Balboa Island
Infrastructure Discussion

December 14, 2019

Island Public Infrastructure

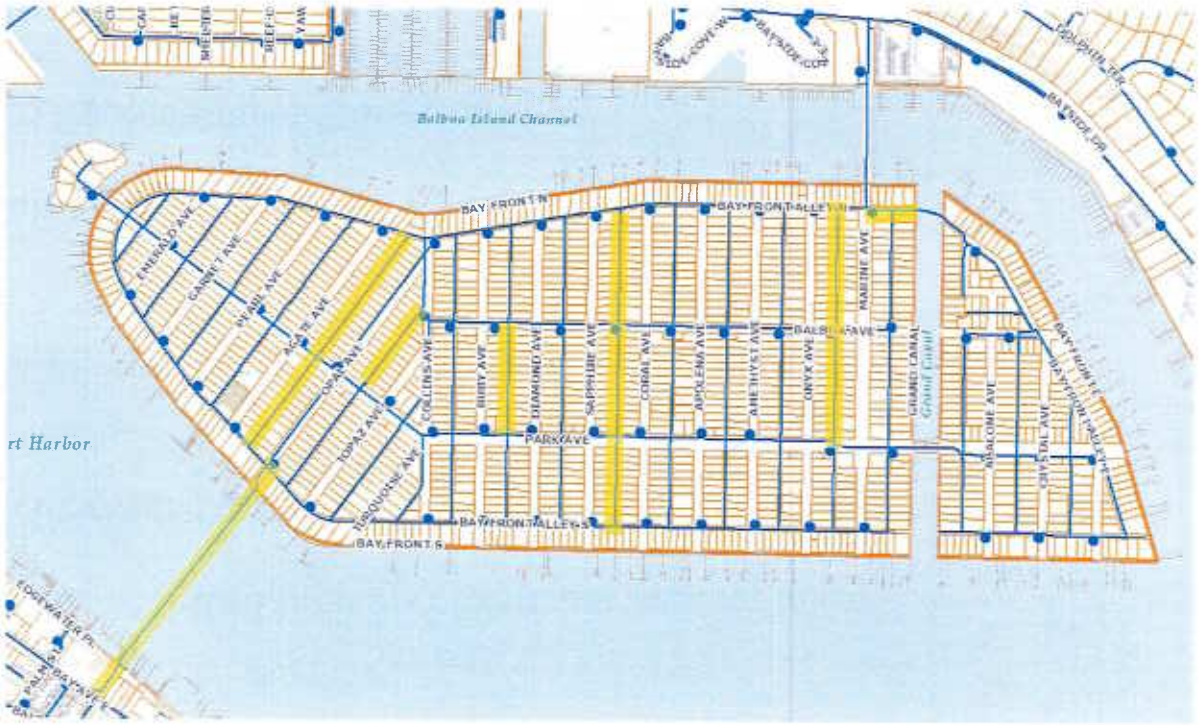
- Drinking Water System
- Sewer System
- Drainage System
- Streetlight System
- Streets and Allies – Pavement, Curbs, Sidewalks
- Seawalls and Boardwalk
- Bridges
- Ferry – Private (but desired transportation)
- Beaches
- Landscaping (Balboa Island Park, Medians on Park, Street Trees, etc.)
- Public Piers (six)
- Facilities (Fire Station & Restrooms, Ferry Landing Restrooms, Carroll Beek Center)
- Public Utilities – Electric, Gas, Telephone and Cable

To Begin with - Some Points of Reference

- The Island's Infrastructure is the Foundation on which your Development, Property Values, and Quality of Live rest upon!
- All Infrastructure has a Life Span and Needs Maintenance and Eventual Replacement
- In late 1920's and early 1930's – Original Sewer Systems, Water Systems, Street Pavement and Street Lights installed
- Island Seawall's and Boardwalk's installed on Grand Canal in 1929 and the rest of the Island around 1935-1939
- Island was built Below the High Tide Mark
- From an Infrastructure Maintenance and Replacement Standpoint:
  - Challenges with working on a Dense, Residential, Island
  - Basically One-Way On and Off the Island
  - High Ground Water (saltwater)
  - Corrosive Environment (water and salt)
  - Construction will have some level of disruption and/or inconvenience

Drinking Water System

- System Originally Installed in the late 1920's and early 1930's
- Primarily Cast Iron Pipe (CIP)
- Mostly replaced between late 1940's to 1960's with CIP and ACP
- Recently some segments upgraded to PVC Pipe
- Some CIP pipes and values still need replacement
- Main Channel Crossing Main needs to be replaced



Denotes Water Lines that needs to be replaced

Sewer System

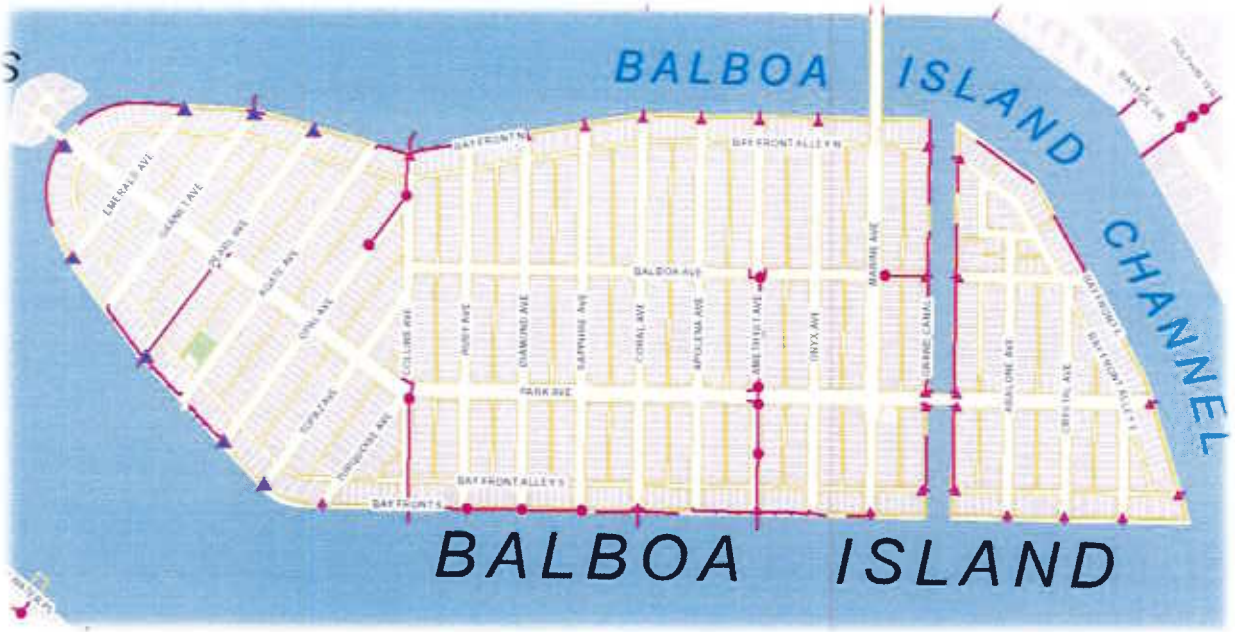
- System Originally Installed in In late 1920's and early 1930's
- Primarily Clay Pipe w/ Brick Manholes
- Pipe Maintenance and Repair Completed to address known Fractures and Sag's
- Brick Manhole probably will need replacement
- Many Pipes should be able to be Slipped Lined as they further age

- Collins Island Sewer Lift Station needs to be Replaced
- Diamond Sewer Lift Station Rehabilitated in 2009
- Little Island Sewer Lift Station Replaced in 1998

(Pumps all island(s) waste water to mainland)

Drainage System

- Gravity Drainage System Originally Installed around 1930's with Seawall
- Originally Pipes with Wood Plugs
- Some interior pipes added. Modified to current Manual Tide Valve System
- Requires almost Daily Labor attention, Supplemented by Potable Pumping Units during High Tides & Rain Events



Tide Valves

34 Tide Valves Protects the Island from Flooding due to High Tides. Currently Manually Operated

Manual or Power Assisted Operation

Flooding Threat from Tides and Storms

Seawall Gap – Ferry Landing

Rainfall related Street Flooding
Thanksgiving Day 2019

The Real Threat from a Flood is the Water Just Needs to Rise for a Moment, and the Damage is Done

Flooding Event, Balboa Avenue at Marine Avenue Looking East (2-27-2010)

Street Flooding Overtopping Curb at Turquoise Avenue (12-22-2010)

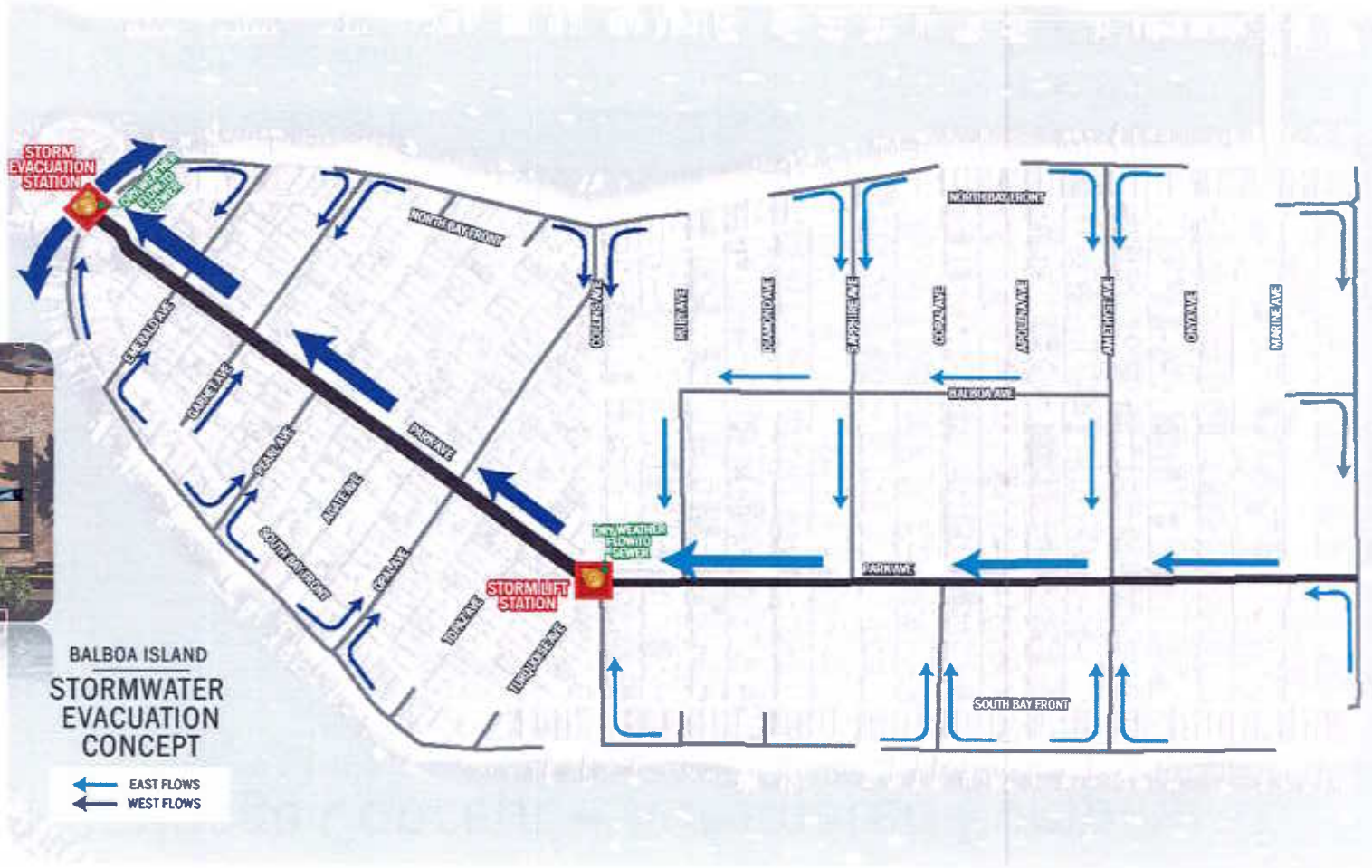
New Island Drainage Concept – Automated Pumping

Sub-Terrain Storm Water Pump Station

- Reduce Number of Discharge Points
- Automate Discharge and Tide Values
- Provide High Storm Water Pump-Out Capacity
- Collect and Discharge Low-Flow to Sewer *(Improved Water Quality)*

Possible Big Island Drainage Concept

Storm Water Pump Station
Under Street (electric)



Streetlight System

- Originally Installed in 1920's to 1930's
- Replaced conduits, conductors and poles in 1995
- Currently Lamps are 50w and 70w HPS. Looking to convert to LED and replace globes in coming years

Streets & Allies– Pavement, Curbs, Sidewalks

- Originally Installed 1920 to 1930
- Concrete Streets have held up well
- Most Structurally Sound. Some spot areas need to be replaced
- Lots of Cracks (from inadequate control joints during installation)
- Alley Concrete Replaced and generally in Good Shape
- How to address American Disability Act Requirements? (ADA)

- In Future need to look into Complete Replacement or Rehabilitation
  - Replacement – length of disruption, all material removed and new material placed
  - Rehabilitation – less disruption, R&R bad areas, crack seal and maybe cold mill surface

Island Bridges

Marine Avenue

Refurbishments in 1980 & 1999

Repaved in 2019

Park Ave – New in 2018

Collins Island

Built 1957

Looking at Replacement

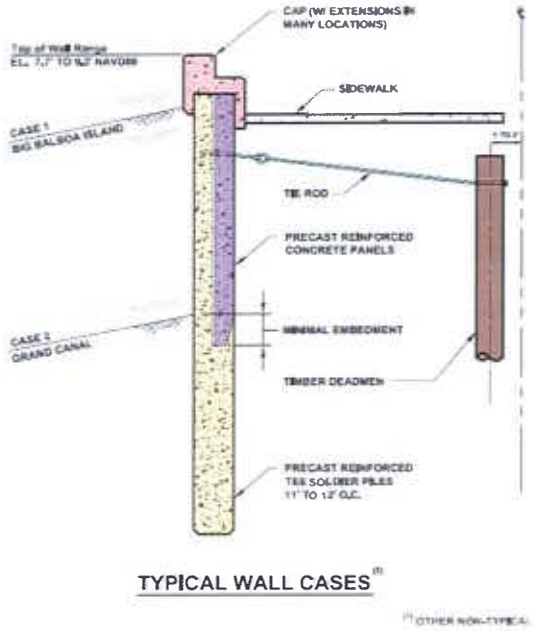
Landscaping – Park, Medians and Trees

Park Ave Medians – Due for Refurbishment.
New irrigation system, curbs and hardscape, Understory Plants

Carroll Beek Center (1981) **and Park** - Building Refurbished several years ago.

Street Trees on Garnet, Pearl, Park, Marine and a couple of isolated locations

Seawalls



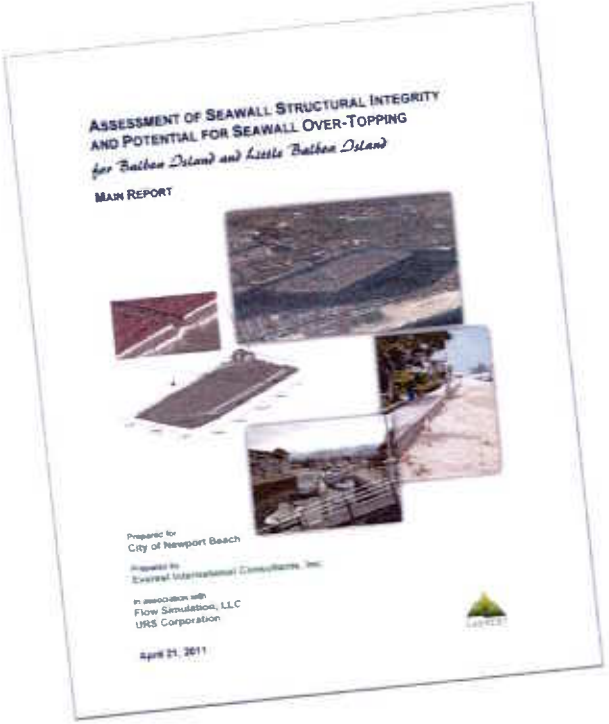
TYPICAL WALL CASES[1]

[1] OTHER NON-TYPICAL

- Balboa Island is protected from flooding by Perimeter Seawalls
- Grand Canal Seawalls were built in ~ 1929
- West End Seawall were built in ~ 1925-1935
- Remainder of seawall were built in ~ 1939
- The Balboa Islands are the lowest of the eight islands in the Harbor: approximately Elevation 5'-7' *(Extreme high tides approach 8')*
- Little Island Cap installed ~ 1985
- Big Island Cap installed 2018

Southwest end of Island during a King Tide (12-12-2013)

Balboa Islands – Seawall Structural Integrity and Over-Topping Assessment Study Completed April 2011

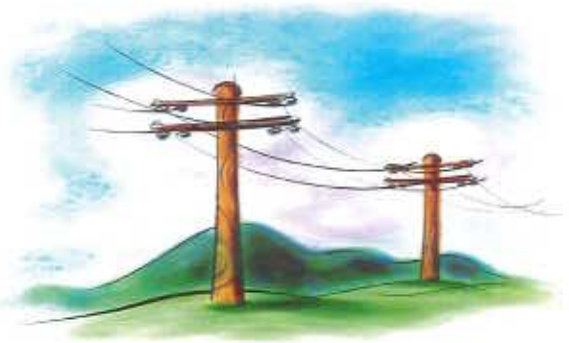


Seawall Condition (in 2011)

- Seawall Age: 76-86 years
- Overall Condition: Holding together fairly well with widespread surficial cracks with some concrete spalling and evidence of corroding rebar
- Estimated Useful Life: Perhaps as little as 10 years, maybe as long as 25 years (2011 report)

Its Now 2019 – Looking to conduct another Structural Integrity Assessment next year.
We may need to start thinking about the Replacement of Islands Walls in the future.

Dry Utilities



Southern California Edison

- Plan to Replace/Rehabilitate Overhead System
- Still Island-wide Undergrounding Discussion

- **Underground Assessment District 113 - Agate to West End**
  - Currently in Design. Construction Planned to Start around fall 2021

Southern California Gas

- Need SCG to review system integrity and capacity of their Island system

Telephone/Cable

- AT&T just completed installation of a Fiber-optic High Speed Data/Internet System on the Island

Our Initial Thoughts for Going Forward

- **In General - Work from Underground to Finish Surface**
  (Utilities upgraded/replaced, undergrounded before pavement is addressed)
  - Complete Water, Sewer System Replacements and Upgrades
  - Design and Construct Drainage System
  - Complete Overhead Utility Discussion: New Undergrounding or Overhead System
  - Then Address Street Pavement
  - Look for opportunities to raise street elevation where possible

- **In General - Work from West Side of Island to East Side**
  - Westside UUD approved and underway
  - Collins Island Bridge and Sewer Pump Station are due for replacement

- **We need to look at Ferry Landing Seawall Gap and maybe install a Floodgate**

Our Initial Thoughts for Going Forward

- **Rehabilitation of Main Collector Streets – Agate, Park, Balboa & Marine**
  - Need to determine when best to address each
  - How to make ADA Compliant *(Particularly on Agate, Balboa, and Park)*

- **We need to Review and Plan for the Eventual Replacement of the Perimeter Seawall**
  - How to Access Beaches and Piers
  - Look into Raising the exterior Boardwalk as part of the project

- **Consider how to Provide more Public Parking and/or Park/Green Space in the Future**
  - Property Donation Program?
  - Use some of the Street Ends?
  - Dog Area?

Questions & Comments

Your **Public Works Department**

Protecting and Providing Quality
Public Improvements and Services

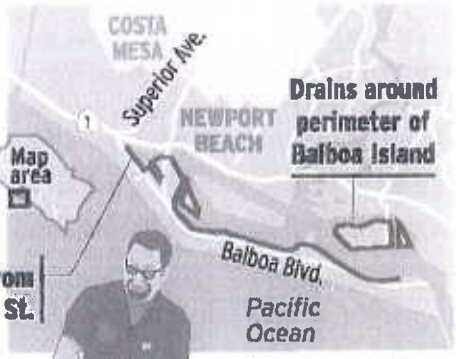
Tentative Balboa Island Infrastructure Long Range Plan (as of December 2019)

Recent Island Infrastructure Improvement Projects	Year Completed	Description
Water Main Replacement Project - Phase 1 (Balboa Ave)	2018	Replaced 1940's Era Cast Iron Water Mains on Balboa Ave to Improve Reliability and Fire Flow
Water Main Replacement Project - Phase 2 (Park Ave)	2019	Replaced 1940's Era Cast Iron Water Mains on Park Ave to Improve Reliability and Fire Flow
Park Avenue Bridge Replacement	2018	Replaced Original Bridge
Big Island Seawall Cap	2019	Constructed an approx. 10" concrete cap on existing Seawall to reduce over-topping and flood threat
Grand Canal Dredging and Beach Sand Regrading	2019	Dredged out built-up bottom sediments and pushed up sand against seawall
AT&T Island Wide Fiber-optic System Upgrade	2019	Installed Fiber-optic cable to provide High-speed intranet and Broadband Video
Marine Ave/Bridge Pavement Rehabilitation	2019	Removed and repaved asphalt pavement on Marine/Jamboree from PCH to Island
New Signal at Marine Ave and Bayside Drive	2019	Installed completely new traffic signal and operating system with CCTV

Proposed Island Infrastructure Improvement Projects	Target Start Design	Target Start Construction	Description
Ruby Beach Swim Platform	2019	Spring 2020	Reinstall the Ruby Street Swim Platform (north beach)
West Balboa Island Utility Undergrounding - Resident Sponsored 20b	Winter 2019	Fall 2021	Underground overhead Utilities from Agate Ave to West end of Island
Sewer Force Mains Replacement (Little Island to Mainland)	2020	2022	Replace Sewer Force Main
Ferry Landing Seawall Gate	2020	2022	Explore and Potential Construct Flood Gate in Seawall Gap
Water Main Replacement Project - Phase 3 (Bay Crossing)	2020	2022	Replaced 1940's Era Cast Iron Water Mains crossing the Bay that feeds the Island
Collins Island Sewer Lift Station Replacement	2021	Fall 2022	Rehabilitate/Reconstruct Wet Well Sewer Lift Station
Collins Island Bridge Replacement	2021	2023	Replace 1957 Bridge and adjacent seawalls
Rehabilitate Public Restrooms at Fire Station, Beek Center, Ferry Landing	2021	2022	
Perimeter Seawall Integrity Assessment Study	2020	2021	Review structural Integrity of Perimeter Seawall (Last Study done 2011)
Water Main Replacement Project - Phase 4	2022	2024	Replaced remaining 1940's Era Cast Iron Water Mains in alley's to Improve Reliability and Fire Flow
Island Wide Drainage System			Replace Manual Operated tide valve system with automated pump system
Phase 1 - West End Big Island	2020	2023	Install underground collection System on West End, and Pump Station at end of Park Ave
Phase 2 - East End Big Island	TBD	TBD	Install underground collection System and Pump Station
Phase 4 - Middle Big Island	TBD	TBD	Install underground collection System and Pump Station
Phase 5 - Little Island	TBD	TBD	Install underground collection System and Pump Station
Lower Harbor Dredging around Island	2018	2021	Dredge Main Channels/Anchorage in Lower Harbor
Reconstruct Ferry Landing	TBD	TBD	Work with Operator to Replace Ferry Landing and Approach
Big Island Wide Electrical System Upgrading/Undergrounding	TBD	TBD	
Big Island Residential Street Replacement	TBD	TBD	Resurface/replace Street Pavement. Based on all underground done, condition and funding
Big Island Collector Street Replacement			
Park Avenue	TBD	TBD	Resurface/replace Street Pavement. Based on underground done, condition and funding
Agate Ave	TBD	TBD	Resurface/replace Street Pavement. Based on underground done, condition and funding
Balboa Ave	TBD	TBD	Resurface/replace Street Pavement. Based on underground done, condition and funding
Marine Ave	2020	TBD	Resurface/replace Street Pavement. Based on underground done, condition and funding
Big Island Wide Electrical System Upgrading/Undergrounding	TBD	TBD	Still in Discussion with SCE and Island Residents
Perimeter Seawall Replacement	TBD	TBD	Replace Portions or All of Perimeter Island Seawall on both Islands

Keeping water off the streets

A two-man crew goes out during high tide to monitor 89 vavles that were strategically placed around the island in the mid-70s, replacing plugs put in during the early 1900s. Newport Beach is the only beachfront city in the county with the system.



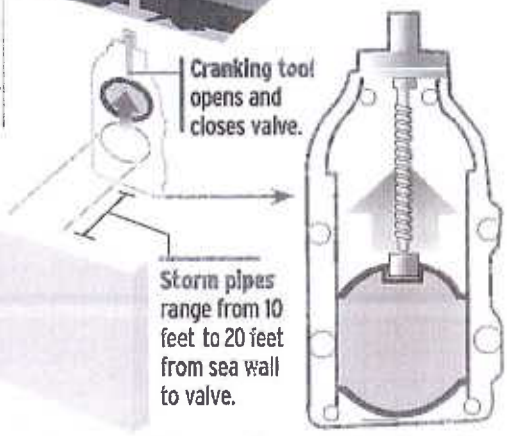
1. **When ocean tide is 5.4 feet above sea level or higher, Balboa Island and Balboa peninsula are susceptible to flooding.**

2. **As water level rises,** it flows into storm drains.

3. **To prevent flooding,** valves to storm drains are manually closed. A valve tool is inserted and manually twisted by a crew member which closes the valve. Valves over 18 inches require electric motors to open and close.

4. **After peak high tide,** crew members begin to reopen tidal valves.

High tides occur an average of 20 days a month. In the summer they tend to peak in the evenings; mornings in the winter.



Valves remain open unless there is a high tide. When there is rain and the tide is high, valves are closed, keeping storm run-off from draining. This causes storm flooding on the streets, and pumping crews are called out to pump drains.

Source: Tom Miller and Jim Auger, City of Newport

Laura Czingula and Monica Edwards/The Register