FIGURE 4: Kayakers on the Los Angeles River in the Sepulveda Basin, 2011.
PHOTO: DEREK LAZO

REVITALIZED RIVERS AND VIBRANT COMMUNITIES: THE PROMISE IN LOS ANGELES

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Abstract

The coastal draining rivers of Los Angeles County are engineered and managed for two primary purposes: reducing the risk of flooding and retaining mountain rainfall for water supply. All other benefits of the rivers, or ecosystem services, have been reduced or eliminated. Changing and enlarging the priorities for the urban rivers of Los Angeles requires full implementation of a new paradigm, based on a watershed approach and requiring the coordinated, collaborative efforts of many local, state, and federal organizations and agencies. In Los Angeles, a new partnership with multiple agencies of the federal government is providing assistance. Led by the U.S. Environmental Protection Agency (EPA), the Urban Waters Federal Partnership (UWFP) is an umbrella for broad, cross-sector coordination and implementation of a region-wide watershed approach. To achieve a restored river and revitalized communities in Los Angeles, the organization and agency partners of the UWFP need to strengthen the existing collaborative network to effectively coordinate and carry out the work of facilitating, supporting technology and communication, collecting and reporting data, and handling logistical and administrative details. The UWFP is among the newest additions to a chorus of adaptive management efforts related to the Los Angeles River watershed. Success will require smart, watershed-wide, collective impact planning and investment to achieve the vision. In this way can the Los Angeles River reclaim its multiple benefits and serve as a vital resource for communities.

Introduction

Today, the coastal-draining rivers of Los Angeles County are engineered and managed for two primary purposes: reducing the risk of flooding and retaining mountain rainfall for the water supply. The ecosystem services provided by rivers, primarily supplying water, growing fish, serving as a conduit for transportation, recreational

FIGURE 1: Map of the Los Angeles River watershed. CREDIT: COUNCIL FOR WATERSHED HEALTH

opportunities, cycling nutrients, transporting sediment, filtering pollutants, and others (U.S. Geological Survey 2007), were reduced in the Los Angeles system over the past century to one service—supplying water, primarily sourced from mountain rainfall.

How can the communities adjacent to rivers, and part of the river watersheds, reclaim the multiple benefits from those rivers so they are a resource for communities? What has happened in Los Angeles has happened to rivers across the country. The stories are the same; only the details are different. Changing and enlarging the priorities for the urban rivers of Los Angeles require full realization of the paradigm of watershed management. Although it took two agencies, one local and one federal, working for most of the twentieth century to engineer a flood control system from the rivers, the future system requires the collaborative efforts of many local, state, and federal organizations and agencies.

The federal commitment to "be at the table" on a working level is a rare opportunity for the local stakeholders who have long been involved with river restoration and revitalization.

A watershed approach is widely accepted as the most effective framework for addressing water resource challenges (U.S. Environmental Protection Agency [EPA] 2012a). Working with the landscape and its natural processes, a watershed approach relies on sound science, receives input from multiple stakeholders, and integrates multiple programs to strategically address priorities and resolve challenges. The watershed approach integrates scientific research and engineering in a management process that requires the consent and support of the public. Thus, the decision-making cycle includes not only planning, implementing, monitoring, assessing, and adjusting but also providing feedback to and from the public (Alcamo and Bennett 2003). The question remains: How do you fully implement a watershed approach in a system of agencies, cities, and organizations, each with its own authorities, jurisdictions, and missions?

In Los Angeles, a new partnership with multiple agencies of the federal government is providing some answers to this question. Led by the U.S. EPA, the Urban Waters Federal Partnership is an umbrella for broad, cross-sector coordination and implementation of a region-wide watershed approach. The Partnership was formed as an acknowledgement that large-scale change requires commitment from key agencies and organizations from different sectors working together on a common agenda.

Traditional Navigable Waters

On July 6, 2010, the EPA issued a ruling that the entire fifty-one-mile Los Angeles River is "traditional navigable waters" of the United States (U.S. EPA 2010a) (Figure 1). The EPA decision clarified the legal status of the river under the Clean Water Act and overturned an earlier decision by the U.S. Army Corps of Engineers to designate only 3.75 miles in two reaches as "traditional navigable waters."

The decision by the Army Corps of Engineers, issued two years earlier in March 2008, was met with protests by advocates for the river. Removal of Clean Water Act protection from most of the river was seen as a setback after decades of work to change the perception of the river as nothing more than an open urban storm drain. Seven environmental groups responded to the March decision with a joint letter of protest to the EPA. Over three days at the end of July 2008, a small group of twelve people committed an act of civil disobedience when they navigated the length of the LA River in canoes and kayaks in the Los Angeles River Expedition, seeking to show that the river was navigable by small craft (de Turenne 2008).

Two days after the EPA issued its ruling, Administrator Lisa Jackson stood on the banks of Compton Creek, a tributary of the river, and stated:

> A clean, vibrant L.A. River system can help revitalize struggling communities, promoting growth and jobs for residents of Los Angeles. We want the L.A. River to demonstrate how urban waterways across the country can serve as assets in building stronger neighborhoods, attracting new businesses and creating new jobs. (U.S. EPA 2010b)

The founder of Friends of the Los Angeles River, poet and writer Lewis MacAdams, exulted in the implications of the decision. "This is an important day, one we've been working toward for years," said MacAdams. "It is a day when the EPA has essentially redefined the L.A. River and its values. In other words, starting today, a flood control channel is only one of its many characteristics" (Sahagun 2010).

The EPA based its decision on historic use and current navigation and recreational uses of the river. Although the evaluation was based in science and engineering, the conclusion is an important political milestone in the cultural history of the river and its relationship to the communities through which the river flows. The decision also set the stage for more federal involvement in the region, a mirror of the process that brought us the current river.

Taming the River, Conserving Water

Many great cities have developed alongside rivers in order to use them as a supply and a drain, for commerce and for recreation. Los Angeles is no exception; because of the region's semiarid climate, settlements for thousands of years relied upon the perennial mild flows (MacDonald 2007) near the confluence of the Los Angeles River and the Arroyo Seco and stayed clear of the vast areas of the region that would become flooded during winter rains.

The earliest European who recorded his impression of the Los Angeles River was Father Juan Crespi during the Portolá Expedition of 1769 from San Diego to Monterey. Crespi described a "good sized, full flowing river" near present-day downtown in August, the middle of the dry season (Gumprecht 1999). The earliest settlements by the Spanish were placed near water supplies, including the agricultural settlement that became Los Angeles (Wagner 1935). Some one hundred years later, the river would still be described as a "willow-lined stream" by none other than William Mulholland, famed chief engineer of the Los Angeles Department of Water and Power (Carle 2000).

A series of major storms causing great loss of life and property from the 1880s through the 1930s coincided with rapid development of the Los Angeles region, as the population grew more than ten times (LA Almanac 2012). New residents often did not appreciate or were not told about the potential hazards of winter storms, seeing instead an arid landscape free of water (Davis 1998). Thus, the floodplains were settled. After a particularly damaging flood in 1914, the Los Angeles County Flood Control District (LACFCD) was created by an act of the California legislature in 1915 (Gumprecht 1999). The new district was empowered to provide flood protection, water conservation, and recreation and aesthetic enhancement, through assessments on property owners and bonds. The first LACFCD project involved installing check dams and debris basins along the foothills of the San Gabriel Mountains.

In 1935, after several more disastrous floods pointed to the need for urgent action, President Roosevelt authorized Works Project Administration funding, allocated to the U.S. Army Corps of Engineers, to complete a flood control and water conservation system for the Los Angeles region. Many millions of dollars and thirty-five years later, the Los Angeles County Drainage Area Project, the largest public works project west of the Mississippi River, undertaken by the Army Corps of Engineers in partnership with the LACFCD, was officially completed (Gumprecht 1999). It is fortunate that the plans for the rebuilt river system included detaining and conserving rainfall in the mountains; otherwise, the river would in truth have become nothing more than a single-purpose storm channel.

The first director of the LACFCD, James W. Reagan, advocated for a system of mountain dams and reservoirs, not to store water for direct use as a water supply but for gradual release for percolation into aquifers tapped by wells:

> Very little consideration is being given by the sub-dividers to the providing of the county in the near future with an adequate and vitally necessary supply of water. . . The depletion of the underground water supply in Los Angeles County is extremely alarming. The present plan of running this very much needed floodwater away to the sea as quickly as possible . . . should be discontinued as quickly as possible. (Reagan 1924)

The landscape of Los Angeles, before urbanization, could capture 95 percent of most storms (Los Angeles & San Gabriel Rivers Watershed Council [LASGRWC] 2010a). Rain would fall on the vegetated slopes and sink in or flow toward the highly porous soils of the valleys and coastal plain. Water that did not otherwise

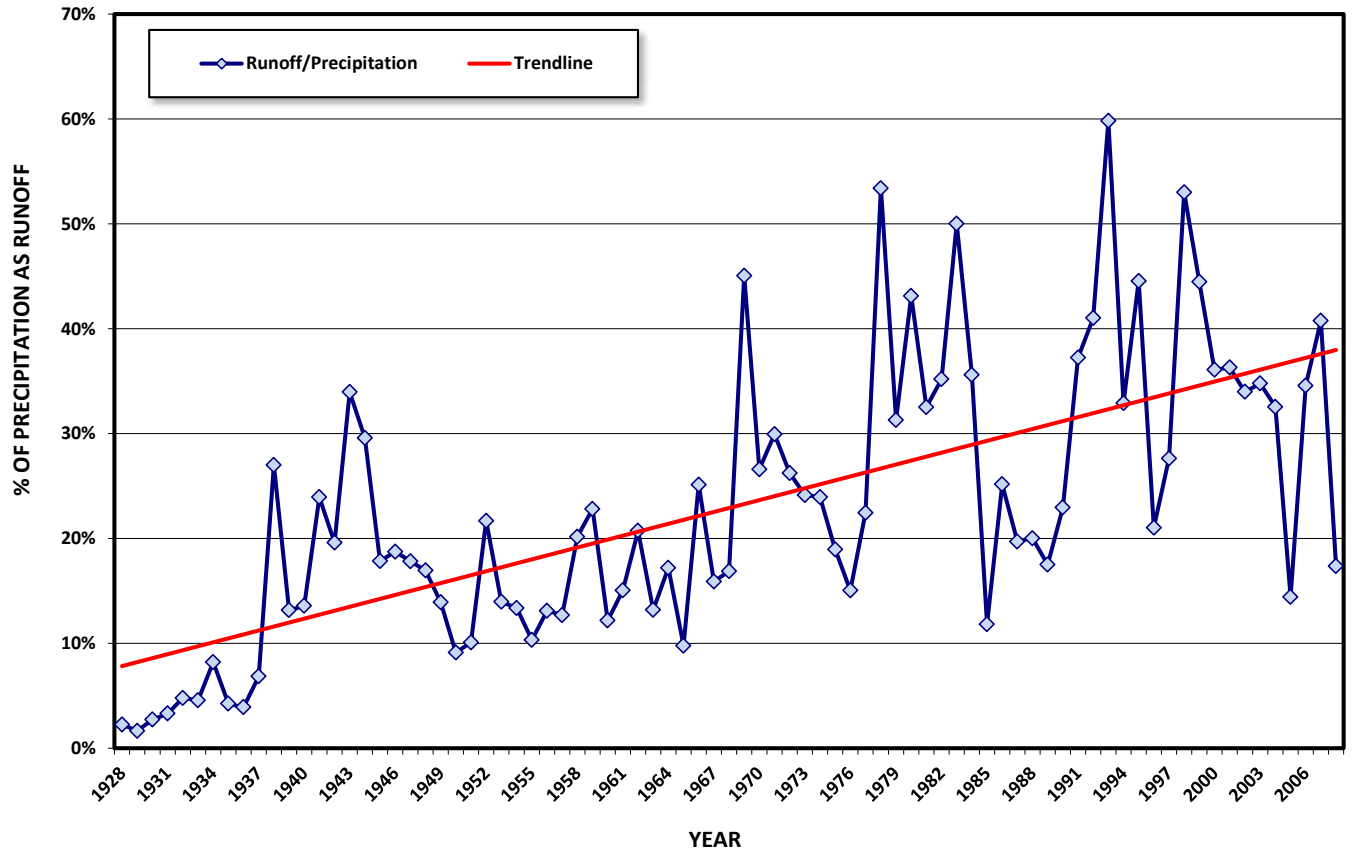

FIGURE 2: Ratio of annual runoff to annual precipitation in Los Angeles (1928–2008). DATA SOURCES: LOS ANGELES CIVIC CENTER PRECIPITATION, WESTERN REGIONAL CLIMATE CENTER; LOS ANGELES RIVER FIRESTONE BLVD. STREAM GAGE, COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS.

evaporate or transpire from the leaves of plants would fill the deep aquifers contained in coarse sediment washed off the mountains. Plentiful groundwater would rise to the surface in the Glendale Narrows, providing year-round flows for this reach of the river.

The rivers would rage in only the largest storms or wettest of winters. The Los Angeles River could reportedly increase its flow 3,000 percent in one day, rivaling the Colorado River for discharge volumes (Davis 1998). Today, mountain and foothill dams restrain much of the flow during winter storms. Urban hardscape also increases runoff and reduces infiltration of stormwater. As a result, only about 60 percent of the rain soaks into the ground today; the rest is directed to the ocean (Figure 2).

Nevertheless, groundwater remains an important source of water supply for the Los Angeles region, providing about 40 percent of the total. Recharge of captured mountain runoff using spreading basins is by far the largest component of active recharge (Metropolitan Water District of Southern California 2007). Although the details may not have been clear to the engineers of the early twentieth century, they knew that groundwater was an essential supply to a growing population in a region with few perennial streams.

In addition to the challenge of taming the river and conserving the water, many other water-related problems confront the Los Angeles region. Climate change reduces the reliability of the water supply system. The rivers are polluted by urban runoff, and the resemblance to natural rivers is gone. The amount of native vegetation and wildlife continues to decline with development and too frequent wildfires that convert chaparral to non-native grasses. Urban communities have too few parks and little access to wide open spaces. A watershed approach is necessary as it benefits communities and ecosystems by using a systems approach to solving these problems simultaneously.

Revitalizing Communities and Waterways: Urban Waters Federal Partnership

Almost one year after the EPA's ruling on the navigability of the river, the Los Angeles River was selected as one of seven pilot watersheds for implementation of the Urban Waters Federal Partnership (UWFP) with the vision that "urban waterways across the country can serve as assets in building stronger neighborhoods, attracting new businesses and creating new jobs" (U.S. EPA 2010b). On June 24, 2011, eleven federal agencies signed a statement of principles to launch the Urban Waters Federal Partnership with the stated goal of restoring urban waterways and revitalizing communities throughout the United States. The Los Angeles River is joined by the Anacostia (Washington, DC, and Maryland), Patapsco (Baltimore), Bronx and Harlem River (New York), South Platte River (Denver), Lake Pontchartrain (New Orleans), and the northwest Indiana area (U.S. EPA 2011). The partnership has since grown to thirteen federal agencies and added eleven new waterways (U.S. EPA 2013a).

The Urban Waters Federal Partnership is aimed at reconnecting urban communities with their waterways, particularly communities that are overburdened or economically distressed. The vision is of transforming "overlooked assets into treasured centerpieces and drivers of urban renewal" (U.S. EPA 2013b). The Partnership improves coordination among federal agencies and collaborates with community-led revitalization efforts to improve the nation's water systems and promote their economic, environmental, and social benefits. Specifically, the program:

- Break(s) down federal program silos to promote more efficient and effective use of federal resources through better coordination and targeting of federal investments.
- Recognize(s) and build(s) on local efforts and leadership, by engaging and serving community partners.
- Work(s) with local officials and effective community-based organizations to leverage area resources and stimulate local economies to create local jobs.
- Learn(s) from early and visible victories to fuel long-term action.

This notion of reconnection is echoed through many of the Obama administration's programs and initiatives, with activities designed to complement several others in objective and scope to several others. The 21st Century Strategy for America's Great Outdoors (AGO) detailed by President Obama in April 2010 was one of the first efforts by the administration to line up federal support behind the doctrine of multi-benefit engagement of natural resources. In its implementation, AGO has opened a number of pathways for projects that promote coexistence of conservation and recreation ideals.

With a more specific scope to urban waterways, the Urban Waters Federal Partnership has expanded the AGO vision to using restoration and stewardship of rivers and watersheds to catalyze other benefits, such as health, education and recreation, economic development, and smart land use planning, to fulfill additional community priorities.

Recognizing that accomplishing these goals in urbanized and built-out places often presents competing visions with existing infrastructure and development, the Urban Waters Federal Partnership work has strategically leveraged the federal Partnership for Sustainable Communities (U.S. EPA 2013a). The Partnership for Sustainable Communities is a significant cooperation between the U.S. Department of Transportation, the U.S. Department of Housing and Urban Development, and the Environmental Protection Agency that has aligned regional planning, transportation investment, and environmental stewardship. One project, described below (Northeast Los Angeles Riverfront Collaborative), received a Challenge Grant from the U.S. Department of Housing and Department (HUD) to identify economic and recreational benefit opportunities along the Glendale Narrows stretch of the river in northeast Los Angeles, which has allowed the participating agencies to engage the larger effort through direct programmatic support.

Participating Partners

Federal Agency Partners

Army Corps of Engineers
Department of Agriculture, Forest Service
Department of Commerce, Economic Development Administration
Department of Commerce National Weather Service
Department of the Interior
Department of the Interior, Fish and Wildlife Service
Department of the Interior National Park Service
Department of the Interior U.S. Bureau of Reclamation
Department of the Interior U.S. Geological Survey
Department of Housing and Urban Development
Department of Transportation
Environmental Protection Agency

Non-Federal Partners

Arroyo Seco Foundation
California State Parks
City of Glendale
City of Long Beach
City of Los Angeles
Council for Watershed Health
Friends of the Los Angeles River
Gateway Cities Council of Governments
Los Angeles County Bicycle Coalition
Los Angeles Conservation Corps
Los Angeles County Public Works/Flood Control District
Los Angeles Regional Water Quality Control Board
Los Angeles River Revitalization Corps
Los Angeles Unified School District
Mountains Recreation and Conservation Authority
San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy
Santa Monica Mountains Conservancy
State Coastal Conservancy
The River Project
TreePeople
Trust for Public Land
Urban Rivers Institute
Urban Semillas

FIGURE 3: Los Angeles Urban Waters Federal Partnership (box).

Los Angeles UWFP

The Los Angeles UWFP established in 2011 is led by the U.S. EPA and is joined by nine other federal agencies and twenty local organizations (Figure 3). The Partnership enjoys high levels of participation by federal partners and local stakeholders, all of whom view the Urban Waters Federal Partnership as an opportunity to elevate the profile of river revitalization work to one that will draw high-level attention and necessary resources. Despite the federal austerity measures, throughout 2013 federal partners continued to meet and identify efficiencies toward achieving joint goals. This follows the Obama administration's charge to build cross-agency collaboration to address local priorities—a charge that can be successful in LA River revitalization because of the number of federal agencies that have complementary activities in the same geography.

The Urban Waters Federal Partnership provides a mechanism for the agency staff to engage with each other and to embed collaboration into their operations. The federal commitment to "be at the table" on a working level is a rare opportunity for the local stakeholders who have long been involved with river restoration and revitalization. Regulatory and coordination issues that may have dogged local sponsors for years are directly being received and tracked by staff, and information for addressing local issues is being sought throughout the national Urban Waters Federal Partnership network. Furthermore, partners seeking resources for revitalization projects have been given an extra boost as these activities are prioritized by the Partnership.

In addition to supporting the mission and vision of the Urban Waters Federal Partnership, the Los Angeles partners identified the following specific goals:

- Restore ecosystem functions
- Balance revitalization with flood avoidance to ensure public safety
- Reduce reliance on imported water supplies
- Foster sustainable stewardship.

Outreach to engage cities downstream of the City of Los Angeles expanded the reach of the Los Angeles UWFP. An updated work plan, in progress in 2013, will address additional priorities, such as increased open space and parks, public health, and safe access to bikeways.

The following describes projects and activities that were the focus of the Los Angeles UWFP in 2011–2013.

LA River Ecosystem Restoration Feasibility Study

The LA River Ecosystem Restoration Feasibility Study by the U.S. Army Corps of Engineers was started in 2006 with a fifty/fifty cost share partnership between U.S. Army Corps of Engineers and the City of Los Angeles. The study is investigating the feasibility of restoring a more natural riparian ecosystem along a ten-mile stretch of the river from near Griffith Park to downtown Los Angeles (U.S. Army Corps of Engineers 2012).

The alternatives for restoring the ecosystem include plans that incorporate a suite of habitat types along and within the Los Angeles River, such as wetlands, riparian areas, pool/riffle complexes, and riparian buffers, as well as appropriate recreation features (e.g., trails, signage). The Partnership identified completion of the ARBOR[1]

1 Nicknamed for the U.S. Army Corps of Engineers' LA River Ecosystem Restoration Study—an acronym for "Alternative with Restoration Benefits and Opportunities for Revitalization."

study as the highest priority and critical to the success of overall revitalization goals.

Numerous projects along the LA River have been proposed to create pocket parks, improve habitat, increase recreation trails, and retain stormwater runoff, but without implementation of the ARBOR study, these efforts would have difficulty linking up and fully realizing their restoration and revitalization potential. Nevertheless, completion of the study was once uncertain due to a sizeable shortfall in federal funding. However, in September 2012, fashion manufacturer Miss Me, Inc. donated nearly $1 million to Friends of the Los Angeles River (FoLAR), an LA UWFP member, which in turn provided these resources to the City of Los Angeles to support the study. With this generous gift, progress moved quickly (FoLAR 2012), and the U.S. Army Corps of Engineers report is due out for comment in September 2013.

Enhancing Recreational Opportunities

Compared to the twenty-five largest metropolitan areas in the U.S. in 2000, Los Angeles ranked seventeenth in city land devoted to parks and lags all other large cities on the West Coast (Loukaitou-Sideris 2006). Many of the ongoing LA UWFP activities include expanding the opportunities for recreational activities for the approximately nine million residents of the Los Angeles River Watershed. One means for facilitating recreation in this watershed is via the AGO Initiative. In November 2011, the U.S. Department of Interior released its "America's Great Outdoors: Fifty State Report," which identified the combined Los Angeles and San Gabriel River Trail systems as one of two priorities in the State of California.

The National Park Service (NPS) is the lead federal agency for facilitating this AGO priority and supports several high-profile projects associated with these trails. NPS, Mountains Recreation and Conservation Authority, The River Project, LA River Expeditions, Friends of the Los Angeles River, Urban Semillas, and other partners worked with the Los Angeles Conservation Corps (LACC) and the U.S. Army Corps of Engineers in the Paddle the LA River program (2013) (Figure 4). Over the first two years, more than 2,000 people, including urban school children, kayaked or canoed a two-mile stretch of the river within the Sepulveda Basin Recreation Area and Flood Control Basin from Memorial Day to Labor Day. In the first year of operation, tickets sold out within minutes, and the public buzz brought significant visibility to the restoration of the river.

In 2013, the program was extended to the Glendale Narrows section of the river; data are still out on how many kayaked this section, which was open for anyone with a kayak and a paddle. Unfortunately, the U.S. Army Corps of Engineers was unable to process the permit for the Sepulveda Basin Recreation Area for 2013. The goal for 2014 is for both areas to be open to the public for summer recreation and programs.

Los Angeles Urban Waters Ambassador

The Los Angeles UWFP welcomed its Urban Waters ambassador in summer 2012. This full-time federal position is staffed by an employee of the U.S. Department of Housing and Urban Development but funded by the U.S. Environmental Protection Agency for a two-year term. The ambassador is hosted by a nongovernmental organization (NGO), the Council for Watershed Health, and serves as coordinator, facilitator, and reporter of local watershed revitalization efforts, providing support in strategic planning and project execution. Beginning with summer 2013 and extending through spring 2014, the Council for Watershed Health hosted an Ann C. Rosenfield graduate fellow from the UCLA Luskin School of Public Affairs who worked with the ambassador and the Council for Watershed Health to extend the work of the Partnership.

Monitoring and Communicating Conditions of Watershed Health

Understanding status and trends in watershed condition over the long-term is a critical aspect of effective watershed management. Assessment of progress in environmental management founded on investigation and reporting is crucial especially because activities and programs occur over numerous agencies and organizations, and results are not always immediately apparent. The Council for Watershed Health is working with the U.S. EPA and members of the LA UWFP to develop a framework with which to describe status and trends with indicators of environmental, social, and economic health for the Los Angeles River watershed.

Ultimately, a regular periodic report card that effectively communicates with policy makers and the public will become an ongoing part of the management system of the Los Angeles watershed. The report card, which requires as-yet unidentified long-term support, will be a tool widely communicated to agencies, corporations, elected officials, and members of the public to stimulate discussion and promote improvement in conditions. In this way, we can focus limited resources on what is working and adapt management plans to compound the effects of well-coordinated actions. This work follows on the Council for Watershed Health's 2010 pilot investigation of the health of the Arroyo Seco watershed, a tributary of the Los Angeles River (LASGRWC 2011).

Additional Related Projects and Programs

South Los Angeles Wetlands Park

In February 2012, the City of Los Angeles held its grand opening for the new South LA Wetlands Park, built on a former railcar and bus maintenance yard in a densely populated neighborhood sorely in need of green space. In this neighborhood, residential streets coexist with warehouses, mechanics shops, and scrap yards. The new park replaces one of these industrial areas with constructed wetlands to naturally treat stormwater before it is discharged into the Los Angeles River. By diverting water from storm drains and allowing it

FIGURE 5: Northeast Los Angeles River Collaborative (NELA RC) Project study area. CREDIT: CREATED FOR THE CITY OF LOS ANGELES BY TIERRA WEST ADVISORS, INC.

to flow through wetlands, the project can treat up to 680,000 gallons of stormwater per day (LA Stormwater 2012).

The Los Angeles Department of Public Works Bureaus of Sanitation and Engineering collaborated with the Department of Recreation and Parks to design and construct South Los Angeles Wetlands Park. The City Council approved $8.1 million in Proposition O General Bond funding to develop and construct the wetlands, and additional funds were provided by the Collection System Settlement Agreement, Propositions 50, 12, 40, and K, the Metropolitan Transit Authority, and a U.S. EPA Brownfields Grant (LA Stormwater 2012).

Northeast Los Angeles Riverfront Collaborative

The Northeast Los Angeles Riverfront Collaborate (NELA RC) builds on the growing momentum for river revitalization to re-vision the Los Angeles River as a focal point for the communities of Atwater Village, Cypress Park, Elysian Valley, Glassell Park, and Lincoln Heights (Figure 5). Funded by a $2.25 million community challenge planning grant from the Federal HUD-DOT-EPA Partnership for Sustainable Communities, the collaborative is engaging community residents through kiosks and postcards, and online at www.mylariver.org. NELA RC has three objectives:

- Engage the community in identifying a NELA Riverfront District,
- Create a comprehensive implementation strategy for community revitalization and reinvestment, and
- Create a model of engagement and public media to foster civic participation in the revitalization of communities.

The NELA Riverfront Collaborative will produce its first report by spring 2014 (NELA RC 2013).

Regional Watershed Monitoring

The Los Angeles River Watershed Monitoring Program (LARWMP) is designed to answer five specific questions of interest to a broad range of stakeholders within the watershed (LASGRWC 2010b):

- What is the environmental health of streams in the watershed?
- Are the conditions at areas of unique importance getting better or worse?
- Are receiving waters near discharges meeting water quality objectives?
- Are local fish safe to eat?
- Is it safe to swim?

The LARWMP was developed during 2007 by a group of stakeholders representing major National Pollution Discharge Elimination System (NPDES) permittees, regulatory and management agencies, and conservation groups. The objectives of the program are to increase awareness of the importance of issues at the watershed scale and to improve the coordination and integration of monitoring efforts for compliance and ambient conditions. The program focuses on improving understanding of

- Compliance with receiving water objectives
- Trends in surface water quality
- Impacts on beneficial uses
- Health of the biological community
- Data needs for modeling contaminants of concern

The resulting program is a multi-level monitoring framework that combines probabilistic and targeted sampling for water quality, toxicity, bio-assessment, and habitat condition (Figure 6). Patterned after a similar program implemented for the San Gabriel River, the LARWMP incorporates local and site-specific issues within a broader watershed-scale perspective. The LARWMP is implemented through a collaborative effort led by the Council for Watershed Health, in cooperation with the cities of Burbank and Los Angeles, the Los Angeles County Department of Public Works, the Los Angeles Regional Water Quality Control Board, the U.S. EPA, and other stakeholders.

The field protocols and assessment procedures follow California's Surface Water Ambient Monitoring Program (SWAMP). Results of the ambient assessment are shared through the California

FIGURE 6: Water quality sampling in the Los Angeles River watershed. PHOTO: AQUATIC BIOASSAY CONSULTING INC

Environmental Data Exchange Network, and annual reports are posted on the Council's website. In late 2013, the results and conclusions compiled from the first five years of monitoring will be issued in a State of the Los Angeles River Watershed report and conference.

Elmer Avenue Neighborhood Retrofit Project

The Elmer Avenue Neighborhood Retrofit Project demonstrates the transformation of conventional paved landscapes with various best management practices and strategies, on public and private property, to improve water quality, increase water supply, and enhance communities with new green spaces (Belden et al. 2012). Working with residents and numerous local, state, and federal stakeholders, the City of Los Angeles and the Council for Watershed Health completed construction in June 2010 of the first phase project, a one-block "clean water street" that manages runoff from forty upstream acres of residential landscape.

An extensive monitoring program is under way, seeking to answer questions ranging from the amount of water captured and infiltrated to the ability of residents to manage the improvements. Phase 2, the creation of a green, walkable Paseo that captures and infiltrates runoff from an additional twenty acres, was completed in 2012 with funding by multiple agencies: the California Strategic Growth Council, Santa Monica Mountains Conservancy, the Los Angeles Department of Water & Power, and City of Los Angeles Proposition O (Figure 7).

A third phase, funded through the City of Los Angeles Proposition O, completed in 2013, will extend the life of project benefits and capture additional water that monitoring had found was bypassing the project. Elements of the project, including monitoring, continue to be funded by federal partner Department of the Interior Bureau of Reclamation and others.

Achieving Lasting Change

The movement to revitalize the Los Angeles River, begun in the 1980s, has grown to encompass the watershed and even the metropolitan region beyond. In addition to the examples described, the U.S. EPA designated Los Angeles as a green infrastructure partner, one of ten cities nationwide. The U.S. EPA technical assistance program awarded a grant to the Council for Watershed Health to evaluate state and regional regulatory drivers that influence the costs and benefits of green infrastructure. The result is a report that identifies green infrastructure opportunities and barriers in greater Los Angeles, including a checklist for local governments (U.S. EPA and Council for Watershed Health 2013).

The question remains, what does success look like? At the community level, the Northeast Los Angeles Riverfront Collaborative uses open-ended questions, asking community members, "I want my river to be…." (NELA RC 2013). Indicators, quantitative measures of ecological health, including water quality compliance, are necessary to provide answers of a different sort (Wicks et al. 2010). Both are required to link communities to rivers.

The UWFP links community revitalization with river restoration, as does the vision of the Council for Watershed Health (2011) and numerous other watershed and river restoration organizations. Thus, the goal of restoring the river is inextricably linked with, in the words of EPA Administrator Lisa Jackson, "building stronger neighborhoods, attracting new businesses and creating new jobs" (U.S. EPA 2010b).

Although the Los Angeles community has worked for decades to bring about this equation, involvement of federal agencies is providing the catalyst. Bringing together the group of federal agencies with local agencies, cities, and organizations is taking the watershed approach to a new scale by providing additional inputs of technical assistance and funding. Whether the effort operating under the UWFP umbrella will succeed in the long term, however, has yet to be determined. The remainder of this paper provides a discussion of the conditions necessary for successful large-scale social sector change (Kania and Kramer 2011).

FIGURE 7: Elmer Avenue Paseo on December 12, 2012.
PHOTO: NANCY L. C. STEELE

To ensure that all partners are working toward the same outcome and reduce the possibility of working at cross-purposes, a **common agenda** and shared vision for change must be established. In December 2011, the LA UWFP group members adopted a work plan, bringing local specificity to the vision and objectives of the UWFP. Partners supported the Los Angeles River Ecosystem Restoration Feasibility Study as the highest priority, and some of the partners took affirmative actions to ensure political and financial support.

It is equally important that the group agreed to a mechanism for measuring and reporting success. A **shared measurement system** that reflects the overall goals of the partnership has yet to be identified. The project to develop indicators of watershed health should be recognized as an essential component of a successful LA UWFP.

Most of the partners are involved in one or more of the projects identified in the work plan along with reinforcing projects and projects not yet added to the work plan. These **mutually reinforcing activities** illustrate two necessary conditions: that each participant (1) undertakes projects at which it excels and (2) coordinates its activities and projects with the group vision. Each participant needs to be clear about its role and the activities it will undertake to support the partnership. Otherwise, overlapping visions and poor communication about activities could end up sabotaging the trust this condition requires.

As a corollary to the prior condition, **continuous communication** among partners is required to develop and maintain trust and ensure focus remains on the agreed-upon vision. Participants need to believe their own interests will be treated fairly and decisions made based on objective evidence. In addition to communications and meetings, another way to accomplish this condition is through collaborative projects and advocacy for priorities.

Finally, achieving successful collective impact requires a **backbone support organization** with dedicated staff that can plan, manage, and support the initiative. For the first two years of the LA UWFP, the EPA has provided support staff in the ambassador position. Moving forward, the group should determine how it will continue the Partnership if future funding is not available to continue to support dedicated staff.

To achieve a restored river and revitalized communities in Los Angeles, the organization and agency partners need to strengthen the existing collaborative network to effectively coordinate and carry out the work of facilitation, technology and communication support, data collection and reporting, and logistical and administrative details. The network must be able track and report on how individual partner efforts are contributing to the success of the whole at the same time that partners work collectively on a common vision.

The UWFP is among the newest additions to a chorus of adaptive management efforts related to the Los Angeles River watershed.

Success will require smart, watershed-wide, collective impact planning and investment to achieve the vision. Only in this way can the Los Angeles River reclaim its multiple benefits and serve as a vital resource for communities.

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