8-31-2009


Environmental Education Strategy for Nevada

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EXECUTIVE SUMMARY

Highlights of the university’s focused efforts during the past three months include the following:

- Evaluation results from the NEEI Certification program will be presented at the North American Association for Environmental Education National Conference on October 9-10, 2009.
- A grant was received from the Nevada Community Foundation for the printing of *The Story of Gill* graphic novel.
- A total of 75 people participated in Families in Nature events at the Spring Mountains and Lake Mead National Recreation Areas.
- A third Nevada Environmental Education & Interpretation Certification program was held August 12-18, 2009 for twelve participants.
- Forever Earth was scheduled for 23 days and benefited 688 individuals.
- The National Park Service used Forever Earth as a mobile visitor center on three dates. During these outings, Park Service interpreters contacted over 500 visitors and presented two water safety programs.
- Fourteen Discover Mojave Outdoor World events were conducted for 754 participants.

CONSERVATION EDUCATION AND INTERPRETATION

The following progress has been made toward CE&I project objectives in this quarter.

*Project 1 - Task 1. Assist CI teams in the implementation of at least three educational projects.*

a. Identify at least one project each year to focus on from the following areas of strategic importance to SNAP: litter prevention, responsible OHV recreation, wilderness, and/or restoration. Agency personnel, including SNAP CI teams, will assist in the identification of these educational projects, providing necessary information and guidance. Project identification will be completed by August 31 of each year.
Allison Brody met with Lori Headrick, Project Manager, SNAP Wilderness Team, on May 24, 2009. It was agreed that Allison Brody will work with members of the SNAP Education Action Team to develop a Wilderness Outreach plan, to include projects such as a graphic novel set in a Clark County Wilderness area and a presentation to promote Wilderness awareness to a variety of audiences. Allison Brody and Sky McClain will meet on September 8, 2009 to begin this process.

b. **SNAP Executive Director and PLI staff will work with SNAP Board of Directors to determine focus areas and context of delivery of messages for these focus areas.**

   Once a draft Wilderness Outreach plan is created, Allison Brody will meet with the SNAP Executive Director to accomplish this step.

c. **PLI staff, appropriate agency staff, and other experts will determine the best set of delivery systems for each area of strategic importance. Possible delivery systems include brochures, kiosks, multi-media products, billboards, electronic devices such as MP3 players etc.**

   No progress has been made this quarter.

d. **Key user groups and best educational methodologies will be identified for each project, drawing upon the expertise of university faculty and staff. This will be completed by October 31 of each year.**

   No progress has been made this quarter.

e. **CE&I products and services for the focus project will be created and implemented by PI/Project Manager Allison Brody with assistance from the UNLV graduate student, Curriculum Development Personnel, Media Relations, and Web Communications. UNLV fiscal and clerical personnel will assist the PI/Project Manager with ordering, tracking, and documenting the purchase and delivery of required materials, supplies, and equipment. Agency personnel will assist in product development, review, and execution within their agency educational programs. Examples of possible projects include brochures, interpretive signs, web site content, multi-media products, curricula, and/or programs delivered by CE&I staff. Each project will be completed by May 31 of each year.**

   No progress has been made this quarter.

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**Project 1 – Task 2. Produce assessment proposals and reports for at least two CE&I products or services.**

a. **Identify data collection protocols for assessment of CE&I projects in priority focus areas: litter prevention, responsible OHV recreation, wilderness, and/or restoration. This activity for the selected focus area will be completed by November 30, 2007 and November 30, 2010.**

   Allison Brody will present evaluation results from the NEEI Certification program at the North American Association for Environmental Education national conference on October 9-10, 2009.
b. Drawing upon the expertise of university faculty and staff, the PI/Project Manager will write assessment proposals to human-subject standards specified by UNLV’s Internal Review Board. These proposals will be completed by February 28, 2008 and February 2, 2011.

This task refers to subsequent years. No progress has been made this quarter.

c. Assessment end results will be cooperatively determined with the PLI staff, SNAP Executive Director, SNAP Board and appropriate agency staff.

This task refers to subsequent years. No progress has been made this quarter.

d. Collect and analyze data, using UNLV faculty and research assistants as needed. PI/Project Manager, with assistance from the UNLV graduate student and hourly personnel, will produce a written report by May 31, 2008 and May 31, 2011.

This task refers to subsequent years. No progress has been made this quarter.

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Project 1 – Task 3. Document number of people reached by CE&I programs and services of the four federal agencies and cooperating partners.

Data collection will end September 30, 2009.

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Project 1 – Task 4. Work with at least one private sector group to implement at least two educational projects.

a. Identify two or more projects for delivering SNAP priority focus area messages to at least one private sector group. Examples of private sector groups interfacing with public lands include tour companies, concierge associations, and housing developers. Examples of projects that incorporate SNAP messages could be the development of a training program for a tour company or an interpretive plan for a trail system through a housing development. Agency personnel, including SNAP CI team members, will provide necessary information and guidance. SNAP Executive Director will work with PLI to develop concepts for private sector educational programs. At least one project will be identified by August 31, 2008, and an additional project will be identified by August 31, 2009.

Allison Brody will create training modules for tour operators offering services in Clark County. Project steps include: (1) hold stakeholder meetings to identify needs, audiences, and delivery systems; (2) develop a training plan proposal for approval by SNAP and other core stakeholders; and (3) develop and pilot training modules.

b. CE&I products and services for the focus project will be created and implemented by PI/Project Manager, with assistance from the Curriculum Development Personnel, the UNLV graduate student, and Media Relations. UNLV fiscal and clerical personnel will assist the PI/Project Manager with ordering, tracking, and documenting the purchase and delivery of required materials, supplies, and equipment. Agency personnel will assist in project execution. Each project will be completed by May 31 of each year (2008 and 2010, respectively).
A grant was received from the Nevada Community Foundation on June 29, 2009. The $4,450 grant is to be used for the printing of *The Story of Gill* graphic novel, in coordination with the launch of the web strip (anticipated to happen by December 2009).

c. SNAP Executive Director will provide briefings to the SNAP Board of Directors on proposed private sector educational projects.

A proposal will be developed following stakeholder meetings.

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**Project 1 – Task 5. Work with the Hispanic community to implement at least two educational projects.**

a. PLI staff, in coordination with the appropriate agency staff, will identify at least one project for delivering SNAP priority focus area messages to Hispanic community by convening one or more stakeholder meetings. Examples of potential projects include interpretive projects and educational programs delivered at community events. Project identification will be completed by January 31, 2009.

Four Families in Nature events have been successfully facilitated since March 2009. Two of these events have been held on public lands: Spring Mountains National Recreation Area (June 20, 2009, attended by 55 people, see attachment) and Lake Mead National Recreation Area (July 18, 2009, attended by 15 people, see attachment). A fifth event is being planned for Red Rock Canyon National Conservation Area on September 19, 2009. Friends of Red Rock Canyon and Red Rock Interpretative Association are partnering with this event, providing funding for transportation as well as interpretive staff to help with programming.

b. CE&I products and services for the focus project will be created and implemented by PI/Project Manager, with assistance from the Curriculum Development Personnel, the UNLV graduate student, and Media Relations. UNLV fiscal and clerical personnel will assist the PI/Project Manager with ordering, tracking, and documenting the purchase and delivery of required materials, supplies, and equipment. Agency personnel will assist in project execution.

Participants learned about SNAP Hispanic Outreach at the monthly Las Vegas Latin Chamber of Commerce-sponsored breakfast on June 26, 2009. Outreach materials were highlighted at the breakfast, including the Spanish-language displays used at event booths and *Hector* comic books (featuring Don’t Trash Nevada messages).

PLI and SNAP were represented at a booth at the 7th annual La Oportunidad Business Conference and Consumer Expo at Las Vegas Hilton on August 22, 2009, sponsored by the Las Vegas Latin Chamber of Commerce. Children and families participated in the “Dunk the Trash” and “Up and Down” activities, and received information and messages about public lands.

c. PLI staff, in collaboration with agency staff, will identify additional potential projects or services suggested by follow-up stakeholder meetings.

Language Sources will help develop a newsletter for the Families in Nature program participants. The purpose of this newsletter will be to provide a forum for continual engagement of the core family participants, as well as to promote and expand the program beyond these core participants.
d. PI/Project Manager, with assistance from the Curriculum Development Personnel, the UNLV graduate student, Media Relations, general clerical support, and agency personnel will create and implement one additional program or service for the Hispanic community, evaluating success and documenting milestones in a written report.

The planning team (including Amanda Rowland, SNAP Education) will be meeting several times during September and October to further define and refine the Families in Nature program as well as to identify additional projects.

e. PI/Project Manager will enlist the services of professional social researchers to create and implement a survey and monitoring program of the Hispanic community. Initial survey will focus on visitors to areas selected by the SNAP Board of Directors. Preliminary survey results will be provided to the SNAP Board of Directors as they become available. The results will be used to guide Hispanic messaging and outreach program development and implementation. The messaging and outreach program will be implemented by PI/Project Manager Allison Brody, with assistance from contracted marketing specialists, the UNLV graduate student, Media Relations, and Web Communications. UNLV fiscal and clerical personnel will assist the PI/Project Manager with ordering, tracking, and documenting the purchase and delivery of required materials, supplies, and equipment. Agency personnel will assist in product development, review, and execution within their agency educational programs. Agency personnel will assist in project development and implementation.

A conference call is scheduled for September 4, 2009 with Deb Reardon (project manager, SNAP Recreation Team), Allison Brody, Jim Gramman (OMB representative with the NPS Social Science program), and Maria Marinch (Language Sources). The purpose of the conference call is to address questions that OMB has about the proposed survey and focus groups.

f. A database will be created by contracted personnel, and the results of the survey and monitoring program will be entered into this database. A step-by-step resource guide for connecting with Hispanic communities will be completed based on this research by January 31, 2011.

This task refers to subsequent years. No progress has been made this quarter.

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**Project 1 – Task 6. Maintain and participate in area-wide cooperative CE&I effort.**

a. Administer educators’ listserv/blog on a monthly basis, with assistance of Media Relations and Web Communications personnel and input from agency staff.

Postings and associated information can be viewed at [www.enviroedexchange.org](http://www.enviroedexchange.org).

b. Facilitate bi-monthly meetings for Partners for Education about the Environment, a collaborative group of informal educators from more than 20 informal education organizations in the Las Vegas area, including representatives from each of the four federal agencies.

Allison Brody is facilitating a Professional Development subcommittee for CHOLLA. The Committee met on June 16, 2009 and on August 20, 2009. An on-line survey has been launched to determine professional development needs.
c. **Appropriate agency staff will attend Partners for Education about the Environment meetings and work to collaboratively to identify regional education focus and efforts.**

Amanda Rowland (SNAP Education), Angelina Yost, and Kathy August attended the June 20 CHOLLA meeting.

d. **Implement stated goals (listed below) for Partners for Education about the Environment with assistance from Media Relations, general clerical support, agency personnel, and the UNLV graduate student.**

Allison Brody and Amy Page (PLI) have developed draft benchmarks to identify environmental literacy for the state of Nevada. These Nevada Environmental Literacy Core Concepts (see attachment) have been submitted to Richard Vineyard, the Science Director for Nevada Department of Education. They will then be submitted to the remaining planning team members, which include Amanda Rowland (SNAP Education).

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**Project 1 – Task 7. Develop Public Awareness Campaign to inform residents about the benefits of our public lands; encourage residents to learn about the plants, animals, rocks, and the natural and cultural history of Southern Nevada; and motivate people of all ages to responsibly explore outdoor recreational opportunities on public lands.**

a. **Conduct pre- and post-surveys to measure resident awareness levels. Pre-survey to be completed by August 31, 2008. Post-surveys to be completed by July 31, 2009 and April 30, 2010.**

The proposed SNAP messages were presented to the SNAP Team Leads on July 16, 2009, by Angelina Yost and Allison Brody, and suggested revisions were incorporated. The updated version of the messages was submitted by Angelina Yost to the SNAP Education Team. Further progress on this task is dependent on approval of these messages.

b. **PLI and SNAP staff will participate in the development of a public awareness campaign, which includes but is not limited to creative strategy, production, distribution and evaluation. Campaign development will be completed by August 31, 2008 and implemented by January 5, 2009.**

Progress on this cannot be made until the SNAP messages have been approved and the SNAP Education Team provides strategic direction.

Jennifer Haley, Angelina Yost, and Bob Loudon approved the submission of a proposal to the Rivers, Trails and Conservation Assistance Program (RTCA) to help facilitate a collaborative partnership that would work together to create, develop, and implement a Southern Nevada Children’s Outdoor Bill of Rights. This partnership would include groups such as the Southern Nevada Agency Partnership; Parks and Recreation Departments of Clark County, City of Henderson, City of Las Vegas and City of North Las Vegas; Nevada Department of Wildlife; Southern Nevada Health District; Outside Las Vegas Foundation; REI, Inc.; Clark County School District; Nevada State Parks; and the University of Nevada, Las Vegas. The Bill would serve as a shared vision for connecting children to nature from which the partnership would develop an implementation strategy to identify opportunities, challenges, and solutions. We anticipate one barrier being a lack of close-to-home opportunities to explore nature. Through this process, the group will identify opportunities to protect and enhance open space, increase natural play spaces, and develop trails within the community that would complement the system of federal lands surrounding Las Vegas.
This application was submitted on July 30, 2009 (see attachment).

c. PLI staff, in coordination with SNAP and agency staff, will develop a media plan and budget for the implementation of the public awareness campaign. This will be complete by January 5, 2009.

Progress on this cannot be made until the SNAP messages have been approved and the SNAP Education Team provides strategic direction.

d. PLI and SNAP staff will develop promotional vehicles to reach target audiences onsite by January 5, 2009.

Progress on this task cannot be made until the SNAP messages have been approved and the SNAP Education Team provides strategic direction.

e. PLI staff will produce a written assessment report of the effectiveness of the public awareness program. This will be completed by May 2010.

This task refers to subsequent years.

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Project 1 – Task 8. Develop Mobile Exhibit program to deliver SNAP messages.

a. PI/Project Manager will coordinate the development and construction of three-dimensional museum-quality exhibits with graphical elements and supporting educational materials, with assistance from the Curriculum Development Personnel, the UNLV graduate student, and Media Relations. SNAP and agency staff will assist in project development and implementation, message and graphic design development, and with the design of quality assurance protocols to ensure the consistent and effective use of the exhibit program. This will be completed by May 31, 2010.

A draft Mobile Exhibit Project Planning Report (posted on Grovesite) has been submitted to the planning team for review. Comments will be received from the team by September 15, 2009. The Project Planning Report will then be shared with the SNAP Executive Director and the SNAP Education Team for approval.

A front-end evaluation plan (see attachment) has been approved by the planning team. Information was gathered from eight visitors at Lake Mead National Recreation Area on July 20, 2009 and five visitors at Spring Mountains National Recreation Area on August 22, 2009. Additional information will be gathered from a minimum of eight visitors at Red Rock Canyon National Conservation Area in September, 2009. Results will be compiled and used to inform the final messages, text, and exhibit design.

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Project 1 – Task 9. Investigate potential delivery systems for integrating SNAP messages into the Clark County School District.

This was completed May 2009. Updates and recommendations will be provided to the SNAP Education team by November 2009.

a. PI/Project Manager, in cooperation with the Nevada Natural Resource Education Council, will facilitate the implementation of the Nevada State Certification Program for Environmental Education and Interpretation (NEE&I). Certification program components will include: recruitment and registration of Certificate Program participants; four workshops for Certification program participants; mentor-training workshops; and supervised internships for Certification program participants. SNAP and agency staff will provide review of certificate standards. Curriculum will be developed for the pilot program by May 31, 2008.

A planning meeting was held on July 21, 2009 to review and revise the internship portion of the NEEI Certification program (see attached notes).

A third cohort for the NEEI Certification program was held August 12-14, 2009 and August 17-19, 2009 at the Springs Preserve. Twelve participants successfully completed 48 hours worth of coursework during this 6-day workshop (see attached participant list). These twelve participants will begin their internship (now referred to as a “capstone experience”) beginning September 2009.

b. PI/Project Manager will facilitate the planning and implementation Our Places Tell Stories conference. Conference components will include: identification and invitation of speakers, including a keynote; recruitment and registration of participants; creation of conference program; and facility logistics (food, rooms, set-up, etc.). The conference will be held on March 4-6, 2008. If sufficient sponsorships are procured, it will be possible to hold an additional conference before May 2010.

The 2010 Our Places Tell Stories conference is being planned by a planning team that includes representatives from SNAP, BLM, FWS, and the US FS (see attached notes from planning team meetings held on July 9, 2009 and August 26, 2009).

The conference theme is:

*Lead the Way: Engage, Empower, and Embrace through Environmental Literacy*

The 2010 OPTS Conference will be held February 24-27 at the Springs Preserve. February 24-26, 2010 conference sessions will target informal educators, while sessions offered on February 27, 2010 will target teachers and other formal educators.
<table>
<thead>
<tr>
<th>Year Two Deliverables (June 2009 – May 2010)</th>
<th>Percent Complete as of August 31, 2009</th>
<th>Plan for Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project 1 – Task 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Identify at least one project each year to focus efforts.</td>
<td>100%</td>
<td>Completed: Wilderness Awareness</td>
</tr>
<tr>
<td>b. SNAP Executive Director and PLI staff will work with SNAP Board of Directors to determine focus areas and context of delivery of messages for these focus areas.</td>
<td>0%</td>
<td>A Wilderness Outreach plan will be created and presented to the SNAP Executive Director and the SNAP Education team by October 2009.</td>
</tr>
<tr>
<td>c. Determine the best set of delivery systems for each project.</td>
<td>0%</td>
<td>This will be identified in the Wilderness Outreach Plan.</td>
</tr>
<tr>
<td>d. Key user groups and best educational methodologies will be identified for each project.</td>
<td>0%</td>
<td>This will be identified in the Wilderness Outreach Plan.</td>
</tr>
<tr>
<td>e. CE&amp;I products and services for the focus project will be created and implemented.</td>
<td>0%</td>
<td>These will be identified in the Wilderness Outreach Plan.</td>
</tr>
<tr>
<td><strong>Project 1 – Task 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Produce assessment proposals and reports for at least two CE&amp;I products or services.</td>
<td>100%</td>
<td>Evaluation results for the NEEI Certification Program will be presented at the NAAEE National Conference on Oct. 9-10, 2009.</td>
</tr>
<tr>
<td><strong>Project 1 – Task 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document number of people reached by CE&amp;I programs and services of the four federal agencies and cooperating partners.</td>
<td>75%</td>
<td>Data collection will be completed by September 30, 2009.</td>
</tr>
<tr>
<td><strong>Project 1—Task 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>A project has been identified: develop a training plan for Southern Nevada Tourism sector</td>
<td></td>
</tr>
<tr>
<td><strong>Project 1 – Task 5</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Identify project for delivering SNAP priority focus area messages to Hispanic community.</td>
<td>100%</td>
<td>Families in Nature program; outreach tools and events.</td>
</tr>
<tr>
<td>b. Create and implement project.</td>
<td>100%</td>
<td>Four Families in Nature events have been held. Three more are in the planning stages.</td>
</tr>
<tr>
<td><strong>Project 1 – Task 6</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Administer educators’ listserv/blog.</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td>b. Facilitate Partners for Education about the Environment meetings.</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td>c. Appropriate agency staff will attend Partners for Education about the Environment meetings.</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td>d. Implement stated goals (see overview section) for Partners for</td>
<td>Continuous</td>
<td>The Nevada Environmental Literacy core concepts have been proposed.</td>
</tr>
<tr>
<td>Education about the Environment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Project 1 – Task 7</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop a media plan and budget for the implementation of the public awareness campaign. This will be complete by January 5, 2009.</td>
<td>15%</td>
<td>Awaiting SNAP Approval</td>
</tr>
<tr>
<td><strong>Project 1 – Task 8</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordinate the development and construction of three-dimensional museum-quality exhibits with graphical elements and supporting educational materials</td>
<td>45%</td>
<td>Draft exhibit plans have been submitted to planning team members for approval.</td>
</tr>
<tr>
<td><strong>Project 1 – Task 9</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investigate potential delivery systems for integrating SNAP messages into the Clark County School District.</td>
<td>100%</td>
<td>Completed.</td>
</tr>
<tr>
<td><strong>Project 1 – Task 10</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop a Nevada State EE&amp;I Certificate Program and conduct an Our Places Tell Stories Conference.</td>
<td>100%</td>
<td>A third cohort has completed coursework.</td>
</tr>
</tbody>
</table>
FOREVER EARTH PROGRAM

The following progress has been made toward Forever Earth project objectives in this quarter.

Project 2 – Task 1. Coordinate and schedule Forever Earth uses.

a. Revise Forever Earth Standard Operating Procedures (SOPs; Sewing et. al., 2006) and produce revised SOP edition.

The Forever Earth SOPs has been updated and revised to reflect changes in program and boat operations (see attached). A copy of the SOPs is located in the main cabin of Forever Earth.

b. Provide training on revised SOPs for boat captains and deckhands. This activity will be completed by September 30 of each year.

Training is scheduled for September 29, 2009 for all boat crew and program facilitators from the Public Lands Institute and National Park Service.

c. Maintain Forever website and update content.

This activity is on-schedule to be completed by May 31, 2010, as needed.

Project 2 – Task 2. Schedule and deliver educational programming for a minimum of 25 trips.

a. Coordinate with Clark County School District teachers as well as private school teachers and home school educators to schedule a minimum of 25 educational trips on Forever Earth. This will be completed by May 31 of each year.

This task is on schedule to be completed May 31, 2010.

In the first quarter, 638 passengers benefited from educational programming during 17 trips aboard Forever Earth. These are detailed in the following table. Highlights of Forever Earth educational use included:

- Fourth-grade students from Jo Mackey Elementary School (June 1, 2009) and Woolley Elementary School (June 3 and 9, 2009) learned about the Lake Mead’s water use cycle.
- On June 2, 2009, teachers participating in a week-long workshop sponsored by Bryce Canyon Natural History Association learned about the Forever Earth program and about the impacts of quagga mussels on Lake Mead.
- Fifth-grade students from Peterson Elementary School (June 2, 11, 12, and 24, 2009), from Crestwood Elementary School (June 5, 16, and 23, 2009), and from Brookman Elementary School (June 10 and 26, 2009) learned about the suitability of Lake Mead’s habitat for razorback suckers.
- On July 6 and 7, 2009, students attending a summer learning institute developed by the Alexander Dawson Foundation participated in the Invasive Species curriculum activities on Forever Earth.
- A field trip associated with the National Association for Geology Teachers Conference held at UNLV was conducted for 22 conference attendees.
- Teachers attending a class about global climate change offered by Nevada State College participated in geology activities and learned about the Forever Earth program.
(NOTE: See attached for a listing of all Forever Earth trips conducted during the 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>1-Jun</td>
<td>Jo Mackey ES (4th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>10</td>
<td>24</td>
<td>34</td>
</tr>
<tr>
<td>2-Jun</td>
<td>Petersen ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>13</td>
<td>28</td>
<td>41</td>
</tr>
<tr>
<td>2-Jun</td>
<td>Bryce Canyon Natural History Association</td>
<td></td>
<td>Teacher Workshop</td>
<td>2 hrs.</td>
<td>27</td>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td>3-Jun</td>
<td>Woolley ES (4th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>10</td>
<td>37</td>
<td>47</td>
</tr>
<tr>
<td>5-Jun</td>
<td>Crestwood ES (4th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>3.5 hrs (2 trips)</td>
<td>9</td>
<td>32</td>
<td>41</td>
</tr>
<tr>
<td>9-Jun</td>
<td>Woolley ES (4th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>11</td>
<td>38</td>
<td>49</td>
</tr>
<tr>
<td>10-Jun</td>
<td>Brookman ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>12</td>
<td>29</td>
<td>41</td>
</tr>
<tr>
<td>11-Jun</td>
<td>Petersen ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>3.5 hrs (2 trips)</td>
<td>9</td>
<td>24</td>
<td>33</td>
</tr>
<tr>
<td>12-Jun</td>
<td>Petersen ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>3.5 hrs (2 trips)</td>
<td>7</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td>16-Jun</td>
<td>Crestwood ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>8</td>
<td>31</td>
<td>39</td>
</tr>
<tr>
<td>23-Jun</td>
<td>Crestwood ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>11</td>
<td>38</td>
<td>49</td>
</tr>
<tr>
<td>24-Jun</td>
<td>Petersen ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>3.5 hrs (2 trips)</td>
<td>14</td>
<td>26</td>
<td>40</td>
</tr>
<tr>
<td>26-Jun</td>
<td>Brookman ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>9</td>
<td>26</td>
<td>35</td>
</tr>
<tr>
<td>6-Jul</td>
<td>Alexander Dawson Foundation</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4.5 hrs. (2 hrs.)</td>
<td>9</td>
<td>34</td>
<td>43</td>
</tr>
<tr>
<td>7-Jul</td>
<td>Alexander Dawson Foundation</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4.5 hrs. (2 hrs.)</td>
<td>9</td>
<td>41</td>
<td>50</td>
</tr>
<tr>
<td>16-Jul</td>
<td>National Association for Geology Teachers</td>
<td>Education</td>
<td>Conference field trip</td>
<td>3.5 hrs.</td>
<td>24</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>20-Jul</td>
<td>Nevada State College</td>
<td>Education</td>
<td>Teacher Workshop</td>
<td>4 hrs.</td>
<td>13</td>
<td>0</td>
<td>13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOTALS for 1st quarter</th>
<th>Education - 11 groups</th>
<th>Education - 64.5 hrs.</th>
<th>205</th>
<th>433</th>
<th>638</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTALS for Year 3 (to date)</td>
<td>Education - 11 groups</td>
<td>Education - 64.5 hrs.</td>
<td>205</td>
<td>433</td>
<td>638</td>
</tr>
</tbody>
</table>

b. Review and revise existing Forever Earth curricula (Sewing et. al, 2006) and produce revised annual editions. This will be completed by May 31 of each year, beginning in 2008.

The 2007-2008 Edition was completed by May 31, 2008.

The 2009-2010 Edition is on schedule to be completed by May 31, 2010.

c. **Drawing upon the expertise of university faculty and staff, develop and produce one additional curriculum module for sixth-grade students.**

This activity was completed in Year 1.

d. **Identify and purchase any needed program materials, supplies, equipment, and/or visual aids required for delivering the curriculum. This will be completed by May 31 of each year.**

This activity was completed in Years 1 and 2.

This activity is ongoing as items are identified throughout Year 3. This task is on schedule to be completed by May 31, 2010.

e. **Develop a partnership with one of the agencies responsible for water quality monitoring for integrating data collection performed by high school students into an ongoing research database. This will be completed by May 31, 2008.**

This activity was not completed due to the low number of high schools scheduling field trips aboard Forever Earth. It was determined by the Curriculum Development Team to re-assign resources to ongoing improvements and additional activities for the 7th grade Forever Earth curriculum.

f. **Develop one additional curriculum module for fifth grade students. This will be completed by May 31, 2009.**

This activity was completed in Year 2.

g. **Develop one additional curriculum module for fourth grade students. This will be completed by May 31, 2010.**

No progress was made on this task during the quarter. The task is on schedule to be completed by May 31, 2010.

h. **Working with agency personnel and drawing upon the expertise of university faculty and staff, produce a written assessment report that summarizes changes in student and teacher knowledge, attitudes, and performance and includes recommendations for program improvement. Utilize UNLV research assistants and faculty as needed to collect and analyze data.**

An assessment of the 2008/2009 curriculum was conducted during Year 2, Round 6. Student knowledge, performance skills, and attitudes and teachers’ perceptions of the program were measured using assessment tools developed in previous years. Data was collected and organized by Michelle Weibel, UNLV graduate student assisting with the Forever Earth program. Dr. Lori Olafson and Dr. Greg Schraw, UNLV Educational Psychology Department, analyzed the data and summarized the findings in a report titled “Assessment of Forever Earth Curriculum 2008/2009” (*see attached*). The results support several conclusions:

1) The most important is that each of the four curricula produced substantial increases in knowledge that were maintained over the one to four week delay following the Forever Earth activity. This pattern of results clearly indicates that the activities had significant long-term instructional benefit.
2) Student attitudes improved significantly after experiencing the curriculum.
3) Teachers demonstrated very favorable attitudes about the curriculum’s effectiveness.
4) Although the scope of the program increased dramatically, a 223% increase in the number of students served, student gains continued.

Project 2 – Task 3. Schedule a minimum of three trips per year for research purposes.

a. Develop and distribute a letter of introduction and a program brochure to university, state, and federal researchers in Nevada, Arizona, and Utah to inform them of Forever Earth and its purpose. This will be completed by August 31, 2007.

This activity was completed during Year 1.

b. Coordinate with university, state, and federal researchers to schedule Forever Earth for a minimum of three scientific research trips. This will be completed by May 31 of each year.

No progress was made on this activity in this quarter.

c. Identify and purchase any needed research supplies and/or equipment. This will be completed by May 31 of each year.

No progress was made on this activity in this quarter.

d. Revise Forever Earth program brochure (Sewing and Miller, 2006) as necessary. Distribute a letter of introduction and program brochure to university, state, and federal researchers in Nevada, Arizona, and Utah to inform them of Forever Earth and its purpose. This will be completed by August 31, 2008 and 2009.

This task was completed in previous years.

Project 2 – Task 4. Schedule Forever Earth as a mobile visitor center.

a. Coordinate with the Interpretive Division at Lake Mead National Recreation Area on a continuous basis to schedule Forever Earth at least twice per month during peak visitation (June, July, August of each year).

The National Park Service used Forever Earth as a mobile visitor center on three occasions this quarter (see table below). Two additional reservations were not fulfilled:
1) The August 8, 2009 reservation was cancelled due to lack of boat crew; and
2) The August 22, 2009 was shortened due to high winds and safety concerns.

On the three dates that were fulfilled, NPS interpreters made over 500 visitor contacts; hosted 87 visitors onboard Forever Earth; and conducted 2 water safety programs.

(NOTE: See attached for a listing of all Forever Earth trips conducted during the 1st Quarter.)

<table>
<thead>
<tr>
<th>Date(s)</th>
<th>Group Type</th>
<th>Group</th>
<th>Trip Purpose</th>
<th>Length of Trip</th>
<th># of NPS Staff</th>
<th># of Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 27</td>
<td>National Park Service</td>
<td>Agency</td>
<td>Mobile Visitor Center</td>
<td>5.5 hrs.</td>
<td>2</td>
<td>200</td>
</tr>
<tr>
<td>July 11</td>
<td>National Park Service</td>
<td>Agency</td>
<td>Mobile Visitor Center</td>
<td>5 hrs.</td>
<td>3</td>
<td>250</td>
</tr>
</tbody>
</table>

Education in the Environment: A Strategy for Continued Interagency Outdoor Programming
Quarterly Report: Year 2 • Quarter 1
Education in the Environment: A Strategy for Continued Interagency Outdoor Programming
Quarterly Report: Year 2 • Quarter 1

<table>
<thead>
<tr>
<th>July 25</th>
<th>National Park Service</th>
<th>Agency</th>
<th>Mobile Visitor Center</th>
<th>5 hrs.</th>
<th>2</th>
<th>52</th>
</tr>
</thead>
</table>

**TOTALS for 1st quarter**

| Agency | 3 uses of Forever Earth as mobile visitor center | Agency - 15.5 hrs. | 7 | 502 |

**TOTALS for Year 6**

| Agency | 3 uses of Forever Earth as mobile visitor center | Agency - 15.5 hrs. | 7 | 502 |

Project 2 – Task 5. Provide Forever Earth for agency purposes for a minimum of six trips per year.
a. Coordinate on a continuous basis with local, state, and federal agencies to schedule Forever Earth for a minimum of six trips per year. This will be completed by May 31 of each year.

A familiarization trip was conducted by the National Park Service for the SNPLMA Executive Committee on June 18.

On August 22, the Public Lands Institute conducted a staff meeting and a familiarization trip for PLI and NPS staff involved with Forever Earth programming.

**Forever Earth Agency Trips – Year 2 (Round 6), 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 18</td>
<td>National Park Service</td>
<td>Agency</td>
<td>Familiarization trip for SNPLMA Executive Committee</td>
<td>2 hrs.</td>
<td>24</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>August 24</td>
<td>Public Lands Institute</td>
<td>Agency</td>
<td>Familiarization trip for PLI and NPS staff</td>
<td>4 hrs.</td>
<td>17</td>
<td>0</td>
<td>17</td>
</tr>
</tbody>
</table>

**TOTALS for 1st quarter**

| Agency - 2 groups | Agency - 6 hrs. | 41 | 0 | 41 |

**TOTALS for Year 6**

| Agency - 2 groups | Agency - 6 hrs. | 41 | 0 | 41 |

Project 2 – Task 6. Provide funding for student field trips to public land sites.
PI/Project Manager Daphne Sewing, with the assistance from the UNLV graduate student, will coordinate and disburse transportation funding for field trips to public lands by Clark County School District students.

a. Produce a written report on Transporting Students to Public Land Sites for Field Trips. The report will include recommendations for future implementation.

This activity was completed during Year 1.

b. During the 2007-2008 school year, provide transportation funding for a minimum of 15 field trips to public lands.
This activity was completed during Year 1.

c. During the 2008-2009 school year, provide transportation funding for a minimum of 35 field trips to public lands.

This activity was completed during Year 2.

d. During the 2009-2010 school year, provide transportation funding for a minimum of 35 field trips to public lands.

In this quarter, funding for bus transportation was provided for twelve field trips.

Project 2 – Task 7. Implement additional program assistance.
PI/Project Manager Daphne Swing, with assistance from the UNLV Project Planner, will evaluate and, to the extent possible, implement a volunteer or other workforce structure to increase the scope of delivery and impact of the program.

a. Determine and, to the extent possible, implement the most efficient, high quality delivery structure for the Forever Earth program.

This task is on schedule to be accomplished by May 31, 2010.
DISCOVER MOJAVE OUTDOOR WORLD

The following progress has been made toward Outdoor World project objectives in this quarter.

**Project 3 – Task 1. Conduct a minimum of 25 Outdoor World events annually.**

a. Coordinate and develop a schedule of events for the year. This will be completed by September 30 of each year.

A draft schedule of activities for Year 3 (Round 6) has been developed (see attached). Clark County School District will be scheduling eight activities for middle school physical education students during the 2009-2010 school year; activity dates are being discussed. Interest from recreation and community centers to schedule additional activities will be reflected in subsequent revisions of this schedule.

b. Utilize UNLV students and staff, volunteers, and federal agency personnel to conduct a minimum of 25 events. This will be completed by May 31 of each year.

In this quarter, 14 events were conducted for 754 participants (see table below).

The Public Lands Institute was one of the many sponsors of the annual Free Fishing Day, held at Lake Mead NRA, on June 13, 2009. Project Manager Daphne Sewing participated on the planning team and, along with PLI and NPS staff, provided a fish art activity during the day’s event.

PLI staff facilitated a geocaching activity for Boy Scout Troop 143 on two dates, June 10 and 13, 2009.

Four events were conducted for a summer teen program sponsored by Valley View Recreation Center, Henderson Parks and Recreation Department.

PLI and NPS staff facilitated activities as part of the Families and Nature program at Winchester Cultural Center on June 20 and July 18, 2009.

Two activities were conducted for teenage residents of a Westcare facility on July 15 and 22, 2009.

A geocaching activity was conducted for campers participating in the Adventure Program at Camp Lee Canyon on July 20, 2009.

On July 28 and August 5, 2009, teen staff from the RecMobile program, Clark County Parks and Recreation Department participated in Outdoor World activities.

### Discover Mojave Outdoor World Schedule

#### Quarter 1, Year 3

<table>
<thead>
<tr>
<th>DATE</th>
<th>GROUP</th>
<th># of PARTICIPANTS</th>
<th>ACTIVITY</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wed., June 10</td>
<td>Troop 143, Boy Scouts</td>
<td>23</td>
<td>Geocaching</td>
<td>Spring Mountains NRA</td>
</tr>
<tr>
<td>Sat., June 13</td>
<td>General Public – Free Fishing Day</td>
<td>307 (125)</td>
<td>Fishing Art Adventure</td>
<td>Lake Mead NRA</td>
</tr>
<tr>
<td>Sat., June 13</td>
<td>Troop 143, Boy Scouts</td>
<td>47</td>
<td>Geocaching</td>
<td>Spring Mountains NRA</td>
</tr>
<tr>
<td>Fri., June 19</td>
<td>Valley View Recreation Center</td>
<td>33</td>
<td>Kayaking I</td>
<td>Lake Mead NRA</td>
</tr>
<tr>
<td>Date</td>
<td>Location and Activity</td>
<td>Participants</td>
<td>Location</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------------------------</td>
<td>--------------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Sat., June 20</td>
<td>Winchester Cultural Center – Families and Nature</td>
<td>51</td>
<td>Spring Mountains NRA</td>
<td></td>
</tr>
<tr>
<td>Fri., July 10</td>
<td>Valley View Recreation Center</td>
<td>24</td>
<td>Sunset Park</td>
<td></td>
</tr>
<tr>
<td>Wed., July 15</td>
<td>Westcare – Boys</td>
<td>13</td>
<td>Lake Mead NRA</td>
<td></td>
</tr>
<tr>
<td>Sat., July 18</td>
<td>Winchester Cultural Center</td>
<td>14</td>
<td>Lake Mead NRA</td>
<td></td>
</tr>
<tr>
<td>Mon., July 20</td>
<td>Camp Lee Canyon, Clark County Parks and Recreation</td>
<td>46</td>
<td>Spring Mountains NRA</td>
<td></td>
</tr>
<tr>
<td>Wed., July 22</td>
<td>Westcare – Boys</td>
<td>6</td>
<td>Nevada Indoor Climbing Center</td>
<td></td>
</tr>
<tr>
<td>Fri., July 24</td>
<td>Valley View Recreation Center</td>
<td>27</td>
<td>Nevada Indoor Climbing Center</td>
<td></td>
</tr>
<tr>
<td>Tues., July 28</td>
<td>RecMobile</td>
<td>13</td>
<td>Lake Mead NRA</td>
<td></td>
</tr>
<tr>
<td>Wed., Aug. 5</td>
<td>RecMobile</td>
<td>9</td>
<td>Nevada Indoor Climbing Center</td>
<td></td>
</tr>
<tr>
<td>Fri., Aug. 7</td>
<td>Valley View Recreation Center</td>
<td>16</td>
<td>Spring Mountains NRA</td>
<td></td>
</tr>
</tbody>
</table>

**TOTALS for 1st Quarter**

- 6 Groups
- 754 participants
- 14 Events

---

c. Draw upon the expertise of university faculty and staff to produce a written assessment report that summarizes changes in participant knowledge, attitudes, and performance and includes recommendations for program improvement. Utilize UNLV research assistants as needed to collect and analyze data. This will be completed by August 31 of each year, beginning 2008.

An assessment protocol was continued through the fifth year of the Outdoor World program (Year 2, Round 6). Participant knowledge, performance skills, and attitudes and teachers’ perceptions of the program were measured using assessment tools developed and refined in the previous years. Data was collected and organized by Michelle Weibel, UNLV graduate student assisting with the Forever Earth program. Dr. Lori Olafson and Dr. Greg Schraw, UNLV Educational Psychology Department, analyzed the data and summarized the findings in a report titled “Assessing Discover Mojave Outdoor World, Year 5 of Program” (see attached). The results support several conclusions:

1. The assessments are comprehensive and capable of assessing different measures of growth from the beginning to the end of the program.
2. The program events continue to have a significant impact on participants’ knowledge and skills, based on growth from pre- to post-intervention assessments.
3. Participants also demonstrated strong positive attitudes about the experiences.
4. Overall, results from the assessments showed that program events have a significant and positive impact on children’s knowledge, skills, and attitudes. Parents also provided very favorable ratings of their child’s participation in science class following the program. In contrast, teachers’ ratings did not increase after completion of the program.

d. Maintain website to highlight program activities and partner contributions and update content as necessary. Website content will be evaluated regularly by agency staff. This will be completed by May 31 of each year.

This task is on schedule to be completed by May 31, 2010.
Project 3 – Task 2. Develop a minimum of one new Outdoor World activity each year.

a. UNLV and agency staff will work together to identify the type of recreational activity to develop into an additional event for targeted youth audience. This will be completed by August 31 of each year.

An additional fishing activity is being investigated at the request of the U.S. Fish and Wildlife Service.

b. Develop curriculum (goals, objectives, programs, activities, locations, etc.) for the selected recreational activity. This activity will be completed by January 31 of each year.

This task is on schedule to be completed.

c. Field test new event curriculum, make changes, and finalize curriculum. This will be completed by May 31 of each year.

This task is on schedule to be completed.

Project 3 – Task 3. Develop a minimum of two partnerships that increase the impact of the program each year to assist in conducting Outdoor World events, providing financial assistance, or supplying the desired target audience of economically disadvantaged youth, ages 8-12.

a. UNLV, SNAP Executive Director, and SNAP Board of Directors work together to identify potential new partners.

No work was completed on this task during the first quarter.

b. UNLV and appropriate agency staff, including the SNAP Board of Directors, will contact potential partners for intended purposes. This will be completed by October 31 of each year.

PI/Project Manager Daphne Sewing worked with two new partners during the quarter: 1) Camp Lee Canyon, Clark County Parks and Recreation Department; and 2) Winchester Cultural Center.

c. Formulate a minimum of one partnership. This will be completed by January 31 of each year.

This task is ongoing. Plans are to continue the relationships established with Camp Lee Canyon and Winchester Cultural Center.

d. Highlight partner contributions on website. This activity will be completed by May 31 of each year.

This task is on schedule for completion.

Project 3 – Task 4. Implement additional program assistance.

PI/Project Manager Daphne Swing, with assistance from the UNLV Project Planner, will evaluate and, to the extent possible, implement a volunteer or other workforce structure to increase the scope of delivery and impact of the program.

a. Determine and, to the extent possible, implement the most efficient, high quality delivery structure for the Outdoor World program. This will be done by May 31, 2010.
No work was accomplished on this task during the quarter.

**ADDITIONAL WORK ACCOMPLISHED FOR THIS PROJECT**

A grant proposal was submitted to the River, Trails, and Conservation Assistance Program to request help with pulling a diversity of partners together to create a Southern Nevada Children’s Outdoor Bill of Rights. Opportunities to develop natural play areas and additional trails or trail improvements within communities are also part of the vision for the project. Letters of support for this project were obtained from Clark County Parks and Recreation Department, Henderson City Parks and Recreation Department, Clark County School District, and a North Las Vegas City Councilman.
# STATUS OF YEAR 2 (ROUND 6) DELIVERABLES – FOREVER EARTH & OUTDOOR WORLD

<table>
<thead>
<tr>
<th>Year Three Deliverables (June 2009 – May 2010)</th>
<th>Percent Complete as of August 31, 2009</th>
<th>Plan for Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOREVER EARTH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project 2 – Task 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Revise SOP.</td>
<td>100%</td>
<td>Operational changes will be identified during scheduled boat training and facilitators training and incorporated into the SOP.</td>
</tr>
<tr>
<td>b. Provide training on SOP for boat crew.</td>
<td>20%</td>
<td>Training is scheduled for September 29, 2009.</td>
</tr>
<tr>
<td>c. Update and maintain website.</td>
<td>0%</td>
<td>Updates will be made as needed.</td>
</tr>
<tr>
<td>Project 2 – Task 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Schedule a minimum of 25 educational trips.</td>
<td>44%</td>
<td>Additional reservations will occur throughout the school year.</td>
</tr>
<tr>
<td>b. Produce 2009/2010 edition of FE curriculum.</td>
<td>50%</td>
<td>A new 7th grade shore activity has been created and will be field tested and delivered in the next quarter; an additional 4th grade activity has been identified and will be developed during the next two quarters.</td>
</tr>
<tr>
<td>d. Purchase program materials, supplies, and visual aids.</td>
<td>10%</td>
<td>Visual aid and equipment needs have been identified for the 2008/2009 school year.</td>
</tr>
<tr>
<td>e. Develop partnership for integrating data collected by high school students into existing research data base.</td>
<td>0%</td>
<td>Craig Palmer and others will be working with the project manager to develop plan for this element.</td>
</tr>
<tr>
<td>g. Develop additional 4th grade curriculum.</td>
<td>20%</td>
<td>An additional 4th grade activity has been identified and will be developed during the next two quarters.</td>
</tr>
<tr>
<td>h. Produce written assessment report of participants in Forever Earth curricula.</td>
<td>100%</td>
<td>Completed.</td>
</tr>
<tr>
<td>Project 2 – Task 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Schedule 3 scientific research trips on Forever Earth.</td>
<td>0%</td>
<td>These will be scheduled throughout the year.</td>
</tr>
<tr>
<td>c. Purchase needed research supplies and equipment.</td>
<td>0%</td>
<td>Purchases will be made dependent on needs identified by researchers.</td>
</tr>
<tr>
<td>d. Revise program brochure as needed.</td>
<td>100%</td>
<td>Complete</td>
</tr>
<tr>
<td>Project 2 – Task 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Schedule Forever Earth as a mobile visitor center twice per month during June, July, and August.</td>
<td>50%</td>
<td>NPS conducted three trips this summer.</td>
</tr>
<tr>
<td>Project 2 – Task 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Schedule a minimum of 6 trips for agency purposes.</td>
<td>33%</td>
<td>These will be scheduled throughout the year.</td>
</tr>
<tr>
<td>Project 2 – Task 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Provide bus transportation funds for 35 student field trips.</td>
<td>34%</td>
<td>Additional trips will be funded throughout the year.</td>
</tr>
<tr>
<td>Project 2 – Task 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Determine delivery system.</td>
<td>10%</td>
<td>Currently working with project planner to analyze potential delivery systems.</td>
</tr>
<tr>
<td>OUTDOOR WORLD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project 3 – Task 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Develop a schedule of events for the year.</td>
<td>70%</td>
<td>Draft schedule will be modified as more events are scheduled by partners.</td>
</tr>
<tr>
<td>b. Conduct a minimum of 25 events.</td>
<td>56%</td>
<td>Current partners indicate they will schedule more events throughout the year.</td>
</tr>
<tr>
<td>c. Produce written assessment report</td>
<td>100%</td>
<td>Completed.</td>
</tr>
</tbody>
</table>
of participants in Outdoor World program.

d. Update and maintain website. 0% New partners will be highlighted on website. This is expected to occur throughout the year.

**Project 3 – Task 2**

<table>
<thead>
<tr>
<th>Task</th>
<th>Status</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Identify a new recreational event to be developed.</td>
<td>100%</td>
<td>Two activities are being targeted: an outdoor rock climbing experience and mountain biking.</td>
</tr>
<tr>
<td>b. Develop curriculum for the selected recreational event.</td>
<td>0%</td>
<td>This is expected to occur during the second and third quarters.</td>
</tr>
<tr>
<td>c. Field test new event curriculum.</td>
<td>0%</td>
<td>This is expected to occur during the third quarter.</td>
</tr>
</tbody>
</table>

**Project 3 – Task 3**

<table>
<thead>
<tr>
<th>Task</th>
<th>Status</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Identify potential new partners.</td>
<td>100%</td>
<td>Completed.</td>
</tr>
<tr>
<td>b. Contact potential partners.</td>
<td>100%</td>
<td>Completed.</td>
</tr>
<tr>
<td>c. Formulate a minimum of one new partnership.</td>
<td>200%</td>
<td>Two new partnerships were established in the first quarter.</td>
</tr>
<tr>
<td>d. Highlight partner contributions on website.</td>
<td>0%</td>
<td>New partners will be highlighted on website. This is expected to occur during the second quarter.</td>
</tr>
</tbody>
</table>

**Project 3 – Task 4**

<table>
<thead>
<tr>
<th>Task</th>
<th>Status</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Determine delivery system to increase scope of program.</td>
<td>0%</td>
<td>Will work with the project planner to analyze potential delivery systems.</td>
</tr>
</tbody>
</table>

Submitted by: 

Margaret N. Rees 
Principal Investigator

August 31, 2009 Date
Families in Nature
Event Participant List
<table>
<thead>
<tr>
<th>Names</th>
<th>Food</th>
<th>Confir</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gabriela Regalado *</td>
<td>Meat 10lb</td>
<td>OK</td>
<td>506-6166</td>
</tr>
<tr>
<td>2. Samantha Regalado</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>3. Sasha Regalado</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>4. Luis Arredondo</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>5. Carmen Godinez *</td>
<td>Pollo(Chicken) 5lb</td>
<td>OK</td>
<td>428-3035</td>
</tr>
<tr>
<td>6. Yazareth Arredondo</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>7. Nadxielli Arredondo</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>8. Vanessa Kwan - *</td>
<td>Chips</td>
<td>OK</td>
<td>818-5696</td>
</tr>
<tr>
<td>9. Vivian Trieu</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>10. Jimmy Beltran Cervantes</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>11. Star Beltran Cervantes</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>12. Infinity Cervantes</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>13. Argelia Cervantes *</td>
<td>Jamaica Water</td>
<td>OK</td>
<td>406-2018</td>
</tr>
<tr>
<td>14. Anita Fox*</td>
<td>Caleslaw</td>
<td>OK</td>
<td>824-0946</td>
</tr>
<tr>
<td>15. Page Owens</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>16. Tony Owens</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>17. Noemi Hernandez *</td>
<td>Chicken salad</td>
<td>OK</td>
<td>649-3197</td>
</tr>
<tr>
<td>18. Vanessa Hernandez</td>
<td></td>
<td>OK</td>
<td>510-6486</td>
</tr>
<tr>
<td>19. Patricia Arevalo</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>20. Alejandra Arevalo</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>21. Ana Arevalo *</td>
<td>Cup cakes</td>
<td>OK</td>
<td>945-2855</td>
</tr>
<tr>
<td>22. Mercedes Tadeo</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>23. Elizabeth Tadeo</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>24. Pedro Tadeo</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>25. Mercedes Camacho *</td>
<td>Fruit Salad</td>
<td>OK</td>
<td>813-5401</td>
</tr>
<tr>
<td>26. Bertha Tadeo</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>27. Valentin Arevalo</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>28. Laura Gibson – *</td>
<td>Chips and Capri Sun drinks</td>
<td>OK</td>
<td>762-4031</td>
</tr>
<tr>
<td>29. Alejandro Gibson</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>30. Angel Gibson</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>31. Anthony Gibson</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>32. Andrew Gibson</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>33. Flor Gibson/ Henry Giraldo</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>34. Lucia Retana</td>
<td>Tortillas and water</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>35. Donaji Mondragon</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>36. Mario Gonzalez</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>37. Kevin Gonzalez</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>38. Francisco Romero *</td>
<td>Rice</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>39. Daniel Romero</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>40. Felix Romero</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>41. Ana Laura Reyes *</td>
<td>Chorizo and salsa</td>
<td>OK</td>
<td>741-0475</td>
</tr>
<tr>
<td>42. Ana G. Ozuna</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>43. Fiorella Ozuna</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>44. Ismael Ozuna</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>45. Bruno Ozuna</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>46. Anabel Hernandez –</td>
<td>Macaroni and Ice</td>
<td>OK</td>
<td>278-5369</td>
</tr>
<tr>
<td>47. Hector Chavez</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>48. Ernesto Chavez</td>
<td></td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>49. Maria Hernandez –</td>
<td>Mashed Potatoes, Salad</td>
<td>OK</td>
<td></td>
</tr>
</tbody>
</table>
Nevada Environmental Literacy
Core Concepts
1. All life on Earth exists within an ecosystem.
   a) Ecosystems are made of interdependent relationships between groups of living things (biodiversity) and their physical environment.
   b) An impact on any element of an ecosystem has consequences throughout that ecosystem (and potentially others).

2. Human beings are an integral part of all ecosystems.
   a) Human activities within ecosystems affect these systems.
   b) Ecosystems can affect human decisions and activities.

3. Healthy ecosystems provide many essential services and benefits that sustain and improve human lives.
   a) Natural systems maintain a habitable planet by regulating climate and by cycling water, oxygen and carbon dioxide and soil nutrients.
   b) Natural systems provide human beings with essential services (ecosystem services) that sustain life on Earth: fresh air, clean water, energy, mineral resources, soil, and oceans that can produce food.
   c) People depend on thousands of plants and animals to live their daily lives.
   d) Biological diversity provides a multitude of natural resources used commercially for food, shelter, fiber, medicines, and other products.
   e) Healthy ecosystems underpin healthy human economics. Many jobs depend directly on protecting natural ecosystems (recreation, farming, utilities).
   f) Healthy communities and the people that live there are sustained by healthy ecosystems. Natural places nourish human’s mental and physical health.

4. The human experience requires a connection to nature. These experiences in natural places in our community enrich our lives and inspire our choices for future generations.
   a) For all human beings, nature is a place to renew the human spirit and refresh our emotional and mental health.
   b) The beauty and resources of the natural and cultural world are global treasures. They help define America’s national heritage and character, and provide the nation with valuable and irreplaceable natural resources.
   c) Nevada’s natural world provides wondrous places to play and recreate, to explore, to be creative, to learn and enjoy both as individuals and with our friends and families.
5. Human beings are responsible for dramatic changes to ecosystems at a rate unprecedented in Earth’s history.
   a) The growth of the human population coupled with the increased consumption of resources by individuals will increasingly impact the planet’s finite resources.
   b) Human threats to Nevada’s environment include global climate change, invasive species, habitat destruction, water, and air quality.

6. We have the responsibility to care for the Earth, to leave healthy ecosystems for our families and future generations.
   a) Human solutions to environmental challenges include sustainability initiatives that minimize our impact, such as use of alternative energy sources, public transportation, recycling, green architecture, and responsible water use.
   b) Nevadans strive for a personal commitment to help ensure environmental quality and quality of life through actions such as:
      - Making appropriate lifestyle decisions
      - Actively participating in public decisions
      - Sharing our knowledge and feelings about the natural world
      - Support local environmental organizations
      - Practice and promote stewardship and responsible use
   c) Nevadans are informed and consider multiple points of view.
   d) Nevadans have an understanding of their local environment, including where their water comes from, natural features, and local environmental issues.

*Adapted from the American Zoo and Aquarium’s Conservation Education Messages, produced by the AZA Conservation Education Committee, 2000
RTCA Proposal for SNAP Message
APPLICATION for NPS RTCA ASSISTANCE

Applicant Information

Project Name: Southern Nevada Children’s Outdoor Bill of Rights
Location: Clark County, NV
Applicant Name: Public Lands Institute, University of Nevada, Las Vegas
Primary Contacts:
Daphne Sewing   Allison Brody
Project Manager  Project Manager
UNLV Public Lands Institute  UNLV Public Lands Institute
4505 S Maryland Parkway  4505 S Maryland Parkway
Las Vegas, NV  89154-2040  Las Vegas, NV  89154-2040
daphne.sewing@unlv.edu  allison.brody@unlv.edu
702-895-5098 (office)  702-895-5097 (office)
702-895-5166 (FAX)  702-895-5166 (FAX)

Project Description

1. Describe the project goals, including any tangible conservation or outdoor recreation results expected.

This new initiative would depend upon a collaborative partnership that would work together to create, develop, and implement a Southern Nevada Children’s Bill of Rights. This partnership would include groups such as the Southern Nevada Agency Partnership; Parks and Recreation Departments of Clark County, City of Henderson, City of Las Vegas and City of North Las Vegas; Nevada Department of Wildlife; Southern Nevada Health District; Outside Las Vegas Foundation; REI, Inc.; Clark County School District; Nevada State Parks; and the University of Nevada, Las Vegas. The Bill would serve as a shared vision for connecting children to nature from which the partnership would develop an implementation strategy to identify opportunities, challenges, and solutions. We anticipate one barrier being a lack of close-to-home opportunities to explore nature. Through this process, the group will identify opportunities to protect and enhance open space, increase natural play spaces, and develop trails within the community that would complement the system of federal lands surrounding Las Vegas.

2. Identify the important natural resources to be improved or protected, and/or the outdoor recreation opportunities to be enhanced.

Using the Southern Nevada Children’s Outdoor Bill of Rights as a unifying framework for getting children outdoors and enjoying nature offers three potential outcomes:

- Trails within communities and on public lands may be discovered, re-discovered, and protected. The partnership would look for opportunities for new trail opportunities, trail connectivity and protection.
- Natural play spaces beyond what currently exists in neighborhoods, housing subdivisions, and local parks would be identified and developed. New emphasis would be placed on existing natural play spaces.
- Research shows that children who recreate in the outdoors are healthier, more creative, and are more likely to demonstrate stewardship behaviors as adults.

3. Identify the partners that will be actively and substantively involved in the project. Describe the existing or anticipated role and contribution of each.

<table>
<thead>
<tr>
<th>Potential Partner</th>
<th>Role/Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Nevada Agency Partnership</td>
<td>Project development and implementation; development of trails and natural play spaces. Each of the four federal land management agencies has initiatives to get children outside and connected to nature. Publicity for initiative.</td>
</tr>
<tr>
<td>Public Lands Institute, University of Nevada, Las Vegas</td>
<td>Project development, management, coordination, facilitation, monitoring, and assessment. Media development and dissemination.</td>
</tr>
</tbody>
</table>
Clark County Parks and Recreation Department: Program facilitation; identification and development of natural play spaces; trail development and connectivity. Publicity for initiative.

City Parks and Recreation Departments within Clark Co.: Program facilitation; identification and development of natural play spaces; trail development and connectivity. Publicity for initiative.

Nevada State Parks: Program facilitation; identification and development of natural play spaces; trail development and connectivity. Publicity for initiative.

Nevada Department of Wildlife: Program facilitation.

Outside Las Vegas Foundation: Coordination of trail connectivity; grant development.

Las Vegas Springs Preserve: Program facilitation; publicity for initiative; natural play space.

Clark County School District: Program facilitation.

4. Provide other examples of support for the project including recognition in local, regional, and state plans; endorsements from elected officials and boards; supportive public votes or surveys; grants and other funds awarded; or media coverage.

This is a new initiative for Southern Nevada. However, other states (e.g., California, Colorado, Florida, and Maryland) and municipalities (e.g., Chicago and Cincinnati) are implementing similar programs. Avenues for support for this initiative include:

- Nevada State Parks -- Getting Outdoors in Nevada campaign
- National Park Service -- Junior Ranger and Kids in Parks programs
- US Forest Service -- More Kids in the Woods initiative
- US Fish and Wildlife Service -- Neighborhood Explorers and Let’s Go Outside initiatives
- Bureau of Land Management -- Take It Outside: Connect with Your Public Lands

These programs have capitalized on publicity generated by Richard Louv’s book, *Last Child Left in the Woods: Nature Deficit Disorder*; and the Children and Nature Network. Attention has also been given to the rising rate of obesity in American youth and related health problems. Many researchers are tying this increase in obesity to lack of active play and increased connectivity to electronic media.

The initiative also aligns with the “No Child Left Inside” legislation recently passed by Congress. The legislation calls for increased emphasis on environmental education opportunities, environmental literacy plans, and healthy initiatives.

5. Describe the kind of assistance you are seeking from RTCA staff.

The role of the RTCA staff would be to:

- Bring potential partners together and facilitate creation of the Southern Nevada Children’s Outdoor Bill of Rights.
- Identify additional resources, including potential funding sources, for development or enhancement of community trails and natural play spaces.
- Facilitate a planning process for the successful implementation of the Outdoor Bill of Rights initiative.
- Facilitate development of a monitoring plan to measure initiative success.

6. Describe how the project provides connections to and/or enhances other natural/recreational resources in the region; connections to nearby National Parks; how project will engage youth; and name any NPS partners and/or health partners.

This initiative provides a common vision and framework to connect children to nature through outdoor recreation opportunities and unstructured play. Las Vegas Valley is surrounded by 7 million acres of public lands managed by four federal agencies: Bureau of Land Management, National Park Service, U.S. Forest Service, and U.S. Fish and Wildlife Service. These agencies have leveraged resources for common goals and projects through the Southern Nevada Agency Partnership. Additionally, each agency has a mandated program designed to connect children...
with nature and teach outdoor recreation skills. Within the Valley, there are numerous city and county parks as well as natural areas established within housing developments. Community recreation centers also provide outdoor programming for youth. Clark County School District is already providing some physical education students with outdoor adventure activities through the Discover Mojave Outdoor World program (hiking in Red Rock Canyon National Conservation Area; kayaking on Lake Mead; etc.).

**Project Background and Context**

- **Provide a map showing the project location. Briefly summarize the area’s relevant natural, cultural, historic, scenic, and outdoor recreational resources.**
  
  Seven million acres of public land surround Las Vegas. There are 8 national conservation and recreation areas, as well as 19 congressionally designated wilderness areas. These public lands offer outstanding recreational opportunities such as scenic driving, hiking, camping, boating, kayaking, OHV riding, fishing, and much more. A number of significant archaeological and cultural sites are also located on these public lands, such as Sloan Canyon’s petroglyphs. Many state parks preserve the state’s history, such as Old Mormon Fort State Park. Within the city of Las Vegas, there are numerous city and county parks offering more developed outdoor recreational opportunities.
  
  Two maps accompany this document: 1) a map of the public lands within Clark County; and 2) a more detailed map of Las Vegas.

- **Describe public participation in the project so far and any future plans.**
  
  Since we’re only in the beginning stages of planning, there has been no public participation yet. However, we anticipate involving the public somewhere in the planning process, especially as trails and natural play areas become part of the plan.

- **Name primary partners and key individuals involved to date.**
  
  Daphne Sewing and Allison Brody, Public Lands Institute
  
  Various federal agency employees involved in environmental education and outdoor recreation
  
  Southern Nevada Agency Partnership Board

- **Outline the history and prior activity on the project (if any) and its current status. (If known), what is the expected completion date of the project?**
  
  New initiative; not applicable.

- **Which aspects of your project are going well?**
  
  New initiative; not applicable.

- **Where does your project need the most help?**
  
  1) Developing partnerships to gain the widest possible support and implementation; and
  
  2) Identifying and developing resources necessary to enhance trails and natural play areas to support the Children’s Outdoor Bill of Rights.
Mobile Exhibit Front-End Information Plan

Exhibit Goal: to improve the level of responsibility that current users have for public lands.

Exhibit Objectives:
By the end of the exhibit experience, visitors will:
- be able to list ways that the built environment connects with the local natural environment;
- understand that a connection to the local natural environment is important to their quality of life;
- show an interest in the natural and cultural history by seeking out local resources;
- feel connected to public lands;
- recognize the variety of ways that community members connect with public lands;
- be able to identify an invasive species and its consequences;
- understand the aesthetic and health impacts of litter on public lands;
- be able to identify the purpose of designated trails;
- be able to list the consequences of recreating off-trail;
- gain skills and knowledge for responsible recreation;
- make decisions that reduce impacts;
- learn ways in which they can get involved with local stewardship efforts.

Front-End Information Gathering

Goal: to gather information about the knowledge and attitudes that current users have about public lands and impacts to nature. This information will help to guide our exhibit design.

Our audience is current users – we don’t know if “current users” are one group or if they should be grouped into one or more distinct groups based on their knowledge, behaviors, and/or attitudes. Therefore, we propose conducting front-end information gathering sessions to determine what current users understand about impacts that people have on public lands. Developing this understanding will help us design exhibit experiences that will be relevant to all current users.

The Front-End Information Gathering will help us answer:
- what do people already think about different types of impacts
- what are users’ perceptions about one impact relative to others
- do users’ understand what causes the impacts
- what are users’ ability to understand how to mitigate these impacts
- what are users’ perceptions about their role in mitigating impacts

Protocols / Methods
People will be sampled from each of four sample sites on three public lands:
- BLM Visitor Center
- FS Cathedral Rock picnic area (August 22)
- NPS Boulder Beach (July 19)

A minimum of 5 people (target: 15 people) will be sampled at each sample site.
At each sample site, people will be asked to participate in this evaluation (incentives include a Don't Trash Nevada tote bag and/or sunglass case). Participants will go through the evaluation one at a time.

Each participant will do three things: (1) relationship circles; (2) card sort; and (3) answer questions related to the card sort. Protocols are described below.

1. Provide information: how do you recreate? Where are you from? How long have you lived here?
2. Relationship circles to represent your relationship with public lands, the relationship between public lands and health; and the relationship between public lands and city (the built environment)
3. Sort pictures into two piles – those you consider “negative impacts to nature” and others
4. From the impact pile, choose the three you consider the most significant. Why? What is your experience with these? (probe) The assistant will record the photos that are in the “other” pile.
5. For each of the three top impacts, answer the question: why did you pick this one? (probe – what has your experience with this been?). What can be done to help fix or solve this impact? Do you have a role in fixing this problem?
Mobile Exhibit Front End Information Sheet

Hi, my name is ___. I work for ___ and we are creating a mobile museum exhibit about the people of Las Vegas and public lands. We would like to find out some of your thoughts about nature to help us develop this exhibit. Would you mind taking a look at some of these pictures and telling us what you think? It’ll take about 10 minutes, and we can give you this fabulous tote bag as a token of our appreciation.

<table>
<thead>
<tr>
<th>Participant #:</th>
<th>Date:</th>
<th>Recorders:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Age Range (Circle)</th>
<th>teen</th>
<th>20-35</th>
<th>36-50</th>
<th>over 50</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Gender (circle):</th>
<th>M</th>
<th>F</th>
</tr>
</thead>
</table>

Where are you from? How long have you lived here? (conversational)

How do you recreate? (conversational)

<table>
<thead>
<tr>
<th>Self and Nature score (1-7)</th>
<th>Health and Nature score</th>
<th>City and Nature score:</th>
</tr>
</thead>
</table>

Can you take these pictures and choose the ones that you consider to be negative impacts to nature? Go ahead and put them all into one pile here. Now, of these negative impacts, please choose the three that you consider to be the most significant.

<table>
<thead>
<tr>
<th>Impact #1 is:</th>
<th>Impact #2 is:</th>
<th>Impact #3 is:</th>
</tr>
</thead>
</table>

Why did you pick this one?

Probe: what has your experience with this been?

Why did you pick this one?

Probe: what has your experience with this been?

Why did you pick this one?

Probe: what has your experience with this been?

What can be done to help fix or solve this impact?

What can be done to help fix or solve this impact?

What can be done to help fix or solve this impact?

Do you have a role in fixing this problem? What?

Do you have a role in fixing this problem? What?

Do you have a role in fixing this problem? What?
AGENDA
1. Program overview
2. Internship reflection
   a. Evolution
   b. Open reflection – list
   c. What are the program outcomes of certification? List, clarify, agree.
   d. Potential internship experiences – list, clarify.
   e. Bring feedback to program committee for final recommendation
3. Is there a benefit to taking NEEI statewide?
   a. List challenges, benefits – clarify
   b. Bring feedback to program committee for final recommendation
4. What are the benefits and challenges to institutional certification?
   a. Discuss and define
   b. List challenges and benefits
   c. Agree on plan for next steps

Internship Reflection

<table>
<thead>
<tr>
<th>things that we liked</th>
<th>things we would like to change</th>
</tr>
</thead>
<tbody>
<tr>
<td>• It was easier to define what interns were doing. Not as abstract – everyone doing the same thing</td>
<td>• Rubric was not weighted properly – group management was given same value as questioning. An intern could not demonstrate the most important thing and still pass.</td>
</tr>
<tr>
<td>• Internship reflected a defined outcome: could facilitate a program</td>
<td>• Those that didn’t have an interpretive site, there was a scramble to find a place to facilitate</td>
</tr>
<tr>
<td>• Internship was better defined so we could emphasize those skills during the courses</td>
<td>• Some sites had so much content to learn that it was a challenge to concentrate on the facilitation</td>
</tr>
<tr>
<td>• The program is through UNLV so gave internship validity when setting up intern experience with community partners</td>
<td>• Idea: work with developed programs to minimize the above challenge</td>
</tr>
<tr>
<td>• Defined for mentors – mentors had background and information and ability to network with other mentors</td>
<td>• Relied on intern to let us know they were ready – sometimes the audience was not given a great experience if the intern didn’t deliver a good program. Perhaps the mentor should not be at their site.</td>
</tr>
<tr>
<td>• Personalization of internship: somebody coming in with good experience (been in the field), mentor could get sense of where to improve – makes it easy to come up with projects to play to their strengths and improve weaknesses</td>
<td>• Need to ensure that interns have sufficient practice time</td>
</tr>
<tr>
<td>• Flexibility worked</td>
<td>• Finding experiences for interns that worked 8-5 M-F / other commitments – work around their schedule</td>
</tr>
<tr>
<td>•</td>
<td>• Not clear about role of site trainer vs. mentor. Is site trainer needed?</td>
</tr>
<tr>
<td>•</td>
<td>• Personalization of experience – very</td>
</tr>
</tbody>
</table>
difficult to define projects with people that are new to the field. Better with cookie-cutter projects.

- The term 'Internship' is misleading – need another way to describe

- Need to be Very clear on expectations – time commitment, etc.

### Capstone
Practice
Project (final project)
Field project

### Outcomes of NEE&I
- Certification should provide or create a standard for practice for the field of EE&I for NV: philosophy, terminology, and demonstration of facilitation skills. Professionalizing the profession.
- Be able to deliver quality programs that provide meaningful and impactful experiences to the participant’s audience. Therefore need level of knowledge and methodology and ability to organize and plan.
- A real understanding of the purpose of EE&I: not a snail-loving tree hugger; requires specific skill sets such as critical thinking, scientific processes, a serious profession to be taken seriously. Understanding of the standards of the profession. Participants have a real understanding of the process of experiences (personal and non-personal) – phases of organization, implementation, facilitation.

- Demonstration of skills and program delivery
- Understanding of the field of EE&I

<table>
<thead>
<tr>
<th>Courses: understanding (provide practice and application)</th>
<th>Capstone: practice and application</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

### Recommendations for Capstone:
- Set experience – something like Mojave Max, or we create some stand-alone activity not associated with a program that we introduce during the courses. Natural history content, cultural content. Different audiences.
- Consider another type of experience for more experienced participants – not program development; still program delivery – for example, way to evaluate informal contacts
- Consider offering opportunities for different age groups – school, adult, -- keep the flexibility, meet the needs of the participants
- Consider keeping basic framework of this past capstone: change rubric, standardize a little better –

Is there a benefit to taking the program statewide?
- Standard of practice should be statewide
• More credibility both national and local and regional
• Environmental literacy funding
• Networking, community partnerships
• Agency can recognize the importance of EE&I
• Beneficial to state tourism -- ecotourism

Challenges:
• Capstone (can this be done via video or on-line or train mentors at site)
• Facilitators (site facilitators) → someone else is managing the program –
• cost prohibitive
• Cost
• Interest
• Marketing
• On-line component – capstone
• Quality assurance – consistency, how to keep administrative part organized – communication

To answer the question, perhaps we should engage sites in a conversation – brainstorm with stakeholders (maybe via social networking). Rededication to following existing standards that many agencies and organizations already have. Commitment to best practices. Could also serve to promote environmental literacy and NEEI program.
NEEI Certification Participant List for Summer 2009 cohort
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virginia Ramos-Barajas</td>
<td>SNAP</td>
</tr>
<tr>
<td>Laura Brinson</td>
<td>SNAP</td>
</tr>
<tr>
<td>Caryl Davies</td>
<td>Landscape Architect/Kyle Canyon bid</td>
</tr>
<tr>
<td>Hal Edwards</td>
<td>Partner with SNAP</td>
</tr>
<tr>
<td>Marosa Ferraris</td>
<td>RRCIA</td>
</tr>
<tr>
<td>Marilyn Lynt</td>
<td>Wetlands Park volunteer</td>
</tr>
<tr>
<td>Claire McLaughlin</td>
<td>Friends of Red Rock</td>
</tr>
<tr>
<td>Linda Miller</td>
<td>CHOLLA</td>
</tr>
<tr>
<td>Emily Montoya</td>
<td>SNAP</td>
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<tr>
<td>Sarah Valentine</td>
<td>RRCIA</td>
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<tr>
<td>Tifferney White</td>
<td>CHOLLA</td>
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<tr>
<td>Irma Varela-Wynants</td>
<td>Partner with SNAP</td>
</tr>
<tr>
<td>John Schneider</td>
<td>Master Gardner</td>
</tr>
</tbody>
</table>
OPTS 2010 Planning Team
Meeting Notes
Kathy August, Allison Brody, Allyson Butler, Wilisha Daniels, Laura Kelm, Margie Klein, Eileen Gilligan, Ann Grisham, Karyn Johnson, Amy Page, Marcel Parent, Amanda Rowland, Stefanie Schmidt, Cheryl Wagner, Tifferney White, Angelina Yost

The 2010 OPTS conference will be the third OPTS conference. All OPTS conferences so far have been held in Las Vegas. Allison Brody provided background information about the OPTS conference. Amy Page brought evaluation results from the 2006 and 2008 conference and discussed lessons learned.

Following a discussion, we agreed on the following date and conference location:

The 2010 OPTS Conference will be held February 25, 26, and 27 (with the possibility of adding Feb. 24) at the Springs Preserve.
February 25-26 conference sessions will target informal educators, while sessions offered on Feb. 27 will target teachers and other formal educators.

**General Ideas**

Health connections
Making connections to the environment through EL – have to make it relevant
Magnet schools – service learning – partnerships are critical (how, who) – schools are looking for how to do this. EL can be a part of service learning
Content knowledge about issues
Relevancy – cultural relevancy to the environment
Investing in your community through EL actions
Technology connections – future industry, alternate energy (solar)

**Conference Theme Brainstorm**

It was agreed that the conference topic will be environmental literacy.

<table>
<thead>
<tr>
<th>Leading the way</th>
<th>Energizing Engagement to our Environment</th>
<th>Making the Environment Relevant</th>
<th>Opportunity on the Horizon – Embracing the Environment/EE&amp;I</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Product cycle and use/resuse</td>
<td>-Appeals to diff audiences</td>
<td>- Topics: health, cultural relevance, lifestyle choices, generations, economics</td>
<td>-Knowing that there is more to EE&amp;I than just telling people info.</td>
</tr>
<tr>
<td>-Healthy behaviors</td>
<td>-Where you can go to get involved</td>
<td>- Strands: issues, choices, audiences (for example, Env. Issues; influencing</td>
<td>-“Emerging” “Embracing”</td>
</tr>
<tr>
<td>-Connections to the outdoors</td>
<td>-Renewal</td>
<td></td>
<td>-“The sun becomes the world” graphic</td>
</tr>
<tr>
<td>-Nevada’s resources and uses</td>
<td>-Teachers: potentially different strands for sciences</td>
<td></td>
<td>- current issues</td>
</tr>
<tr>
<td>-Tools to discover for env. Literacy for</td>
<td>-Various interpretations</td>
<td></td>
<td>-place-based location of</td>
</tr>
</tbody>
</table>
Leading the Way: Energizing Engagement through Environmental Literacy
Leading the Way: Engagement through Connections
Leading the Way: Energizing the Engagement through Environmental Connections
Lead the Way: Energizing Engagement through Environmental Literacy
Lead the Way: Connect to your Environment
Leading the Way to Environmental Literacy: Energizing Engagement and Connections
Connect, Engage, and Energize: Lead the Way through Environmental Literacy
Engage, Energize, and Embrace: Lead the Way through Environmental Literacy

PROPOSED THEME OPTS2010:
Engage, Empower, and Embrace: Lead the Way through Environmental Literacy

Next OPTS2010 Planning meeting: August 26 from 3:00 – 5:00 p.m. (location TBD)
Agenda: Review and approve theme, develop strands, choose keynote
Sub-Committee for Teacher Institute: Amy, Margie, Amanda, Kathy, Allyson, Karyn, Ann, Eileen, Cheryl
  Discuss and recommend: credit, stipends, time, etc.

Engagement: partnerships with stewardship projects – e.g., SNAP Interagency volunteer team (Get Outdoors Nevada) – YCC programs being brought back as well as AmeriCorps

Faith Ross (DRI) – maybe planning, speaker
Finalizing the Theme
Engage, Empower, and Embrace: Lead the Way through Environmental Literacy
Engage, Empower, and Embrace: Lead the Way to Environmental Literacy
Lead the Way: Engage, Empower, and Embrace through Environmental Literacy

Strand Brainstorm
- Health, science, social studies, fine arts
- Several audiences: community, formal education, health
- Fostering environmental literacy – content, attitudes, actions – Planning, Fostering, and Implementing EL programs
- Define EL
- Embrace, Empower, Engage
  - Empower – content knowledge – core content areas; knowledge about environmental issues; understanding and addressing misconceptions. Places to learn this content – resources.
  - Engage – action, consumer choices, lifestyle choices, volunteering, stewardship. Different tools informal can use to foster audience’s engagement. Urban gardening projects.

CONFERENCE REGISTRATION IDEAS
- $75 early bird / $85
- Scholarships available
- One-day special rate that includes the Keynote address (e.g., Saturday + keynote)
- Keynote in evening so that teachers can attend
- Speakers (even those invited) given a 25% discount on registration if they attend the conference (don’t ask to register if they are only present during their presentation)
Conference Format
Wednesday – 1:00 – 5:00 sessions – consider opening remarks by someone such as Richard Vineyard
Wednesday keynote 5:00 – 6:30 p.m. followed by reception with appetizers (bar with one drink ticket)
Thursday – sessions (daily rate = $30)
Friday – sessions – might include a plenary presentation (perhaps by Sally Jewell)
Saturday – teacher institute (registration includes keynote and reception) -- $40—one PDE available ($10 additional fee). Committee will search for ways to reduce this cost.

KEYNOTE IDEAS
1. Richard Louv
2. Kevin Coyle
4. Mark LeBlanc from Children & Nature Network
5. Francis Kuo

Showing Environmental Literacy at the Conference
- Paperless as possible – don’t print postcards; use jump drives with presentations, such as keynote
- No water bottles
- Signs explaining what we’re doing
- Recycling bins
- Highlight Springs Preserve sustainability

Save the Date: out by mid-September
Include PDE information
Registration packet out by mid-October – therefore, conference session descriptions out to planning committee by mid-September

Teacher Institute sub-committee will meet September 23 2:00 p.m.
September 30 at 3:00 p.m. – 5:00 p.m.
Agenda: registration packet and sponsors (review draft letter)
Forever Earth
Standard Operating Procedures
DISCOVER MOJAVE FOREVER EARTH
STANDARD OPERATING PROCEDURES

2009 / 2010 Edition
By: Daphne Sewing, Forever Earth and Discover Mojave Outdoor World Program Manager and Jennell M. Miller, Ph.D., Public Lands Institute, with special thanks owed to Rick Kendall for sharing his expertise related to program creation and the development of standard operating procedures for the Lake Roosevelt Floating Classroom Program (Lake Roosevelt National Recreation Area, Coulee Dam, Washington).

Funded by the Southern Nevada Public Land Management Act and delivered by the UNLV Public Lands Institute on behalf of the National Park Service

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SECTION I. BACKGROUND

Forever Earth is a floating water and environmental science laboratory and learning center at Lake Mead National Recreation Area. Lake Mead, a Colorado River reservoir, is the principal source of drinking water for more than one million residents in the Las Vegas urban area. Further involvement by our students, scientists, and the community in the research and monitoring of Lake Mead will help to expand our knowledge of this important resource and potentially lead to strategies to protect it.

Forever Earth was dedicated in October 2002 in formal ceremony. The Forever Earth Program, which includes the Forever Earth vessel (a 70-foot houseboat), was brought to life through a partnership of Forever Resorts; the National Park Service (NPS), Lake Mead National Recreation Area; University of Nevada, Las Vegas (UNLV), and the Outside Las Vegas Foundation. Additional community partners include other governmental organizations and the Clark County School District. The Forever Earth program, a Round 4 Conservation Initiative funded by the Southern Nevada Public Land Management Act, is being administered and delivered by UNLV on behalf of the National Park Service.

The mission of the project is to support and encourage scientific study and environmental monitoring at Lake Mead by school groups, researchers, and the public. The Forever Earth vessel also may be used for other educational events, special events, and as a command post for emergency operations. Forever Earth provides a platform for the enhancement of Lake Mead water science research and monitoring and education. The educational component of this project provides a first-hand learning experience in the sciences, particularly limnology and water quality and their associated fields and technologies, but also in a variety of other disciplines (e.g., biology, mathematics, physics, and cultural and social sciences).

This handbook provides information on the educational and operational capabilities of the vessel and guidance on various policies, regulations, procedures, and safety. This is a living document and, as such, is expected to be revised over time.
Mission

The Forever Earth Project is dedicated to:

- Encouraging and facilitating scientific study and environmental monitoring at Lake Mead, a valuable resource, by providing a mobile, well-equipped research platform;
- Providing standards-based, hands-on Forever Earth Floating Classroom experiences within the setting of a valuable natural resource;
- Educating the public about Lake Mead;
- Improving the environment through education and research, and setting an example of environmental stewardship;
- Ensuring the safety of its participants.

Vision

Forever Earth is a recognized, model floating laboratory for scientific research at Lake Mead and a dynamic place-based learning opportunity that links students to their natural surroundings through study of Lake Mead and inspires continued learning.

Broad Objectives

In broad terms, Forever Earth’s 2008-2011 objectives include targeted tasks in each of the following areas:

- Build effective partnerships with the academic and research communities and the public to support and maintain the collaborative development of the Forever Earth Project.
- Continue to implement a dynamic, standards-based Forever Earth Floating Classroom program that adopts Lake Mead for the context of learning relevant scientific (and other subject matter) applications that are based upon actual research conducted at Lake Mead and that inspire continued learning.
- Provide Forever Earth as a research platform for scientific studies and environmental monitoring on Lake Mead.
- Secure funds and generate financial support for enhanced operation during 2008 through 2011 and for continued operation beyond 2011.
- Conduct Forever Earth operations as an example of environmental stewardship.

Partners

Forever Resorts

Forever Resorts (a division of Forever Living, LLC) is headquartered in Scottsdale, Arizona and operates more than 55 recreational properties in national parks, recreation areas, national forests and other destinations worldwide. Forever Resorts is a leader in luxury houseboat vacation rentals. Each Forever Resort location is committed to the standards of their corporate environmental policy, which is to monitor and improve the performance of business operations and endeavor to conduct all activities in a manner that protects both human health and the environment.

John Schoppmann, senior vice president of resort operations, envisioned Forever Earth. Mr. Schoppmann recognized the opportunity to build public awareness about water quality issues at Lake Mead by providing hands-on
science experiences. Mr. Schoppmann was instrumental in developing a similar project 10 years earlier at Lake Powell in Arizona and Utah in which a houseboat was used in anti-litter strategies. The vessel was built by Fun Country Marine Industries (a division of Forever Living, LLC), and its use is donated by Forever Living, LLC founder and president, Dr. Rex Maughan. Fun Country Marine Industries constructs all of the houseboats available for rent in Forever Resorts recreational properties and is the entity representing Forever Resorts within the Cooperative Agreement with the University of Nevada, Las Vegas (UNLV).

Some areas of responsibility for Forever Resorts outlined in the Cooperative Agreement, in effect through June 2011, include:

- Providing regular inspections and performing mechanical maintenance and repairs.
- Replacing engines and generators as needed.
- Stocking the vessel with consumable supplies.
- Providing a berth (slip) at Callville Bay Marina.

University of Nevada, Las Vegas

The University of Nevada, Las Vegas (UNLV) has supported the Forever Earth Project from its inception. In 2004, UNLV formally partnered with the Southern Nevada public land managers in multiple Great Basin Cooperative Ecosystem Study Unit (GBCESU) task agreements for the collaborative delivery of selected Conservation Initiatives funded by the Southern Nevada Public Land Management Act. Specifically, funds are obligated in the “Education in the Environment” Conservation Initiative (SNPLMA Round 4) to support Forever Earth Project management and implementation. Another component of the Conservation Initiative involves establishment in southern Nevada of a Wonderful Outdoor World (WOW) program. WOW is a program that fosters a belief that outdoor recreation and the environment play an important and positive role in American culture. Key to the success of the Forever Earth Project and WOW will be community involvement through volunteerism and donations.

UNLV is well suited to participate in this project by its past interest in Forever Earth, its expertise, and physical location to develop the products as specified within the GBCESU Agreement and SNPLMA Conservation Initiative. UNLV is a local research university composed of diverse academic departments, research centers and institutes. With thirteen colleges, over fifty-one departments and schools, and thirteen institutes and centers, UNLV embraces a broad scope of interests and expertise that complement this particular type of project. UNLV also has the ability to establish an extensive local community connection critical to the success of the project. The university is ranked in the category of Doctoral/Research Universities-Intensive by the Carnegie Foundation for the Advancement of Teaching.

Some areas of responsibility for UNLV outlined in the Cooperative Agreement, in effect through June 2011, include:

- Maintaining possession and management of the vessel.
- Hiring and directing qualified boat captain(s) and deckhand(s).
- Maintaining and revising standard operating procedures and scheduling protocols for managing and operating Forever Earth.
- Managing educational and laboratory supplies and equipment.
- Providing hull insurance and protection and indemnity insurance.
- Providing post-trip cleaning service for the vessel.
Outside Las Vegas Foundation

The Outside Las Vegas Foundation (OLVF) is a primary non-profit partner of four federal land management agencies in southern Nevada. Its mission is to enhance the connection between people and their public lands in southern Nevada. OLVF was a founding stakeholder in the Forever Earth Project, and OLVF initially provided coordination and reservation services for the project, in addition to helping secure private and corporate donations and funding.

2008-2011 Role of the Outside Las Vegas Foundation

1. Build community participation and partnerships in support of the Forever Earth Project and Discover Mojave Outdoor World events
2. Work to secure private dollars and resources to help support Forever Earth
3. Prepare Forever Earth grants and funding initiatives
4. Celebrate successes

National Park Service, Lake Mead National Recreation Area

Lake Mead National Recreation Area (Lake Mead NRA), in addition to the recreational opportunities it provides, is one of southern Nevada's “natural laboratories” in which we can study and learn about our desert environment. Lake Mead is the setting where Forever Earth educational experiences and data collection will take place and upon which studies are focused. The educational component of the Forever Earth Project (Forever Earth Floating Classroom) is based upon actual research conducted at the lake and evolving management issues.

In the building phase of Forever Earth, NPS staff provided input regarding the vessel's design and the project's principal purposes. Before UNLV's involvement, the initial educational programs aboard Forever Earth were conducted by NPS staff.

2008-2011 Role of the National Park Service Lake Mead National Recreation Area:
1. Continue to provide environmental education and interpretive guidance for the Forever Earth Project and contribute to the development of educational programming components (Lake Mead NRA interpretive staff).
2. Provide guidance in selecting research topics appropriate for student research and facilitate connection to the research community for the Forever Earth Project (Lake Mead NRA scientific and research staff).
3. Provide staff for the development and implementation of the Forever Earth and Discover Mojave Outdoor World programs.
4. Identify connectivity and integration where necessary between this and other Conservation Initiatives.
<table>
<thead>
<tr>
<th>Major Goals for the Next Three Years, Round 6</th>
<th>Year 1 (6/07-5/08)</th>
<th>Year 2 (6/08-5/09)</th>
<th>Year 3 (6/09-5/10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 A three-year cooperative agreement signed and implemented for the use and operation of Forever Earth</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Revise Standard Operations Plan and Handbook as needed</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3 Refine Forever Earth Floating Classroom curriculum; create new programs as identified by Curriculum Team</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>4 Meet deliverables for Forever Earth program as defined by CESU Task Agreement</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>5 Continue to implement marketing plan; revise as needed</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>6 Pursue additional funding for years 2 and 3, possibly beyond</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
Section II: Forever Earth Vessel

General Specifications

The Forever Earth vessel is an aluminum, trihedral hull houseboat manufactured by Fun Country Marine Industries, Inc. with the following specifications:

Dimensions

- Length: 70 ft
- Beam: 16 ft
- Weight: 42,000 lbs

Fuel Capacity and Consumption

285 gallons; each engine burns approximately 9-10 gallons of fuel per hour. Fuel Consumption can vary due to wind, throttle usage, and weight distribution. The generator burns approximately 3-5 gallons per hour (©2004 Forever Resorts 70” Millennium Houseboat Operating Manual).

Passenger-carrying Capacity and Minimum Age Requirement

Maximum vessel capacity is 25 people. This number includes program facilitators provided by NPS or UNLV, program participants, and group leaders/chaperones. The boat crew is not counted within this number. No more than 12 people are allowed on the top deck at any one time.

Grade 4 students constitute the minimum age of passengers allowed on the vessel. These requirements have been set as outlined in the insurance policy effected by UNLV.

Power

Primary: Two 20,000 watt generators with emissions control devices
Secondary: Solar cells provide power to charge 12V batteries, then inverted to 120V to power refrigerators, laboratory equipment, audiovisual system, and lighting.

Speed

- Normal cruising: 8 miles per hour
- Maximum speed: 10 miles per hour

Propulsion

Two 200 horsepower Evinrude Ficht (2 cycle) outboard engines
**Inside Spaces**

Main Deck

combined meeting/galley/helm space, two restrooms – one of which is Americans with Disabilities Act (ADA) accessible

Lower Berths

laboratory (7'8" x 7'7") and computer room (7'8" x 7'7")

Slightly Elevated Berths

Two sleeping quarters (each with queen size bed)

**Deck Spaces**

Top Deck — 500 square feet (58'2 3/16 " x 15'8 ¼") with 24' hard top sunroof

Bow Deck — 16' x 10'53")

Aft Deck — 9'11" x 16'0")

**Legal Owner**

Fun Country Marine Industries, Inc

9801 S. Grant RR #4

Muncie IN 47302

**Registered Owner**

Maughan Rex G. DBA Callville Bay Resort and Marina

Las Vegas NV 89124-9702

Registration: Certificate of Number Undocumented Motorboat*

NV 4732 KT (Clark County)

Hull Number: FCX00339C202

Use: Livery (Rent-Lease)

Year: 2002

Make: Funcountry

*"Undocumented motorboat" signifies a vessel, which does not have a marine document issued by the U.S. Coast Guard. [Bd. of Fish & Game Comm’rs, No. 19 part § 1, eff. 3-10-80]
Vessel Features

General
- air conditioning / heating
- ceiling fan
- conference table and chairs
- EMS first-aid storage
- personal flotation devices and storage
- bow ramps
- built-in ice chests on upper deck
- dive ladder
- double front gate
- flush front deck tie downs
- fiberglass hard top canopy (24ft) with rope lighting on upper deck
- four-point anchor system
- hose bibs
- Storage for SCUBA gear and tank
- solar panels
- stern cleats
- upper deck davit (hoist)

Americans with Disabilities Act (ADA) Access
Forever Earth is wheelchair accessible with assistance as follows:
- bath with seat in shower
- grab bars
- open lavatory and raised head (toilet)
- 31-inch door opening on lavatory
- deck level side gates on front deck with 30-inch clear opening
- front patio door with 31-inch clear opening and ramp

Audiovisual / Communications / Navigational
- audiovisual center (flat-screen television, VCR, DVD player, surround sound)
- compass
- depth sounder
- Global Positioning System (GPS)
- intercom system throughout
- dry erase board
- radar
- radios
Program Supply Room
- copy machine with scanning capability and wireless printing

Galley
- Appliances
  - full-size refrigerator / freezer with ice-maker and purified water dispenser
  - four-burner cook top range and oven
  - trash compactor
  - dishwasher
  - sink

- Small Appliances
  - blender
  - coffee maker
  - microwave
  - toaster

- Service
  - 12 cereal bowls, salad bowls, dinner plates, mugs, and water glasses
  - 12 forks, spoons, knives, sharp knives and teaspoons

- Kitchenware and cooking
  - can opener (manual)
  - cheese grater
  - colander
  - cutting board
  - griddle
  - assorted knives
  - ladle
  - pot holders
  - slotted spoons
  - spatulas
  - tongs
  - mixing bowls
  - bottle opener and corkscrew
  - 2 frying pans
  - sauce pans
  - large pot
  - casserole
  - measuring cups and measuring spoons
Laboratory

- eye wash station
- electrical outlets every three feet
- cabinet and drawer storage
- hazardous waste / sharps containers
- refrigerator / freezer
- stainless steel sink
- water deionization with reverse osmosis
- scientific equipment (see Scientific Equipment and Scientific Instrumentation, pages 14-15)

Green Features

The Forever Earth Project is committed to improving the environment through education and research. As such, it is important that the Forever Earth floating laboratory and education vessel represent this dedication. Environmentally conscious features and components of the Forever Earth vessel include the following:

Solar Energy: Green Power Generation Technology

Harnessing solar energy through photovoltaic (solar) cells produces no air pollution, hazardous waste, or noise, and it requires no transportable fuels. Sunlight is free and abundant. On the Forever Earth vessel, photovoltaic cells provide energy to charge a bank of 12V (DC) batteries. An inverter converts the power to 120V (AC), clean electricity, which Forever Earth uses to run its refrigerators, laboratory equipment, audiovisual system, and lighting.

No gray water discharge

All houseboats have holding tanks for toilet waste (black water), but usually discharge waste from showers and sinks (gray water) overboard. The Forever Earth vessel, however, retains all effluents in the holding tank for pumping out at authorized marina locations.

Energy Efficient Items

Where possible, energy efficient products and equipment are used, including ceiling fans, a heat pump heating and cooling system, long life light bulbs, fluorescent lights, low voltage lights, low-flow shower heads.

Clean Burning Two-cycle Outboard Engines

The vessel has two 200 horsepower “Ficht Ram Injection” Evinrude engines that are state-of-the-art in two-cycle clean burning technology. These engines exceed the 2006 Federal emission standards for outboard engines.

Emission Control Device (ECD)

This device removes carbon monoxide (CO), maintaining CO at less than 35 PPM, from the exhaust emissions of the two Westerbeake 20KW generators and making them the safest on the market for use with recreational boats.
**Containment Boom**

Forever Earth includes 300 feet of a floating boom, which can be used anywhere on Lake Mead in the event of a fuel spill. The boom will contain liquids, while absorbent pads will remove petroleum products from the water.

**Trash Recycling Program**

All refuse items are sorted into labeled containers for recycling through Boulder City Disposal Company. A trash compactor is available on board to reduce the volume of bulky trash items.

**Recycled Components**

Many items used in the construction of this vessel are either recycled products or items that can be recycled. These include the aluminum hull, window glass, plastic chairs, carpet, and batteries.

**Green Participants**

Participating groups are encouraged to:

- Throw nothing but water overboard
- Not feed wildlife
- Take all recycling and garbage to the appropriate bins upon return to the dock
- Use only cleaning chemicals provided on board, all of which meet Green Seal Approval
- Use drapes as insulation from the sun
- Minimize water use by not leaving water running in sinks and showers and by taking quick showers

**ISO-14001 Status**

Forever Resorts is the first U.S. multi-site marina, hospitality, and lodging operator to be awarded ISO-14001 environmental certification for all domestic operations. The international standard for environmental management systems (EMS) is a formal set of policies and procedures defining how organizations manage potential impacts of its products or services on the environment the health and welfare of the people who use them.

Forever Resorts certification was presented by Lloyds Quality Registration Assurance (LQRA) one of a few companies nationwide authorized to audit and register companies for ISO 14001 and other quality standards. To maintain its ISO-14001-certified status, Forever Resorts operations, including that of the Forever Earth Project, must continue to conform to the standards set forth in ISO-14001.

**Scientific Equipment and Instrumentation on Board**

**Aquatic Life / Sediment Studies**

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<td>vertical tow nets</td>
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<tr>
<td>dip net, metal frame</td>
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<td>sampling dredge</td>
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- soil sieves 1 set

**Microscopy Equipment**

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<td>Digital Stereoscope</td>
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**Water Chemistry**

<table>
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<td>“Fish Farming” Test Kit (Hach)</td>
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<td>Spectrophotometer</td>
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<tr>
<td>Multi Parameter (temp/ph/ppm)</td>
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<td>pH Meters</td>
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<tr>
<td>pH “tester”</td>
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<tr>
<td>pH calibration solutions</td>
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**General Equipment**

<table>
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<th>ITEM</th>
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Section III. Participation and Use Requirements

Requirements for use of the Forever Earth Vessel vary by group type, although some requirements and restrictions apply to all groups.

Requirements that Apply to All Uses

Intent Requirements

Proposed Forever Earth uses must align with at least one of the four principal purposes of the Forever Earth Project: (1) Education; (2) Scientific Studies/Research; (3) Water Quality Monitoring and (4) Command Post. Requests must be made by recognized educational, research, governmental, and non-profit civic organizations.

For scheduling purposes, high-priority uses of the Forever Earth vessel are:

- education
- scientific studies/research
- water quality monitoring

Lower priority uses will be considered on a case-by-case basis, and could include:

- trash localization and pickup
- emergency services provided by NPS Employees
- familiarization trips for groups invited by NPS, UNLV, OLVF, or Southern Nevada Agency Partnership
- uses deemed appropriate by UNLV, OLVF, and Forever Resorts on behalf of Fun Country Marine Industries.

Strictly recreational uses are not consistent with Forever Earth’s principal purposes. Furthermore, such uses would be in competition with Forever Resorts business activities and therefore are inappropriate. The Forever Earth scheduler reserves the right to reject any proposed uses that do not align with the principal purposes of the Forever Earth Project.

Group Size

The maximum group size is 25 passengers. This includes program participants and group leaders/chaperones. Forever Earth staff and boat crew are not counted within this number. Ratio of (adults accompanying the group) to children under the age of 16 should be at least 1:10. The scheduler works with organizations seeking use of Forever Earth to ensure total occupancy does not exceed 25 passengers and that there will be approximately one adult present for every 10 children on board.

Students in the 4th grade constitute the minimum age of passengers allowed on the vessel. These requirements have been set as outlined in the insurance policy effected by UNLV.

Insurance Requirements
Organizations that are not self-insured (e.g., home educator groups; private school groups; etc.) seeking use of Forever Earth are required to show evidence of active and adequate liability insurance. This is done in the form of a “certificate of insurance” issued by the organization’s insurance broker. Forever Earth Information: Insurance (see Appendix A) provides the group leader with the information it will need to supply to its broker.

The scheduler of Forever Earth will receive and maintain a copy of the certificate of insurance and endorsement from the user group.

**Specific Requirements for Student Groups**

**Forever Earth Floating Classroom Student Participation Expectations**

Before embarking on a Forever Earth Floating Classroom trip, authorization, liability, and behavioral agreements must be met:

1. In order to finalize a Forever Earth trip, the school principal or school district superintendent must sign the Reservation Application (Appendix B). By signing the Reservation Application, the participating group commits to following the Cleaning Policy (Appendix C), Cancellation Policy (Appendix D) and other policies deemed appropriate for the group’s intended use of Forever Earth.
2. A General Liability Release (Appendix E) must be signed by a parent or guardian for each participating student.

Before embarking on a trip, student participants and their parents must agree to the following conditions:

1. The student will notify both the teacher and Forever Earth staff of any preexisting medical conditions or medications that are taken on this field trip.
2. All students will participate in cleanup of accidental spills/breakage as needed and in general boat cleanup at the end of the trip; student groups shall clean up using only the cleaning supplies provided.
3. Students will arrive dressed appropriately for the weather.
4. Horseplay or other disruptive behavior will not be tolerated.
5. Swimming from the vessel is not allowed.
6. Glass containers are prohibited (except scientific equipment such as test tubes already aboard Forever Earth).
7. The use of tobacco products, alcohol, or drugs is strictly prohibited.
8. Instructions or directions given by Forever Earth crew and staff must be followed.
9. If any of the above guidelines are abused or broken, it may result in the immediate cancellation of the trip and immediate return to the marina for the entire group.

These regulations are enacted for the safety and enjoyment of all participants, teachers and Forever Earth Project staff members. Agreement upon these conditions by the school, the students, the teachers, Forever Resorts, Inc., UNLV, and NPS is a condition of participation.

**Forever Earth Floating Classroom Program Goals, Objectives, and Essential Academic Learning Requirements**
The Forever Earth Floating Classroom is a program that aligns with each of the goals of science education in Nevada (see below). All graduates of Nevada schools should:

- Demonstrate the processes of science by posing questions and investigating phenomena through language, methods, and instruments of science;
- Acquire scientific knowledge by applying concepts, theories, principles, and laws from life, physical, and Earth/space science;
- Demonstrate ways of thinking and acting inherent in the practice of science and exhibit an awareness of the historical and cultural contribution to the enterprise of science; and
- Demonstrate an ability to solve problems and make personal decisions about issues affecting the individual, society, and the environment

(Nevada Science Content Standards for Grades 2, 3, 5, 8 and 12 as adopted August 20 1998/September 1 2001 edition)

The primary objective in developing curriculum for the Forever Earth program is to create interdisciplinary and interactive programs for students within the learning environment of Forever Earth. The curriculum is designed to give students the rare opportunity to study different facets of water in the desert – such as its characteristics and quality, the species that rely on it, its ability to change a landscape and much more. This educational experience complements traditional classroom studies with engaging, participatory, on-site activities and support lessons based upon a solid framework for inquiry and discovery. On-site activities and the supporting lessons align with Nevada State Science Standards and Clark County School District Curriculum Essentials Framework and Science Objectives. Additionally, the organizational visions and missions of key stakeholder groups were reflected in the program curriculum.

Curriculum supplied by participating group

Participating groups that wish to use their own curriculum are asked to submit a description of their proposed program that includes an itinerary with specific destinations in advance of their use of Forever Earth. This submission is necessary for the Forever Earth Project staff to determine whether the proposed use is appropriate and to provide the boat pilot with the destinations for approval. The proposed itinerary will be checked for feasibility. If the proposed itinerary is not feasible, the boat captain and scheduler will make suggestions to adjust the itinerary while meeting as many of the participating group’s proposed objectives as possible. Groups supplying their own curriculum may need additional time scheduled for bringing aboard and setting up their equipment.

Specific Requirements for Professional Research Groups

Insurance

Unless self-insured, each group is required to show evidence of active and adequate liability insurance. This is done in the form of a “certificate of insurance” issued by the organization’s insurance broker. Forever Earth Information: Insurance (see Appendix A) provides the group leader with the information it will need to supply to its broker.
The scheduler of Forever Earth will receive and maintain a copy of the certificate of insurance and endorsement from the user group.

**Itinerary**
Participating group must submit a brief description of their proposed project including destinations. Arrangements will need to be made for communication between the boat captain and group so that the captain can plan the itinerary and make any special arrangements.

**Use Agreement**
By signing the Reservation Application (Appendix B), the participating group agrees to the Cleaning Policy, Cancellation Policy, and other policies deemed appropriate for the group’s intended use of Forever Earth.

**Permits**
Participating groups planning research activities aboard Forever Earth are responsible for determining which permits are necessary and for obtaining such permits for work to be conducted. Forever Earth scheduler informs the participant of this requirement and ensures that permits have been obtained. Below is general information regarding United States Department of the Interior, National Park Service research and collection permits:

*Policy and General Requirements*
The National Park Service (NPS) welcomes interest in considering national parks for research sites. The NPS is responsible for protecting in perpetuity and regulating use of our National Park areas including recreation areas. Preserving park resources unimpaired and providing appropriate visitor uses of parks require a full understanding of park natural resource components, their interrelationships and processes, and visitor interests that can be obtained only by the long term accumulation and analysis of information produced by science. The NPS has a research mandate to provide management with that understanding, using the highest quality science and information. Superintendents increasingly recognize that timely and reliable scientific information is essential for sound decisions and interpretive programming. NPS welcomes proposals for scientific studies designed to increase understanding of the human and ecological processes and resources in parks and proposals that seek to use the unique values of parks to develop scientific understanding for public benefit.

*When is a permit required?*
A Scientific Research and Collecting Permit is required for most scientific activities pertaining to natural resources or social science studies in National Park System areas that involve fieldwork, specimen collection, and/or have the potential to disturb resources or visitors. When permits are required for scientific activities pertaining solely to cultural resources, including archeology, ethnography, history, cultural museum objects, cultural landscapes, and historic and prehistoric structures, other permit procedures apply. The park's Research and Collecting Permit Office or Headquarters can provide copies of NPS research-related permit applications and information.
regarding other permits. Federally funded collection of information from the public, such as when formal surveys are used, may require approval from the Office of Management and Budget.

**When to apply?**
Professional Research Groups apply at least 90 days in advance of the planned start date of field activities. Projects requiring access to restricted locations or proposing activities with sensitive resources, such as endangered species or cultural sites, usually require extensive review and can require 90 days or longer for a permitting decision. Simple applications can often be approved more quickly.

**How and where to apply?**
An individual may obtain application materials via the Internet (find “Research Permit and Reporting System” at http://science.nature.nps.gov/research or through www.nps.gov). Questions and/or permit applications should be directed to:

Michael Boyles
Environmental Compliance Specialist
Lake Mead National Recreation Area
601 Nevada Way
Boulder City, NV  89005
702-293-8978
Michael_J_Boyles@nps.gov

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**Laboratory Health and Safety Requirements**
Research groups planning to use hazardous materials (non-radioactive) are required to present current certifications of Laboratory Environmental Health and Safety Instruction awarded by their institution for each individual that will be utilizing hazardous materials. Copies of the certificates must be given to the scheduler during the scheduling process. The scheduler will provide the Forever Earth captain with a list of individuals that have successfully demonstrated evidence of training. On the day of the trip, individuals will present appropriate forms of identification (e.g., driver’s license) to the captain, who will match names on the list with IDs.

The Forever Earth Project does not provide hazardous waste removal or storage services aboard Forever Earth nor within marina facilities. Participating research groups are required to properly manage their chemicals and sharps while on board, this includes providing their own chemical storage containers and sharps containers. Participating research groups are responsible for the immediate removal and transportation of all chemicals and sharps brought aboard, in compliance with U.S. Department of Transportation (DOT) regulations (DOT 49 CFR 173.6), to their home base laboratories for sorting and appropriate disposal.

A clearly marked laboratory refrigerator/freezer is provided in the laboratory room for the storage of scientific materials over the duration of a trip; this unit must not be used to store any item intended for
human consumption. A galley refrigerator/freezer is provided on the main deck for the storage of food and beverage intended for human consumption over the duration of a trip; this unit must not be used to store any scientific materials.

Located in the laboratory is a portable, gravity-fed eyewash station. Participating research groups that require use of this equipment are responsible for familiarizing themselves with the use of the eyewash station and ensuring that the eyewash is filled and ready to use, prior to leaving the dock. There are two showers on the Forever Earth vessel, one in each of the two restrooms located on the main deck.

Participating groups are responsible for thorough cleaning of the Forever Earth vessel in complete compliance with Forever Resorts cleaning policies (Appendix C). Groups are reminded to bear in mind that Forever Earth is a multipurpose vessel, and as such it is made available for use to non-laboratory trained individuals including children. All traces of hazardous chemicals and sharps used must be removed upon completion of the trip.

Forever Earth is not equipped for the use of radioactive materials; use of such materials is not permitted aboard the Forever Earth vessel.

Forever Earth is not equipped with a chemical fume hood; chemicals/solutions requiring the use of a hood are not permitted aboard the Forever Earth vessel at this time.

Liquids other than pure water and lake water are not to be disposed of overboard or down vessel sink drains. Again, all chemicals and solutions must be removed from the vessel, by the participating research group, upon completion of the trip.

Specific Requirements for All Other Groups

Insurance
Unless self-insured, each group is required to show evidence of active and adequate liability insurance. This is done in the form of a “certificate of insurance” issued by the organization’s insurance broker. Forever Earth Information: Insurance (see Appendix A) provides the group leader with the information it will need to supply to its broker. The scheduler of Forever Earth will receive and maintain a copy of the certificate of insurance and endorsement from the user group.

Itinerary
Participating group must submit a description of their proposed project including destinations. Scheduler determines whether proposed use aligns with Forever Earth Project’s principal purposes and accepts or rejects as appropriate. Arrangements will need to be made for communication between the boat captain and group to ensure that the captain has ample time to plan for the itinerary and make any special arrangements.

Use Agreement
By signing the Reservation Application (Appendix B), the participating group agrees to the Cleaning Policy, Cancellation Policy and other policies deemed appropriate for the group’s intended use of Forever Earth.

**Requirements for Diving Operations**

Only researchers affiliated with NPS or UNLV may conduct diving operations from Forever Earth. NPS scientific diving that requires use of SCUBA will meet the standards of and comply with the Lake Mead NRA Dive Safety Plan. For UNLV researchers, compliance with the standards of the Lake Mead NRA Dive Safety Plan is recommended but not required. UNLV divers should familiarize themselves with the Lake Mead NRA Dive Safety Plan because it contains important emergency contact information.

A copy of the Lake Mead NRA Dive Safety Plan is kept onboard Forever Earth. It is the responsibility of the Forever Earth Project Manager to annually update emergency contact numbers within the Dive Safety Plan. For Lake Mead NRA Dive Safety Plan updates and questions, contact James Koza, Navigational Aides Specialist, Lake Mead National Recreation Area.

The dive master/supervisor is responsible for diving operations and is responsible to the Forever Earth boat captain for vessel operation. The captain and deckhand will not have any responsibilities associated with diving operations. The boat captain may ask to see all divers’ certifications. The dive master should give a copy of the dive plan to the captain prior to trip.

**Diving Regulations:**

1. A person shall display a diver’s flags when diving or swimming below the water’s surface with the aid of a breathing device. The diver’s flags must be:
   a. At least 12 inches in height by 12 inches in width with a red background and a white diagonal stripe that is one-fifth the width of the flag;
   b. Attached to the Forever Earth vessel;
   c. Attached to a float or buoy which is visible to approaching vessels and which, between sunset and sunrise, has a light attached; and
   d. Prominently displayed within 100 feet of the location of the diver or swimmer.
2. A person shall not display a diver’s flag on the waters of this state unless he is diving or swimming below the water’s surface with the aid of a breathing device, in the vicinity of the diver’s flag.
3. Except in the case of emergency, a person shall not operate a vessel other than the diver’s support vessel within 100 feet of a diver’s flag.
4. Except in the case of emergency, a person who operates a vessel at a distance of more than 100 feet but less than 200 feet of a diver’s flag shall operate that vessel at a speed that leaves a flat wake, but in no case may the vessel be operated at a speed greater than 5 nautical miles per hour.
More information regarding diving at Lake Mead National Recreation Area is available at:
http://www.nps.gov/lame/scuba.html
Section IV. Scheduling Procedures

Recognized educational, research, governmental, and nonprofit civic organizations may request the use of the Forever Earth vessel for approved activities through the University of Nevada, Las Vegas.

Groups/organizations interested in using the vessel can begin the reservation process in one of two ways:

1. By contacting:
   Daphne Sewing
   Project Manager
   University of Nevada, Las Vegas
   702-895-5098 or daphne.sewing@unlv.edu; or

2. By scheduling through the Forever Earth website:
   www.discovermojave.org/forever_earth/

The group leader should begin the reservation process at least 4-6 weeks in advance of the desired use date, so that all arrangements (e.g., scheduling the boat; scheduling a pre-trip classroom visit; obtaining insurance documents; etc.) can be made. Information needed includes contact information, proposed reservation date, purpose of trip, time leaving dock and time arriving back at dock, number of passengers, and grade level (if appropriate).

Scheduling Process

The scheduler will:

1. Start a Forever Earth Reservation Application (Appendix B) by filling in the provided information based on the initial phone call/email OR review the on-line reservation database for pertinent information.

2. Contact the group leader to complete the following:
   - Determine the group or organization name, description and complete contact information (address, phone number, fax and e-mail).
   - Establish whether the potential user group’s intended use aligns with the “Intent of Usage Requirements” (see page 18) and request a description of proposed projects/uses (for uses other than programmed Forever Earth Floating Classroom trips).
   - Determine whether the group is self-insured. If not explain the insurance requirements and provide information regarding obtaining a certificate of insurance.
   - Explain that the maximum number of passengers (teachers, students, other adult chaperones, researchers, meeting participants) cannot exceed 25.
   - If the group is a student group, explain that the desired adult to child ratio of 1:10; also explain that the minimum age allowed on board are children in the 4th grade.
   - Discuss dates, destinations and duration of use/ determine if submission of proposed itinerary is needed.
   - Discuss the payment of fuel/oil costs.
   - Go over the following:
     - General liability release and photo waiver
3. After the contact, complete the following:

- Complete the on-line Reservation Application (if not already completed by the group leader) and fax or email to the potential user with appropriate forms and informational sheets. The information sheets may also be downloaded from the website.
- Contact Lake Mead Environmental Education Coordinator to schedule NPS staff if needed.
- Contact senior boat captain to coordinate desired usage date(s).
- If NPS Staff or boat crew is unavailable for the desired dates, call potential user and ask for new dates; continue coordinating among user, NPS and Forever Earth staff until a mutually agreeable date is found.
- If the group is not self-insured, arrange to receive a certificate of insurance. The documentation is required within two weeks of scheduled date.
- When final, signed reservation application is received and insurance (if applicable) is confirmed, verify date and logistics with the senior captain.
- FAX a list of scheduled dates to Callville Bay Boat Rentals Manager.
- Notify Lake Mead Environmental Education Coordinator to add the group to the monthly list of educational groups and that Entrance Fee Waiver letter (on file) will be provided to the group leader.
- If applicable, verify insurance.
- Call user group to inform of finalization and schedule a pre-trip classroom visit.
- Create schedule of activities for the group.

The participating group must provide or complete the following:

- Submit itinerary if providing own programming.
- Commit to paying for fuel and oil when invoiced by UNLV’s Public Lands Institute.
- Complete Forever Earth Reservation Application and associated check-offs. The Application must be signed by an authorizing official or administrator.
- If the group is not self-insured, finalize insurance requirement by obtaining a certificate of insurance with additional insureds added as requested.
- Provide signed copies of the liability waiver for each participant.

Liability Release and Photo Waiver

Participants are asked to sign a liability release and photo waiver (Appendix E). By signing the liability waiver, participants are acknowledging that some risk is involved in the activity and are agreeing not to hold the Nevada System of Higher Education and, therefore, UNLV, responsible for any claims, losses, or damages. A signature on the photo waiver gives permission to UNLV and its partners to use photos for materials representing the Forever Earth Project including, but not limited to: brochures, newspaper and magazine articles, PowerPoint presentations, grant proposals, and all other marketing materials. **Those who do not agree to the photo waiver will be clearly marked with a nametag and will not be photographed.**
Cancellation Policy
For the safety of the participants, the Forever Earth Project Manager reserves the right to cancel without prior
warning, any field trip, class, or other scheduled usage of Forever Earth. Should any event occur (such as, but not
limited to, those listed below) that affects safe delivery of the scheduled program, the Project Manager will make
every attempt to reschedule the group on a mutually agreeable date.

- Mechanical failure of the Forever Earth vessel
- Severe inclement weather
- Natural or local disaster
- Failure of participants to adhere to Forever Earth policy

Cleaning Policy
Users of the Forever Earth vessel must return the vessel and all of its scientific equipment to the same condition that
they were received. Forever Earth is supplied with cleaning chemicals that have been awarded the Green Seal of
Approval and cleaning supplies to assist users in assuring the cleanliness of the Forever Earth vessel. Participants
must only use the cleaning chemicals supplied and not bring any other products aboard. Cleaning the vessel
includes:

- vacuuming carpets
- mopping linoleum
- wiping down all used counter surfaces and mirrors and drying with a clean towel
- thoroughly cleaning and rinsing all scientific glassware used
- appropriately removing sharps and hazardous waste
- turning off computer and other electronic scientific equipment
- removing all personal items and food brought aboard
- removing trash and recyclables from Forever Earth, carting them to shore, and depositing in the appropriate
  shore-based containers (a cart is available aboard Forever Earth)

For short trips (4 hours or less), cleaning is generally not required. However, full-day and longer usage requires
agreement by the user group to the cleaning policy.

The vessel will be inspected after use, and participating groups that fail to clean the vessel adequately will
not be allowed to use the vessel again.
Participating groups may only use cleaning chemicals supplied aboard Forever Earth, no other cleaning
chemicals are allowed aboard. Use of non-approved cleaning chemicals could damage the vessel and result
in loss of ISO-14001 environmental certification status.

Food
In general, participating groups are responsible for bringing aboard all food and drink for their trip. If the group leader is not providing food and drink to its participants, then the group leader should instruct individuals to bring their own snacks, lunch, and bottled water (or whatever food and beverage supplies are appropriate for the duration of their trip). Sugary foods, candy, and soda are to be discouraged for students and children as they will be confined to a small space for a number of hours.

**Clothing**

Group leaders should ensure that their participating group members wear and bring the appropriate clothing for the weather. In general, consider the following:

- Flip-flops or slide sandals are inappropriate regardless of season
- Sunscreen, UV protective lip balm, hats with brims, and sunglasses
- Long-sleeved shirts can provide protection against the sun
- Bring appropriate warm layers in the winter

**User Costs**

The Forever Earth vessel is not licensed as a “Commercial Vessel” by the United States Coast Guard. Thus, no fees or compensation may be charged by the vessel owner or crew. The United States Coast Guard uses a broad interpretation of the term “compensation,” thus in addition to cash and currency, compensation includes gifts of any kind. The crew may not accept compensation or gifts from passengers.

Participating groups may pay for fuel and oil. Arrangements to pay for fuel and oil costs by credit card, cash, or invoice must be made before the scheduled use. The amount of fuel used is determined by immediate refueling upon return at the fuel dock. Fuel and oil rates vary as do gas rates for cars.
SECTION V. ABOARD FOREVER EARTH

Authority of the Boat Captain
The captain of the Forever Earth vessel has the full and final responsibility for the safety of the houseboat and all personnel and participants aboard. Because of this responsibility, he/she has full authority over all operations and personnel, both crew and visitors, in regard to safety. In all decisions regarding safety, the captain’s authority is absolute.

The captain will obtain the latest wind and weather forecasts prior to the departure of each trip. It is his/her decision regarding the feasibility of a trip due to weather, mechanical considerations, or other related factors. The captain may also shorten a trip or modify the activities of a group based on safety considerations.

Pre- and Post-trip Duties of the Boat Captain and Deckhand

Duties of the Forever Earth captain include:

- Navigating while the school groups, university students, or researchers engage in activities appropriate to the four principal purposes of the Forever Earth program.
- Directing and coordinating operations with a deckhand for each outing.
- Preparing the boat for timely departures.
- Performing vessel-to-shore communications as necessary.
- Assessing and coordinating preventive and regular maintenance procedures for the vessel with Callville Bay Resort and Marina.
- Assisting group leaders with charting courses appropriate for educational experiences and research activities.
- Maintaining operational log book, including pre- and post-trip inspections and completing the daily log (Appendix F).
- Ensuring safety equipment is up-to-date.
- Re-fueling and oil replacement.
- Cleaning or coordinating cleaning tasks.

Duties of the Forever Earth deckhand include:

- Assisting the captain with the safe operation of the boat.
- Assisting the captain and group leader with the safety of the group.
- Preparing the boat for timely departures.
- Performing vessel-to-shore communications as necessary.
- Performing departure and arrival docking procedures.
- Maintaining operational log book, including pre- and post-trip inspections.
- Ensuring safety equipment is up-to-date.
- Cleaning or coordinating cleaning tasks.
Station Bill

In October 2006, the Forever Earth boat crew conducted safety drills and developed a “station bill” (Appendix G) to outline responsibilities during emergency situations, including man overboard; fire; collision; and abandon ship. Although the captain and deckhand have primary responsibilities for managing the situation, Forever Earth staff members are assigned duties as deckhands #2, #3, and #4. These duties vary from crowd control to acting as a “spotter.” Assignments are made and duties are reviewed before each trip departure. In addition, the primary Forever Earth staff member designated as deckhand #2 carries a handheld radio during each trip for direct communication with the captain and deckhand.

Prohibited Items

For the safety of staff and participants, the following are not permitted on board Forever Earth:

1. Prohibited substances

NRS 484.1245 “Prohibited substance” defined. “Prohibited substance” means any of the following substances if the person who uses the substance has not been issued a valid prescription to use the substance and the substance is classified in schedule I or II pursuant to NRS 453.166 or 453.176 when it is used:
   - Amphetamine.
   - Cocaine or cocaine metabolite.
   - Heroin or heroin metabolite (morphine or 6-monoacetyl morphine).
   - Lysergic acid diethylamide.
   - Marijuana or marijuana metabolite.
   - Methamphetamine.
   - Phencyclidine.

   (Added to NRS by 1999, 3414)

2. Firearms and other weapons (unless carried by law-enforcement personnel)

3. Glass containers (other than scientific equipment such as test tubes)

Passenger Conduct

The boat captain will ensure proper conduct of passengers at all times. Regarding conduct, passengers will be given the information below in a safety briefing aboard Forever Earth staff before departure (see Appendix H for safety briefing outline).

- No running, pushing or shoving.
- No sitting or leaning on the railings.
- Do not go anywhere on the boat alone.
- Life jackets must be worn when outside the main cabin.
- Close the back door behind you when you are the last person in or out of the main cabin.
- It’s always a good idea to have one hand holding onto something if you’re standing up.
- Be careful going up or down the ladder; go down the ladder the same way that you came up the ladder.
- Hold onto everything when you are outside; paper, hats, clothing, etc. can be blown away and overboard.

Medical Emergencies
First-aid kits are stored in the main cabin and on the upper deck. Oxygen and associated medical equipment are stowed below deck and are available to certified medical personnel as appropriate. In the event of an emergency, the captain will use a radio to contact dispatch who will arrange transport to the appropriate medical facility.

Personal Flotation Devices
U.S. Coast Guard approved Type I (jacket) Personal Flotation Devices (PFDs) are located on the Forever Earth vessel in two long, marked fiberglass storage boxes. Children and adults are required to don PFDs at any time directed by the captain in emergency conditions.

Children, ages 12 and younger, are required to wear the provided PFDs at all times except when inside a cabin (i.e., when on the front, aft, or top deck, children, ages 12 and younger, must wear a lifejacket). In addition, the captain and/or the Forever Earth Project Manager may require older student groups to wear life jackets.

U.S. Coast Guard approved Type IV (ring lifebuoy) PFDs are mounted on brackets on the bow, aft deck and top deck. Type IV devices are for use as an extra device to aid conscious persons who have fallen overboard.
Section VI: Donors and Contacts
通过创建公开和私人合作伙伴关系，以保护环境和Lake Mead National Recreation Area，以及通过其捐助者的慷慨，Forever Earth Project已经成为现实，并继续发展。Forever Earth Project对以下单位表示感谢：

- Forever Resorts
- Lake Mead National Recreation Area
- Outside Las Vegas Foundation
- American Recreation Coalition
- Black Canyon/Willow Beach River Adventures
- Bombardier
- Callville Bay Resort and Marina
- Cottonwood Cove Resort and Marina
- Chevron
- Crane Contec
- Enviromarine
- Envirolift
- Forever Living Products
- Fun Country Marine Industries
- General Motors Automobile Company
- Petroleum Wholesale
- Marysville Marine South
- Meadows Construction
- Pictographics
- Polaris
- Retail Works
- Ryerson Tull
- Southern Nevada Interpretive Association
- University of Nevada Las Vegas
- Westerbeke
- World Class Wire
- Z.F. Mathers
- Overland Petroleum Company
- Golder Associates

Grants Received

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Contacts:

Ellen Anderson  
Environmental Education Specialist  
Lake Mead National Recreation Area  
601 Nevada Way  
Boulder City NV 89005  
Ellen_Anderson@nps.gov  
702/293.8957 (office)

Kerrie Blazek  
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Clark County School District  
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702/250.5061 (cell)

Kim Roundtree
General Manager
Black Canyon/Willow Beach River Adventures
Appendix A

Insurance Information
Insurance Requirement

Your organization is required to show evidence of active and adequate liability insurance in the form of an endorsement adding the three organizations listed below as additional insureds and deleting the watercraft exclusion on your policy for this activity. Please ask your broker to provide a certificate of insurance and the required endorsement to the Forever Earth scheduler. These documents are required to hold your reservation and must be received at least two weeks prior to the scheduled date of Forever Earth use. There is no exception to this request. If you find you cannot meet these requirements, please contact the Forever Earth scheduler immediately to withdraw your reservation.

Information for your Broker

Insurance Required: Commercial General Liability
- Each Occurrence $1,000,000
- Products/Completed Operations Aggregate $1,000,000
- Personal and Advertising Injury $1,000,000
- General Aggregate $2,000,000

Date of Activity: ___________________________ (provide same date given to scheduler)

Location of Activity: Lake Mead National Recreation Area

Activity Description:
The Forever Earth Project is coordinated through a partnership of the University of Nevada Las Vegas, Fun Country Marine Industries, and Forever Resorts. At Lake Mead National Recreation Area (Nevada), participants will board Forever Earth, a 70-foot houseboat that is outfitted with water science testing supplies and monitoring equipment. The vessel will travel to various points on Lake Mead for hands-on data gathering exercises, observation, and/or discussion. Forever Earth departs from Callville Bay Marina (Box 100, HCR-30; Las Vegas NV 89124-9410).

Additional Insureds to be added to your Certificate of Insurance:
Please include the following statement exactly as it appears below:
Officer, employee or volunteers of the below named entities are insureds with respect to liability arising out of the activities by or on behalf of the named insureds in connection with work performed for Forever Earth.

1) Board of Regents
   Nevada System of Higher Education
   Contact: Michael Means, Insurance Administrator
   4505 S Maryland Parkway
   Las Vegas, NV 89154-1042

2) Fun Country Marine Industries and

3) Rex Maughan dba Callville Bay Resort and Marina
   Contact: John Schoppmann
   Senior Vice President, Resorts
   Forever Resorts, L.L.C.
   7501 East McCormick Parkway
   Scottsdale, AZ 85258
Appendix B

Reservation Application and Receipt
Forever Earth

Reservation Receipt

Your reservation request has been received. Please print 2 copies of this page, one for your own records and one to complete and fax or mail to the Forever Earth Project Manager, see contact information below.

RESERVATION ID: 370

Project Manager Daphne Sewing
Paradise Elementary Environmental Science Club

Las Vegas, NV 89154
Phone: 702-895-5098 Fax:

Reservation Start Date/Time: 2008-11-08 9:00 AM
Reservation End Date/Time: 2008-11-08 2:00 PM
Number of students 20
Number of adults 4
Minimum Grade Level 5
Maximum Grade Level 5
Purpose of trip Education
Description of use Outdoor World Event

Comments
Where did you hear about us?
Reservation Status RECEIVED

Insurance (check one):
__ Our group is self-insured (examples include Clark County School District, federal and state agencies, etc.)
__ We understand that our group is required to add additional insureds onto its General Liability policy as instructed.

Additional Information (check all):
__ We understand that each participant must complete a release form.
__ We have read and agree to the cancellation and cleaning policies.
__ We agree to pay for fuel and oil at the dock with a major credit card or cash.

Research Groups ONLY (check all):
__ We have applied for the necessary research permits.
__ We have attached an abstract describing the research activities to be performed.

Authorized Signature: X____________________________
Appendix C

Cleaning Policy
Cleaning Policy

To maintain low user cost and to keep Forever Earth in great shape for years to come, participants are required to clean up after themselves. We ask that the following be done before departure:

- wipe down table and counter surfaces with provided spray cleaner
- clean galley appliances that were used, and clear refrigerator of all food and drinks brought aboard
- empty the ice tray in the freezer compartment
- empty trash and clean all surfaces in the restrooms
- clean and put away all laboratory equipment and glassware that were used
- turn off and cover any electronic laboratory equipment that was used
- shut down computer and turn off monitor
- vacuum carpets if necessary, and wipe up any spills on decks and tile flooring
- walk through the interior and all decks to make sure no belongings are left behind
- dispose of all garbage and recyclables in the appropriate receptacles at the marina

**Important note:**
Cleaning solutions meeting specific environmental standards are provided onboard; all other cleaning solutions are prohibited!
Appendix D

Cancellation Policy
Cancellation by Forever Earth Project Partners

For the safety of the participants, we reserve the right to cancel without prior warning any field trip, class, or other scheduled usage of Forever Earth. Should any event occur (such as, but not limited to, those listed below) that affects safe delivery of the scheduled program, the University of Nevada, Las Vegas will cancel your use and make every attempt to reschedule your group on a mutually agreeable date.

- mechanical failure of the Forever Earth vessel
- severe inclement weather
- natural or local disaster

Cancellation by Participant

Should you wish to cancel your use of Forever Earth, please submit a notice of cancellation in writing by mail, e-mail or fax at least 72 hours prior to a trip.

Submit written notice of cancellation to:
Daphne R. Sewing
Project Manager, Forever Earth/Outdoor World
University of Nevada, Las Vegas
4505 Maryland Parkway
Box 452040
Las Vegas, NV  89154-2040

(e-mail)  Daphne.Sewing@unlv.edu
(fax)    702/895.5166
Appendix E

General Liability Release
**Release Requirement**

Admittance aboard Forever Earth requires a completed release form. A parent or legal guardian must sign the release for participants under the age of 18. It is the policy of the University of Nevada, Las Vegas on behalf of the Nevada System of Higher Education and Forever Resorts, L.L.C. to provide for the safety of participants during Forever Earth use and to take every precaution reasonable to ensure that trips aboard Forever Earth are run with due regard for the safety of all participating individuals. However, the use of any vessel on any body of water involves a degree of risk, and the use of Forever Earth at Lake Mead is no exception.

**General Release and Save Harmless Waiver**

The undersigned does hereby assume any and all risks involved in boarding and traveling aboard the Forever Earth vessel as offered through the University of Nevada, Las Vegas and Forever Resorts, L.L.C. at Lake Mead National Recreation Area (National Park Service) and does hereby save and hold harmless the above organizations from any and all claims, losses and damages (including attorney’s fees and any costs involved because of said claims), on account of: lost or damaged articles; accident; any mishap due to alcohol or drug abuse; death; injury; illness; disruption; delays or cancellations caused by weather conditions; any mechanical or electrical difficulties; or other events beyond their control. __________ (please initial)

**Image Consent and Release**

The undersigned does hereby irrevocably consent that all photographs of below named participant taken during the participant’s time aboard Forever Earth by staff may be used and re-used by the Forever Earth Project partners for purposes of illustration, display, publication, and any other non-profit purpose. I understand that these images may be cropped, edited or otherwise altered. __________ (please initial)

My signature indicates that I have read the above General Release and Save Harmless Waiver, I fully understand its terms, I understand that I have given up rights by signing below, and I sign freely and voluntarily without any inducement. Additionally my signature indicates that I have read the above Image Consent and Release, I fully understand its terms, I understand that I have given up rights by signing below, and I sign freely and voluntarily without any inducement.

__________________________   _________________________
participant (please print)       participant signature       date

If participant is under the age of 18:

__________________________   _________________________
parent or legal guardian (please print)       parent or legal guardian signature       date
Appendix F

Daily Log
# Forever Earth Daily Log

<table>
<thead>
<tr>
<th>FE Crew:</th>
<th>WX</th>
<th>Date:</th>
</tr>
</thead>
</table>

## UNLV:

<table>
<thead>
<tr>
<th>NPS:</th>
<th>Elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>School/Agency:</td>
<td>Route / Destination:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 1 Depart:</th>
<th>#Children:</th>
<th>#Adults:</th>
<th>Return:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 2 Depart:</td>
<td>#Children:</td>
<td>#Adults:</td>
<td>Return:</td>
</tr>
<tr>
<td>Group 3 Depart:</td>
<td>#Children:</td>
<td>#Adults:</td>
<td>Return:</td>
</tr>
</tbody>
</table>

### Purpose:

### Totals:

<table>
<thead>
<tr>
<th>Port Gen End</th>
<th>Stbd Gen End</th>
<th>Oil Level P</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start _______</td>
<td>Start _______</td>
<td>Coolant</td>
<td>P _______</td>
</tr>
</tbody>
</table>

### Hours Run:

<table>
<thead>
<tr>
<th>Port OB End</th>
<th>Stbd OB End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start _______</td>
<td>Start _______</td>
</tr>
</tbody>
</table>

### 2cycle oil% | P _______ | S _______ |

### Fuel on Board % | Fuel Added | Fuel Cost/gal @ | Total Cost with bulk oil |

### Fresh Water % | Added Y /N@ | Black Water % | Pumped Y /N @ |

### Required equipment on board and serviceable per master list: Y /N (make notes below)

### Maintenance and/or operational problems:

<table>
<thead>
<tr>
<th>Reported to:</th>
<th>When reported:</th>
<th>When resolved:</th>
</tr>
</thead>
</table>

### Other Notes:
Appendix G

Station Bill
## FOREVER EARTH STATION BILL

<table>
<thead>
<tr>
<th>Man Overboard</th>
<th>Captain</th>
<th>Senior Deckhand</th>
<th>Deckhand #2</th>
<th>Deckhand #3</th>
<th>Deckhand #4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PA/Radio announcement</td>
<td>Scene Leader/Spotter</td>
<td>Spotter</td>
<td>Spotter</td>
<td>Spotter</td>
</tr>
<tr>
<td></td>
<td>Maneuver for retrieval</td>
<td>Throw forward life ring</td>
<td>Don safety line</td>
<td>Ring buoy #2 deck</td>
<td>Crowd control</td>
</tr>
<tr>
<td></td>
<td>Scene Leader/Spotter</td>
<td>Secure safety line for Deckhand #2 at bow</td>
<td>Assist retrieval</td>
<td>Type 4 PFDs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scene Leader/Spotter</td>
<td>Rig LifeSling/Retrieval</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fire</th>
<th>Captain</th>
<th>Senior Deckhand</th>
<th>Deckhand #2</th>
<th>Deckhand #3</th>
<th>Deckhand #4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PA/Radio announcement</td>
<td>Secure ventilation (A/C, Blower, etc.)</td>
<td>Fire extinguisher</td>
<td>Fire extinguisher</td>
<td>Fire extinguisher</td>
</tr>
<tr>
<td></td>
<td>Maneuver for retrieval</td>
<td>Start bilge pumps if necessary</td>
<td>Advance on fire when team is ready</td>
<td>Secure vents</td>
<td>Crowd control</td>
</tr>
<tr>
<td></td>
<td>Scene Leader</td>
<td>Take fire extinguisher to scene</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scene Leader</td>
<td>Secure vents</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Collision</th>
<th>Captain</th>
<th>Senior Deckhand</th>
<th>Deckhand #2</th>
<th>Deckhand #3</th>
<th>Deckhand #4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PA/Radio announcement</td>
<td>Scene Leader</td>
<td>AFT voids</td>
<td>MID voids</td>
<td>Crowd control</td>
</tr>
<tr>
<td></td>
<td>Maneuver for retrieval</td>
<td>Check FORWARD</td>
<td>Assess outer hull damage</td>
<td></td>
<td>PFDs #1 deck</td>
</tr>
<tr>
<td></td>
<td>Scene Leader</td>
<td>voids/gather info/make status report to Captain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scene Leader</td>
<td>Assessment of hull damage</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Abandon Ship</th>
<th>Captain</th>
<th>Senior Deckhand</th>
<th>Deckhand #2</th>
<th>Deckhand #3</th>
<th>Deckhand #4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PA/Radio announcement</td>
<td>Scene Leader</td>
<td>Crowd control #2 deck</td>
<td>Crowd control</td>
<td>Crowd control</td>
</tr>
<tr>
<td></td>
<td>Maneuver to shore if possible</td>
<td>PFDs #1 deck</td>
<td>PFDs #2 deck</td>
<td>PFDs #1 deck</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scene Leader</td>
<td>Control debarkation point</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**
Deckhand #2 will be the Public Lands Institute Group Leader or NPS Group Leader.
Deckhands #3 and #4 will be the assistant group leaders.
Appendix H

Safety Talk Outline
SAFETY TALK OUTLINE

While on Forever Earth, there are a number of rules that we insist on being followed. This is for your safety and the safety of everyone onboard.

- No running, pushing or shoving.
- No sitting or leaning on the railings.
- Do not go anywhere on the boat alone.
- Life jackets must be worn when outside the main cabin.
- Close the back door behind you when you are the last person in or out of the main cabin.
- It’s always a good idea to have one hand holding onto something if you’re standing up.
- Be careful going up or down the ladder; go down the ladder the same way that you came up the ladder.
- Hold onto everything when you are outside; paper, hats, clothing, etc. can be blown away and overboard.

Other

- Recycle all aluminum and plastic bottles (like bottled water containers).
- Flush the toilet by pressing and holding the black button in for a slow count of 15. Only toilet paper goes into the toilet.
- No gum.
- Turn off cell phones.
<table>
<thead>
<tr>
<th>Date(s)</th>
<th>Group</th>
<th>Group</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>1-Jun</td>
<td>Jo Mackey ES (4th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>10</td>
<td>24</td>
<td>34</td>
</tr>
<tr>
<td>2-Jun</td>
<td>Petersen ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>13</td>
<td>28</td>
<td>41</td>
</tr>
<tr>
<td>2-Jun</td>
<td>Bryce Canyon Natural History Association</td>
<td>Education</td>
<td>Teacher Workshop</td>
<td>2 hrs.</td>
<td>27</td>
<td>0</td>
<td>27</td>
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<tr>
<td>3-Jun</td>
<td>Woolley ES (4th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>10</td>
<td>37</td>
<td>47</td>
</tr>
<tr>
<td>5-Jun</td>
<td>Crestwood ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>3.5 hrs (2 trips)</td>
<td>9</td>
<td>32</td>
<td>41</td>
</tr>
<tr>
<td>9-Jun</td>
<td>Woolley ES (4th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>11</td>
<td>38</td>
<td>49</td>
</tr>
<tr>
<td>10-Jun</td>
<td>Brookman ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>12</td>
<td>29</td>
<td>41</td>
</tr>
<tr>
<td>11-Jun</td>
<td>Petersen ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>3.5 hrs (2 trips)</td>
<td>9</td>
<td>24</td>
<td>33</td>
</tr>
<tr>
<td>12-Jun</td>
<td>Petersen ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>3.5 hrs (2 trips)</td>
<td>7</td>
<td>25</td>
<td>32</td>
</tr>
<tr>
<td>16-Jun</td>
<td>Crestwood ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>8</td>
<td>31</td>
<td>39</td>
</tr>
<tr>
<td>18-Jun</td>
<td>National Park Service</td>
<td>Agency</td>
<td>SNPLMA Exec. Comm. Meeting</td>
<td>2 hrs.</td>
<td>24</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>23-Jun</td>
<td>Crestwood ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>11</td>
<td>38</td>
<td>49</td>
</tr>
<tr>
<td>24-Jun</td>
<td>Petersen ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>3.5 hrs (2 trips)</td>
<td>14</td>
<td>26</td>
<td>40</td>
</tr>
<tr>
<td>26-Jun</td>
<td>Brookman ES (5th grade)</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4 hrs. (2 trips)</td>
<td>9</td>
<td>26</td>
<td>35</td>
</tr>
<tr>
<td>27-Jun</td>
<td>National Park Service</td>
<td>Agency</td>
<td>Mobile Visitor Center</td>
<td>5.5 hrs.</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>6-Jul</td>
<td>Alexander Dawson Foundation</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4.5 hrs. (2 hrs.)</td>
<td>9</td>
<td>34</td>
<td>43</td>
</tr>
<tr>
<td>7-Jul</td>
<td>Alexander Dawson Foundation</td>
<td>Education</td>
<td>Student Field Trip</td>
<td>4.5 hrs. (2 hrs.)</td>
<td>9</td>
<td>41</td>
<td>50</td>
</tr>
<tr>
<td>11-Jul</td>
<td>National Park Service</td>
<td>Agency</td>
<td>Mobile Visitor Center</td>
<td>5 hrs.</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>16-Jul</td>
<td>National Association for Geology Teachers</td>
<td>Education</td>
<td>Conference field trip</td>
<td>3.5 hrs.</td>
<td>24</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>20-Jul</td>
<td>Nevada State College</td>
<td>Education</td>
<td>Teacher Workshop</td>
<td>4 hrs.</td>
<td>13</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>25-Jul</td>
<td>National Park Service</td>
<td>Agency</td>
<td>Mobile Visitor Center</td>
<td>5 hrs.</td>
<td>2</td>
<td>0</td>
<td>2</td>
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<tr>
<td>22-Aug</td>
<td>National Park Service</td>
<td>Agency</td>
<td>Mobile Visitor Center</td>
<td>1 hr.</td>
<td>2</td>
<td>0</td>
<td>2</td>
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<tr>
<td>24-Aug</td>
<td>Public Lands Institute</td>
<td>Agency</td>
<td>Staff Meeting</td>
<td>4 hrs.</td>
<td>17</td>
<td>0</td>
<td>17</td>
</tr>
</tbody>
</table>

**TOTALS for 1st quarter**

- **23 Groups**
  - Education - 17 groups
  - Agency - 6 groups
  - Total Pass. 255

**TOTALS for Year 3 (to date)**

- **23 Groups**
  - Education - 17 groups
  - Agency - 6 groups
  - Total Pass. 255
Assessment of Forever Earth Curriculum 2008/2009
Final Report

Assessment of Forever Earth Curriculum 2008-2009

Submitted by:

Lori Olafson
Gregg Schraw
Michelle Weibel
Department of Educational Psychology
UNLV
Executive Summary

Forever Earth is a floating environmental laboratory and learning center at Lake Mead National Recreation Area that provides hands-on science experiences for students in the Clark County School District. The Forever Earth program was brought about through the efforts of numerous partners including Forever Resorts, a division of Forever Learning LLC, the National Park Service, Lake Mead National Recreation Area; Outside Las Vegas Foundation; and UNLV’s Public Lands Institute. In 2005, a formal written agreement was reached between Fun Country Marine Industries and UNLV’s Public Lands Institute to operate and manage the Forever Earth houseboat for the purpose of enhancing outdoor environmental education efforts in Southern Nevada. During the first year of the assessment program, knowledge, attitude, and performance assessments were developed to document the effectiveness of program events over the duration of the program. The findings from the first two years of assessment revealed that students’ knowledge and attitudes increased substantially as a result of participating in the Forever Earth field trips. Results also demonstrated that teachers’ perceptions of the curriculum were very favorable. In 2008-2009, the third year of assessing the program, students again completed knowledge, attitude, and performance assessment and results indicated that students’ knowledge, attitudes, and skills increased substantially as a result of participating in the Forever Earth field trips. Teachers’ perceptions of the Forever Earth curriculum continued to be positive.
Introduction

The Forever Earth program was brought about through the efforts of numerous partners including Forever Resorts, a division of Forever Learning, LLC: the National Park Service, Lake Mead National Recreation Area; Outside Las Vegas Foundation; and UNLV’s Public Lands Institute. In 2005, a formal written agreement was reached between Fun Country Marine Industries and UNLV’s Public Lands Institute to operate and manage the Forever Earth houseboat for the purpose of enhancing outdoor environmental education efforts in Southern Nevada.

A development team consisting of science educators from Clark County School District (CCSD) and informal educators from UNLV’s Public Lands Institute (PLI) and Lake Mead National Recreation Area was formed to create the Forever Earth curriculum. The four member On-Site Experience Development Team consisted of program staff from the PLI and Lake Mead National Recreation Area. This team created the programming that was delivered aboard the Forever Earth Vessel and on land at Lake Mead National Recreation Area, and focused on creating engaging activities and ensuring that the mission and vision of the National Park Service and Lake Mead National Recreation Area was accurately presented. The Classroom Experience Development Team authored the pre-visit and post-visit lessons. This team, consisting of four members (two from PLI and two from CCSD), ensured that grade-appropriate science standards were met and that the Clark County educator’s perspective was carefully considered.

The curriculum for each grade level was developed to complement traditional classroom studies in grades four, five, six, and seven with engaging, participatory, on-site activities and support lessons based upon a solid framework for inquiry and discovery. Students participated in activities, performed investigations, and used scientific equipment to discover the answers to key questions. Curricula for grades four, five, six, and seven were developed, field tested and delivered.

In 2006-2007, our research team became responsible for developing an assessment plan in order to document the effectiveness of the curriculum over the duration of the program. We developed assessment instruments and administered these instruments to program participants. In the second year of the assessment program (2007-2008) the assessments were modified slightly and again administered. In this report, we describe the assessment plan and provide results for 2008-2009 based on completed assessments.

Context

The significant water and other natural resources found within Lake Mead National Recreation Area provide extraordinary material for learning about science and the environment. The primary objective in developing curriculum for the Discover Mojave Forever Earth Project was to create interdisciplinary, interactive, and inquiry-based programs for students on the floating environmental education center and research laboratory. Under the direction of Daphne Sewing, Discover Mojave Forever Earth Project Manager for PLI, the curriculum development team created a curriculum in which participants learned about the importance of the lake and public land to the desert’s flora and fauna. The curriculum manual included detailed descriptions and facilitator’s guides for the activities conducted; on-site activity support materials; and pre-trip and post-trip classroom activities with accompanying support materials.
Participants in Forever Earth programs explored the Lake Mead aquatic environment and its interrelationships with the surrounding area through their participation in the following four curricula:

- **Grade 4: Just Passing Through! The Water Cycle!**
  Students learned about Lake Mead’s water use cycle by following one drop of water and then diagramming this important cycle on a magnet board. Working as scientists, students determined if water is the same in all parts of the lake by comparing water samples from the middle of the lake and from Las Vegas Bay.

- **Grade 5: Finicky Fish Finish…Last!**
  Students explored what has happened to the Colorado River and the reasons why it is so difficult for a native fish species, the razorback sucker, to thrive in this changed environment. Students collected water quality data to determine whether habitat conditions are sufficient for the survival of young razorback suckers.

- **Grade 6: Alien Invaders!**
  Students studied Lake Mead to determine whether it is at risk for invasion by zebra mussels. Students learned about the consequences the zebra mussels could have on the lake and its living and non-living resources. In January 2007, this curriculum was revised after the discovery of quagga mussels, another invasive species.

- **Grade 7: GSI: Geo Scene Investigation**
  Students are introduced to topographic and geologic maps and participate in an inquiry-oriented activity designed to introduce them to the geology, landforms, geologic processes, and geologic timeline of the Lake Mead National Recreation Area.

Each of these events were one time only activities, and were designed initially to last between two and a half to four hours on the boat, not including pre-trip and post-trip activities. However, it was necessary for PLI staff to develop additional on-shore activities for many of the groups participating in the Forever Earth program. For insurance purposes, only 23 students were permitted on the boat at any one time. Given that most of the classes had in excess of 23 students, most were split into two groups, with one group on the boat for two hours and the other group doing on-shore activities for two hours.

### Assessment Program

As in the first two years of the assessment program, data was collected from both students and teachers. The assessments were conducted over time (i.e., pre- and post-intervention). Pre-test assessments were conducted in the classroom during the pre-trip visit. Post-test assessments were conducted onsite upon completion of the day’s activities.

#### Student Assessment

Student assessment items were developed in alignment with the Forever Earth curriculum. Students were assessed for three areas of growth including knowledge, attitudes, and skill performance for the four curricula.

**Knowledge Items**
Assessments for each of the four curricula included four to five knowledge questions related to the specific activity (e.g., *Throughout time, what geologic actions or processes have been at work at Lake Mead?*). These knowledge questions consisted of constructed-response items, where students were required to generate answers in response to a prompt rather than choose from a set of alternatives. Knowledge questions were developed to assess the instructional objectives outlined in each of the curricula. For example, one of the stated knowledge objectives for Geo-Scene Investigation (Grade Seven) was “Students will identify common rocks and minerals of the Lake Mead area.” The corresponding knowledge item on the pre- and post-test was *Describe some of the common rocks and minerals of the Lake Mead area.* Developing items for each knowledge objective help to ensure content-validity of the assessment (Thorndike, 2005). See Appendix A for an example of a knowledge assessment.

Based on feedback from program facilitators, minor modifications were made to two items at the fourth grade level for 2007-2008. Two of the possible answers to item 2 (*How has the water from Las Vegas wash different from water in the middle of the lake? Answer “yes” or “no” to the following questions*) were eliminated because arguments could be made for selecting either yes or no as a correct response. Item 3 was changed from selected response to an open-ended question. A minor wording change was made to item 2 (Grade 6) in 2008-2009 (i.e. *Why can quagga mussels thrive in Lake Mead?*).

**Attitude Items**

The attitude scales that were developed in 2006-2007 were based on existing assessments (Metzger & McEwen, 1999; Musser & Diamond, 1999; Schindler, 1999) that were designed for the purposes of assessing children’s attitudes to recreational events and to the environment. We constructed similar attitude scales to measure children’s attitudes towards the Forever Earth curriculum and to the environment.

An attitudes assessment was developed for each curriculum. The attitude pre-test included four items. The first two items on each attitude assessment were questions related to the specific event (e.g., *Learning about native and non-native fish in Lake Mead was very interesting to me.*) The second two items were related more generally to the Forever Earth activity (e.g., *I would like to do another Forever Earth Activity*).

At post-test, the four pre-test items were repeated and four additional questions were included for grades four, five, and six that were designed to measure more general attitudes towards the environment (e.g., *I learned important things today about the water*). The seventh grade post-test eliminated questions five and six because these two items were not strongly related to the seventh grade curriculum. See Appendix B for an example of an attitude assessment.

No modifications were made to the attitudes assessment in 2008-2009.

In 2008-2009 a repeated post test measure was conducted. Students completed identical knowledge and attitude items one to four weeks after the post tests were administered in order to measure the long-term retention of learning. Previous research suggests that most forgetting occurs within 48 hours of a learning activity (Neath & Surprenant, 2003); thus, we assume that the repeated post-test provides a useful measure of long term retention.

**Skills**

Because each curriculum included a hands-on activity component, such as students using a plankton net to collect plankton as part of the sixth grade curriculum, we felt that it was
important to include a performance assessment component. As Stiggins (2005) notes, observing and evaluating skills as they are being performed can be a rich and useful source of information about the attainment of specific skills. Skill performance assessments, in the form of a checklist completed by the event facilitator, were designed to measure whether or not the child demonstrated a particular skill related to the curriculum objectives and the Nevada Science Content Standards. For example, one of the science standards in the sixth grade curriculum is that students know how to use appropriate technology and laboratory procedures for observing, measuring, recording, and analyzing data. The performance skill related to this objective was *Participant collects water sample and performs water quality measurements.* Event facilitators determined whether or not the participant demonstrated the skill by checking one of two columns: *demonstrates skill or does not demonstrate skill.* (See Appendix C for a sample performance assessment).

In the first year of the assessment program, these performance assessments were not conducted. Primarily, this was due to the time constraints faced by program facilitators as they assessed knowledge and attitudes for 1200 participants. In the second year, the performance assessments were conducted by randomly selecting two schools at each grade level, except for seventh grade because only one seventh grade classroom completed the seventh grade curriculum and measurement tools. Initially, at each grade level, students were randomly selected. However, given the ease with which trained observers and staff found they could complete the assessments, all students from the selected schools were assessed on their performance. In 2008-2009 the same sampling strategy was used with the goal of sampling at least two schools for each grade level.

Teacher Assessment

We felt that it was important to elicit teacher perceptions to provide additional information about the effectiveness of the curriculum. We reviewed existing assessments in the literature such as the Compendium Evaluation Tool (California Regional Environmental Education Community), a teacher survey developed by the Place-based Education Evaluation Collaborative, and recommendations by Environmental Education Materials: Guidelines for Excellence (North American Association for Environmental Education). Existing assessments were Likert-type instruments and consisted of items related to knowledge, pedagogy, and attitudes.

The *Guidelines for Excellence,* developed by the North American Association for Environmental Education, outlines six key characteristics of high quality environmental education materials. For the purposes of constructing a survey to measure teachers’ perceptions about the curricula, we focused on the key characteristic of “Instructional Soundness.” Instructional soundness includes the following components: learner-centered instruction, different ways of learning, connection to learners’ everyday lives, expanded learning environment, interdisciplinary goals and objectives, appropriateness for specific learning settings, and assessment (NAAEE, p. 4). These components of instructional soundness are related to both the content of the curriculum (knowledge) and to the ways that the content is delivered (pedagogy). The Compendium Evaluation Tool (California Regional Environmental Education Community) also indicates criteria for instructional materials. Notably, both general content and pedagogy are included as criteria. The next section of the report describes the knowledge, pedagogy, and attitude items that were developed (see Appendix D for the complete pre-survey).

*Knowledge Items*
Knowledge items were related to the content, goals, and objectives of the curriculum. Content-specific items (e.g., “Students’ understanding of environmental concepts, conditions, and issues will increase as a result of participation in this site-based activity”), as well as more general content items were included. Content-general items were related to how well the curriculum was aligned to classroom activities and school district standards (e.g., “The content of this activity is aligned to the Curriculum Essentials Framework”). Nine knowledge items (items 1, 4, 5, 9, 10, 13, 15, 18, and 21) were included in the survey.

Pedagogy Items

Environmental education, according to the North American Association for Environmental Education, is “learner-centered, providing students with opportunities to construct their own understandings through hands-on, minds-on investigations. Learners are engaged in direct experiences and are challenged to use higher-order thinking skills” (NAAEE, p. 1). Pedagogy items were designed to reflect this view of instructional soundness and to elicit teachers’ views about the appropriateness of the instructional activities. Eight pedagogy items (items 6, 7, 11, 14, 19, 20, 22, and 23) asked teachers to think about how learners might respond to the activities: (e.g., “The activity will engage fifth grade learners,” and “Important concepts are conveyed in several ways so that all students can understand them”).

Attitude Items

In addition to assessing teachers’ perceptions of the components of knowledge and pedagogy, we developed questions related to teachers’ attitudes. As Thomson and Hoffman (2005) note, one of the objectives of environmental education is directly concerned with attitudes: to help social groups and individuals acquire a set of values and feelings of concern for the environment. Attitude items included attitudes about the piloted curriculum (e.g., “I would bring my fifth grade science class to the Forever Earth Floating Classroom”) and personal attitudes about the environment (e.g. “I am in favor of saving wilderness areas”). Eight attitude items (items 2, 3, 8, 12, 16, 17, 24, and 25) were included in the survey.

All knowledge, pedagogy, and attitude items were constructed as Likert-type items. Additionally, two open-ended questions were included in the post survey: 1) What are the biggest challenges that you face as a teacher in providing opportunities for student learning in settings outside the classroom?, and 2) Do you think that learning in settings outside the classroom is a valuable way to enhance existing curriculum?

Individual Interviews

Individual interviews were conducted with classroom teachers in Fall 2008 and Spring 2009. These interviews were conducted by a member of the research team using a consistent interview protocol (see Appendix E).

Summary of Assessment Program

The assessment plan of the Forever Earth curriculum in 2008-2009 included four data collection components:

1. the pre- and post- test measures of students’ knowledge, attitudes, and skills
2. the repeated post-test measure of students’ knowledge and attitudes
3. the pre- and post- measures of teachers’ perceptions of the curriculum
4. individual interviews conducted with teachers at the conclusion of the program.

Implementation
The assessments were conducted over time (i.e., pre- and post-intervention) to determine the effectiveness of the curriculum in having an impact on student knowledge and attitudes about the environment, and the performance of skills related to the curriculum content at each grade level.

In the first year of the assessment program, the curriculum was implemented on 39 separate occasions in the 2006-2007 school year, involving 1263 students from 18 schools. All participants completed the knowledge and attitude components of the assessment program. In the second year of the assessment program, the curriculum was implemented 62 times over the 2007-2008 school year, involving 1885 students from 27 different schools. Two schools at each grade level that experienced the curriculum intended for that grade level were randomly selected for assessment of knowledge, attitudes, and skills. That is, two fourth grade classrooms that signed up for the water cycle curriculum (4th grade curriculum) were assessed. This selection criterion was followed for all grade levels. In the third year of the program, 125 programs were implemented that involved 2804 participants. Ninety-three of these programs involved school groups that completed the program during the school day (see Table 1), while 32 of the groups were other agencies (e.g. National Park Service, Southern Nevada Water Authority) or groups (e.g. after school programs, Boys and Girls Clubs). Thirty-one different schools participated in the program (21 elementary schools, six middle or junior high schools, three high schools, and one K-12 school) involving 2269 students. The assessment program focused on these school groups only, and used the same selection criterion as in the previous year.

For the repeated post test measure, the goal was to select two programs from each grade level. However, for fourth grade and seventh grade only one participating school agreed to the additional data collection. Three programs were assessed in Fall and three were assessed in Spring.

Teacher interviews, occurring in both Fall 2008 and Spring 2009 semesters, were facilitated by a member of the research team.

**Analysis**

The knowledge measure, where students responded to open-ended questions, was analyzed using content analysis (Berg, 2001), in which student responses were coded in three categories (no knowledge, partial knowledge, and more complete knowledge). For example, a student response of "I don't know anything about any fish in Lake Mead" to the item 5 on the fifth grade assessment ("What do you know about the fish in Lake Mead? ") was coded as no knowledge because the response contained little, or incorrect, knowledge. Partial knowledge occurred when a student responded with some correct information or provided a very general statement (e.g., "I learned that there are only 300 razorback suckers in Lake Mead"). Student responses coded as more complete knowledge typically included more specific information or more than one example or reason (e.g., "I learned that razorback sucker are endangered species. A Colorado Pikeminnow can be up to 6 feet and weigh up to 100 lb. Razorback sucker eat plankton. Razorback suckers lay their eggs on the shore in puddles").

The scoring guide that was developed in the first year of assessment was revised in Fall 2008 to account for the variety of responses that occurred in the large sample. Minor modifications were again made in Fall 2009 to include additional examples of student responses. We calculated the median rank across the three knowledge categories (no
knowledge, partial knowledge, and more complete knowledge) for all pre- and post-
assessments. A no knowledge response was assigned a 0; a partial response was assigned a
1; and a more complete response was assigned a 2. See Appendix F for a sample scoring
guide.

The analysis of attitudes compared pre-test and post-test ratings by students who
participated in the events. Ratings were made on a 1-5 Likert scale.

Results

Student Knowledge

Student pre, post, and repeated post-test knowledge scores are shown in Table 2.Individual scores ranged from 0 to 2 on four separate measures for a total composite score that
ranged from 0 to 8. We compared pre and post tests, pre and repeated post tests, and post and
repeated past tests to determine whether scores increased due to the intervention and
remained high after a one to four week delay.

Statistically significant gains occurred at each grade level. Scores were treated as
interval data and compared using paired samples t-tests between pre, post, and repeated post-
test composite scores. These findings show that there was a significant increase in knowledge
at each grade between pre and post-test. Table 2 shows that knowledge increased
substantially from pre-test to post-test across the 4th, 5th, 6th, and 7th grade samples. The
increase at all grades was one standard deviation unit or more, which is considered a large
effect size.

The repeated post-test scores also were significantly higher than pre-test scores at all
grade levels. This indicates that gains due to the Forever Earth activity were maintained over
the delay period and suggests stable long-term retention. Table 2 also shows that repeated
post-test scores were statistically unchanged (i.e., grades 4 and 7) or significantly higher (i.e.,
grades 5 and 6) at the repeated delay test. Knowledge scores may increase between ppost-test
and repeated post-test due to post-activity processing and integration by students (Neath &
Surprenant, 2003).

Pre, post, and repeated post-test means for each knowledge item were also calculated
for every grade level (see Table 3). Statistically significant gains occurred between the pre-test
item and the post-test item in all cases except for two. Item 2 at the 4th grade level and item 1 at
the 5th grade level did not increase significantly between the pre and post-test. On both of these
items, students scored relatively high on the pre-test.

Student Attitudes

Student pre- and post-test attitude scores are shown in Table 4. Scores were treated as
interval data and compared using paired samples t-tests. We created three different attitude
scores, including pre-test attitudes about specific content, the matching post-test attitudes (i.e.,
same four items completed as the pre-test), and general post-test attitudes. We refer to these
as specific pre-test, specific post-test, and general post-test attitudes respectively. We also
repeated the assessment of the specific and general attitude questions after a one to four week
delay. Each rating was made on a 5-point scale and summed to create a score that ranged from
5 to 20.
Table 4 reveals that pre-test and post-test attitudes differed significantly for the 4th, 5th, 6th, and 7th grades. Post-test attitudes were higher in every case. A comparison of specific post-test and repeated post-test attitudes revealed a significant increase at 4th grade, no change at 5th and 6th grades, and a significant decrease at 7th grade. In general, these results suggest a lasting increase in attitudes due to the intervention.

We also found no difference between the post-test and repeated post-test general attitudes at any of the grades. General attitudes were high after the intervention and remained high after the delay.

The data shown in Table 4 indicate that attitudes increased significantly from pre- to post-test and remained stable over the delay period. Overall, these findings suggest that attitudes improved significantly due to instruction.

Teacher Assessment

Assessment of Teacher Perceptions of the Curriculum

Teachers completed pre- and post-test ratings of their perceptions of the curriculum’s effectiveness with respect to knowledge, attitudes, and pedagogy. These ratings were combined into overall composite scores before and after the events. Seven teachers completed ratings. The mean rating and standard deviation are shown in Table 5.

There was no significant difference for pre- versus post-test ratings on knowledge, attitudes, or pedagogy. The means for each of these scores increased at post-test approximately one-half standard deviation, but were not significant due to the low sample size. In comparison, a sample of 20 teachers would have lead to significant statistical differences due to increased power. Thus, the current results suggest a positive trend toward increased knowledge, attitudes and pedagogy.

Conclusions

The purpose of this report was to provide results from the assessment program of Discover Mojave Forever Earth in its third year of implementation. The assessment program that was implemented was designed to evaluate the effectiveness of the four separate curricula that were developed. Data were collected and analyzed from both students and teachers.

Results support several conclusions. The most important is that each of the four curricula produced substantial increases in knowledge that were maintained over the one to four week delay following the Forever Earth activity. This pattern of results clearly indicates that the activities had significant long-term instructional benefit. A second conclusion is that student attitudes improved significantly after experiencing the curriculum. A third conclusion is that teachers demonstrated very favorable attitudes about the curriculum’s effectiveness. Lastly, although the scope of the program increased dramatically, a 223% gain in the number of students served, student gains continued.
Recommendations

1. Continue the assessment program for both students and teachers. Results suggest that the assessment instruments used for students were reliable and sensitive to growth over time with respect to their knowledge, skills, and attitudes. With teachers, we recommend that the pre-post assessment strategy of assessing teachers’ perceptions of the curriculum be continued, especially in cases where the curriculum undergoes revisions.

2. Continue the teacher interviews as a data collection technique, but only with teachers who have not participated in prior years. Many of the teachers are bringing their classes as an annual event, and re-interviewing them has not yielded any additional, new insights.

3. Continue to focus on growth over time as indexed by gain in pre- and post- test scores by continuing to implement the delayed maintenance measure (e.g. a post-test follow up one week later).

4. Consider implementing the assessment program for other groups and agencies. These groups and agencies now account for 34% of the programs being implemented.

5. The curriculum for sixth and seventh grades appears to be under-utilized, a trend that has been consistent for the last two years. These programs represent only 13% of the total number of curricula provided in 2008-2009. It would be worthwhile to explore why this is occurring and to address the issue. For example, perhaps modifications to the curricula are needed, or additional information needs to be provided to middle school teachers.
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<td>4.47; 1.20</td>
<td>4.47; 1.20</td>
<td>5.49</td>
<td>(p &lt; .000)</td>
</tr>
<tr>
<td>Post/Repeated Post</td>
<td>21</td>
<td>4.80; 1.72</td>
<td>4.47; 1.20</td>
<td>4.47; 1.20</td>
<td>-1.07</td>
<td>n.s.</td>
</tr>
<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre/Post</td>
<td>46</td>
<td>1.91; .96</td>
<td>5.04; 1.92</td>
<td></td>
<td>10.69</td>
<td>(p &lt; .000)</td>
</tr>
<tr>
<td>Pre/Repeated Post</td>
<td>46</td>
<td>1.91; .96</td>
<td>5.54; 1.96</td>
<td>5.54; 1.96</td>
<td>12.28</td>
<td>(p &lt; .000)</td>
</tr>
<tr>
<td>Post/Repeated Post</td>
<td>46</td>
<td>5.04; 1.92</td>
<td>5.54; 1.96</td>
<td>5.54; 1.96</td>
<td>2.04</td>
<td>(p &lt; .05)</td>
</tr>
<tr>
<td>6&lt;sup&gt;th&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre/Post</td>
<td>56</td>
<td>3.07; 1.54</td>
<td>6.44; 1.43</td>
<td></td>
<td>14.40</td>
<td>(p &lt; .000)</td>
</tr>
<tr>
<td>Pre/Repeated Post</td>
<td>56</td>
<td>3.07; 1.54</td>
<td>8.01; 1.33</td>
<td>8.01; 1.33</td>
<td>19.18</td>
<td>(p &lt; .000)</td>
</tr>
<tr>
<td>Post/Repeated Post</td>
<td>56</td>
<td>6.44; 1.43</td>
<td>8.01; 1.33</td>
<td>8.01; 1.33</td>
<td>7.03</td>
<td>(p &lt; .000)</td>
</tr>
<tr>
<td>7&lt;sup&gt;th&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre/Post</td>
<td>54</td>
<td>1.64; 1.49</td>
<td>4.44; 2.38</td>
<td></td>
<td>13.18</td>
<td>(p &lt; .000)</td>
</tr>
<tr>
<td>Pre/Repeated Post</td>
<td>24</td>
<td>1.64; 1.49</td>
<td>6.16; 1.46</td>
<td>6.16; 1.46</td>
<td>12.08</td>
<td>(p &lt; .000)</td>
</tr>
<tr>
<td>Post/Repeated Post</td>
<td>24</td>
<td>6.54; .93</td>
<td>6.16; 1.46</td>
<td>6.16; 1.46</td>
<td>-1.24</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

Note: (4 items, 0-2 rubric score, 0-8 range). n.s. denotes a test that is not statistically significant.
Table 3: Pre and Post-test Means for Knowledge Items by Grade Level

<table>
<thead>
<tr>
<th>Item</th>
<th>Grade 4</th>
<th>Grade 5</th>
<th>Grade 6</th>
<th>Grade 7</th>
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<tbody>
<tr>
<td>Pre1</td>
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<td></td>
</tr>
<tr>
<td>Pre2</td>
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</tr>
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<td>Pre3</td>
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<td></td>
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</tr>
<tr>
<td>Pre4</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Pre5</td>
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</tr>
<tr>
<td>Post1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post2</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Post3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post4</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Post5</td>
<td></td>
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<tr>
<td>Repeated Post1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Repeated Post2</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Repeated Post3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeated Post4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeated Post5</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Table 4: Pre- and Post and Repeated Post-test Composite Attitude Scores by Grade Level

<table>
<thead>
<tr>
<th>Grade</th>
<th>Sample Size</th>
<th>Specific Pre/Post</th>
<th>Specific Post/RP</th>
<th>General Post/RP</th>
<th>t value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pre-test Mean and Standard Deviation</td>
<td>Post-test Mean and Standard Deviation</td>
<td>Repeated Post-test Mean and Standard Deviation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>72</td>
<td>15.55; 2.54</td>
<td>17.95; 2.76</td>
<td>9.47</td>
<td>p &lt; .000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>17.43; 2.43</td>
<td>19.14; 1.14</td>
<td>5.38</td>
<td>p &lt; .000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>18.47; 1.72</td>
<td>18.38; 1.90</td>
<td>.240</td>
<td>n.s.</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>46</td>
<td>15.80; 3.63</td>
<td>18.86; 1.73</td>
<td>6.60</td>
<td>p &lt; .000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>18.86; 1.73</td>
<td>18.56; 2.15</td>
<td>-1.23</td>
<td>n.s.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>46</td>
<td>17.63; 4.20</td>
<td>18.59; 1.09</td>
<td>.95</td>
<td>n.s.</td>
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</tr>
<tr>
<td>6th</td>
<td>56</td>
<td>16.32; 2.45</td>
<td>17.51; 2.84</td>
<td>3.75</td>
<td>p &lt; .000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>56</td>
<td>17.51; 2.84</td>
<td>17.46; 2.90</td>
<td>-.26</td>
<td>n.n</td>
<td></td>
</tr>
<tr>
<td></td>
<td>56</td>
<td>18.55; 1.68</td>
<td>18.29; 1.64</td>
<td>-.23</td>
<td>n.s</td>
<td></td>
</tr>
<tr>
<td>7th</td>
<td>54</td>
<td>14.81; 2.22</td>
<td>17.14; 2.46</td>
<td>6.61</td>
<td>p &lt; .000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>16.08; 2.71</td>
<td>14.37; 3.00</td>
<td>-4.25</td>
<td>p &lt; .000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>8.79; 1.28</td>
<td>8.83; 1.12</td>
<td>.16</td>
<td>n.s.</td>
<td></td>
</tr>
</tbody>
</table>

Note: n.s. denotes a test that is not statistically significant.
Table 5: Assessment of Teacher Perceptions of the Curriculum 2007-2008

<table>
<thead>
<tr>
<th></th>
<th>Sample Size</th>
<th>Pre-test Composite Mean</th>
<th>Post-test Composite Mean</th>
<th>t value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>7</td>
<td>37.33; 4.92</td>
<td>39.44; 3.41</td>
<td>1.57</td>
<td>n.s.</td>
</tr>
<tr>
<td>Attitudes</td>
<td>7</td>
<td>36.42; 2.99</td>
<td>37.85; 2.11</td>
<td>1.51</td>
<td>n.s.</td>
</tr>
<tr>
<td>Pedagogy</td>
<td>7</td>
<td>34.85; 5.01</td>
<td>38.14; 2.19</td>
<td>1.47</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

Note: n.s. denotes a test that is not statistically significant.
References


1. Which of these fish are native to Lake Mead? Which are non-native to Lake Mead? Draw a line from each fish to the correct circle.

<table>
<thead>
<tr>
<th>Striped Bass</th>
<th>NATIVE FISH</th>
<th>Colorado Pikeminnow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel Catfish</td>
<td></td>
<td>Bluegill</td>
</tr>
<tr>
<td>Razorback Sucker</td>
<td>NON-NATIVE FISH</td>
<td>Common Carp</td>
</tr>
</tbody>
</table>

2. Why did the razorback sucker become endangered?

- 
- 
- 
- 
- 

3. How do the striped bass and other non-native species affect the razorback sucker in Lake Mead?

- 
- 
- 
- 
- 

4. What are the habitat needs of the razorback sucker?

- 
- 
- 
- 
- 

5. What did you learn about the fish in Lake Mead?

- 
- 
- 
- 
- 


Appendix B: Fourth Grade Attitude Assessment (Post)

1. I would tell my friends to do this program on the Forever Earth Floating Classroom.
   Strongly agree Agree Not Sure Disagree Strongly Disagree
   5   4   3   2   1

2. Learning about water at Lake Mead was very interesting to me.
   Strongly agree Agree Not Sure Disagree Strongly Disagree
   5   4   3   2   1

3. The Forever Earth activities were fun.
   Strongly agree Agree Not Sure Disagree Strongly Disagree
   5   4   3   2   1

4. I would like to do another Forever Earth program.
   Strongly agree Agree Not Sure Disagree Strongly Disagree
   5   4   3   2   1

5. I learned how important Lake Mead is to plants, animals, and people.
   Strongly agree Agree Not Sure Disagree Strongly Disagree
   5   4   3   2   1

6. I learned important things today about the water.
   Strongly agree Agree Not Sure Disagree Strongly Disagree
   5   4   3   2   1

7. I learned how people can use Lake Mead without hurting it.
   Strongly agree Agree Not Sure Disagree Strongly Disagree
   5   4   3   2   1

8. Because of what I learned today, I think it’s important to take care of Lake Mead.
   Strongly agree Agree Not Sure Disagree Strongly Disagree
   5   4   3   2   1
## Appendix C: Performance Rubric: Forever Earth – Finicky Fish Finish Last (5th grade)

<table>
<thead>
<tr>
<th>Participant Name</th>
<th>Objective 1</th>
<th>Objective 2</th>
<th>Objective 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Demonstrates Skill</td>
<td>Does not Demonstrate Skill</td>
<td>Demonstrates Skill</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Appendix D: Assessment of Teacher Perceptions of the Curriculum (4th Grade)

1. This site-based activity will increase my content knowledge.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

2. I would bring my fourth grade science class to the Forever Earth Floating Classroom.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

3. Students wanted to participate in this activity.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

4. The site-based activity is related to standards-based work within my fourth grade classroom.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

5. The content of the activity is aligned to the Curriculum Essentials Framework.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

6. The activity offered students opportunities to practice critical thinking processes such as problem solving, forming hypotheses, collecting and analyzing information, drawing conclusions.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

7. The site-based activity could improve my teaching in the classroom.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

8. The activity will promote respect and caring for the environment.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

9. The activity could be easily integrated into an established curriculum.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
10. The content of the activity is developmentally appropriate for fourth grade students.

Strongly agree | Agree | Not Sure | Disagree | Strongly Disagree
---|---|---|---|---
5 | 4 | 3 | 2 | 1

11. The needs of diverse learners are met by this activity.

Strongly agree | Agree | Not Sure | Disagree | Strongly Disagree
---|---|---|---|---
5 | 4 | 3 | 2 | 1

12. Participation in informal venues increases teacher knowledge.

Strongly agree | Agree | Not Sure | Disagree | Strongly Disagree
---|---|---|---|---
5 | 4 | 3 | 2 | 1

13. My understanding of environmental concepts, conditions and issues should increase as a result of participation in this site based activity.

Strongly agree | Agree | Not Sure | Disagree | Strongly Disagree
---|---|---|---|---
5 | 4 | 3 | 2 | 1

14. The activity engaged fourth grade learners.

Strongly agree | Agree | Not Sure | Disagree | Strongly Disagree
---|---|---|---|---
5 | 4 | 3 | 2 | 1

15. Students' understanding of environmental concepts, conditions and issues should increase as a result of participation in this site based activity.

Strongly agree | Agree | Not Sure | Disagree | Strongly Disagree
---|---|---|---|---
5 | 4 | 3 | 2 | 1

16. I am in favor of protecting public lands.

Strongly agree | Agree | Not Sure | Disagree | Strongly Disagree
---|---|---|---|---
5 | 4 | 3 | 2 | 1

17. As a teacher, I am enthusiastic about learning in settings beyond the classroom.

Strongly agree | Agree | Not Sure | Disagree | Strongly Disagree
---|---|---|---|---
5 | 4 | 3 | 2 | 1

18. Depth of conceptual understanding is a core element of this activity.

Strongly agree | Agree | Not Sure | Disagree | Strongly Disagree
---|---|---|---|---
5 | 4 | 3 | 2 | 1
19. The activity can encourage students to develop awareness and knowledge of environmental responsibility.

Strongly agree  Agree  Not Sure  Disagree  Strongly Disagree
5  4  3  2  1

20. Learning is based on students constructing knowledge to gain conceptual understanding.

Strongly agree  Agree  Not Sure  Disagree  Strongly Disagree
5  4  3  2  1

21. The content of the activity is interdisciplinary.

Strongly agree  Agree  Not Sure  Disagree  Strongly Disagree
5  4  3  2  1

22. Students are enthusiastic about learning in settings beyond the classroom.

Strongly agree  Agree  Not Sure  Disagree  Strongly Disagree
5  4  3  2  1

23. Important concepts are conveyed in several ways so that all students can understand them.

Strongly agree  Agree  Not Sure  Disagree  Strongly Disagree
5  4  3  2  1

24. If I had to choose between protecting a natural area and creating homes for humans I would choose to protect the area.

Strongly agree  Agree  Not Sure  Disagree  Strongly Disagree
5  4  3  2  1

25. I am interested in spending time working to help the environment.

Strongly agree  Agree  Not Sure  Disagree  Strongly Disagree
5  4  3  2  1
Appendix E: Interview Questions for Classroom Teachers

1. How did you find out about Forever Earth?

2. What did you like best about the Forever Earth field trip?
   a. What did the students like best?

3. Did you use any of the information from Forever Earth in your classroom instruction?
   a. Was it helpful?

4. Does the Forever Earth programming tie into the school district curriculum?

5. Do you notice a change in student attitudes towards science?

6. Have the students used any of the knowledge they gained on Forever Earth in the class?

7. Did you do the classroom preparatory activities as directed/suggested?
   a. If yes, please describe. Do you think it was helpful or beneficial for the students?
   b. If no, why not?
      1. Do you think it would have been beneficial for the students?
      c. How could the pretrip activities be improved?

8. Would you do another Forever Earth fieldtrip?

9. What was said to chaperones? (their role or directions)

10. Did you tell anyone about the Forever Earth field trip? If yes, what did you tell them?

11. Was the teacher previsit beneficial?
    a. Do you have any suggestions for improvement?

12. Was the classroom previsit beneficial?
    a. Do you have any suggestions for improvement?

13. How could the Forever Earth field trip be improved?
1. Describe what happens when Lake Mead’s water is used by people by putting these steps in order from 1 through 6. Write the number on the line in each circle.

More complete: 2 points
- Response has 3-4 items in the correct order
Partial complete: 1 point
- Response has 1-2 items in the correct order
Less complete: 0 points
- Response has no items in the correct order

2. How is the water from Las Vegas Wash different from water already in the lake?
Answer “yes” or “no” to the following questions.

_More complete: 2 points
- Response has both items answered correctly
Partial complete: 1 point
- Response has one item answered correctly
Less complete: 0 points
- Response has neither item answered correctly

3. List some of the reasons why the water is so low in Lake Mead

More complete: 2 points
- Response has 2 correct responses and no more than 1 incorrect answer
  o People have used the water for different things
  o Evaporation
  o Drought

Appendix F: Sample Scoring Guide
Forever Earth Assessment: 4th Grade Scoring Guide
4. What can you do to save and protect the water in Lake Mead?

<table>
<thead>
<tr>
<th>More complete: 2 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Response includes two correct answers</td>
</tr>
<tr>
<td>o Take shorter showers</td>
</tr>
<tr>
<td>o Turn off the tap when brushing teeth</td>
</tr>
<tr>
<td>o Don’t litter</td>
</tr>
<tr>
<td>o Only use what you need</td>
</tr>
<tr>
<td>o Use less water</td>
</tr>
<tr>
<td>o Recycle</td>
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<table>
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<th>Partial complete: 1 point</th>
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<tbody>
<tr>
<td>• Response includes one correct answer or one less-specific answer</td>
</tr>
<tr>
<td>o Don’t waste water</td>
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<table>
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<tr>
<th>Less complete: 0 points</th>
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</thead>
<tbody>
<tr>
<td>• No information or incorrect information provided</td>
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Discover Mojave
Outdoor World Schedule
Quarter 1, Year 3
### Discover Mojave Outdoor World Schedule

**Year 3, Round 6 (June 1, 2009 - May 31, 2010)**  
(last updated 8/26/09)

<table>
<thead>
<tr>
<th>DATE</th>
<th>GROUP</th>
<th># of PARTICIPANTS</th>
<th>ACTIVITY</th>
<th>LOCATION</th>
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<tbody>
<tr>
<td>Wed., June 10</td>
<td>Troop 143, Boy Scouts</td>
<td>23</td>
<td>Geocaching</td>
<td>Spring Mountains NRA</td>
</tr>
<tr>
<td>Sat., June 13</td>
<td>General Public – Free Fishing Day</td>
<td>307</td>
<td>Fishing</td>
<td>Lake Mead NRA</td>
</tr>
<tr>
<td>Sat., June 13</td>
<td>Troop 143, Boy Scouts</td>
<td>125</td>
<td>Art Adventure</td>
<td></td>
</tr>
<tr>
<td>Fri., June 19</td>
<td>Valley View Recreation Center</td>
<td>47</td>
<td>Geocaching</td>
<td>Spring Mountains NRA</td>
</tr>
<tr>
<td>Sat., June 20</td>
<td>Winchester Cultural Center – Families and Nature</td>
<td>51</td>
<td>Nature activities</td>
<td>Spring Mountains NRA</td>
</tr>
<tr>
<td>Fri., July 10</td>
<td>Valley View Recreation Center</td>
<td>24</td>
<td>Geocaching</td>
<td>Sunset Park</td>
</tr>
<tr>
<td>Wed., July 15</td>
<td>Westcare – Boys</td>
<td>13</td>
<td>Kayaking</td>
<td>Lake Mead NRA</td>
</tr>
<tr>
<td>Sat., July 18</td>
<td>Winchester Cultural Center</td>
<td>14</td>
<td>Kayaking</td>
<td>Lake Mead NRA</td>
</tr>
<tr>
<td>Mon., July 20</td>
<td>Camp Lee Canyon, Clark County Parks and Recreation</td>
<td>46</td>
<td>Geocaching</td>
<td>Spring Mountains NRA</td>
</tr>
<tr>
<td>Wed., July 22</td>
<td>Westcare – Boys</td>
<td>6</td>
<td>Rock Climbing</td>
<td>Nevada Indoor Climbing Center</td>
</tr>
<tr>
<td>Fri., July 24</td>
<td>Valley View Recreation Center</td>
<td>27</td>
<td>Rock Climbing</td>
<td>Nevada Indoor Climbing Center</td>
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<tr>
<td>Tues., July 28</td>
<td>RecMobile</td>
<td>13</td>
<td>Kayaking</td>
<td>Lake Mead NRA</td>
</tr>
<tr>
<td>Wed., Aug. 5</td>
<td>RecMobile</td>
<td>9</td>
<td>Rock Climbing</td>
<td>Nevada Indoor Climbing Center</td>
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<tr>
<td>Fri., Aug. 7</td>
<td>Valley View Recreation Center</td>
<td>16</td>
<td>Hiking</td>
<td>Spring Mountains NRA</td>
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<td><strong>TOTALS for 1st Quarter</strong></td>
<td><strong>6 Groups</strong></td>
<td><strong>754 participants</strong></td>
<td><strong>14 Events</strong></td>
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<td>Sat., Sept. 26</td>
<td>Neighborhood Recreation Center, NLV</td>
<td></td>
<td>Kayaking</td>
<td>Lake Mead NRA</td>
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<tr>
<td>Wed., Sept. 30</td>
<td>Environmental Science Club, Paradise Elementary</td>
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<td>Kayaking</td>
<td>Lake Mead NRA</td>
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<tr>
<td>Wed., Oct. 7</td>
<td>Environmental Science Club, Paradise Elementary</td>
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<td>Bird Watching</td>
<td>Sunset Park</td>
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<td>Wed., Oct. 14</td>
<td>Environmental Science Club, Paradise Elementary</td>
<td></td>
<td>Rock Climbing</td>
<td>Nevada Indoor Climbing Center</td>
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<tr>
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<td>Environmental Science Club,</td>
<td></td>
<td>Geocaching</td>
<td>Sunset Park</td>
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<td>Location</td>
<td>Activity</td>
<td>Location Details</td>
<td></td>
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<tr>
<td>Tues., Oct. 27</td>
<td>Neighborhood Recreation Center, NLV</td>
<td>Geocaching</td>
<td>Local city park TBD</td>
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<tr>
<td>Wed., Oct. 28</td>
<td>Environmental Science Club, Paradise Elementary</td>
<td>Bird Watching II</td>
<td>Clark Co. Wetlands Park</td>
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<td>Sat.-Sun., Nov. 7-8</td>
<td>Environmental Science Club, Paradise Elementary</td>
<td>Camping I</td>
<td>Red Rock Canyon National Conservation Area</td>
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<td>Wed., Nov. 18</td>
<td>Neighborhood Recreation Center, NLV</td>
<td>Rock Climbing I</td>
<td>Nevada Indoor Climbing Center</td>
<td></td>
</tr>
<tr>
<td>TBD – 8 dates</td>
<td>Clark County School District Physical Education</td>
<td>Various</td>
<td>Various</td>
<td></td>
</tr>
<tr>
<td>TBD</td>
<td>Westcare</td>
<td>Various</td>
<td>Various</td>
<td></td>
</tr>
</tbody>
</table>

**TOTALS for 2nd Quarter (to date)**

- **x Groups**
- **x participants**
- **x Events**

**TOTALS for 3rd Quarter (to date)**

- **X Groups**
- **X participants**
- **X Events**

**TOTALS for 4th Quarter (to date)**

- **X Groups**
- **X participants**
- **X Events**

**TOTALS for Year 3 (to date)**

- **6 Groups**
- **754 participants**
- **14 Events**
Assessing Discover Mojave Outdoor World Program
Year 5 of Program
Assessing Discover Mojave Outdoor World, Year Four of Program

Submitted by:

Lori Olafson
Gregg Schraw
Michelle Weibel
Department of Educational Psychology
UNLV
Executive Summary

Discover Mojave Outdoor World is a hands-on outdoor recreation program for urban, economically disadvantaged youth. In Year One of the program, knowledge, attitude, and performance assessments were developed to document the effectiveness of program events over the duration of the program. The assessment plan was modified in Year Two: changes were made in how students’ general attitudes were measured, and new measures of teachers’ and parents’ attitudes were added. Year One, Two, and Three findings revealed that knowledge, attitudes, and performance increased substantially as a result of participating in the outdoor recreation events. Results from Years Two and Three also demonstrated that teachers and parents had very favorable attitudes towards the program. The assessment plan was extended in Year Four, and findings demonstrated once again that children’s knowledge, attitudes, and skills increased as a result of participation in program events. Teachers’ perceptions of the program continue to be favorable.
Introduction

The Public Lands Institute (PLI) at the University of Nevada, Las Vegas (UNLV) manages an outdoor recreational learning program for southern Nevada children. Discover Mojave Outdoor World is a recreation program for urban, economically disadvantaged youth that was originally designed to introduce them to outdoor recreation, environmental education, fishing and boating, and aquatic resource management. The intent of this program is to encourage and facilitate lifelong recreation on public lands among lower socioeconomic, ethnically diverse school-age children. UNLV’s role is the implementation and administration of the program on behalf of the federal agencies that manage the public lands surrounding Clark County – Bureau of Land Management; National Park Service; U.S. Fish and Wildlife Service; and U.S. Forest Service.

In Year One of the program, our research team became responsible for developing an assessment plan in order to document the effectiveness of program events over the duration of the program. Modifications to the assessment program were made in Years Two and Three. This report provides results of the analysis based on completed assessments in Year Four.

Context

Discover Mojave Outdoor World evolved as a pilot program based on the ideals found within the national Wonderful Outdoor World (WOW) program. The national program is based on the premise that participation in activities in natural settings impacts children in several ways: 1) provides a positive outlet for the alleviation of stress, 2) promotes physical exercise and activity, 3) stimulates an appreciation of and connection to nature, and 4) encourages the responsible use of recreational areas. Providing recreational activities for children who lack such opportunities promotes equitable access and utilization of public recreational venues.

In Year One, Public Lands Institute staff developed five half-day events based on educational themes formed by an environmental educational committee comprised of federal agency and community members. The events were linked to these themes as broad-based outcomes for participants as a result of attending these events. The events were recreational in nature and comprised an educational component. The events were as follows: (1) Wild Bird Safari, (2) Fun with Fishing, (3) Kids in Kayaks, (4) Adventures in Art, and (5) Cool Canoeing. In addition, curricular modules created for each event correlated the events to content standards, life skills, technological sites and resources, and literature. The curricular modules divided events into three sessions; 1) an awareness session to set the baseline of knowledge, 2) an activity session and, 3) a debriefing session which served as the culminating activity.

Each event provided students with an opportunity to visit a local outdoor park or public land site. In the first event, children were taught how to bird watch at a local park and then transfer these skills to the local wetlands. The second event enabled children to participate in a “casting clinic” while learning about different kinds of fish and their habitats. In events three and five, children were given the opportunity to experience kayaking or canoeing at local parks or Lake Mead. Event four utilized art and watercolors and other media to teach students about geological landforms and other phenomena. All events were designed with the student demographics in mind. Each event was meant to be transferable and accessible to the children that participated in them. Further, children were given “make and take” items to serve as a way of remembering the experience.
As the program has continued to expand, new events have been added and others have been revised. In Year Three, for example, rock climbing was piloted as a new activity. This activity takes place at an indoor rock climbing center. Participants are given a brief lesson by a staff member from the center teaching them about safety, how to climb, and how to belay. Once participants are given approval by the staff, they are then allowed full access to all climbing walls within the center. The assessment for rock climbing was developed in Year Three and piloted in Spring 2007. Rock climbing activities were subsequently assessed in Year Four.

With respect to modifications to events implemented, canoeing continues to be an activity that is available but has not been scheduled during Years Three and Four. In particular, canoeing has not been requested by alternate environments. In another modification, the Adventures in Art activity has been combined with science to create a culminating activity called Science and Art Adventure. The Science and Art Adventure takes place on Forever Earth, a floating classroom and research laboratory on Lake Mead. Participants engage in different types of water sampling to learn about water in Lake Mead and then complete art activities. Art activities include gyotaku (an old Japanese form of fish identification) and water painting of landscapes. The Art and Science Adventure is not assessed due to the subjective nature of art assessment.

In Year Four two new activities were developed but not assessed. One of the new activities consisted of an overnight camping trip at Walking Box Ranch, owned by the Bureau of Land Management and managed by the PLI. Participants learned how to set up their tents in groups of 3-4, assisted with cooking and clean-up, and participated in a nature walk. This activity will be assessed in Year Five. The second new activity, Outdoor Photography, was a program developed by the National Park Service and provided to DMOW participants since it has to do with recreation and the environment. It is not anticipated that this activity will be assessed.

**Instrument Development**

**Year One**

In Year One, we developed assessments for three areas of growth, including knowledge, attitudes, and skill performance for each of the five half-day events. Assessments for each of the five events included knowledge questions related to the specific event (e.g., *What did you learn about watching birds?*) and five attitude items (e.g., *I would like to show my friends how to watch birds*). The skill performance assessment, in the form of a checklist completed by the event facilitator, measured whether or not the child demonstrated a particular skill (e.g., *Participant uses binoculars to find and focus on a bird*).

**Year Two**

In Year Two, the assessment plan was revised in a number of ways. An adjustment was made related to assessing attitudes. In Year One general attitude questions were asked during each event (e.g., *I learned how to take better care of the land*). We found that general attitudes did not change over the course of participation in the program and considered eliminating these questions. However, it was decided instead to ask the general attitude questions at the beginning and the end of the program (when youth participated in multiple events), and not after each event.
Two additional assessment tools were created for use in Year Two. On the *Teacher Rating Scale* (Appendix A), teachers rated participants’ performance in the science classroom before the program began and at its conclusion. Students were rated on six dimensions using a Likert-type scale. Dimensions included knowledge about science concepts; completion of science homework; behavior in science class; interest in learning about science; confidence in science class; and performance in science activities. The second new tool, the *Parent Rating Scale* (Appendix B), asked parents to rate their children on the same six dimensions as the *Teacher Rating Scale* at the conclusion of the program.

The final revision that was made to the Year Two assessment concerned the interviews. Given concerns about the lack of standardization related to interviewing participants, a structured interview protocol was developed (Appendix C).

The assessment program in Year Two included five data collection components:

5. the pre and post test measures of knowledge, attitudes, and skills
6. field journals completed by Environmental Science Club participants
7. the Teacher Rating Scale completed by science teachers
8. the Parent Rating Scale completed by parents
9. individual interviews conducted with participants at the conclusion of the program.

**Year Three**

Three changes were made to the assessment program in Year Three. Two of the changes were suggested as recommendations set forth in the final report for Year Two, and these changes were discussed and agreed upon by program staff and the research team. First, the field journals completed by the Environmental Science Club participants were eliminated as a data source for program effectiveness. Given the limited English proficiency of the participants, paper-and-pencil tasks that required expressive writing skills were not successfully completed by the majority of the participants. Although participants continue to be provided with field journals, these are no longer analyzed.

The second change to the assessment program that resulted from Year Two recommendations was the implementation of individual interviews of teachers who taught science in the classroom setting to Environmental Science Club participants. In Year Two, we received anecdotal information from teachers indicating they had observed significant changes in behavior and attitudes of Environmental Science Club participants. A structured interview protocol was developed (Appendix D) in order to more formally document teachers’ observations.

The final change to the assessment program was the development of an additional assessment. Program staff developed a new Rock Climbing program event. This event was successfully piloted in Fall, 2006. Knowledge, skills, and attitudes for this event were assessed in Spring, 2007 with an assessment that was structured similarly to existing assessments.

The assessment program in Year Three included five data collection components:

1. the pre and post test measures of knowledge, attitudes, and skills
2. the Teacher Rating Scale completed by science teachers
3. the Parent Rating Scale completed by parents
4. individual interviews conducted with participants at the conclusion of the program
5. individual interviews conducted with science teachers.

Year Four
The assessment program in Year Four was not modified. Year Four’s assessment plan included the same five data collection components as in Year Three:

1. the pre and post test measures of knowledge, attitudes, and skills
2. the Teacher Rating Scale completed by science teachers
3. the Parent Rating Scale completed by parents
4. individual interviews conducted with participants at the conclusion of the program
5. individual interviews conducted with classroom teachers.

Implementation
As in Years One, Two, and Three, the assessments in Year Four were conducted over time (i.e., pre and post-intervention) to determine the effectiveness of these events in having an impact on student knowledge, attitudes, and performance about the environment. In each semester (Fall, 2007 and Spring, 2008) there were two distinct groups of participants for the events of Discover Mojave Outdoor World.

In Fall 2007 there were participants from the Environmental Science Club. The Environmental Science Club was an after-school program for fifth graders at a school in an at-risk professional development school, located in the east region of the school district. The club meetings were organized by the PLI project manager and met after school to participate in the recreational events. A classroom presentation by the PLI Project Manager introduced fifth-grade students to the Environmental Science Club. This club served as the venue of access for students to the recreational events. Students were initially asked to complete an application in order to become a member of the Environmental Science Club. These applications asked such questions as, Why do you want to be a member of this club? What do you like to study about science? Why do you think it is important for kids to learn about their environment? In Fall 2007, two groups of fifth graders participated in the Environmental Science Club. The Bobcats began with 17 students, and the Coyotes had 15 participants.

The Coyotes and the Bobcats participated in five events in the Fall 2007 semester. In the first event, children went rock climbing at the Nevada Climbing Center. The second event consisted of an overnight camping trip at Walking Box Ranch. This event was not assessed. The third event enabled children to participate in a “casting clinic” while learning about different kinds of fish. During the fourth event participants were taught how to bird watch at a local park and then transferred these skills to the local wetlands. The culminating event, Science and Art Adventure, was located on the Forever Earth Floating Classroom. This final event was not assessed.

In addition to the Environmental Science Club participants, over 450 youth from a number of different organizations participated in a variety of events. We refer to these programs as Alternate Environments throughout the report, and they included diverse groups such as Henderson City Parks and Recreation, North Las Vegas Parks and Recreation, after school programs, and the RecMobile from Clark County Parks and Recreation. Unlike Environmental
Science Club participants, participants from Alternate Environments experience the event as a discrete, stand-alone activity. Events for the Alternative Environments included kayaking, outdoor photography (not assessed) rock climbing, and science and art adventure (not assessed).

In total, 28 recreational events involving 496 participants were conducted. Most participants completed the knowledge, skills, and attitude components of the assessment program for fishing, bird watching, kayaking, and rock climbing. For the Environmental Science Club, student and teacher interviews, occurring at the end of each semester, were facilitated by a member of the research team.

**Analysis**

The knowledge measure, where students responded to open-ended questions, was analyzed using content analysis (Berg, 2001), in which student responses were coded in three categories (no knowledge, partial knowledge, and more complete knowledge). For example, when a student responded to the prompt “What do you know about rock climbing” by writing “nothing,” this response was coded as no knowledge. Partial knowledge occurred when a student responded with one correct or very general statement (e.g., “You have to wear a harness”). An example of a student response that was coded as more complete knowledge (more than one correct statement) in response to the prompt “What did you learn about rock climbing?” was “The belayer is the person holding the rope to help the climber. The carabiner is the loop of material in the front of the harness where you hook the metal connector into. The harness holds a person in place attached to the belayer’s rope. To rappel is to come down from the rock climbing while the belayer is slowly belaying you.”

We calculated the mean across the three knowledge categories (no knowledge, partial knowledge, and more complete knowledge) for all pre- and post-assessments. A no knowledge response was assigned a 0; a partial response was assigned a 1; and a more complete response was assigned a 2.

Two separate analyses were completed for the attitude scales. The first analysis compared pretest and posttest ratings by students who participated in the events. The second analysis compared pretest and posttest attitudes by the science teacher who rated students on each of the six questions shown in Appendix A.

The performance rubrics were summarized for each event by calculating how many of the participants demonstrated all skills, most skills, or some skills. Interview transcripts were analyzed thematically by question. For each question, responses were categorized to represent patterns and regularities (Bogdan & Biklen, 2003).

**Results**

**Knowledge and Skills**

Student pre- and post-test knowledge scores are shown in Table 1. Individual scores ranged from 0 to 2. The birdwatching and fishing activities used two scores for a total possible score of 0-4 at both pre- and post-test. The kayaking and rock activities used one score for a total possible score of 0-2.
Statistically significant gains occurred at each grade level. Scores were treated as interval data and compared using paired samples t-tests between pre-test and post-test composite scores. A negative t-score indicates that the post-test mean was higher than the pre-test mean, which occurred at each grade level. These findings show that there was a significant increase in knowledge for each activity. The increase was between one and two standard deviation units, which is considered a large effect size.

Table 2 shows the proportion of scores at each level of understanding for each activity. Table 2 reveals that most students lacked relevant knowledge or possessed partial knowledge prior to the events. In contrast, the majority of students possessed complete knowledge after the events with the exception of the birdwatching event, where many students possessed partial knowledge after the event. Although there were large and statistically significant gains in knowledge, many students found this event challenging and lacked complete knowledge.

Table 2 also shows that students virtually all students could demonstrate all performance skills following the event. The only exception was that a small proportion of students demonstrated partial skills following the rock climbing event.

Attitudes

*Student Rating Scale*

Students rated each event before and after their participation. Students made 5-point ratings on five questions; thus, scores ranged from 5 to 25, where 25 represented the most favorable attitude toward the event. Results for each event are shown in Table 3. Dependent sample t-tests were conducted on each of the four events using a two-tail test.

Table 3 shows that attitudes were very favorable at pre-test, with a mean between 4.0 and 5.0 for each event. Attitudes increased significantly for the bird watching and rock climbing events, but did not change for the fishing and kayaking events, which were quite high at pretest (e.g., 17 out of 25).

These findings support the conclusion that attitudes typically increase between pretest and posttest, and increase significantly for new and less familiar topics such as rock climbing.

*Teacher Rating Scale*

Teachers rated each event before and after student participation. Teachers made 5-point ratings on six questions; thus, scores ranged from 6 to 30, where 30 represented the most favorable attitude toward the event. There was no significant difference between pre-test scores (M = 16.93, SD = 2.96) and post-test scores (M = 16.51; SD = 2.68). Teachers provided average ratings of student performance of approximately 3.50 out of 5 at pretest. It is unclear why ratings did not change at post-test, especially considering the significant gains in knowledge and attitudes shown by students in Tables 1-3.

*Parent Rating Scale*
Parents rated their child’s participation in the program after the child participated. Parents made 5-point ratings on six questions shown in Appendix B; thus, scores ranged from 6 to 30, where 30 represented the most favorable attitude toward the event. Ratings were very high (M = 26.28; SD = 3.24) and an average score of 4.38 over the six questions. These findings suggested that parents had very favorable attitudes about their child’s participation and success in science classes following the Discover Mojave program.

**Interviews**

*Participant Interviews*

A total of 27 students were interviewed from the Environmental Science Club in Fall, 2007. These interviews provided additional information participants’ knowledge and attitudes. Similar to Year three, all participants were overwhelmingly positive when discussing their experiences in the Environmental Science Club. Following is a summary of responses to key questions.

When asked “What do you like best about science club” all the participants mentioned at least one particular activity. In addition many of them offered more global statements positive statements such as “I liked all the activities we got to do.” One stated, “I learned how to do a lot of stuff in,” and continued to list each activity. Some participants mentioned how that they enjoyed being transported to the activities and “that we get to go outside.” They made statements such as, “Please do it again” and “I had fun I wish I could do it again.” Many asked to see that the program extended longer throughout the year.

In response to the questions “What was your favorite activity” there was no consensus again this year among the participants about a single favorite activity. Every event was mentioned by at least one participant as being most interesting. Rock Climbing was the one activity mentioned by the majority of participants as being a favorite. Additional activities participants would have liked to do include canoeing, biking, and hiking. Many also expressed a strong desire to cast on their own during Fun with Fishing.

All students indicated positive attitudes towards science in general, and the Environmental Science Club in particular. About half of the students said they were doing better in science, yet the majority stated that they liked science better. Some statements included, “I want to be a scientist now” and “I even do experiments at home.”

In response to the question “If you could tell your friends what you learned about taking care of the land and water what would you tell them” the majority of participants demonstrated they had learned important lessons about the environment. All participants made the general statement “Don’t litter” and the majority said that it was important to recycle. They also gave more specific statements about actions they have taken and advised family and friends such as taking shorter showers, being kind to and not harming plants and animals, and using a fishing license.

*Teacher interviews*

Three teacher interviews were conducted at the conclusion of the Environmental Science Club, Fall, 2007. These interviews were conducted by a member of the program staff and were tape recorded. However, there was an equipment malfunction and the tapes were not able to be transcribed. The interviewer took detailed notes during the interviews, and these field notes comprise the raw data from the interviews.
Teachers noted a number of changes for Environmental Science Club participants in the areas of achievement, behavior, self-confidence, and attitudes. All teachers noted that student attendance and classroom behavior was better the day of the activities because Environmental Science Club members wanted to be sure they could attend the activity. Teachers all stated that it gave them something to look forward too.

Two teachers described how the Environmental Science Club also helped some students with self-confidence and socialization skills. For example, one student was raising her hand more often in science class. She was willing to answer questions and also more comfortable asking legitimate questions. Another student who was often quiet and shy enjoyed talking to the teacher and classmates about each activity. In addition, this person became more social and started socializing more with other members of the Environmental Science Club. One teacher also addressed the excitement students would have when something in the classroom connected with one of the Environmental Science Club activities. For example, when dissecting owl pellets, science club members shared their knowledge from their Wild Bird Safari activity. A couple of members were excited to share their experience and new birding knowledge.

All teachers saw the Environmental Science Club as a positive experience for their students. One teacher remarked that students were getting the opportunity to do things they may never otherwise have the chance to participate in. One teacher expressed an interest in providing some of the activities during school time for her whole class. She would also like to have the after-school club available for everyone. Another teacher is looking forward to participating more during the after-school activities with the students.

Conclusions

The purpose of this report was to provide results from the assessment program of Discover Mojave Outdoor World in Year Four of its implementation. Revisions to the assessment program were described. As in Years One, Two, and Three we assessed knowledge, attitudes, and performance for each student using the assessment tools that were developed previously. In addition, we collected data from parents and teachers. Interviews were conducted as a means to explore in more detail the experiences and learning of the children and the perceptions of their science teachers.

In Year Four, the scope of the program increased considerably in terms of number of events offered and the number of participants. In Year Three a total of seven events were offered and in Year Four 28 events were offered. Participation in events increased substantially, particularly for participants in Alternative Environments. In Year Three there were 13 participants in Alternate Environments and in Year Four 481 students from Alternate Environments participated in Discover Mojave: Outdoor World events.

These findings support the following conclusions. First, the assessments are comprehensive and capable of assessing different measures of growth from the beginning to the end of the program. Secondly, the program events continue to have a significant impact on students’ knowledge and skills, based on growth from pre- to post-intervention assessments. Participants also demonstrated strong positive attitudes about the experiences. Overall, results from the assessments showed that program events have a significant and positive impact on children’s knowledge, skills, and attitudes. Parents also provided very favorable ratings of their
child’s participation in science class following the program. In contrast, teachers’ ratings did not increase after completion of the program.

Recommendations

Findings from Years One, Two, Three, and Four suggest that the Discover Mojave program is quite strong, both with respect to instruction and assessment of learning. No major changes are necessary in our opinion. However, we offer the following recommendations to further strengthen the program and its assessment.

- For the Environmental Science Club, it appears that students are becoming more familiar with events that have been conducted for three years (e.g. fishing, birding) and gains in knowledge between pre and post intervention are smaller. Rock climbing, a new activity, showed the greatest gain. Therefore it may be worthwhile to consider developing an additional activity each year. Classroom teachers provided several examples of ways to expand the activities.
- Developing assessments for the new events, such as camping.
- Participation in alternate environments continues to increase, but relatively few of these events are assessed. Consider a more systematic sampling method that would allow for the completion of a greater number of assessments being completed.
- Continue to collect data from teachers associated with the Environmental Science Club (interviews and teacher ratings). Consider developing a way to collect data from program staff affiliated with the alternate environments.
- Allow more time for the birdwatching event to insure that students acquire complete knowledge.
- Continue to interview teachers, as they provide valuable evidence about additional positive benefits of the program.
- Explore additional ways to gather parent feedback about the program, as the return rate for surveys continues to be low.
Table 1: Student Pre- and Posttest Knowledge

<table>
<thead>
<tr>
<th>Activity</th>
<th>Sample Size</th>
<th>Pre-test Mean and Standard Deviation</th>
<th>Post-test Mean and Standard Deviation</th>
<th>t value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bird Watching</td>
<td>47</td>
<td>1.23; 1.20</td>
<td>2.55; 1.13</td>
<td>-5.79</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Fishing</td>
<td>43</td>
<td>1.09; 1.28</td>
<td>2.53; 1.27</td>
<td>-5.77</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Kayaking</td>
<td>19</td>
<td>.26; .56</td>
<td>1.74; .56</td>
<td>-9.22</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Rock Climbing</td>
<td>78</td>
<td>.67; .72</td>
<td>1.67; .57</td>
<td>-9.69</td>
<td>p &lt; .001</td>
</tr>
</tbody>
</table>

Note: n.s. = not significant
Table 2: Summary of Knowledge and Performance Skills for Four Events by Knowledge-Level

<table>
<thead>
<tr>
<th>Event</th>
<th>Participants</th>
<th>Knowledge Pre (%)</th>
<th>Knowledge Post (%)</th>
<th>Performance (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birdwatching</td>
<td>47</td>
<td>None 50</td>
<td>12</td>
<td>Demonstrates some skills 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial 40</td>
<td>46</td>
<td>Demonstrates most skills 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>More Complete 10</td>
<td>42</td>
<td>Demonstrates all skills 100</td>
</tr>
<tr>
<td>Fishing</td>
<td>43</td>
<td>None 62</td>
<td>21</td>
<td>Demonstrates some skills 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial 20</td>
<td>28</td>
<td>Demonstrates most skills 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>More Complete 18</td>
<td>51</td>
<td>Demonstrates all skills 100</td>
</tr>
<tr>
<td>Kayaking</td>
<td>19</td>
<td>None 79</td>
<td>5</td>
<td>Demonstrates some skills 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial 16</td>
<td>16</td>
<td>Demonstrates most skills 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>More Complete 5</td>
<td>79</td>
<td>Demonstrates all skills 100</td>
</tr>
<tr>
<td>Rock Climbing</td>
<td>78</td>
<td>None 47</td>
<td>5</td>
<td>Demonstrates some skills 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial 39</td>
<td>23</td>
<td>Demonstrates most skills 9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>More Complete 14</td>
<td>72</td>
<td>Demonstrates all skills 87</td>
</tr>
<tr>
<td>TOTAL</td>
<td>187</td>
<td>None 54</td>
<td>10</td>
<td>Demonstrates some skills 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partial 33</td>
<td>30</td>
<td>Demonstrates most skills 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>More Complete 13</td>
<td>60</td>
<td>Demonstrates all skills 94</td>
</tr>
</tbody>
</table>
Table 3: Student Pre- and Posttest Attitudes

<table>
<thead>
<tr>
<th>Activity</th>
<th>Sample Size</th>
<th>Pre-test Mean and Standard Deviation</th>
<th>Post-test Mean and Standard Deviation</th>
<th>t value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bird Watching</td>
<td>47</td>
<td>14.87; 3.60</td>
<td>16.17; 3.88</td>
<td>-2.59</td>
<td>p &lt; .01</td>
</tr>
<tr>
<td>Fishing</td>
<td>43</td>
<td>17.00; 3.51</td>
<td>16.39; 4.03</td>
<td>.757</td>
<td>n.s.</td>
</tr>
<tr>
<td>Kayaking</td>
<td>34</td>
<td>16.96; 1.94</td>
<td>17.52; 2.48</td>
<td>-1.04</td>
<td>n.s.</td>
</tr>
<tr>
<td>Rock Climbing</td>
<td>77</td>
<td>16.91; 2.78</td>
<td>18.68; 1.74</td>
<td>-6.34</td>
<td>p &lt; .01</td>
</tr>
</tbody>
</table>

Note: n.s. = not significant
References


Appendix A: Teacher Rating Scale

Please rate this student’s performance in your science classroom using the following scale:

1=strongly disagree
2=disagree
3=neither agree or disagree
4=agree
5=strongly agree

Please check the box that best reflects your opinion.

<table>
<thead>
<tr>
<th>STUDENT NAME:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>This student is knowledgeable about science concepts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This student completes all required science homework on time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This student is sometimes off-task or disrupts the class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This student is interested in learning science concepts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This student is confident that s/he can succeed in learning science.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This student successfully performs science activities in class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TEACHER: _____________________________
Appendix B: Parent Rating Scale

Your child has recently completed several hands-on science activities. We want you to rate the degree to which these activities helped your child learn about science using the following scale:

1=strongly disagree
2=disagree
3=neither agree or disagree
4=agree
5=strongly agree

Please check the box that best reflects your opinion.

<table>
<thead>
<tr>
<th>Student Name:</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>My child is more knowledgeable about science</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My child completes science homework on time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My child is better behaved in science class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My child is more interested in learning about science.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My child is more confident that s/he can succeed in science class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My child is better able to perform science activities in school.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Parent Name (please print): ______________________________
Appendix C: Interview Questions for Discover Mojave Participants

1. What did you like best about the science club?
   - What programs?
   - What activities?
   - What was most interesting or most fun? Why?

2. How could the science club be improved?

3. What are some things that you learned from being in the science club?
   - Knowledge
   - Skills

4. Did you use any of the information from the events at school?

5. Do you like science more now?

6. Do you feel that you are better at doing science in school?

7. Did you tell anyone about the science club? If yes, what did you tell them?

“General Attitudes” (overarching themes)
1. If you had to tell your friends about what you learned about taking care of the land what would you tell them?
2. If you had to tell your family about what you learned about keeping the water clean and safe, what would you tell them?
3. What is the most important thing you learned about the land or water?
4. If I wanted to live on the land without hurting it, what would you tell me to do?
Appendix D: Interview Questions for Science Teachers

1. How did students respond to the Environmental Science Club program?
   a. Did their attitudes change? Did they become more interested after the program?
   b. Did you notice any changes with confidence?
2. Was there a difference in science club students and students who did not participate in science club?
   a. Any changes in homework completion, attendance, behavior, participation?
3. Was there any particular event or activity that you found was especially meaningful for the students?
4. What did you like personally about the Outdoor World Program?
5. Do you have any suggestions for how we could improve the program?
   a. Can you think of any activities that could be added?