

# EMBARCADERO SEAWALL EARTHQUAKE SAFETY BOND 2018

## ANNUAL STATUS REPORT

Second Report Through December 2021



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## Executive Summary

On November 6, 2018, the citizens of San Francisco passed Proposition A with 82.7% voter approval, authorizing a \$425 million General Obligation Bond known as the Embarcadero Seawall Earthquake Safety Bond (Seawall Bond) to support the Seawall Earthquake Safety and Disaster Prevention Program (Seawall Program).

Prior to the approval of the Seawall Bond, in June 2018, the United States Army Corps of Engineers (USACE) awarded San Francisco a “new start” study appropriation to commence a General Investigation feasibility study, which would consider and recommend potential project alternatives to reduce coastal flood risk along the San Francisco waterfront (the Flood Resiliency Study). A waiver was approved in November 2021, increasing the study time from 36 to 86 months and increased the study cost from \$6 million to \$16 million.

In February 2019, Executive Director Elaine Forbes formed the Port’s Waterfront Resilience Program. The Waterfront Resilience Program includes the Seawall Program, the Flood Resiliency Study and related resilience planning and implementation efforts for the Port’s entire 7 ½ miles of waterfront property.

On March 12, 2019, the Port Commission approved Resolution 19-08, authorizing the first issuance of the Seawall Bond for up to \$50.0 million, including issuance costs, to support the planning and

preliminary design phases of the Seawall Program. After a delay due to a legal challenge that ultimately was appealed to the California Supreme Court – which denied review of an appellate decision in favor of the City – Bonds were issued pursuant to Resolution No. 323-19 and Resolution No. 324-19, both adopted by the Board of Supervisors on July 16, 2019, and approved by the Mayor on July 26, 2019. On June 2, 2020, the City issued \$49.7 million in taxable general obligation bonds at an interest rate of 0.7% and a final maturity date of June 15, 2021.

This first bond sale supports management, planning and overall program development, and partially funds preliminary design of early projects of the Embarcadero Seawall Program. Specifics of this work include site surveys, comprehensive geotechnical investigation and laboratory testing of soils, earthquake risk assessment of the seawall and associated infrastructure, seismic and flood risk assessment including sea level rise, alternatives development and evaluation (conceptual level design, engineering, cost estimating, constructability), advancing environmental analysis (NEPA/CEQA) and permitting, advancing preliminary design of Seawall Bond projects, and extensive stakeholder and community engagement.

This work also includes bond-funded matching funds for the Flood Resiliency Study with USACE. The \$16 million Flood Resiliency Study is cost shared 50/50 with USACE and will analyze flood risks to the Port's entire jurisdiction from Fisherman's Wharf to Heron's Head Park.

On December 14, 2021, the Port presented 23 Embarcadero Early Projects to the Port Commission, seeking the Commission's concurrence to advance planning for the entire waterfront, with a more detailed focus on the zone between Piers 19-41, and complete needs assessment and alternatives analysis of a suite of Embarcadero Early Projects, at an estimated cost of \$26 million over the next 2 years.

Please refer to the following report for further details. Visit the Waterfront Resilience Program website at <https://sfport.com/wrp> for a link to this Annual Report and future reports.

## Program Summary

The Port established the Waterfront Resilience Program (Resilience Program) to ensure that the entire 7½ mile waterfront, and its important regional and citywide assets, are resilient in the face of hazards such as earthquakes, flooding, and sea level rise due to climate change. The Resilience Program includes several initiatives to increase the resilience of the waterfront:

- **Embarcadero Seawall Program:** A City sponsored effort, that the Port is entrusted to implement, to reduce seismic and flood risk along the waterfront from Fisherman's Wharf to Mission Creek. In November 2018, voters of the City and County of San Francisco voted overwhelmingly to support Proposition A, the San Francisco bond initiative to provide \$425 million to upgrade and repair a portion of the 100-year-old Embarcadero Seawall. The overall repair is estimated to cost up to \$5 billion; this figure will be revised when the Program team produces cost estimates. The Port presented 23 Proposition A funded [Embarcadero Early Project](#) recommendations to the Port Commission in December 2021. The total rough order of magnitude estimate to deliver all projects ranges from \$650 million to \$3 billion.

- **USACE / Port of San Francisco Waterfront Flood Resiliency Study:** USACE awarded the Port of San Francisco a “New Start” in 2018 which authorized a General Investigation of flood risk along the San Francisco Bay waterfront. As a result, the Port and USACE are studying flood risk along San Francisco’s bayside shoreline, from Aquatic Park to Heron’s Head Park. The approximately seven-year USACE Flood Resiliency Study will identify vulnerabilities and recommend strategies to reduce current and future flood risks for consideration for federal investment and implementation at a funding ratio of 2/3 federal, 1/3 local.
- **Other resilience work:** In addition to these efforts, the Resilience Program is supporting other areas of work to make the 7 ½ mile waterfront more resilient:
  - A Floodproofing the Piers study assessed the options available to adapt the piers to be resilient to elevated sea levels.
  - The Southern Waterfront Seismic Vulnerability Study will use existing geotechnical information in the Port’s Southern Waterfront to assess earthquake risk to Port facilities in the area.
  - The Islais Creek Adaptation Study, a joint effort by the Port, the San Francisco Municipal Transportation Agency and City Planning, examined sea level rise and flood risk in the Islais Creek/Bayview neighborhood, with a focus on transportation assets.
  - The Resilience Program also represents the Port with participation in citywide and regional adaptation and resilience efforts led by others.

The Port has also appropriated non-bond funding to support work in areas beyond the scope of the Embarcadero Seawall and the Army Corps of Engineers Flood Resiliency Study.

## Embarcadero Seawall Program Status

The Embarcadero Seawall Program is currently in its Preliminary Design phase. Over the past year, the Program has developed adaptation strategies for geographic areas along the entire Northern Waterfront (South Beach, Ferry Building Area, Northeast Waterfront, and Fisherman’s Wharf), including options for future coastal flood defenses that can be advanced through the USACE Flood Study. Through this geographic-focused work, the Program team has developed a list of 23 Embarcadero Early Projects that will:

- reduce life safety risks identified during the Embarcadero Seawall Multi-Hazard Risk Assessment (MHRA),
- reduce disaster response risks identified through the Port-San Francisco Department of Emergency Management sponsored disaster response task conducted in August 2021, and
- Address existing high-consequence flood risks identified through the Flood Study.

Having completed risk assessment, initial planning, and identification of Embarcadero Early Projects, the Port is at a pivotal stage in Program development. In this phase, the Program team will undertake advanced planning with City Departments and USACE will develop adaptation strategies that create a

locally preferred plan for future coastal flood defenses that protect multiple, interdependent critical infrastructure systems from earthquakes and flooding.



(Above: Blue = Proposition A Predesign; Green = Advance through Geographic Strategy; Purple = Coordination with Long-Term Tenants, Capital Programs and City Agencies)

The initial cost estimates for delivering all 23 Embarcadero Early Projects range from \$650 million to \$3 billion and represents more projects than can be delivered solely with Proposition A funding. Project budgets will be developed as projects advance through predesign, providing information for determining which Embarcadero Early Projects get funded first. By using Proposition A to fund a portion of this advanced planning and for project definition and predesign of projects, the Port will position the Program to leverage other public and private sources of funding.

### Community and Stakeholder Engagement

Since 2017, the Port has connected with tens of thousands of people through robust community and stakeholder engagement efforts to advance work on the Embarcadero Seawall Program and Waterfront Resilience Program. This engagement has included outreach to community members, businesses and merchants, advisory committees, non-profit groups and others. In 2021, the engagement was designed to continue to inform and raise awareness about the Waterfront Resilience Program and progress under the Embarcadero Seawall Program.

Throughout 2021, in the face of the pandemic, the Port continued engagement via digital platforms. This outreach and engagement focused on building relationships, providing opportunities for the public to interact directly with Port staff to ask questions about the multi-hazard earthquake and flood risks facing the waterfront and share feedback about community priorities and concerns. Digital engagement included an online presentation series scheduled with citywide community-based organizations, including in-language presentations and presentations with youth-focused organizations. The Port reached more than 700 attendees through 30 presentations between May and September 2021.

Materials shared included information about Port’s progress on the Embarcadero Seawall Program, describing the selection of 23 Embarcadero Early Projects with near-term efforts focused on life safety

and citywide disaster response capabilities and addressing the areas of highest earthquake and sea level rise risks along the Embarcadero waterfront.

Additional stakeholder engagement approach included:

- Embarcadero Seawall community meeting series;
- Online engagement through the Waterfront Resilience Program website (<https://sfport.com/wrp>) and monthly eNewsletter (3,000+ subscribers)
- Presentations to and discussions with advisory committees, boards, City partner agencies; and resilience programs within other U.S. cities; and
- Support for ongoing engagement with the U.S. Army Corps of Engineers on the San Francisco Waterfront Coastal Flood Study.

### Other Embarcadero Seawall Program Efforts

- **Adapt Plan:** To demonstrate leadership in resilience work, the Port of San Francisco is developing a robust adaptation plan to inform and guide the city's seismic and sea level rise response along the Port's 7.5 mile jurisdiction over the next century.
- **Envision:** What are potential scenarios for a Port of San Francisco shoreline that would be resilient to 3 to 7 feet (or more) of sea level rise expected by 2100, and how should these scenarios influence the design of adaptation measures developed today?
- **Bulkhead Wharf Elevation Scenarios:** The wharves in the Embarcadero Historic District which are connected to the Seawall provide flood protection to the Embarcadero today, but they are aging and are exposed to significant seismic risk. Protecting the Embarcadero and upland areas from coastal flooding could be accomplished by elevating the wharves and using the structures as an extension of the seawall. The timeframe over which this would be effective, and the impacts to the buildings and the public realm, would vary with the increase in elevation. Higher structures provide longer term protection but would require more significant alterations to character-defining features of the existing waterfront.
- **Seismic Measures Development:** Given the unique soil conditions and structures at various points along the Embarcadero, what are the engineering solutions that can reduce lateral spreading and protect structures and infrastructure near the Seawall? What do these approaches cost, what are the associated construction impacts, how effective are these solutions at mitigating risks, and how can they be part of sea level rise adaptation?
- **Flood Measures Development:** Through the USACE Flood Resiliency Study, the Port and USACE are developing flood measures for the Port's entire waterfront. For the Embarcadero Seawall area, what are the most effective measures that can also improve seismic performance and what are the costs of these measures?

Current work is described in more detail below.

### Adapt Plan



The Adapt Plan is the Port of San Francisco’s “roadmap to resilience” in the face of urgent earthquake risk, increasing sea level rise, and other climate change impacts. The Plan allows the Port to combine approaches of different planning documents: overarching goals and metrics like a strategic plan, recommended projects like a capital plan and policy, and design guidance to ensure that the waterfront is thoughtfully and intentionally adapted over time – making it all accessible and accountable to the public to ensure robust feedback.

In the near-term, the Adapt Plan includes proposed construction projects and other actions for implementation along the Embarcadero waterfront, including those funded by Proposition A in the Embarcadero segment of the waterfront.

In the mid and longer-term, the Adapt Plan identifies the next actions that should be implemented, including the next phase of construction projects, the development of working groups, partnerships with tenants, private and public partners and other City departments to implement shared actions, the identification of additional funding and financing sources and the advancement of further studies and for the entire Port jurisdiction.

### **Envision**

While the Port has heard important public feedback on values for a waterfront of 2100, the Port is currently evaluating the critical assets, systems and services that must remain along the waterfront in order to develop options for a waterfront that is resilient to 2100 conditions. The Port is working to develop draft concepts that are resilient to this range of potential 2100 water levels, which according to current State of California and City guidance is from 3.4 feet to approximately 7 or more feet of sea level rise.

The Port will create Envision concepts that demonstrate that the actions planned as part of Proposition A Seawall Bond funded projects are adaptable to future conditions including California Ocean Protection Council (OPC) high (1:200) projection. These concepts are intended to help guide near term actions and long-range planning and will be updated over time to reflect changing science, priorities, and strategies.

### **Bulkhead Wharf Elevation Scenarios**

The historic wharves in the Embarcadero Historic District currently provide flood protection to the City today. The condition of the soils, the wharves and the structures all combine to make the bulkhead wharf zone a critical seismic safety hazard along the waterfront. In addition to the seismic risk associated with the bulkhead wharves, these wharves also present an entry point for future flood risk and a challenge when considering how to raise the entire San Francisco waterfront to reduce increasing current and future flood risks.

The Bulkhead Wharf Elevation Study provides concepts for how seismically-strengthened, raised bulkhead wharves can provide increased coastal flood management method for the City to address sea level rise and improved seismic performance. These findings can be used to facilitate engagement with stakeholders and ultimately inform criteria that will guide the evaluation of flood protection measures confined to a narrow geography in an active urban setting.

### **Seismic Measures Development**

The Seismic Measures Development Report supported the identification of Proposition A Seawall Bond projects through development of alternatives. This report included developing a range of measures

applicable to the unique areas of the Embarcadero Seawall based on subsurface conditions, marine structure type, and landside infrastructure type and configurations. The work includes conceptual engineering design, performance, constructability, service life considerations, and cost estimating, and the findings supported the development of complete alternatives, alternatives evaluation, and selection of Proposition A Seawall Bond projects.

### Flood Measures Development

The Port, through its work with USACE, is also developing a comprehensive set of flood measures for potential Embarcadero Seawall and Port wide application through the Flood Resiliency Study.

## Budget, Funding, Expenditures

The Seawall Bond 2018 budget is \$425,000,000 and the total appropriation is \$49,675,000. The following is a summary of the budget and appropriation per component:

Components	Original Budget*	General Obligation Bond**				Encumbrance + Expenditures / Budget	Encumbrance + Expenditures / Appropriation
		Appropriations	Expenditures	Encumbrances	Balance		
Seawall Program Labor	18,800,00	5,395,482	4,114,859		1,280,623	21.9%	76.3%
United States Army Corps of Engineers (Flood Study)	8,900,00	7,010,000	1,565,034		5,444,966	17.6%	22.3%
Planning/Engineering/Preliminary Design (35%)	37,500,000	30,707,914	20,038,041	2,175,406	8,494,466	59.2%	72.3%
Risk Assessment	-	3,279,168	3,237,567	41,601	0	-	100.0%
Final Design (65%)	46,600,000					0.0%	0.0%
Other City Depts/Gov Agencies	1,900,000	384,357	132,703		251,654	7.0%	34.5%
Design Support during Construction	8,400,000					0.0%	0.0%
Pilot Projects	40,000,000					0.0%	0.0%
Seawall Program Projects	262,900,000					0.0%	0.0%
Oversight, Accountability & Cost of Issuance	-	875,000	1,129		873,871	-	0.1%
Unappropriated Bond Sale Funds	-	2,023,080			2,023,080	0.0%	0.0%
<b>TOTAL</b>	<b>425,000,000</b>	<b>49,675,000</b>	<b>29,089,334</b>	<b>2,217,007</b>	<b>18,368,660</b>	<b>7.4%</b>	<b>63.0%</b>

\* Subject to change based on program schedule and needs

\*\* Appropriations, Expenditures, Encumbrances and Balance are based on F\$P amounts through December 2021.

The Accountability reports for the bond sales will be available on the Waterfront Resilience Program website at <https://sfport.com/wrp/library>

## Expenditures and Encumbrances

As of December 2021, the Seawall Bond 2018 expenditures and encumbrances are \$29,089,334 and \$2,217,007, respectively. The expenditures represent 58.6% of the total current appropriations.

## Attachment 1 – Contact Information

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# Attachment 2 – Schedule

