

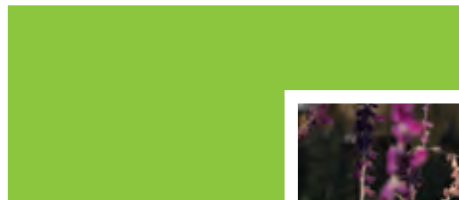


# ELMER AVENUE

Water Augmentation Study

## NEIGHBORHOOD RETROFIT DEMONSTRATION

### PROJECT





MAP DESIGNED BY THE LOS ANGELES AND SAN GABRIEL RIVERS WATERSHED COUNCIL, 2009

NOTE: Photo taken before retrofit

## WHAT IS THE NEIGHBORHOOD RETROFIT PROJECT?

The days when we could ignore our relationship to the land and water are over. Reliance on water from the Colorado River and Delta Region makes less sense today. Thankfully, we know from the results of the Los Angeles Basin Water Augmentation Study (WAS) that we can safely percolate polluted runoff through soil to produce clean drinking water in our aquifers – natural reserves that lie just below our feet. Out of that study we created the Elmer Avenue Neighborhood Retrofit, a truly complete “green street” that is revolutionizing the way we think about the interaction between land and water.

Elmer Avenue utilizes a variety of strategies, both on public and private property, to show how a neighborhood can safely capture rainwater and add it to the aquifer. Taken together, our community improvements generate a lot of water – more than the entire block would have used in an entire year!

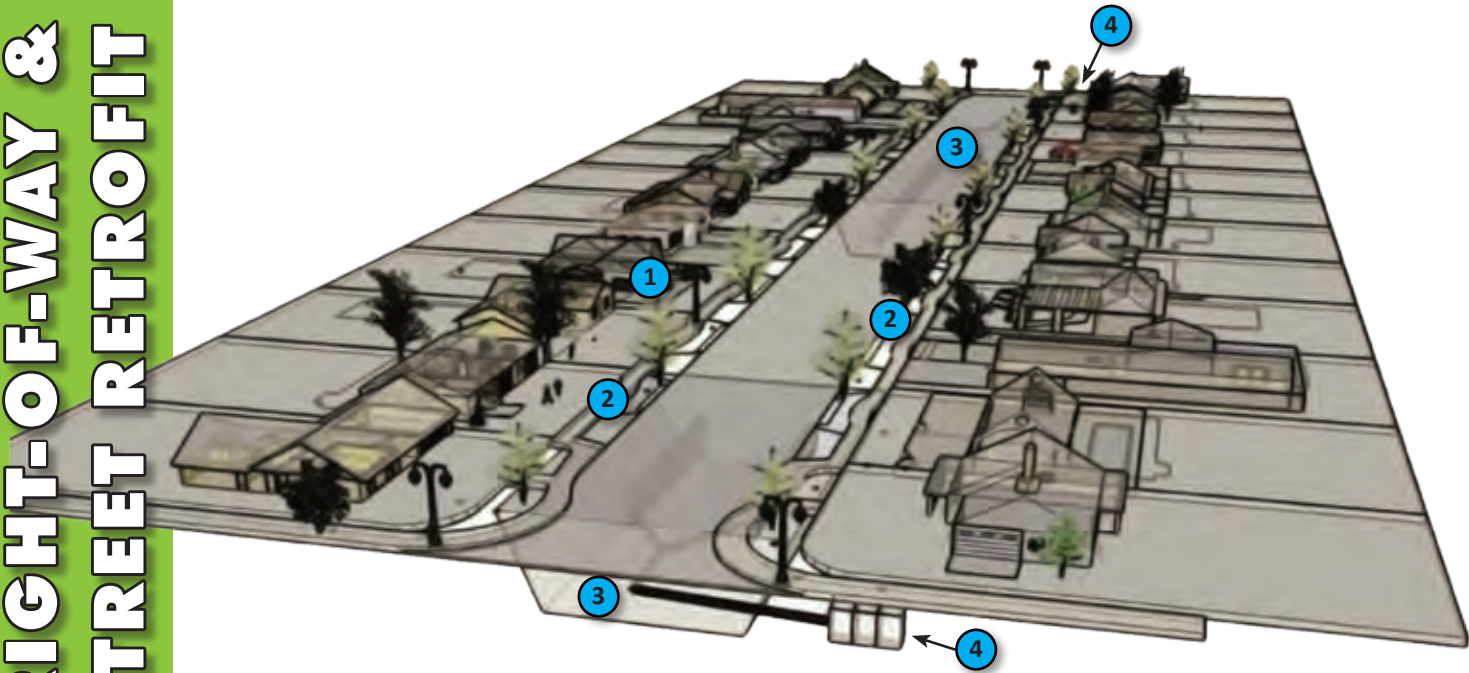
Elmer Avenue demonstrates a variety of sustainable strategies: under street infiltration galleries, open bottom catch basins, bio-swales, rain barrels, permeable pavers, climate appropriate landscapes, and even solar street lights. The construction of the first phase of the project was completed in June 2010. The second phase will further enhance the community, creating a green, walkable Paseo while addressing runoff from an additional 20 acres, allowing rainwater from more than 60 acres of land to safely make its way back into the aquifer – the way nature intended.

## WHAT ARE THE GOALS AND BENEFITS OF THE PROJECT?

- Reduce street flooding and polluted runoff to rivers and the ocean
- Show how rainwater can be naturally added to our local aquifer, increasing our long-term supply
- Promote community awareness of water conservation and watershed connections
- Enhance the community through increased green spaces and improved infrastructure
- Promote sustainable and low impact design



**RIGHT-OF-WAY & STREET RETROFIT**



**HIGHLIGHTS**

- Demonstrates Low Impact Development strategies on public lands
- Reduces pollution that is sent to the Los Angeles River from urban runoff
- Captures and treats runoff from 40 acres of residential landuse
- Annually deposits 16 acre-feet of groundwater recharge
- The first block in Los Angeles with street lights off the grid.

**1. SOLAR STREET LIGHTING**

The lights are powered by solar panels and use LED technology to save 1,730 kW of power each year.



**2. PARKWAY BIO-SWALES**

The parkway bio-swale uses plants and soil to capture urban runoff, breakdown pollutants and provide habitat for animals.



**3. INFILTRATION GALLERY**

The two underground infiltration galleries capture runoff from the upstream landuses. The galleries are capable of infiltrating 6,575 gallons of water every five minutes for groundwater recharge.



**4. CATCH BASINS**

The two catch basins (one on each end of the block) divert water from the street to the infiltration galleries. They reduce pollutants from entering the infiltration galleries by settling out sediments and filtering trash.



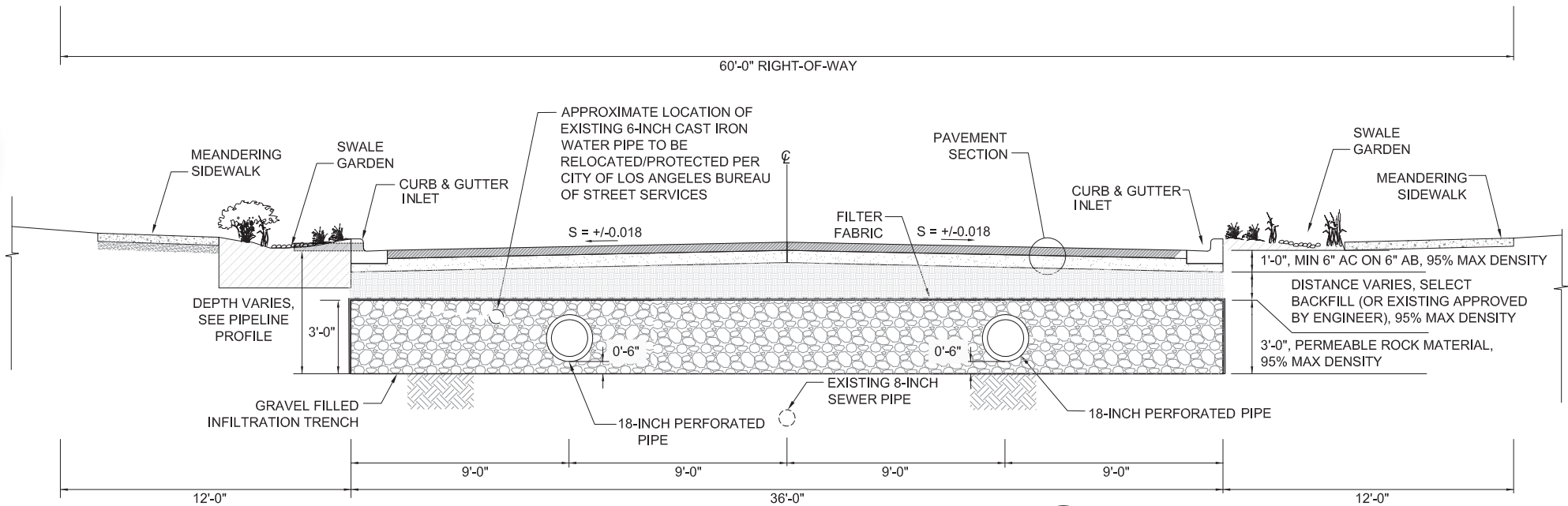
# II Elmer Avenue Retrofit Demonstration Project II



BEFORE



AFTER



INFILTRATION TRENCH SECTION - ELMER AVENUE

SCALE: 1" = 4'

A  
C-2

## II Watershed Management Strategies II

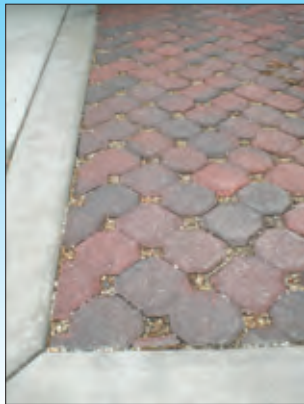
### HIGHLIGHTS

- Reconnects the 24 homes in the neighborhood to the natural hydrology of the Los Angeles River Watershed
- 23 new native street trees were installed by the residents and volunteers
- 13 rain barrels each with a 55 gallon capacity
- 6,000 feet of drip irrigation
- 1,560 square feet of permeable pavers
- 51% of the landscaping plants come from a native plant palette



### 1. PERMEABLE PAVERS

These pavers allow water to soak into the ground instead of running off (as is the case with traditional concrete sidewalks and driveways).



### 2. DRIP IRRIGATION

The parkways and grass areas are irrigated with underground drip irrigation providing more efficient water placement and less runoff than standard rotor equipment.



### 3. SMART IRRIGATION

A smart irrigation controller reduces water use by automatically shutting off during rain and provides required water based on weather.



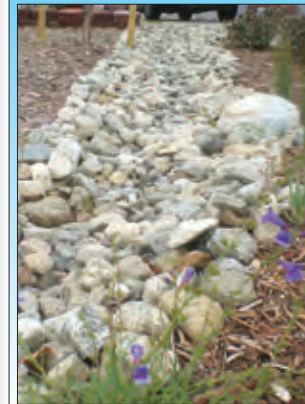
### 4. NATIVE LANDSCAPING

Drought-tolerant and native plant landscaping reduces watering needs and provides habitat for native birds and butterflies. Trees also reduce heat island impacts.



### 5. ROCK SWALE

This rock and gravel swale reduces watering needs and allows runoff to soak into the ground.



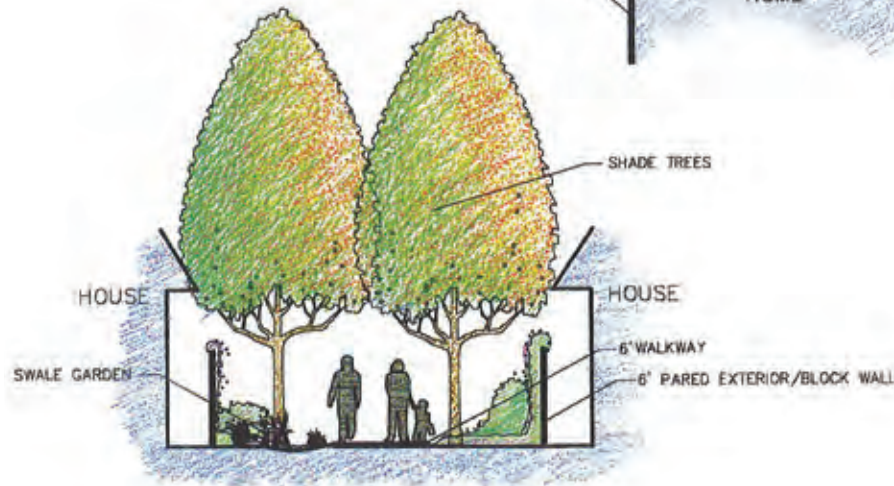
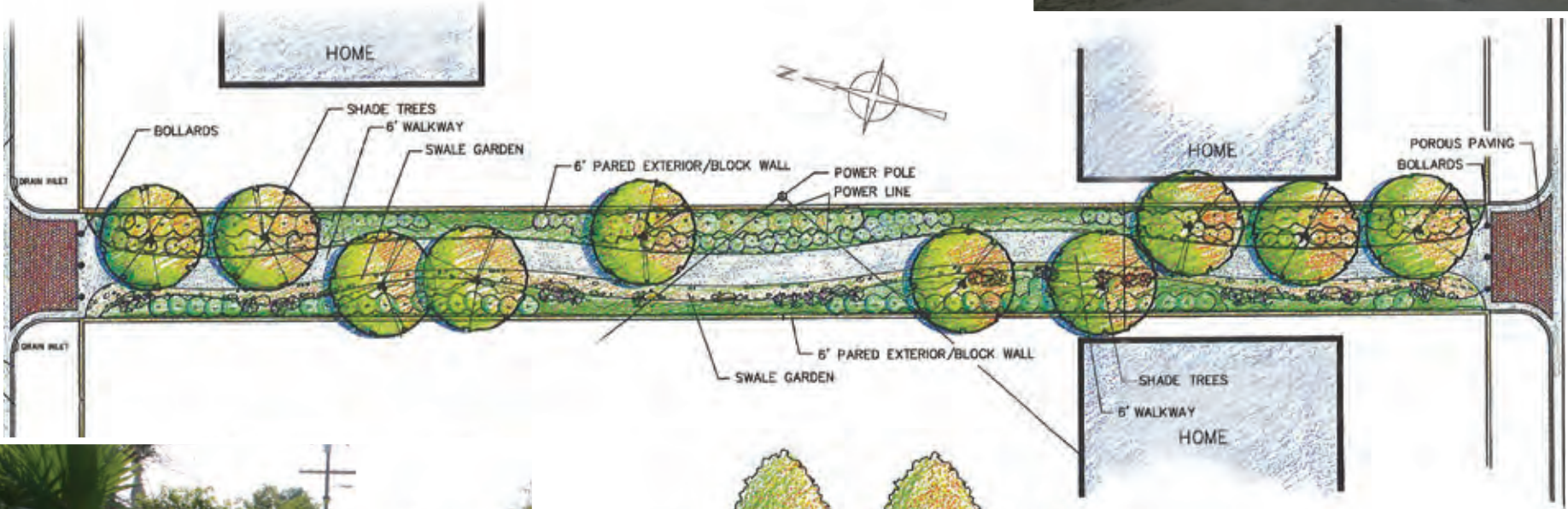
### 6. RAINBARREL

The rainbarrel collects rainwater from the roof. This reduces runoff and stores water for reuse in the landscape.



# THE PASEO AT ELMER AVENUE

Phase II of the Elmer Avenue project will convert a unimproved alleyway at the southern end of the neighborhood into a welcoming public path containing park like elements. Called the "Elmer Paseo," the project integrates durable permeable surfaces for walking, drought tolerant plantings to add green space, bio-swales for stormwater treatment, and signage to engage and educate the public, while providing a central gathering space for the community. Through its various elements, the Paseo is able to capture and treat an additional 20 acres of urban stormwater.



CONCEPTUAL  
DESIGNS



# PLANT PALETTES



**TREES**

**GRASSES AND GROUNDCOVER**

Western sycamore

Elijah Blue fescue

Carmel Creeper ceanothus

coast live oak

California gray rush

dymondia

western redbud

deer grass

Carmel Sur manzanita







## SHRUBS AND PERENNIALS



## II Watershed Management Strategies II

The Elmer Avenue Neighborhood Retrofit was not created simply to restore and rehabilitate a neighborhood. It continues to be an active research project of the Council for Watershed Health. Pre- and post-construction monitoring provides additional data on the feasibility of decentralized infiltration for groundwater recharge. The Council is tracking the multiple benefits of the project (water quality, water supply, costs, performance, habitat function, and additional benefits) to develop lessons learned for future projects in the region.



**SITE MONITORING AND MAINTENANCE**

# PROJECT PARTNERS



The Water Augmentation Study is a long-term research project led by the Council for Watershed Health to explore the potential for increasing local water supplies and reducing urban runoff pollution by increasing infiltration of stormwater runoff and maximizing multiple benefits. The following partners provided funding, cost-share, or in-kind services.

- CALFED Bay-Delta Watershed Program
- California Department of Water Resources
- Long Beach Stormwater Management Division
- Los Angeles Bureau of Sanitation, Watershed Protection Division\*
- Los Angeles Bureau of Street Lighting
- Los Angeles Bureau of Street Services
- Los Angeles Department of Water and Power\*
- Los Angeles County Department of Public Works\*
- Los Angeles Regional Water Quality Control Board\*
- Metropolitan Water District of Southern California\*
- Pomona College\*
- Santa Monica Environmental Programs Division\*
- State Water Resources Control Board
- TreePeople\*
- University of California Riverside\*
- Upper Los Angeles River Area Watermaster\*
- U.S. Department of the Interior, Bureau of Reclamation\*
- Water Replenishment District of Southern California\*

Additional thanks to:

- The residents of Elmer Avenue
- Sun Valley Neighborhood Council
- Urban Semillas
- Stivers & Associates, Inc.
- AMEC-Geomatrix
- Dudek
- Wilson Environmental Landscape Design, Inc.
- Pierre Landscaping
- Southern California Gas Company
- The Toro Company
- Rainbird Corp.
- The Rain Barrel Company
- Vulcan Materials Company

\* Member of the Technical Advisory Committee



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