



Sustainability Education Program Backgrounder March 2007

The RiverQuest Sustainability Education Program is a comprehensive initiative to reorient RiverQuest's entire suite of formal and informal education programming to address issues of environmental sustainability, both locally and globally, in connection with the arrival of the organization's new "green" flagship vessel in 2007. The Program impacts all of RiverQuest's educational programming for schools K-12, university and graduate level, and for the public. **The Program addresses the fundamental relationships among environmental impacts of, human populations, regional affluence/economics, and influence of technology throughout all Program components, including teacher training, in-class school curriculum, transformative river-based learning experiences and future distance learning systems.**

RiverQuest's Program explores some of the most important local and global examples of human impacts on the environment. A local Pittsburgh example may focus on the links between watershed management, land use policy and development, and downstream flooding. An international example may be of a limited, dwindling water supply source in two neighboring African countries that will soon be insufficient to provide for growing local population needs and that may lead to conflict between the two countries. A global example may address the effects of worldwide population growth, economic development and rising affluence (e.g., in China and India), rising CO₂ emissions, and the issue of global warming and its affect on the planet's sustainability. For more advanced audiences at high school and university levels, these concepts can be supplemented with economic and mathematical modeling and analysis.

The hands-on components of the Program will be taught onboard *Explorer*, the organization's new flagship vessel and one of the world's first green-designed boats. The boat can accommodate up to 150 passengers for public tour programs and 90 students for formal education programs. The vessel has been designed with an innovative hybrid diesel-electric propulsion system that will run on diesel-biofuel mixtures to reduce emissions, and is designed to incorporate other alternative energy sources in the future. It includes many other environmentally friendly features (lighting, windows, construction materials, and operations) that meet or exceed Leadership in Energy and Environmental Design (LEED™) green building standards. This vessel is the only known boat to have been designed and built using these standards.

RiverQuest plans to install additional alternative energy sources onto the boat as technologies evolve. An expanded dock and landside facility is conceptualized to include solar panels and wind and water turbines. Displays of energy usage from the various sources will be monitored and displayed on screens on the boat. Interpretive signage and interactive displays related to the green technologies in use will be incorporated into the site. These features will be incorporated into the Program as examples of environmentally conscious green design and operation.

Contextual learning has been a core part of Voyager's mission from its inception: to provide hands-on, experiential education programming that fosters critical thinking. The integration of information technology into the new boat will be instrumental to the student experience on board. Through an existing collaboration with **Carnegie Mellon University**, RiverQuest instructors will have access to multimedia library, web-based educational materials and interactive mapping and informational displays to link international and global issues of sustainability to the local experiences of students on board the vessel.

A key to the success of the Program lies in the input and collaboration among partner agencies with similar missions. Some local examples of these include **the Sustainability Engineering Department at Carnegie Mellon University, and ASSET, Inc.**, a leading statewide science and math educational organization. **Jean Michel Cousteau's Ocean Futures Society** has been identified as a national and international partnering organization for future program development. *Explorer* will provide the opportunity to significantly expand the geographic reach of Voyager's programs: summer programs down the length of the Ohio River are a possibility, and a future distance learning module is planned that will enable RiverQuest to reach targeted audiences nationwide.

The development and evaluation of the Program will progress through the collaboration of in-house staff working closely with outside expert consultants. Identified outside expertise includes, as noted above, the Ocean Future's Society, Carnegie Mellon University and ASSET Inc. , as well as Pennsylvania Department of Education, the National Science Foundation, and Dr. Matt Mehalic, a specialist on sustainability education from the University of Pittsburgh. Other national and international resources such as The Cloud Institute for Sustainability Education and the United Nations Division for Sustainable Development may be accessed for expertise.

Consistent with RiverQuest's educational mission, the Program's formal education modules will address the Pennsylvania Department of Education's Academic Standards for Environment and Ecology. Program content is modified according to school grade levels, with plans for newly offered sequential programs that allow successive programs to build on the students' previous experiences. It is anticipated that university classes will utilize the new boat's tools and models to help explain issues of sustainability under the direction of their professor. In addition to university classroom time on the boat, university collaboration on sustainability workshops is also planned.

For more details about the K-12 school and public programs, call Karl Thomas, Executive Director, at 412-231-2712.