Flood Risk Profile

Pier 70

Subarea 3-5

Subarea Description

Pier 70 (Subarea 3-5) includes Pier 70, the Union Ironworks Historic District, and the old Potrero Power Plant. Each site is in various stages of planned redevelopment to incorporate historic renovation with mixed-use residential housing projects. This subarea also includes a portion of the Dogpatch residential area. Within the Union Iron Works Historic District, Pier 68 includes large ship dry docks, cranes, and industrial buildings. The shipyard has a large drydock that remains one of only five ship repair yards on the West Coast that can repair extra-large (post-panamax) sized vessels. However, numerous improvements are needed to maintain shipyard services at this location. Pier 68 is part of the greater Pier 70 redevelopment project.

The entire shoreline within this subarea is hardened, either through piers or engineered shoreline protection (rock armoring). The primary flooding pathway is overtopping along the shoreline. Flooding initially occurs from overtopping of the shoreline at Pier 68 where the new Crane Cove Park is planned. With higher Bay water levels, overtopping will occur along the entire subarea shoreline, first along Port's Seawall Lot 349, followed by Pier 70, then the shoreline adjacent to the old power plant. Once overtopping along Pier 68 and Seawall Lot 349 occurs, the adjacent inland areas will be impacted but inundation will mostly be contained east of Illinois Street. Flooding within this subarea will comingle with flooding in the adjacent Subareas 3-4 and 4-1.

Basemap Credits (all maps): © Mapbox, © OpenStreetMap

Flood Risk Profile

Pier 70

Subarea 3-5

Assets and Landmarks

Maritime

1. Seawall Lot 345

Disaster Response

2. Assembly Area (Seawall Lot 349)
3. Large Vessel Berth (Pier 68)
4. Illinois Street

Transportation

5. Muni (T-Line)

Utilities

Wastewater

6. Tennessee Street Pump Station
7. Twentieth Street Pump Station

Power

8. Channel Force Main
9. Combined Sewer Discharge Outfalls (2)
10. Potrero Hill Substation

Open Space and Ecology

Open Space

11. Bay Trail / Blue Greenway
12. Esprit Park
13. 22nd St. access (planned)
14. Crane Cove Park (planned)
15. Pier 70 (planned)
16. Shipway Park (planned)

Critical Facilities

17. Old Potrero Police Station

Timing of Exposure: Assets and Landmarks

Assets / Landmarks	Flood Scenario	Equivalent Events	Timing: USACE Low	USACE Inter.	OPC Most Likely	USACE High	OPC 1-in-200
Maritime							
• Seawall Lot 345	66" (11.9 ft. NAVD)	High tide + 66" SLR	>2150	>2150	2143	2106	2086
		100-YR + 25" SLR	>2150	2116	2072	2061	2053
Disaster Response							
• Assembly Area (Seawall Lot 349)	77" (12.8 ft. NAVD)	High tide + 77" SLR	>2150	>2150	>2150	2116	2095
		100-YR + 36" SLR	>2150	2145	2091	2075	2063
• Illinois Street	84" (13.4 ft. NAVD)	High tide + 84" SLR	>2150	>2150	>2150	2121	2100
		100-YR + 43" SLR	>2150	>2150	2104	2083	2069
• Large Vessel Berth (Pier 68)	--	--	--	--	--	--	--
Utilities							
• Combined Sewer Discharge Outfalls (1 of 2)	24" (8.4 ft. NAVD)	High tide + 24" SLR	>2150	2112	2070	2059	2051
		5-YR + 0" SLR	Today	Today	Today	Today	Today
• Combined Sewer Discharge Outfalls (1 of 2)	36" (9.4 ft. NAVD)	High tide + 36" SLR	>2150	2144	2091	2074	2063
		50-YR + 0" SLR	Today	Today	Today	Today	Today
• Twentieth Street Pump Station	66" (11.9 ft. NAVD)	High tide + 66" SLR	>2150	>2150	2143	2106	2086
		100-YR + 25" SLR	>2150	2115	2072	2061	2053
• Tennessee Street Pump Station • Potrero Hill Substation	> 108"	--	--	--	--	--	--

Timing of Exposure: Assets and Landmarks

Assets / Landmarks	Flood Scenario	Equivalent Events	Timing				
			USACE Low	USACE Inter.	OPC Most Likely	USACE High	OPC 1-in-200
• Channel Force Main	--	--	--	--	--	--	--
Transportation							
• Muni T-Line	> 108”	--	--	--	--	--	--
Open Space							
• Crane Cove Park (planned)	36” (9.4 ft. NAVD)	High tide + 36” SLR	>2150	2144	2091	2074	2063
		50-YR + 0” SLR	Today	Today	Today	Today	Today
• 22nd St. access (planned)	48” (10.2 ft. NAVD)	High tide + 48” SLR	>2150	>2150	2113	2088	2073
		100-YR + 7” SLR	2091	2049	2033	2026	2024
• Shipway Park (planned)	66” (11.9 ft. NAVD)	High tide + 66” SLR	>2150	>2150	2143	2106	2086
		100-YR + 25” SLR	>2150	2115	2072	2061	2053
• Pier 70 (planned)	77” (12.8 ft. NAVD)	High tide + 77” SLR	>2150	>2150	>2150	2116	2095
		100-YR + 36” SLR	>2150	2145	2091	2075	2063
• Bay Trail / Blue Greenway	84” (13.4 ft. NAVD)	High tide + 84” SLR	>2150	>2150	>2150	2121	2100
		100-YR + 43” SLR	>2150	>2150	2104	2083	2069
• Esprit Park	> 108”	--	--	--	--	--	--
Critical Facilities							
• Old Potrero Police Station	> 108”	--	--	--	--	--	--

Pier 70

Subarea 3-5

Timing of Exposure: Subarea

Adaptation Focus	Shoreline Type	Flood Scenario	Timing				
			Return	USACE Low	USACE Inter.	OPC Most Likely	USACE High	OPC 1-in-200
Immediate	Engineered	36" (9.4 ft. NAVD)	High tide + 36" SLR	>2150	2144	2091	2074	2063
			50-YR + 0" SLR	Today	Today	Today	Today	Today
Tipping Point	Engineered	66" (11.9 ft. NAVD)	High tide + 66" SLR	>2150	>2150	2143	2106	2086
			100-YR + 25" SLR	>2150	2115	2072	2061	2053
Long Term >2050	Engineered	77" (12.8 ft. NAVD)	High tide + 77" SLR	>2150	>2150	>2150	2116	2095
			100-YR + 36" SLR	>2150	2145	2091	2075	2063

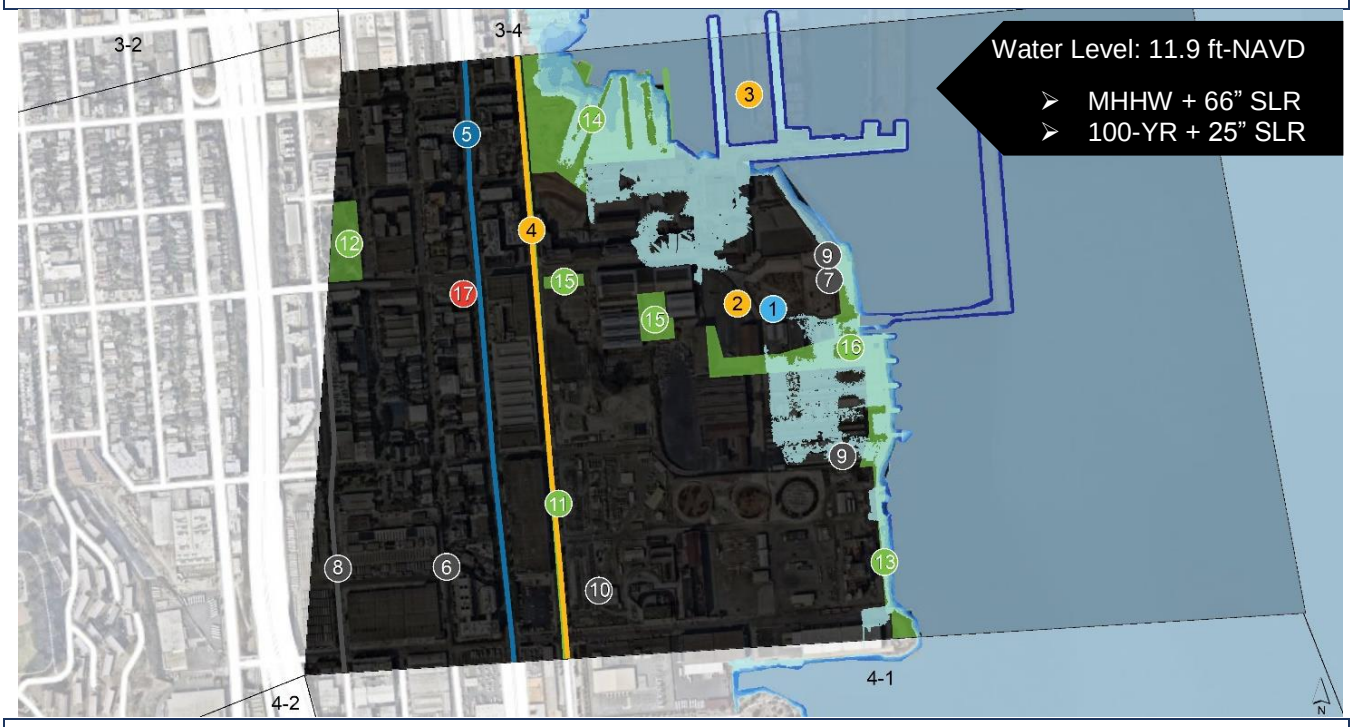
Flood Progression

Immediate Flood Risk

Pier 70

Subarea 3-5

Substantial Flood Risk (Tipping Point)



Long-Term Flood Risk (>2050)

Pier 70

Subarea 3-5

The following describes the progression of potential extreme tide and sea level rise flooding, along with a brief discussion of the assets that will be impacted within Subarea 3-5.

Flood Scenario	Assets	Consequences				
High tide + 12" SLR	**1-YR + 0" SLR**	**USACE Low**	**USACE Int.**	**OPC Most Likely**	**USACE High**	**OPC 1:200**
		Today	Today	Today	Today	Today
Water Level Elevation: 7.4 ft. NAVD88	--	--				
		--				
High tide + 24" SLR	**5-YR + 0" SLR**	**USACE Low**	**USACE Int.**	**OPC Most Likely**	**USACE High**	**OPC 1:200**
		Today	Today	Today	Today	Today
Water Level Elevation: 8.4 ft. NAVD88		**Utilities** The higher Bay water levels may reduce the gravity-driven flow of excess combined wastewater and stormwater from the transport / storage boxes to the Bay. This scenario results in overtopping and backflow at one combined sewer discharge outfall. This impact is only of concern during intense and prolonged rainfall events that exceed the capacity of the large underground transport / storage boxes that ring the city. This could result in an increase in localized flooding in low-lying areas.				
High tide + 36" SLR	**50-YR + 0" SLR**	**USACE Low**	**USACE Int.**	**OPC Most Likely**	**USACE High**	**OPC 1:200**
		Today	Today	Today	Today	Today
Water Level Elevation: 9.4 ft. NAVD88		**Utilities** A second combined sewer discharge outfall will be overtopped and potentially experience backflow from the higher Bay water levels.				
		Open Space and Ecology Crane Cove Park will be inundated near the existing Pier 68 shoreline. Crane Cove Park is a planned 9-acre park and the Port has already started site preparation activities. The Crane Cove Park design includes accommodations for sea level rise and coastal flooding.				

Pier 70

Subarea 3-5

Flood Scenario	Assets	Consequences				
High tide + 48" SLR	**100-YR + 7" SLR**	**USACE Low**	**USACE Int.**	**OPC Most Likely**	**USACE High**	**OPC 1:200**
		2091	2049	2033	2026	2024
Water Level Elevation: 10.2 ft. NAVD88		**Open Space and Ecology** The 22nd Street access (planned new open space improvements) will be impacted.				
High tide + 52" SLR	**100-YR + 11" SLR**	**USACE Low**	**USACE Int.**	**OPC Most Likely**	**USACE High**	**OPC 1:200**
		2141	2067	2045	2036	2032
Water Level Elevation: 10.7 ft. NAVD88	--	**--** --				
High tide + 66" SLR	**100-YR + 25" SLR**	**USACE Low**	**USACE Int.**	**OPC Most Likely**	**USACE High**	**OPC 1:200**
		>2150	2115	2072	2061	2053
Water Level Elevation: 11.9 ft. NAVD88		**Maritime** The majority of Pier 68 will be inundated. Pier 68 is within the Union Iron Works National Register Historic District. The pier has historically provided maritime and industrial services and is still used today for ship repair. Both Pier 68 and Seawall Lot 349 are part of the greater Pier 70 redevelopment project.				
		Utilities The Twentieth Street pump station could be impacted. This is a below grade pump station located in a mixed residential and commercial area on 20th Street, approximately 100 feet from the San Francisco Bay shoreline. This pump station serves the eastern end of Twentieth Street and the old Todd Shipyard in the Mariposa drainage basin with a pumping capacity of three mgd. Electrical equipment and controls are located at grade and below grade, and the pump motor is located below grade. The main power is located at grade west of the station. Pathways for flooding at this asset include the access hatch and the air exhaust at ground level that can lead to water reaching below grade rooms and equipment. This pump station will be replaced as part of the Pier 70 development project.				

Pier 70

Subarea 3-5

Flood Scenario	Assets	Consequences
		Open Space and Ecology Shipway Park could be inundated. This is a new planned waterfront park near Pier 70. The park's design will include accommodations for sea level rise and coastal flooding.

High tide + 77" SLR	100-YR + 36" SLR	USACE Low	USACE Int.	OPC Most Likely	USACE High	OPC 1:200
		>2150	2145	2091	2075	2063

		Disaster Response The Assembly Area at Seawall Lot 349 will be impacted.

High tide + 84" SLR	100-YR + 43" SLR	USACE Low	USACE Int.	OPC Most Likely	USACE High	OPC 1:200
		>2150	>2150	2104	2083	2069

Water Level Elevation: 13.4 ft. NAVD88		**Disaster Response** A portion of Illinois Street will be inundated. Closures along Illinois Street would increase traffic and congestion for the transit network.
		Open Space and Ecology A portion of the Bay Trail / Blue Greenway will be inundated.

High tide + 96" SLR	100-YR + 55" SLR	USACE Low	USACE Int.	OPC Most Likely	USACE High	OPC 1:200
		>2150	>2150	2125	2096	2078

Water Level Elevation: 14.4 ft. NAVD88	--	**--** --

High tide + 108" SLR	100-YR + 67" SLR	USACE Low	USACE Int.	OPC Most Likely	USACE High	OPC 1:200
		>2150	>2150	2145	2107	2087

Water Level Elevation: 15.4 ft. NAVD88	--	**--** --

Pier 70

Subarea 3-5

Adaptation Focus: Immediate

Shoreline Characteristics	Shoreline Overtopping					Timing of Impact (100-YR)				
Classification	Avg. Elev.	Avg. Depth (ft)	Max Depth (ft)	Length (ft)	%	USACE Low	USACE Inter.	OPC Most Likely	USACE High	OPC 1-in-200
Engineered	7.9 ft. NAVD	1.8	3.0	1,100	7.4%	Today	Today	Today	Today	Today

Flood Pathways

- Localized flooding first occurs from overtopping of short stretch of the engineered Bay shoreline at Pier 68 (location of new Crane Cove Park), resulting in localized inundation of the industrial land use near the shoreline.

Shoreline Focus

- Isolated adaptation measures at the overtopping locations within this subarea would address flooding at the MHHW + 36" scenario.

Adaptation Considerations

- Higher water levels will eventually overtop the entire shoreline within this subarea. Adaptation measures should consider embedding capacity to adapt to higher water levels over time.

Pier 70

Subarea 3-5

Adaptation Focus: Tipping Point

Shoreline Characteristics	Shoreline Overtopping					Timing of Impact (100-YR)				
Classification	Avg. Elev.	Avg. Depth (ft)	Max Depth (ft)	Length (ft)	%	USACE Low	USACE Inter.	OPC Most Likely	USACE High	OPC 1-in-200
Engineered	10.8 ft. NAVD	1.2	3.6	2,000	26.8%	>2150	2115	2072	2061	2053

Flood Pathways

- Overtopping occurs over several locations along the Bay shoreline (Pier 68, Sewall Lot 349, and near the southern shoreline) within this subarea, resulting in inundation of the adjacent shoreline areas.
- Flooding comingles with Subarea 3-4.

Shoreline Focus

- Subarea wide shoreline adaptation measures are required.

Adaptation Considerations

- Adaptation measures should consider embedding capacity to adapt to higher water levels over time.
- Higher water levels will overtop the engineered shoreline, resulting in inundation of the areas immediately adjacent to the shoreline (Potrero Hill Substation).

Pier 70

Subarea 3-5

Adaptation Focus: Long-Term >2050

Shoreline Characteristics	Shoreline Overtopping					Timing of Impact (100-YR)				
Classification	Avg. Elev.	Avg. Depth (ft)	Max Depth (ft)	Length (ft)	%	USACE Low	USACE Inter.	OPC Most Likely	USACE High	OPC 1-in-200
Engineered	11.0 ft. NAVD	1.2	5.5	8,882	59.9%	>2150	2145	2091	2075	2063

Flood Pathways

- Overtopping occurs over several locations along the Bay shoreline (Pier 68, Sewall Lot 349, and near the southern shoreline) within this subarea, resulting in inundation of the adjacent shoreline areas.
- Flooding from overtopping at the different shoreline locations within this subarea comingle.
- Higher Bay water levels (MHHW + 84") will eventually inundate Pier 70 (under existing conditions).
- Flooding also comingles with the adjacent Subareas 3-4 and 4-1.

Shoreline Focus

- Subarea wide shoreline adaptation measures are required.

Adaptation Considerations

- Due to comingling of flooding with the adjacent Subareas 3-2, 3-3, and 3-4, adaptation measures need to be coordinated across these subareas and implemented in tandem.