

## **Building Social Capacity Through Education and Outreach**

A challenge and opportunity in watershed management

*Everything has changed but, our way of thinking. We can't solve today's problems by using the same kind of thinking we used when we created them.*

Albert Einstein

### **Forward**

The Tijuana River Watershed Communications Project was envisioned by its collaborators as a three-part package that includes the story of the watershed; the story of its people, culture and natural resources; and a resource guide for education and outreach.

The purpose of the project is for citizens in the U.S. and Mexico

- 1) to understand that we all live in a watershed,
- 2) to understand the importance of watershed health to themselves and their communities, and
- 3) to take positive action to keep the watershed healthy.

This document provides a context and methodology to help in the education, understanding and involvement of the public. The model introduced in this resource for watershed management demonstrates the importance of outreach, education and citizen involvement. It is a resource for existing programs as well as for program development. It is through these important activities - education, outreach and public involvement - that the attainment of watershed health becomes possible.

## Introduction

The belief that nature can be controlled and manipulated to accommodate solely the needs of the human population leaves out the fact that “when one tugs at a single thing in nature he finds it attached to the rest of the world. . .” (John Muir). Thinking about our communities as systems sewn together in a vast quilt of complex living and non-living organisms brings us closer to understanding how our world works, how we might support its systems, why we should conserve it, and, where appropriate and possible, to restore the ecosystems that sustain us all. Finding ways to empower people to think in new ways about the sustainability of our planet is not only possible but is happening now, sometimes one person and one idea at a time. **Building social capacity** is such an idea.

### **Building Social Capacity Using Outreach and Education**

For our purposes, we define social capacity as the collection of abilities, know-how, technologies and attitudes held by individuals and groups that are used for the improvement of society.

Building social capacity is a method for encouraging and supporting “new thinking.” By increasing social capacity we can provide a foundation that supports behavioral change. In this case, it is the capacity to understand and create good practices in the communities that comprise our watershed.

Researching, understanding and teaching others in our individual communities about watershed ecology create a deeper knowledge of the relationships between living and non-living organisms. When the watershed is functioning optimally, there is a balance between needs and uses. The watershed system is balanced through its responses to benefit and stress. Education and outreach programs seek to engage people in understanding their role as a benefit or stressor within the watershed ecosystem. Once ecosystem balance is understood, the capacity for creating healthy watersheds can more easily be built.

Building social capacity includes:

- Collaborative and individual effort,
- Developing relationships,
- Understanding needs and perspectives,
- Developing technical knowledge, and

- Designing messages delivered in a modality that will be heard and implemented.

Goals are to:

- Create awareness,
- Change attitudes,
- Change behaviors and illustrate how people can take action in their communities,
- Work with people to make appropriate short and long-term decisions about watershed health that affect their daily lives.

### **Building Social Capacity is About Developing Environmental Literacy**

Building social capacity empowers people and helps them to see that they can have positive effects and influences in their communities. At the base, it comes down to people understanding their interrelationships and interdependencies with both living and non-living components of the watershed ecosystem, and changing their behaviors accordingly.

Environmental literacy is a term coined by Charles Roth and John Disinger “.....it is a person’s capacity to perceive and interpret the relative health of environmental systems and take appropriate action to maintain, restore and improve the health of those systems.” (1992).

Environmental literacy and behavioral change occurs in different stages.

1. Perceiving the problem,
2. Becoming aware of the relationship of the problem to the individual creating it,
3. Nurturing a desire, and
4. Taking action to make the change.

Successful environmental literacy or social capacity building strives to develop the necessary qualities for behavioral change; knowledge, perception, attitude, skills and the ability to take action.

The social capacity of watershed stakeholders can be quantified by measuring the number of environmentally literate individuals. Such literacy includes measurable results such as improved water quality, fewer beach closures, and

restored habitat and citizen involvement in other watershed improvement activities.

## **Education and Outreach**

Outreach includes information and education as well as public involvement and communication (See Figure 1 - Outreach/Education).



Figure 1 - Outreach/Education

These terms are often used interchangeably, as Thomas Davenport discusses in his book *Watershed Project Management*. He makes a useful distinction between information, education and outreach and uses the level of stakeholder involvement as the method of differentiation.

The concept of **information** is twofold: public information and support information. Public information is *passive* and involves the distribution of information on specific issues directly or indirectly. Generally the public is not given directions as to what they need to do to solve the problem or the information may be insufficient. The focus is on *awareness and reporting facts*. Examples include: fact sheets, posters, public service announcements, radio, TV or newspaper ads, direct mail, etc. Support information consists of specific technical or management information to targeted audiences in *direct support of education efforts* or as a *follow-up to implementation*.

The concept of an **education** program is a *hands-on* process. This type of effort develops *active problem solving skills that will help the individual to make informed decisions and get involved*. Education's outcomes are *knowledge and action*. Examples of education include one-on-one and small groups in-the-classroom and in-the-field interactive experiences whether with a refuge, reserve or other land management agency, environmental organization, group community activity, local governmental agency, or even by mentoring other students.

The concept of **outreach** blends public information with education. Its outcome is *problem-solving action*. Outreach is characterized as *interactive, informative and fun*.

Public outreach is defined as activities that enable the public and stakeholders to become informed and to participate in the process of good management. It includes information, education and outreach. The process of education and outreach builds social capacity by developing environmentally literate individuals.

Watershed management consists of two components: policy/regulations and watershed ecology. (See Figure 2 below.)

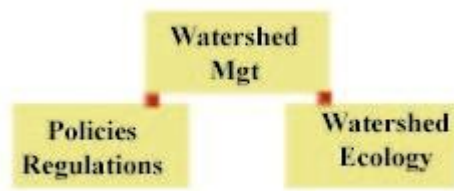


Figure 2 - Watershed Management

Watershed management is successful when education and outreach programs result in increased social capacity leading to sustained watershed health.

### **How To Use The Model For Developing Outreach and Education**

The two parts of watershed management identify key content areas to communicate and design information, education and outreach programs for a broad range of stakeholders. As an example, when addressing municipalities, the content area would focus on regulation and activities; for planners, policy and regulation; for science educators, watershed ecology; and for social studies educators, watershed policy/regulation and its influence on communities.

<b>Components of Watershed Management</b>			
<b>Audience</b>	<b>Policy/Regulation</b>	<b>Watershed Ecology</b>	<b>Activities</b>
Industry	X		X
City planners	X	X	
Policy Makers	X	X	
Science educators		X	X
Social Studies educators	X		X
Museums, nature centers, after-school programs		X	X

**Key point:** Many case studies of Best Management Practices (BMP) are distinguished by the fact that when education and outreach trains its participants in content, problem solving techniques and an application of the solution to “real world” issues, the result is continuous and sustained healthy watershed management practices. These BMP contribute to the development of public environmental literacy and build the capacity of the community to address watershed issues.

Knowledge + skills + application = Environmentally literate people + good watershed management.

#### References:

Davenport, Thomas, The Watershed Project Management, Lewis Publishers, 2003.

Roth, C. & Disinger, J., Environmental Literacy, ERIC Clearinghouse for Science, Math and Environmental Education, Columbus, Ohio, 1992.

# **The Tijuana River Watershed Communications Project**

## **Resource Guide**

### **Background on Watersheds**

*Groundwater and Wetlands* (U.S.) - a watershed science interactive website, includes an introduction to the hydrologic cycle, rock properties, groundwater systems, high plains aquifers, human modifications to groundwater systems, an introduction to wetlands, destruction of wetlands and quizzes and exercises. Additional weblinks.

<http://www.mhhe.com/earthsci/geology/mcconnell/demo/index.html>

*Communicating Ecosystem Services* (U.S.) - The Union of Concerned Scientists (UCS) and the Ecological Society of America (ESA) project Communicating Ecosystem Services focuses on the valuable but under-appreciated services that nature provides. The purpose of the project is to increase the public awareness of the importance of ecosystem services, and the promotion of the extension of our country's biological resources. It includes a series of tool kits and a website to help achieve the goal.

<http://www.esa.org/ecoservices/>

*U.S. Environmental Protection Agency, EPA* (U.S.) - About water by regions and state (linked to water resources offices of each state), historical perspectives about water, summaries of water conferences sponsored by the EPA.

<http://www.epa.gov/water/>

<http://www.epa.gov/surf>

### **Program Models and Standards for Excellence**

*Environmental Education (EE) Standards for Excellence* (U.S.) - Environmental Education Materials: Guidelines for Excellence, North American Association for Environmental Education (NAAEE), 2000. These standards are designed as a guide for using curricular materials for attaining environmental literacy skills and competencies.

Contact: 706.764.2926

<http://www.naaee.org>

*State Education & Environment Roundtable, SEER* (U.S.) - is a cooperative endeavor of 12 state education agencies that seeks to improve student achievement by *Using the Environment as an Integrating Context for Learning* (EIC). EIC is a model of proven instructional strategies using the environment as a framework for integrating content areas and by which students can construct their own learning guided by teachers and administrators.

<http://www.seer.org>

The resources listed below are organized as follows: Education and Outreach Programs; Centers for Environmental Education; Programs for Community Involvement; Environmental Networks; and Policy, Regulation and Research. These resources are organized for the programming needs of formal and informal educators, citizen outreach program designers and in some cases municipal outreach educators.

### **San Diego and Tijuana Education and Outreach Programs**

*Aquatic Adventures* (U.S.) - provides educational programs that connect underserved youth to science, inspire environmental action, and increase exposure to marine habitats. These programs engage youth in unique experiences that reveal new opportunities and engender valuable skills, empowering each individual to fulfill their potential. Aquatic Adventures facilitates five programs as well as large community events. Programs integrate language arts, math, and social studies and are aligned with California State Standards.

<http://www.aquaticadventures.org>

*Communities Alive In Nature* (U.S.) - is an applied science, math, language arts and technology program. It uses the natural and surrounding school environments as a framework for learning or EIC (see the State Education & Environment Roundtable). It is dedicated to improving academic achievement and developing environmental literacy in students and teachers. CAN process focuses on the science concept, clarifies the concept with hands-on activities, followed by concept application in field studies and restoration activities. Curriculum is augmented with the adopted text and correlated to state content standards. The Adopt a Watershed curriculum is incorporated in the program, with customized field assessment and restoration features of the San Diego environment. CAN is a Best Practices Program recognized by The Chamber Foundation's Business Roundtable for Education.

<mailto:comalive1@aol.com>

*The Nature School* (U.S.) - promotes environmental awareness and education by offering programs on coastal creeks, fresh water habitat, stream ecology, fishery conservation and water quality monitoring. The School is involved in coastal creek and fresh water habitat advocacy; stream ecology and fishery conservation education; in class fish hatchery and field science, and water quality monitoring.  
Contact: 619.224.2003.

*Project Clean Water* (U.S.) - represents a collective effort by the municipalities of San Diego County. More than 100 stakeholders are involved and committed to make a collective effort to assure Clean Water in the San Diego region. There is a strategic plan for the region, updates from each of the Technical Advisory Committees (TAC) in science/technology, legislative/funding and education/outreach. There is an inventory



of education and outreach programs in the Region and in California.

<http://www.projectcleanwater.org/index.html>

***Project SWELL - Stewardship: Watershed Education for Lifelong Leadership*** (U.S.) -

The beginnings of watershed curriculum written for San Diego Schools consisting of worksheets addressing urban runoff originating from school grounds for grade 5. There is a set of worksheets addressing runoff from different areas, effects to groundwater, rivers and ocean.

Contact: San Diego City Schools, Science Department

***Proyecto Bio-regional de Educación Ambiental, PROBEA*** (MEX) - a program of the San Diego Natural History Museum, PROBEA is a binational, inter-institutional, multidisciplinary collaboration between partners who seek to inspire teachers and community workers through environmental education. It focuses on strengthening communities through trainings and active involvement in our bio-region, as well as builds relationships between neighbors through collaborations and sharing ideas and resources. Founded in 1991, PROBEA has been facilitating environmental education programs and events in San Diego and the Baja California peninsula since 1993.

PROBEA designs innovative curricula to facilitate environmental education workshops and to spur enthusiasm for education among scientists, conservationists, volunteers and teachers. The program uses innovative methodology to introduce environmental themes and activities promoting an earth stewardship ethic. PROBEA unites communities in conservation efforts through education and training and strengthens the relationships between Mexico and the U.S. by collaborating on projects and sharing ideas and resources. PROBEA supports citizens in caring for their environment to create a more sustainable future.

[klevyszpiro@sdnhm.org](mailto:klevyszpiro@sdnhm.org)

[www.sdnhm.org/probea](http://www.sdnhm.org/probea)

***Proyecto Fronterizo de Educación Ambiental A.C., PFEA*** (MEX) - is a civil organization dedicated to the development of change-generating processes in environmental practice and policy, at the local and international levels. Their goal is to promote efficiency in social participation based on partnership building and facilitating citizens' access to environmental information. PFEA seeks to strengthen the institutional framework to achieve the development of a sustainable society. PFEA is a non-profit, non-political organization with the following principles: ecosystems determine the quality of life; the community is co-responsible for environmental preservation; and each individual has the right to access information that guarantees his right to a healthy environment. Only a democratic, informed and participatory society is able to prevent and face present environmental challenges.

[www.pfea.org](http://www.pfea.org)

*San Diego County Office of Education Outdoor Education (U.S.) -*

**The Splash Van:** A mobile science lab featuring five different stations where kids use computers, microscopes, chemistry experiments and living creatures to learn about water quality and insect life. The lab teaches students the connection between human activities and the health of the environment.

**The Green Machine:** An interactive exploration program that teaches agricultural awareness at three stations: a soils research station with live earthworms, the water cycle station with dramatic role play scenarios and costumes, and an integrated pest management station with interactive role play and insect puppets. Both the Green Machine and the Splash Van are operated by the San Diego County Office of Education. Contact: 858.694.7000

*The San Diego National Wildlife Refuge Complex (U.S.)* - along with partners Chula Vista Nature Center and Tijuana Estuary Visitor Center, offers three environmental education experiences for grades K-6 that explore plants, animals, sea life and their habitats in the classroom and in the field. They include: Sweetwater Safari, Tijuana Estuary Explorers and Habitat Heroes. All materials meet state standards, and some transportation grants are available. "The Pelican Van" depicts area ecosystems and wildlife and is available to visit Orange County schools. Other environmental education opportunities are available at several of our San Diego and Orange County Refuges. Contact: 619.691.1262

<http://sandiegorefuges.fws.gov>

*San Diego County Water Authority Education for Teachers & Students (U.S.)* - The San Diego County Water Authority provides FREE educational programs and materials for grades K-12 to San Diego County educators. Some materials require an in-service at your school. To schedule an in-service or classroom presentation, or order materials, please call the School Education Program. Mini grants are also available for school based water projects.

<http://www.sdcwa.org/education/teachers.phtml>

*Solana Center for Environmental Innovation (U.S.)* - formerly known as Solana Recyclers, dedicated to environmental education, resource conservation, and sustainable agriculture. The Solana Center provides information and opportunities for citizens and businesses to take responsible action toward conserving natural resources and building a sustainable future. The Center will provide interactive class presentations which focus on [pollution](#) prevention, watershed education, [composting](#), and natural resource conservation in English & Spanish.

<http://www.beresourceful.org/>

<http://www.solanacenter.org>

**The TidePool Cruiser** (U.S.) - The sixteen-foot TidePool Cruiser addresses the critical issue of non-point source (NPS) pollution and its effect on the marine environment in an exciting, innovative, and hands-on way. Participants are given the tools they need to decide for themselves the type of impact they will have on the beaches and coastal waters of southern California. The TidePool Cruiser travels to schools and parks around southern California from Santa Barbara County to the Mexican border.

<http://www.windowsonourwaters.org/wow/tidepoolcruiser.shtml>

### **State, National, Global**

**Adopt-A-Watershed**, (U.S.) - a K-12 watershed science curriculum and leadership institute for educator teams to support the implementation of project based learning units. These curriculum units are teacher created, attested and resource agency reviewed for accuracy and neutrality. Many units have been adapted to the urban environment by San Diego County teachers. The curriculum is easily augmented with adopted text and meets California content standards.

<http://www.adopt-a-watershed.org/>

**Cal Alive!** (U.S.) - The California Institute for Biodiversity (CIB), the creators of the Cal Alive! Project, is a Bay Area-based non-profit organization. CIB is dedicated to improving science literacy, environmental education, and the appropriate use of technology in classrooms throughout the state. Since its inception by executive director Carol J. Baird, Ph.D. in 1995, CIB has helped thousands of teachers introduce their students to the biological diversity of California. As one of the world's ten biodiversity "hotspots," California offers its citizens and students a remarkable opportunity to learn important scientific concepts and environmental values in the context of the natural world around them. By providing high-quality software for students as well as support materials and in-depth professional development opportunities for educators, CIB has improved science education in California schools.

<http://www.calalive.org>

**Environmental Education Exchange** (U.S.) - is a nonprofit 501(c)(3) organization established to enhance and expand the environmental literacy of inhabitants and visitors in the unique desert regions of the southwestern United States and northwestern Mexico.

The *Exchange* offers expertise in environmental education to a wide range of public agencies, private organizations, school districts and businesses. The *Exchange* works to provide individuals with the knowledge, values, and skills necessary to actively contribute to a healthy and sustainable environment in this culturally diverse area of rapid population growth and urban development.

The *Exchange* is committed to developing programs and materials that present a fair, balanced approach to environmental issues and strives to design programs which are ecologically sound, culturally appropriate, and sensitive to regional considerations.

<http://www.eeexchange.org>

**GLOBE** (U.S.) - is a worldwide hands-on, primary and secondary school-based science and education program. Globe provides students the opportunity to learn by taking measurements in the fields of atmosphere, hydrology, soils, and land cover. They then report this data on the Internet. Students communicate with other students and scientists about the studies they are undertaking. GLOBE is a cooperative effort of schools, led in the United States by a Federal interagency program supported by NASA, NSF, EPA, and the State Department, in partnership with over 140 colleges and universities, state and local school systems, and non-government organizations. Internationally, GLOBE is a partnership between the United States and 97 other countries. Available in Spanish.

<http://www.globe.gov/fsl/welcome.html>

**National 4-H** (U.S.) - Curriculum in English and Spanish: Environmental Education and Earth Sciences, Citizenship & Civic Education, Science & Technology, Plants & Animals, Wildlife Habitat Evaluation program for urban and rural habitats.

[http://www.national4-hheadquarters.gov/4h\\_curric.html](http://www.national4-hheadquarters.gov/4h_curric.html)

**NSTA Journal Articles** (U.S.) - Elementary & Intermediate School Resources, sorted by grade level to provide ideas for classroom activities and lessons related to the earth's environment and ecosystems.

<http://science.nsta.org/enewsletter/2003-01/elementary.htm>

<http://science.nsta.org/enewsletter/2003-01/intermediate.htm>

**National Wildlife Federation, NWF** (U.S. & MEX) - is the largest member-supported conservation organization in the United States. It was founded in 1936 to help stem the loss of wildlife habitat during the dust bowl era. NWF has nine regional offices, over 1.1 million individual members, and state-wide affiliates in 45 states, as well as in the Virgin Islands and Puerto Rico. NWF is known for its award winning publications for children and adults, its high quality educational training courses for teachers, its popular web site and its "common sense" approach to wildlife and habitat conservation.

NWF's signature environmental education training courses, such as Schoolyard Habitats, have been presented to thousands of teachers in almost every state in the U.S. Through the *Alianza para la Vida Silvestre* project, NWF is working with partners in Mexico to make these training courses available to Mexican teachers in a culturally appropriate manner.

<http://www.nwf.org>

**Project Learning Tree, PLT** (U.S.) - is an award winning, broad-based environmental education program for educators and students in PreK - grade 12. PLT helps students learn HOW to think, not WHAT to think, about the environment. PLT, a program of the [American Forest Foundation](http://www.americanforestfoundation.org), is one of the most widely used environmental education programs in the United States and abroad. PLT materials bring the environment into the classroom and students into the environment. The program covers topics ranging from forests, wildlife, and water, to community planning, waste management and energy. Some materials are available in Spanish.

<http://www.plt.org/about/index.cfm>

**Project Wild** (U.S.) - is a K-12 interactive, interdisciplinary wildlife conservation and environmental education program supported by natural resource agencies. It provides information about and sample materials from an interactive, interdisciplinary wildlife conservation perspective.

<http://www.projectwild.org/>

**Schools Online** (U.S.) - Website for K-12 educators that features brief text or animated presentations on such subjects as planting, tending gardens, helping students to become more aware of plants, animals & humans interact with the ecosystems. Some activities are available on CD ROM & in Spanish.

[http://www.ultralab.anglia.ac.uk/pages/schools\\_online/Contents.html](http://www.ultralab.anglia.ac.uk/pages/schools_online/Contents.html)

**TreePeople** (U.S.) - The mission of TreePeople is to inspire the people of Los Angeles to take personal responsibility for the urban forest, training and supporting them as they plant and care for trees and improve the neighborhoods in which they live, learn, work and play. The mission reaches beyond the simple act of planting a tree. The K-12 education programs raise environmental awareness and they also enrich academic lessons and teach potent life skills. While the forestry programs restore watersheds and fragile habitats, they also heal inner-city communities, bring neighbors together, cool and green campuses, and address serious urban issues such as water and energy conservation, flood prevention and storm-water pollution.

The Transagency Resources for Environmental and Economic Sustainability (T.R.E.E.S.) project is changing the nation's approach to urban watershed management, motivating other cities to adopt "best management practices" and follow our lead. The project demonstrates the technical and economic feasibility (and desirability) of retrofitting the city to function as an urban forest watershed. It promotes strategic landscaping and other sustainable watershed management practices for residential and commercial properties. These practices can conserve water, reduce pollution, create open space and recreational opportunities, and provide jobs for youth in their own communities.

Contact: 818.623.4884.

<http://www.treepeople.org/trees>

***Union of Concerned Scientists, UCS*** (U.S.) - An interactive module that looks at the impacts of global warming on the California habitats and ecosystems.

<http://www.ucsU.S.a.org/climatechange/california.html>

***U.S. EPA Environmental Education*** (U.S.) - Activities by grade level and by region, professional development, grant opportunities and events. *Email requests for information can be made in Spanish.*

<http://www.epa.gov/enviroed/>

***U.S. Fish and Wildlife Service*** (U.S./Global) - Activities include distance learning programs for students of all ages, materials, curricula, on-line programs and events.

<http://www.fws.gov/kids/educators>

***United States Geological Survey USGS Learning Web*** (U.S.) - Dedicated to K-12 learning and life long learning about people, places, plants and animals and how to find balance. Teacher resource site provides lesson plans, project scenarios, hands on activities to understand mapping, faults, land formations, etc. Project site offers interactive modules. One scenario is an environmental study of Los Angeles. Students are given an opportunity to study real environmental dilemmas concerning geologic and hydrologic hazards and provide solutions to these dilemmas.

<http://www.U.S.gs.gov/education/>

***Water Education Foundation*** (U.S.) - is a non-profit organization whose mission is to create a better understanding of water issues and help resolve water problems through educational programs. Example: *Where Does Your Water Come From?*

<http://www.watereducation.org>

***Waves Wetlands and Watersheds*** (U.S.) - A science activity guide for students in formal and informal settings to assist in learning about California coastal issues from upstream pollution to sand and cliff erosion on the California coast. Free workshops available.

California Coastal Commission Science activity Guide, Julia Copple Davenport, Curriculum Developer 2003.

Contact: 415.904.5400.

<http://www.coastforyou.org>

## **Centers for Environmental Education in the San Diego/Tijuana Region**

***The Birch Aquarium*** (U.S.) - has a range of different outreach and on-site programs and exhibits dealing with the ocean and its inhabitants for grades K-12. All the programs require a fee and are either classroom or on-site presentations. To find out more about the programs and to reserve a presentation visit their website.

<http://www.aquarium.ucsd.edu/education/education.html>

***The Chula Vista Nature Center*** (U.S.) - Its mission involves educating the public on the importance of coastal resource conservation at Sweetwater Marsh National Wildlife Refuge. This is accomplished through collaboration with the Refuge on Sweetwater Safari, a science and language arts based field experience as well as off-refuge field trips, guided walks, classes, tours, and special projects. Its program includes a full-time Science Resource Teacher who works closely with the Nature Center staff to provide environmental education programs which are integrated in their science and social studies curricula.

Contact: 619.476.7836 (Chula Vista Elementary School District teachers)

Contact: 619.409.5903 (Teachers and organizations outside the district)

<http://www.chulavistanaturecenter.org>

***Ecoparque*** (MEX) - is a program of El Colegio de la Frontera Norte. Its mission is to raise environmental awareness in visitors and the community at large. It was designed to contribute to the goal of achieving urban sustainability. *Ecoparque* has in place an ambitious environmental education program that serves thousands of students, educators and volunteers in the city of Tijuana by using its water treatment plant and other resources as a demonstration of what can be done to improve our environment.

<http://www.colef.mx>

***Las Piedras Environmental Education Center*** (MEX) - founded by Fundación La Puerta, a magical and inspiring site at the foot of Mount Cuchama in Tecate, Baja California, Mexico. Its mission is to encourage a love for nature through environmental education by teaching knowledge of natural processes and understanding the relationship between man and nature. Its main goals are to link the Tecate community to their natural environment and to support teachers with training, materials and activities to integrate environmental education into their curriculum.

<mailto:laspedras@fundacionlapuerta.org>

<http://www.fundacionlapuerta.org>

***National Park Service – Cabrillo National Park*** (U.S.) - is responsible for the conservation of scenery and natural and historic objects of its parks for the enjoyment of future generations. Cabrillo National monument offers educational programs for 2<sup>nd</sup> through 5<sup>th</sup> grade students. Programs include the history of Cabrillo's 1542 expedition along the California coast; the ecology and adaptation of plants and animals; Native American use of plants found in the coastal sage scrub habitat.

<http://www.nps.gov/cabr/>



***Quail Botanical Gardens*** (U.S.) - Quail Botanical Gardens is dedicated to the conservation of rare and endangered plants from across the globe. San Diego visitors and residents are invited to experience this spectacular collection of flora. Tours, nature walks, lectures, landscape advice and instructional programs are offered to advance public awareness of plant diversity.

<http://www.qbgardens.com/>

***The San Diego Natural History Museum*** - (U.S./MEX) offers a variety of programs for grades K-6. They offer grade appropriate workshops presented by the museum's staff at the Museum, or as an outreach program conducted at your school. There is a fee required for the programs.

Contact: 619.255.0210, Museum Education Department

Contact: 619.255.0228, Binational Education, PROBEA/Mexico project.

<http://www.sdnhm.org>

<http://www.sdnhm.org/education/binational>

***The Tijuana Estuary Visitor Center*** (U.S.) - Managed by California State Parks and the U.S. Fish and Wildlife Service, the Visitor Center offers a variety of hands-on, interactive activities for visitors of all ages as well as a collection of videos (including videos in Spanish) that are shown upon request. The educational videos are intended to educate the public about estuaries and watersheds, including estuary flora and fauna, estuarine ecology and natural processes. The Tijuana Estuary has exciting, hands-on education programs for students as well as tours, informative lectures and other outreach opportunities for adult audiences. In addition to ongoing programs, the Tijuana Estuary also puts on special events throughout the year, such as Batmania in October and Earth Day activities in April.

Contact: 619.575.3613

Ongoing activities and special events support the estuary's mission to provide interactive, hands-on, thematic, bilingual, environmental education to local and regional students and the community, working in partnership with local schools, community groups and government agencies. See programs diagramed below:

**School Groups:**

[Estuary Explorers](#) or [M.A.R.S.H.](#)

**Other Programs for Kids:**

[Jr. Rangers](#) or Scout Groups

**Adult Programs:**

[Speaker Series](#) or [Coastal Training Program](#)

<http://www.tijuanaestuary.com/calendar>



## Programs for Community Involvement

*Earth Force, Protecting Our Watersheds, POW* (GLOBAL) - is a program for middle school students to study their watersheds and work on projects to improve the health of their watersheds. It can be used in a variety of settings. This site is a part of the GREEN site and provides a free activity download.

<http://www.earthforce.org/pdf/uploaded/Sample.pdf>

*Fundación Esperanza de México, A.C., FEM* (MEX) - is a non-profit, non-sectarian, social service civil association. Formally incorporated in 1990, the foundation implements programs focused on initiating community development and promoting communities' self autonomy. It has developed a program for self-construction of housing that does not require a skilled workforce, but depends primarily on volunteer labor. FEM has successfully worked in collaboration with other social organizations and community groups. Since 1994, it has promoted the creation of *Fondos de Ahorro para la Vivienda* (FAV), Housing Savings Groups. To date, 110 families have participated in the FAV with the aim to gain dignified housing, not only for themselves, but other families.

<http://esperanzademexico.org>

*Give Water A Hand* (U.S.) - is a highly acclaimed national watershed education program designed to involve young people in local environmental service projects. It is applicable to formal and informal applications and it engages and empowers students to understand and the find solutions to water quality issues in different settings.

<http://www.uwex.edu/erc>

*Global Rivers Environmental Education Network, GREEN* (GLOBAL) - was created to improve the water lifelines of the world, thereby the lives of all people. Like a river, GREEN crosses political, cultural and economic boundaries to help participants share information and ideas for positive action in defense of their local rivers and watersheds. People from 133 nations are linked through an international network of students, teachers and institutions.

The new *GREEN* website can help you make the lasting improvements to your watershed by offering an online monitoring database and community action tool. Designed for monitoring groups and interested browsers alike, the site contains a national database of locally generated data for biological, chemical, physical and land use information; special project pages for registered users to create customized records of their watershed monitoring and action projects. Detailed Action Steps and Checklist systems to lead users through a step-by-step monitoring and problem-solving process; extensive resources to support monitoring and action taking ability for large watershed monitoring groups to review and coordinate monitoring data from affiliated monitoring groups; it offers concise summaries and curricular resources for educators.

<http://www.earthforce.org/green/>

*I Love A Clean San Diego* (U.S.) - is dedicated to empower the community to act in ways that are economically viable and ecologically sustainable. It offers a wide range of community education programs and clean-up events.

<http://www.ilacsd.org/>

*Isaak Walton League of America* (U.S.) - one of the oldest conservation organizations in America was founded in 1922, in response to the noticeable degradation of the stream conditions in America. It supports many conservation programs for citizen monitors, youth programs and more. Save Our Streams is a well known program originated by the League.

<http://www.iwla.org/>

*Ja Jan* (MEX/U.S.) - keeps the border communities of California and Baja California informed about coastal water quality conditions, promotes water pollution prevention and encourages constructive community participation in addressing the region's water pollution.

*Ja Jan* monitors water quality at various high-use public beaches in the U.S.-Mexico border region and then distributes the results of the tests to the public in English and Spanish. *Ja Jan's* monitoring work is geared towards the creation of a permanent, accessible and reliable source of water quality data for the inland and coastal watersheds of the region. Current monitoring sites include: Imperial Beach, Playas de Tijuana, Baja Malibu, Rosarito, San Miguel, El Sauzal and other important locations. *Ja Jan* also trains and organizes citizens on both sides of the border so that they can participate in beach water quality monitoring, and conducts bilingual environmental education campaigns to inform students and the community about the impacts of water pollution and pollution prevention.

<http://www.jajan.org>

*Los Niños* (U.S./ MEX) - has as its mission to improve the quality of life by creating opportunities for children and their families to realize their human potential through participation in the development of their communities. *Los Niños* defines Community Development as a participatory process through which community members identify community needs and organize themselves to take the actions necessary to improve their quality of life. *Los Niños* believes that sustainable communities with healthy children are the foundation of a strong civil society. It provides opportunities to nurture human potential through self-reliant activities that promote community development, food security, social justice, and human dignity.

<http://www.losninosinternational.org>

***Project Wet International*** (GLOBAL) - The Discover a Watershed Series is comprised of publications for children and adults, diverse community education events (e.g., expeditions, festivals, and workshops), and networking services. Focused on major watersheds in North America and Mexico. <http://www.discoverawatershed.org/>

***San Diego Baykeeper*** (U.S.) - is dedicated to the principal that protecting California's precious coastal waters is the job of every citizen. As such, we have developed programs that involve the community directly in stewardship of local waters. It offers many activities and training opportunities including: citizen monitoring, kelp monitoring and restoration, beach clean-ups, internships, pollution hotline and more. <http://www.sdbaykeeper.org/programs/programs.htm>

***San Diego National Wildlife Refuge Complex*** (U.S.) - San Diego's Refuges offer a variety of environmental education programs in the field and in the classroom in collaboration with its partners, the Chula Vista Nature Center, Tijuana Estuary and with the Friends of San Diego Wildlife Refuges and other partners. <http://sandiegorefuges.fws.gov>

***Surfrider Foundation*** (GLOBAL) - is dedicated to the preservation and conservation of coastlines and beaches. The Foundation is international. Website allows access to current ocean water quality by county and state. <http://beach.com/beachwaterquality/>

## **Environmental Networks and Collaborative**

***Binational Watershed Advisory Council*** (U.S./MEX) - A binational team of researchers and practitioners, the Binational Watershed Advisory Council (BWAC), has been organized by the Institute for regional Studies of the Californias and the Department of Geography at San Diego State University (SDSU). Funding sources include the State of California, the County of San Diego, and SDSU.

The Advisory Council has developed baseline information about the watershed and identified stakeholders from various sectors. The stakeholders meet periodically to develop a binational vision for the Tijuana River Watershed. The vision will contain stakeholders' views about the ideal state for their watershed in the near and distant future and will recommend strategies and alternatives for achieving that vision. <http://www.trw.sdsu.edu>

***Border Environmental Education Web*** (MEX/ U.S.) - A resource directory of organizations in Mexico and U.S. involved in Environmental Education. This site has been made possible through generous assistance from the USDA Forest Service- Region III, and the U.S. Environmental Protection Agency's San Diego Border Liaison Office. This site offers comprehensive and up-to-date information on

environmental education programs and providers along the U.S.-Mexico border. Search our easy-to-use database for resources, programs, or people. We invite you to provide us with information on your organization, or update an existing organizational entry.  
<http://www.bordereeweb.net>

***The Border EcoWeb*** (U.S./MEX) - is designed to facilitate public access to environmental information for the U.S.-Mexican border region. The Border EcoWeb [INVENTORY](#) provides brief descriptions and links to various datasets available on the Internet. These links are organized by media, organization, and region. Also developed is a [DIRECTORY](#) that contains contact information and project descriptions for government agencies and other groups involved in activities dealing with the border environment.  
<http://www.borderecoweb.sdsu.edu/>

***California Regional Environmental Education Community Network, CREEC*** (U.S.) - The State of California has organized itself into 11 regions throughout the state and established local contacts for EE resources, events and opportunities pertinent to those regions. Each region can be accessed through the following website as well as the regions website.  
<http://www.creec.org>

***California Native Plant Society*** (U.S.) - is dedicated to increase the understanding and appreciation of native plants of California and to preserve them in their natural habitats through science activities, education and conservation.  
<http://www.cnps.org/>

***Sierra Club*** (U.S.) - is dedicated to exploring, enjoying and protecting the planet. Its website provides an update on local environmental issues, rare plant list for San Diego County, photographs, environmental links and links to local decision makers.  
<http://www.sierraclub.org/ca/>

***Consejo de Educación Ambiental para las Californias, CEAC***  
***Environmental Education Council for the Californias, EECC*** (MEX/ U.S.) - A cross border organization of environmental education and border environmental organizations whose purpose of advancing a culture of sustainability in the region by addressing the environmental, economic, and social access issues surrounding environmental education in the Californias. It focuses on increasing environmental awareness and understanding and the subsequent behavior leading to responsible action for the environment.  
<http://www.ceac.net>  
<http://www.eecc.net>

*EE Link* (GLOBAL) - A project of the North American Association of Environmental Education, NAAEE, the link is a primary source for environmental education resources, for school based and outreach applications.

<http://www.eelink.net/>

*Environmental Education and Training Partnership, EETAP* (U.S.) - The EETAP Project was designed to assist educators, by helping them learn how to incorporate environmental education into their curriculums through quality training and related support services. The goal of the EETAP Resource Library is to provide access to quality resources and information through a virtual library, various publications, and instruction on using EE databases to find information.

<http://www.eetap.org>

## **Policy, Regulation and Research**

*Association for Borderland Studies* (MEX/ U.S.) - The comparative study of international boundaries and border regions has gained new urgency and vitality in the post-Cold War, 21st century world. Contemporary issues include regional economic integration, the emergence of new post-Communist nation states, the proliferation of ethnic conflicts, security versus openness of borders, and the need to institutionalize management of trans-boundary problems ranging from immigration to shared environmental problems to public health and economic development concerns.

<http://www.absborderlands.org/>

*Project Clean Water* (U.S.) - represents a collective effort by the municipalities of San Diego County and more than 100 stakeholders dedicated, committed to make a collective effort to assure Clean Water in the San Diego region. Includes a strategic plan for the region to attain the vision of PCW, updates from each of the Technical Advisory Committees (TAC) in the science/technology, legislative/funding and education/outreach. Includes and inventory of education and outreach programs in the Region and in California.

<http://www.projectcleanwater.org/index.html>.

*Proyecto Fronterizo de Educación Ambiental A.C., PFEA* (MEX) - is a civil organization dedicated to the development of change-generating processes in environmental practice and policy, at the local and international levels. Their goal is to promote efficiency in social participation based on partnership building and facilitating citizens' access to environmental information. PFEA seeks to strengthen the institutional framework to achieve the development of a sustainable society. PFEA is a non-profit, non-political organization with the following principles: ecosystems determine the quality of life; the community is co-responsible for environmental preservation; and each individual has the right to access information that guarantees his right to a healthy environment. Only

a democratic, informed and participatory society is able to prevent and face present environmental challenges.

<http://www.proyectofronterizo.org>

*The Center for Sponsored Coastal Ocean Research - Coastal Ocean Program, CSCOR/COP* (U.S.) - is an important federal-academic partnership providing predictive capabilities for managing coastal ecosystems. CSCOR/COP seeks to deliver the highest quality science in time for important coastal policy decisions by supporting high-priority research and interagency initiatives related to NOAA's mission in three goal areas: Coastal Fisheries Ecosystems, Cumulative Coastal Impacts, Harmful Algal Blooms/Eutrophication.

[http://www.cop.noaa.gov/Fact\\_Sheets/CSCOR\\_Gen.html](http://www.cop.noaa.gov/Fact_Sheets/CSCOR_Gen.html)

*El Colegio de la Frontera Norte, COLEF* (MEX)

*COLEF – ORSTROM joint Digital Mapping Project* (MEX/U.S.) - In this project, the partners propose to evaluate the uses and dynamics of renewable resources in relation to economic and demographic activities. The evaluations will allow the diagnosis of certain aspects of management of the Mexican Border environment between the mouth of the Colorado River and the Pacific Coast and do a comparative analysis with the system north of the border. <http://govinfo.ucsd.edu/maps/colef/colef.html>

*Institute for the Regional Studies of the Californias, IRSC* (U.S./MEX) - The Institute for Regional Studies of the Californias (IRSC) provides [San Diego State University](#) with a forum for the investigation, discussion, and dissemination of information about the United States-Mexican border region. The Institute focuses on the border region of California and Baja California and is also concerned with important issues of the United States-Mexican interface and monitors border regions elsewhere in the world. Created in 1983, the Institute has undertaken multidisciplinary applied research projects on important regional concerns including trans-border environmental issues, policy perspectives of the California-Mexico relationship, quality of life, and sustainable development. IRSC also plays an active role in Mexico-related professional organizations and is frequently consulted on trans-border issues by the media, nongovernmental organizations, the public sector, and other border stakeholders. Other Institute activities include conducting binational symposia; improving communication between public and private sector representatives on both sides of the border; serving as a clearinghouse for information on trans-border events, issues, and institutions; and encouraging the effective use of educational resources among the region's universities. The Institute serves as a major link between SDSU and Mexican institutions.

IRSC has an ongoing publications program that includes books, monographs, and shorter items. Many titles are co-published with SDSU Press.



IRSC has under way major applied research projects on border environmental issues and policy, regional economic issues, and trans-border planning issues. IRSC serves as the SDSU link to the [Southwest Center for Environmental Research and Policy](http://www-rohan.sdsu.edu/~irsc/irscdesc.htm), a congressionally established consortium of Mexican and U.S. universities for research and policy studies on environmental issues of the border.

<http://www-rohan.sdsu.edu/~irsc/irscdesc.htm>

***National Library for the Environment*** (U.S.) - Issues covered include global climate change, population and environment, ocean and coastal resources and biodiversity. The site also accesses environmental virtual libraries and congressional research reports. It is a project of the National Council for Science and the Environment.

<http://www.ncseonline.org/NLE/>

***ProPenínsula*** (MEX) - is an organization dedicated to the preservation of natural resources of Baja California through the strengthening of local organizations.

<http://www.propeninsula.org>

***The Southwest Center for Environmental Research and Policy, SCERP*** (U.S./MEX) - is a consortium of five U.S. and five Mexican universities which serves U.S.-Mexican border residents by applying research information, insights, and innovations to environmental challenges in the region.

<http://www.scerp.org>

***Comisión Estatal de Servicios Públicos de Tijuana, CESPT*** (MEX) - Their mission is to guarantee the efficient delivery of potable water and clean-up services to the municipalities of Tijuana and Playas de Rosarito so that they can contribute to improve the residents' quality of life, the development of the region and environmental conservation. Their staff is committed with their mission's essence and their calling for service which exceeds user expectations.

<http://www.cespt.gob.mx>

***Comisión Nacional del Agua, CNA*** (MEX) - Their mission is to manage and conserve national waters with the community's participation in order to achieve a sustainable use of the resource. For CAN, managing and conserving national waters is to assess them for quantity and quality, estimate their availability, grant concessions, assignments and reserves for a fairer and more efficient use. It also encourages user participation in watershed boards to maintain a hydrological balance and satisfactory water quality. Community participation will be achieved by establishing a water culture which is the set of habits, behaviors and manners in which people use this resource efficiently and rationally.

<http://www.cna.gob.mx>

**U.S. EPA Region IX (U.S.)** - EPA's commitment to environmental protection includes providing educational services for educators, students, youth groups, the community and environmental organizations.

Competitive grants are offered to support environmental education, environmental education publications for classroom use, and youth awards program. The U.S.-Mexico Border XXI Program is an innovative binational effort that brings together U.S. and Mexican entities to work toward sustainable development.

<http://www.epa.gov/region09/water/>

**USDA Forest Service – Cleveland National Forest (U.S.)** - The mission of the Forest Service (FS) is to achieve quality land management under the sustainable land use multiple use concept in order to meet the diverse needs of people. The Cleveland National Forest, a unit of the U.S. Forest Service, offers Project Learning Tree, Wilderness Education and Fire Ecology education programs to students and teachers. A binational children's educational camp was recently sponsored in Baja California.

<http://www.fs.fed.U.S./r5/cleveland/>

**U.S. Fish & Wildlife Service (U.S.)** - The Service is the principal federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people. The Service manages the 93-million-acre National Wildlife Refuge System comprised of more than 500 national wildlife refuges, thousands of small wetlands, and other special management areas. San Diego County is home to several wildlife refuges: South San Diego Bay, Tijuana River Estuary, Sweetwater Marsh, and San Diego National Wildlife Refuges (NWR). A variety of educational programs are offered from interactive exhibits, nature hikes and youth programs depending on location.

<http://sandiegorefuges.fws.gov>

<http://www.fws.gov/kids/educators>

Also the U.S. Fish & Wildlife Service Division of Education Outreach provides training and support for conservation professionals to develop and implement collaborative outreach, education and heritage programs that achieve conservation goals. Library resources, training courses, maps, pictures and videos can be accessed through this site.

<http://training.fws.gov/deo/education.html>