

MARINE CONSERVATION RESEARCH INSTITUTE

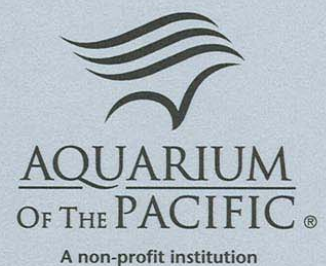
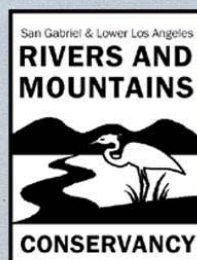


AQUARIUM OF THE PACIFIC

*Forum on
Los Angeles and San Gabriel
Rivers'
Watersheds*

JUNE 10-11, 2004

REPORT MCRI 04-02
July 19, 2004



Aquarium of the Pacific
Marine Conservation Research Institute

Forum on
Los Angeles and San Gabriel Rivers' Watersheds

*People, Ports, Plankton, Pipefish, and Pelicans:
A Region's Search for Sustainable Strategies to Live in Harmony with Nature*

June 10 – 11, 2004

Jerry Schubel
Barbara Long
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Vision Statement

“To create an exhibit that will tell the evolving story of the changing relationships of people within the San Pedro Bay drainage basin and their environment—terrestrial, riverine, and coastal ocean.”

INTRODUCTION

A watershed is defined as a specific land area that drains water into a river system or other body of water. The prominent cities in Southern California would not be located where they are today were it not for the Los Angeles and San Gabriel Rivers and the fertile soil around its watersheds. For centuries these rivers were the sole source of water for its inhabitants. The rivers' water not only helped make Los Angeles County and Orange county two of the richest agriculture regions in the nation, but also shaped its image as the Southern California Eden. Today however, the images of our watersheds contradict its importance to the history and development of this region.

The San Gabriel and Los Angeles Rivers' watersheds used to be abundant with flora and fauna. But with the increase in human settlements and in an effort to control the floods, the land was paved and the rivers were lined with concrete, hidden behind walls and its channels deepened. Our watersheds have been exploited and transformed. Our rivers are abused and forgotten, our wetlands almost nonexistent, and our hills and valleys are urbanized. Entire ecosystems have been compromised leaving polluted oceans and very little room for plants and animals. Elements in our watersheds no longer function as natural systems especially in the San Pedro Bay at Long Beach where the two rivers culminate.

Today there are several groups and agencies advocating for the restoration and re-emergence of the watersheds from their destruction. The Aquarium of the Pacific is keen

to be part of that revitalization endeavor by building new exhibits dedicated to “telling the evolving story of the changing relationships of people within the San Pedro Bay drainage basin and their environment—terrestrial, riverine, and coastal ocean”. With funding provided by the Rivers and Mountain Conservancy (RMC), the Aquarium hopes to inform our 1.2 million annual visitors, including 180,000+ children on school field trips, about the life of the rivers and other elements in our habitat and the changes that need to occur, with their help, to restore the watersheds to their original beauty. The project will include:

- A “green” environmental education classroom to be used by the community and school groups to explore the stories of the watersheds in greater depth
- Native landscaping and interpretive signage, around the classroom and exhibits area
- A watershed exhibit featuring a watershed table to show the story of the watersheds and identify actions that can be taken to restore some of the natural qualities of the rivers and mountains.
- A public exhibit on the stories of the watersheds in the area of the City of Long Beach’s Pier Point Landing facility that will be open to all visiting Rainbow Harbor
- Graphical reinterpretation of the plaza fountain to show the water cycle story to all visiting Rainbow Harbor

To determine what essential scientific process and key messages need to be included in the exhibits, the Aquarium of the Pacific’s Marine Conservation Research Institute (MCRI) held a watershed forum on June 10, 2004. A diverse spectrum of topics related to the native and urban watersheds of Southern California were discussed including the history, science and policies behind our watersheds.

A second session, a design charrette, was held on June 11, 2004, to explore in detail possible ideas for the future exhibits, based on the responses and input of the first session. The charrette was intended to assist in the formulation of programs and design elements for the watershed exhibit that will significantly contribute to the public’s understanding of their environment with an emphasis on the changing relationships of humans with water.

The forum and charrette were organized around an exceptional panel of watershed experts and structured to give panelists an opportunity to speak on their area of expertise and elaborate on matters they thought were imperative for people to know. (See Agendas in Appendix A and List of Participants in Appendix B).

SUMMARY OF FORUM PANELISTS’ PRESENTATIONS

The forum panel was composed of scientists, urban planners, educators, watershed management experts, city officials, architects, exhibit and landscape designers and Aquarium staff. (Presentations are available on a CD-ROM).

Frank Colonna, vice mayor of Long Beach and chair of the RMC, opened the forum by expressing his sincere gratitude for convening together on such an important matter. Colonna said “The time is right in our city to look under the rocks and see what we are really all about”, i.e. water quality, habitat restoration, and rediscovery of what has been left behind in our watersheds. He advised that there’s no time like the present and the present holds an aggressive governor who could make a lot of meaningful changes. He added that the results of this forum may lead to critical work and be looked around nationally.

Belinda Faustinos, executive director of the RMC, spoke about the principle purposes of the RMC which are to manage public lands within the Lower Los Angeles River and San Gabriel River watersheds. The RMC’s core efforts are to provide open space, low impact recreational and educational uses, water conservation, watershed improvement, wildlife and habitat restoration and protection, and watershed improvement within the territory. She added it was important to the RMC to involve the Aquarium in achieving its vision. The funds going into the project are coming from Proposition 40 which is dedicated to the preservation of open spaces. Faustinos thanked the Aquarium for their effort in organizing the forum.

Jerry Schubel, president and CEO of the Aquarium, welcomed the participants and summarized the goals of the forum and reminded all participants that the Aquarium intends to achieve distinction through the watershed exhibit. Schubel presented a slideshow highlighting the increase in population growth in the last century in Southern California and elaborated on the evolution of the Los Angeles River into the concrete bed we know it to be today. He touched upon some of the beneficial and detrimental possibilities for the river in the future giving a list of action plans that could be implemented to recapture the rivers’ past glory.

Barabara Long, vice president of government relations and special programs at the Aquarium, gave a brief overview of the project and described the five components of the watershed project, i.e. the “green” classroom, native landscaping, watershed exhibit, public exhibit, and fountain reinterpretation. She added that the exhibits will be a destination for children, parents, teachers, etc. and should be a thought provoking enough to allow parents to teach children and vice versa. Long reminded participants about the “3, 30, 3” rule and said whether the guests come for three seconds, thirty seconds, or three minutes, all of them can be great experiences.

Dennis Eschen, manager of planning and development at the Parks, Recreation and Marine, **Tom Leary**, stormwater program officer of the Department of Stormwater Management, and **Matt Lyons**, manager of planning at the Long Beach Water Department, represented the City of Long Beach and spoke on the many efforts the city has made to initiate environmental education programs, water retention projects, create parks and outdoor spaces, improve trash collection, manage waste, and reclaim water among other things. Lyons continued to give startling facts regarding the amount of water used by the people of Long Beach and how much of it is wasted.

Cathie Chavez, project analyst for the RMC, presented a slideshow on what a watershed is. After explaining the integral parts and the physical features of the San Gabriel and Los Angeles watersheds she revealed the current conditions of the watershed with a list of point sources and non-point sources found in the water. She added that to improve our well being we have threatened our drinking water, the local animals and native species. However, with the support of the public many improvements can be made.

Dr. William Deverell, the forum's keynote speaker, is professor of history at the University of Southern California and until July 1st was associate professor at the California Institute of Technology. He is the author of several books addressing California's political reform and the history of Los Angeles.

In his studies, Deverell examined the historical turning points and pivotal events to understand why the region evolved as it did and why and how the watersheds were transformed. He outlined the history of the communities that have lived in the Los Angeles watershed and spoke on the human dependency on water and the proximity at which all communities reside beside water bodies. Deverell isolated a few points in the past decades to explain the wide breath of LA's rapid growth and development to show how it emerged into a major American city. Some of the prominent points in his lecture include:

- Native Americans in the eighteenth century and the Mexicans in the nineteenth century resided on the hills but near the LA River as they knew the river was prone to floods.
- Watersheds were critical to the people for their pastoral economy and for cartographic reasons as boundaries and property system definition were defined by the localized landscape markers. The rivers were well understood by the early communities.
- Anglos arrived with the advent of the Mexican-American war and the gold rush in the mid-nineteenth century and situated themselves next to the river and as a result many communities were flooded away. There was a tremendous growth in the demographics.
- The nineteenth century brought along the industrial revolution and the railroad technologies. Industrial and residential zoning was developed and "Jeffersonian" view of landscape was adopted where maps were defined by a grid system. The arrival of the railroads brought in the love for straight lines, rationality metaphorical for the river flow.
- Ecologically sensitive proposals such as the Olmstead-Bartholomew Plan (developed in 1930 by the son of the designer of New York's Central Park) suggested outlawing buildings on the flood plains and instead building parkways along the river. But these proposals never went into effect.
- Devastating floods took place in early twentieth century and as a result channelization of the river started under the U.S. Army Corps of Engineers. Channelization of the river was welcomed for their flood controlling properties as the aesthetic qualities of concrete were considered beautiful, clean and modern at that time.

Deverell's historical perspective of our watersheds prompted new issues to consider and much of his information became the topics of many discussions throughout the forum.

Shirley Birosik, watershed coordinator at the Regional Water Quality Control Board, spoke on the impact by humans on the quality of the water in the watersheds. Birosik listed some natural elements found in the water such as various types of bacteria, salts, oil, and metals and artificial substances such as organics and explained how humans are increasing the quantity of these elements to disproportionate levels. Watersheds may have been able to assimilate to the levels of the natural substances if the rivers had not been altered. However, now as much of the landscape is paved, rivers no longer operate naturally, and natural sponges (wetlands) are nearly nonexistent, the watersheds do not possess the ability to absorb the natural substance let alone the artificial ones. The watersheds are abused and overburdened.

As a note of optimism, Birosik added that there is a great deal of awareness now about water quality issues as compared to twenty to thirty years back. The most successful effort being the Clean Water Act of 1972 which established the basic structure for regulating discharges of pollutants into the waters in the US.

Kelly Schmoker, environmental scientist at the RMC, informed members of the forum about the impact of urbanization on the physical and biological characteristics of the Los Angeles and San Gabriel River watersheds. Schmoker displayed several crucial sections, graphs and diagrams outlining the changes in the landscape of our environment as a result of urbanization. These changes have had an adverse effect and created upstream and downstream erosion, changed the formation of the river, destroyed the wetlands, diminished the water quality and threatened the native species. She pointed out that our watersheds have very different geological characteristics than other watersheds and that is another reason why we are even more susceptible to flooding.

In her closing remarks, Schmoker stressed that the watersheds need to be viewed as an entire system as impacts at the top of the watershed transform the entire watershed and vice versa.

Mary Loquvam, local assistance program coordinator of the Southern California Wetlands Recovery Project, spoke on the watershed phenomenon of the headwaters. Headwaters are the source of rivers and represent about seventy-five percent of the known streams and river channels in the U.S. Thousands more are there but have not yet been identified. The natural processes that occur in the headwaters provide a host of benefits, including flood control, adequate high-quality water, and some of the richest biodiversity found in the watersheds. Headwaters are the only part of the Los Angeles River where the river is functioning normally. However the headwaters are facing peril from human activity today and therefore it is critical to include its role in the education of the watersheds. Loquvam said "Some day the river may be restored and we would want the headwaters to be intact and contribute to the functioning of the river".

To provide the ecosystem services that sustain the health of the nation's waters, it is important to maintain the roots of the rivers by protecting the hydrological, geological, and biological characteristics of the headwaters. In her final remarks, Loquvam added that several organizations are working to assess the water quality of the Los Angeles River. They will calculate the amount of water the headwaters contribute to the basin. This data is especially valuable for providing protection to the headwaters.

Rick Harter, executive director of the Los Angeles & San Gabriel Rivers Watershed Council, outlined several important issues about watersheds. He stressed the importance of laying out the foundation of the science and social aspects of watersheds and show how connected we are to the process for informational, motivational and inspirational purposes. Among other things, Harter mentioned the following factors as being important to the exhibit:

- To start from the basic and explain the question “what is a watershed?” This can be done by defining and demonstrating the science behind the watersheds, including aspects about geology, climate, geography etc. and the hydrological cycle of water.
- Explain the input side of water related issues such as information about the water supply, the history of how much water was needed, how much of it is going into treatment plants, how water supply is used and distributed today, etc.
- Explain the output side of water related issues such as information about stormwater, pollution, groundwater dynamics, etc.
- Funding is an important issue for policy makers and is an issue that people are divorced from in terms of awareness.
- The social side of the issues including how humans and the environment are linked. It is important to describe the way water is perceived and celebrated in different communities. Water is also eighty five percent of our body content.

Leslee Temple, vice president of NUVIS, the landscape architectural firm for the watershed project, spoke about their concepts for the watershed project. Temple said the design would consist of a network of gardens reflecting the plant communities of the Los Angeles and San Gabriel Rivers' watersheds. The concepts for the design would be divided into two stories. The first story will focus on the types of native materials found in all aspects of the watersheds including in the headwaters, tributaries, and near the coastal waters. The second story will emphasize the beauty in native landscape education by revealing the methods involved in planting, maintaining and growing native plants. Visitors will see the development of the gardens from its inception to its maturity.

RESULTS OF BREAKOUT SESSIONS

Participants at the forum were separated into groups of about five to seven people to explore eight aspects of our watersheds. Each group brainstormed an issue and considered what ideas and concepts they would want the visitors to go away with after viewing the exhibits. The topics for the breakout sessions and their results are presented below:

- Sense of place themes
- Current threats to the watersheds
- Restoration planning & pilot programs
- The past (flood control, land use and water use management)
- The water cycle (including how we use water)
- Demonstration of sustainable design principles on our site
- Individual practices & choices that affect our future
- Characteristic species in the flora and fauna of the watersheds

Sense of Place Themes

The group explored the subject “sense of place” through three different areas in a hierarchy that visitors would be most familiar with, i.e. the home (backyard), the community and then the watershed. The group felt visitors would be most comfortable tackling the subject through the universal concepts of the natural, cultural, engineered and historical environment within the following three areas to recognize their sense of place in the ecosystem.

- “My home” (“My backyard”) concept focuses on the cause and effect of individual choices with an emphasis on historical stories. The concept should give a sense of hope that one can have an impact and make a difference.
- “My community” concentrates on the shared environment and focuses on elements that people are familiar with now such as regional icons, palm trees and freeways but never existed before or had to be imported.
- “My watershed” answers the question about where water comes from. Through the journey of a raindrop, the story of water can be outlined and explained in relation to its history, its movements, and its orientation in the larger landscape.

Current Threats

The group outlined critical threats currently facing the watersheds in terms of individual actions and presented small and large steps that could make a difference in adhering these threats. The threats include:

- People, the primary threat, get in the way of the natural process. The uncontrolled growth of population and their lack of knowledge and awareness about the oceans and watersheds create a dilemma. Fundamental understanding of the environment may rectify that problem.
- Current values focus on what people need rather than what the watersheds need. Science based solutions can be accomplished by looking at the environment from a different perspective and reintroducing natural values.
- Inability of governments to recognize the opportunities for watershed transformation. Current government policies blocking watershed restoration can be highlighted.

- The current cultural interpretation of what the landscape should look like needs to be changed. Show the mistakes mankind has made throughout its history with their interpretation of what the environment should look like at the time (such as using concrete to “beautify” the river) and how different that view is now.
- The continuous loss of functioning habitat. Parts of the watersheds such as the headwaters are functioning normally but are under imminent threat. These parts should be highlighted as features we still have a chance to preserve.

Restoration Planning and Pilot Programs

The group studied models that would promote watershed restoration. They include the following:

- Highlight successful pilot programs for wetland restoration such as in the Dominguez Gap, giving information about its locations, processes, and results with impacts in numbers.
- Show current models in place of restoration planning including, but not limited to, efforts to remove concrete, the concept of earth day, the positioning of recreation areas and measures of flood control.
- Re-evaluate the successful and unsuccessful measures that have been put in place over history. Show simple efforts such as backyard techniques, cisterns, and use of porous paving and show older planning methods such as the way boundaries were defined.

The Past

The group evaluated how history could influence visitors to learn and understand their watershed better. The group focused on three factors.

- The time sequences of the following events:
 - Demographic, agricultural, residential and industrial land uses in history
 - Flood control methods
 - River and later, freeway transportation corridors
 - How various communities lived in harmony with the river
- Discussion of the difference between the natural local features and man-made features and how and why they were perceived so differently between earlier communities and communities now.
- Discussion of the cultural/political/social issues that have shaped our watersheds and our perceptions over time. To also show how the watersheds could be if we were to “peel back the layers of our urban landscape” and dig into the cultural memory of the watersheds (including the unintended consequences such as applying concrete to beautify the river, contaminating water with DDT while trying to clean the air, etc.)

Water Cycle and How We Use It

The group gathered to explore how the importance of water could be brought to light and how it is essential and limited. Their suggestions include:

- Outline the journey of water through the water cycle. Explain the different types of water (salt water, gray water, etc.), where it comes from and where it goes so that visitors understand the interconnectedness of water to the daily life. Water may be limited but it is also a renewable resource.
- Show the dependence on water in society's infrastructure. Water is so important to a society that it creates jobs and has government agencies and institutions centered on it.
- The health and abundance of water in the watersheds dictate society's dependence on the local environment and on to neighboring watersheds. Therefore stewardship of water is vital and methods to conserve water through sustainable practices are essential.

Demonstration of Sustainable Design Principles on Site

The group pondered on how visitors could take home and implement key messages on sustainability. Their ideas include the following:

- Encourage the "regenerative system" where products have a second life the way the environment is self-supporting and can have many lives.
- Show simple and complex implementation of local materials and natural energy used in the visitor's environment and in the Aquarium environment to demonstrate efficiency and sustainability. Use methods and materials such as the "green" roofs, permeable surfaces, solar energy, passive design, native plants, gray water, and edible landscape.
- Become a member of the "environmental police" with the aid of a ticket book to take home where children and adults can measure and grade sustainability in their home, school and/or work place.

Individual Practices and Choices That Affect Our Future

The group considered the personal choices that people could make in three different personal spaces that could positively affect the future. The group developed a list of responsibilities that already exist but need to be reinforced in the home, school and work place.

- A change in practices in the home such as planting native plants to avoid yard work, taking out the hardscape, properly disposing of cleaning products, garden fertilizers and insecticides, buying less toxic products and instead buying more organic products, participating in local environment programs, conserving water, and consulting websites for learning responsible tips.

- A change in practices in the school by initiating recycling program, reducing trash, encouraging the planting of native gardens, and improving energy conservation tactics.
- A change in the practices in the work place by promoting car pooling, the use of mass transit, buying non-toxic janitor supplies, reducing the procurement of single-use office supplies, buying recycled office supplies, developing a green energy/efficiency program
- Encourage people to vote and work with the government to be more environmentally responsible.

Characteristic Species in the Flora and Fauna of the Watersheds

The group discussed the precarious living conditions for the various species found in the watersheds and how their stories could be highlighted. Following are a list of the ways their plight might be brought to light:

- Discuss the turning points in the history of the watersheds such as the construction of freeways, channels, dams and houses to establish a historical baseline and show what affect that has had on the animals and native plants.
- Show which species used to exist in the flora and fauna of the watersheds and which ones exists now.
- Discuss the watersheds as a biodiversity hotspot
- Use models with different scenarios to play with the zoning of population, paved space, landscaped space, etc. to see the results of what could have been
- Put a face to the problem by highlighting the life of an animal and its journeys, perils, and discoveries.
- Demonstrate native landscape for small backyards to show how easy it is to apply it the visitor's home. Also showcase examples of real people who are practicing it in their own backyards.

Additional Ideas of Breakout Sessions

Link Exhibit to Other Centers – Link the exhibit at the Aquarium to other exhibits at museums, cultural centers, government agencies, etc. Reveal to visitors where and how they may obtain additional information on our watersheds as well as other watersheds.

Traveling Exhibit – Design the exhibit to be mobile so that it can be transported to other centers and can be connected to other programs. Funding might be easier to get through such programs.

Information CD – Provide a CD with information about watersheds that cannot be displayed due to lack of space or funding.

Future Urban Design – Mention the impracticality of moving 12 million people as a solution to the problems. Instead declare that the future is urban but people can bring

softening touches of nature into the city. Therefore future urban planning initiatives should be looked at through the perspective of the watersheds.

“I am the Solution” – Enforce the notion that people do have power and that they can make a change.

The forum ended successfully with an extensive list of ideas on watershed history, sciences and restoration. The participants were able to provide great details of significant issues that should be presented to the public for their general knowledge and to help them determine our future with foresight and purpose.

RESULTS OF DESIGN CHARRETTE

The design charrette, held the next day, allowed the designers to absorb all the information from the watershed forum and organize the ideas into preliminary design elements and possible programs for the exhibits. The day was planned around presentations by the designers and summarization of the previous day’s discussions.

Schubel recapped the purpose and components of the watershed project. He explained that within a span of only about a hundred years, our natural systems have gone from one dominated by nature to one dominated by humans. The challenge now is to achieve an appropriate and sustainable balance. These exhibits will focus on that challenge. The aim now should be how to show the people of San Pedro Bay to live in harmony with their environment and show what alternative pathways people can take to add natural elements to a highly human dominated system. The fact is our watersheds will remain a human dominated system from now on and it is only through physical and social engineering that it can be altered.

Design Presentations

Glennis Briggs, project manager at Esherick, Homsey, Dodge, and Davis (EHDD), and **Noreen Hughes**, exhibit designer at EHDD, both presented case studies of design work the firm had completed that were similar in nature to the watershed project. Briggs and Hughes cited possible use of eco-friendly materials, architectural and construction techniques and preliminary conceptual designs for the environmental education classroom, the public exhibit and watershed exhibit.

Hernando Miranda, sustainability consultant and principal of Soltierra LLC, talked about the Leadership in Energy & Environmental Design (LEED) Green Building Rating System. Miranda went over a point based credit checklist for the Aquarium to identify which areas the building would have to be replaced with more eco-friendly methods or materials. The higher points would allow the Aquarium to achieve its desired LEED Gold standard certification for the entire campus. The list would be applied to the watershed project to achieve LEED Platinum certification. LEED certification of these particular exhibits and eventually the whole campus serves to contribute to the further development of the Aquarium as a highly imaginable, inspiring and unique place.

Zofia Kostryko, principal of deZign sKape, informed participants about plans for the graphical reinterpretation of the plaza fountain, located in the front of the Aquarium entrance. Those walking along the Rainbow Harbor and visitors to the Aquarium will first encounter this exhibit and learn the story of water from the time it falls on the San Gabriel Mountains to the time it discharges into the San Pedro Bay. The exhibit will become a natural and significant precursor of the watershed exhibit and the public exhibit at the Pier Point Landing.

Summary of Major Themes

Participants agreed there were too many aspects of the watershed to show in the exhibits within the prescribed scope and budget of the project. They reviewed and listed the most important thoughts developed from the forum the day before. They are presented below:

- Stories to tell
 - What is a watershed?
 - What is the watershed of the Los Angeles River? Of the San Gabriel River? Of the San Pedro Bay?
 - What are the watersheds of the San Pedro Bay?
 - What are watersheds so important?
 - What was the natural state of the watershed of the San Pedro Bay and of each of its rivers?
 - What were the natural forces that created these watersheds?
 - How did the Los Angeles and San Gabriel Rivers “behave” under natural conditions in terms of the meanders, flooding of the flood plain, etc.?
 - How did the overlay of settlement and development change the natural qualities of the Rivers? Why? When?
 - Under the landscape there is a beautiful landscape. We need to reveal it
 - Population and paving over the landscape
 - Channelization of rivers
 - Hardscaped floodplain
 - Pollution levels in rivers
 - Groundwater hydrology
 - Five dams of San Gabriel watershed and twenty-two dams of the Los Angeles watershed
 - Regulation of flow, percentage that’s discharge as waste water
 - The existing condition was a success and an engineering marvel. Now we have a new goal to add natural components
 - Society’s priorities change
 - Public perceptions that “its not a river” needs to be changed. We need to unmask the river
 - There is now an increased demand for public recreation
 - Bringing back the habitat for the creatures with which we share the watershed, i.e. the steelheads, Santa Ana suckers, coyotes, etc.
 - The headwaters are still “natural”

- The water cycle/hydrological cycle and how it is expressed in this region
 - We are not self-sufficient. Show where our water comes from. What will happen if those supplies are exhausted? What are the prospects for the future?
 - Imported water – the system isn't designed to collect water, we lose it
 - Population in the watershed – only 30% of drinking water comes from within the watersheds, we are “robbing” other people of their water
 - External sources of water will decrease in the future, therefore we need to figure out how to be more water self-sufficient
 - It's all interconnected
 - Law of unintended consequences
 - The problems of trash and non-point source pollution
 - Show the watersheds' uniqueness as a biodiversity hotspot
 - Show the “desired future” and outline the steps to get there. They are happening today
 - Los Angeles is a city based on hopes and dreams. This dream is still possible.
 - People have power to exercise
 - People have a place in the ecosystem, show them how
 - Tell the success stories
- Take aways from the exhibits
 - The strong connection people have to the rivers, watersheds, nature
 - What a watershed is
 - Restore the “magic and spirit” of the river
 - Know about other watersheds nearby
 - People have a personal responsibility to the rivers and the region
 - Call to action. Personal and collective (government) change and make a difference
 - Our watersheds have special features such as unique incline, extensive aquifers and erratic water flow
 - Biography of the river—“story of the river”. Go away inspired
 - Give people hope
 - Threats to the watersheds
 - The rivers do not function like natural systems anymore
 - People need to save what still “works” naturally right now (e.g. headwaters)

The designers refined the process even further and organized the thoughts and messages around three central questions that would explain to visitors the priority stories of the watersheds. Each story traces the transformation of the watershed through its past, present and future. The three themes focus on the natural, engineered and cultural environment of the watersheds and include:

- What is a Watershed?
The three watersheds of San Pedro Bay
 - The watershed defined and located
 - Unique physical attributes of the San Pedro Bay drainage basin (including its geology, geography, climate and hydrology)
 - The various communities, animals and plants that reside or used to reside in the watersheds

- What has happened to “My Watershed”?
The California Floristic Province, of which this is part, is a global biodiversity hotspot
 - To discuss issues about population growth, flood control, development, threats and perception
 - Address the fact that the river is not dead! Show what parts are under threat and what parts are still functioning

- What Can We Do About It?
How we can restore the “magic and spirit of the river”
 - Public action in terms of political will, building sustainably, and highlighting pilot programs
 - Personal action in the form of demonstration gardens, making simple choices at home, school or work, 3R’s (reuse, reduce, recycle)

Project Requirements

Requirements for each component for the watershed project were reiterated while additional requisites were outlined.

- “Green” environmental education classroom
 - Must be LEED Platinum certified
 - Capacity of 30-40 people
 - Room is to be used and equipped for educational purposes for school groups, board meetings, community meetings, rental space for professional meetings, etc.
 - Room must be designed to cater to people of all age range
 - Equip room with a/v capacity, cordless mike, etc. (Aquarium to buy equipment)
 - Use of adaptive furniture
 - 200 SF storage space to put away furniture and classroom tools
 - Classroom design as presented in RFP response
 - Installation of low-flush toilets, if cost and space permit

- Native landscaping
 - Use of native species of plants
 - Strong, clear and attractive pedestrian connections

- Use of gray water for irrigation
- Watershed exhibit
 - Located within an outdoor, covered exhibit pad
 - Manipulative watershed table
 - Have a water component to the watershed table (subsequent events may change this feature)
- Public exhibit
 - City of Long Beach Parks, Recreation and Marine is the “owner”
 - Located at Pier Point Landing
 - Must be designed for minimal maintenance
 - No docent interpretation
- Plaza fountain
 - No structural changes to the existing fountain
 - Graphical components will be place along the outer wall of the fountain to display the story of the water cycle
 - Installation of graphical riverscape (made of eco-friendly material), depicting the San Gabriel and Los Angeles Rivers, on the plaza ground

CONCLUSION

The Aquarium of the Pacific’s Marine Conservation Research Institute (MCRI) convened a watershed forum and design charrette on June 10-11, 2004 that brought together thirty-five leaders from City of Long Beach, the design field, academic institutions, and local, regional and state agencies to identify key issues to present in the new exhibits at the Aquarium. The forum produced a multitude of innovative ideas which will be implemented in various parts of the exhibits. The participants agreed that the overall goal of the exhibits would be to teach visitors how to improve the quality of life for the people and our environment by making the city sustainable and changing the shape of the future of the watersheds. The task will be challenging but also a rewarding one.

The designers of the watershed project are currently in the process of forming the thematic framework structure of the designs. The requirements and the standards set forth during the programming and schematic design phase will become the basis for the development of the project design.

The watershed project is an exciting effort to create an outreach platform. The additions and enhancements to the Aquarium will make a significant contribution in educating Los Angeles and Orange County residents about the open spaces in our urban habitat as well as increasing their appreciation of their watershed and their understanding of the water cycle.

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Appendix A

Forum and Design Charrette Agendas

*People, Ports, Plankton, Pipefish, and Pelicans:
A Region's Search for Sustainable Strategies to Live in Harmony with Nature*

**A Forum on the Los Angeles and San Gabriel Rivers' Watersheds
June 10, 2004
8:30 a.m. to 4:30**

Schedule	Agenda Item	Facilitator
8:30	Welcome and introductions	Frank Colonna, Belinda Faustinos & Jerry Schubel
8:45	Forum objectives	Jerry Schubel & Barbara Long
9:00	Aquarium's RMC funded project overview	Barbara Long & Cathie Chavez
9:15	City of Long Beach partnership	Dennis Eschen, Tom Leary & Matt Lyons
9:30	Our watersheds <ul style="list-style-type: none"> • Definition • Unique attributes 	Cathie Chavez
10:00	Historical overview of our watersheds— Transformation to an urban watershed	Bill Deverell
11:00	The science of our watersheds and water cycle (land formation, natural habitats, impact of humans)	Shirley Birosik & Kelly Schmoker
11:30	Issues of our watersheds relevant for public exhibits (environmental, social, economic and other)	Rick Harter & Mary Loquvam
12:00	Lunch/Poster Sessions: Environmental education room LEED Long Beach Parks & Rec. river project LA County Stormwater Programs The plaza fountain The Rivers and Mountains Conservancy	Glennis Briggs Hernando Miranda Dennis Eschen Kimberly Lyman Zofia Kostyrko Cathie Chavez & Kelly Schmoker
12:45	Breakout session's objectives	Jerry Schubel and Carolyn Levi
1:00	Breakout sessions #1 <ul style="list-style-type: none"> A. LA and San Gabriel Rivers and watersheds—Sense of place themes B. Current threats to watershed C. Restoration planning & pilot programs; historic plans (Olmstead) D. The past (flood control, land use and water use management) 	All
1:45	Breakout sessions #2 <ul style="list-style-type: none"> E. The water cycle (including how we use 	All

	water) F. Demonstration of sustainable design principles on site G. Individual practices & choices that effect our future H. Characteristic species in the flora and fauna of the watersheds	
2:30	Report on breakout sessions	All
3:30	Key messages for the public and guidelines for charrette participants	Belinda Faustinos, Jerry Schubel, & Lynne Preslo
4:15	Wrap up & next steps	Barbara Long

A Design Charrette for the Los Angeles and San Gabriel Rivers' Watershed Project

- Environmental education classroom
- Aquarium watershed exhibit
- Native Landscaping
- Pier Point Landing public display
- Reinterpretation of the plaza fountain—the water cycle story

June 11, 2004
8:30 a.m. to 2:30 p.m.

Schedule	Agenda Item	Facilitator
8:30	Welcome and introductions	Jerry Schubel and all
8:45	Thoughts of June 10 th forum	All
9:15	City of Long Beach Parks, Recreation & Marine's role	Dennis Eschen
9:30	Environmental education room: <ul style="list-style-type: none"> • Programming to date • Access requirements • Building as exhibit; symbol, sustainable 	Glennis Briggs
10:15	Introduction to sustainable design/LEED certification	Hernando Miranda
10:30	Break	
10:45	Exhibit workshop (Lunch will be served)	All
2:15	Wrap up & next steps	Jerry Schubel & Barbara Long

Appendix B

List of Participants

Name	Title	Organization
Shirley Birosik	Watershed Coordinator	Regional Water Quality Control Board
Mary Blackburn	Director	El Dorado Nature Center, City of Long Beach
Glennis Briggs	Senior Associate, Project Manager	EHDD
Ed Cassano	Vice President of Programs & Exhibits	Aquarium of the Pacific
Cathie Chavez	Project Analyst	Rivers and Mountains Conservancy
Dave Clare	Project Manager	Claro Creative Studios
Frank Colonna	Vice Mayor/Chair of RMC	City of Long Beach
Amy Coppenger	Director of Education	Aquarium of the Pacific
Suzanne Dallman	Manager of Stormwater Programs	LA & San Gabriel Rivers Watershed Council
William Deverell	Associate Professor of History	California Institute of Technology
Dennis Eschen	Manager of Planning and Development	Parks, Recreation and Marine, City of Long Beach
Belinda Faustinos	Executive Officer	Rivers and Mountains Conservancy
Simone Goldfeder	Project Architect	EHDD
Rick Harter	Executive Director	LA & San Gabriel Rivers Watershed Council
Jeff Hohensee	Director of Education	TreePeople
Noreen Hughes	Exhibit Designer	EHDD
Zofia Kostyrko	Principal, Exhibit Designer	DeZign sKape
Tom Leary	Stormwater Program Officer	Stormwater Management, City of Long Beach
Carolyn Levi	Consultant	Imagination's Edge Consultant Services
Barbara Long	Vice President of Government Relations	Aquarium of the Pacific
Mary Loquvam	Local Assistance Program Coordinator	Southern California Wetlands Recovery Project
Kimberly Kyman	Public Relations Group	LA County Department of Public Works
Matthew Lyons	Manager of Planning	Water Department, City of Long Beach
Steve Mayer	Director	Activision
John McCord	Manager of Education	Aquarium of the Pacific
Hernando Miranda	President, Sustainability Consultant	Solterra LLC
Hope Mitnik	Exhibit Designer	EHDD
Corinne Monroe	Researcher	Aquarium of the Pacific

Rob Mortensen	Mammalogist III	Aquarium of the Pacific
Mark Perez	Landscape Architect	NUVIS
Lynne Preslo	AoP Board Member/President	GeoEco, Inc.
Fahria Qader	Project Administrator	Aquarium of the Pacific
John Rouse	Vice President of Operations	Aquarium of the Pacific
Rick Ruiz	Vice President/Board Member of RMC	PS Enterprises
Mark Sandoval	Manager of Marine Bureau	Parks Recreation and Marine, City of Long Beach
Kelly Schmoker	Staff Environmental Scientist	Rivers and Mountains Conservancy
Jerry Schubel	President & CEO	Aquarium of the Pacific
Eileen Takata	Watershed Planner	Orange County Watershed & Coastal Resources Division
Leslee Temple	Vice President, Landscape Architect	NUVIS