First Flush 2018 Water Quality Results

Presentation to:
Sewer Authority Mid-Coastside
Board of Directors
February 25, 2019
Resource Conservation District

Non-Regulatory Technical Assistance

Water
Climate
Wildlife
Agriculture
What is First Flush?

- First big rain of the season
- Freshwater runoff enters storm drains
- High pollution
Why Do We Care?

Long Term Datasets

Snapshots along Central Coast

Identify Problems

Allow Informed Management
Volunteers!

Rely completely on volunteer involvement. Thank you to all of our volunteers!

Citizen science

Conduct training to teach protocol
Sample Sites

First Flush 2018 → 13 sites

First Flush Historic (2008-2018) → 6 of the 13 sites
First Flush Precipitation History

Rain Decides!
This year was November 21st
What are we testing?

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Potential Sources</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fecal Indicator Bacteria</td>
<td>Feces of warm blooded animals (Humans, dogs, horses, etc.)</td>
<td>Indicator for pathogens that can human health</td>
</tr>
<tr>
<td><em>(E.Coli, Enterococcus)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrients (Nitrate, Orthophosphate)</td>
<td>Fertilizers, pesticides, detergents</td>
<td>Ecosystem and recreation impacts</td>
</tr>
<tr>
<td>Metals (Copper, Zinc, Lead)</td>
<td>Gutters/roofs, brake pads, tires, industrial waste, paint, fires</td>
<td>Human health impacts, reduced reproduction and mortality of marine organisms</td>
</tr>
<tr>
<td>Total Suspended Solids</td>
<td>Construction, erosion, agricultural runoff, fires</td>
<td>Marine organism impacts (ex: respiratory effects in aquatic organisms)</td>
</tr>
</tbody>
</table>
Physical Tests

- Transparency
- pH, Hardness, Chlorine
- Electrical conductivity, Water temperature
- Observations: trash, odor, bubbles, scum, oil

Helps inform data!
2018 Physical Results Summary

- pH, Hardness, Chlorine, and Conductivity within expected ranges
- Orange Color
  - Montara Creek, San Vicente Creek Mouth, Harbor Upland, El Granada Ditch, Surfer’s South
- Bubbles/Foam
  - West Point Ave, Roosevelt Drainage, Kelly Ave
- Trash
  - Kelly Ave
## 2018 Pollutant Results Summary

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Water Quality Objective</th>
<th>Locations with Highest Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bacteria</strong></td>
<td>100%</td>
<td>Capistrano Outfall</td>
</tr>
<tr>
<td><strong>Orthophosphate</strong></td>
<td>100%</td>
<td>Dunes Drainage</td>
</tr>
<tr>
<td><strong>Copper</strong></td>
<td>38%</td>
<td>Montara Creek</td>
</tr>
<tr>
<td><strong>Nitrate</strong></td>
<td>15%</td>
<td>Dunes Drainage</td>
</tr>
<tr>
<td><strong>TSS</strong></td>
<td>0%</td>
<td>San Vicente Creek Mouth</td>
</tr>
<tr>
<td><strong>Zinc</strong></td>
<td>0%</td>
<td>Montara Creek</td>
</tr>
<tr>
<td><strong>Lead</strong></td>
<td>0%</td>
<td>San Vicente Creek Mouth</td>
</tr>
</tbody>
</table>
2018 New Sites Summary

• **Montara Creek:**
  ▫ High bacteria, orange color
  ▫ Some of the highest nitrate, orthophosphate and copper levels in all San Mateo First Flush samples

• **Roosevelt Drainage:**
  ▫ High bacteria, bubbles/foam

• **Dunes Drainage:**
  ▫ High bacteria, highest nitrate level in all San Mateo First Flush samples and one of the highest orthophosphate levels

• **Poplar, Magellan not flowing**
# Historic Pollutant Results Summary

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Water Quality Objective Exceedance Rate (2008-2018)</th>
<th>Locations with most exceedances and/or highest values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria</td>
<td>97%</td>
<td>Surfer’s South, Capistrano Outfall</td>
</tr>
<tr>
<td>Orthophosphate</td>
<td>72%</td>
<td>El Granada Ditch</td>
</tr>
<tr>
<td>Copper</td>
<td>49%</td>
<td>Capistrano Outfall, West Point Ave Ditch</td>
</tr>
<tr>
<td>Zinc</td>
<td>25%</td>
<td>West Point Ave Ditch</td>
</tr>
<tr>
<td>TSS</td>
<td>2%</td>
<td>San Vicente Creek Mouth</td>
</tr>
<tr>
<td>Nitrate</td>
<td>0%</td>
<td>West Point Ave Ditch</td>
</tr>
<tr>
<td>Lead</td>
<td>0%</td>
<td>Vassar Ave</td>
</tr>
</tbody>
</table>
What can you do?
E. coli 2018

Detection Limit: 24,196

WQO<320
E. coli 2018 (1:100 Dilution)

Detection Limit: 241,960

WQO<320
E. coli Historic Sites

YEAR

MPN/100 mL


WQO<320
San Vicente Creek Mouth
West Point Ave Ditch
Vassar Ave
Capistrano Outfall
El Granada Ditch
Surfer's South
Enterococcus 2018

Detection Limit: 24,196

WQO<104
**Enterococcus 2018 (1:100 Dilution)**

Detection Limit: 241,960

WQO < 104
Copper 2018

![Copper 2018 Diagram](chart.png)
Zinc 2018

The graph shows the concentration of Zinc in various sites in 2018. The x-axis represents the site names, and the y-axis represents the concentration in μg/L. The horizontal red line indicates the Water Quality Objective (WQO) of 200 μg/L. Most sites fall below the WQO, with Montara Creek Mouth being the only exception, which exceed the WQO.
Lead 2018

![Graph showing lead levels at different sites with WQO < 30 as the acceptable level.](image-url)
Nitrate 2018

WQO < 2.25
Orthophosphate 2018

![Orthophosphate 2018 Graph]

WQO < 0.12
Total Suspended Solids 2018

WQO<500
Next Steps

- Raise Awareness
- Distribute Data
- Inform management and target practices

Continue First Flush and other education/outreach initiatives (FY20-FY22) through Coastside One H2O

- SAM estimate=$20,000 for 3 years= $60,000 total
- SAM estimate assumes cost share and resources from other partners
Thank you!

Questions?

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