

Case Study: The River Project and Los Angeles Department of Water and Power

Watershed: Tujunga/Pacoima Watershed

Researchers: Kaily Bourg and Lauren Miller

Organization	Year	Grant Program	Project Title	Watershed	Award Amount
The River Project	2003-2008	CALFED Watershed Program	Watershed Management Plan for Restoration Feasibility of the Tujunga Wash	Los Angeles River	\$650,000
Los Angeles Department of Water and Power	2008-2015	CALFED Watershed Program	The Woodman Avenue Multi-beneficial Stormwater Capture Project	Los Angeles River	\$1,646,750

Note: Though different grant recipients, the “Watershed Management Plan for Restoration Feasibility of the Tujunga Wash” and “The Woodman Avenue Multi-beneficial Stormwater Capture Project” are discussed in joint due to their connected origins and overlap among interview participants.

Overview

The River Project received a \$650,000 grant through the CALFED Watershed Program in 2003 to develop a comprehensive watershed management plan for the Tujunga/Pacoima watershed. The plan was completed in April 2008 and identifies 37 stakeholder-supported, “preferred” priority projects that address both small-scale and watershed-wide improvement needs. The Woodman Avenue Multi-beneficial Stormwater Capture Project was identified as a “preferred” priority project in the Tujunga/Pacoima Watershed Management Plan and was designed, constructed, and completed through a partnership between the Los Angeles Department of Water and Power (LADWP); The River Project; City of Los Angeles Department of Public Works, Bureau of Sanitation (Sanitation); and City of Los Angeles Department of Public Works, Bureau of Street Services (Street Services). Funded by a \$1,646,750 grant through the CALFED Watershed Program and matching funds from LADWP (\$1,514,681) and Sanitation (\$271,837), the Woodman Avenue Project was completed in 2015.

Tujunga/Pacoima Watershed

The Tujunga/Pacoima watershed is the largest subwatershed of the Los Angeles River Watershed. The 225-square-mile watershed includes a portion of the Angeles National Forest and the cities of Los Angeles and San Fernando. Three main tributaries include the Big Tujunga, Little Tujunga, and Pacoima Washes. The upper watershed includes 165 square miles of the Angeles National Forest and a large recreational area while the lower watershed is highly urbanized. Approximately 525,000 people reside in the Tujunga/Pacoima watershed. Historically an area of high biodiversity, the watershed is defined as having concentrated rainfall, steep slopes, and a capacious underground reservoir—the San Fernando Groundwater Basin. The San Fernando Groundwater Basin provides 11% of the City of Los Angeles’s drinking water, making it the largest local water supply source. Los Angeles imports 80% of municipal water use. Several areas surrounding the basin, including the project site on Woodman Avenue, are identified as disadvantaged communities (DAC) by the Greater Los Angeles County Region Integrated Regional Watershed Plan (IRWMP).

2003-2008 Watershed Management Plan for Restoration Feasibility of the Tujunga Wash

Grant Summary

The River Project identified four goals to be accomplished with the CALFED watershed grant: 1) develop a watershed assessment and management plan for the Tujunga/Pacoima watershed that focuses on reducing dependence on imported water supplies by restoring water quality and ecosystem health; 2) implement community education and an outreach program; 3) improve collaboration among agencies and organizations in the watershed; and 4) improve stakeholder capacity to implement watershed management. Major accomplishments include the development of a comprehensive watershed management plan for the Tujunga/Pacoima watershed, community outreach through a six-week Watershed-University (Watershed-U) workshop, the development of a k-12 curriculum focused on the Tujunga Wash, and launching the implementation of priority projects identified in the management plan through partnerships with local agencies and other organizations.

Process and Outcomes

With numerous recommended projects in the Tujunga-Pacoima Watershed Plan underway or completed, the plan continues to be an active document and resource in the watershed (See Appendix D for list of projects and implementation status). It was developed by a project team of 11 specialists and guided by a stakeholder steering committee composed of 45 representatives from local, state, and federal agencies, nonprofit organizations, and community residents. A Technical Advisory Committee (TAC) of 33 members was also established to inform and support the development of the plan and ensure that decisions aligned with the overarching goals and objectives of watershed management efforts.

The River Project managed the project team, provided oversight to the development of the plan, and supplied administrative assistance and watershed coordination with supporting staff. At the start of the project, the team also included a facilitator from the National Park Service's Rivers, Trails, and Conservation Association; watershed education specialists from University of California (UC) Cooperative Extension; a Geographic Information Systems (GIS) technician from the Los Angeles and San Gabriel Rivers Watershed Council (now known as Council for Watershed Health); engineering consultants and hydrology experts from Everest International Consultants, Inc.; a watershed assessment and Decision Support Systems (DSS) expert from UC, Davis; and a curriculum development services consultant from Education Green. Members of the project team worked to identify a diverse group of stakeholders to involve in the steering committee through different outreach methods such as hosting a "Watershed Fiesta" outreach event and using snowball referral to contact individuals.

Once established, the steering committee met monthly to begin the process of developing the plan. Process steps included: development of consensus-based goals and objectives document, inventory of existing information in the watershed, and production of a "State of the Watershed" document. The steering committee also led activities to conduct research to fill data gaps, complete a watershed assessment to be linked with the management plan, conduct a Watershed-

U workshop, develop a k-12 curriculum, and complete the Tujunga/Pacoima Watershed Plan. To achieve a consensus-based approach to the process, the steering committee worked together to draft and refine formal ground rules. Workshop trainings were also held during committee meetings that addressed different topics such as “reaching a common vision through consensus.” The committee identified an extensive list of common objectives, summarized by the overarching goal to “revitalize the Tujunga watershed, balancing water supply, water quality, community open space needs, environmental protection and restoration, and public safety.”

The project team gathered and synthesized an inventory of existing information on the physical, biological, social, and economic characteristics of the watershed, including available GIS data, which was shared with the steering committee for feedback and input during monthly meetings. Engineers with the team worked with the TAC to develop and select appropriate numeric models that would assess current and future conditions of the watershed. As a result, the information gathered and produced contributed to an extensive “State of the Tujunga” watershed assessment, which provided content and recommendations for the management plan. Following the assessment, the project team worked with stakeholders to identify over 200 possible projects that were scored and prioritized using a set of criteria and guidance from the TAC. Project benefits and feasibility were scored using different strategies and tools, such as DSS and GIS technologies. Criteria considered included: infiltration potential, park needs, location, habitat connectivity, and special districts. Twenty-four neighborhood-scale and thirteen watershed-scale projects were determined to be priority projects, representing the greatest opportunities to improve overall watershed health. The thirty-seven priority projects were listed in the final Tujunga/Pacoima watershed plan. Only a small number of projects have not been considered for implementation. Several projects have been implemented and completed, some have obtained funding, and many are moving forward through discussion and planning phases (See Appendix D).

A major goal and accomplishment that paralleled the management plan efforts was the Watershed-U Tujunga program, a series of six educational workshops spread over the course of six weeks. Watershed-U is an evolving approach to watershed management that educates and trains stakeholders on a range of topics related to effective watershed improvement efforts. The UC Cooperative Extension Natural Resources Program in Ventura and Los Angeles counties designed and developed the Watershed-U program, and it was first implemented in the Arroyo Seco watershed. Eighty community members and leaders participated in the Watershed-U Tujunga program as students, including participation from City of Los Angeles Department of Recreation and Parks, Los Angeles Neighborhood Land Trust, San Fernando Valley Audubon Society, California Trail Users Association, Los Angeles Valley College students, Milliken Middle School students, and other community residents. Over the course of the six workshops, eight elected officials contributed as guest speakers and thirty-six professionals from local, state, and federal entities presented on topics like: the physical geography, history, and culture of the watershed; water supply and water quality; flora and fauna and interpretation; green infrastructure and stream restoration; land use, development, and governance; and connecting the management plan to the stakeholder and the future of the watershed. The River Project intended for the Tujunga Watershed-U workshops series to repeat annually; however, they were unable to obtain funding for its continuation.

Another paralleled effort, the k-12 curriculum development, led to valued outcomes regarding youth in the Tujunga/Pacoima watershed. Two sets of curricula were developed: 1) A Teachers Guide to the Tujunga/Pacoima Watershed for grades k-5 and 2) Make a Watershed Difference – Youth Guide to the Tujunga/Pacoima Watershed for grades 6-12. Approximately two-dozen teachers were invited to an outreach event to learn about and contribute to a peer review and modification of the curricula. The complete versions were made available for download on The River Project's website.¹ Online access allows teachers to easily integrate the program into classrooms; however, a way to track how many classrooms utilize the curricula has not been established. Far reaching outcomes associated with the curricula are displayed through The River Project's "Paddle the LA River" program and the Woodman Avenue project's 4th grade watershed education program, which both grew out of the original curricula developed in junction with the watershed management plan.

2008-2015 Woodman Avenue Multi-Beneficial Stormwater Capture Project

Grant Summary

The Woodman Avenue Project was first proposed by the Panorama City Neighborhood Council and further conceptualized through stakeholder input during the development of the Tujunga/Pacoima Watershed Plan. The median retrofit project replaced a 16 feet wide by 3,500 feet long concrete median with a naturalized swale. It maintained the overall purpose to capture, treat, and infiltrate dry weather runoff and wet weather stormwater runoff. To accomplish identified goals for the Woodman Avenue project, LADWP, the grant manager, partnered with Sanitation, which provided project design and management, Street Services, which provided construction services, and The River Project, which provided outreach and education. Specific goals included: 1) increase water supply and recharge the San Fernando Basin, 2) reduce non-source point contaminants and Total Daily Maximum Loads (TMDLs) in the Los Angeles River, and the Pacific Ocean, 3) alleviate local flooding, and 4) provide outreach and education to increase local awareness of the watershed. The project is multi-beneficial, providing benefits to stormwater infiltration, groundwater recharge, pollution reduction, local flooding reduction, and the overall enhancement of the Woodman Avenue community, including watershed awareness and improved management practices. Including goals to addressing multiple issues, the project provided incentives for the partnering agencies to advance their individual missions, such as the LADWP's commitment to decreasing dependence on imported water and Sanitation's commitment to reducing pollutant and contaminant levels in the Los Angeles River, as well as advance the collective goal.

Outcomes and Process

The Woodman Avenue project was one of the first green street projects of its kind to be pursued in the City of Los Angeles, resulting in significantly increased understanding of green design and maintenance processes. Through an eight-year process of conceptualization, design, construction, completion, and maintenance, the Woodman Avenue project team forged a process

¹ <http://www.theriverproject.org/tujungawash/teaching.html>

that led to numerous learning opportunities, future applications of those lessons, and a functional multi-beneficial stormwater capture system.

The design phase of the project was a two-year process that began in 2009, and involved monthly meeting of the design team over the course of the two years. The team drafted plans to assess how to best implement the stormwater capture technology onto the median, and through this process, the team discovered issues that changed the scope of the project while also underlining the need to adopt an adaptive approach in every phase of the project. For example, a 15-acre drainage area, which was initially included in the concept plan of the project, was eliminated due to the location of high voltage power lines running beneath part of the project site—an unforeseen obstacle. Working around the power lines would have presented a danger for the construction crews and public, and relocating the power line system was economically infeasible. The project team initially anticipated the drainage area to capture 80 acre-feet of stormwater per year, but with the reduction in drainage area, approximately 55 acre-feet per year is captured by the system. Additionally, some informants expressed reservations about constructing the water capture above the east valley interceptor sewer line, which ran beneath the median and limited stormwater storage capacity. Construction teams confronted added complications and delays with the installment, lending to the sloped position of the median and resulting structural instability. Informants noted that such obstacles should be taken into consideration, emphasizing that lessons learned in the design phase alone would greatly inform similar future projects.

Projects of this scale typically are delayed at the construction phase due to lengthy permitting processes. However, with Street Services involved in the design and construction of the median retrofit and with extended internal review by the City of Los Angeles Bureau of Engineering and Department of Transportation, the project was allowed exemption from all permit requirements concerning public right-of-way. Street Services is the jurisdiction governing construction within public right-of-way for the City of Los Angeles. Reduced delays with permitting allowed for construction to begin in May of 2012. Construction crews first took steps to modify the median, such as removing asphalt surfaces in concrete curbs and transplanting existing trees, and made alterations to soil levels and surface water diversion systems in preparation for the installment of the water capture infrastructure. Consistent with project goals, best management practices (BMPs) were integrated into the project (e.g., trash rack to remove large debris; a settling basin to remove sediment; vegetated infiltration swale system to remove metals oil, bacteria, and small particulates; and an underground retention system consisting of storm chambers that can hold 2.5 acre-feet of stormwater) throughout its construction.

Following construction, the project team established five monitoring sites to collect water quality and stormwater capture data. Data are compared at each of the sites to monitor changes in pollutants and other particulate matter as the water flows through the natural filtration system. Informants noted the importance of including monitoring in the grant and design plan, and Sanitation allocated staff resources to do three years of monitoring as part of the grant requirements. The team determined the project to be “successful” when comparing accomplishments to the goals of the project. The newly installed infrastructure resulted in a “significant increase” in water capture and infiltration during both dry and wet weather flows, a reduced concentration TMDLs in the Los Angeles River, a “maximized” effort to “de-urbanize”

the median, increased habitat for wildlife from native plants, and reduced local flooding. The final report notes that data regarding the performance of the installment has been limited because of drought conditions.

Despite the performance measure successes post-construction, the project encountered major challenges and setbacks. In the weeks succeeding construction completion, parts of the project infrastructure failed during a major rain event. Heavy flows resulted in erosion and the development of sinkholes in a sandy-sloped area of the site. LADWP extended resources to repair the site and improve structural stability, while also recognizing the importance and benefit of using vegetation in stormwater capture projects.

The River Project led outreach and education efforts throughout the project process. Goals surrounding outreach and education efforts included: 1) increasing watershed awareness, 2) improving trash management practices of residents and businesses to influence cleaner storm water runoff, 3) creating an environmental program that encourages residents to adopt environmentally friendly management practices, and 4) integrating community input from outreach and education efforts into the project. To accomplish outreach and education goals, The River Project held public forums and community meetings to update interested individuals on the project progress and provide education on broader watershed-related issues. Some workshops and forums focused specifically on trash reduction and waste management practices. A total of 68 residents and 37 businesses attended the workshops. The River Project also arranged meetings among local business owners to discuss opportunities for adopting water-saving technologies and practices. A webpage was added to The River Project's website to provide updates on project progress and information regarding outreach events. The River Project's outreach to community members regarding Woodman Avenue construction helped connect some aspects the community's desires with the project plans, including ideas like relocating the median's pre-existing stressed Magnolia trees. The River Project also designed a 4th grade student curriculum focused on watershed education, which was integrated into six classes at Ranchito Elementary School and reached 180 children. The 4th grade curriculum was adopted and modified from the curricula developed in conjunction with the Tujunga/Pacoima Watershed Management Plan. It included an activity for students to design interpretive signage for the Woodman Avenue project site, which were incorporated into four interpretive signs. The signs intended to provide broad education for the general community and encourage anti-pollution practices.

Key Findings

Some stakeholders ultimately measure the success of a management plan through metrics concerning whether or not the plan is implemented. Though the *Watershed Management Plan for Restoration Feasibility of the Tujunga Wash* and *The Woodman Avenue Multi-beneficial Stormwater Capture* projects are different by project type, they jointly tell the story of an effective and collaborative watershed management process between nonprofits and local agencies from the conception of a management plan to the ribbon cutting of a major median retrofit project. Watershed management and collaboration in this case resulted in several tangible outcomes, but not without problems, challenges, and numerous lessons learned.

Despite internal challenges with communication, many informants recognized the great amount of effort contributed and work accomplished by the management plan project team, resulting in a comprehensive management plan that is actively used as a resource for entities within the watershed. Additionally, the Plan was awarded the American Planning Association "Innovation in Green Community Planning" Award in 2009. The Tujunga/Pacoima Management Plan was developed with an adaptive and collaborative process. A watershed coordinator and facilitator were hired to provide administrative and logistical support, guide and mediate conflict within the project team and stakeholder steering committee meetings, and maintain stakeholder engagement by making sure diverse ideas were heard. Some informants noted that the development of a "goals and objectives" document through consensus-based processes contributed to a common dialogue that allowed stakeholders to better understand each other and the collective purpose of the group. The project manager drove the process forward with great passion and dedication, while reinforcing the importance of a consensus-based approach. At times when outreach efforts fell short, the project manager met individually with critical stakeholders who didn't attend steering committee meetings to discuss the progress of the plan and gather necessary input. Though divided among different team members and tasks, informants importantly noted that the role of watershed coordination was fulfilled to an extent that enabled a collaborative and adaptive process. The project manager recognized when more or different conversations were necessary and when to bring more resources to the table that would lead to desired outcomes, such as partnering with agencies to implement projects identified in the management plan.

In the case of the Woodman Avenue project, informants acknowledged the challenges associated with completing a project through inter-agency partnerships. Challenges with grant management manifested around pre-existing rivalries between local agencies combined with the departments' internal hierarchical structures. Without formal control over other agency partners regarding the Woodman Avenue work, the grant manager was challenged to convey the importance of the work and associated timelines in order to maintain partner engagement and effort. Informants suggested that future grants include a partnership development and relationship-building workshop. Understanding partner goals and assuring that partners are not "left out of the loop" would enable a smoother process. Additionally, similar to communication challenges associated with developing the management plan, tensions developed between design engineers and other project partners who offered, what was perceived as, "unrealistic recommendations" for the design. Some informants noted that the design engineers were not included in the conceptual planning of priority projects in the Tujunga/Pacoima Management Plan, such as the Woodman Avenue project. This resulted in disagreement among project partners regarding expectations in the design's alignment with the management plan and the physical limitations present in the project site. The disagreement combined with poor communication among project partners resulted in changes in the design plan without the support of all partners. Some informants noted that the changes made strayed from the management plan, eventually leading to the collapse of a segment of the infrastructure during the major rainstorm following construction completion. Involving potential project partners and associated experts in early discussions surrounding projects and creating open dialogue in the planning phase could mitigate obstacles in future implementation, such as avoiding sloped medians, sewer lines, and ineffective design modifications.

Informants emphasized that internal communication issues were perhaps the most significant challenge regarding the social and planning processes surrounding the development of the Tujunga/Pacoima Watershed Management Plan and implementation of the Woodman Avenue project. Some informants characterize the working environment during the development of the management plan as highly stressful and sometimes negative. This is in part a result of poor communication and conflicting ideas among the project team regarding work expectations and realistic goals, which resulted in project team turnover. Turnover created another obstacle that stressed the momentum of the group: bringing in new team members who lacked familiarity with the context, process, and social networks associated with the project. Informants suggested that if turnover does occur, having a strategy or protocol in place to bring the new team member up to speed would benefit the timeline and working relationships involved with a project.

Another major challenge experienced by the Woodman Avenue project remains the issue of project maintenance. Grants that fund projects like the Woodman Avenue retrofit frequently omit funding for project maintenance, and in this case, the Los Angeles City Charter prevents local agencies from maintaining projects that are outside of their own department's internal projects. At the conclusion of the grant period, without regular maintenance, the project site was vandalized with graffiti and hundreds of plants were stolen. As a temporary solution, LADWP signed a supplemental agreement with The River Project to maintain the site for a short period of time under a "plant establishment" clause in order to stay within the City's charter. Since, Kaiser Permanente Medical Center, located adjacent to the Woodman Avenue median, signed an "Adopt-a-Median" agreement with the City of Los Angeles and will maintain landscaping on the project site indefinitely. The improved median design contains a walking path, which aligns with Kaiser's mission to promote exercise, walking, and healthy habits.

In discussing grant structure of the Woodman Avenue project, informants noted that having to select a completion date prior to the start of the design process drew a "dark cloud" over the team and suggested that increased flexibility in deadlines with intermittent milestones would enable more efficiency in design and flow of the project. Other recommendations for improved grant structure concerned the time and resources spent on grant administration alone. Since agencies and city departments are typically required to internally produce project documents and reports in their own institutional format, informants noted that time and resources could be more efficiently utilized if grant deliverables and documents could be submitted in a more flexible form that is similar to state agency obligations.

As a pilot project, the Woodman Avenue project uncovered several valuable lessons for the future of water management in Los Angeles, from mitigating obstacles at the design phase to improving agency management practices, as well as gaining an understanding of the multiple benefits of green infrastructure. LADWP is currently developing a new project of similar nature to the median retrofit and will implement lessons learned from the Woodman Avenue project. Lessons learned in both projects, the Tujunga/Pacoima Management Plan development and the Woodman Avenue project, contributed to groups recognizing the need for partnership compatibility and appreciation for the work abilities of different partner types. The partnerships established through the work of the development of the Tujunga/Pacoima Management plan will continue to promote new collaborative projects throughout the Los Angeles region while maintaining a holistic and adaptive approach to watershed management.

Appendix A

Methods

This case study is based on eight stakeholder interviews conducted both in person and over the phone. In-person interviews occurred in Los Angeles and Ventura as part of a five-day trip to the South Coast region, where the two researchers conducted interviews for a total of 11 grants. See Appendix B for a list of interview participants. Interviews were recorded by handwritten notes and synthesized into this case study report.

Appendix B

Interview Participants include one or multiple representatives from the following:

The River Project

Everest International Consultants

National Park Service

Los Angeles Department of Public Works, Bureau of Street Services

Los Angeles Department of Water and Power

Appendix C

Available Grant Documents and References

	Grant Proposal (Submitted to granting agency)	Quarterly or Annual Update(s)	Final Report (Submitted to granting agency)	Catalogued Description (Published by granting agency)	Catalogued Final Report (Published by granting agency)	Other
Watershed Management Plan for Restoration Feasibility of the Tujunga Wash				X		X
The Woodman Avenue Multi-beneficial Stormwater Capture Project			X			X

Appendix D
Tujunga/Pacoima Watershed Plan: Priority Projects

Project title	Implementation status (2017)
1. Power Line Easement Project	In progress: construction starts 2018
2. Railroad Right of Way	Bike path component completed
3. Primary Street improvement – San Fernando Road, Woodman Ave, Victory Boulevard, Van Nuys Boulevard	Woodman completed 2014, others in progress; construction starts 2018
4. CBS – Viacom Radio Community Park	No action to date
5. Tujunga and Pacoima Wash Bridge Retrofit and Channel Expansion	No action to date
6. Big Tujunga Dam Enhancement Project	Completed in 2011
7. Tujunga-Sun Valley Tujunga Wash Diversion Project	In design: alternative diversion strategy proposed as part of Rory Shaw Wetlands Park at Sheldon Pit
8. Valley Generating Station Storm Water Capture	In progress: construction starts 2018
9. Tujunga Wash Project	In process – 1 mile completed
10. Hansen Dam Water Conservation and Supply	In progress: planning, pending response from US Army Corps
11. Hansen Golf Course Water Recycling Project	Completed in 2015
12. Hansen Spreading Grounds Enhancement	Completed in 2013
13. Moorpark Park Retrofit	No action to date
14. North Hollywood Well Field	In progress: construction ends April 2018
15. Pacoima Spreading Ground Enhancement	In progress: construction begins 2018
16. Invasive Plant Removal and Maintenance of Endangered Arroyo Toad Habitat	Arundo removal in progress, to be complete in 2017
17. Wilson Canyon Wash and Sylmar High School Retrofit	No action to date
18. Tujunga Spreading Grounds Enhancement	In progress: construction ends 2019
19. Tujunga Wells Ammoniation Station	Completed in 2009
20. Pacoima Reservoir Sediment Removal	In progress: construction begins Spring 2019
21. Boulevard Pit Stormwater Storage	In progress: budgeted for future
22. Pacoima Median and Bike Trail	One segment of bike trail completed on Van Nuys Blvd.
23. Pacoima Neighborhood Retrofit	Funded and in planning
24. Pacoima Wash Recreation Trail	Two park segments complete, another funded; 1.6 miles bike trail funded and in process
25. Panorama City Creek Restoration	No action to date
26. Van Nuys Boulevard Pocket Parks	No action to date
27. Arleta Greenbelt	In progress: planning to be completed early 2019
28. Arleta Neighborhood Retrofit	Moved to Panorama City, completed in 2014
29. Grace Community Church of the Valley Parking Retrofit	No action to date
30. Tujunga Wash Outdoor Classroom	No action to date
31. Sunland Park Retrofit	No action to date
32. Wyngate Street Pocket Park	No action to date
33. Verdugo Hills High School Retrofit	No action to date
34. Angeles Gateway Preserve	Area preserved through Rim of the Valley Corridor Preservation Act 2016
35. Mission Hills Greenbelt	No action to date
36. “Tujunga” Tataviam Village Parks	No action to date

37. Hansen Dam Wildlife Lake Improvement	No action to date
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