



San Pablo Avenue Green Streets Projects

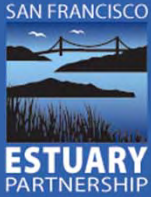
Public Works Conference: American Public Works Association,
Northern California Chapter

Co-Presented By:

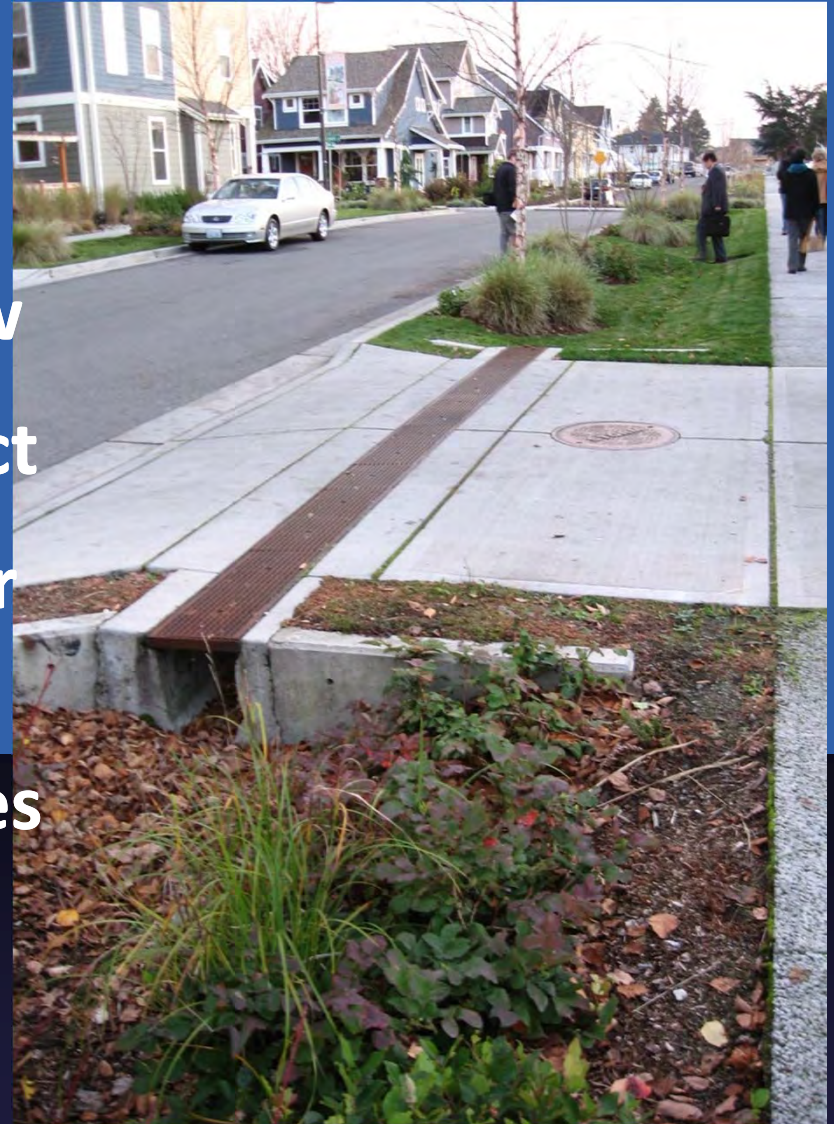
Jerry Bradshaw, Director of Public Works, City of El Cerrito

Josh Bradt, Project Manager, SF Estuary Partnership





- Estuary Partnership
- Green Infrastructure Overview
- El Cerrito Green Streets Project
- San Pablo Avenue Stormwater Spine Project
- Green Infrastructure Resources



San Francisco Estuary Partnership

- Collaborative, Non-regulatory Public Agency
- Protect, restore, and enhance water quality and habitat
- *Comprehensive Conservation & Management Plan*





Laura Cunningham



Laura Cunningham

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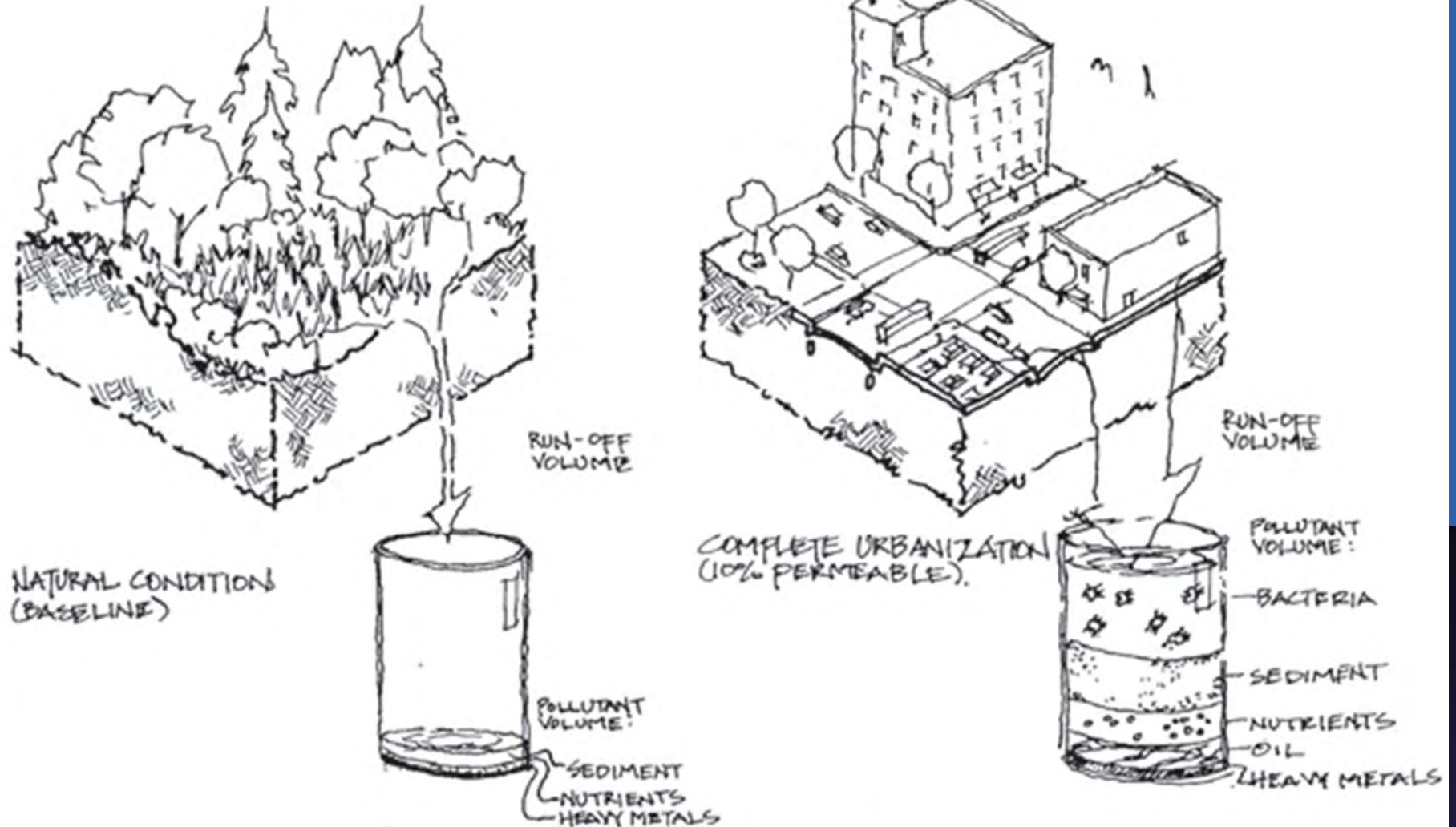


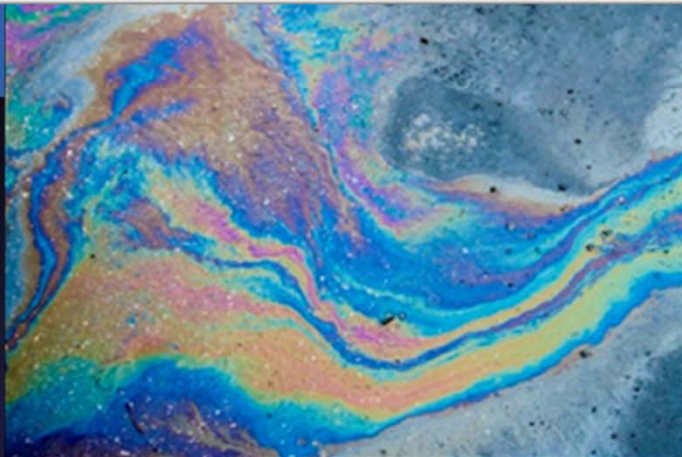
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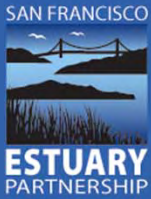




Credit: *Stormwater Guidelines for Green, Dense Redevelopment*,
City of Emeryville, 2005







Protecting & Restoring





Low Impact Development



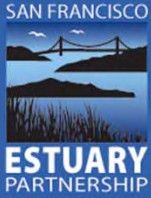
Credit: Todd Eberle, *Vanity Fair*



Credit: *Green Alleys Handbook*, City of Chicago



Credit: Treadwell & Rollo, website



Serramonte Library Stormwater Treatment Gardens, Daly City



Credit: CMG Landscape Architecture, website



Adeline Street Curb Extension, Emeryville





Green Streets/Infrastructure



Method/Benefit	Porous Pav	Ntve Lndscp'g	Mat. Trees	Bio-Swales	Rain Grdns	Greenways
↓ Water pollution	+	+	+	+	+	+
↓ Runoff Volumes	+	+	±	+	+	+
↑ Air Quality	+	+	+	+	+	+
↓ GHG/Store CO2	±	+	+	+	+	+
↓ Energy Use	±	+	+	±	±	±
↓ Heat Islands	-	+	+	+	+	+
↑ Green Jobs	+	+	+	+	+	+
↑ Property Values	?	+	+	+	+	+
↑ Quality of Life	±	+	+	+	+	+
↑ Aesthetics	-	+	+	+	+	+

El Cerrito
Green Streets

San Pablo
Avenue

Rain Gardens



Background & Context

San Pablo Avenue Streetscape Improvements

- Baxter Creek Frontage
- Bay Friendly Medians
- Pedestrian Enhancements



City Hall Bioswales/C.3 Compliance



Stormwater treatment bioswales feature colorful, drought tolerant, native plants

San Pablo Avenue Rain Gardens

- Detain and treat storm water from the highly urbanized Avenue
- Flexible modules to work with constraints
- Tri-lingual interpretive signs to educate the public about the garden's function



Two Sites

South of Madison (200 ft.)

South of Eureka (400 ft.)

Treat ~ 1.3 acres of
existing impervious area

Demonstrate:

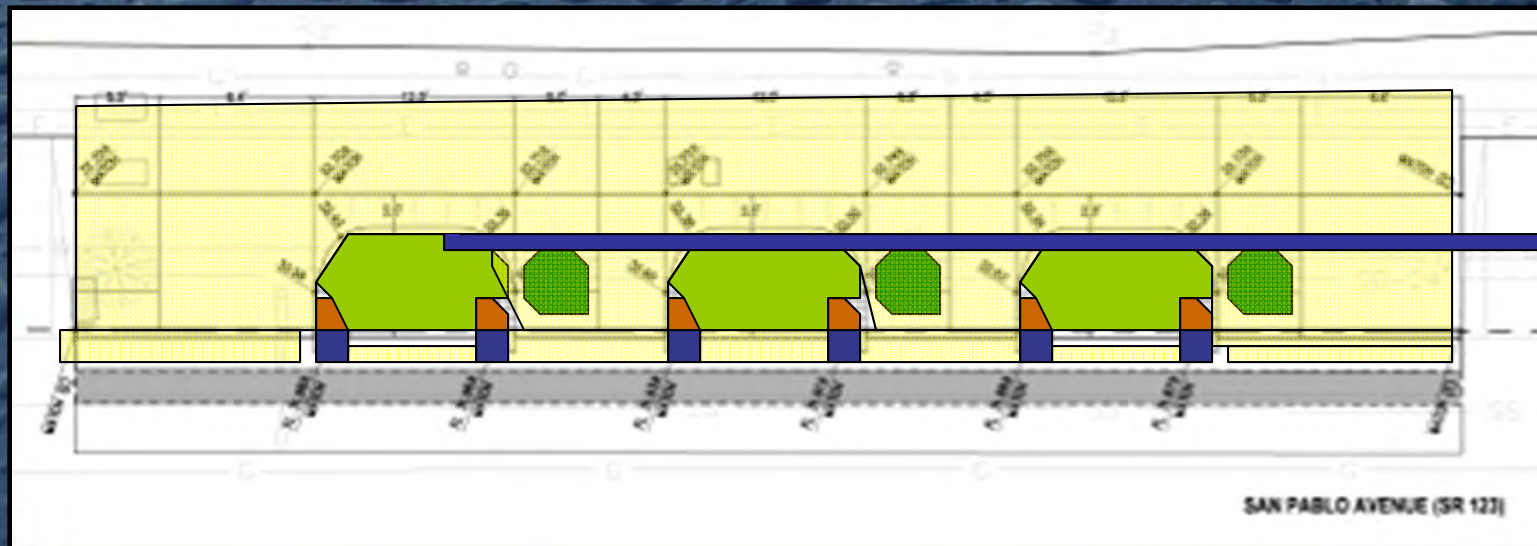
- *aesthetics and
environmental synergy*
- *urban retrofit project*

Grant Funded



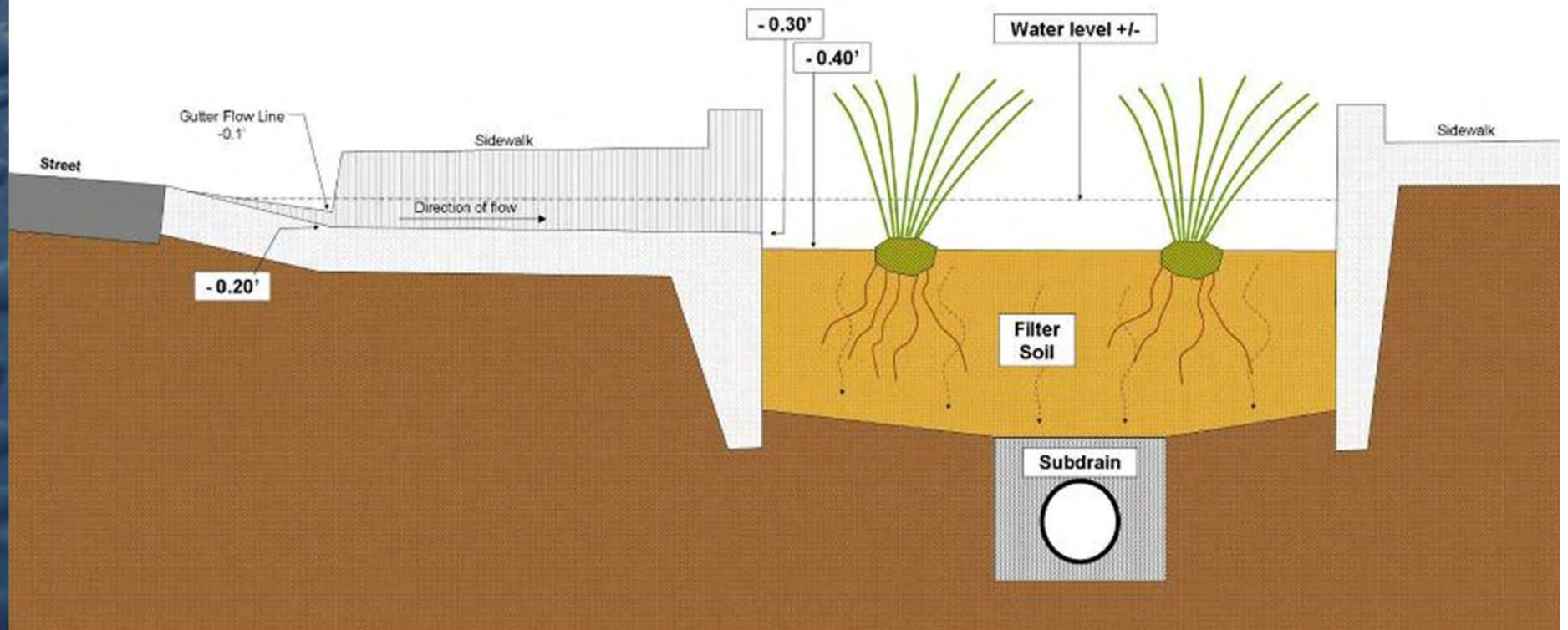
El Cerrito Rain Garden: South of Madison

San Pablo Avenue Rain Gardens: Schematic



- Curb
- Bioretention Area
- Checkerplate
- Cut/Stormwater Entry Point
- Subdrain
- Tree
- Sidewalk

San Pablo Avenue Rain Gardens: Cross Section



Conflicts & Constraints



Much Concrete Work Required



San Pablo Avenue Rain Gardens: Curb Inlet









We cut the curbs to *claim* the rain!

Check out the curbs along the street. Notice anything different?

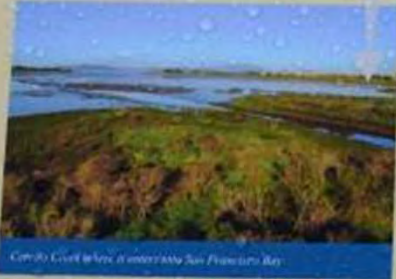
Instead of sending polluted water from the street directly into the storm drains that flow to the Bay, openings in the curbs let the water flow into the rain gardens first. Note how the rain gardens are slightly lower than the surrounding sidewalk. This helps them catch, retain, and clean water.

¡Checa las aceras a lo largo de la calle. ¿Ves algo diferente?

En lugar de enviar el agua sucia directamente a los desagües de las alcantarillas que fluyen hacia el mar, las aberturas en las aceras permiten que el agua sucia fluya a los jardines de lluvia primero. ¡Notas cómo los jardines de lluvia son ligeramente más bajos que el resto de la acera? Esto les ayuda a capturar, retener y limpiar el agua.

路邊石上的開口，是為了要收集雨水。

原本污濁的雨水會直接流到排水溝中，再流到灣區。現在，路邊石上的開口可以讓雨水先流到雨水花園，再流到灣區。雨水花園比周圍的人行道低，這樣可以收集、保留並淨化雨水。



Cerrito Creek before it enters the San Francisco Bay.

Dirt Does the Work

These rain gardens collect urban runoff from the surrounding streets and sidewalks.

In rain gardens the plants and soil do the work of filtering polluted water (called "urban runoff") before it returns to the storm drain system, which is connected to our creeks and San Francisco Bay.

You can help reduce Bay pollution too, by using less chemicals and pesticides in your yard and replacing turf with native plants like the ones you see here.

You can also create a rain garden in your yard. For more information, visit www.sfestuary.org or www.ecoenvironment.org.

La Tierra Hace el Trabajo

Estos jardines de lluvia capturan la escorrentía urbana que cae por las calles de las alrededores y las aceras.

En los jardines de lluvia las plantas y el suelo hacen el trabajo de filtrar el agua sucia (llamada "escorrentía urbana") antes de que vuelva al sistema de drenaje de aguas pluviales, que se conecta a nuestros arroyos y Bahía de San Francisco.

También puedes ayudar a reducir la contaminación de la Bahía haciendo, al menos, menos productos químicos y pesticidas en tu jardín, así como reemplazar el césped con plantas nativas como las que ves aquí.

También puedes crear un jardín de lluvia en tu jardín. Para más información, visita www.sfestuary.org o www.ecoenvironment.org.

土壤淨化雨水

雨水花園可以收集來自周圍街道人行道的都市 runoff。

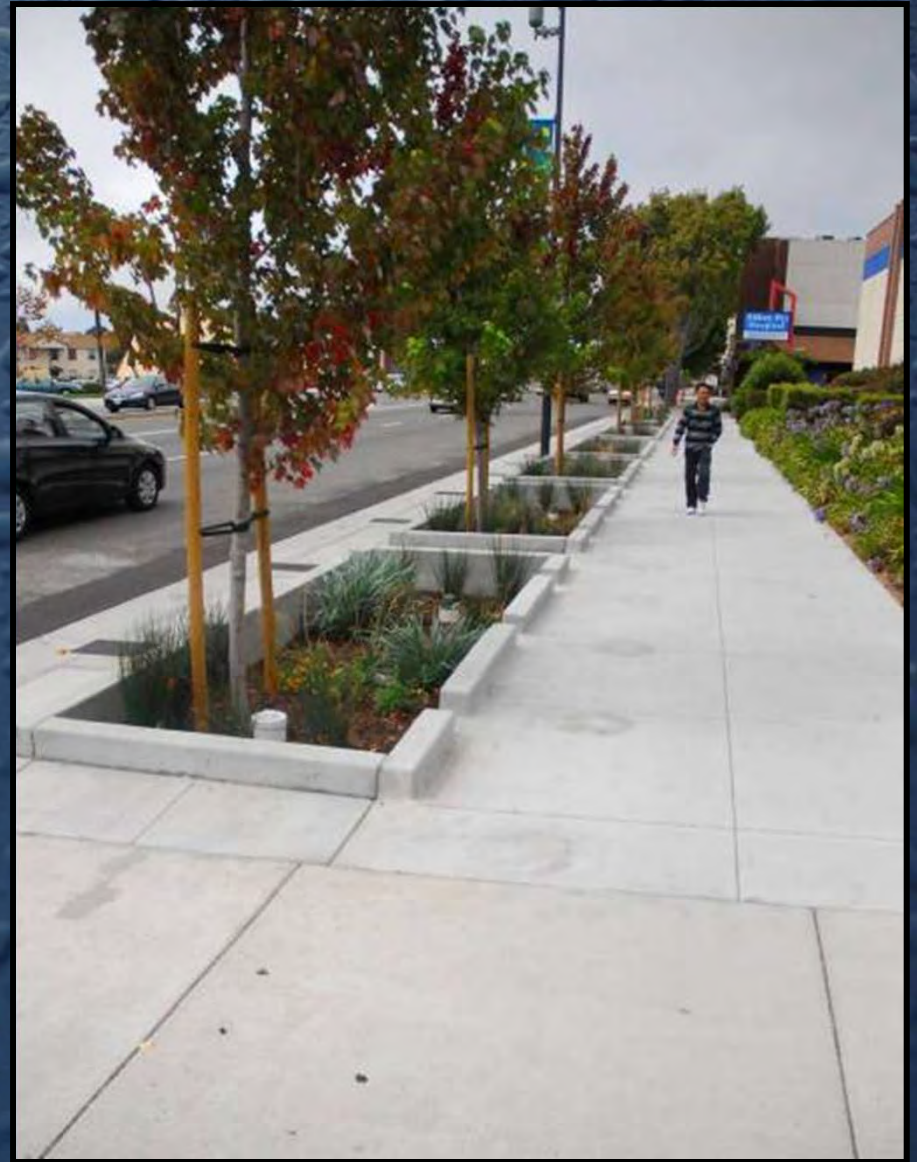
雨水花園中的植物和土壤具有淨化雨水的能力。在雨水花園中，污濁的雨水經過過濾，經過植物和土壤的過濾，從讓我們擁有更健康的自然環境。只要我們減少使用化學藥品和農藥，從減少使用化學藥品和農藥開始，我們就可以對淨化雨水做出貢獻。

你也可以在你的後院創造一個雨水花園。欲知更多資訊，請參閱 www.sfestuary.org 或 www.ecoenvironment.org。



Funding for this project has been provided in full or in part by the American Recovery and Reinvestment Act of 2009 and the Clean Water State Revolving Fund through an agreement with the State Water Resources Control Board.

San Pablo Avenue Rain Gardens



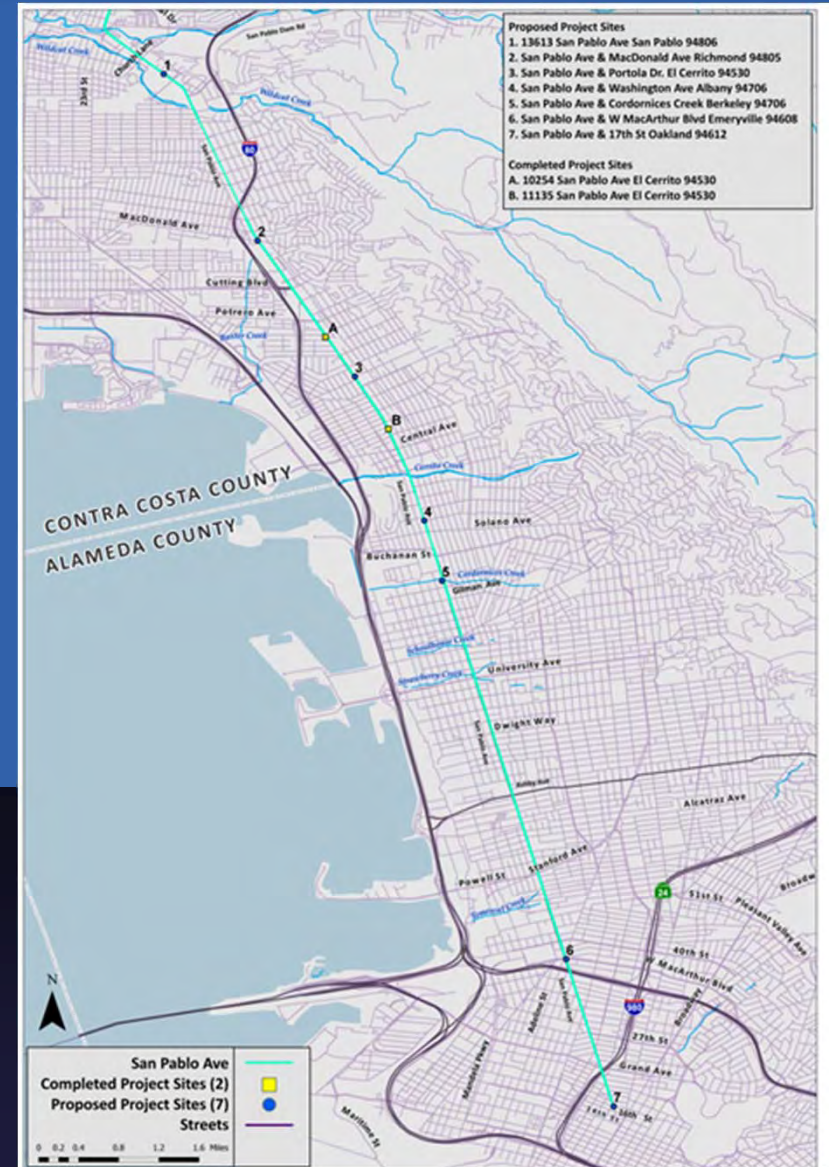


San Pablo Avenue
Rain Gardens Today



Green Stormwater Spine Project Preview

- Implement green retrofits in 7 cities along San Pablo Ave
- Treat 7 acres of impervious surface (min.)
- Emphasis on vegetated approaches in public right-of-way



Four Key Project Goals

- Demonstrate Benefits and Effectiveness of Green Retrofits
- Improve Water Quality
- Increase Public Awareness
- Increase Municipal/County Acceptance





San Pablo Avenue Approach

Capitalize on Multiple Opportunities



Green Street Opportunity	San Pablo	Richmond	El Cerrito	Albany	Berkeley	Emeryville	Oakland
<i>Shared street and parking lot facilities</i>	👍	👍	👍	👍	👍	👍	👍
<i>Stormwater canopies at transit stops</i>	👍	👍	👍	👍	👍		
<i>Manage parking lot and/or building runoff</i>	👍	👍	👍	👍	👍	👍	👍
<i>Create a better pedestrian environment</i>	👍	👍	👍	👍	👍	👍	👍
<i>Rearrange parking to yield landscape space</i>	👍	👍	👍	👍	👍	👍	👍
<i>Project site is near local creeks</i>		👍			👍		
<i>Project site is near potential development</i>	👍	👍			👍		👍



San Pablo Avenue Opportunities

Create a better and "greener" pedestrian environment



El Camino Real
(Existing Conditions)



San Pablo Avenue Opportunities

Create a better and "greener" pedestrian environment



El Camino Real
(Proposed Arterial Retrofit)



San Pablo Avenue Approach

Create Projects That Have High Demonstration Value





San Pablo Avenue Approach

Make it Beautiful!



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San Pablo Avenue Opportunities

Shared stormwater facilities with parking lots and San Pablo Avenue



Donnelly Avenue
Burlingame, California

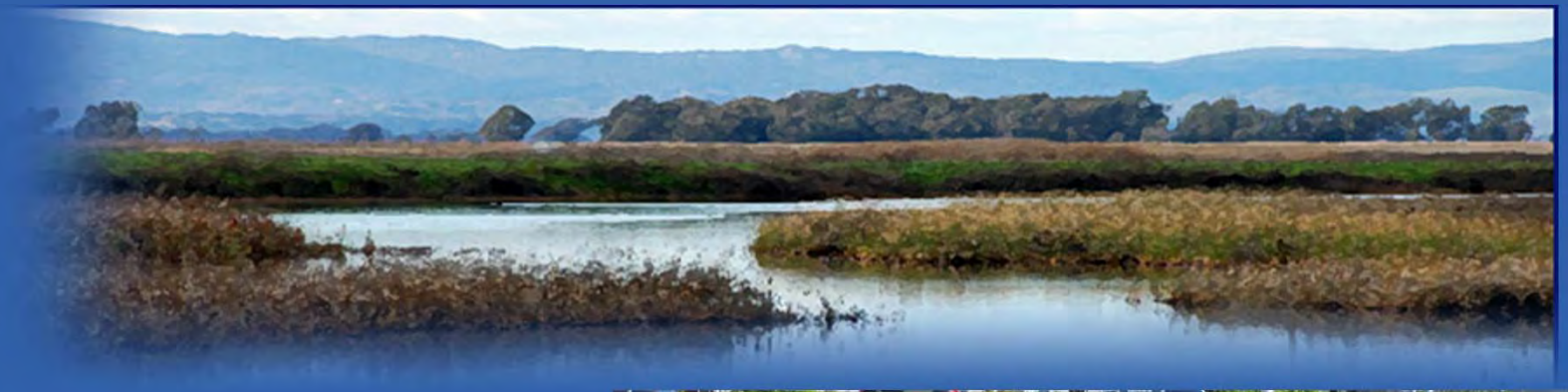


Major Project Tasks	Estimated Timeline
Design & Engineering	Spring 2013
Construction	Summer-Winter 2013
Water Quality Monitoring	Fall 2012 - 2015
Plant Establishment	Spring 2014-Fall 2015
Model Ordinance	Fall 2014
Regional Outreach	On-going-Dec 2015

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Photograph by Dan Cloak

