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INITIAL SOUTHERN WATERFRONT EARTHQUAKE ASSESSMENT

Informational Presentation
September 13, 2022

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NEED FOR INITIAL SOUTHERN WATERFRONT EARTHQUAKE ASSESSMENT

2011 Tohoku Earthquake

2016 Kaikoura Earthquake

2010 Chile Earthquake

1993 Guam Earthquake

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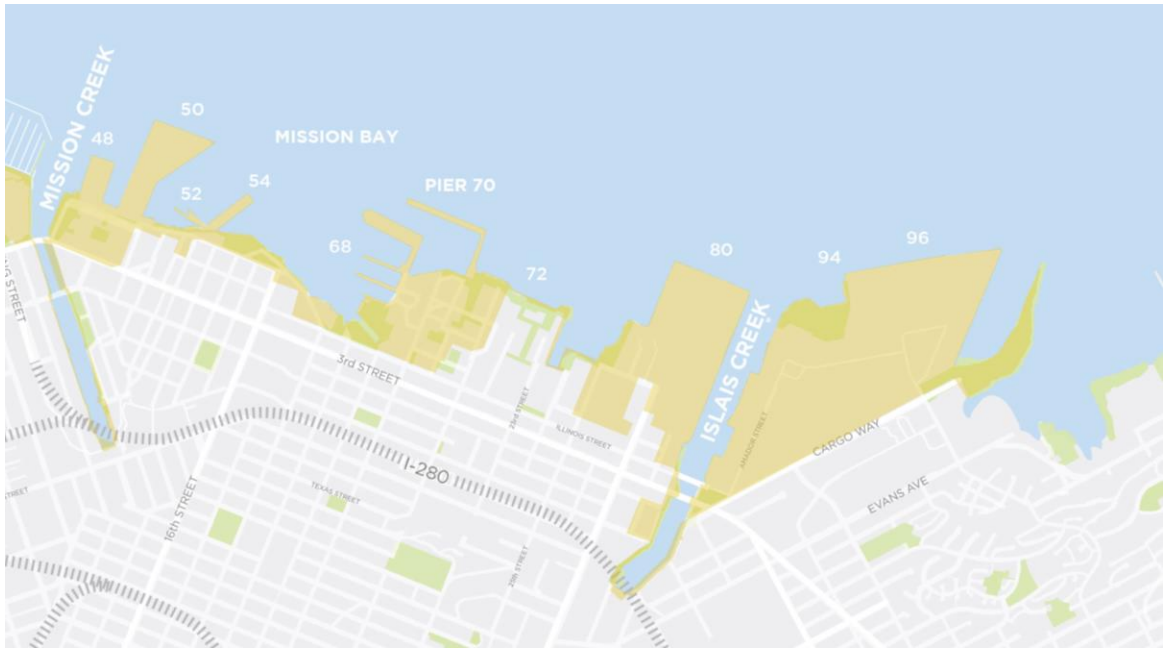
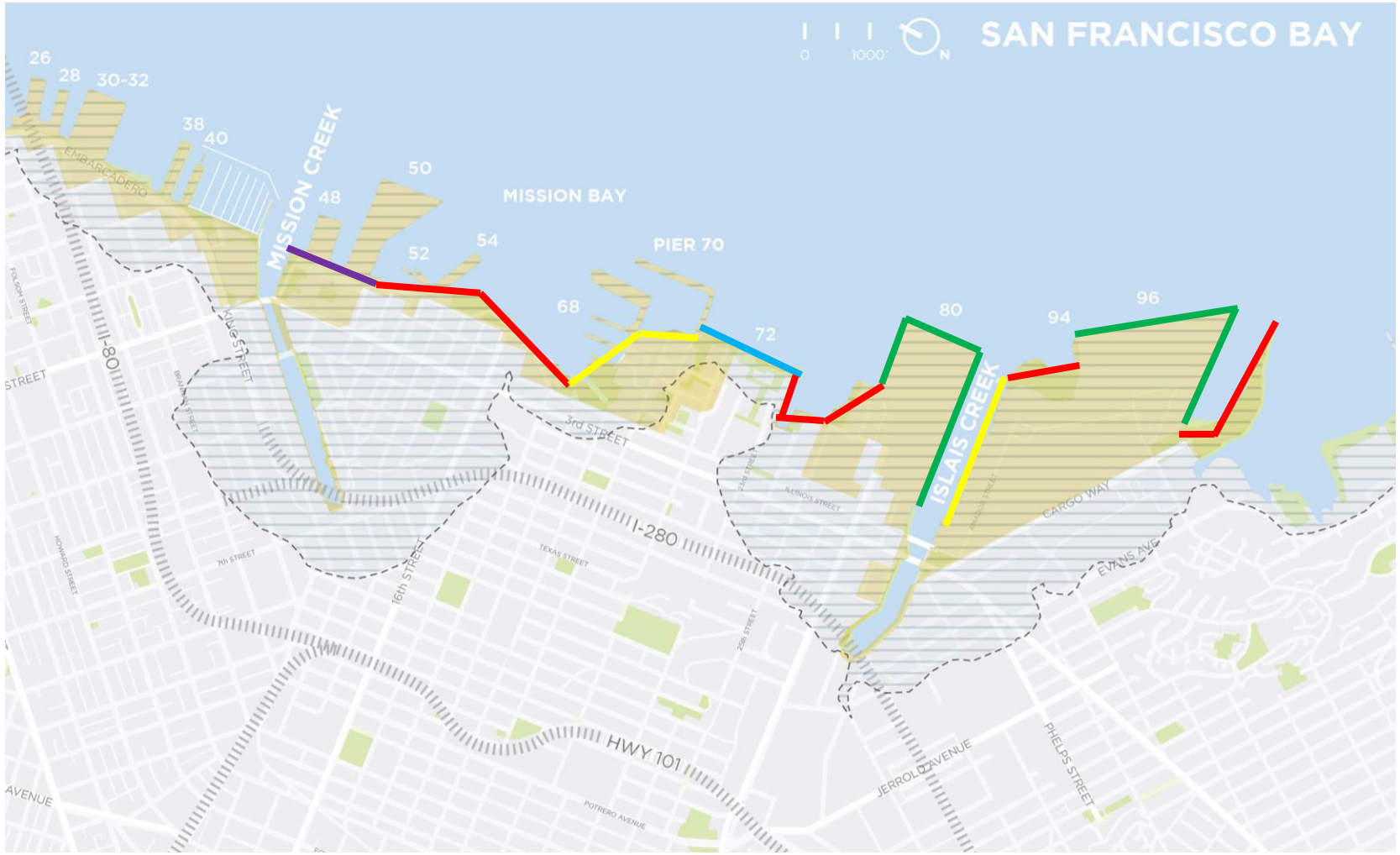


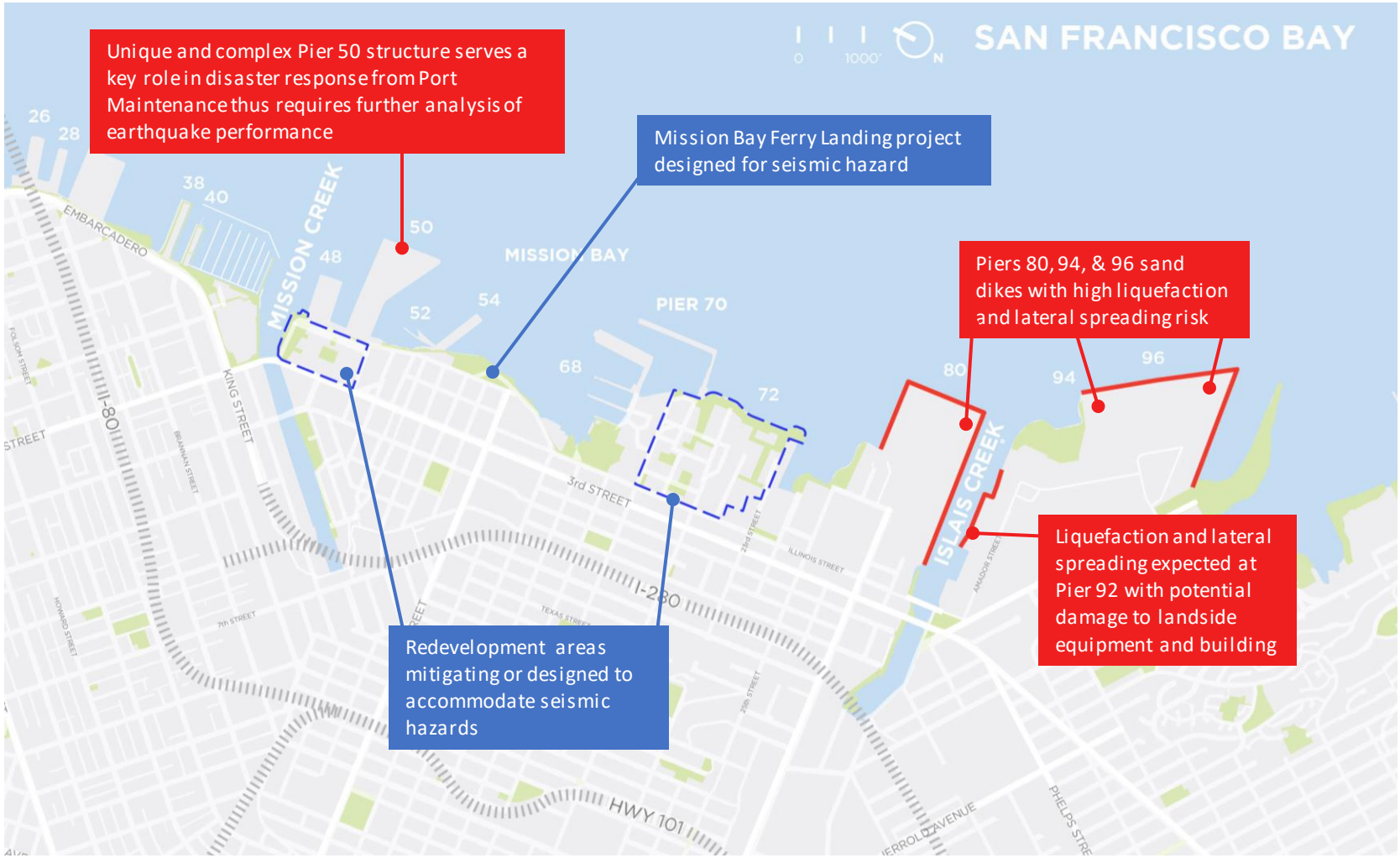
ASSESSMENT PURPOSE

- Initial assessment of seismic hazards and potential vulnerabilities from Pier 48 to Heron's Head Park to leverage funding and opportunities to mitigate issues
- Similar to 2016 Seawall Vulnerability Study in level of detail and analysis
- Does not assess consequences or risks like the Embarcadero Multi-Hazard Risk Assessment (MHRA)
- Southern Waterfront character does not require an MHRA, so Port staff will advance directly to facility specific analysis, designs and construction
- Identification of potential Projects in the Southern Waterfront

GENERALIZED SOUTHERN WATERFRONT SHORELINE TYPES



ASSESSMENT FINDINGS



NEXT STEPS BASED ON ASSESSMENT FINDINGS

Identify Projects for Implementation

Build upon initial understanding with future planning and analysis

Identify and pursue funding

PIER 50 PORT MAINTENANCE & MARINE TERMINAL EARTHQUAKE IMPROVEMENT PROJECT

- Unique seismic behavior for finger pier due to solid land at the eastern end
- Potential reduction to lateral spreading hazard at shoreline
- Important in City's emergency response
- Next steps for Pier 50 include:
  - Detailed condition assessment
  - Advanced earthquake analysis
  - Developing conceptual retrofit strategy
- Approved FY22/23 Port Capital Budget for ~$3M
- Intend to seek additional state and federal funding to complete pre-design and CEQA (FEMA)

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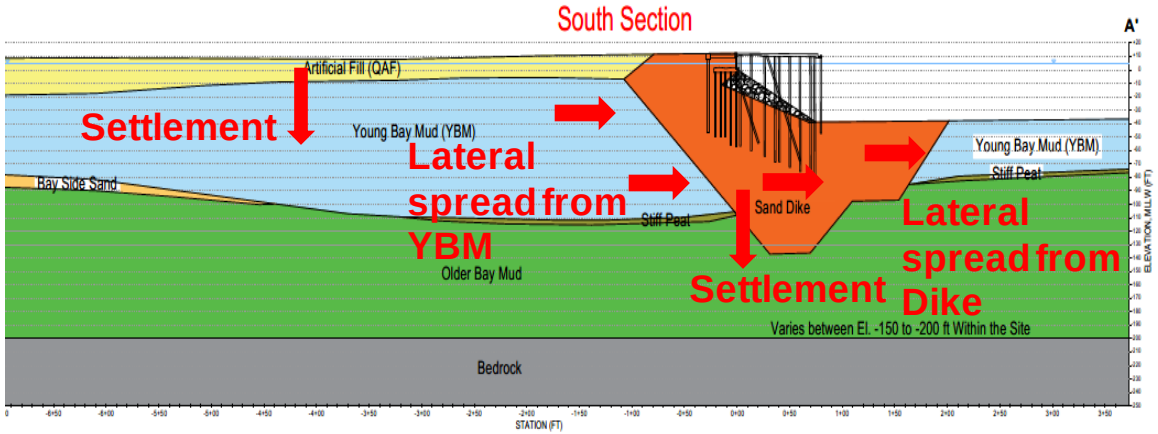

PIER 80 MARINE TERMINAL CAPITAL IMPROVEMENT PROJECTS

- Projects to meet maritime business needs, now informed by known hazards and vulnerabilities
- Vulnerable sand dike construction type along wharf edge
- SFPUC outfall pipe in vulnerable zone - continue coordination
- Important to the City's emergency response with deep draft berthing capable of roll-on/roll-off cargo adjacent to large backlands
- Approved FY22/23 funding for Pier 80 Subsidence Rehab ($0.8M) and Pier 80 Mooring Point and Fendering ($9.4M)
- Intend to seek additional state and federal funding for earthquake improvement project (MARAD)

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PIER 94/96 MARINE TERMINAL EARTHQUAKE IMPROVEMENT PROJECT

- Vulnerable sand dike construction type along wharf edge
- Building E located within zone of expected ground movement
- Identified by City's Emergency Response Plan as critical asset
- Share findings with long-term tenants and identify means to further quantify or mitigate earthquake risks
- Submitted $3.6M request via FEMA Hazard Mitigation Program Grant Application, awaiting review of application
- Intend to pursue subsequent FEMA grant to complete detailed design and construction

SUMMARY OF FUNDING & FUTURE NEED

Facility	Project Type	Effort	Value	Source
Pier 50	Earthquake	Assessment & Pre-Design	~$3.0M	Port Capital
Pier 80	Capital Improvement	Design & Construction	$10.2M	Port Capital
Pier 94/96	Earthquake	Assessment & Pre-Design	$3.6M	FEMA Grant

- Pier 80 capital improvement projects do not have specific seismic mitigation purpose but will consider new information as part of design
- Port has not yet been funded through P94/96 FEMA Grant, application is currently under review by FEMA and requires 25% Port Capital match

- Scale of construction funding to fully mitigate seismic risk at these facilities estimated to be greater than $100M, however, provides substantial opportunity to infuse capital into aging facilities nearing the end of their useful life and evolve with the changing maritime needs
- Allocated funding allows the pre-design processes to begin for these key facilities in order to leverage and align future funding opportunities

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SUMMARY

- This is an initial assessment intended to focus and guide future endeavors
- Incorporate findings into Draft Waterfront Resilience Program Adaptation Strategies and USACE San Francisco Waterfront Coastal Flood Study
- Work closely with long-term tenants and City agencies to discuss potential vulnerabilities and next steps to evaluate or fund mitigation
- Use Port capital to advance the projects
- Continue engaging the community and advisory groups about findings and as next steps progress
- Report back to Port Commission as grants are awarded

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