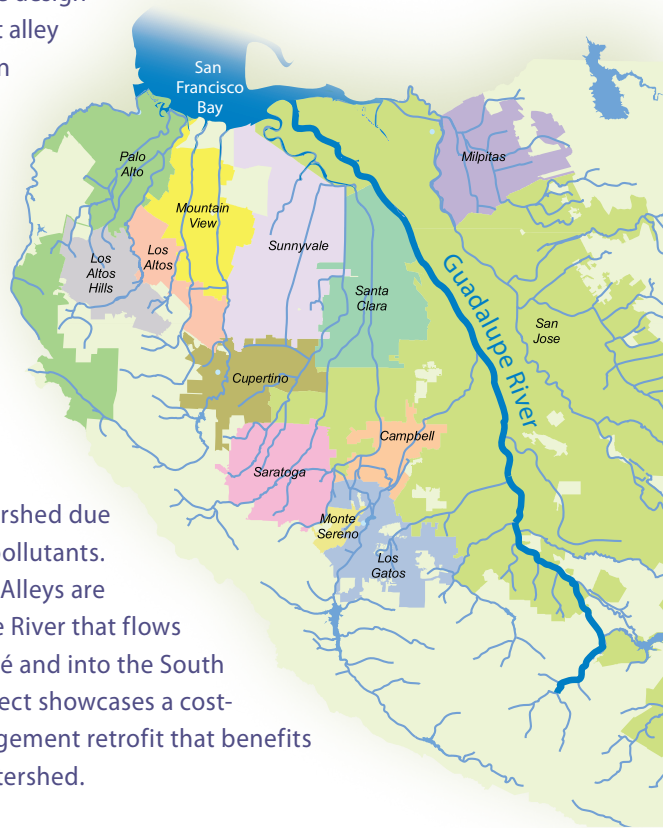


## An Innovative Approach to Managing Stormwater

This pilot project was developed to cost-effectively retrofit three urban alleys lacking stormwater treatment. The neighborhood has several similar alleys in need of drainage improvements. The design may be used for subsequent alley retrofits in this and other San José neighborhoods.

## Protecting Our Watersheds

A watershed is a land area that drains water into a creek, river, lake, or bay. The Guadalupe Watershed is one of the largest watersheds in Santa Clara County and has been identified as a priority watershed due to urban runoff and other pollutants. The Martha Gardens Green Alleys are located near the Guadalupe River that flows through downtown San José and into the South San Francisco Bay. This project showcases a cost-effective stormwater management retrofit that benefits the community and the watershed.



## Partners

- State Water Board — Providing \$945,000 of Proposition 84 Stormwater Grant Program funds for project construction.
- City of San José, Department of Public Works — Providing project design and engineering, construction management and inspection, and project acceptance.
- City of San José, Environmental Services Department — Providing grant administration, public education and outreach about the project, and conducting pre- and post-project water quality monitoring.

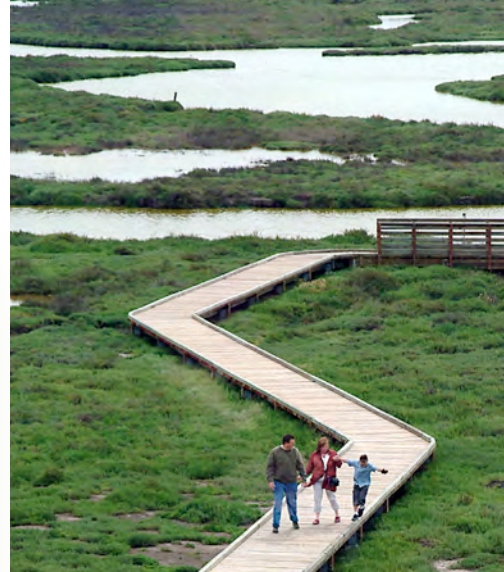


[www.sjenvironment.org/greestreets](http://www.sjenvironment.org/greestreets)

Funding for this project has been provided in part through an agreement with the State Water Resources Control Board. The contents of this document do not necessarily reflect the views and policies of the State Water Resources Control Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

In accordance with the Americans with Disabilities Act, City of San José Environmental Services Department materials can be made available upon request in alternative formats, such as Braille, large print, audiotape or computer disk. Requests may be made by calling (408) 945-3000 (Voice) or (800) 735-2929 (CRS).

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## What you can do to help protect the watershed

- Never pour anything into a gutter, street, or storm drain.
- If you see litter, pick it up and put it in the trash.
- Clean up after your pet.
- Use “green” or less toxic cleaning products.
- Safely dispose of mercury-containing waste (thermometers, fluorescent lights, and thermostats) at household hazardous waste (HHW) centers.
- If ants invade your home, use non-toxic ant removal techniques found at [www.ourwaterourworld.org](http://www.ourwaterourworld.org).
- Drain your pool or spa into the sanitary sewer cleanout or a vegetated area, not into the street and storm drain.
- Regularly maintain your vehicle to prevent leaks.
- Recycle used motor oil and filters through the HHW collection program.
- Clean your car at a commercial car wash, instead of in the driveway, alley, or street.

**Report Illegal Dumping  
Trash: 408-794-1900**

**Storm Drains: 408-945-3000**

**Schedule a large item pickup with your recycling hauler. Go to [sjenvironment.org/largeitems](http://sjenvironment.org/largeitems)**

**Schedule a free HHW appointment. Go to [www.hhw.org](http://www.hhw.org) or call 408-299-7300**

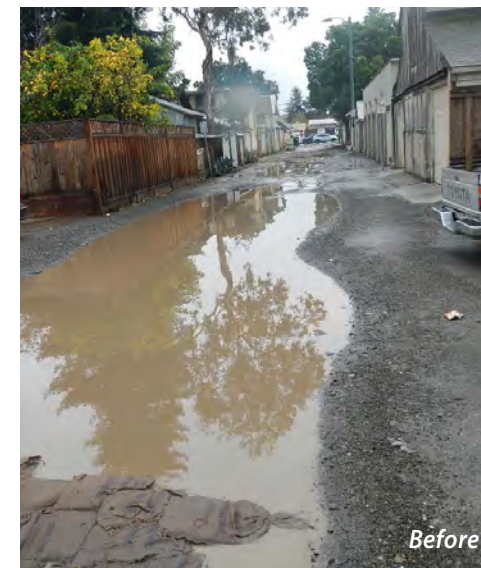
## STORMWATER SOLUTIONS

# Martha Gardens Green Alleys

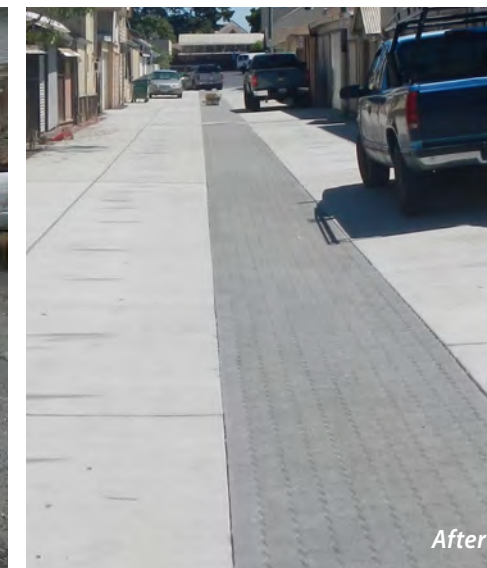
## An Innovative Approach to Managing Stormwater

### Retrofitting Three Urban Alleys

Three alleys in the Martha Gardens neighborhood of San José were selected for pavement and drainage improvements. Over 35,000 square feet of deteriorated asphalt and bare soil have been replaced with recycled content “green” concrete and permeable paved surface to filter stormwater on site.



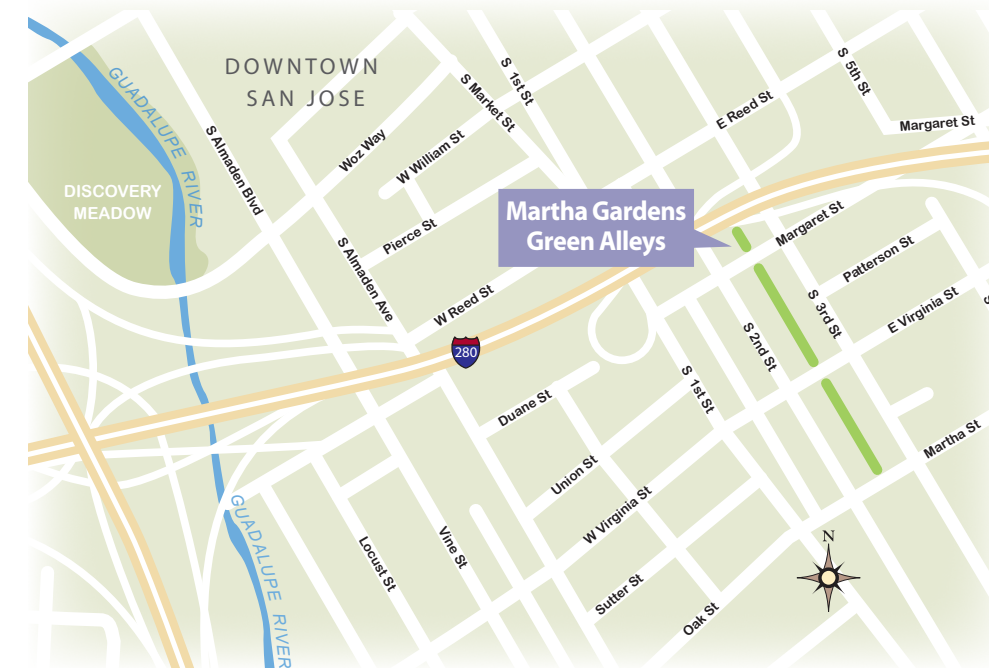
Before



After

During the rainy season, flooding would occur in the alleys, adjacent yards, and garages. Stormwater runoff from the alleys carried sediments and pollutants into the nearby Guadalupe River.

New pavement and filtration will eliminate flooding and provide safe, pedestrian-friendly access to the homes and garages along the alleys. Sediments and pollutants are filtered from the runoff.



### Green Alleys

Stormwater runoff from urban areas is a major source of pollution in local waterways and the San Francisco Bay (Bay). As rainwater flows from rooftops and pavement, it collects pollutants and carries them to the Bay through storm drains, creeks, and rivers. Green alleys have specially-designed stormwater features to help slow the flow of runoff and filter pollutants from the water.

The specific features of this green alley project include:

- Permeable pavement
- Filtration trenches
- Lighter colored surfaces that absorb less sunlight and lower temperatures
- Recycled materials

“The alley seems like a different place. Now, it looks like a nice place to live. I’ve seen kids out here with their toys, and I discovered a neighbor who is a roller skater. I think it has great potential for a bike thoroughfare, too. When the winter rains come, all the improvements will really make a difference.”

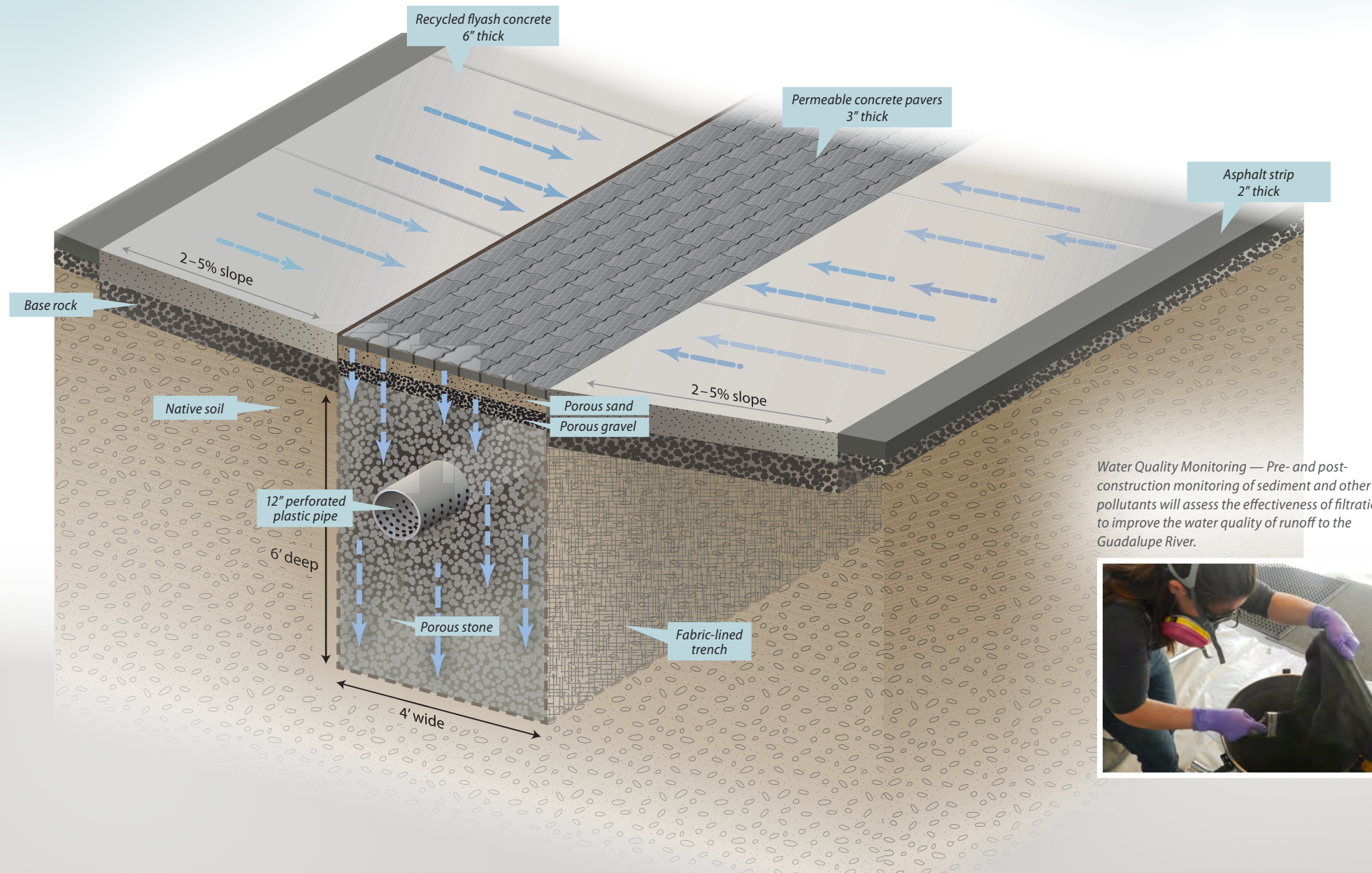
— Tony May, Neighbor



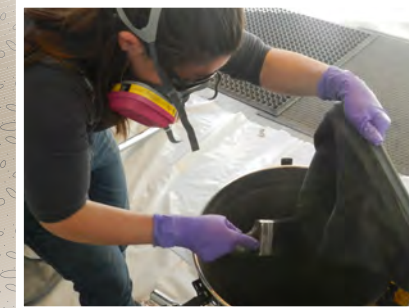
**GREEN ALLEYS** manage stormwater by working with nature to filter rainwater close to where it falls. When rain falls on the concrete surfaces in the Martha Gardens Green Alleys, it flows to the center of the alley where it seeps through the permeable pavers.

As the water trickles down through cracks between the pavers, it passes through layers of sand and gravel into a stone-filled trench where it slowly seeps into the surrounding native soil. During heavy storms, the trench may fill with water faster than it can drain out. If this happens, excess water is carried through an underground perforated pipe to a storm drain, preventing trench overflows.

# How It Works



*Water Quality Monitoring — Pre- and post-construction monitoring of sediment and other pollutants will assess the effectiveness of filtration to improve the water quality of runoff to the Guadalupe River.*



1

**Angled Surface** — The 2-5% sloping concrete sides of the alleys will direct rain water to the center of the alleys and the underground trench.

2

**Filtration** — A stone-filled trench stores and filters rainwater for soaking into the ground.

3

**Green Concrete** — The alleys are paved with concrete made from recycled flyash, a waste product from coal-powered plants. The light color absorbs less heat from the sun and keeps the alleys and the surrounding area cooler in the summertime.

4

**Trench** — An underground trench, 6 feet deep and 4 feet wide, runs the entire length of each alley.

5

**Permeable Pavers** — Interlocking pavers create a permeable surface for stormwater runoff to drain into the spaces between the pavers to the underground trench.



## Features

**SPECIAL PAVING** — “Green” concrete and permeable pavers manage runoff and provide a long-lasting surface.

- “Green” concrete made from flyash, a waste material from coal burning power plants, provides a smooth, durable surface in the alley. This light-colored concrete absorbs less heat from the sun than regular asphalt, which helps keep the surface or surrounding area cool in the summer.
- Interlocking permeable pavers allow stormwater runoff to flow to and drain through the cracks into an underground filtration trench.

**FILTRATION**— Large stone-filled trenches store runoff for soaking into the ground.

- Capturing runoff from the alleys on site prevents pollutants from washing to the neighboring Guadalupe River and preserves the capacity of the storm sewer system.
- During the largest storms, raised pipes in the filtration trenches will safely convey runoff to the storm sewer to prevent overflows.

## Water Quality Benefits

- Major source of sediment eliminated
- Pollutants, such as oil and grease from cars, filtered from runoff on site
- Street-sweeping restored

## Neighborhood Improvement Benefits

- New pavement with proper drainage
- Reduced runoff to the storm sewer system that flows to the Guadalupe River
- Cleaner streets and alleys