



# Low Impact Development: Implementation Examples and New Directions

Laura Prickett, AICP



# Outline of Presentation

- What is Low Impact Development?
- Recent implementation examples
- New directions in LID
- LID and high density development
- For more information...



# What is Low Impact Development?

- Design features that reduce runoff and mimic a site's predevelopment hydrology
- LID includes:
  - Source controls
  - Site design measures
  - Stormwater treatment by infiltration, harvesting and use, evapotranspiration, or "biotreatment"



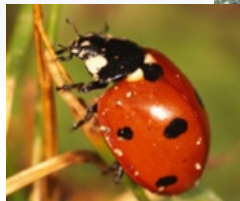


# Source Control Measures



Drain air conditioning condensate to landscaping

- Reduce pollutant sources
- Some discharges drain to landscaping
- Integrated pest management
- Drought-tolerant plants
- High-efficiency irrigation



Choose less toxic products for your home and garden. Look for this symbol before you buy.





# Site Design Measures



Pervious walkway

- Direct runoff to landscaping
- Reduce imperviousness
- Preserve open space
- Reduce project footprint



Skinny street with parking pullouts



"Disconnected"  
downspout

# Stormwater Treatment



Infiltration Trench

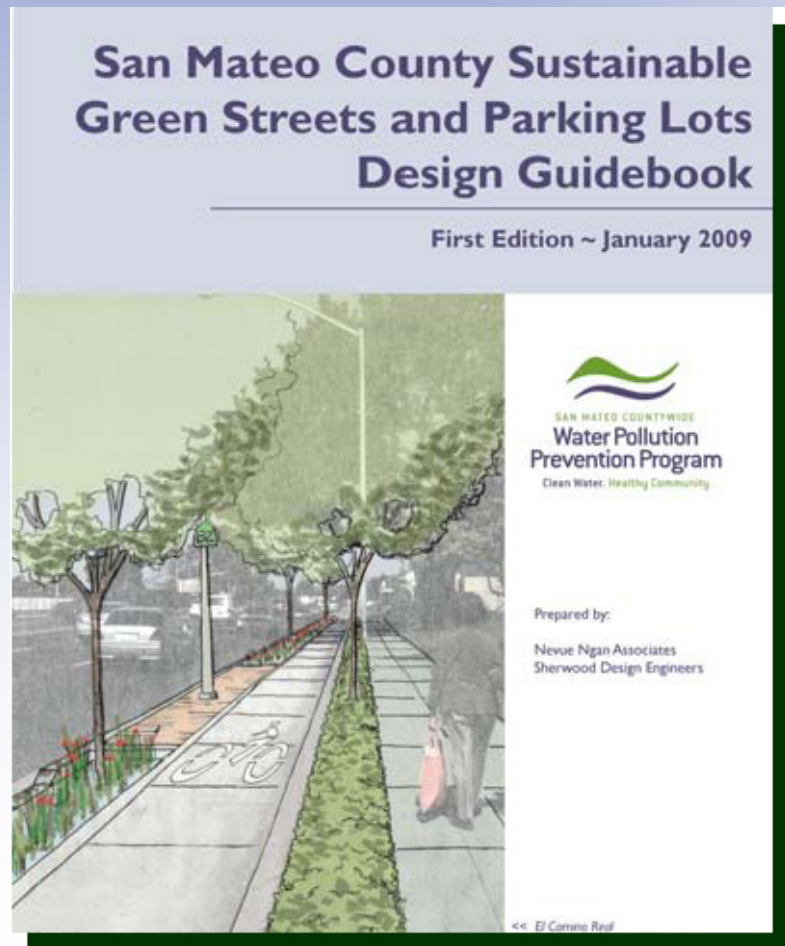


Bioretention Area (biotreatment)

- Beginning December 1, 2011, LID treatment is:
  - Rainwater harvesting/use, infiltration and evapotranspiration, or
  - Where that is infeasible, use “biotreatment” (remove pollutants by filtering through soils with 5-10”/hour infiltration rate)



# Implementation Examples: Green Streets and Parking Lots, San Mateo County



- Funded with vehicle registration fee implemented by AB 1546, extended by SB 348
- Demonstrate designs in Green Streets and Parking Lots Design Guidebook



# Implementation Example: Serramonte Library, Daly City



- Bioretention areas:
  - Biotreatment (filtering through fast-percolating soil to underdrain)
  - Some infiltration to soils below underdrain
  - Some evapotranspiration in surface ponding area

# Implementation Example: Serramonte Library, Daly City



- Biotreatment of runoff from roof and parking lot
- SFEI is monitoring water quality: preliminary results favorable



# Implementation Example: Serramonte Library, Daly City



- Low flows filter through soil
- Inlet to storm drain for high flows



# Implementation Example: City of Burlingame Parking Lot



- Bioretention areas:
  - Biotreatment of runoff from roofs, municipal parking lot and portion of roadway





# Implementation Example: Brisbane City Hall Rain Garden



- Biotreatment of a portion of roof and parking lot runoff
- Drought tolerant plantings

# Implementation Example: Brisbane City Hall

## SUSTAINABLE STORMWATER MANAGEMENT

The landscaped area before you is actually an engineered system for treating **stormwater** runoff. This area, called a **rain garden** or bioretention area, collects stormwater runoff from both the parking lot and building roof. Runoff is treated as it **filters** through the specially-selected vegetation and **soaks** into the ground. Drain lines buried in the rain garden (the **underdrain** system) collect the treated water and send it through the City's storm drain system to Brisbane **Lagoon** and out into the **Bay**.



The rain garden uses a special soil mixture to help runoff soak into the ground and plants that do well in wet conditions.



The bioswale along Valley Drive also collects and treats stormwater runoff.



The underdrain system beneath the rain garden carries treated stormwater runoff to the Brisbane Lagoon and out to the Bay.



During very heavy storms, runoff ponds up and eventually overflows into the storm drain inlet to prevent flooding.

Another stormwater treatment system, called a **bioswale**, is located on the opposite side of City Hall along Valley Drive. In this system, parking lot and roof runoff is treated as it gradually flows along the length of the bioswale, being **filtered** by the grass and **soaking** into the ground before reaching the City's storm drain system and flowing to Brisbane **Lagoon** and out into the **Bay**. These treatment systems help keep pollutants from our cars out of the **Bay**.



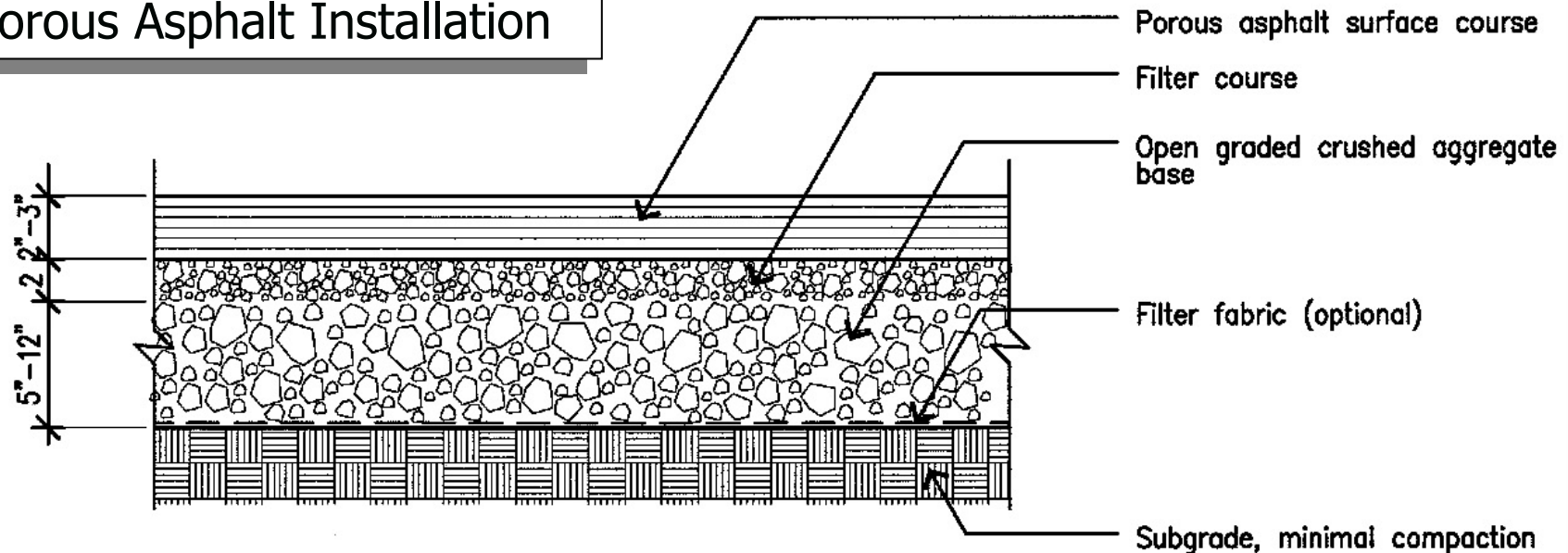
This project was funded in part by a "Sustainable, Green Streets and Parking Lots" grant from the San Mateo Countywide Water Pollution Prevention Program, a program of the City/County Association of Governments of San Mateo County. To learn more about what you can do to keep stormwater clean, visit the Countywide Program's website at [www.flowstobay.org](http://www.flowstobay.org).

- Educational sign at Brisbane City Hall
- Similar signs at all SMCWPPP-funded demonstration projects



# New Directions in LID Infiltration

## Porous Asphalt Installation



- Pervious paving
  - In clay soils, in some locations, the underdrain rock layer can be sized to hold the MRP-required amount of stormwater for treatment, below the underdrain.

# New Directions in LID Infiltration



Small area of pervious pavers, Serramonte Library

- Demonstration projects allow municipalities to gain some experience with new approaches.

# New Directions in LID

## Evapotranspiration



- Green roofs may be practicable for project applicants that will own and operate the building



Casa Feliz, affordable housing in San Jose



# New Directions in LID: Rainwater Harvesting



Sculpture collects rainwater for flushing toilets,  
Mills College Natural Sciences Building, Oakland



- Local examples by motivated institutions and individuals
- Typically does not “pencil out” due to low cost of water

# LID and Smart Growth and Transit Oriented Development

- LID requirements need to avoid making “greenfield” sprawl development more attractive to project applicants
- “Special projects” criteria for reduced LID requirements being developed – stay tuned!



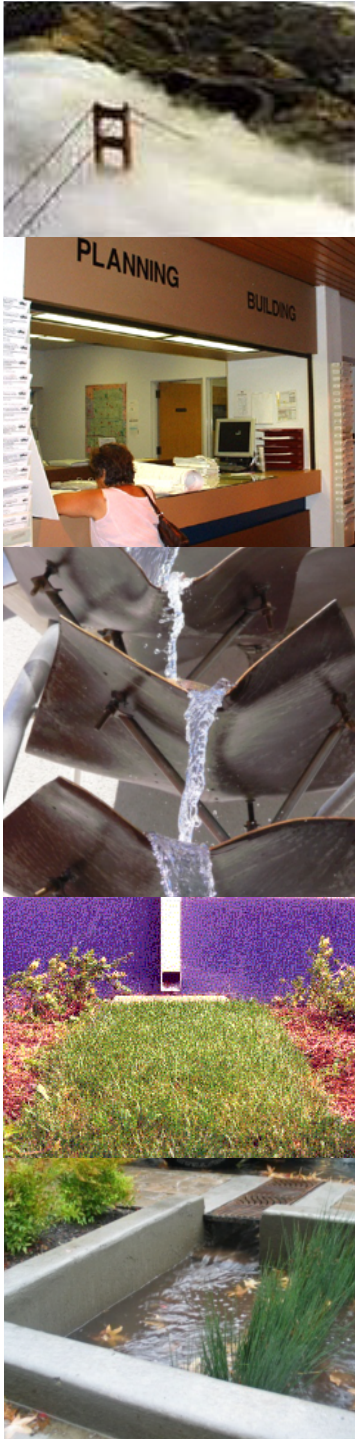
Transit oriented development, Redwood City



# For More Information...



- San Mateo County Green Streets Web Page  
[www.flowstobay.org](http://www.flowstobay.org) (click on "Municipalities,"  
then "Green Streets and Parking Lots")



## Contact Information:

Laura Prickett

[lprickett@eoainc.com](mailto:lprickett@eoainc.com)

510.832.2852 x 123

