

Navigating Water Challenges in Urban Spaces: Green Stormwater Infrastructure

Napa County Watershed Symposium
December 5, 2024

Peter Schultze-Allen, CPSWQ, RQP
Senior Scientist, SCVURPPP



Santa Clara Valley
Urban Runoff
Pollution Prevention Program

Presentation Overview

- Definitions
 - Gray Infrastructure
 - Green Stormwater Infrastructure (GSI)
 - Low Impact Development (LID)
- Regenerative Landscaping and GSI
 - WELO
 - ReScape
- GSI Measure Locations
- GSI Measure Types
- Additional Resources



Gray Infrastructure

The historically-used system for conveying stormwater with pipes, catch basins, curbs, gutters, channels, storm drains and other human-made impervious materials that generally do not allow for infiltration or use natural systems such as soils or plants. Single-purpose gray infrastructure moves urban stormwater away from the built environment as quickly as possible.



Ankara, Turkey and Palo Alto



Green Stormwater Infrastructure (GSI)

GSI is a **cost-effective, resilient approach** to managing **urban runoff** providing many community benefits:

- Reduces and slows stormwater
- Treats stormwater at its source filtering pollutants
- Sequesters carbon
- Cools urban areas
- Improves human health
- Add biodiversity and habitat



Low Impact Development (LID)

LID implements GSI as part of parcel-based new and redevelopment projects (required by stormwater permits).



WELO and ReScape

California's Model Water Efficient Landscape Ordinance (MWELO) and ReScape Regenerative Landscaping Principles provide additional guidance and integrate well with GSI/LID.



GSI Locations

- Green Streets
 - Roadway projects that incorporate GSI
 - Integrate with other roadway projects:
 - Active transportation projects
 - Urban forestry
- Low Impact Development (LID)
 - Development of “parcel-based” sites
- Regional Projects
 - Large locations, such as parks treating runoff from off-site and on-site areas.



GSI Types

- Bioretention:
 - Stormwater planters
 - Stormwater curb extensions
 - Tree well filters
 - Flow-through planters
 - Green roofs
- Rainwater harvesting
- Infiltration systems
- Pervious pavement

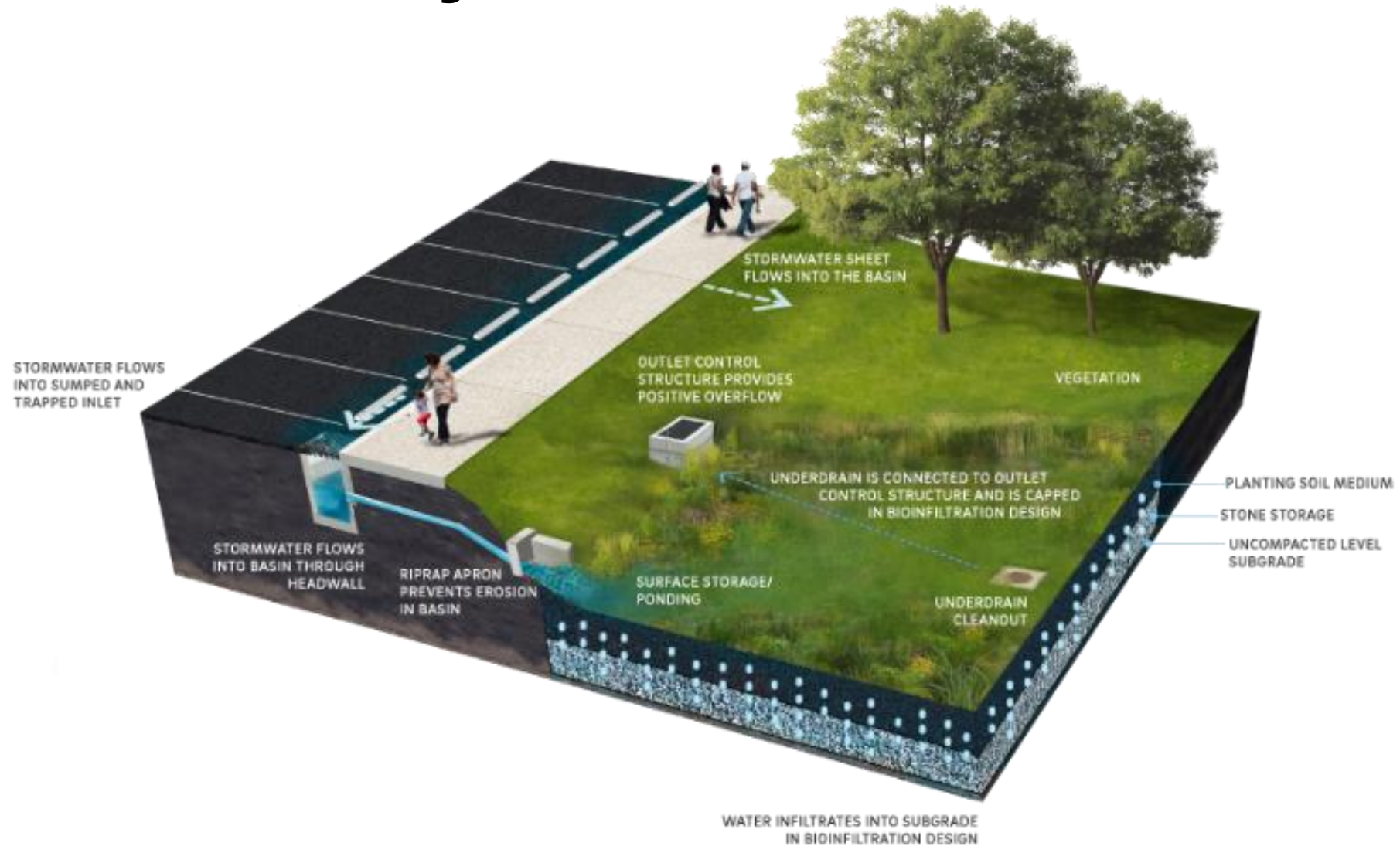


Bioretention

Bioretention areas, also known as rain gardens, are shallow, vegetated basins that collect and absorb runoff from rooftops, sidewalks, and streets.



Bioretention System Elements

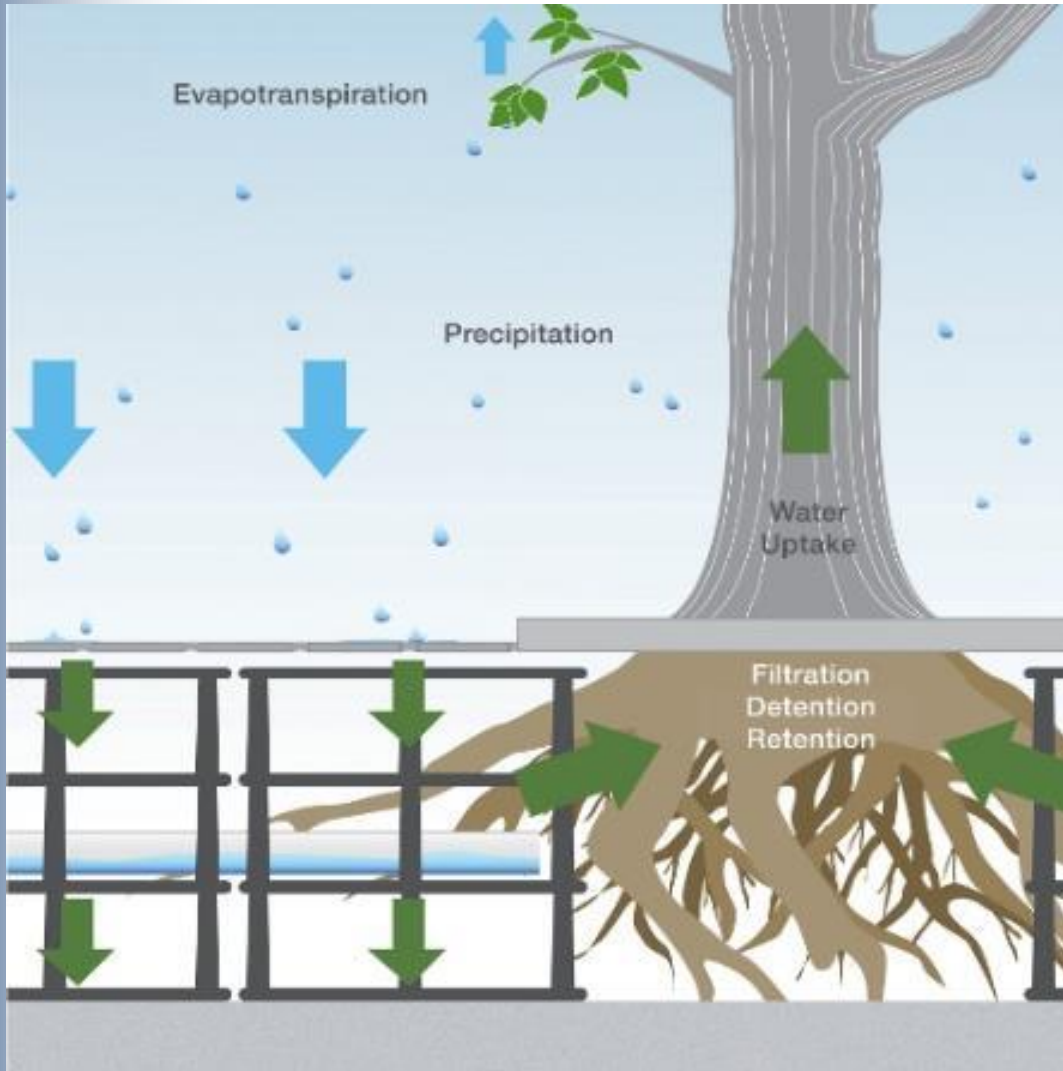








Tree Well Filter



Green Roof

A green roof intercepts rainwater and cools the building.



Pervious Pavement

Pervious pavement can infiltrate, treat, and/or store rainwater where it falls. They can be made of pervious concrete, porous asphalt, permeable interlocking pavers or other materials.



Pervious Pavement: Grid with Gravel



GSI and Active Transportation

Protected bikeway
(Class IV) with trees
and bioretention in
the buffer area.





Additional Resources

- BASMAA Post-Construction Manual: Design Guidance for Stormwater Treatment and Control for Projects in Marin, Sonoma, Napa, and Solano Counties:

<https://basmaa.org/wp-content/uploads/2021/02/basmaa-post-construction-manual.pdf>

- SCVURPPP GSI Handbook:

https://scvurppp.org/wp-content/uploads/2019/09/SCVURPPP-GSI-Handbook-Sept-2019_9-5-19.pdf

- SCVURPPP GSI website:

<https://scvurppp.org/swrp/gsi/>

- Rescape:

<https://www.rescapeca.org/>



Carpenteria californica
Bush Anemone

Contact Info

Peter Schultze-Allen
Senior Scientist
EOA, Inc.

pschultze-allen@eoainc.com

510-832-2852 x128



Calandrinia spectabilis
Rock Purslane