# PUMPOUT REPORT 2017

## California Clean Vessel Act Pumpout Performance Report

## San Francisco Estuary Partnership
## The Bay Foundation


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**Cover photos:**
**Angel's Gate Lighthouse by John Hollenbeck,**
**Ocean reflection by Jeff Grocky**

Discharging sewage overboard creates environmental and human health problems, especially in a state with more than four million recreational boaters. To reduce the negative impacts of discharging sewage overboard, all boaters are encouraged to use sewage management facilities, including pumpout stations, dump stations, and mobile pumpout services. Since 2008, the San Francisco Estuary Partnership and The Bay Foundation have monitored public sewage pumpout stations throughout the state, with funding from California State Parks Division of Boating and Waterways through the Clean Vessel Act grant program. This Pumpout Report highlights findings on the condition and operational status of pumpout stations in 2017.

## ⟶ KEY PARTNERS

### NORTHERN CALIFORNIA

San Francisco Estuary Partnership (SFEP), a National Estuary Program, monitors 89 pumpout stations throughout San Francisco Bay and Delta region.
www.sfestuary.org/boating / (415) 778-6674

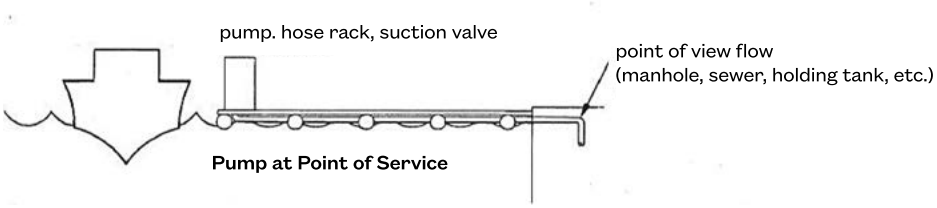
### SOUTHERN CALIFORNIA

The Bay Foundation (TBF), a 501(c)3 non-profit organization, monitors 70 pumpout stations from Santa Barbara County to San Diego County.
www.santamonicabay.org / (888) 301-2527

Funding for this project is provided by a grant from California State Parks Division of Boating and Waterways (DBW) through the federal Clean Vessel Act (CVA) grant program. This program provides grants to both public and private boating facilities for up to 75 percent of the construction, renovation, operation, and maintenance of pumpout and dump stations to service recreational vessels. Funding comes from the Sport Fish Restoration and Boating Trust Fund, administered federally by the U.S. Fish and Wildlife Service. For more information, visit www.dbw.parks.ca.gov, call (888) 326-2822, or contact:
California State Parks Division of Boating and Waterways
One Capitol Mall, Suite 500
Sacramento, CA 95814

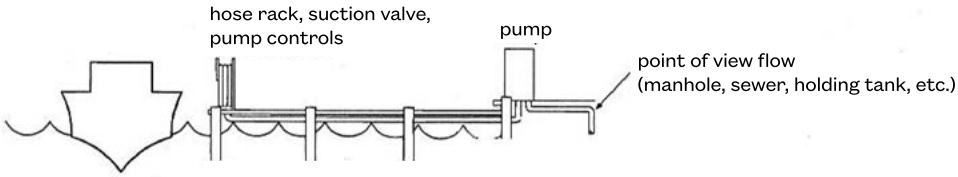
## STATIONARY PUMPOUT

Pumpout systems are typically found as a stand-alone feature within a marina. They are located dockside where there is sufficient space for a boater to dock and not affect others around them. There are several configurations for these systems:




**Pump at Point of Service**

This diagram shows the pump system (hose station and pump) as one unit, at the point of service.




**Pump Remotely Installed**

This diagram shows the pump as two separate entities. The hose rack is at the point of service while the pump is set apart, either at the end of the dock or it can be located landside.


This diagram shows a multiple hose station layout. A single pumpout unit can be plumbed to multiple hose stations, and equipped with a Remote Service System as shown in the diagram. There are limitations to multiple hose station configurations.

## IN-SLIP PUMPOUT

Another option available to marinas includes in-slip pumpout systems. There are several variations to this type of system. However, this system allows a boater to empty the sewage holding tank without leaving the slip. Variations include:

In-slip hose cart at West Point Harbor.
Photo by Adrien Baudrimont

**Option 1:** The marina installs a centralized pumpout station with multiple pumpout hydrants located throughout the marina, and spaced (approximately 40 feet to 60 feet apart) so that a portable hose can reach from the hydrant, located on the dock, to each nearby vessel. The pumpout hose is mounted on a mobile cart. The cart with the hose is wheeled to each boat as it needs pumpout servicing. The hose is unreeled and connected to both the hydrant and boat to be serviced. Wireless transmitters are available that allow convenient on-off operation without the need for someone to run back to the pump each time it needs activating.

**Option 2:** The marina installs multiple pumpout hydrants throughout the marina, and spaced so that a portable hose can reach from the hydrant to each nearby vessel. A mobile cart containing both a sewage pump and hose is then then wheeled to each boat as it needs pumpout servicing. The hose is unreeled and connected to both the hydrant and boat to be serviced. The sewage pump is activated and uses the hydrant and piping system to discharge the boats holding tank contents.

In-slip pumpout tank at Oyster Cover Marina.
Photo by Adrien Baudrimont

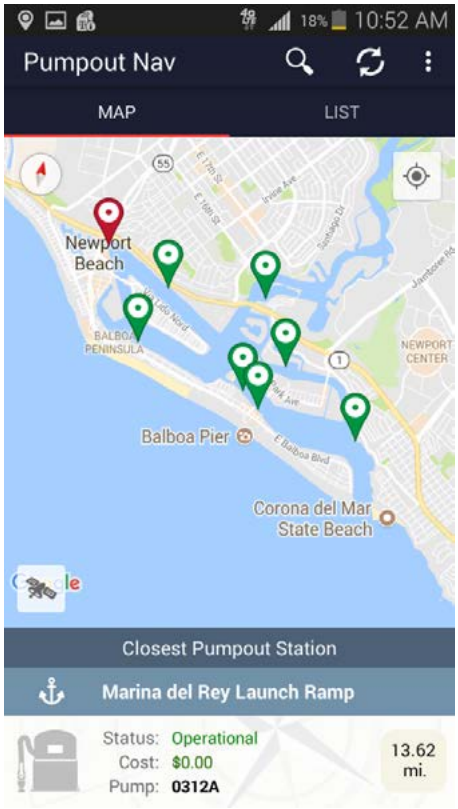
**Option 3:** The marina uses a mobile cart that is equipped with a sewage pumpout, hose, and small holding tank (typically 20 to 40 gallons). This cart is located on the docks and is wheeled to each boat as it needs pumpout servicing. The cart, now loaded with sewage is then wheeled to a hydrant located somewhere on the docks and the pump is now used to discharge the sewage landside for disposal and treatment.

## MOBILE PUMPOUT

In many areas of California, boaters can have their boat sewage removed by a mobile service. Mobile service vessels are retrofitted to hold a large quantity of sewage and can typically pump out dozens of vessels without having to discharge into a dockside pumpout system. This service can be managed by a contractor or provided by the marina itself, or simply allowed on premises as a boater solicited service.

There are benefits and drawbacks to each of these setups, but the benefits of mobile pumpouts are very clear. One of the largest obstacles boaters cite when asked about their sewage discharge is convenience. Mobile pumpouts are a great solution as they can be arranged when boaters are not at the marina. This hands free option is relatively inexpensive and can be a very attractive addition to a marina's compendium of services.

# ⟶ PUMPOUT NAV APP




Pumpout Nav, a free iOS and Android app, is designed for boater use while on-the- go and aboard the vessel. It helps boaters geo-locate sewage pumpout stations closest to their present location. The Pumpout Nav app automatically finds the boater's location, and suggests the closest pumpout stations on a map or as a list. The app displays each facility's operational status, cost, hours, and detailed location within the marina for each unit. It also provides instructions on how to use a pumpout station and information about the environmental risks and applicable regulations regarding sewage discharge.

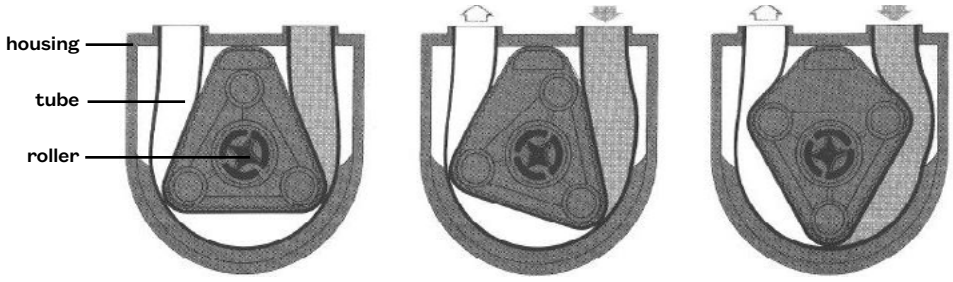
Pumpout Nav is equipped with a crowdsourcing function that allows any user to flag non-functional pumpouts throughout California. If boaters find a non-operational pumpout, they can report the issue directly through the app, and even submit photos. On the marina side, once a boater reports a problem, the marina manager and the local Clean Vessel Act Program are notified via email. The email alert will let marinas know their pumpout could be down and should be inspected. The local Clean Vessel Act Program staff can now follow up with marinas in real time, offer assistance if applicable, and encourage marina managers to apply for Clean Vessel Act funding to address the issue if needed.

Pumpout Nav also has a monitoring feature that allows San Francisco Estuary Partnership and The Bay Foundation to record monitoring data while in the field.  Once the data is entered and submitted through the app an automatic email is sent to the facility manager summarizing the results of that monitoring effort.

There are three primary types of pumps used in a sewage pumpout system.

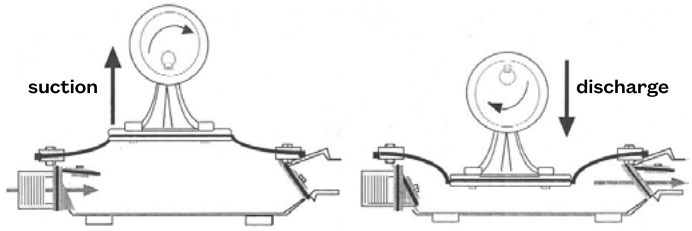
## PERISTALTIC

Peristaltic pumps work by displacement, alternating compression and relaxation on a tube, drawing contents into the tube and creating suction. The tube is located in an enclosed housing and is compressed by a roller.



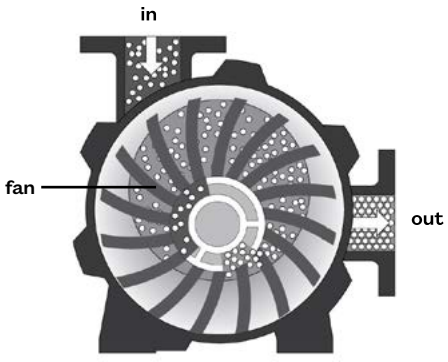

## DIAPHRAGM

Diaphragm pumps work by displacement, they use the backward and forward motion of a diaphragm (or membrane) to fill and empty a chamber with the contents being pumped, creating a suction. This pump works like a plunger.




## VACUUM

Vacuum pumps work by creating a pressure difference usually with the use of a fan. The fan forces contents forward increasing pressure in front and decreasing pressure behind the fan, this creates suction. A vacuum (which creates a pressure difference) is what allows humans to drink through a straw.



# ⟶ MAINTENANCE RECOMMENDATIONS

Preventative maintenance is the best solution for avoiding problems. Marina operators should inspect the pump and pump enclosure on a weekly basis and, when possible, daily. These inspections should check for leaks, cracks, unusual wear, and if there is missing equipment.

## HOSE

Look for damage that could affect performance of the system, like tears or a collapsed hose wall. To keep repair costs down, sections of hose can be repaired rather than replacing the entire hose; however the number of repairs on one hose should be limited as to not impede optimum operation.

## SIGHT GLASS

Look for cracks and make sure the movement of effluent is visible through the sight glass.

## NOZZLE

Look for signs of wear, including cracks and tears. Ensure that the tip has not been cut off and there is a backflow flap in place.

## BALL VALVE

Check that handles are not broken and can be easily rotated.

## HOUR COUNTER

Ensure that the hour counter is not broken and functions properly.

## SIGNAGE

Ensure there is adequate signage and it is legible. Signage should include pumpout symbol, funding credit, instructions, hours of operation, pumpout cost, contact number for problems, and on/ off buttons.

## UNUSUAL NOISES

Turn the pump on and listen for unusual noises including squeaking, rattling, and grinding, also listen for air leaks, specifically around threaded connections.

**Photo credit:**
**1. Victoria Gambale, 2. The Bay Foundation, 3. J. Harvell, 4. Michelle Staffield, 5. Victoria Gambale, 6. Carrie Baldwin**

## ⟶ WHY MONITOR PUMPOUT STATIONS?

The goal of pumpout station monitoring is to promote a sense of accountability for condition and operational status of pumpout stations, promote useful pollution prevention amenities for boaters, and decrease the amount of sewage discharged into waterways.

Pumpout station monitoring allows San Francisco Estuary Partnership and The Bay Foundation to:

— ensure stationary pumpout equipment is operational for use at all times.
— track the general condition and evaluate performance of pumpout stations.
— assist facilities that do not meet Division of Boating and Waterways grant requirements by offering a reliable source of technical assistance and resources.
— promote the installation and proper maintenance of pumpout stations.
— maintain contact with recipients of DBW's grant.

## ⟶ MONITORING RANGE & FREQUENCY

### SOUTHERN CALIFORNIA

The Bay Foundation monitors 70 public sewage pumpout stations in 13 Southern California harbors from Santa Barbara to San Diego.

### NORTHERN CALIFORNIA

San Francisco Estuary Partnership monitors 83 public pumpout stations in 65 Northern California marinas throughout the San Francisco Bay and Delta.

All units are monitored on a quarterly basis in the months of February, May, August, and November. Since monitoring is only conducted four times a year the analysis presented in this report is a window into how the unit operates based on this limited data.

## ⟶ MONITORING PARAMETERS


**Signage is important**
**Balboa Yacht Basin, Photo by Carrie Baldwin**

Pumpout Nav app is used to standardize data collection, improve efficiency, and reduce error.

San Francisco Estuary Partnership and The Bay Foundation note presence or absence of the following signage:

— Pumpout symbol
— Funding credit
— Instructions for pumpout operation
— Hours of operation
— Pumpout usage cost
— Contact number for problems
— On/off buttons

Condition of parts are rated.
0 = absent, 1 = needs repair, 2 = worn, 3 = excellent

**Specific parts rated by** San Francisco Estuary Partnership and The Bay Foundation

**Part**
Hose
Nozzle
Sight glass
Pedestal
On/ off buttons
Motor unit
Ball valve
Nozzle's backflow flap


**Hour counter**
**Photo by The Bay Foundation**

Each motor unit is equipped with an hour counter meter. During site visits, a reading from the meter is recorded. The meter is activated by the motor once it is engaged and counts the elapsed time that the motor runs. The time logged by the meter gives insight to how often the unit is being used. However, due to the immense variation in pumpout type, process technique, and the use of "delay" switches, determining an accurate quantity of sewage pumped from the hour counter is not feasible.

Vacuum pressure is an indication of how well the unit operates and is measured during each monitoring event, in inches of mercury (inHg). By attaching a vacuum gauge to the end of a pumpout hose or nozzle, a reading is taken after a one minute adjustment period has elapsed. Vacuum pressure varies from 0 to 30 inHg. According to equipment manufacturers the optimum vacuum pressure is 22 inHg.

**Vacuum pressure Photo by Victoria Gambale**

Vacuum time is another indication of how well the unit operates. During each monitoring event, this is measured by timing how long it takes a pumpout to evacuate five gallons of water. The optimum vacuum time is less than 10 seconds.

**Vacuum time Photo by Grace Lee**

Dye tablet dissolving in 5 gallon bucket of water
Photo by Georgia Tunioli

As a courtesy San Francisco Estuary Partnership and The Bay Foundation now offer complementary dye tablet testing. This test can help identify leaks in the plumbing of a sewage pumpout system. This is a courtesy test offered to facility managers, it is not mandated and is not conducted at each unit. For these reasons the results of this test are not presented in this report.

Other parameters recorded during site visits include: make and model of pumpout, pump type, approximate distance from pump to hose stand, and any recent developments.

Although vacuum pressure and vacuum time tests are used as an indication of how well a unit works, they are not directly comparable to how quickly the unit will empty sewage from a boat's holding tank. These measurements, along with other data collected, are used collaboratively to determine the overall condition of a pumpout station and offer assistance and recommendations to facility operators when needed.

It is important to San Francisco Estuary Partnership, The Bay Foundation, and California State Parks Division of Boating and Waterways to keep in close contact with facility managers and be available for questions, clarification on monitoring, and be a reliable source for technical assistance. All monitoring results get emailed directly to participating facility managers through the Pumpout Nav app. Additional follow up is initiated via e-mail or phone with the managers if there were issues of concern from the monitoring. The monitoring effort and follow-up allow staff to work collaboratively with facility managers to resolve any problems that may arise.

| Percentage | Description |
|---|---|
| 90–100 | Excellent |
| 80–89 | Good |
| 70–79 | Fair |
| 60–69 | Poor |
| 0–59 | Very Poor |

In order to standardize the analysis throughout the state for direct comparisons, three parameters are used to determine percentages: vacuum pressure, vacuum time, and condition of parts (specifically hose and nozzle). These three parameters are considered equally important and therefore each parameter represents 33.33% of the total percentages.

The vacuum pressure is calculated as a percentage. The reading is divided by 22. I.E. a reading of 21 divided by 22 is 0.9545, which equals 95.45% for vacuum pressure.

Vacuum time is grouped into 5 second increments from 0 to 60 and assigned a number:
0 to < 5 seconds = 12
5 to < 10 seconds = 11
10 to < 15 seconds = 10
15 to < 20 seconds = 9
20 to < 25 seconds = 8
25 to < 30 seconds = 7
30 to < 35 seconds = 6
35 to < 40 seconds = 5
40 to < 45 seconds = 4
45 to < 50 seconds = 3
50 to < 55 seconds = 2
55 to < 60 seconds = 1
60 and greater = 0

The assigned number is divided by 12. I.E. a vacuum time of 9.95 seconds is assigned an 11, divided by 12 is 0.9166, which equals 91.66% for vacuum time.

The condition of parts is calculated as a percentage. The hose and nozzle are rated on a scale of 0 to 3: 0 absent, 1 needs repair, 2 worn, 3 excellent. The two readings are averaged and divided by 3. I.E. if the nozzle was rated as a 2 and the hose rated as a 3, the average is 2.5 divided by 3 is 0.8333, which equals 83.33% for condition of parts.

The three percentages from vacuum pressure, vacuum time, and condition of parts are then averaged together. I.E. the average of the three percentages above is 90.15%. This percentage indicates the likelihood that a boater will have a successful experience at the pump. We will define this concept as “usability percentage” in the tables to follow.

## This report analyses the data from the 4 monitoring events in 2017.

Each harbor section includes a map of the harbor, table of usability percentages and pump type, a “showcase” which highlights a unique feature, and a table of monitoring details. Monitoring details include  status information only when a unit is non-operational or non-accessible, a general description about the unit, and in some cases notes.

In some instances a unit’s analysis is determined based on less monitoring events or parameters.  In these instances an asterisk (*) is placed next to the percentage and an explanation is provided.

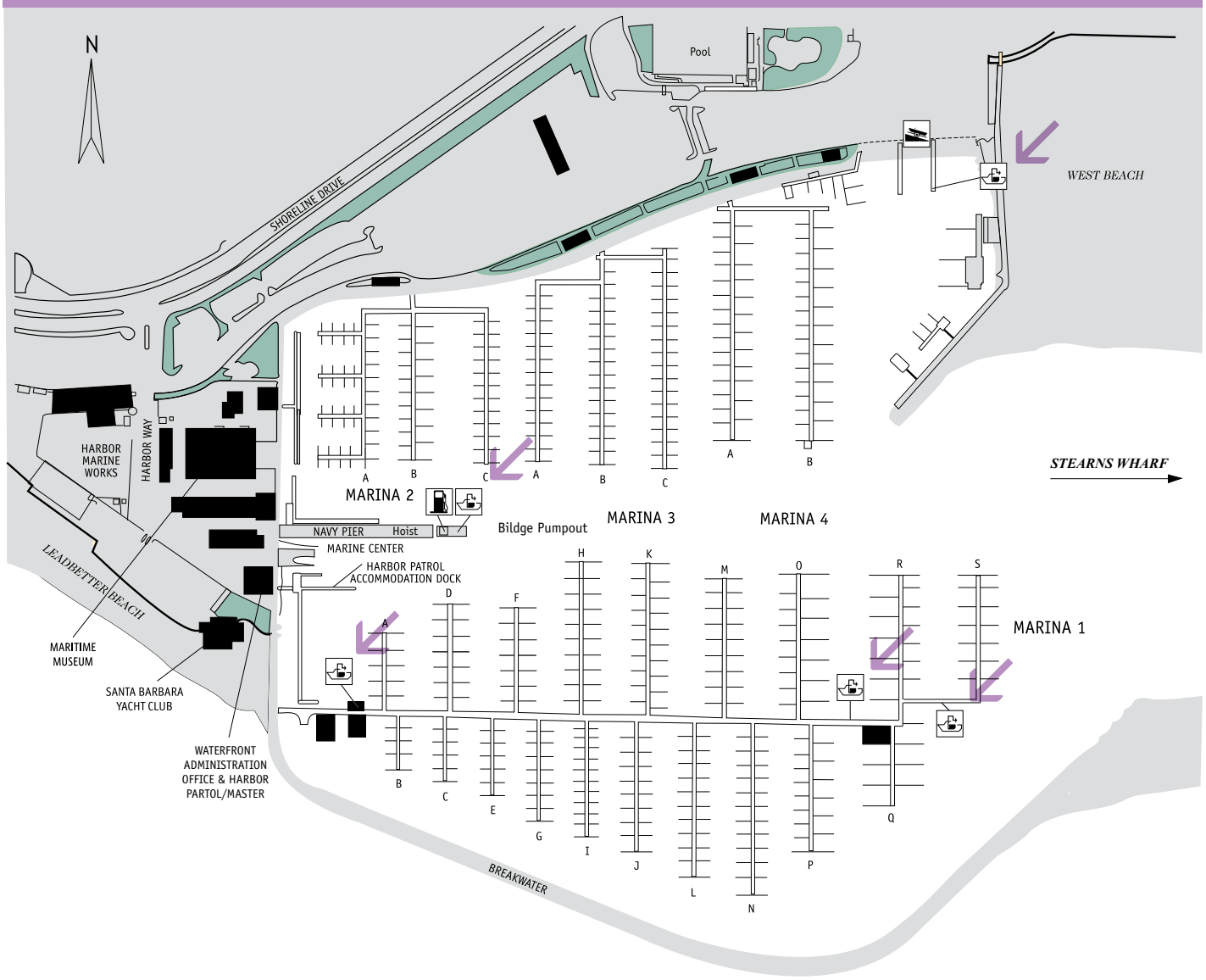
# SANTA BARBARA COUNTY


Santa Barbara Harbor features beautiful views from the Harbor Walkway. Photo by Victoria Gambale

**SANTA BARBARA COUNTY IS HOME TO ONE HARBOR**

## SANTA BARBARA — SANTA BARBARA HARBOR

# SANTA BARBARA — SANTA BARBARA HARBOR




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| **Marina One**, near/ west | 91 | Peristaltic |
| **Marina One**, mid/ PQ finger | 94 | Peristaltic |
| **Marina One**, far/ RS finger | 89 | Peristaltic |
| **Fuel Dock** | 96 | Peristaltic |
| **Boat Launch** | 97 | Peristaltic |

# SANTA BARBARA — SANTA BARBARA HARBOR

## ⟶ SHOW CASE

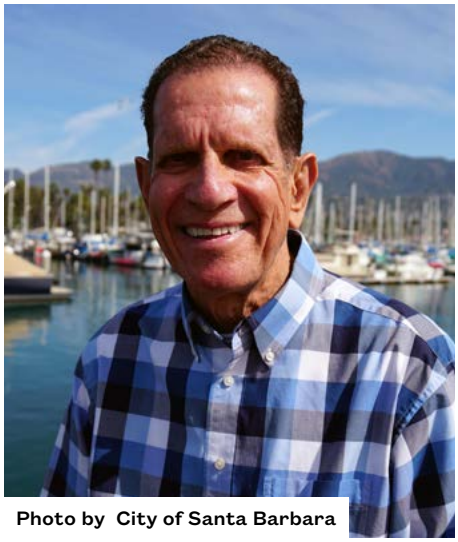


Photo by City of Santa Barbara

Mick Kronman, Harbor Operations Manager, is dedicated to protecting the environment he enjoys. That is evident as he oversees the Department's two Clean Marina programs, one developed internally for the harbor and the other a statewide, industry-sponsored program.

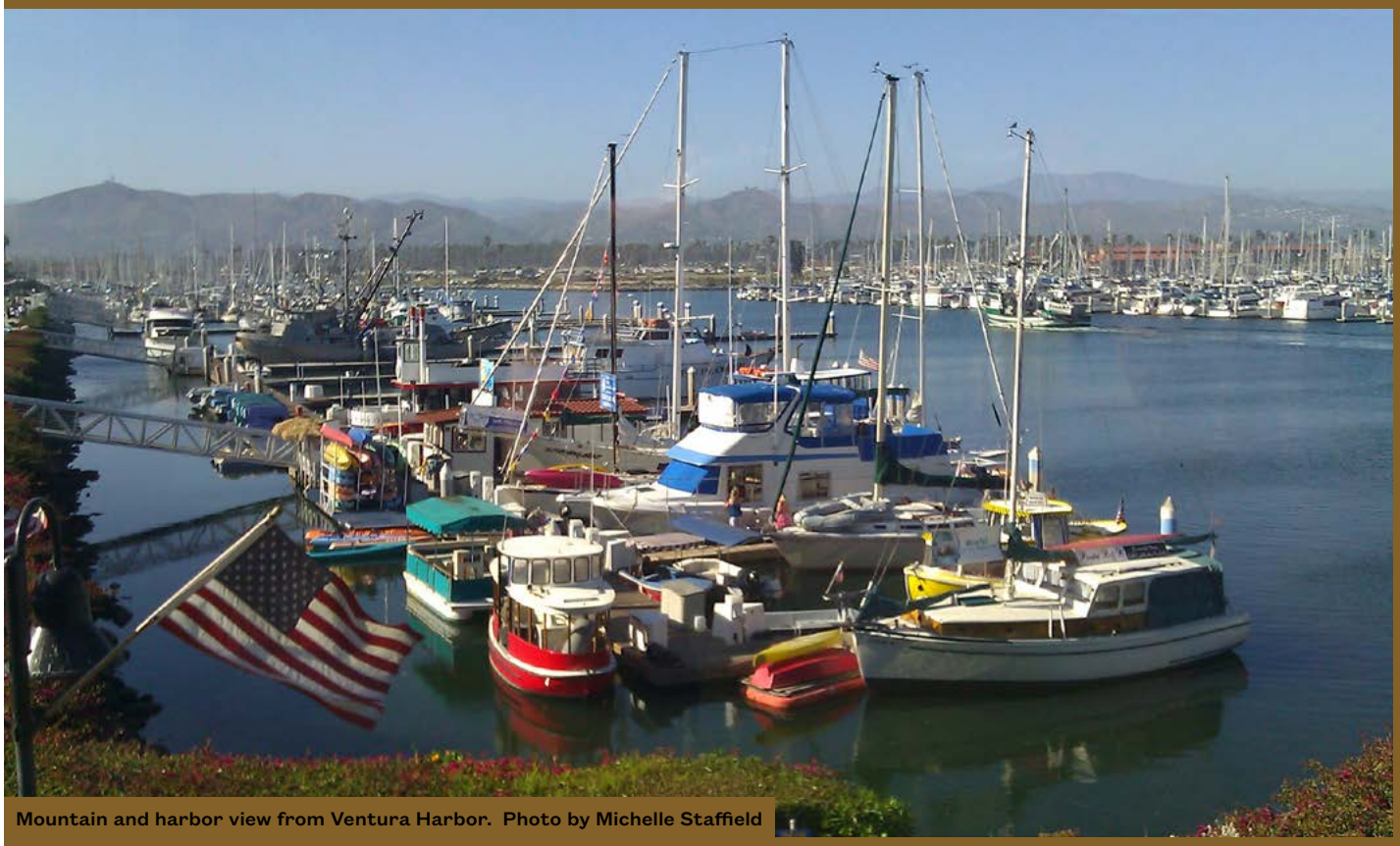
"Central to our goal of keeping pollution out of the harbor is sewage containment. Our five pumpouts are indispensable to that mission. Likewise, monitoring and maintenance of that equipment are essential to their availability and efficiency. The Bay Foundation has been a great partner in that effort. Thanks to smooth-running pumpouts, last year we successfully diverted over 200,000 gallons of sewage to the City's sewer system."
— Mick Kronman

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Marina One** | | |
| Near | | Performs very well |
| Mid | | Consistently performs excellently |
| Far | | Performs very well |
| **Fuel Dock** | | Consistently performs excellently |
| **Boat Launch** | | Consistently performs excellently |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# VENTURA COUNTY



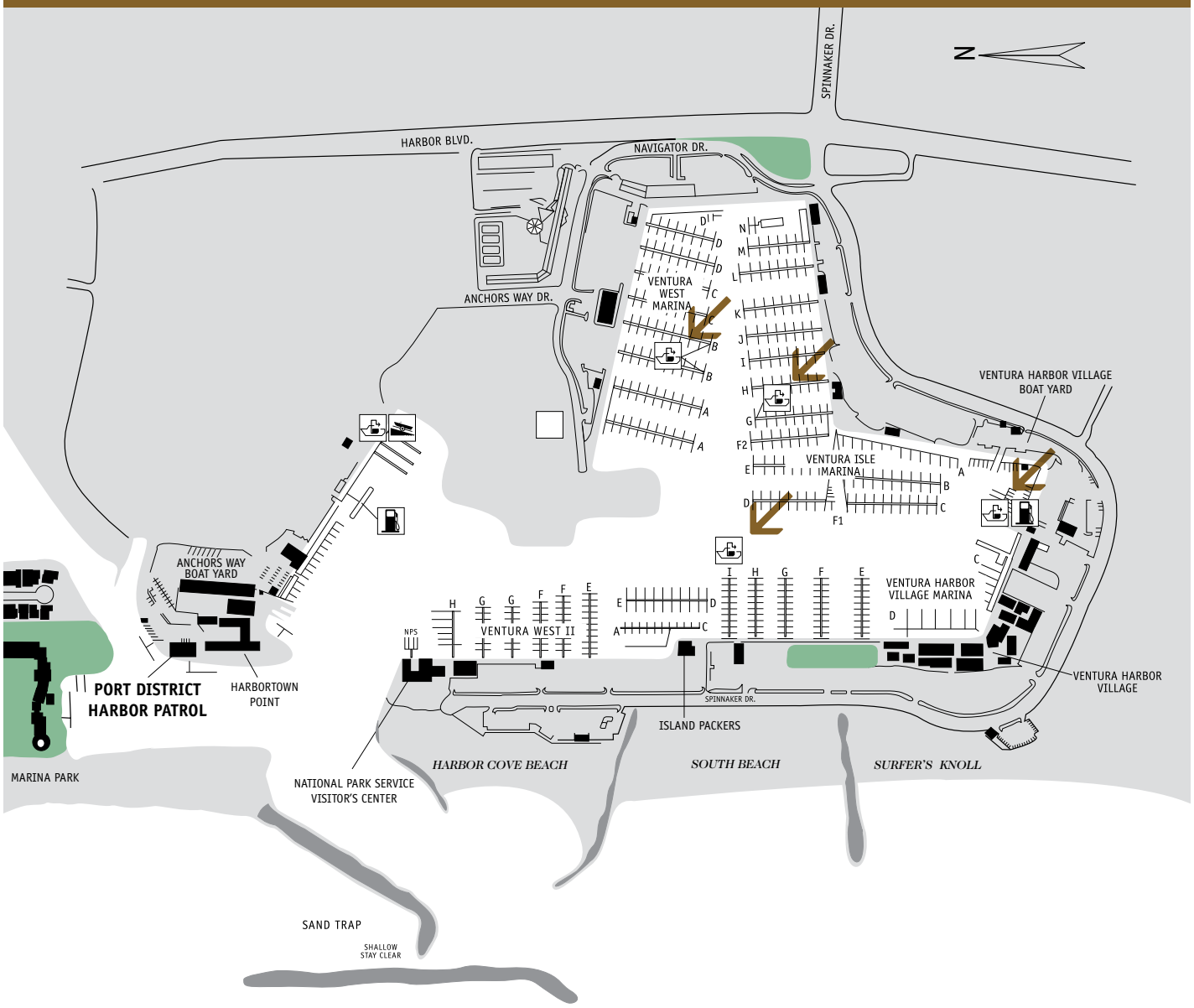
Mountain and harbor view from Ventura Harbor. Photo by Michelle Staffield

**VENTURA COUNTY IS HOME TO TWO HARBORS**

VENTURA — **VENTURA HARBOR**

VENTURA — **CHANNEL ISLANDS HARBOR**

# VENTURA — VENTURA HARBOR




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Ventura West Marina, B dock left/ east | 75 | Diaphragm |
| Ventura West Marina, B dock right/ west | 86 | Diaphragm |
| Ventura Isle Marina, G dock | *59 | Diaphragm |
| Ventura Harbor Marine Fuel, near | 81 | Diaphragm |
| Ventura Harbor Marine Fuel, far | 89 | Diaphragm |
| Island Packers, I dock | 81 | Peristaltic |

*See Notes under Monitoring Details.

# VENTURA — VENTURA HARBOR

## ⟶ SHOW CASE

Photo by Ventura West Marina

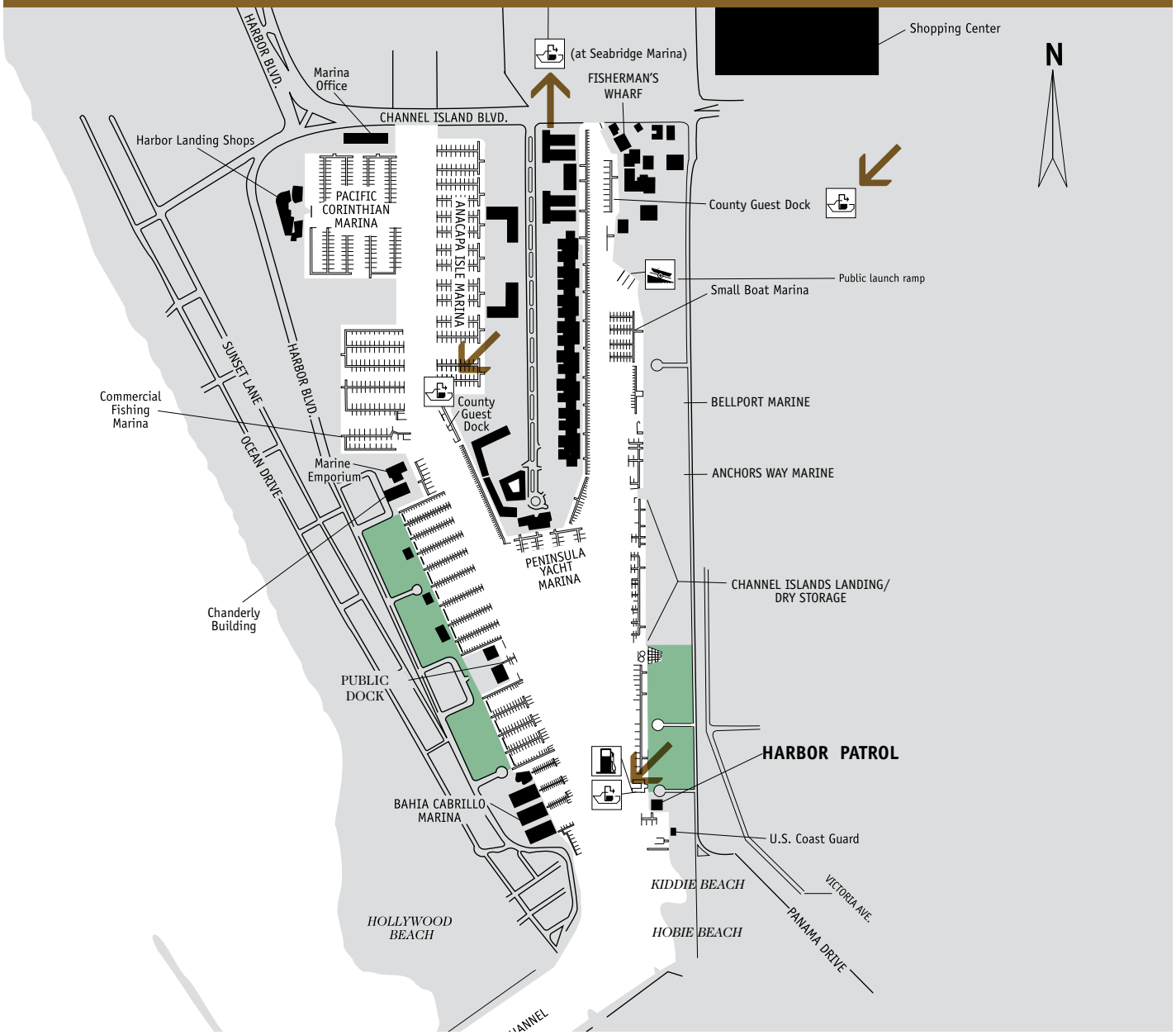
Chuck Ormson is the general manager at Ventura West Marina. Chuck and his crew work hard to keep their two sewage pumpouts operational for the boating community of Ventura Harbor. Due to Chuck's dedication in maintaining operational units, they received a 2017 usability percentage of 81% and 89% despite being older units. Currently, both pumpouts are operating at near excellent performance levels. Chuck emphasizes that marina-based and mobile pumpouts are critical to keeping sewage out of our harbor and coastal waters. And as good stewards of our environment, marina operators play an important role by providing accessible and reliable onsite pumpout services.

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Ventura West Marina** | | |
| B dock left/east | Non-operational Nov. | Performs well when operational |
| B dock right/west | | Performs very well |
| **Ventura Isle Marina** | Non-accessible May, Non-operational Aug. | Peforms well when operational |
| *Notes* | *In May, the unit was non-accessible due to dock repairs. Therefore the usability% is based on three of four monitoring events.* | |
| **Ventura Harbor Marine Fuel** | | |
| Near | | Usually performs well |
| Far | | Usually performs well |
| **Island Packers** | | Usually performs well |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# VENTURA — CHANNEL ISLANDS HARBOR




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Seabridge Marina, F dock | 96 | Peristaltic |
| Peninsula Park, County Guest Dock | 94 | Peristaltic |
| East Bank Guest Dock, near | 98 | Peristaltic |
| East Bank Guest Dock, far | 98 | Peristaltic |
| Harbor Patrol Dock | 90 | Peristaltic |

# VENTURA — CHANNEL ISLANDS HARBOR

## ⟶ SHOW CASE

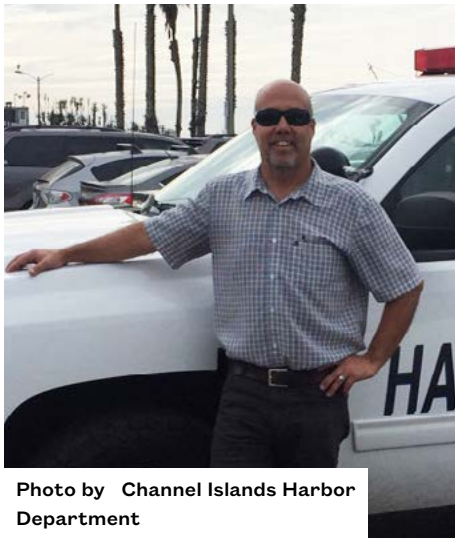


Photo by Channel Islands Harbor Department

Gary Hirtensteiner is the harbormaster for Channel Islands Harbor and has been part of the Harbor Patrol Department since 1991. Through his passion and dedication, he works to give the boating community the resources they need to prevent pollution. The harbor has four public sewage pumpouts that have received excellent usability percentages since 2016. They also accept hazardous wastes like oil, oily water and fuel, and have one of only three bilge pumpouts in Southern California.

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Seabridge Marina** | | Performs very well |
| **Peninsula Park, County Guest Dock** | | Consistently performs excellently |
| **East Bank Guest Dock** | | |
| Near | | Consistently performs excellently |
| Far | | Consistently performs excellently |
| **Harbor Patrol Dock** | | Performs very well |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# LOS ANGELES COUNTY

Sea lions rest on a buoy just outside King Harbor. Photo by John Hollenbeck

**LOS ANGELES COUNTY IS HOME TO FIVE HARBORS**

LA — **MARINA DEL REY HARBOR**

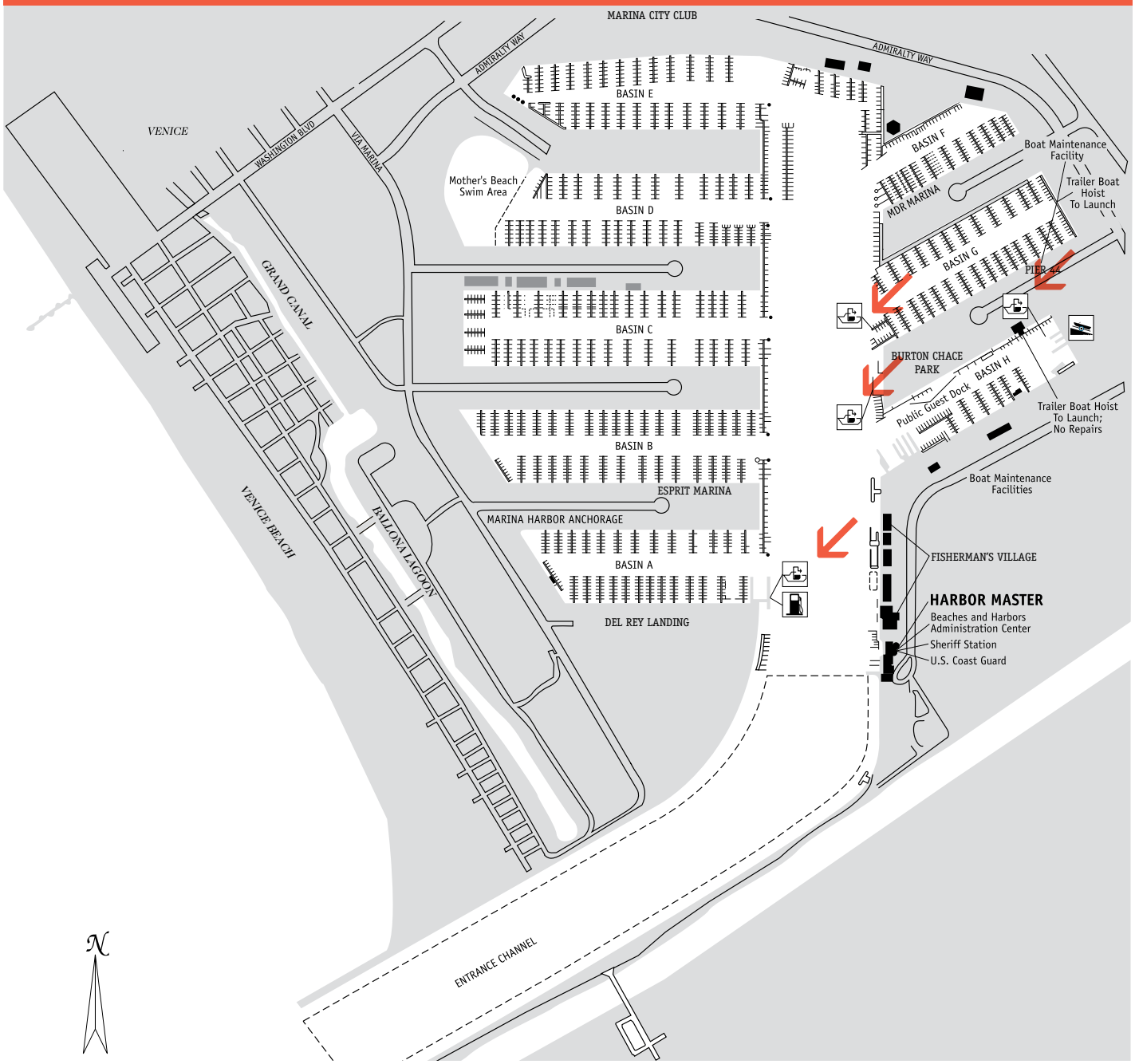
LA — **KING HARBOR**

LA — **PORT OF LOS ANGELES**

LA — **PORT OF LONG BEACH** / Shoreline

LA — **PORT OF LONG BEACH** / Los Alamitos

# LA — MARINA DEL REY HARBOR




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Del Rey Landing, near | 80 | Peristaltic |
| Del Rey Landing, far | 87 | Peristaltic |
| Anchorage 47 | 60 | Peristaltic |
| Launch Ramp | 55 | Peristaltic |
| Burton Chace Park | 76 | Peristaltic |

*See Notes under Monitoring Details.

# LA — MARINA DEL REY HARBOR

## ⟶ SHOW CASE

Photo by Department of Beaches & Harbors

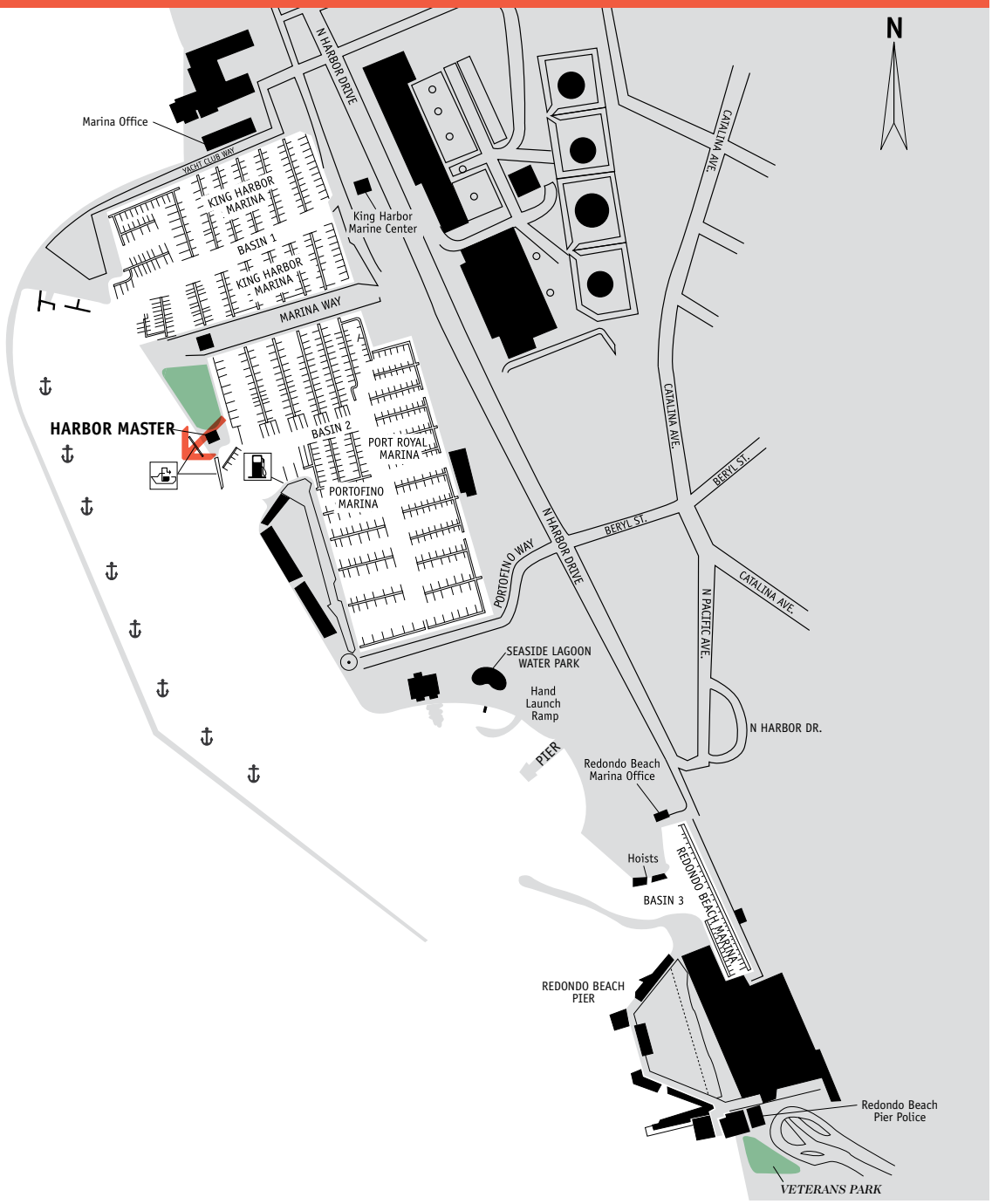
Michael Blenk is the Marina Manager for the Los Angeles County Department of Beaches & Harbors Boating Section. The Department of Beaches & Harbors maintains three free public pumpouts in Marina del Rey. “With nearly 5,000 slips, Marina del Rey was the largest man-made marina in the world upon completion. With such heavy usage in an unnatural body of water, water quality becomes a major concern. By making vessel sewage pumpouts free, accessible, and easy to use, they have become a fundamental part of boating in Marina del Rey that we rely on to keep the community and environment healthy.”
— Michael Blenk

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Del Rey Landing** | | |
| Near | | Usually performs well |
| Far | | Performs very well |
| **Anchorage 47** | Non-operational May, Nov. | Peforms well when operational |
| **Launch Ramp** | Non-operational Feb., May | Performs fairly when operational |
| **Burton Chace Park** | Non-operational May | Peforms well when operational |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# LA — KING HARBOR




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Harbor Patrol, small boat dock | 93 | Peristaltic |

# LA — KING HARBOR

## ⟶ SHOW CASE

Photo by Victoria Gambale

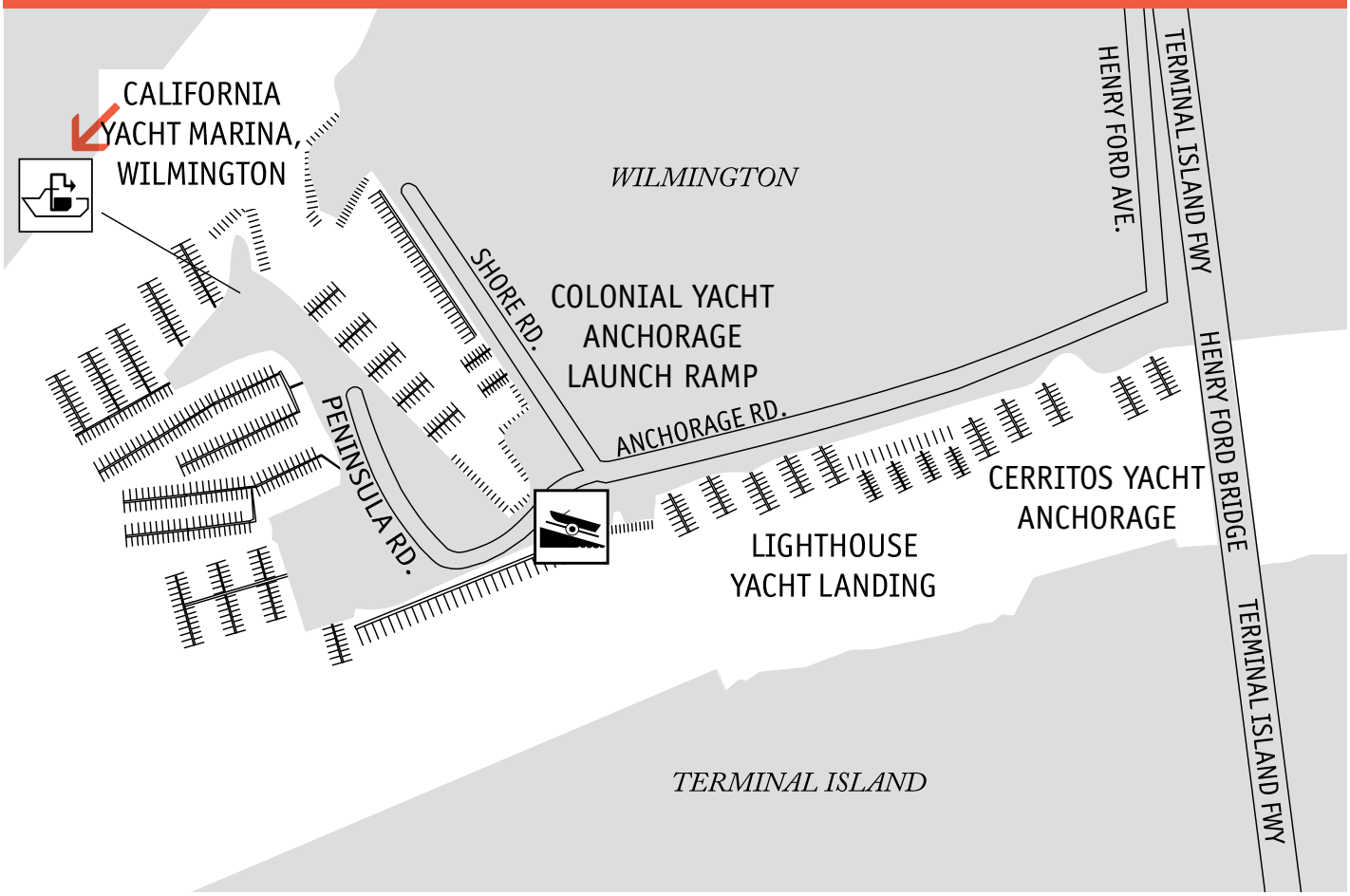
Gary Laolagi is the Maintenance Supervisor for the Redondo Beach Harbor Division. The harbor's sewage pumpout located on the lifeguard dock was upgraded in 2015 with all new equipment. The pumpout was on a dock once frequented by sea lions, which caused dock damage and unsightly waste accumulation, making it unappealing for boaters to use. Gary's ingenuity helped devise an innovative solution. Since May 2015, a rolling rail system has successfully kept sea lions from jumping on the docks and boaters can now access the pumpout free of nuisance.

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Harbor Patrol** | | Consistently performs excellently |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# LA — PORT OF LOS ANGELES




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| California Yacht Marina, Wilmington, F dock | 69 | Diaphragm |
| Cabrillo Way Marina | *81 | Peristaltic |

# LA — PORT OF LOS ANGELES

## ⟶ SHOW CASE

Photo by California Yacht Marina

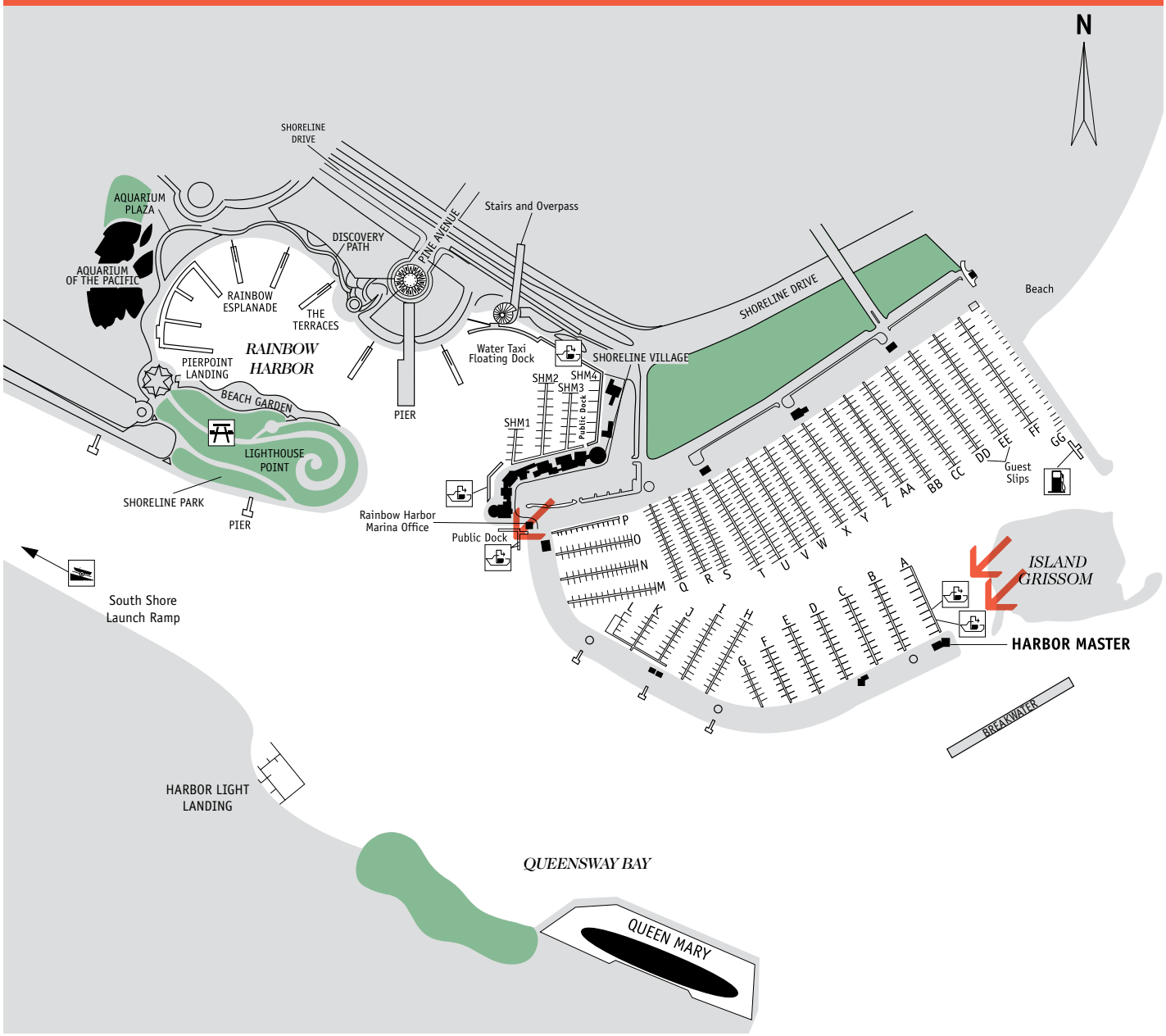
Anthony Del Rosario is the dockmaster at California Yacht Marina in Wilmington. Due to his dedication and commitment to a clean environment, he has successfully managed the only publicly available sewage pumpout in the Wilmington area for the past 14 years. Although an older unit, installed in 2004, Anthony is quick to respond to any issues and keeps the unit running most of the time. Unexpected repairs are addressed right away to ensure the unit is back online as quickly as possible.

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **CYM Wilmington** | Non-operational Feb. | Performs well when operational |
| **Cabrillo Way Marina** | | Performs well |
| **Notes* | *Monitoring began in November thefore the usability% is based on one monitoring event.* | |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# LA — PORT OF LONG BEACH – SHORELINE




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Shoreline Marina Office, A dock near | 97 | Peristaltic |
| Shoreline Marina Office, A dock far | 97 | Peristaltic |
| Shoreline Marina, public dock near | 72 | Peristaltic |
| Shoreline Marina, public dock mid | 63 | Peristaltic |
| Shoreline Marina, public dock far | 85 | Peristaltic |

*See Notes under Monitoring Details.

# LA — PORT OF LONG BEACH – SHORELINE

## ⟶ SHOW CASE

Photo by City of Long Beach

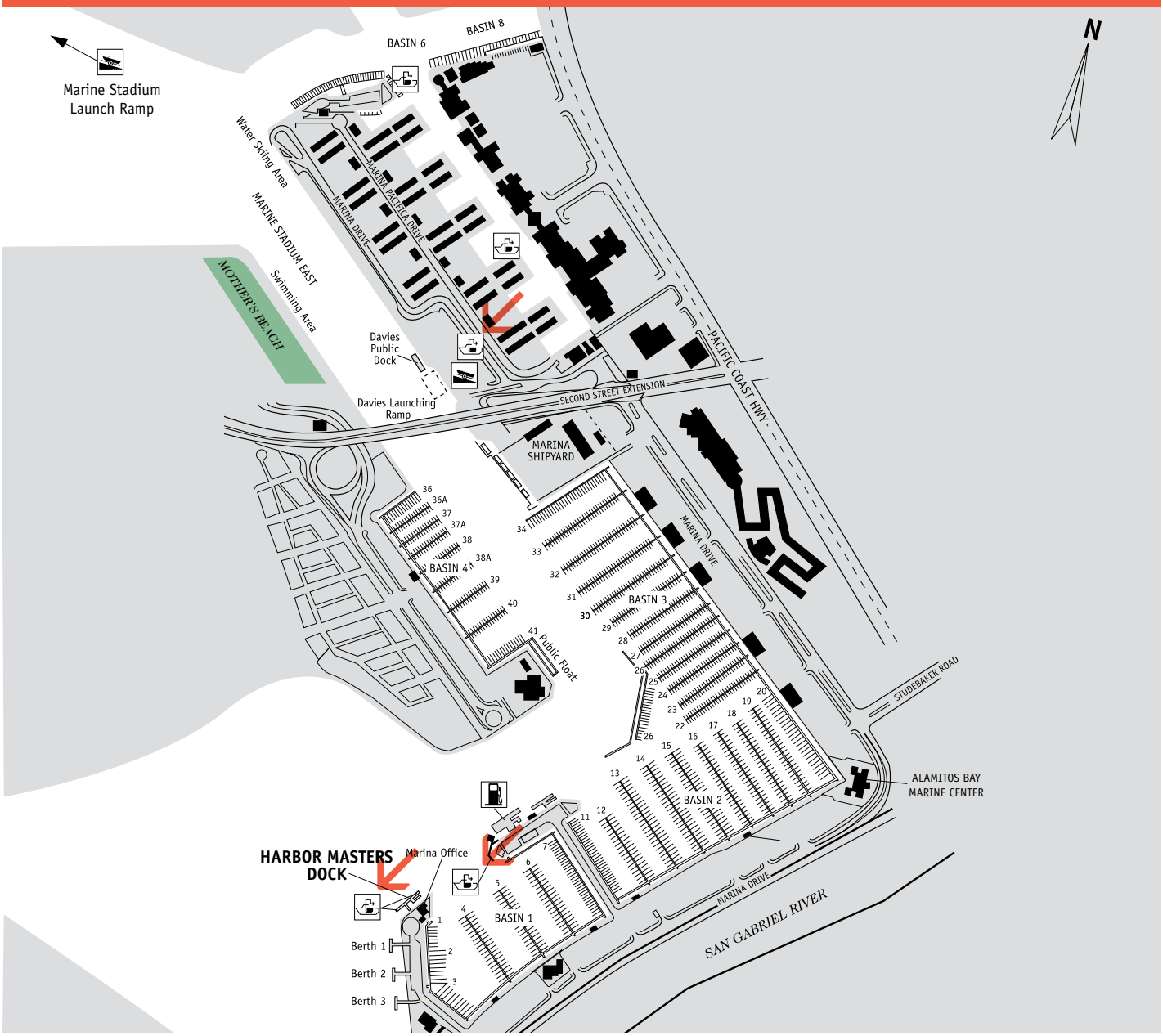
Eric Lyon is the general maintenance supervisor for the City of Long Beach's Park, Recreation and Marine Department. Between Los Alamitos and Shoreline, Eric and his team maintain nine public sewage pumpout units. In the past two years, five units have been replaced with new ones, improving the performance and reliability of their pumpout network. Due to Eric's leadership, the boating community of Long Beach never goes without a well operating sewage pumpout.

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Shoreline Marina Office** | | |
| Near | | Consistently performs excellently |
| Far | | Consistently performs excellently |
| **Shoreline Marina, public dock** | | |
| Near | Non-operational Nov. | Performs well when operational |
| Mid | Non-operational Aug., Nov. | Performs very well when operational |
| Far | | Usually performs very well |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# LA — PORT OF LONG BEACH – LOS ALAMITOS




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Los Alamitos Fire Department, Marine Station | 86 | Peristaltic |
| Los Alamitos Davies Launch Ramp | *94 | Peristaltic |
| Los Alamitos Harbor Master Dock, near | 97 | Peristaltic |
| Los Alamitos Harbor Master Dock, far | 67 | Peristaltic |

*See Notes under Monitoring Details.

# LA — PORT OF LONG BEACH – LOS ALAMITOS

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Los Alamitos Fire Department, Marine Station** | | Usually performs very well |
| **Los Alamitos Davies Launch Ramp** | | Consistently performs excellently |
| **Notes* | *This dock had three problematic units that were replaced with one new unit. The usability% is based on three of four monitoiring events.* | |
| **Los Alamitos Harbor Master Dock** | | |
| Near | | Consistently performs excellently |
| Far | Non-operational Feb. | Usually performs well |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# ORANGE COUNTY

Clouds over Newport Harbor make for a picturesque scene. Photo by John Hollenbeck

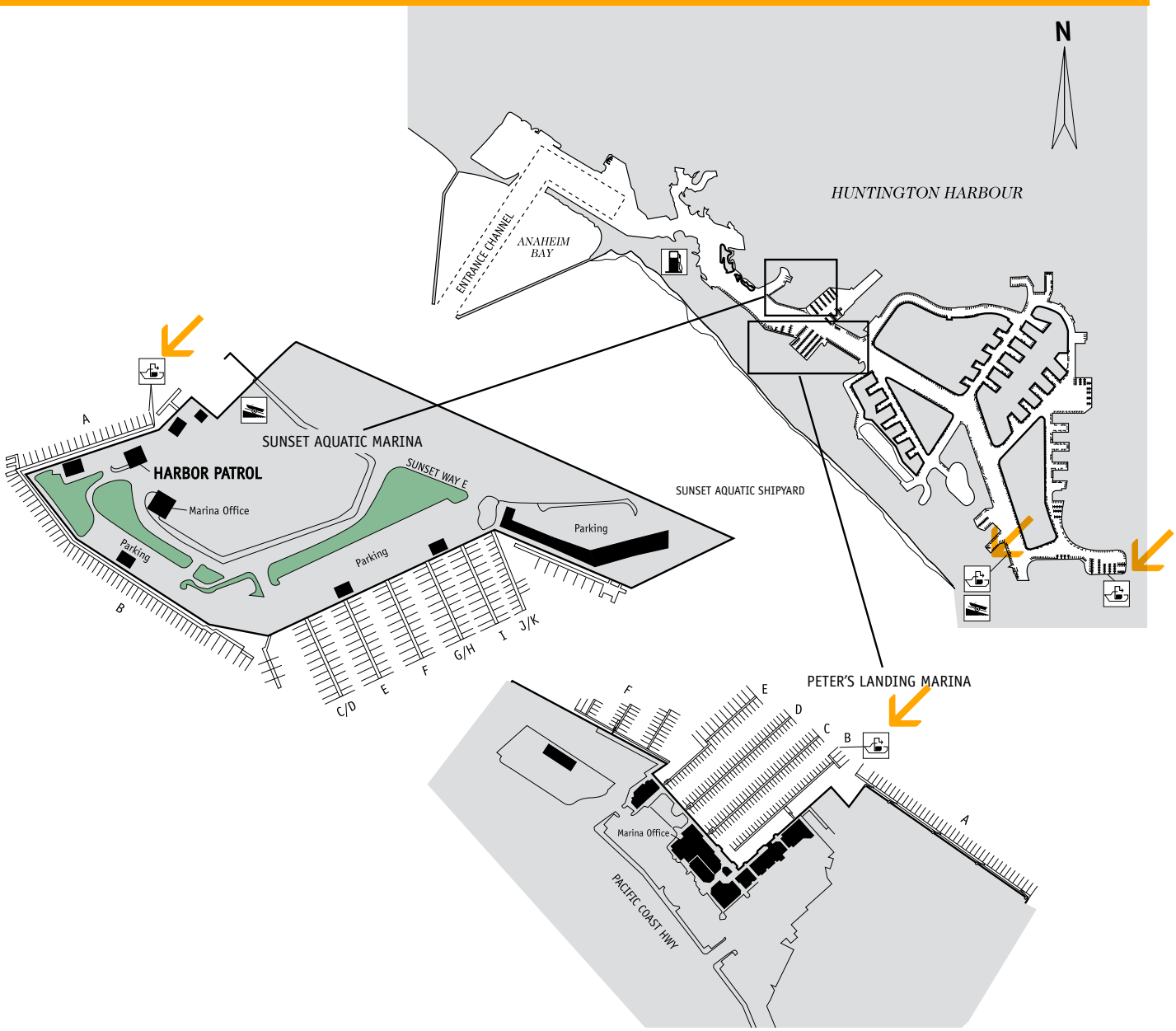
**ORANGE COUNTY IS HOME TO THREE HARBORS**

ORANGE — **HUNTINGTON HARBOUR**

ORANGE — **NEWPORT HARBOR**

ORANGE — **DANA POINT HARBOR**

# ORANGE — HUNTINGTON HARBOUR




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Peter's Landing Marina, B dock | 81 | Peristaltic |
| Huntington Harbor Yacht Club, Fire Department | 76 | Diaphragm |

*See Notes under Monitoring Details.

# ORANGE — HUNTINGTON HARBOUR

## ⟶ SHOW CASE

Photo by Peter's Landing Marina

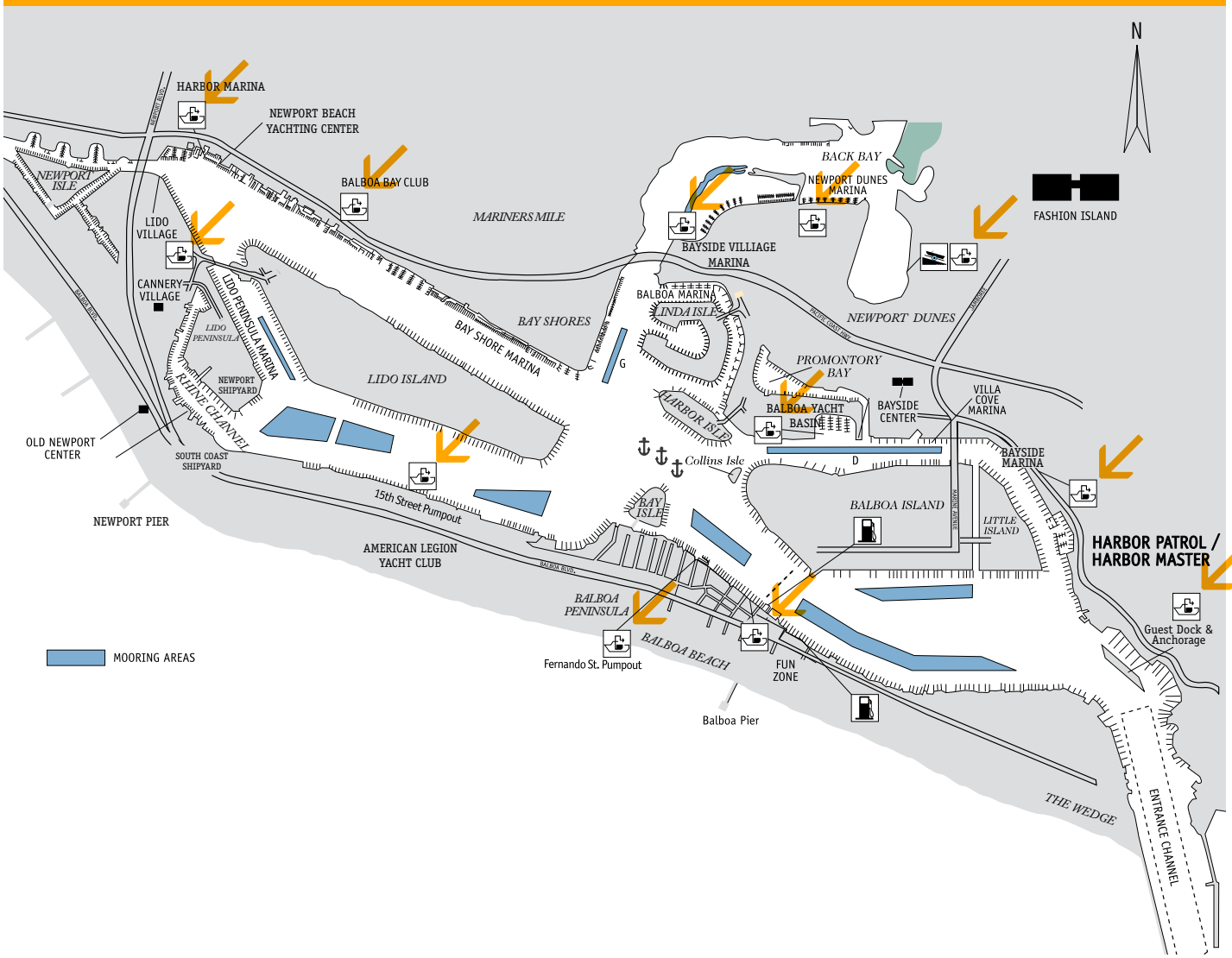
Husband and wife team, Scott and Joanie Seaton, have managed Peter's Landing Marina for over two decades. With a wealth of boating knowledge and experience they understand the importance of protecting the environment they enjoy. Their sewage pumpout plays a key role in that, offering boaters an essential resource to properly dispose of their waste and keep the waters we all enjoy clean.

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Peter's Landing Marina, B dock** | | Usually performs well |
| **Huntington Harbor Yacht Club, Fire Department** | Non-operational Nov. | Ususally performs very well |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# ORANGE — NEWPORT HARBOR




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Lido Marina Village | - | Diaphragm |
| 15th Street, near | 88 | Peristaltic |
| 15th Street, far | 84 | Peristalticn |
| Balboa Fun Zone | 74 | Peristaltic |
| Fernando St. & Edgewater, public dock | 79 | Peristaltic |
| Balboa Bay Club | 78 | Peristaltic |
| Bayside Village Marina | 84 | Peristaltic |
| Balboa Yacht Basin, E dock | 94 | Peristaltic |
| OC Harbor Patrol | 46 | Peristaltic |

*See Notes under Monitoring Details.

# ORANGE — NEWPORT HARBOR

## ⟶ SHOW CASE

Photo by City of Newport Beach

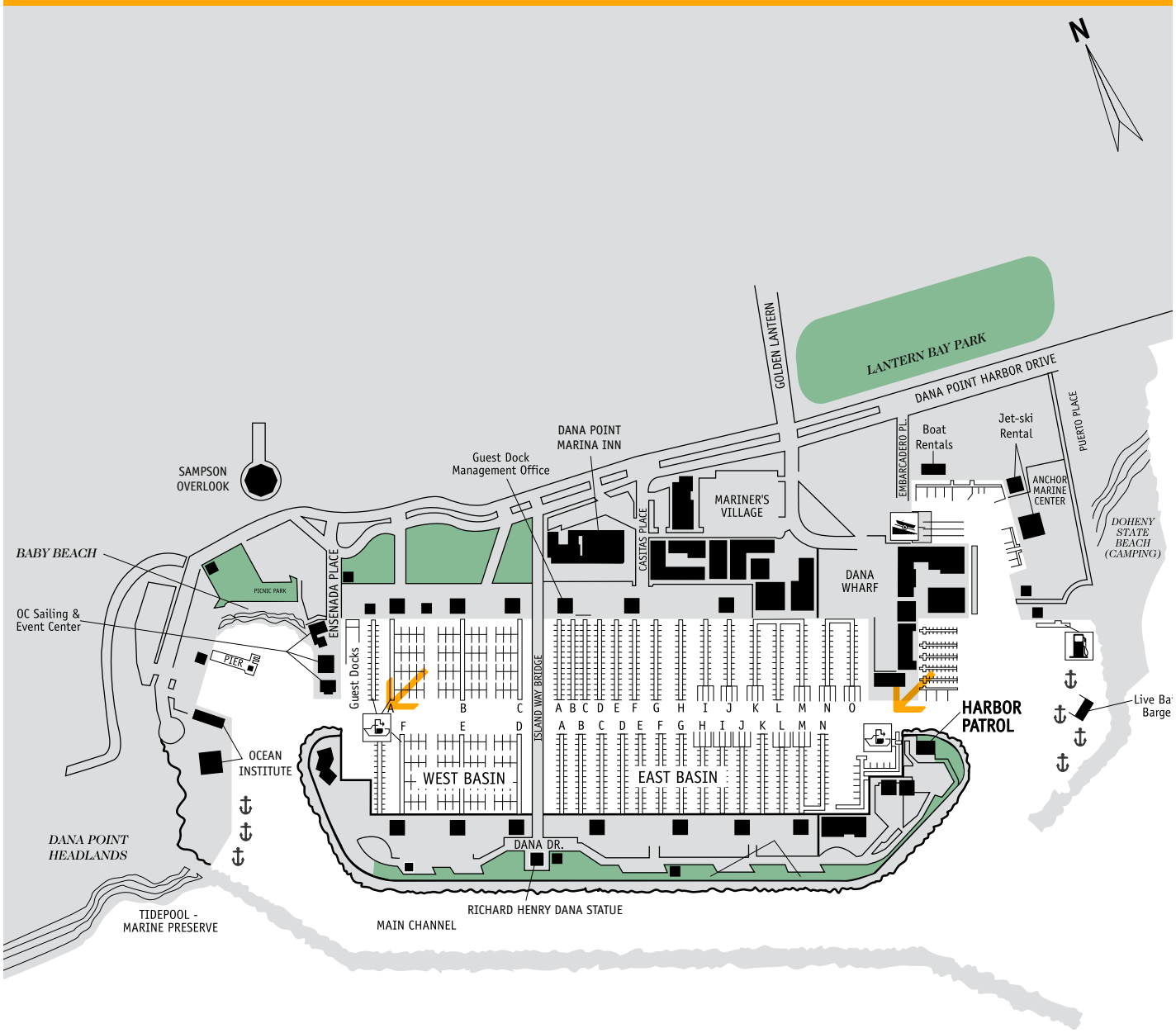
Chris Miller is the Harbor Manager for the City of Newport Beach. "An important part of my job is to ensure that our publicly owned pumpouts in Newport Harbor are functioning to the best of their ability year round. With the help of our vessel sewage pumpout engineer, Noel Plutchak at South Mooring Company, we strive to ensure operability and minimal downtime to minimize the frustration of our boating community. If we stick to our primary goals of regular inspection and quick repairs, then the public will be happy and our water quality will continue to improve. Installing a bilge pumpout station is my next goal in 2018 — another welcome addition to Newport Harbor."
— Chris Miller

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Lido Marina Village** | | Unit was removed |
| **Notes* | *This unit was removed and is going to be replaced with a new unit* | |
| **15th Street** | | |
| Near | | Performs very well |
| Far | | Performs very well |
| **Balboa Fun Zone** | | Performance variable |
| **Fernando St. & Edgewater, public dock** | | Performs fairly |
| **Balboa Bay Club** | Non-operational Nov. | Performs very well when operational |
| **Bayside Village Marina** | | Usually performs well |
| **Balboa Yacht Basin, E dock** | | Consistently performs excellently |
| **OC Harbor Patrol** | Non-operational Feb., May | Performs very well when operational |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# ORANGE — DANA POINT HARBOR




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Sheriff's Harbor Patrol, pumpout dock | 77 | Peristaltic |
| Dana West Basin, F dock end tie | 92 | Peristaltic |
| OC Dana Point Harbor, Guest Docks end tie | 91 | Peristaltic |
| Dana West Basin, A dock side tie | 89 | Peristaltic |

*See Notes under Monitoring Details.

# ORANGE — DANA POINT HARBOR

## ⟶ SHOW CASE

Photo by Dana West Marina

Kelly Rinderknecht is the General Manager at Dana West Marina in Dana Point Harbor. Kelly's passion for keeping the environment she recreates in healthy and clean is evident through her hard work and dedication.

"The livelihood of our marina and the recreational benefits boaters derive from use of our harbor are linked to clean water. Operational pumpout units are imperative to maintain a healthy, clean marina free of sewage discharge. Providing well maintained, operational, easy to use pumpout stations in combination with educating boaters on the importance of exercising best management practices are some of the ways we successfully ensure a pleasant experience for the vast variety of on the water recreational uses in Dana Point Harbor throughout the year."
— Kelly Rinderknecht

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Sheriff's Harbor Patrol** | | Performs fairly |
| **Dana West Basin, F dock** | | Performs excellently |
| **OC Guest Dock** | | Performs excellently |
| **Dana West Basin, A dock** | | Performs very well |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# SAN DIEGO COUNTY

A view of downtown San Diego. Photo by Victoria Gambale

**SAN DIEGO COUNTY IS HOME TO THREE HARBORS**

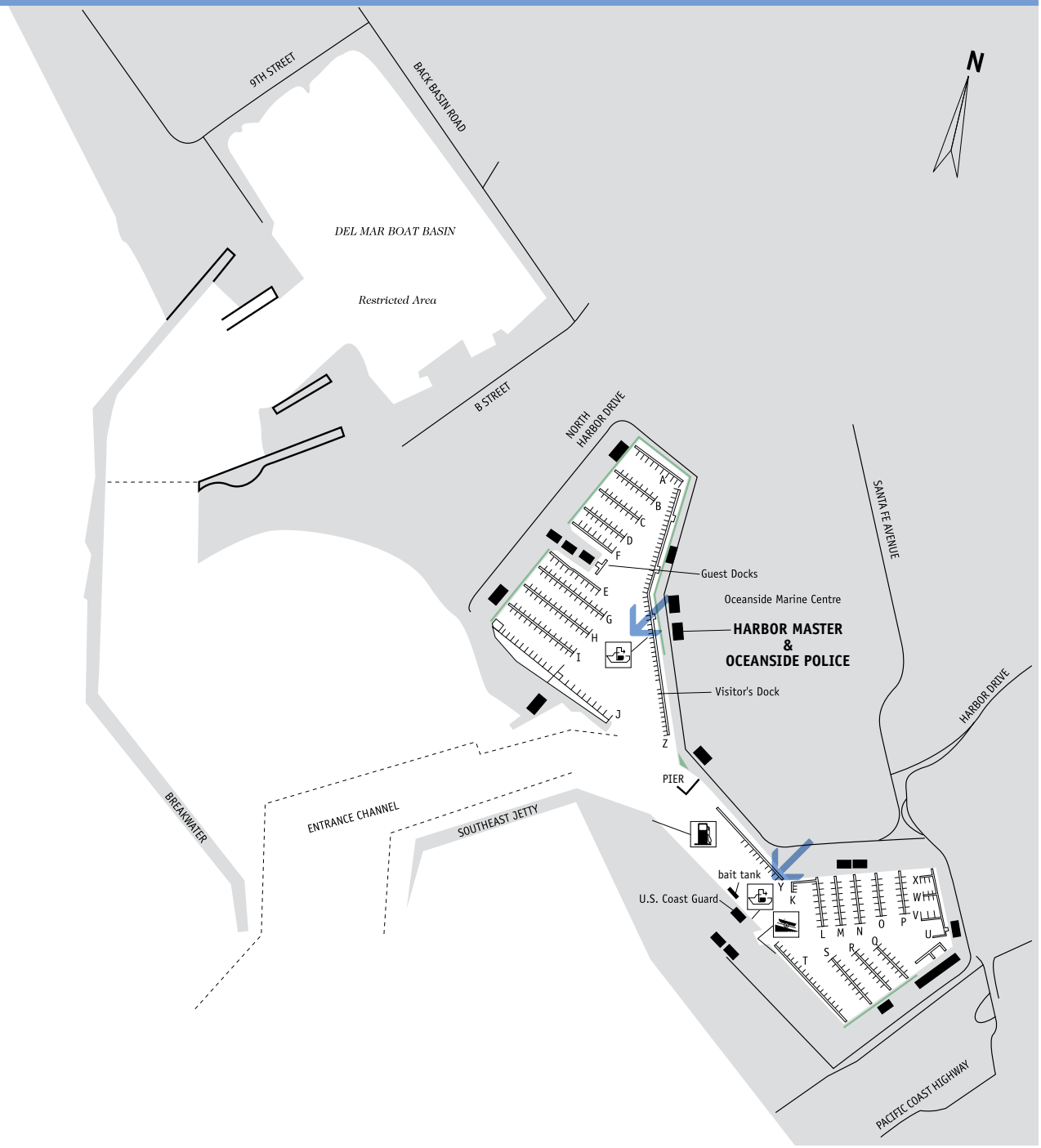
SAN DIEGO — **OCEANSIDE HARBOR**

SAN DIEGO — **MISSION BAY**

SAN DIEGO — **SAN DIEGO BAY**/ Shelter and Harbor Islands

SAN DIEGO — **SAN DIEGO BAY**/ Glorietta Bay & South San Diego Bay

# SAN DIEGO — OCEANSIDE HARBOR




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Department of Harbor & Beaches | 96 | Peristaltic |
| US Coast Guard Auxiliary, near | 95 | Peristaltic |
| US Coast Guard Auxiliary, far | 96 | Peristaltic |

# SAN DIEGO — OCEANSIDE HARBOR

## ⟶ SHOW CASE

Photo by Oceanside Department of Harbor & Beaches

Steven Rodriguez is the Maintenance Supervisor for all of Oceanside Harbor. Steven oversees the entire harbors facilities including their three sewage pumpouts. "Operational sewage pumpouts are important to our slip renters and visiting boaters. It helps keep our harbor clean and is a convenience to boaters who would rather not use other methods to empty their holding tanks." — Steven Rodriguez

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Department of Harbor & Beaches** | | Consistently performs excellently |
| **US Coast Guard Auxiliary** | | |
| Near | | Consistently performs excellently |
| Far | | Consistently performs excellently |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# SAN DIEGO — MISSION BAY


| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Mission Bay Park Headquarters, left | 82 | Peristaltic |
| Mission Bay Park Headquarters, right | 80 | Peristaltic |
| Hyatt Regency, Mission Bay | 89 | Peristaltic |

# SAN DIEGO — MISSION BAY

## ⟶ SHOW CASE

Photo by Hyatt Mission Bay Spa and Marina

Joseph Davis is the Fuel and  Marina Dockmaster at Hyatt Mission Bay Spa and Marina. Joseph has been on board with Hyatt Mission Bay since 2012, managing transient and overnight guests, tending to the general operation, and helping maintain a safe and clean environment throughout the marina facility.

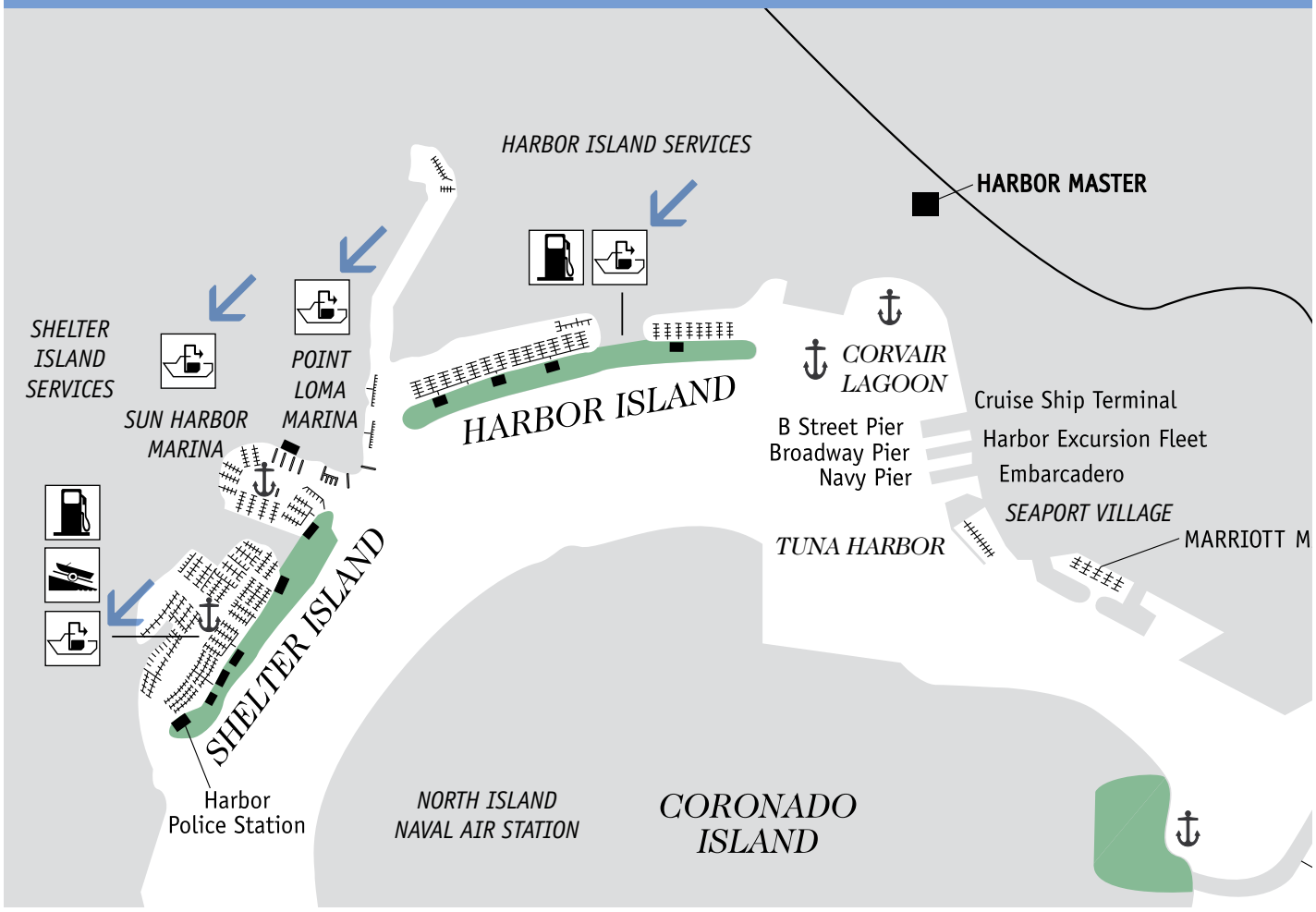
"Having a reliable and operational pumpout unit is one of our top priorities. The Hyatt prides itself in the beauty of Mission Bay, so I'm proud to do my part to help keep our local waters clean. "
— Joseph Davis

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Mission Bay Park Headquarters** | | |
| Left | Non-operational Nov. | Performs very well |
| Right | Non-operational Nov. | Performs very well |
| **Hyatt Regency** | | Performs very well |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# SAN DIEGO — SAN DIEGO BAY/ Shelter and Harbor Islands




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Shelter Island Harbor Police Dock, near | 80 | Peristaltic |
| Shelter Island Harbor Police Dock, far | 81 | Peristaltic |
| Shelter Island Public Dock, near | 80 | Peristaltic |
| Shelter Island Public Dock, far | 79 | Peristaltic |
| Kona Kai Marina, near | 47 | Diaphragm |
| Kona Kai Marina, far | 66 | Diaphragm |
| Pearson's Marine Fuel | - | Diaphragm |
| Sun Harbor Marina, right / public | 83 | Peristaltic |
| Cabrillo Isle Marina CVA, H dock | 84 | Peristaltic |
| Laurel St & Harbor Dr. / airport | 97 | Peristaltic |

*See Notes under Monitoring Details.

## ⟶ SHOW CASE

Photo by Sun Harbor Marina

Kathy OBrien is the general manager for Sun Harbor Marina, the world's first LEED (Leadership in Energy and Environmental Design) certified marina. Kathy has worked in the marina industry since 2005 and has been on the Board of the Marina Recreation Association and is currently on the board of Clean Marinas California.

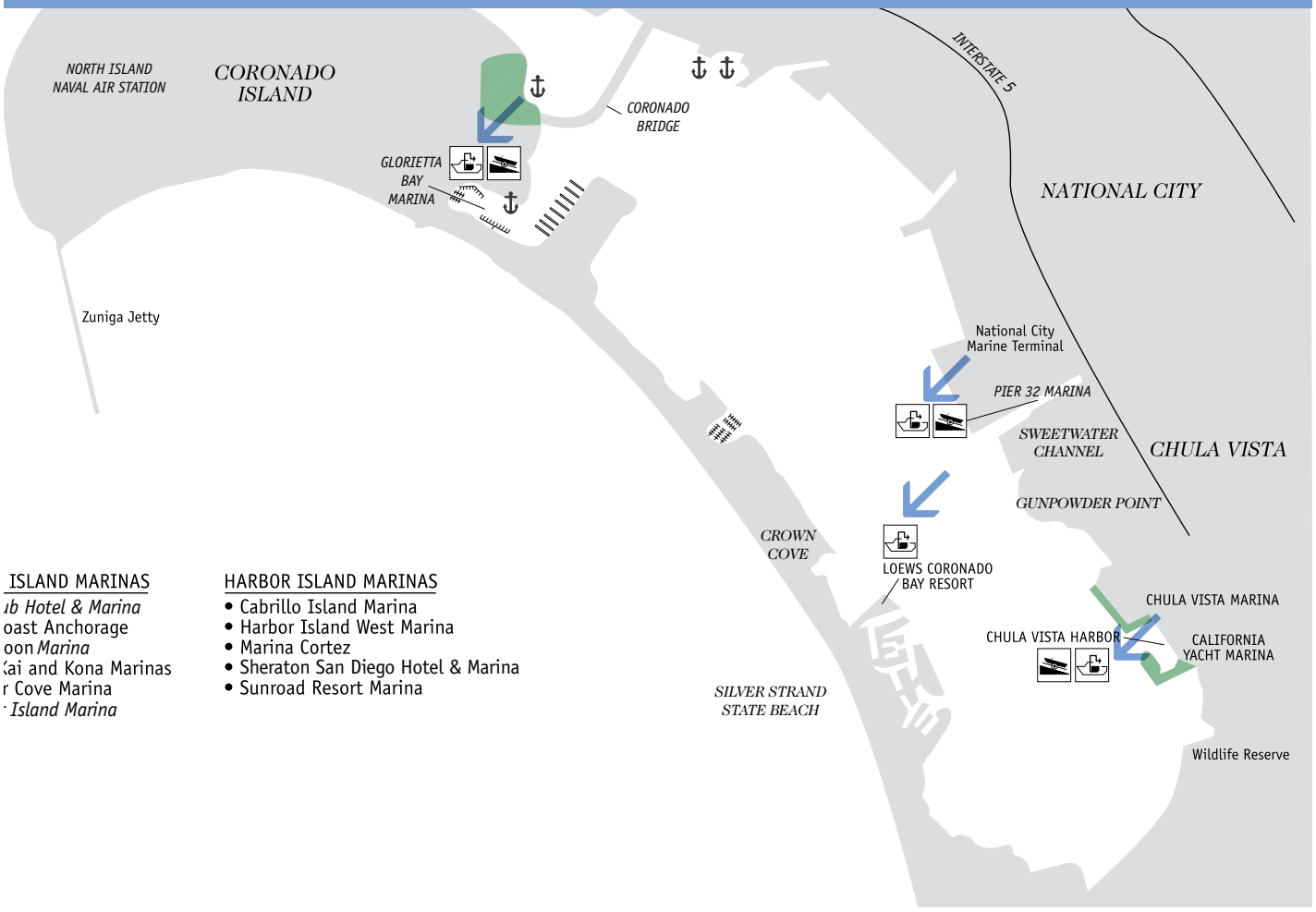
Kathy and her team (Carolyn Price and Bradley Wright) work hard to ensure their pumpouts are consistently operational for the boating community. "Sun Harbor Marina is passionate about ensuring a clean environment for today's and future generations. The pumpout system is monitored daily to ensure full functionality. Monitoring includes weekly pressure checks, additional cleaning of the system, and checking lines and fittings for best use. Additional steps are taken to be sure that the system is used properly and safely by the boating community."
— Kathy OBrien

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Shelter Island Harbor Police Dock** | | |
| Near | | Performs well |
| Far | | Performs well |
| **Shelter Island Public Dock (near & far)** | | Usually performs well |
| **Kona Kai Marina** | | |
| Near | Non-operational May, Nov. | Performanace variable |
| Far | Non-operational Nov. | Performance variable |
| **Pearson's Marine Fuel** | Non-operational Feb., May, Aug., Nov. | Unit down |
| *Notes | *This unit was non operational throughout 2017.* | |
| **Sun Harbor Marina** | | Usually performs very well |
| **Cabrillo Isle Marina** | | Consistently performs well |
| **Laurel St. & Harbor Dr.** | | Consistently performs excellently |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# SAN DIEGO — SAN DIEGO BAY/ Glorietta Bay & South San Diego




ISLAND MARINAS

*ıb Hotel & Marina*
oast Anchorage
oon *Marina*
ʿai and Kona Marinas
r Cove Marina
· *Island Marina*

HARBOR ISLAND MARINAS

- Cabrillo Island Marina
- Harbor Island West Marina
- Marina Cortez
- Sheraton San Diego Hotel & Marina
- Sunroad Resort Marina

| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Glorietta Bay Marina, A dock | 81 | Peristaltic |
| Glorietta Bay Marina, B dock left | 84 | Peristaltic |
| Glorietta Bay Marina, B dock right | 85 | Peristaltic |
| Chula Vista Marina, A dock | 87 | Peristaltic |
| Chula Vista Launch Ramp | 95 | Peristaltic |
| Pepper Park Launch Ramp | 95 | Peristaltic |

*See Notes under Monitoring Details.

# SAN DIEGO — SAN DIEGO BAY/ Glorietta Bay & South San Diego

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Glorietta Bay Marina (A dock, B dock left & right)** | | Performs well |
| **Chula Vista Marina** | | Consistently performs very well |
| **Chula Vista Launch Ramp** | | Consistently performs excellently |
| **Pepper Park Launch Ramp** | | Consistently performs excellently |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# SAN FRANCISCO BAY / NORTH BAY

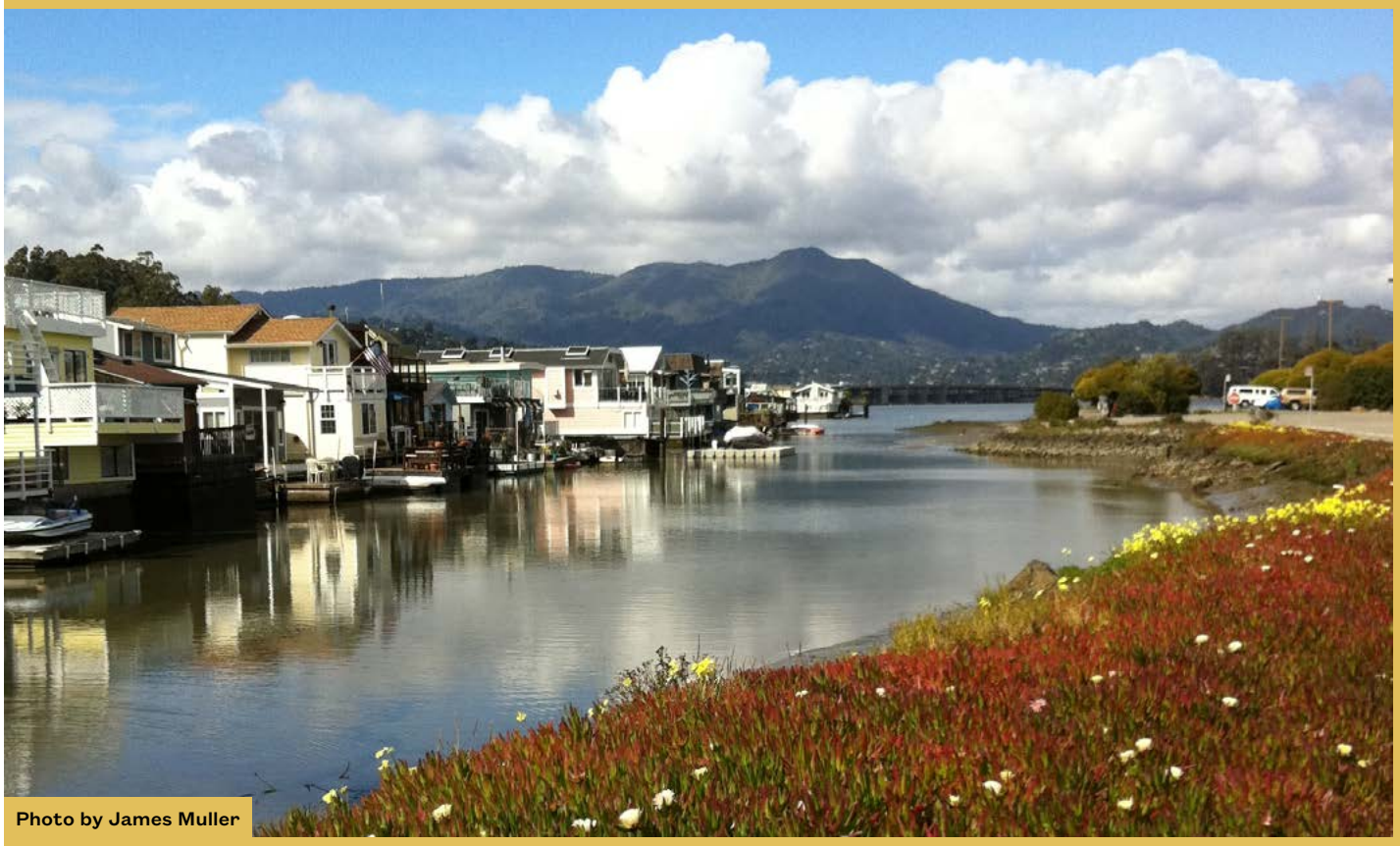


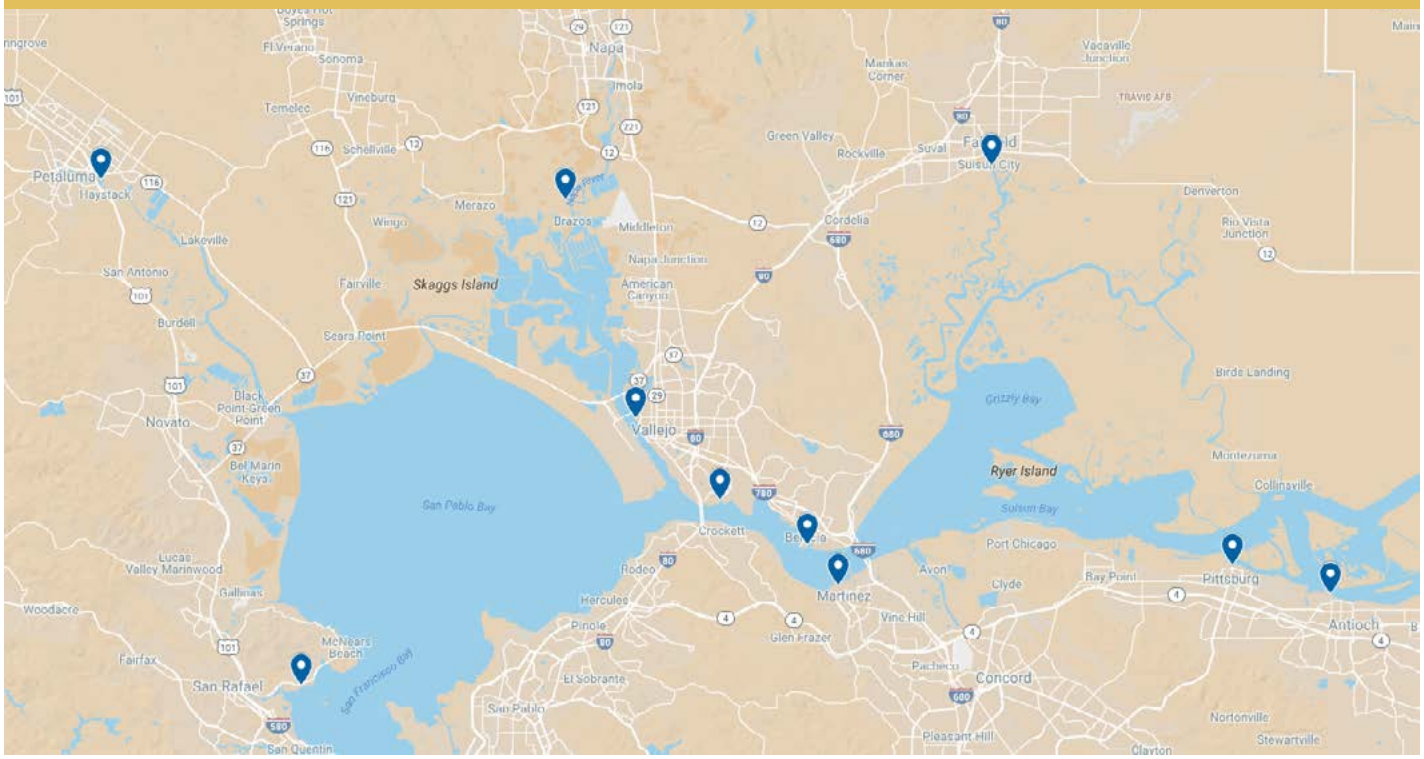
Photo by James Muller

**SAN FRANCSICO BAY'S NORTHERN REGION HOUSES TEN MARINAS**

## SAN FRANCSICO — NORTH BAY

Antioch Marina
Pittsburg Marina
Martinez Marina
Loch Lomond Marina
Napa Valley Marina
Benicia Marina
Glen Cove Marina
Suisun City Marina
Vallejo Municipal Marina
Petaluma Marina

# SAN FRANCISCO — NORTH BAY




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Antioch, Fuel Dock<br>Antioch, Guest Dock | 84<br>80 | Vacuum |
| Pittsburg, Fuel Dock (north)<br>Pittsburg, Fuel Dock (south)<br>Pittsburg, Guest Dock | 91<br>94<br>92 | Peristaltic |
| Martinez | 76 | Peristaltic |
| Loch Lomond, Fuel Dock (north)<br>Loch Lomond, Fuel Dock (south) | 78<br>76 | Peristaltic |
| Napa Valley | 91 | Custom Build |
| Benicia | 82 | Peristaltic |
| Glen Cove | 92 | Peristaltic |
| Suisun City | 72 | Peristaltic |
| Vallejo, J Dock<br>Vallejo, Fuel Dock | 96<br>68 | Peristaltic |
| Petaluma | 71 | Diaphragm |

## ⟶ SHOW CASE


Photo by Natasha Dunn

City of Antioch Marina. Continual repairs and upgrades are necessary for any marina, public or private. The City of Antioch's Marina Property Manager James Pflueger is constantly monitoring and improving marina equipment to welcome boaters and make them feel safe. From pressure washing docks and installing bright LEDs, to installing an automated fuel system and knowing his pumpout system inside and out, James understands properly maintained services and creative solutions are keys to keeping his marina filled and his tenants happy.

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Antioch, Fuel Dock** | Non-Operational Sep | Unit works consistently well. Staff need to assist with this unit. |
| **Antioch, Guest Dock** | | Unit works consistently well. Staff need to assist with this unit. |
| **Pittsburg, Fuel Dock (north)** | | Clean, consistent unit with good signage. |
| **Pittsburg, Fuel Dock (south)** | | Clean, consistent unit with good signage. |
| **Pittsburg Marina, Guest Dock** | | Clean, consistent unit with good signage. |
| **Notes* | *Not able to survey Q1* | |
| **Martinez** | | Unit works well but sometimes experiences loss of vacuum |
| **Loch Lomond, Fuel Dock (north)** | | Unit consistently performs well. Good overall maintenance. |
| **Loch Lomond, Fuel Dock (south)** | | Unit consistently performs well. Good overall maintenance. |
| **Napa Valley** | | Small, powerful pump that works well. |
| **Benicia** | | Pumpout consitantly works well. |

# SAN FRANCISCO — NORTH BAY

| | | |
|---|---|---|
| **Glen Cove** | | Consistently functions well |
| **Suisun City** | | Pumpout works fair but is aging. |
| **Notes* | *Not able to survey Q1* | |
| **Vallejo, J Dock**<br>**Vallejo, Fuel Dock** | Non-Operational Aug | Unit works great<br>Unit worked well after second half of year. |
| **Petaluma** | | Unit is old and the "on" button is hard to find. Works reasonably well though. |
| **Notes* | *Not able to survey Q1, Q3* | |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# SAN FRANCISCO BAY – EAST CENTRAL BAY

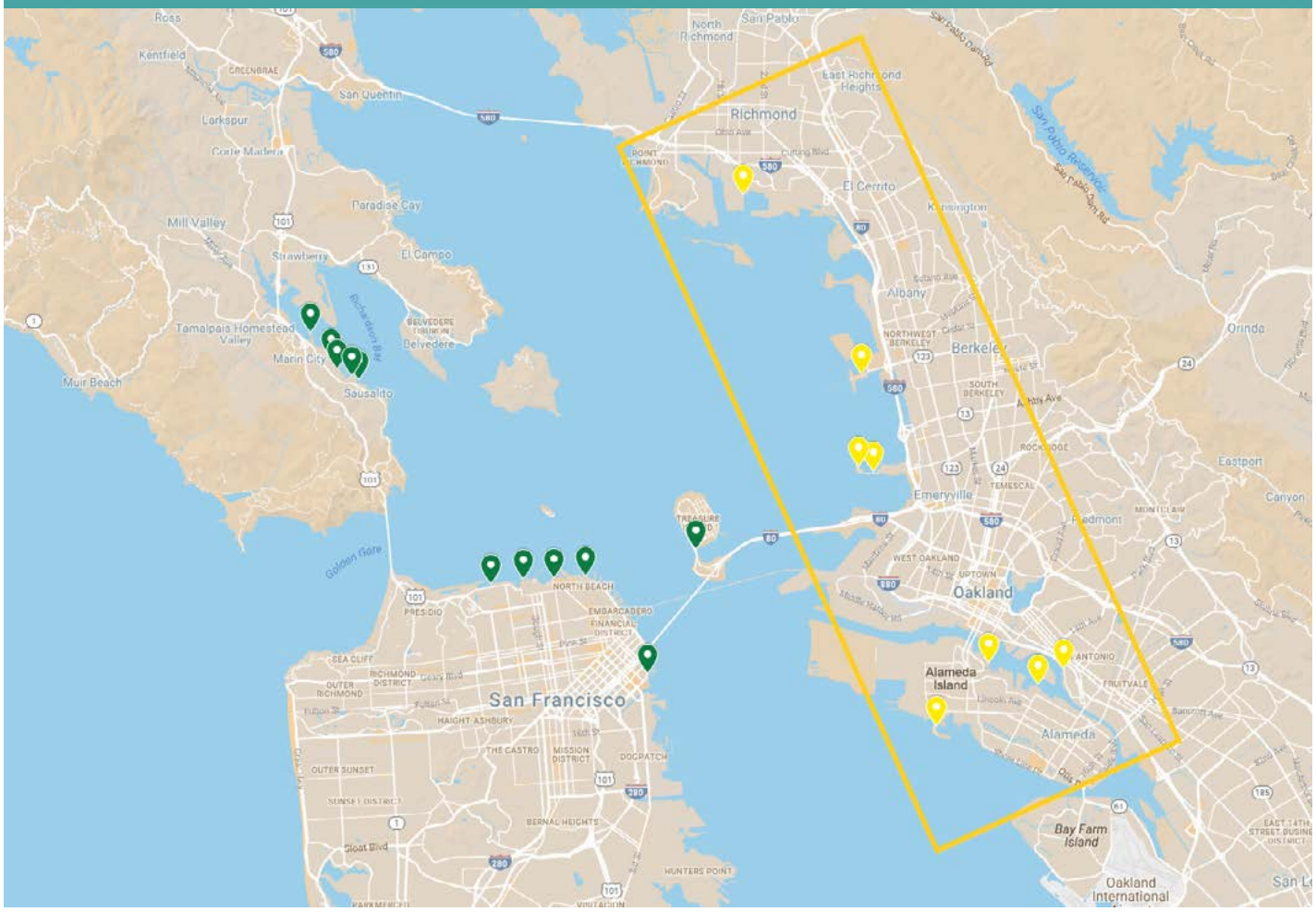
Photo by James Muller

**SAN FRANCSICO BAY'S EAST CENTRAL REGION HOUSES EIGHT MARINAS**

## SAN FRANCSICO — EAST CENTRAL BAY

Bellena Isle Marina
Berkeley Marina
Emery Cove Yacht Harbor
Emeryville Marina
Grand Marina
Marina Village Yacht Harbor
Oakland Marina
Marina Bay Yacht Harbor

# SAN FRANCISCO — EAST CENTRAL BAY




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Bellena Isle Marina | 83 | Peristaltic |
| Berkeley Marina, G Dock<br>Berkeley Marina, I Dock<br>Berkeley Marina, C Dock (east)<br>Berkeley Marina, C Dock (west) | 85<br>62<br>90<br>95 | Peristaltic |
| Emery Cove Yacht Harbor, A Dock<br>Emery Cove Yacht Harbor, S Dock | 94<br>88 | Peristaltic |
| Emeryville Marina | 75 | Peristaltic |
| Grand Marina | 78 | Peristaltic |
| Marina Village Yacht Harbor, Gate 8<br>Marina Village Yacht Harbor, Gate 10 | 94<br>87 | Peristaltic |
| Oakland Marina, Jack London Square | 81 | Peristaltic |
| Marina Bay Yacht Harbor, D Dock<br>Marina Bay Yacht Harbor, G Dock | 55<br>86 | Peristaltic |

# SAN FRANCISCO — EAST CENTRAL BAY

## ⟶ SHOW CASE


Photo by James Muller

Grand Marina's pumpout is well kept and works like a charm! This marina has a unique feature on their pumpout -- a key fob reader. To turn on this system, boaters must first scan their fob just as you might at a dock gate. This allows the marina to track who is using the pumpout and how many times the unit has being used. This system does require visitors to stop by the office to get a fob to activate the pump, which allows the marina to showcase their other services.

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Bellena Isle Marina** | | Older pumpout system, but works well. |
| **Berkeley Marina, G Dock** | | Unit works well |
| **Notes* | *Not able to survey Q2* | |
| **Berkeley Marina, I Dock** | Non-Operational May | Unit difficult to access |
| **Notes* | *Not able to survey Q2* | |
| **Berkeley Marina, C Dock (east)** | | Unit works very well and is easily accessible. |
| **Notes* | *Not able to survey Q2, data missing from database Q3* | |
| **Berkeley Marina, C Dock (west)** | | Unit works very well and is easily accessible. |
| **Notes* | *Not able to survey Q2* | |
| **Emery Cove Yacht Harbor, A Dock** | | Unit well cared for and functions well. |
| **Notes* | *Not able to survey Q2* | |
| **Emery Cove Yacht Harbor, S Dock** | | Unit well cared for and functions well. |
| **Notes* | *Not able to survey Q2* | |

# SAN FRANCISCO — EAST CENTRAL BAY

| | | |
|---|---|---|
| **Emeryville Marina** | | Unit has difficulty pumping due to distance of pumpout from motor. |
| **Notes* | *Not able to survey Q2* | |
| **Grand Marina** | | Unit functions well but had a faulty nozzel for a few months affecting their score. |
| **Marina Village Yacht Harbor, Gate 8** | | Marina keeps unit functioning well. |
| **Marina Village Yacht Harbor, Gate 10** | | Unit is new and works great |
| **Oakland Marina, Jack London Square** | | Unit works well |
| **Marina Bay Yacht Harbor, D Dock** | Non-Operational Aug, Oct | Unit works well when operational |
| **Marina Bay Yacht Harbor, G Dock** | | Unit consistently functions well |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# SAN FRANCISCO BAY – WEST CENTRAL BAY

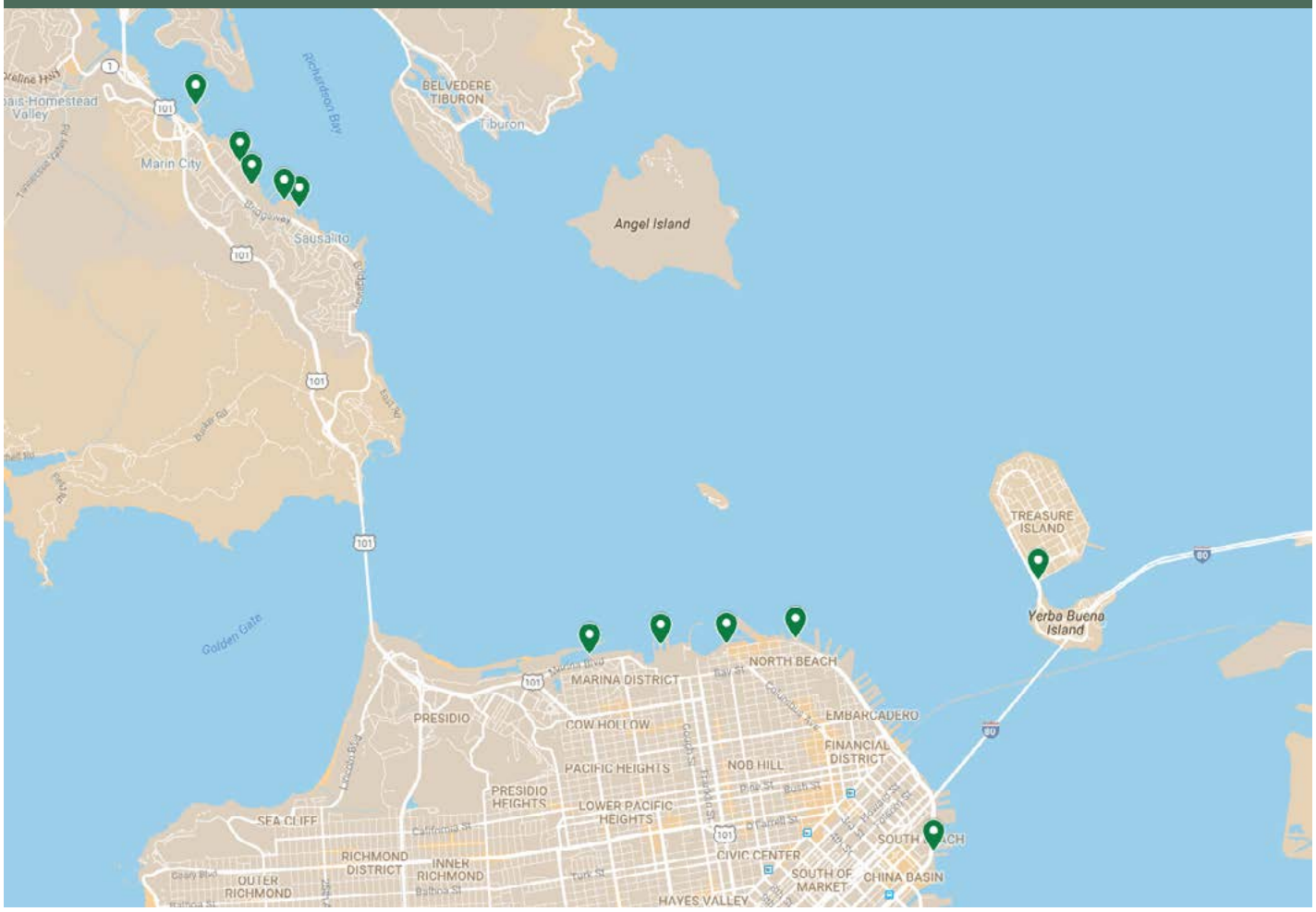
Photo by Adrien Baudrimont

**SAN FRANCSICO BAY'S WEST CENTRAL REGION HOUSES ELEVEN MARINAS**

## SAN FRANCSICO — WEST CENTRAL BAY

Clipper Yacht Harbor
Galilee Harbor
Marina Plaza Harbor
Richardson Bay Marina
Schoonmaker Point Marina
Fisherman's Wharf
Pier 39 Marina
San Francisco Marina – Gashouse Cove
San Francisco Marina – West Harbor
South Beach Yacht Harbor
Treasure Island Marina

# SAN FRANCISCO — WEST CENTRAL BAY




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Clipper Yacht Harbor | 78 | Peristaltic |
| Galilee Harbor | 58 | Diaphragm |
| Marina Plaza Harbor | 45 | Peristaltic |
| Richardson Bay Marina | 72 | Peristaltic |
| Schoonmaker Point Marina | 75 | Peristaltic |
| Fisherman's Wharf | 68 | Peristaltic |
| Pier 39 Marina | 72 | Peristaltic |
| San Francisco Marina, Gashouse Cove<br>San Francisco Marina, West Harbor | 83<br>85 | Peristaltic |
| South Beach Yacht Harbor, End of South Guest Dock | 72 | Peristaltic |
| Treasure Island Marina | 89 | Peristaltic |

# SAN FRANCISCO — WEST CENTRAL BAY

## ⟶ SHOW CASE


Photo by Adrien Baudrimont

Schoonmaker Point Marina. The Pumpout is about 10 feet away from the terrasse of "Le Garage", a busy restaurant. Michael Rainey, Harbormaster, set up a timer on the Pumpout so it won't run during lunchtime out of respect for the restaurant's clients. A nice example of "vivre ensemble"!

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Clipper Yacht Harbor** | | Unit typically operable |
| **Galilee Harbor** | Non-Operational July | Older unit that will be replaced soon. |
| **Marina Plaza Harbor** | Non-Operational July, Dec | Unit breaks down often. Nozzle not on site. |
| **Notes* | *Not able to survey Q1* | |
| **Richardson Bay Marina** | | Slow pump time due to distance from shore. |
| **Schoonmaker Point Marina** | | Consistently performs very well |
| **Fisherman's Wharf** | Non-Operational March, July | Works well now that repairs have been made |
| **Pier 39 Marina** | Non-Operational July, Aug | Consistently performs very well |

# SAN FRANCISCO — WEST CENTRAL BAY

| | | |
|---|---|---|
| **San Francisco Marina, Gashouse Cove**<br>**San Francisco Marina, West Harbor** | | Old unit but well maintained. Operates well.<br>Unit consistently performs well. |
| **South Beach Yacht Harbor (End of South Guest Dock)** | Non-Operational Sep, Nov | Unit performs well when operable. |
| **Treasure Island Marina** | | Unit performs consistently well. |
| **Notes* | *Not able to survey Q4* | |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# SAN FRANCISCO BAY – SOUTH BAY

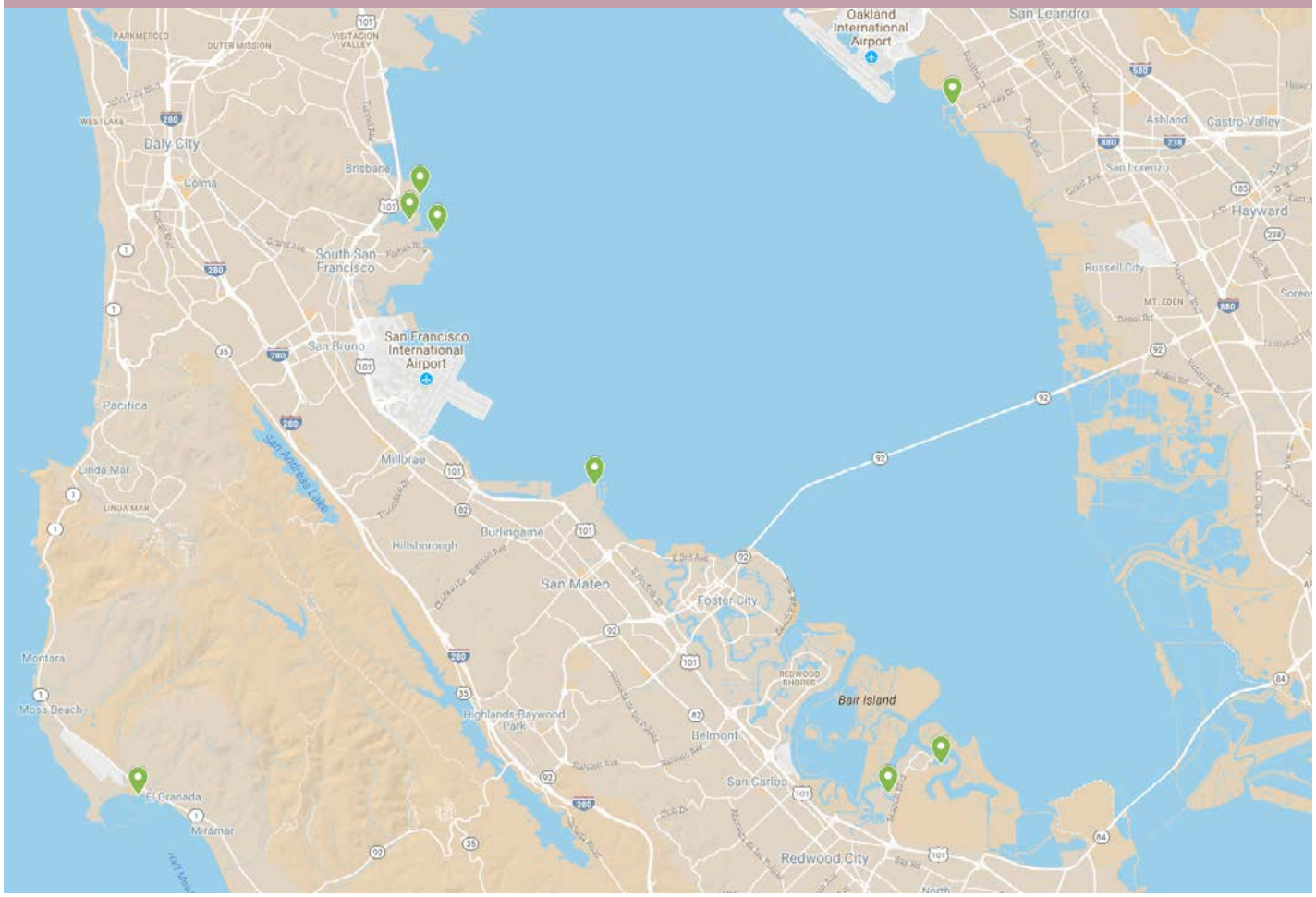
Photo by Adrien Baudrimont

**SAN FRANCSICO BAY'S SOUTH REGION HOUSES ELEVEN MARINAS**

## SAN FRANCSICO — SOUTH BAY

Brisbane Marina
Oyster Cove Marina
Oyster Point Marina
Coyote Point Marina
Pillar Point Marina
West Point Harbor
Port of Redwood City
San Leandro Marina

# SAN FRANCISCO — SOUTH BAY




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Brisbane Marina | 55 | Peristaltic |
| Oyster Cove Marina | 90 | Peristaltic |
| Oyster Point Marina | 62 | Peristaltic |
| Coyote Point Marina | 95 | Peristaltic |
| Pillar Point Marina | 91 | Peristaltic |
| West Point Harbor | 96 | Peristaltic |
| Port of Redwood City | 90 | Peristaltic |
| San Leandro Marina | 95 | Peristaltic |

## ⟶ SHOW CASE

Photo by Adrien Baudrimont

Oyster Cove Marina. Tim Christopher, Harbormaster at Oyster Cove Marina has a monitoring routine that includes a monthly dye tablet test. This pollution prevention tool helps spot leakages in underwater pipes. These types of such tests on a regular basis.

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Brisbane Marina** | Non-Operational Sep, Nov | Old unit that is well maintained but breaks occasionally. Will be replaced |
| **Oyster Cove Marina** | Non-Operational July | Pumpout unit consistently performs excellently. |
| **Oyster Point Marina** | Non-Operational Sep | Old vacuum system that operates well. |
| **Coyote Point Marina** | | Unit functions extremely well |
| **Pillar Point Marina** | | Unit always works well |
| **West Point Harbor** | | Unit always well kept, clean and powerful |
| **Port of Redwood City** | Non-Operational Sep, Nov | Unit consistently performs well |
| **San Leandro Marina** | | Unit is rarely used but works very well |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# SACRAMENTO & SAN JOAQUIN RIVERS DELTA – NORTH DELTA

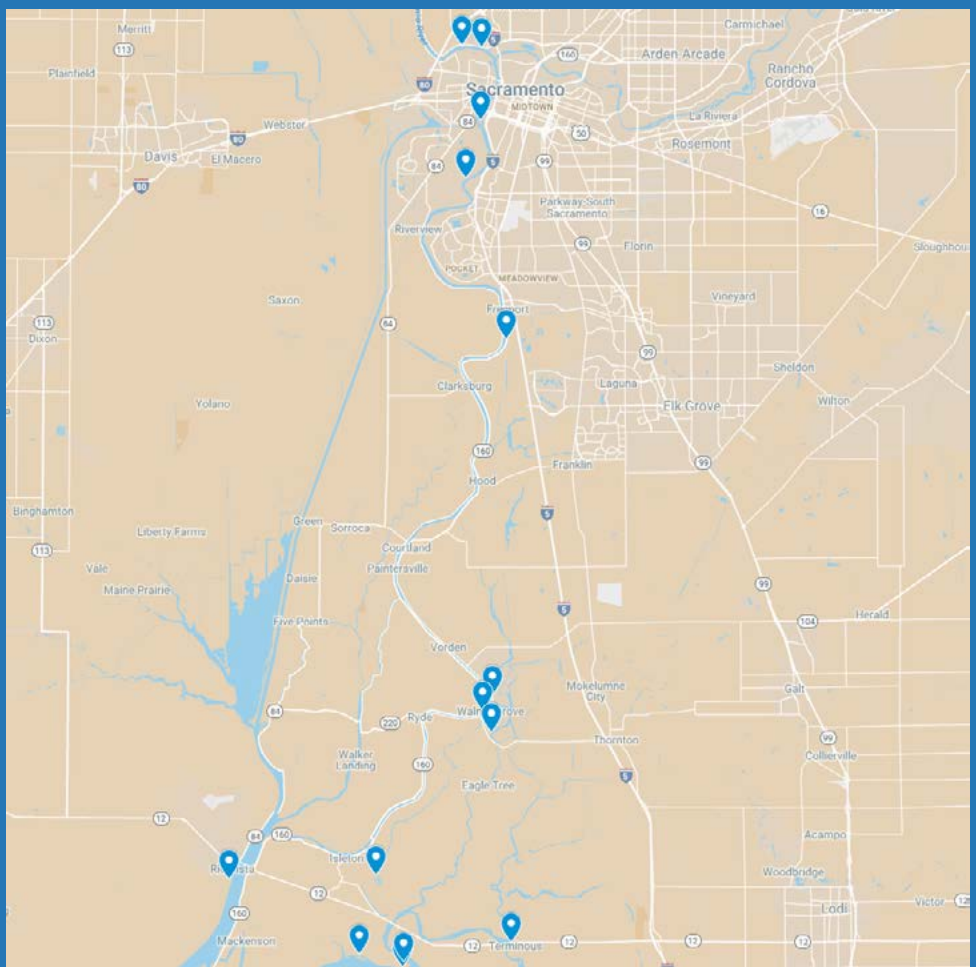
Photo by Natasha Dunn

**THE SACRAMENTO/SAN JOAQUIN RIVERS DELTA NORTH REGION HOUSES FOURTEEN MARINAS**

## SACRAMENTO & SAN JOAQUIN RIVERS DELTA — NORTH DELTA

Riverview Marina
Riverbank Marina
Sacramento Marina
Sherwood Marina
Cliff's Marina
Boathouse Marina
Dagmar's Landing
Walnut Grove Marina
Delta Marina Yacht Harbor
Oxbow Marina
Sacramento Delta Bay Marina
Willow Berm Marina
Korth's Pirate's Layer Marina
Tower Park Marina

# SACRAMENTO & SAN JOAQUIN RIVERS DELTA — NORTH DELTA




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Riverview Marina | 52 | Peristaltic |
| Riverbank Marina | 87 | Peristaltic |
| Sacramento Marina | 84 | Peristaltic |
| Sherwood Marina | 0 | Peristaltic |
| Cliff's Marina | 84 | Diaphragm |
| Boathouse Marina | 86 | Peristaltic |
| Dagmar's Landing | 71 | Unknown |
| Walnut Grove Marina | 81 | Peristaltic |
| Delta Marina Yacht Harbor | 85 | Peristaltic |
| Oxbow Marina | 83 | Peristaltic |
| Sacramento Delta Bay Marina | 59 | Peristaltic |
| Willow Berm Marina – North Post | 81 | Vacuum |
| Willow Berm Marina – South Post | 82 | Vacuum |
| Korth's Pirate's Layer Marina | 77 | Peristaltic |
| Tower Park Marina | 82 | Peristaltic |

## → MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Riverview Marina** | | Unit is older and has limited access. |
| **Riverbank Marina** | | Consistent, well-kept unit |
| **Sacramento City Marina** | | Performs consistently, and signage is good |
| **Sherwood Harbor Marina** | Non-Operational July, Sep, Dec | Unit has been down while marina installs new pumpout. |
| **Notes* | *Not able to survey Q1* | |
| **Cliff's Marina** | | Unit works well |
| **Boathouse Marina** | | Unit works well but does not have signage. |
| **Notes* | *Not able to survey Q2* | |
| **Dagmar's Landing** | | Staff is very efficient assisting with unit. |
| **Walnut Grove Marina** | | Unit must be primed and staff are available to help. Unit works well. |
| **Delta Marina Yacht Harbor** | | Unit consistently works very well |
| **Oxbow Marina** | | Unit consistently performs well |
| **Sacramento Delta Bay Marina** | Non-Operational May | Unit is operational again after many quarters down; works very well. |
| **Willow Berm Marina –North Post**<br>**Willow Berm Marina –South Post** | | Powerful, well kept unit<br>Powerful, well kept unit |
| **Korth's Pirate's Layer Marina** | | Unit consistently works well but pumps slowly. Need staff to access |
| **Tower Park Marina** | | Very consistent unit |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

# SACRAMENTO & SAN JOAQUIN RIVERS DELTA – SOUTH DELTA

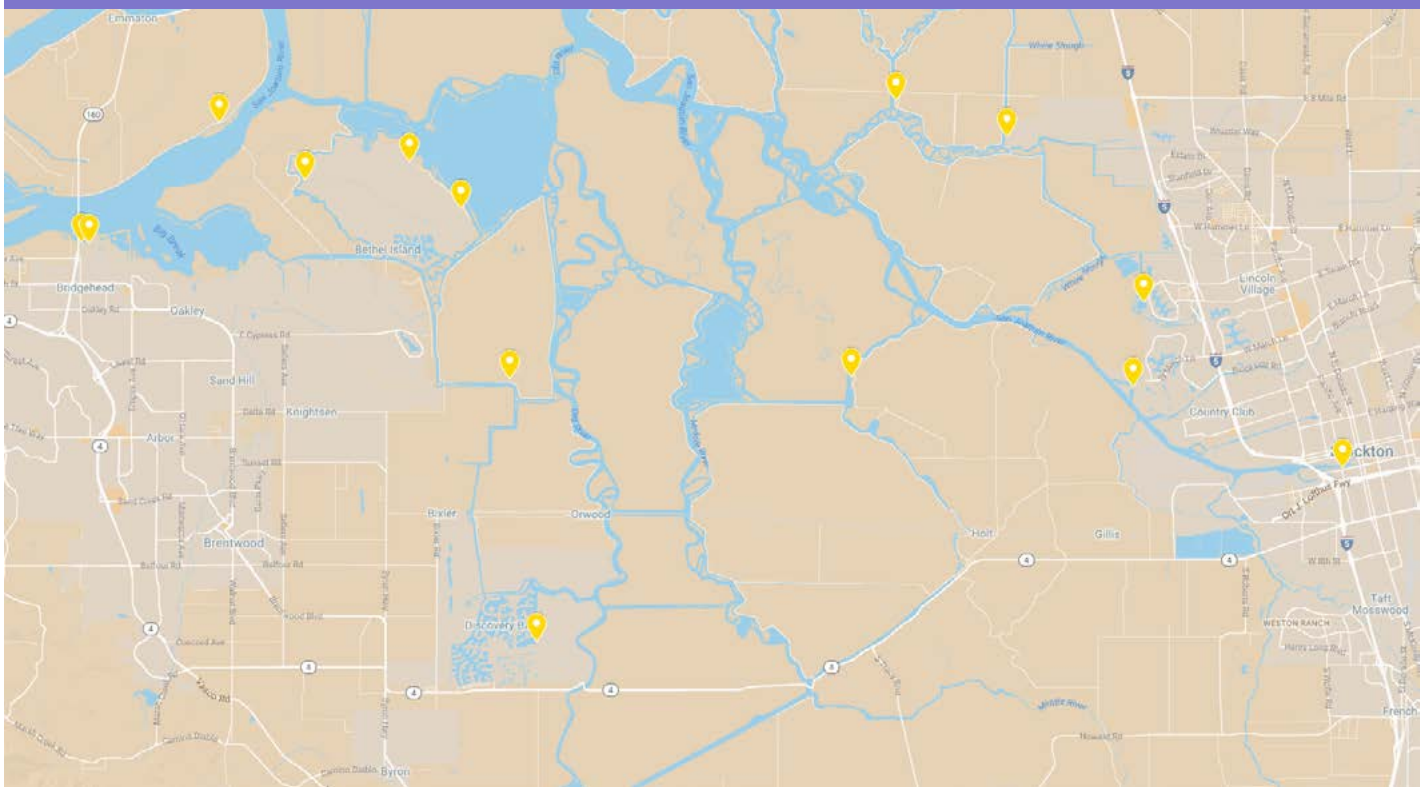
Photo by Natasha Dunn

**THE SACRAMENTO/SAN JOAQUIN RIVERS DELTA SOUTH REGION HOUSES FOURTEEN MARINAS**

## SACRAMENTO & SAN JOAQUIN RIVERS DELTA — SOUTH DELTA

Driftwood Marina
Lauritzen Yacht Harbor
Eddo's Harbor
New Life Marina
Bethel Harbor
Sugar Barge Resort
Holland Riverside Marina
Discovery Bay Yacht Harbor
Tiki Lagun Resort
King Island Resort
Paradise Point Marina
Village West Marina
River Point Landing Resort
Stockton Downtown Marina

# SACRAMENTO & SAN JOAQUIN RIVERS DELTA — SOUTH DELTA




| FACILITY | 2017 USABILITY % | PUMP TYPE |
|---|---|---|
| Driftwood Marina | 74 | Peristaltic |
| Lauritzen Yacht Harbor, Fuel Dock (east)<br>Lauritzen Yacht Harbor, Fuel Dock (west) | 84<br>87 | Peristaltic |
| Eddo's Harbor | 74 | Peristaltic |
| New Life Marina | 60 | Unknown |
| Bethel Harbor, Service Dock (east)<br>Bethel Harbor, Service Dock (west) | 94<br>97 | Peristaltic |
| Sugar Barge Resort | 74 | Peristaltic |
| Holland Riverside Marina | 8 | Vacuum |
| Discovery Bay Yacht Harbor | 85 | Diaphragm |
| Tiki Lagun Resort | 73 | Peristaltic |
| King Island Resort | 0 | Peristaltic |
| Paradise Point Marina, All Four Pumpouts | 33 | Custom Build |
| Village West Marina | 74 | Peristaltic |
| River Point Landing Resort | 71 | Peristaltic |
| Stockton Downtown Marina, Guest Dock | 79 | Peristaltic |

## ⟶ SHOW CASE

Marinas have many ways of keeping sewage out of the water. One of the best ways is to include in slip pumpout services as part of you amenities! Tiki Lagun Resort and Marina includes in slip pumpout service weekly to tenants and is a great way to keep rivers, bays, and harbors free of sewage. Marinas can offer to do the service themselves, or can contract with a mobile pumpout company for service on a regular basis. Tiki Lagun offers the weekly service to all tenants for free.

## ⟶ MONITORING DETAILS

| FACILITY | STATUS | DESCRIPTION |
|---|---|---|
| **Driftwood Marina** | | Unit has long hose and always has public access 24 hours a day. |
| **Lauritzen Yacht Harbor – Fuel Dock (east)** | | Unit works very well |
| **Lauritzen Yacht Harbor – Fuel Dock (west)** | | Unit works very well |
| **Eddo's Harbor** | | Unit works fair |
| **New Life Marina** | | Unit is aging and pumps slowly |
| **Bethel Harbor, Service Dock (east)** | | Powerful, well kept unit |
| **Notes* | *Not able to survey Q1* | |
| **Bethel Harbor, Service Dock (west)** | | Powerful, well kept unit |
| **Notes* | *Not able to survey Q1* | |
| **Sugar Barge Resort** | Non-Operational March, Oct | Nozzle kept in marina office. Unit works consistently well. |

| | | |
|---|---|---|
| **Holland Riverside Marina** | Non-Operational in March, June, Oct, Nov | Unit is down. |
| **Discovery Bay Yacht Harbor** | | Exceptionally clean and well-performing unit |
| **Tiki Lagun Resort** | | Unit works well but has low vacuum. |
| **King Island Resort** | Non-Operational May, July | Unit was down in 2017. |
| **Notes* | *Not able to survey Q1, Q4* | |
| **Paradise Point Marina, All Four Pumpouts** | Non-Operational May, July, Sep, Dec | All pumpouts down in 2017. |
| **Village West Marina** | Non-Operational Dec | Very consistent unit |
| **River Point Landing Resort** | | Unit works well but pumps slowly. Need staff to access. |
| **Stockton Downtown Marina – Guest Dock** | | Nozzle is typically not on unit. Visit marina office to obtain one. |

*See page 11 for follow-up taken after each monitoring site visit. A blank status indicates the unit was operational and accessible during the four monitoring events.

**CALIFORNIA STATE PARKS DIVISION OF BOATING AND WATERWAYS**
www.dbw.ca.gov

**SAN FRANCISCO ESTUARY PARTNERSHIP**
www.sfestuary.org/boating

**THE BAY FOUNDATION**
www.santamonicabay.org

**THE BAY FOUNDATION CLEAN BOATING MATERIALS**
www.santamonicabay.org/learn/publications

**BOATER'S GUIDE APP**
itunes.apple.com/us/app/boaters-guide/id823758875?mt=8

**PUMPOUT NAV APP**

iOS
https://itunes.apple.com/us/app/pumpout-nav-marina-pumpout-finder/id1148752109?mt=8

Android
https://play.google.com/store/apps/details?id=com.ecom.cleanvessel&hl=en

**HONEY POT DAY**
www.honeypotday.org

**MOBILE PUMPOUT COMPANIES**
www.dbw.parks.ca.gov/pages/28702/files/MobileServices_Feb2017.pdf