

# What Do We Look for During Routine O&M Inspections?

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SCVURPPP C.3 Workshop  
October 29, 2019

# Presentation Overview

- O&M inspection preparation
- Top 10 issues to check
- Resources

# O&M Inspection Preparation

1. Contact site manager/property owner
2. Require that maintenance staff (or contractor) attend the inspection
3. Review previous inspections for past issues
4. Bring inspection forms and clipboard
5. Bring digital camera or smart phone
6. Inspect in rainy weather if possible
7. Have personal safety equipment

# Top 10 Issues to Check:

1. Biotreatment soil media, sediment & trash
2. Plants or weeds
3. Mulch
4. Standing water and perviousness (pavement)
5. Flow spreading
6. Inlets and overflows
7. Irrigation system
8. Conveyances
9. Erosion
10. Signage and maintenance records



# 1. BSM, Sediment and Trash

Check for:

- a) Erosion of BSM
- b) Blockage of inlets by trash & leaves
- c) Accumulated sediment at inlets
- d) Lack of sufficient BSM quantity

Order from a supplier on the program list:

<https://scvurppp.org/2019/01/01/biotreatment-soil-media-supplier-list/>























## 2. Plants or Weeds?

Check for:

- a) Plants on the planting palette from project plans or O&M agreement
- b) Crowding by weeds (non-desired plants) desired plants
- c) Dead or dormant plants
- d) Evidence of herbicide use (use OMRI.org)
- e) Water flow impeded by crowded plants



# GSI Plant Best Practices and Tips

- a) Right plant, right place
- b) Minimize trimming, if possible
- c) Check that irrigation system is working
- d) Watch for invasive species:  
Check [www.cal-ipc.org](http://www.cal-ipc.org) for list
- e) Be aware that plants go through three phases:
  - a) Establishment
  - b) Maturity
  - c) Decline



























































NO DUMPING!  
DRAINS TO BAY















NO DUMPING!  
DRAINS TO BAY

















Mexican  
Feather Grass



















Sedums









### 3. Mulch (wood, rock or netting)

Check for:

- a) 3" depth of composted arbor mulch, gravel, cobble or jute netting depending on design
- b) No bare soil areas except within 12" of tree trunks
- c) Evidence of mulch in overflow or movement - "Bathtub ring"
- d) Mulch supplier spec/list being developed













Santa Clara Valley  
Urban Runoff  
Pollution Prevention Program







Gray Rush  
(Juncus P.)

































## 4. Standing Water -> Mosquitos

Check for:

- a) Water in areas that are not visible  
(vaults, catch basins, bubble ups,  
other pipes)
- b) Neglected sites
- c) Change in ownership
- d) Vault maintenance
- e) Algae growth in wet areas









Access  
Cover Not  
In Place

Locking  
Mechanism  
Not  
Working





# Media Vaults: Maintenance Indicators

Slides courtesy of Gordon Clem  
Pacific Stormwater Solutions  
Santa Rosa, CA

[www.pacstorm.com](http://www.pacstorm.com)

707-738-9411



# Maintenance Needed (1<sup>st</sup> Indicator)

- Sediment >4" on vault floor





# Maintenance Not Needed

- Sediment <4" on vault floor





# Maintenance Needed (2<sup>nd</sup> Indicator)

- Sediment more than 1/4" on top of cartridges





# Maintenance not Needed (2<sup>nd</sup> Indicator)

- Sediment is less than 1/4" on top of cartridges





# Maintenance Needed (3<sup>rd</sup> Indicator)

- Static Water >4" in Cartridge Bay





# Maintenance Not Needed

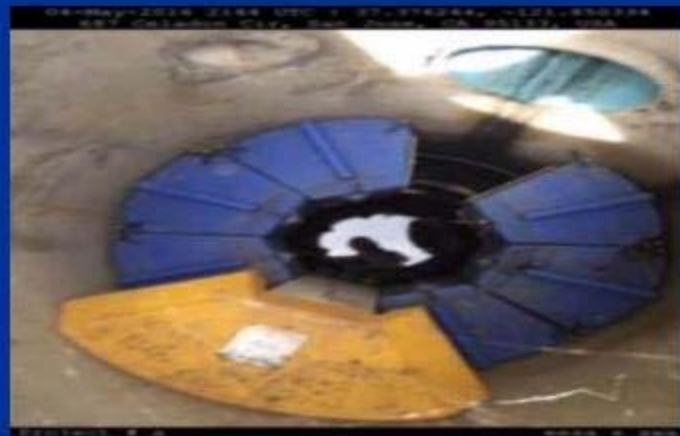
- Static Water <4" in Cartridge Bay





# Filter Maintenance

- As needed based on inspection .  
Refer to manufacturers O&M
- Remove & replace cartridges or media packs
  - Clean sediments from vault bottom/remove scum line
  - Inspect vault
  - Install fresh cartridges/packs
  - Properly dispose of spent media and sediment





# Maintenance Indicators

- Pronounced or measurable scum line (1/4" thick) present above top cap





# 5. Flow Spreaders

Check for:

- a) Clogged or impeded flow spreaders
- b) Attachment to inlet pipe
- c) Erosion





Blue Fescue



Berkeley Sedge

























# 6. Inlets and Overflows

Check for:

- a) Incorrectly installed flow splitters/weirs
- b) Handover from construction to maintenance needs to be checked (activation of system)
- c) Inlets blocked by improper grading
- d) Leaf and plant blockages
- e) Inlets of off-line systems acting as high flow bypass
- f) Vault-based high-flow bypass systems

















Not enough fall  
from street to  
system.

The landscape  
needs re-grading  
and a wider curb  
cut.



















# 7. Irrigation System

Check for:

- a) Exposed drip lines (not covered with mulch)
- b) Testing of system (frequency to be determined by property owner, but must maintain healthy plant growth)
- c) Fully activated smart controllers







# 8. Conveyances

Check for:

- a) Clean trench drains
- b) Unimpeded valley gutters
- c) Sealed manholes
- d) Unblocked pipes
- e) Working pumps - tested annually before rainy season





reAvenue64.com

avenue 64









28 3:12PM











# 9. Erosion

Check for:

- a) Use of splash blocks, rock, flow spreaders and mulch to prevent erosion
- b) Compacted soils
- c) Excessive hardscape features
- d) Excessively large outlet pipes (recommend a maximum of 6")











Cape Rush





# 10. Signage and Maintenance Manuals

Check for:

- a) Legible signage in good condition
- b) Manuals or signage that have manufacturer contact information
- c) Check maintenance records and O&M agreements









**On-Site Stormwater Treatment  
Cleans water before it flows to the bay**





## WELCOME TO THE STANLEY BOULEVARD BAY-FRIENDLY STREETScape



**B**ay-Friendly is a holistic approach to gardening and landscaping that works in harmony with the natural conditions of the San Francisco Bay Watershed. Bay-Friendly practices foster soil health, conserve water, and other valuable resources while reducing waste and preventing pollution.

Below are the 7 Bay-Friendly principles and project features.

### Landscape Locally

Plants used in the pathway construction were derived from local sources. Landscape boulders were harvested from local County road projects less than 50 miles from project site and the mulch was recycled from local organic materials such as tree trimmings or clean wood waste. In addition, 100% of the plants are California native species adapted to the local conditions.

### Nurture Soil

The soil was amended with organic matter composed, covered with mulch and/or compost to form a biologically active horizon and topped off with a layer of organic to add nutrients and retain soil moisture.

### Less to the Landfill

Reused asphalt concrete pavement was used to construct the curb-out path and the retaining wall. Tree clippings were used on site as mulch.

### Create Wildlife Habitat

Native plants provide food and shelter to native wildlife. Over 60 varying plant species with different blooming and fruiting cycles have been planted to provide year-round food sources. Rocks were placed in the landscaping to increase habitat complexity.

### Conserve Water

Irrigation was recycled water. Over 90% of the plants selected are drought tolerant and should not require irrigation after the plants have matured. A weather-based controller delivers water only when needed to eliminate over watering. Water is delivered efficiently through drip and bubble irrigation.

### Protect Water & Air Quality

Storm runoff from Stanley Boulevard is collected into bioswales and filter trenches to filter the water before it flows into our creeks, lakes or bays. Thousands of trees and shrubs planted along the roadway take up the CO2 and pollutants to help clean our air. No synthetic fertilizers are used and an integrated pest management approach is being used for pest and weed control to reduce runoff contamination.

### Conserve Energy

Transportation energy was reduced by acquiring new materials within 100 miles of the site. Street lighting and traffic signals feature low energy LED's with photo electric sensors that automatically turn the lights OFF at dusk and ON at dawn. The landscape design lowers its electrical energy use associated with watering, pruning and fertilizers.



TO SERVE AND PRESERVE





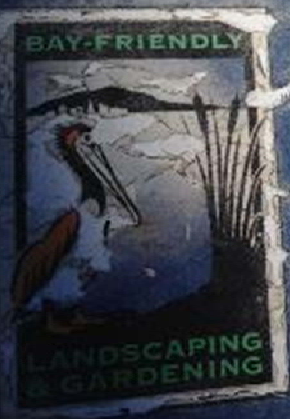
# Welcome to the Bay Street Courtyard

your enjoyment and to demonstrate how to create a beautiful garden practice. It is an ideal place for a community garden and a place which can be used for home gardens and landscaping projects.

gardeners and landscapers can learn from each other to create a beautiful garden in harmony with the natural world. The Bay-Friendly Landscaping and Gardening Program is not a one-size-fits-all program but an approach that encourages gardeners to work with nature by using native plants, water & energy saving practices, and a pollution-free garden habitat.



and help in the Bay-Friendly Landscaping and Gardening Program. It is a place to learn about landscaping or gardening projects.



## FOR MORE INFORMATION

The Bay-Friendly Landscaping and Gardening Program has resources for both the professional and home gardener including quality workshops, Bay-Friendly guides and for residents of Alameda County, discuss compost bins.

Visit [www.BayFriendly.org](http://www.BayFriendly.org)

**Project Developer**  
Madison Marquette

**Landscape Design**  
April Phillips Design Works, Inc.

**Project Sponsors**  
City of Emeryville  
Bay-Friendly Landscaping & Gardening Program









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Twice per year  
maintenance  
and after  
every storm  
event with  
over 1" of rain.





# Inspection Close-out Procedures

- Get contact information from all the parties present
  - owner,
  - property manager,
  - landscape maintenance staff or
  - maintenance contractor,
  - 3<sup>rd</sup> party contractors (vault or pervious pavement maintenance etc.)



# Inspection Close-out Procedures

- Typically, work is needed after the inspection and will be done by maintenance professionals.
- Following up with the property manager can be helpful to confirm that work orders or bid proposals accurately describe the work needed so that the wrong work is not done.



# Inspection Close-out Procedures

- Encourage training
- Provide information to appropriate parties on LID and GSI training opportunities for maintenance professionals



# Resources:

The SCVURPPP C.3 Handbook and GSI Handbook are available on the New Development and GSI webpages:

<https://scvurpppp.org/newdev/>

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



# Upcoming Training Opportunity:



(formerly the Bay-Friendly Landscaping Coalition)

[www.rescapeca.org](http://www.rescapeca.org)

February 20-21 & 27-28, 2020

City of Santa Clara – Maintenance Training



# Questions?

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