



BAY CROSSINGS

"The Voice of the Waterfront"

August 2015 Vol. 16, No. 8



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Richmond's Point Molate
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"The Voice of the Waterfront"

columns

08 WHO'S AT THE HELM?

Captain Rob Barley
by **Matt Larson**

13 IT CAME FROM BENEATH THE SEA

Seeing Sea Stars
by **Mallory Johnson**

18 SAILING ADVENTURES

A Brief History of Mare Island, Part 2
by **Captain Ray**

features

10 POINT MOLATE

Canceled Casino Leaves Room for Development
by **BC Staff**

14 COVER STORY

New Life for Steel from the Bay Bridge's East Span
by **BC Staff**

16 GREEN PAGES

Bay Area Science Teacher Wins White House Award
by **Bill Picture**

news

06 WATERFRONT NEWS

Port of Oakland Takes Steps to Speed Cargo
by **Patrick Burnson**

12 BAYKEEPER

A Better Way to Dredge the Bay's Channels
by **Sejal Choksi-Chugh**

19

Elton John to Perform at Outside Lands Festival

20

August Sizzles at Oakland's Jack London Square

21 CULTURAL CURRENTS

New Exhibition Focuses on British Master Painter
by **Paul Duclos**



guides

22 WATERFRONT ACTIVITIES

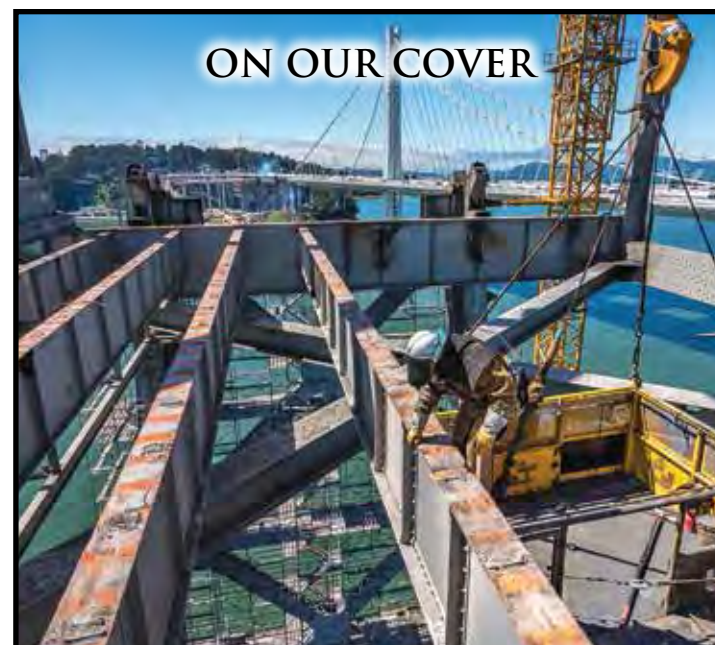
Our recreational resource guide

24 BAY AREA FERRY SCHEDULES

Be on time for last call

26 AROUND THE BAY

To see, be, do, know



The Bay Bridge Steel Program, being administered by Oakland Museum of California, will make steel from the original 1936 East Span of the Bay Bridge available for repurposing and reuse in public art projects throughout California. The program's intent is not only to preserve elements of the bridge, but also its legacy as a major landmark and historic icon. Specific elements sourced from the bridge spans will be salvaged, repaired and cleaned to an established industry standard before reuse.

Photo by Sam Burbank

Corrections & Letters

We appreciate the opportunity to publish our readers' comments, letters or requests for corrections, which can be sent to joel@baycrossings.com.

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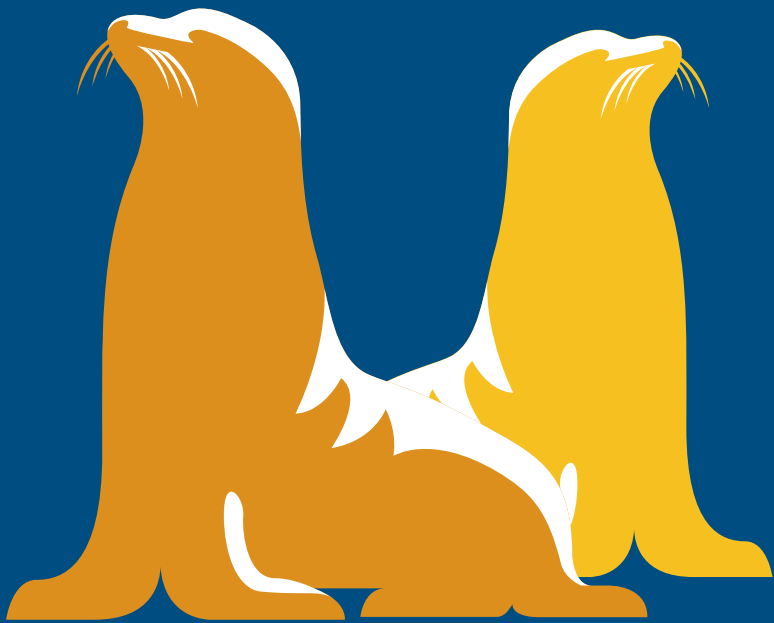
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Port of Oakland Takes Steps to Speed Cargo Flow

BY PATRICK BURNSON

Technology familiar to rush-hour motorists may soon help accelerate containerized cargo flow through the Port of Oakland. The port reports it is testing sensors that measure how long harbor truckers wait to enter its marine terminals.

Armed with wait times, drivers could avoid peak periods and shippers could collect cargo when terminals aren't crowded. If the test proves successful, the technology may be deployed throughout the port.

"Our customers want to get in and out of the port with their cargo quickly," said Port of Oakland Maritime Director John Driscoll. "We think this technology can provide an important component of wait-time metrics to our port stakeholders."

The port installed Bluetooth sensors last month along thoroughfares in the Outer Harbor area of the port. The readers will detect anonymous signals emitted from phones or other mobile devices in truck cabs. They'll measure time between the first and last of each signal to calculate wait times into terminal yards.

It's the same technology used along major freeways to calculate rush-hour

commute times. On roads, overhead signboards tell motorists how long it takes to travel from, say, downtown Oakland to San Francisco. At the port, harbor truckers and cargo owners will get that information on cellphones or computers.

"This is proven technology for determining travel times and a cost effective approach for determining port drayage truck wait times," said Taso Zografos of Reston, Virginia-based Leidos, the firm conducting the test. "If the test is successful, then it could be implemented portwide."

The port said the technology will include cybersecurity measures such as network security, access control, audit and accountability to protect critical infrastructure.

The port added it may eventually use Bluetooth sensors for turn-time measurement within its terminals. Turn times refer to the amount of time it takes a driver to conduct transactions once inside terminal gates. Gate waits and turn times are critical metrics for truckers and cargo owners eager to avoid delays at ports.

The port said its Bluetooth pilot program will last several months. The

pilot project is one of several steps the port is planning to accelerate cargo movement. Others include regular Saturday gate hours, a common chassis pool and off-site locations for container pickup. The programs are a response to growing cargo volumes testing the efficiency of all major West Coast ports.

Armed with wait times, drivers could avoid peak periods and shippers could collect cargo when terminals aren't crowded.

Survey Finds Broad Public Support for the Port of Oakland

Port of Oakland neighbors strongly believe that the port has a significant positive impact on jobs, the local economy and surrounding communities. Those are the key findings of survey results released today by an Oakland polling firm.

"Our results show that for two years in a row, residents view the Port of Oakland as having a positive impact on its neighboring communities," said Dave Metz of Fairbank, Maslin, Maullin, Metz & Associates, the firm that conducted the port's community satisfaction survey.

The second annual survey—conducted in May—indicated growing public recognition of the port's role as an East Bay economic engine. Eighty-four percent of those surveyed said the port is highly important for the region's economy. That was up two percent from a year ago. Sixty-five percent said that the port has a positive impact on surrounding communities, up one percent from last year.

"East Bay residents clearly understand that the port benefits its surrounding communities," said Port of Oakland Executive Director Chris Lytle.

More than 1,100 registered voters in Alameda and Contra Costa counties took part in the phone survey. Here's what they had to say about the Port of Oakland's three business lines: Oakland International Airport, the Port of Oakland seaport, and commercial real estate including Jack London Square:

- 86 percent have a favorable impression of Oakland International Airport;
- 76 percent view Jack London Square favorably; and
- 74 percent view the port as one of the busiest seaports in the United States.

While only 22 percent of East Bay residents consider themselves knowledgeable about the Port of Oakland, those polled broadly agree in the benefits that the port provides:

- 80 percent believe that the Port of Oakland is the entry point for most consumer goods sold in the East Bay;
- 74 percent believe that the Port of Oakland is a major source of jobs for local residents; and
- 71 percent say that the port generates hundreds of millions of dollars in tax revenue each year.

A majority of those surveyed expressed concern about air quality near the port. Fifty-nine percent said the port is a major source of air pollution.

However, the port pointed out in a news release that a 2008 study found that the port contributes just 16 percent of the diesel pollution in the area. Furthermore, the port noted that between 2005 and 2012, it reduced its diesel pollution by 70 percent. That's 15 percent away from the port's adopted goal of 85 percent diesel pollution reduction by 2020.

"While the Port of Oakland has made very significant strides in air quality, we recognize that there's still a lot more work to be done," said Port of Oakland Director of Environmental Programs and Planning Richard Sinkoff.

Patrick Burnson is the past president and current board member of the Pacific Transportation Association, based in San Francisco.
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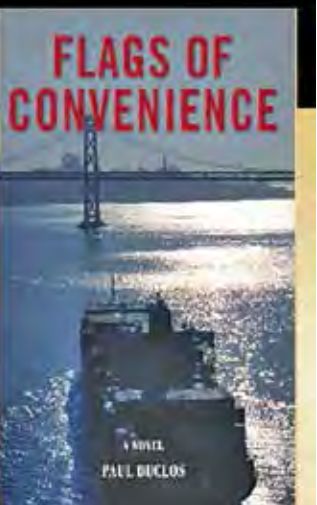
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Captain Rob Barley

BY MATT LARSON

For the past nine years, Rob Barley has been a vessel master (in other words, a captain) for Golden Gate Ferry. For the past several months, he's also been the ferry line's safety, security and training coordinator. You can generally find him at the helm on the early morning commute out of Larkspur at 7:30 and 8:45 a.m., and then on the evening departures from San Francisco at 4 and 5:30 p.m. Between those hours, you can find him in the office.

On his way to work from Petaluma, Barley formerly looked forward just to being out on the water driving boats all day, but with his new managerial responsibilities, he's looking forward to even more. "It seems like every day I'm learning new aspects of the job," Barley said. "As a captain you have to understand the general rules and regulations of what's required of you and your crew, but moving into the office you have to understand it as a company."

"We fall under so many different regulatory bodies—Fish & Game, U.S. Coast Guard, Cal/OSHA, federal OSHA requirements—you can imagine all the different agencies and learning how to comply with all the regulations,"

he said. "Coming into this job I was very impressed with how well we've managed not only to comply, but also to go above and beyond the minimum requirements for safety and security with the limited resources we have. It's pretty amazing."

Barley is no stranger to the water, and it has been a part of his life since very early on. "I grew up on the mean streets of Tiburon, did the sailing camps, I was always in the water as a kid," he said. "That evolved into being a sailing instructor as a teenager, and ever since then I've done nothing but work on boats."

For a time he was able to take groups of people on shark diving trips by the Farallon Islands, a wildlife refuge about 30 miles west of San Francisco. "We put people in a cage, put the cage in the water with sharks in the water," Barley said. For five days a week they'd leave the dock at 5 a.m. and wouldn't return until 7 that night. "It was fun," he said, "when you're young and had a lot of energy."

The Farallons are closed to the public, but Barley recommends visiting them any way you can, be it on a whale watching tour or something else—regardless, though, you can't set foot on the islands. Still, he said, it's worth it. "No two days at the Farallons are the same; the islands look different every single time you visit them." He added, "You'll see more sea life on the trip out



Captain Rob Barley grew up around the water, he was in sailing camps before becoming a sailing instructor as a teenager. For the last nine years, he has been a vessel master for Golden Gate Ferry.

there than most people will probably see in a lifetime."

Barley also formerly worked at Angel Island. He'd take guests on a small boat around the island to give historical tours. To this day, he always looks for a special something there as he's driving the ferry. "We go down the east side of Angel Island every day," he said. "There's one very old wooden structure that's leaning at about a 30-degree list on the east side of Angel Island, and every day I look to see if it's fallen over or not." At this writing, it's still standing.

If you happen to see Barley, or any other Golden Gate Ferry vessel master on board, don't be afraid to introduce yourself. "We see a lot of the same faces everyday but we don't know a lot of the names," he said. "Because of the nature of the business we don't get a chance to really take a lot of time to get to know our passengers." So introduce yourself and strengthen the ferry community one handshake at a time. If you're heading to or from Larkspur, Barley's looking forward to meeting you.



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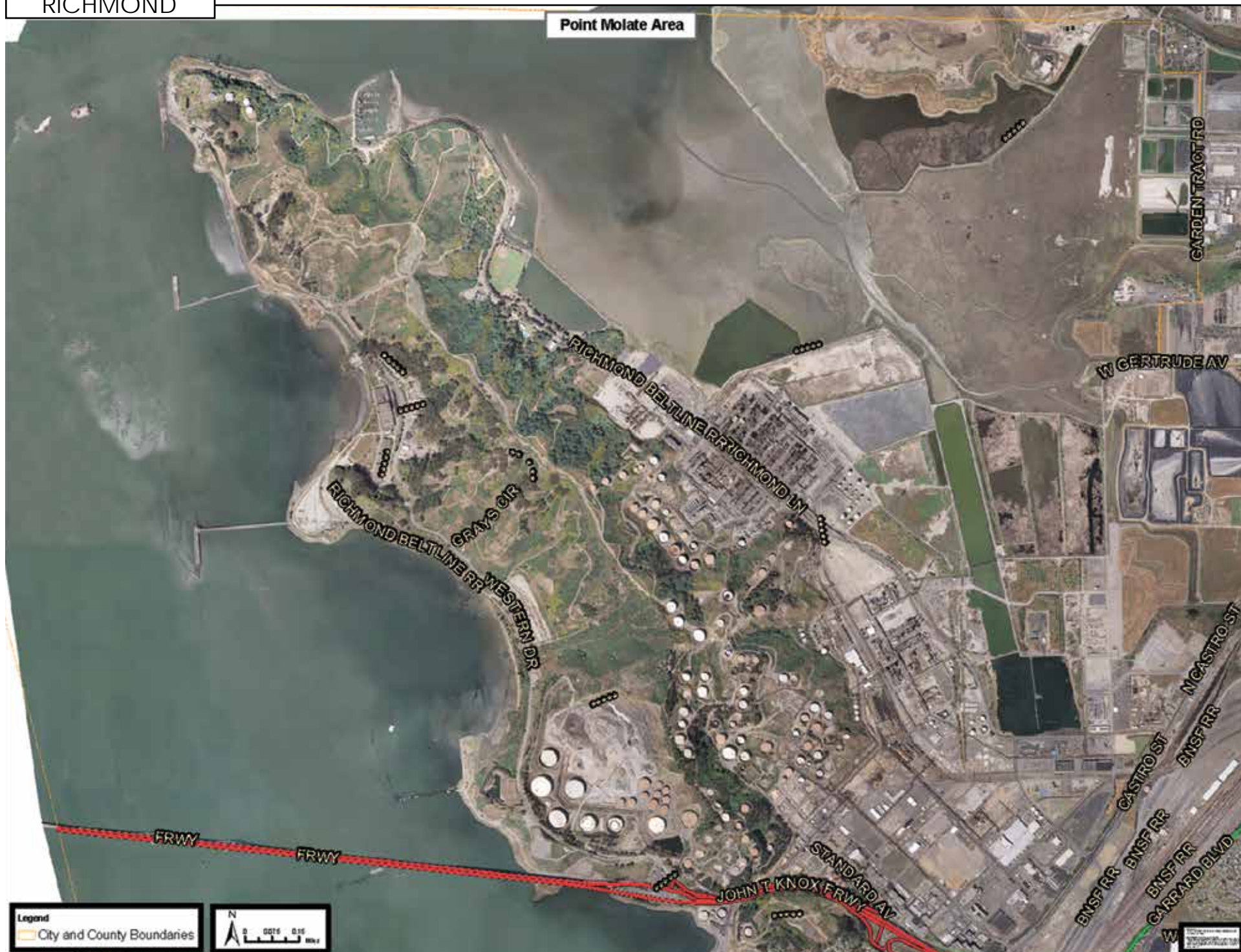
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Richmond Casino Fails to Materialize, Leaving Point Molate Still Largely Undeveloped

BC STAFF REPORT

Last month, we told you about the unique history of Richmond's Point Molate. This month, in our continuing series of articles about this waterfront jewel, we cover some of the relatively recent actions concerning development plans for this location.

The City of Richmond owns a 413-

acre site at Point Molate, just north of the Richmond-San Rafael Bridge. The site is bounded by Chevron refining facilities and properties to the north, east and south. Properties to the north and south are used for storage and transportation of petroleum products, while the more intensive industrial uses occur to the east of the site. Caltrans owns a small sliver of property near the base of the Richmond-San Rafael Bridge, while the State of California owns a piece of the subtidal

lands south of Terminal One.

Approximately 84 acres of upland property are under 15 percent slope and are suitable for development. The remaining dry land acreage has slopes of up to 50 percent and would be more appropriate for open space and recreational uses. The San Pablo Peninsula is zoned for community and recreational uses, with the exception of marine or light industrial uses for Terminal 4 and Chevron's Point Orient.

In 2003, the Richmond City Council issued a request for proposal for development of Point Molate and received seven responses. One proposal came from Chevron, which was concerned over security risks and the prospects of a major development adjacent to its refinery. The company bid \$80 million on the condition that the property would remain as open space.

However, the city chose instead to negotiate with Upstream, whose bid had

originally outlined a hotel-conference center and residential project. The project eventually evolved into a hotel and casino complex with Upstream offering to purchase the former Naval Fuel Depot and contribute close to \$20 million to the city annually.

In 2004, the city entered into a Land Disposition Agreement (LDA) to sell the property to Upstream for \$50 million and began negotiations with the firm to develop the resort hotel and casino complex. Under the conditions of the LDA, any future development of the property would include construction and maintenance of the Bay Trail along the shoreline as well as 33 acres of shoreline park and 150 acres of hillside open space with a public trail system. Over the course of the lengthy negotiations, the developer's nonrefundable payments and deposits to the city for the right to

negotiate and for extensions of the LDA grew to \$15.5 million.

In 2009, the Citizens for East Shore Parks and East Bay Regional Park District filed a lawsuit against the city and the developer over environmental concerns about the development of Point Molate. The parties approved a settlement whereby Upstream would provide at least \$35 million for shoreline preservation. The settlement funding was for land acquisition, and was not limited to Point Molate. It included other areas in Richmond and potentially outside of Richmond.

The settlement was contingent, however, on the casino's construction. Voters rejected the casino proposal in the November 2010 elections by defeating Measure U. The Richmond City Council then voted against the project in April 2011 following the release of the final

environmental impact report.

Richmond Mayor Tom Butt, a councilmember at the time, told *Bay Crossings*: "In the end, it became clear that the promise of a world-class conference center, hotel and performing arts center would just be a casino and a 4,000-space parking garage. The cash flow to the city would be a fraction of what was initially promised. Huge historic buildings would be razed and traffic would be in permanent gridlock at the bridge. It was a classic bait and switch, and we were able to see it before it was too late."

Under the LDA, the rejection of the casino project triggered an exclusive 120-day period during which the developer could negotiate an alternative proposal. The developer instead filed a lawsuit against Richmond contending that the city violated the LDA and had not acted in good faith.

Seven of the nine counts filed by the developer in its lawsuit have been dismissed by the court. The developer then requested permission to file another amended complaint and to stay the lawsuit. The judge denied both requests on October 2, 2014. The majority of the property remains vacant today, with the exception of Building 123, but efforts to remediate and restore the site continue.

The Point Molate Community Advisory Committee was formed in 2011 to work with the Richmond City Council, citizen advisory boards and commissions to provide oversight on Point Molate matters. The committee's work has included advising the city council on environmental remediation, land use planning and financial management.

Next month we will conclude our series by looking at what the future might hold for Richmond's Point Molate.

Recently, a group of architectural students from the Fach Hochschule University of Applied Sciences in Lübeck, Germany visited the Bay Area. Part of their mission was to take architectural excursions to initiate experiences of other ways of thinking, living and building in different cultural contexts. They paid particular attention to the Ford Assembly Building, which was the largest assembly plant to be built on the west coast, because it is an outstanding example of 20th-century industrial architecture.



Professor Heiner Lipper of the Fach Hochschule Lübeck Technical School (left) with Craig Murray of the City of Richmond, during a tour of the Ford Assembly Building.

Designed by Albert Kahn and known for its "daylight factory" design, which employs extensive window openings along its sawtooth roof, the almost 500,000 square foot building built in 1930 suffered structural damage in the 1989 Loma Prieta earthquake. The City of Richmond selected Orton Development to repair and rehabilitate the building and in

2008, SunPower and Mountain Hardware were some of the first companies to make the building their new home. The old craneway at the waterfront is now called the Craneway Pavillion, which is used for concerts, banquets, weddings and corporate events. The iconic building is also part of the Rosie the Riveter/WWII Home Front National Historical Park.



The Ford Assembly Building, built in 1930, is an outstanding example of 20th-century industrial architecture.



Students from the Fach Hochschule Lübeck Technical School group in front of the Rosie the Riveter Museum before touring the historic Craneway Pavilion next door.

A Better Way to Dredge the Bay

BY SEJAL CHOKSI-CHUGH

What if the Bay Area had no beaches where our kids could play, no wetlands protecting our shorelines and no more smelt swimming in our waters?

Every year, millions of cubic feet of sand and mud—enough to fill the Transamerica Building ten times—are dredged up from the floor of San Francisco Bay. But dredging methods that are currently used contribute to erosion of the Bay's shores and of the coast outside the Golden Gate, including San Francisco's Ocean Beach.

Harmful dredging methods also kill endangered fish.

Baykeeper is fighting to get the Army Corps of Engineers, which regularly dredges the Bay's shipping channels, to end these harmful dredging practices in order to preserve our beaches, wetlands and endangered fish.

Most of the Bay is shallow, and sediments continually wash into it from rivers, creeks and the Delta. Dredging is necessary to keep the Bay's shipping channels and harbors deep enough for large ocean-going ships to reach Bay and Delta ports. But there are better ways to dredge the Bay than those now in use—methods that keep shorelines from receding and help protect fish from extinction.

In the past, sediments from the Bay floor were contaminated with mercury, washed down as a result of the Gold Rush, when mercury was used in gold mining. The contaminated mud and sand were dumped far out in the ocean because they were too toxic to stay in the Bay.

Now, sand and mud at the bottom of the Bay are often clean enough that they could be used to restore Bay Area wetlands, but the Army Corps is still dumping too much into the ocean.

Wetlands are crucial to the Bay's health. They provide habitat for wildlife, help prevent shoreline flooding and filter out pollutants. These marshy areas depend on the tides; they need time both underwater and above water for part of each 24-hour cycle. Tens of thousands of acres of Bay wetlands have been restored in recent decades, some as a direct result of Baykeeper's victories. But they could be flooded as sea levels rise and keep them underwater 24 hours a day.

Some clean dredged sediments are being successfully used to restore wetlands that were degraded or destroyed for farming or development. As reported in *Bay Crossings* in March, when the Army Corps recently dredged the Port of Oakland, 400,000 cubic yards of sediment was deposited at a former wetland near Suisun Bay to help restore the threatened native habitat of endangered fish and wildlife.

Clean dredged mud and sand can be used more often to build up wetlands. When millions of cubic yards of clean sediment is instead dumped far out in the ocean, it robs the Bay of a resource that can help wetlands survive sea level rise and improve the Bay's health. And it also contributes to another problem:

erosion of Bay shorelines and of beaches outside the Golden Gate.

Mounting scientific evidence shows a connection between Bay dredging and some of the fastest rates of erosion on the West Coast. Accelerating erosion at San Francisco's Ocean Beach, for example, threatens a major sewer line and the Great Highway. Sand naturally washes out the Golden Gate and up onto Ocean Beach and other coastal beaches, if it's not removed from the Bay ecosystem and dumped far out in the ocean. Erosion is also being accelerated by private companies that are allowed to mine excessive amounts of sand from the Bay for use in manufacturing concrete—another destructive practice that Baykeeper is working to end.

In addition, harmful dredging methods kill endangered fish. One method, hydraulic hopper suction dredging, needs to stop now. Suction dredging vacuums up sand, mud, and everything else that's on the bottom of the Bay. That includes delta smelt and longfin smelt, two Bay fish species on the brink of extinction. The Army Corps' own analysis shows that in 2011, their dredging killed up to 29 percent of the delta smelt population and 8 percent of the longfin smelt population. Baykeeper is challenging the government to use a technology that's safer for fish: clamshell buckets, which scoop up mud and sand the way a backhoe would dig a pit.

Baykeeper will keep up our legal actions until dredging in the Bay is done in ways that preserve our beaches, build up our wetlands and protect our important Bay species. To learn more about Baykeeper and support our work, please visit www.baykeeper.org/donate.



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Sejal Choksi-Chugh is the Executive Director of San Francisco Baykeeper. Baykeeper uses on-the-water patrols of San Francisco Bay, science, advocacy and the courts to stop bay pollution. To report pollution, call Baykeeper's hotline at 1-800-KEEP-BAY, e-mail hotline@baykeeper.org, or click "Report Pollution" at www.baykeeper.org.





Seeing Stars

BY MALLORY JOHNSON

If you've ever visited one of California's bountiful tidepools, chances are you've spotted a colorful and diverse array of wildlife. Life in the tidepools isn't easy, and only the most resilient animals can withstand the elements.

Among those that are up to the task are sea cucumbers, sea anemones and (the most popular of them all) sea stars. Sea stars are remarkable animals that can handle just about anything life can throw at them. Below are 10 fascinating facts about these incredible echinoderms that everyone should know.

1. Don't call them starfish; sea stars are not fish, as they do not have gills, fins, or a skeleton.
2. Sea stars are echinoderms, named for their spiny skin. They have a tough, calcified skin that acts as a

protective coating from predators such as birds, fish and sea otters.

3. There are over 1,800 species of sea stars that vary in size, shape, color and texture.
4. Sea stars are a keystone species; their very presence contributes to the health of their habitat and ecosystem.
5. They have unique eating habits. In order to eat their food, sea stars will crawl over their meal, then carefully throw up their stomachs on top of their food to let their digestive enzymes break it down.
6. Sea stars can regenerate their limbs. This is a useful mechanism for a sea star that finds itself in a tight spot with a predator. It can get away by dropping an arm, and later it grows a new one.
7. While most sea stars have five arms, some species, such as the sunflower star, can have up to 40.

8. Each arm on a sea star contains rows of tiny tubed feet that operate hydraulically. Sea stars take in water through a small hole called a sieve plate on tops of their bodies. They channel that water to their tubed feet, allowing them to extend.

9. Sea stars use tiny muscles and suction cups on the bottom of their feet to cling to rocks and move gradually along the terrain.

10. In order to deal with the temperature fluctuations that tidepool sea stars are exposed to, they employ a coping mechanism known as thermoregulation. They

do this by taking advantage of high tides by soaking up the cold ocean water, which they later use as a buffer when exposed to direct sunlight and warm water during low tides.

Northern California is an excellent place to experience tidepools and the amazing wildlife found within them. Tidepools abound in the region, and most are easily accessible to visitors who want to learn more about the magnificent flora and fauna living there.

Another great place to learn all about sea stars and their tidepool companions is at Aquarium of the Bay, where guests can learn about these echinoderms from trained naturalists and see them during daily presentations and feedings. Visit www.aquariumofthebay.org for more info.



Photo courtesy of Aquarium of the Bay

Sea stars are one of the rare creatures that are suited for the changing conditions that exist in tidepools.

Mallory Johnson is the Communications Manager at Aquarium of the Bay, a nonprofit dedicated to protecting, restoring and inspiring the conservation of San Francisco Bay and its watershed.



Photo courtesy of Aquarium of the Bay

There are over 1,800 species of sea stars, varying in size, shape and color.



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New Life for Old East Span Steel

The old East Span of the Bay Bridge is now in phase two of its demolition. The Bay Bridge Steel Program will make salvaged steel from the demolition available for incorporation into public and civic art projects throughout the State of California.

BC STAFF REPORT

The Bay Bridge Steel Program, being administered by Oakland Museum of California (OMCA), was created in response to significant public interest from Bay Area artists and creative communities in making steel from the original 1936 East Span of the Bay Bridge available for repurposing and reuse.

The steel that will be made available through this program will be drawn from the second phase of bridge demolition that began this summer. Noted photographer Sam Burbank, who also documented the dismantling of the Carquinez Bridge, has graciously provided the amazing photos on this two-page spread to give our readers an idea of the raw materials that will eventually become public art.

The Bay Bridge Steel Program's intent is not only to preserve elements of the bridge, but also its legacy as a major landmark and historic icon, by making this

salvaged steel available for incorporation into public and civic art projects throughout the State of California. Specific elements sourced from the bridge spans will be salvaged, repaired and cleaned to an established industry standard by the demolition contractor.

The Bay Bridge Steel Program partners hope this exciting opportunity is embraced by a broad range of artists, architects, landscape architects, planners and other design professionals working in the public realm. OMCA agreed to work under the direction of the Toll Bridge Program Oversight Committee with Caltrans





and the Metropolitan Transportation Commission/ Bay Area Toll Authority to support and administer the process of distributing steel to be salvaged in ways that celebrate the original bridge and its history.

OMCA has seated a highly qualified selection committee with expertise in public art, art administration, landscape architecture, structural engineering and the history of the bridge to review proposed projects and award the available bridge steel. The museum has also engaged an independent program consultant with extensive public art experience to help administer the Bay Bridge Steel Program.

Applications will be considered for projects that are destined for the public realm within the State of California and that meet key criteria, including celebrating or evoking the bridge, its importance as an iconic structure and/or its history in a creative way. The selection committee will review proposals and award specific elements of cleaned and salvaged steel, at no charge, to successful applicants.

It is important to note that this program was established to award grants of bridge steel; it does not provide for funding or ensure that proposed projects will be accepted or approved by the responsible municipal agencies where they are planned. Applicants will be responsible for addressing these and other additional requirements.

Successful applicants will have the material they have requested allocated to them pending their ability

to demonstrate that they have secured funding and municipal approvals, after which point the steel will be released to their possession. Applicants must be aware that it is not possible to remove or remediate all of the lead paint or other potential hazards and that applicants will be required to sign a waiver acknowledging that they assume responsibility for the steel and its appropriate use.

Completed applications will be considered in three rounds, with the following application deadlines: Deadline for Group A: October 1, 2015

Deadline for Group B: May 2, 2016

Deadline for Group C: December 1, 2016

More information regarding applications is available at museumca.org. Applications will be accepted only through an online application system, bay-bridge-steel.slideroom.com, where detailed information about the application process can be found.

ABOUT THE PHOTOGRAPHER:

Sam Burbank's career started filming space science-oriented stories and doing a lot of extreme filmmaking at places like Devon Island in the Canadian arctic. He worked for years as a TV host and producer for National Geographic and also documented the dismantling of the Carquinez Bridge, which went on to become one of National Geographic's most successful engineering stories. You can see more of his work at www.inversesquarefilms.com.



Bay Area Science Teacher Wins White House Environmental Award

BY BILL PICTURE

A Bay Area science teacher was honored last month by the EPA and the White House Council on Environmental Quality for shaping a curriculum that makes learning about the environment fun for students. James Lance Powell, who teaches eco-oriented science classes at Menlo-Atherton High School in San Mateo County, received a Presidential Innovation Award for Environmental Education (PIAEE) at a ceremony held at the White House.

PIAEE awards are given to environmental educators whose lesson plans employ an innovative, hands-on approach to learning. In addition to the award, Powell will receive \$2,500 for continuing education, while his school will receive \$2,500 to support its environmental education program.

UC system not so keen on green

While sustainability has been integrated into many high school science programs across the country, most classes with a narrow focus on the environment are still not accredited by the University of California system. “Only AP environmental science classes are accredited,” Powell said. “It’s surprising, right. I think the problem is that environmental science is often confused with environmental studies, which is less rooted in science.”

In order to share his own passion for the environment with students and have it count for them (toward college credit), Powell created “environmental analysis through chemistry,” a traditional chemistry class with a fun eco-bent that earned a UC stamp of approval.

“I look at it as two victories,” he said. “First, I feel it helped legitimize environmental science. Second, it helped take a subject that most students find really confusing—chemistry—and made



Photo courtesy of EPA.gov

The White House honored Menlo-Atherton High School teacher James “Lance” Powell last month for his experience-based approach to teaching environmental science. Powell is pictured here with Jorine Campopiano, EPA Schools Environmental Education Coordinator for Region 9.



Photo by Lance Powell

Powell’s field trips are usually followed by in-lab analysis, where students sharpen their critical thinking and reporting skills.

it relatable and relevant.”

“I mean, chemistry stumps everyone, right,” Powell said. “Not only that, I remember studying chemistry and thinking, ‘Why do we need to know this?’ But when you apply it to the world you live in, it suddenly makes more sense.”

Powell’s lesson plans regularly take students out of the classroom and into the field, where they experience chemistry in action in the world around them. The students then return to the classroom for good old-fashioned lab analysis and scientific reporting. “One of the things we do is, I have my students collect storm water samples in their own neighborhood, and then bring the samples in for analysis.”

Powell says his students are often surprised to find high concentrations of harmful chemicals and metals in the samples they collect. “In one case, the concentration of nitrates was 27 times what is considered safe,” he said. “And the fact that the sample literally came

from a student’s own backyard prompted them to start asking questions: ‘What is a nitrate?’ ‘What is its impact on the environment, and on me?’ ‘How did it get there?’ As an educator, I feel that’s my job in a nutshell—to get students asking those questions.”

Furthermore, Powell says his lessons regularly spark healthy in-class discussions about sustainability and environmental justice. “They’re really interested in the injustices,” he said. “A lot of situations that adults barely bat an eyelash at really fire my students up. And they go, ‘Why is this happening?’ That’s what we need to fuel change—that passion, to help us find the solutions to environmental issues.”

Children and the future

“To tackle future ecological challenges, it is critical to instill a sense of environmental protection in our new generation of students,” said EPA Region



9 Administrator Jared Blumenfeld in a written statement.

Powell couldn't agree more. "They've got an inherent natural interest in the environment and environmental issue," he said. "The education system needs to find more ways to engage that interest early on, and hook them in. Otherwise, the students lose it; and educators like myself find ourselves having to be salesmen, trying to convince students that this stuff is cool, and that it's important."

Powell says an unstoked flame of eco-curiosity in a student can result in what he jokingly calls "nature deficiency disorder." "Or video-game-itis," he said. "When we go on these field trips, most of the time we're just a few miles from school, and it's like they've never been outside before. Trudging around in a creek bed is so foreign to them that you'd think we were in the backwoods of Alaska. It's like an Indiana Jones adventure or something."

Powell says some schools have begun teaching environmental science to ninth-graders, as ninth-grade classes typically don't count toward college credit. But he'd like to see the environment on schools' curricula much, much earlier.

"I read someplace that a child's enthusiasm for science begins to wane in the fifth grade," he said. "If you think about it, that makes sense. Little kids are just naturally interested in being outside, going on nature hikes and looking for bugs. So if that's true, we need to start teaching them about the environment way before high school. The earlier the better, in fact. We need to keep their curiosity fire aflame."

Doing so, Powell said, will have benefits beyond just producing science-savvy adults. "The critical thinking skills they develop from science will help them get through school, and get through life," he said.

He believes a more robust science background, and one that includes more environmental science, will also help better prepare young people for the tough job market that awaits them, by helping them to recognize opportunities and seize upon them. While the green tech boom is partly the result of the Bay Area's healthy entrepreneurial spirit, science is its foundation. Every green tech idea started with someone (or a group of people) recognizing a problem, and then dreaming up a way to solve it.

"Sometimes I see that light bulb go



Photo by Lance Powell

One of Powell's most popular field trips sees students collecting storm water samples from area creeks. The samples are then analyzed and compared against EPA clean water standards. Sometimes, the samples contain dangerous levels of contaminants.

off in a student's head, and I get really excited," Powell said. "The truth is, any one of my students could be the one to

come up with the next million-dollar idea."



Photo by Lance Powell

Powell says the goal in creating his "environmental analysis through chemistry" class was to demystify chemistry and make it fun. The class is one of the few non-Advanced Placement science classes with an environmental focus to receive accreditation from the University of California system.

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A Brief History of Mare Island, Part 2

BY CAPTAIN RAY

In last month's edition of *Bay Crossings*, I began telling the history of Mare Island and the U.S. Naval Shipyard that used the island for 142 years. This month I will complete this fascinating tale.

Mare Island served military needs throughout its time as a naval base. In the 1860s a naval hospital was constructed on the island. From a small 30-bed ward in a converted granary, it grew into a facility with almost 600 beds. This hospital gained worldwide recognition for its work in prosthetics for veterans.

Because the German army made

very effective use of U-boats during World War I, in the early 1920s the Navy opened a second west coast submarine facility (the first was on Puget Sound) at Mare Island. Starting with the launch of the USS *Nautilus* (not the nuclear-powered one) in 1927, this facility went on to build more than 25 diesel/electric submarines, four submarine tenders, and, with the coming of the Atomic Age, 17 nuclear submarines. The Navy ceased construction of submarines at Mare Island in 1972.

The Navy also sometimes shared Mare Island with other branches of the armed forces: The U.S. Marine Corps used it as a recruit training depot from 1911 until 1923, when the depot was

relocated to San Diego in 1923. During the Vietnam War, the Navy used Mare Island and the sloughs to the northwest to train riverboat crews.

Mare Island was also used for other activities. In 1892, the first golf course west of the Mississippi River opened on Mare Island. It was only nine holes then, and for the first 30 years the "greens" were sand. The course was famous (or infamous) for an unusual obstacle: a horse belonging to a marine lieutenant that was allowed to wander around. This occurred often enough that the course rules allowed a golfer to move a ball (without penalty) that had been blocked by the horse.

In the 1860s, at the urging of Commandant James Alden, ship captains began to bring trees from all over the world to plant on the island. To this day, Mare Island sports a great variety of "exotics" from the eastern United States, as well as from countries of the Pacific such as China, Japan and Australia. The island's St. Peter's Chapel, a small brown shingle structure, was dedicated in 1901 and is now on the National Register of Historic Places. Not only is it the west's oldest non-denominational naval chapel, it contains artistic treasure: The chapel is adorned with 29 stained glass windows, 16 of which are from the Louis Comfort Tiffany Studios of New York City. It is the largest collection of Tiffany stained glass windows west of the Mississippi River.

The end of Mare Island Naval Shipyard's long history of service to the nation was signaled by the



Photo courtesy of Mare Island Museum
The USS Mariano G. Vallejo (SSBN-658), built at Mare Island Naval Shipyard, was launched on October 23, 1965.

Base Realignment and Closure Commission's 1963 recommendation to close the shipyard. It was officially closed and returned to the City of Vallejo on April 1, 1996.

The island's designations as a National Historic Landmark, a State Historical Landmark and its being listed on the National Register of Historic Districts are all honored in Vallejo's Reuse Plan. Preservation of the shipyard's historic core, wetland restoration, housing, commercial, retail and entertainment spaces are all part of this plan.

Some of the shipyard's buildings have been repurposed by other governmental agencies, including a U.S. Forest Service office building, an Army Reserve Center, and a Coast Guard communications facility. Another part of the island has become a Fish and Wildlife Service refuge, and several of the historic Colonial Revival era mansions on Officer's Row are available for special functions. The City of Vallejo has redeveloped former Navy housing into 600 market-rate condominiums.

The Mare Island Historical Parks Foundation (mareislandhpf.org) offers docent-led tours. These tours last several hours and include the mansions of Officers Row and St. Peter's Chapel, the drydocks along Mare Island Strait and the shipyard museum.

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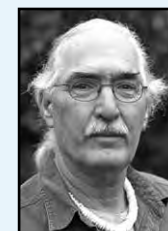
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Ray Wichmann, is a US SAILING-certified Ocean Passagemaking Instructor, a US SAILING Master Instructor Trainer, and a member of US SAILING's National Faculty. He holds a 100-Ton Master's License, was a charter skipper in Hawai'i for 15 years, and has sailed on both coasts of the United States, in Mexico, the Caribbean and Greece. He is presently employed as the Master Instructor at OCSC Sailing in the Berkeley Marina.



Elton John to Perform in Golden Gate Park at Outside Lands Festival

Another Planet Entertainment, Superfly and Starr Hill, in a partnership with the San Francisco Recreation and Park Department, have announced an outstanding lineup for the eighth annual Outside Lands Festival. After four consecutive sold-out years, the world's only gourmet music festival that Rolling Stone hailed as "one of America's best," and the Huffington Post called "a well-rounded cultural event," will once again take place in San Francisco's historic Golden Gate Park from August 7 to 9.

Over the years, Outside Lands has solidified its reputation as one of the most well-known and revered festivals



Photo Credit Andrew Potter

Elton John will headline the festival on Sunday night.

in the world. The media across the country has been universally praising the event since its inception in 2008, covering the festival's evolution from setting the standard in the region to its current position as a renowned national powerhouse that all artists consider one of the most important performances in any given year.

As with all the great Outside Lands lineups of the past seven years, the 2015 edition is brilliantly diverse by design. From legends like Elton John and D'Angelo, to current massive hit makers such as Mumford & Sons, the Black Keys, Sam Smith and Kendrick Lamar, to indie darlings Wilco, Tame Impala and St. Vincent, to newcomers on the

rise, electronic luminaries and hip-hop stars, Outside Lands has developed into a hub of infinite music exploration. As Mother Jones magazine once exclaimed, "Outside Lands is as much about showcasing up-and-coming bands—and their colorful fans, of course—as it is about the stars."

As the world's only gourmet rock festival, Outside Lands has been a pioneer in the food-music movement since its 2008 inception. Each year, to the delight of ticketholders, the festival organizers enhance the stellar culinary offerings. Outside Lands will now offer over 200 menu options, found within six unique experiences: A Taste of the Bay Area, Wine Lands, Beer Lands, Choco Lands, Cheese Lands, and GastroMagic, which was introduced in 2014 as a fully programmed stage devoted to fantastical culinary entertainment. The three-day festival features more than 70 restaurants, 35 wineries, 30 breweries and 10 cocktail bars, all local to California.

Outside Lands has become a cherished event that the City of San Francisco has embraced as fans from around the world flock to spend an incomparable weekend in one of America's greatest parks. Each year, festival organizers ensure that the event highlights the Bay Area and all of the components—from food to wine to beer to art to comedy, theater and music—that make it one of the most desirable places to live and visit.

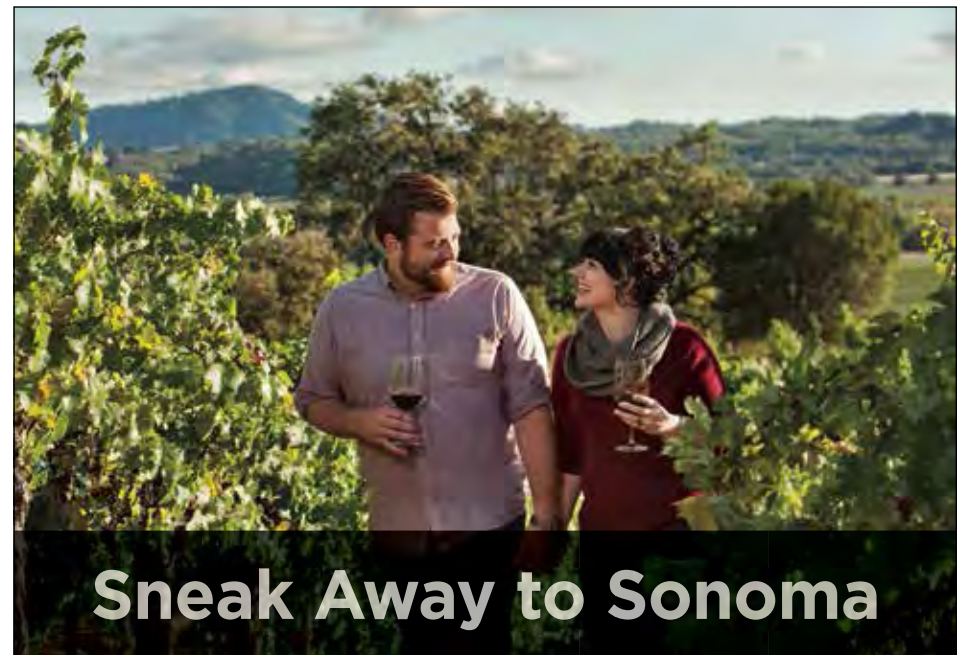
The festival organizers also like to thank the city and other local communities surrounding the park by giving back in substantial ways. A significant portion of every ticket sold will directly benefit San Francisco's Recreation and Park Department. In fact, in its first seven years, Outside Lands has raised over \$10 million for the benefit of the San Francisco Recreation and Park Department. Based on a 2011 economic study, it is estimated that the festival generates over \$70 million annually for the San Francisco economy.



Douglas Mason/Outside Lands

The Outside Lands festival celebrates its eighth year in Golden Gate park on August 7-9. The summer festival has raised over \$10 million to benefit the San Francisco Recreation and Parks Department.

For more information on the Outside Lands Festival and a complete lineup of performers as well as food and drink, visit www.sfoutsidelands.com.



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August Sizzles at Jack London Square

Head down to the Oakland waterfront and enjoy Jack London Square's festive mix of outdoor fun during the month of August. From free film screenings to outdoor dining, there is something for everyone including Sing-Along Cinema, Dancing Under the Stars, Waterfront Flicks, HUSHfest and more!

Sing-Along Cinema returns on Thursday, August 6 with a lively evening of song, dance and musical merriment on the waterfront. Both children and adults will enjoy Frozen at sundown along with a theatrical troupe as they perform with the movie. Moviegoers are encouraged to show up in costume dressed as their

favorite characters and sing along to their favorite songs. Pre-event festivities include costume contests, games, prizes and more.

Don't miss your last chance this summer season to experience the Bay Area's favorite dance series, taking place Friday nights through August 28. Dancers of all experience levels are invited to kick up their heels for an evening of free dance lessons at Dancing Under the Stars. August lessons include the line dance, East Coast Swing triple time, cha cha and salsa. These festive, free dance lessons begin at 8:30 p.m., followed by a dance party at 9 p.m. to try out all the new moves.

This month, Jack London Square concludes its popular free summer film

series, Waterfront Flicks, with Finding Nemo on Thursday, August 13 and The Grand Budapest Hotel on Thursday, August

27. Arrive early for dinner at one of Jack London Square's tasty restaurants and then grab a spot on the Ferry Lawn for trivia and giveaways before the fun-filled screening.

Also, mark your calendar for HUSHfest on Saturday, August 15. This silent disco concert invites music fans to listen to performers on the waterfront using custom wireless headphones. Popular Bay Area DJ's will perform an eclectic mix of funk, soul, rock, electronic music and disco—something for everyone.



Dancing Under the Stars returns to Jack London Square on Friday nights in August.

In addition to all the special events, visitors can grab dinner and a drink at a variety of contemporary restaurants including Jack's Oyster Bar & Fish House, Plank, Rosenblum Cellars, Bocanova, Forge Pizza, Haven, Lungomare and more, as well as the newly opened Rosenblum Cellars. Visitors can easily bike, ferry, BART or drive to Jack London Square. For additional information, visit www.jacklondonsquare.com.

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New Exhibition Focuses on British Master Turner

BY PAUL DUCLOS

The Fine Arts Museums of San Francisco this summer features a major new exhibition, *J.M.W. Turner: Painting Set Free*. The show at the de Young will be the first major exhibition to survey the achievements of Joseph Mallord William Turner (English, 1775–1851) during his final period of productivity, when many of his most celebrated works were created.

Included are paintings from 1835, when the artist turned 60, through 1850, the year he was last exhibited at the Royal Academy in London.

Painting Set Free brings together 65 key oil paintings and watercolors, shedding fresh light on the artist's life and art by challenging myths, assumptions and interpretations that have grown around his later work. It reveals a painter distinguished by the broad scope of his knowledge and imagination, as well as by his radical and exploratory techniques and uses of materials.

The exhibition also will provide the rare opportunity to see firsthand some of the masterpieces featured in Mike Leigh's critically acclaimed 2014 film *Mr. Turner*.

"Turner's late paintings, which include many of his best-known images, are both engaging and enigmatic," said Esther Bell, curator in charge of European paintings at the Fine Arts Museums of San Francisco. "These astonishing works influenced generations of artists, from Claude Monet to Cy Twombly."

In an exclusive interview with *Bay Crossings*, Ms. Bell shared other insights on Turner and the sea.

Bay Crossings: Obviously, Bay Crossings readers relate to most art with a waterborne theme. What makes Turner's work so powerful in this regard?

Esther Bell: Turner was the master of painting atmosphere: wind, water,

fire, light. He was interested in trying to capture the uncapturable through nuanced brushwork and an inventive use of media. And, he does so to masterful effect. The case in point is *Snow Storm: Steam-Boat off a Harbour's Mouth*, where we are transported into a ferocious vortex of water, snow, wind and terror.

BC: What other works in the de Young's permanent collection would resonate with our readers?

Bell: We hope that our visitors will come to the Legion of Honor to see our permanent collection of European paintings, including works by the artists that inspired Turner—such as those by Claude Lorrain or the Dutch masters. We also have a fantastic exhibition of works on paper by Turner and his contemporaries called *Luminous Worlds: British Works on Paper, 1760-1900* on view until November 29.

BC: How should our readers prepare before coming to view this exhibition?

Bell: There are many excellent books on Turner's life and career. For a quick read, but excellent overview, I suggest Olivier Meslay's *J.M.W. Turner: The Man Who Set Painting on Fire*. For a longer, also excellent read, I also enjoyed Anthony Bailey's *Standing in the Sun: A Life of J.M.W. Turner*.

BC: What were the main challenges you faced in putting this exhibition together? Any surprises?

Bell: The exhibition was a joy to work on, and a great privilege—and it didn't present any glaring challenges. The "surprises" occurred mainly when we uncrated the paintings. They were entirely more magnificent and powerful than I had remembered—even from seeing them a matter of weeks earlier. Each work in the exhibition is truly a masterpiece.



Joseph Mallord William Turner, *The Burning of the Houses of Lords and Commons*, October 16, 1834, 1834–1835. Oil on canvas. Philadelphia Museum of Art. The John Howard McFadden Collection

BC: The de Young's audio guides are essential, but do you recommend any particular musical score for this show?

compared to Hector Berlioz for his radicalism; I find both artist and composer to be equally compelling in their manner of invention—relative to their day.

Bell: In Turner's later career he was



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- Every Thurs** **Beer Can Races from Pier 39 - San Francisco Sailing Company, Pier 39 Marina, San Francisco, 415-378-4887, www.sailsf.com**
Live race review and meet up after the race at The City Yacht Club. To join the races contact the San Francisco Sailing School & Club 415-259-9801 or go to www.SailingLessonsSF.com
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- Every Sun** **8:30AM – 11AM - Marin Headlands and Wildlife Sails on Sunday Mornings - Schooner Freda B, Sausalito, 415-331-0444, www.schoonerfredab.com**
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- August 8** **7PM – 9PM – Sail Trim and Shaping Seminar – OCSC Sailing, Berkeley, 510-843-4200, www.ocscsailing.com**
How much do you know about your sails? Join sailmaker Kame Richards as he returns to OCSC for an in-depth look at sail trim and shaping of both headsails and mainsails and how the two interact with one another. You're sure to walk away from this event with some new tricks! Free.
- August 10-14** **Voyage Seaward, Teen 12+, Call of the Sea, Sausalito, 415-331-3214, callofthesea.org**
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- August 14** **6PM - 10:30PM - Friday Night Giants Game in McCovey Cove - Schooner Freda B, Sausalito, 415-331-0444, schoonerfredab.com**
Come cheer on the World Champion San Francisco Giants aboard the schooner *Freda B*! \$99 per person.

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WATERFRONT ACTIVITIES

August 14 or 15 7:30PM- 10:30PM - **Bioluminescence Kayak Tour, Tomales Bay - Outback Adventures, Larkspur, 415-461-2222, www.outbackadventures.com**

Imagine every dip of your paddle creating a brilliant light show put on by living organisms beneath the water's surface. On this tour you may see fish or seals leaving a trail of light everywhere they swim, or create one of your own in our stable double sea kayaks. The best times to observe the bioluminescence are certain moonless nights and since this phenomenon only occurs a few special times a year and these trips fill up so register early. Cost is \$75.

August 15 7PM – 9PM – **GPS and Radar Seminar – OCSC Sailing, Berkeley, 510-843-4200, www.ocscsailing.com**

Get the low-down on hi-tech with this seminar on GPS, chartplotters, Radar, how to use them and how navigation is changing. Free.

August 19 **Radar Recertification 1 Day - Maritime Institute, San Rafael, 888-262-8020 www.MaritimeInstitute.com**

This course is a renewal test for the Unlimited Radar Observer renewal for the advanced mariner that does radar plotting on a regular basis. Testing on the first and second triangles and practical plotting on the radar scope (2 tests each) Approximately four (4) hours. To register or view our complete schedule, visit www.MaritimeInstitute.com.

August 22 9AM – 11:30AM – **Intro to Stand Up Paddleboarding (SUP) - Outback Adventures, Larkspur, 415-461-2222, www.outbackadventures.com**

Learn why Stand Up Paddle Boarding is one of the fastest growing paddle sports in the industry. Learn paddle techniques and get an opportunity to try many different kinds of boards. We will practice the skills in the protected waters of the Corte Madera Creek, no experience necessary. Cost is \$60 per person.

August 29 10AM - 2PM - **Corte Madera Marsh Kayak Tour - Outback Adventures, Larkspur, 415-461-2222, www.outbackadventures.com**

Come explore the marsh wetlands along the Corte Madera State Ecological Reserve while taking in the views of Mount Tamalpais and the San Francisco Bay. We will paddle out in stable double sea kayaks while keeping our eyes open for the curious harbor seals that gather nearby. If time and conditions permit, we may take an optional side trip past the infamous San Quentin Prison, then stop for lunch on a nice sandy beach with incredible views of the Bay. Price: \$70

August 29 6:45PM - 9:30PM - **August Supermoon Sail - Schooner Freda B, Sausalito, 415-331-0444, schoonerfredab.com**

Sail San Francisco Bay and take in this month's spectacular full moon, from the deck of the schooner *Freda B*. \$79 per person.

August 29 7PM – 9PM – **SF Bay Cruising Destinations – OCSC Sailing, Berkeley, 510-843-4200, www.ocscsailing.com**

You too can become an insider by attending this seminar. Popular and challenging destinations - restaurants, nature preserves, maritime and natural history museums, night clubs and secluded coves - are all just a sail away, but only if you know where to go and how to make the most of them.

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AROUND THE BAY IN AUGUST

Time for Some Urban Wine

Join the East Bay Vintners Alliance (EBVA) on August 1 from 1-4 p.m. as it hosts the 10th annual Urban Wine Xperience at Market Hall in Jack London Square in Oakland. More than 20 urban wineries from the EBVA will pour a wide array of white, rose, red and dessert wines for you to taste and enjoy. In addition, local eateries and food purveyors will team up with the various wineries, creating delicious bites that pair beautifully with the EBVA's wine portfolio. No need to travel to wine country when you can experience the ultimate wine tasting in your own urban backyard. Tickets are \$50 for nonmembers in advance and \$70 at the door. Visit www.eastbayvintners.com for more information.

52nd Annual Benicia Peddlers Fair

The Benicia Peddlers Fair is one of Northern California's oldest and most popular antique and collectibles street fairs. For over 50 years, customers and vendors throughout the region have come to enjoy Benicia's wonderful weather and beautiful waterfront setting. This outdoor event began in 1963 with a few collectible and antique stores displaying their items on tables outside St. Paul's Church. It has grown into 300 select antique and collectible dealers from all over the country and more than 20,000 loyal fans. The fair now spans the entire 11 blocks of First Street, with beautiful views of the Carquinez Strait. The show offers connoisseurs and new collectors alike an opportunity to examine and purchase items that include period furniture, decorative antiques, vintage textiles and fashion, pottery, porcelain, pink and blue Depression glass, paintings, prints, jewelry, clocks, watches and much more. The fair gives the public a rare opportunity to ask questions of knowledgeable dealers and witness firsthand the rare history of our great country. This year's fair will be held on Saturday, August 8 from 8 a.m. to 5 p.m.

Off Broadway Summer Pop Up

On August 15, the Top of Broadway Community Benefit District brings to San Francisco the first annual Off Broadway Summer Pop Up, a family friendly event featuring over 100 local artists, makers, designers, vintage apparel and antique collectors. Taking place from 12 to 6 p.m. along the two blocks of Kearny Street and Pacific Avenue, the event is expected to reintroduce the historic neighborhood to San Francisco residents. Local businesses within the Top of Broadway Community Benefit District as well as local nonprofits have also been invited to participate in the day's festivities, with many neighborhood restaurants, bars and storefronts offering specials and discounts throughout the event. Grab a drink in the beverage garden and enjoy continuous stage entertainment on Kearny Street, featuring live music from local bands, DIY workshops and community performances. Kids' activities—including art stations and community games like corn hole and giant Jenga—will also be available throughout the day. In addition to local restaurants, foodies can delight over a selection of food trucks along Pacific Avenue. For a full list of Off Broadway Pop Up vendors and events, visit VisitBroadwaySF.com.

Blues, Brews and BBQ

The 7th annual Blues, Brews and BBQ hosts two stages of blues featuring the Chris Cain Band, Alvon Johnson, South City Blues Band and the Kyle Jester Band. Additionally, the KFOG 104.5 FM stage will feature three emerging Bay Area artists. Over 40 micro-brewed beers will be served along with Napa Valley wines. Don't miss the 3 p.m. rib eatin' contest, where a dozen of Napa's finest face off on their quest for rib eatin' fame, glory and heartburn. This event is free and open to the public. For more information visit donapa.com.

Technological Mediations

San Rafael's Art Works Downtown is pleased to announce *Technological Mediations*, an exhibition featuring the work of 15 artists who explore the



JD Beltran and Scott Minneman's *Cinema Snowglobes*.

intersection of art and technology. The artists in *Technological Mediations* use technology to discuss our mediated lives in the digital age. The exhibit features both emerging and established artists who approach the theme in a variety of media and conceptual approaches. Interactive works by artists JD Beltran, Scott Minneman, Ryan Berkey, Tim Thompson, Paul Sable Snibbe, Peter Foucault and Charles Gadeken allow the public to literally touch and engage with technology. In the case of JD Beltran and Scott Minneman's *Cinema Snowglobes*, gallery visitors are able to hold a short video in their hands while manipulating the snowglobe. During both second Friday receptions (August 14 and September 11, from 5 to 8 p.m.), Peter Foucault's *Attraction/Repulsion: Redux* drawing robots will respond to the sounds of the audience to create marks on paper, and gallery visitors will be able to control the colors and patterns in Charles Gadeken's illuminated tree, *Squared*, using a custom iPad app. Other artists in the exhibition investigate our society's obsession with data collection. Scott Kildall asks the question, "what does data look like?" His work, *Data Crystals*, is a series of 3D printed sculptures generated from open data sources such as a San Francisco crime incidents database. In *All the People in Dolores Park*, Jenny

Odell mines imagery of snapshots found on Google Maps to create a collage of people without the identifiers of place. Together, the artworks in *Technological Mediations* create both an excitement for and a contemplation of the impact of the digital age on our present and future.

Indy Cars Roar into Sonoma

Open-wheel cars. All-star drivers. Twelve turns and 85 laps to make it to the front of the pack. The excitement of Indy Car racing returns to the serpentine Sonoma circuit from August 28 to 30 for the GoPro Indy Grand Prix of Sonoma. For the first time in series history, the Verizon IndyCar Series championship will be decided on a road course. The 11th annual Verizon IndyCar Series event at Sonoma Raceway will serve as the season finale for the 17-race 2015 schedule. The series championship has come down to the last race each year since 2006, and with double points on the line, a solid performance in Sonoma will be more important than ever. Be there to enjoy a full weekend of racing, including the Pirelli World Challenge Championships and Formula Car Challenge. You'll also be treated to an expansive vendor midway and an entertaining pre-event show on Sunday, highlighted by the Patriots Jet Team 25-minute air show. For more information and tickets, visit www.racesonoma.com.

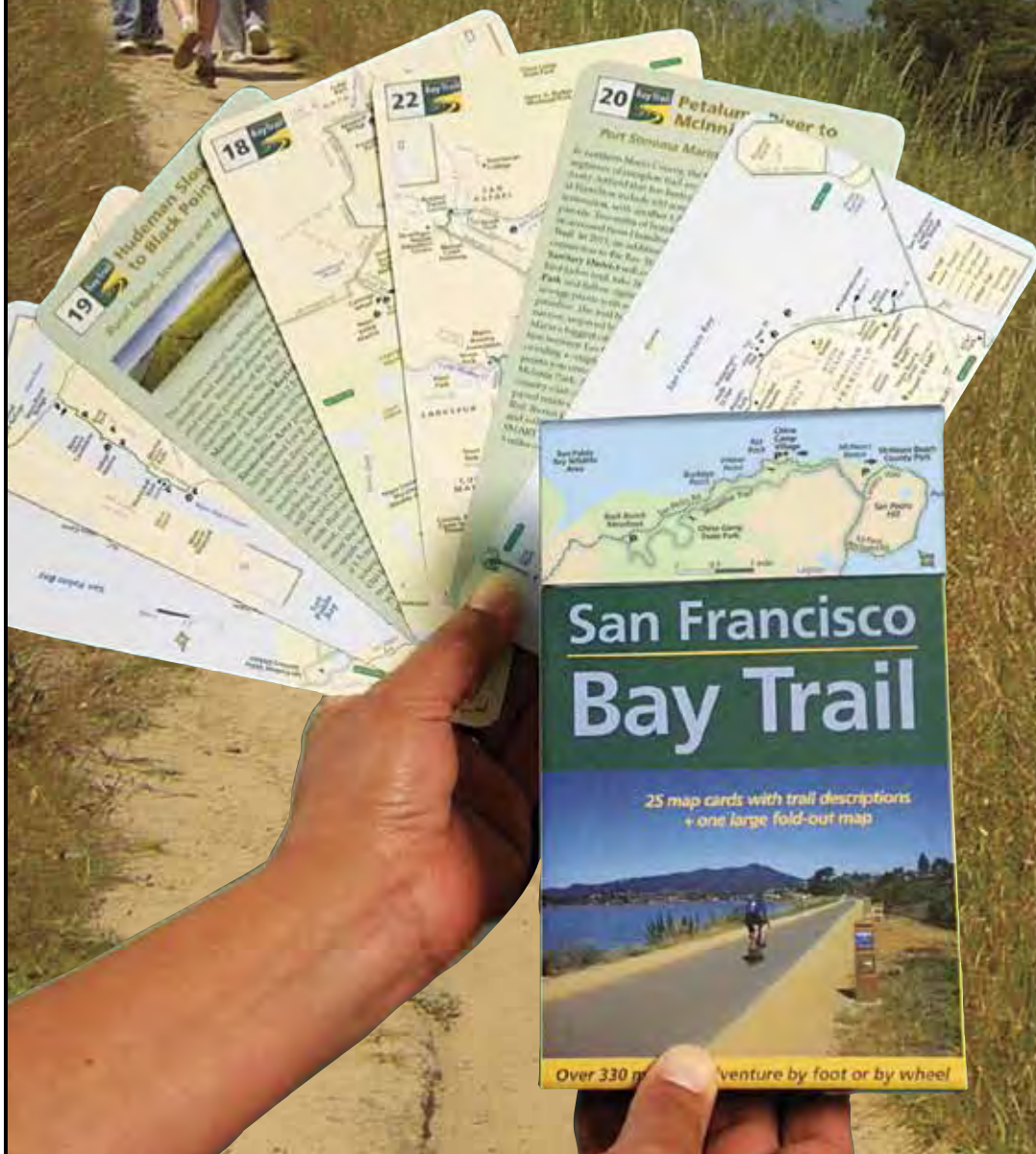


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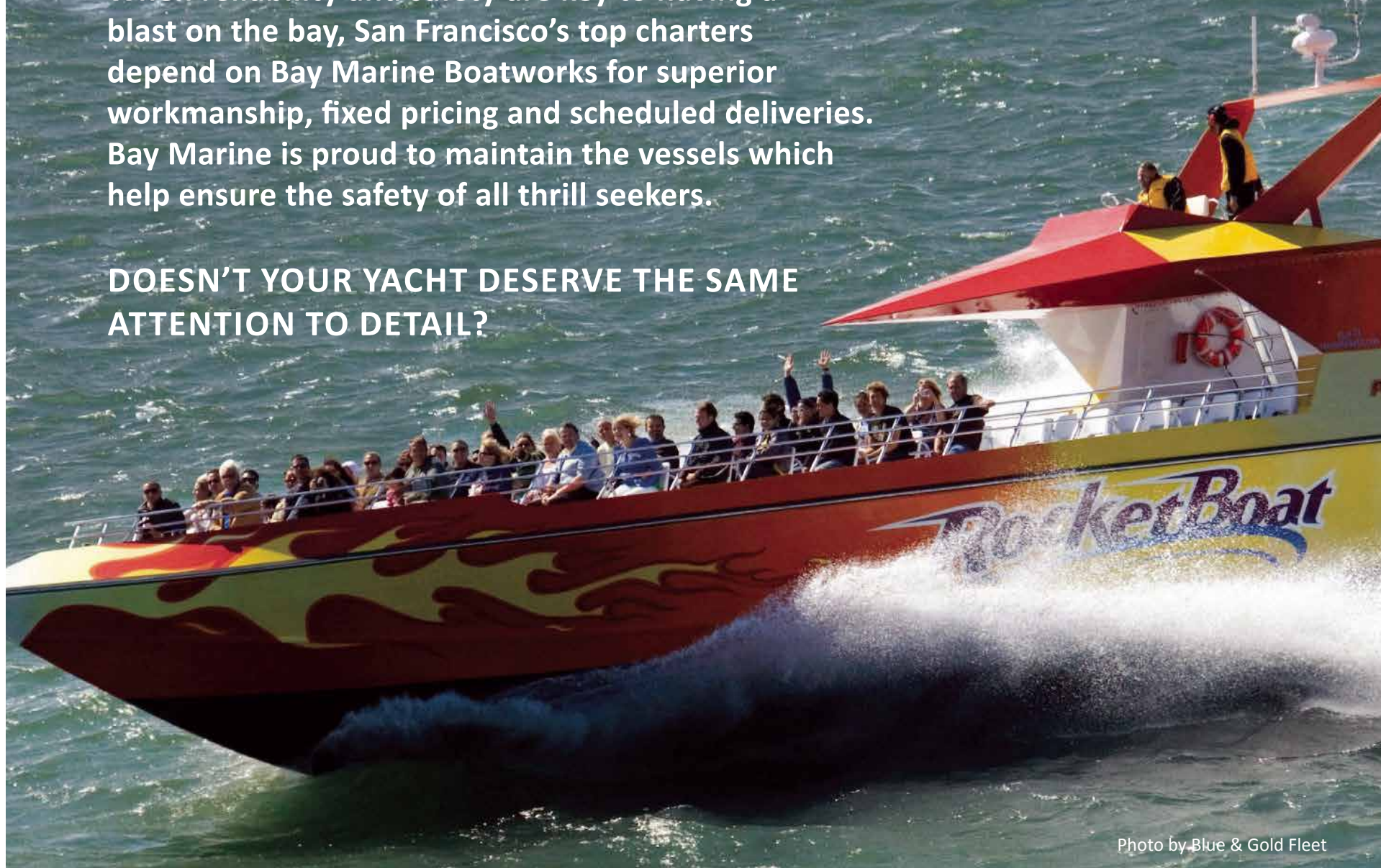


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