



Sea Level Rise Response Planning



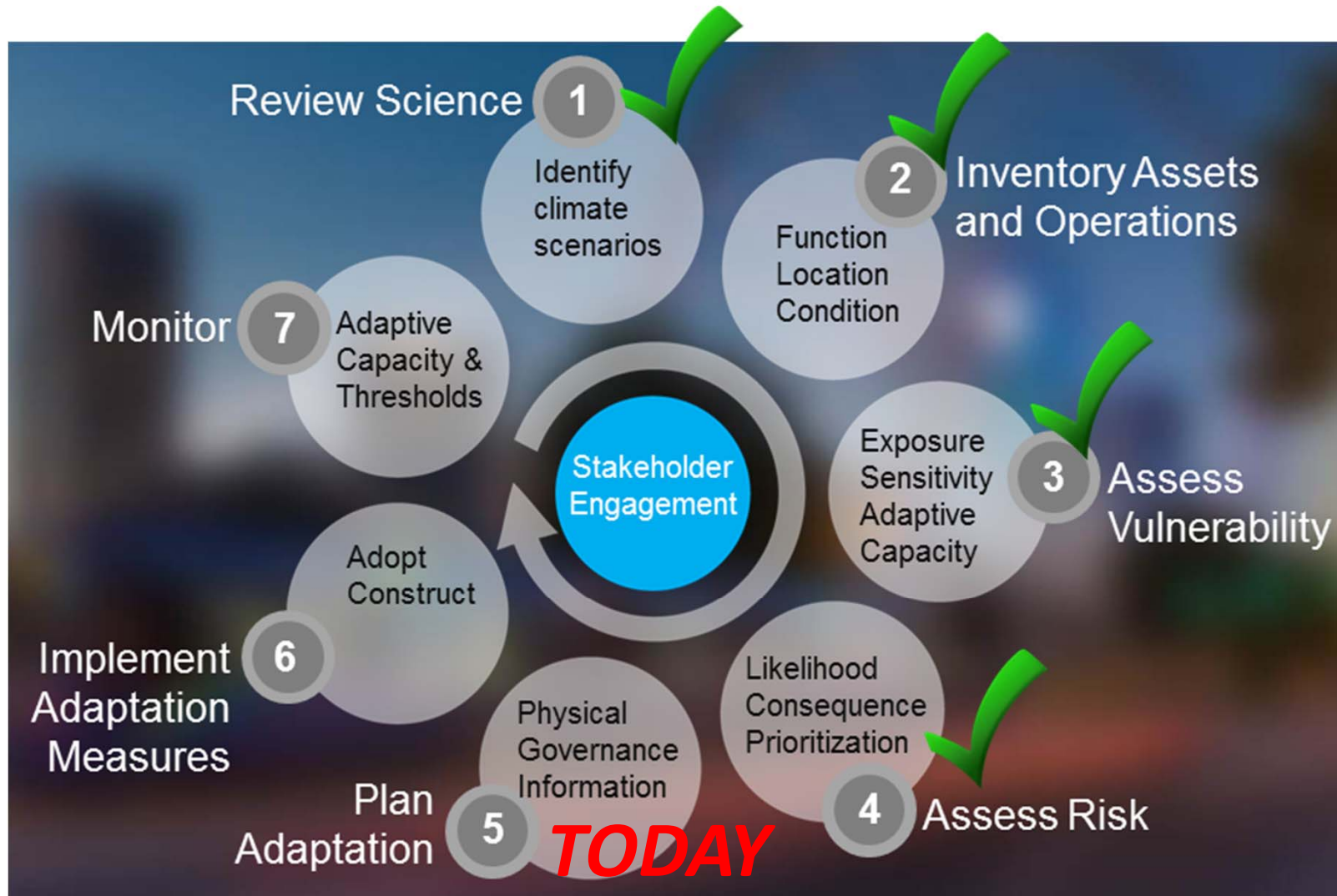
UAC Update
August 23, 2018

Sea Level Rise Response Planning



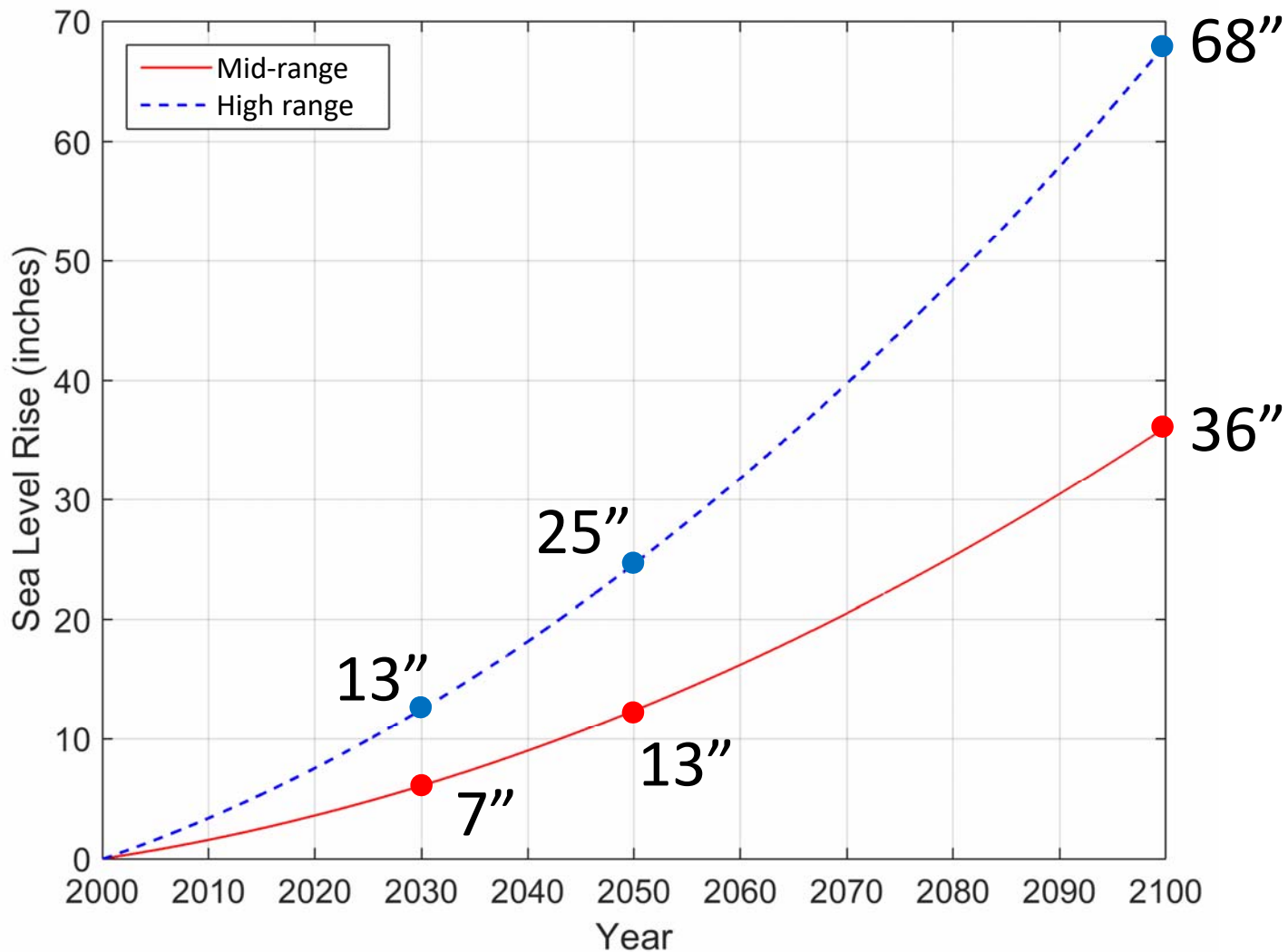
Sea Level Rise Response Planning

RECAP: Process



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Sea Rise Science



Sea Level Rise Response Planning

Timing of Impacts – Budd Inlet Flooding

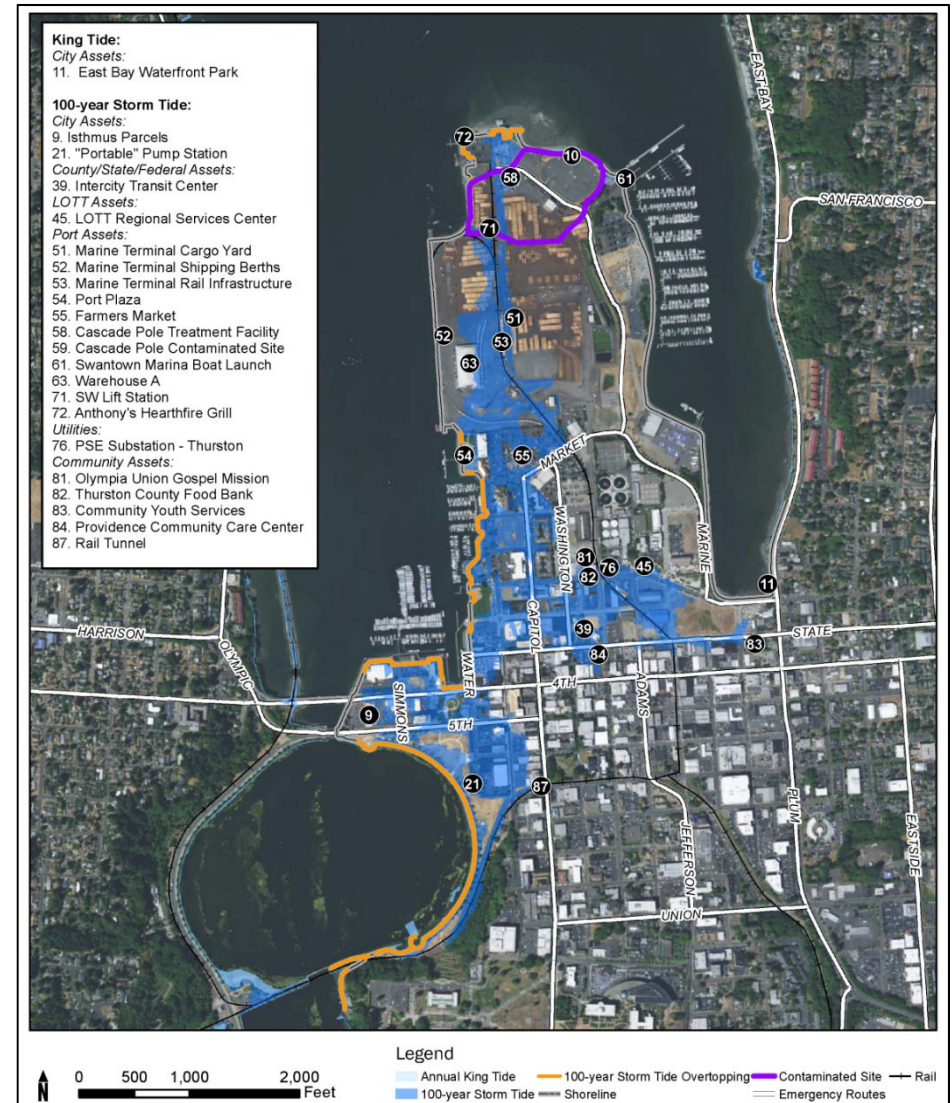
Elevation (ft NAVD88)	Years Until Flooding		
	100-year Tide (Rarely)	5-year Tide (Infrequent)	King Tide (Annual)
13.0	0	Today	0 to 10
14.0	0	10 to 30	20 to 45
15.0	10 to 30	30 to 55	35 to 70
16.0	25 to 55	45 to 80	50 to 90
17.0	45 to 75	60 to 100	65 to >100
18.0	55 to 90	70 to >100	75 to >100
19.0	70 to >100	85 to >100	90 to >100
20.0	80 to >100	95 to >100	>100

Sea Level Rise Response Planning

Vulnerability Assessment

6" SLR Flood Impacts

- Flooding increases appreciably
 - Capitol Lake
 - Isthmus
 - Percival Landing
 - Marine Terminal
 - Stormwater back-up



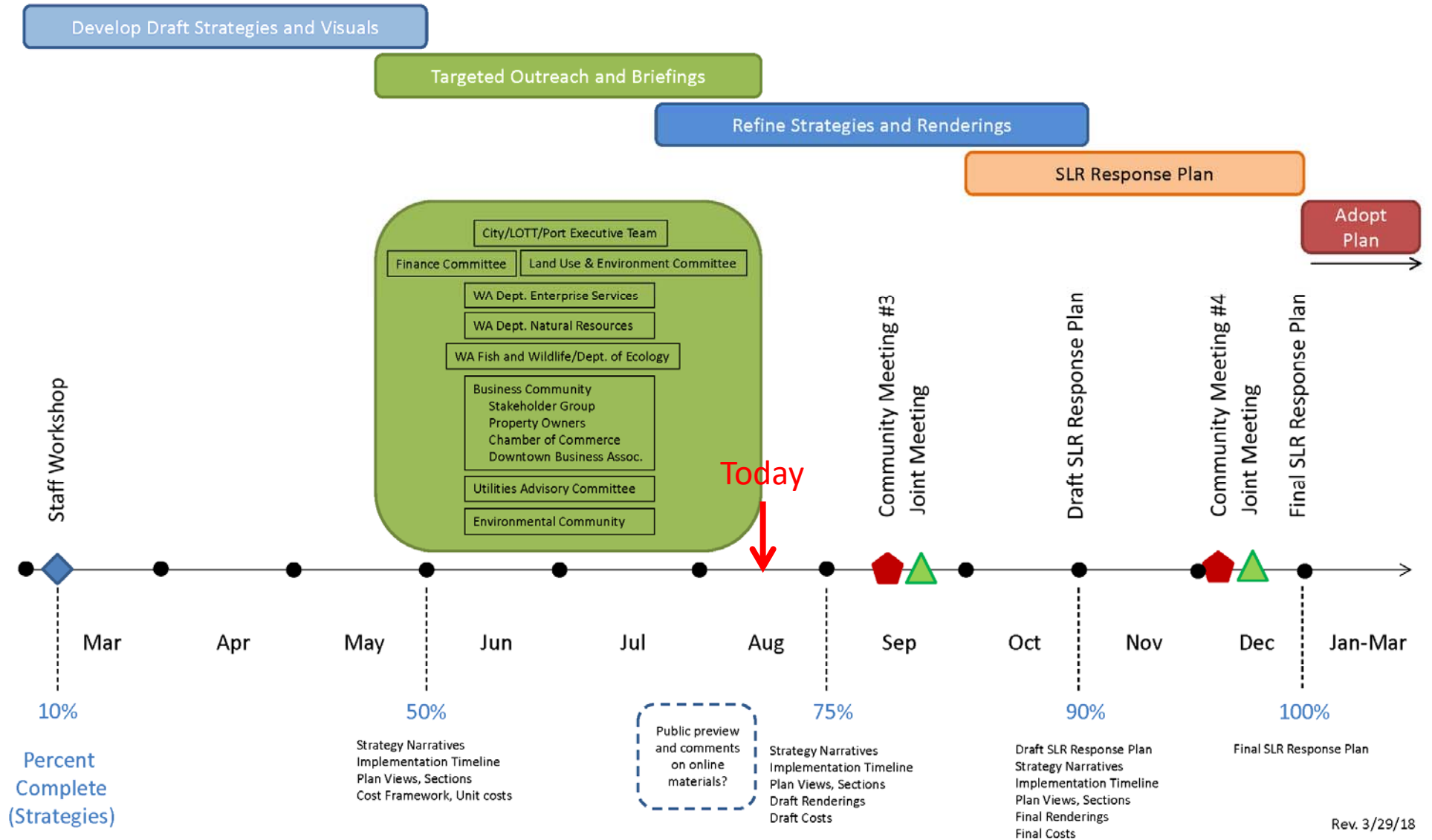
1% Chance Flood with 2' of Sea Level Rise



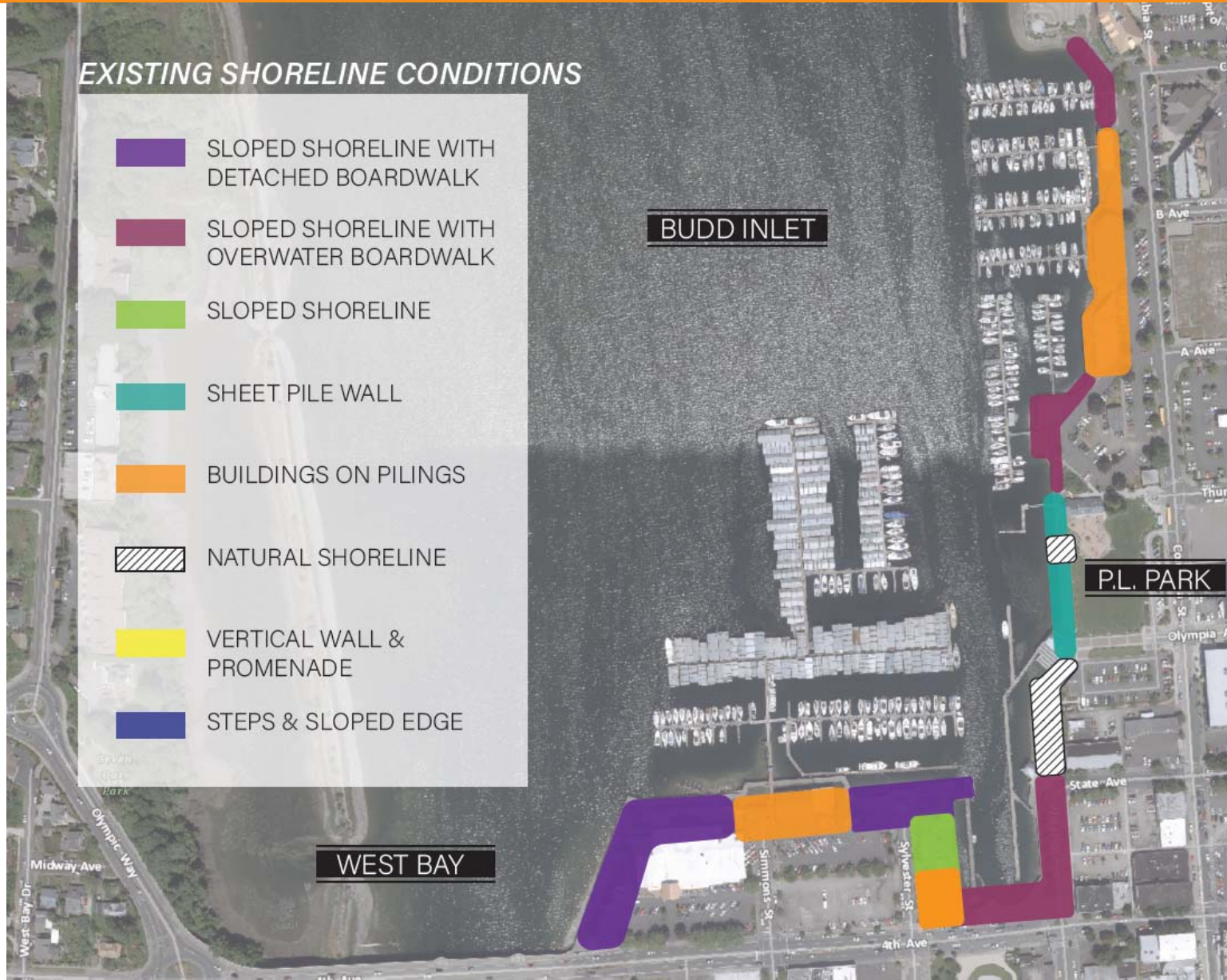
Visit the web story map at olympiawa.gov/sealevelrise

Sea Level Rise Response Planning

Olympia SLR Adaptation Strategies Workplan



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Shoretype 1 – Sloped shoreline with detached boardwalk



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Shoretype 4 – New sheet pile wall



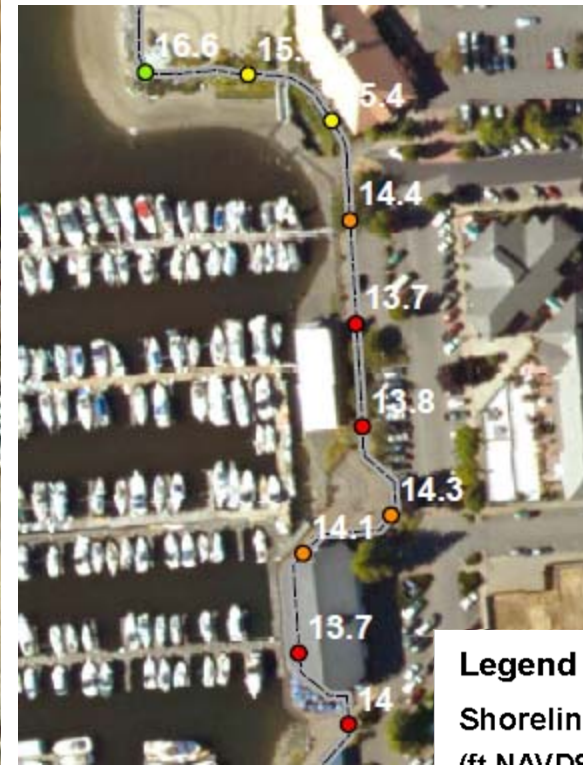
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Shoretype 6 – Natural shoreline



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Percival Landing Shoreline Elevations



Legend

Shoreline Elevation
(ft NAVD88)

- <14
- 14 to 15
- 15 to 16
- 16 to 17
- >17

Sea Level Rise Response Planning

Menu of Sea Level Rise Adaptation Strategies

TEMPORARY FLOOD PROTECTION	LIVING WITH WATER	PERMANENT FLOOD PROTECTION
FLOOD GATES	LIVING SHORELINE	RAISE WALL
SAND BAGS	FLOODABLE LANDSCAPE	STEPS
SEAL STREET GRATES	STORMWATER MANAGEMENT	BERM
PORTABLE BARRIERS	ELEVATED STRUCTURES	WALL
FLOOD PROOFING	ELEVATED PATH	ELEVATED STREET
WET FLOOD PROOFING	RAISED PLANTERS	ELEVATED BOARDWALK

Examples of Physical Strategies:



Non-Physical Strategies:

Governance
 Update design standards
 Update building code
 Floodplain Management
 Interagency partnerships

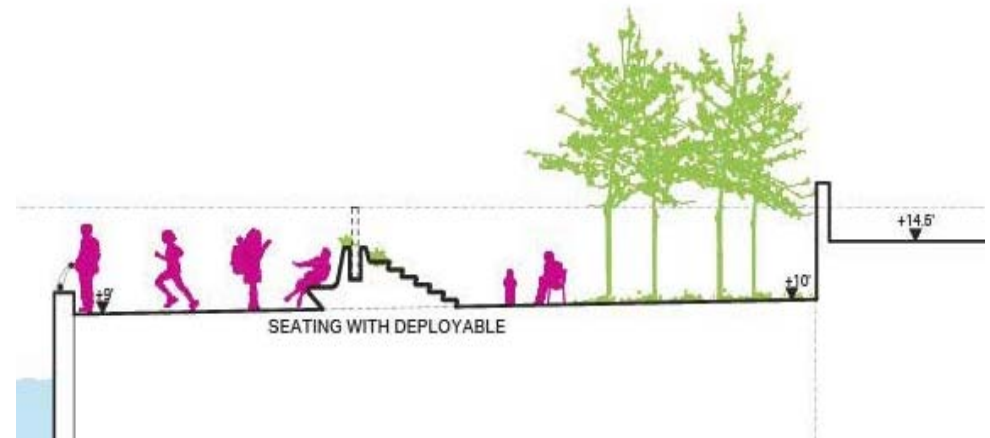
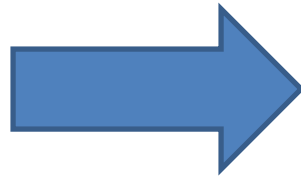
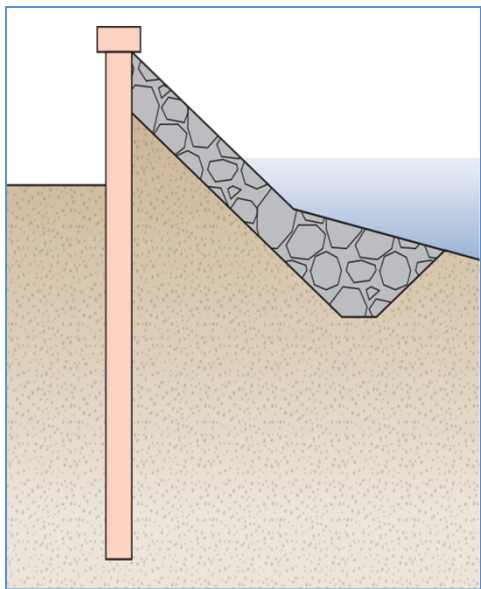
Informational
 Tide station installation
 Groundwater observations
 Measure subsidence
 Modeling studies

Operational
 Traffic detours
 Emergency response

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Currently Working with Landscape Architects

- Linking technical feasibility with our waterfront
- Long-term design decisions – utilitarian or community amenity?



A banner image showing a marina with several boats docked at a pier. The text 'Sea Level Rise Response Planning' is overlaid in white on a dark blue background.

Sea Level Rise Response Planning

Phasing the Response

- First, bring up low spots to 10-year or 100-year flood protection level
- Second, protect from 24" of sea rise
- Long-term – protect from 68" of sea rise
- Monitor science, technology, community needs along the way

Sea Level Rise Response Planning

Port Peninsula – Billy Frank Jr. Trail

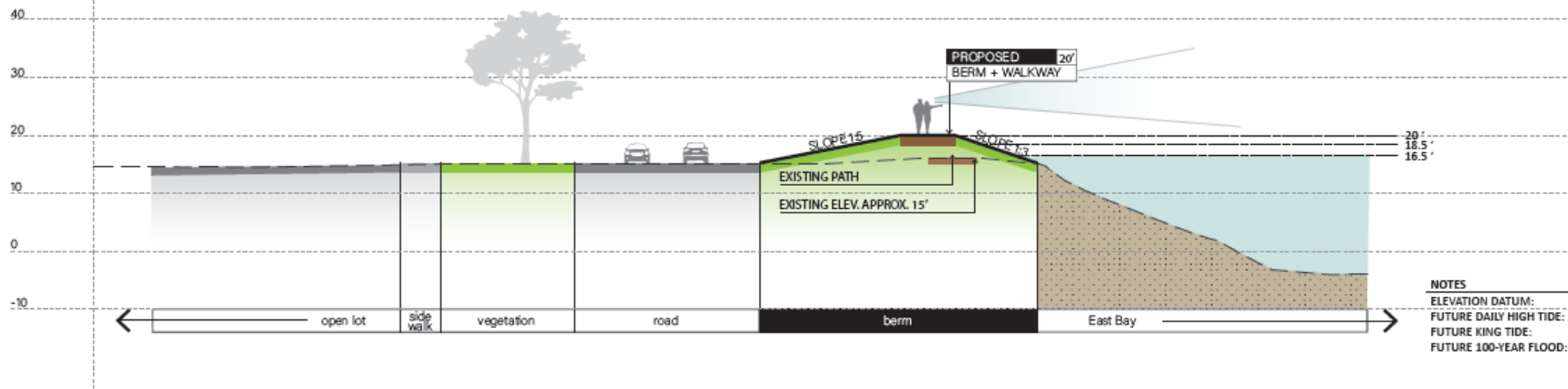


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Elevated Trail

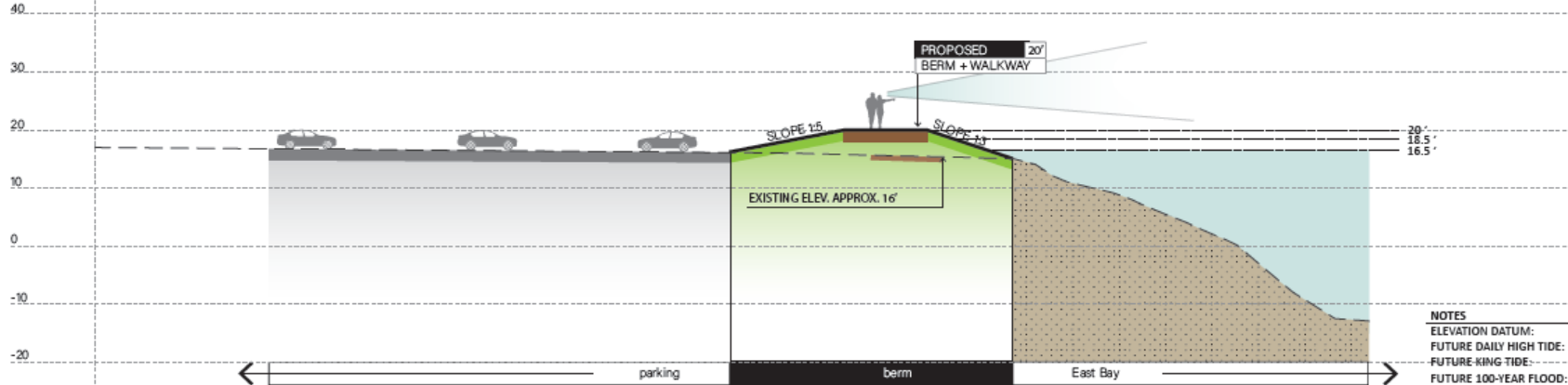
MARINE DRIVE PERSPECTIVE

ELEVATION (FEET)



SWANTOWN MARINA PERSPECTIVE

ELEVATION (FEET)



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Capitol Lake Strategies



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Capitol Lake/Lower Deschutes Watershed



Status Quo



Managed Lake



Estuary



Dual Basin

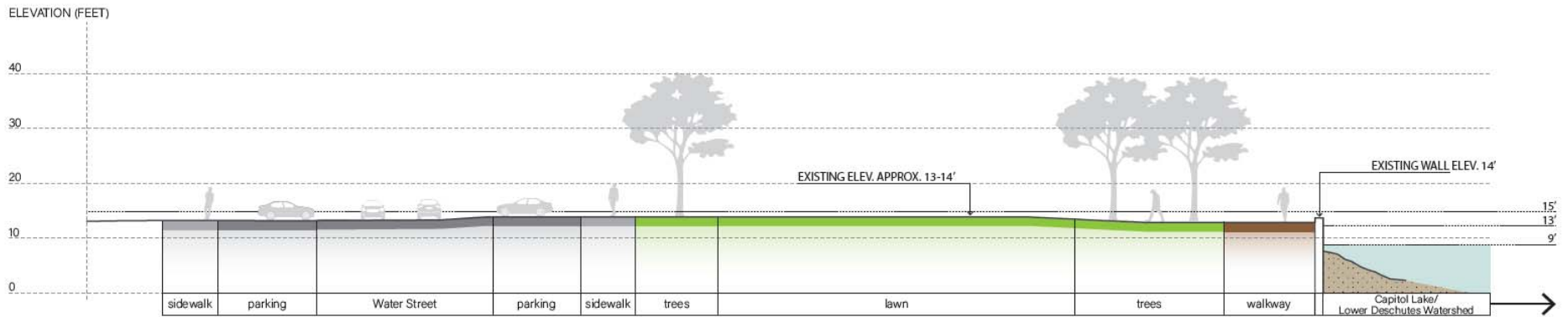
Sea Level Rise Response Planning



Sea Level Rise Response Planning

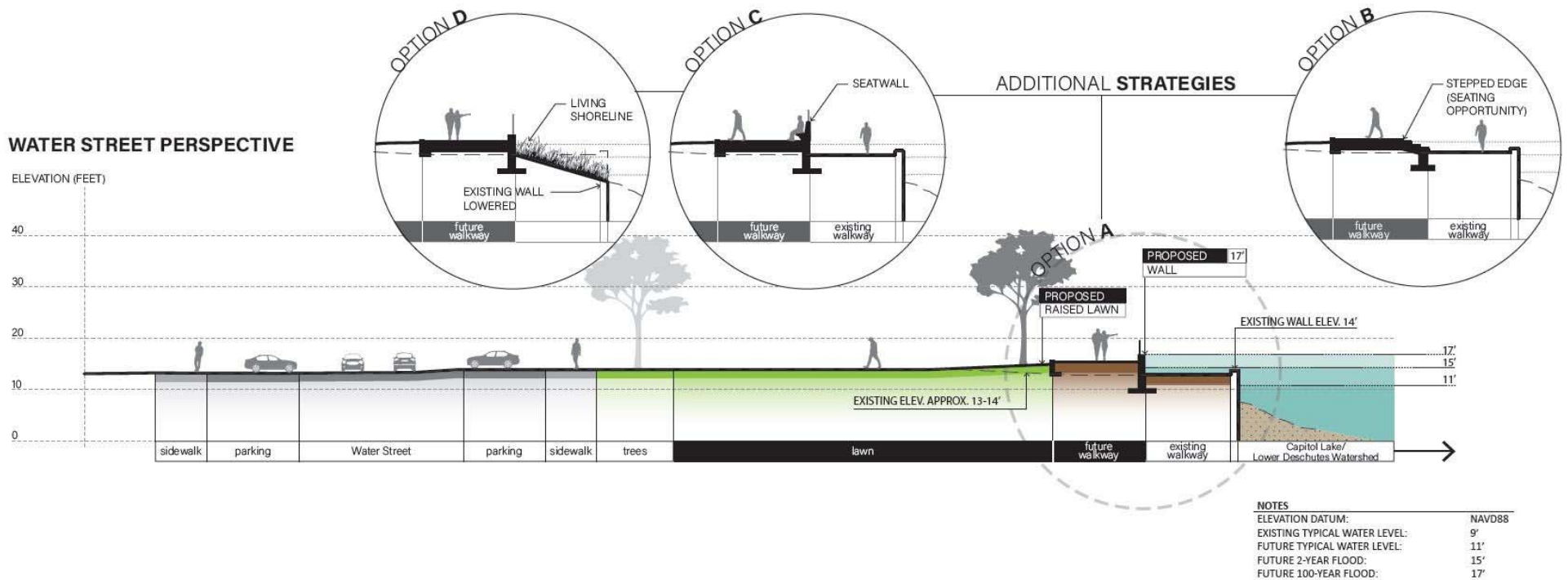
Existing Conditions

WATER STREET PERSPECTIVE



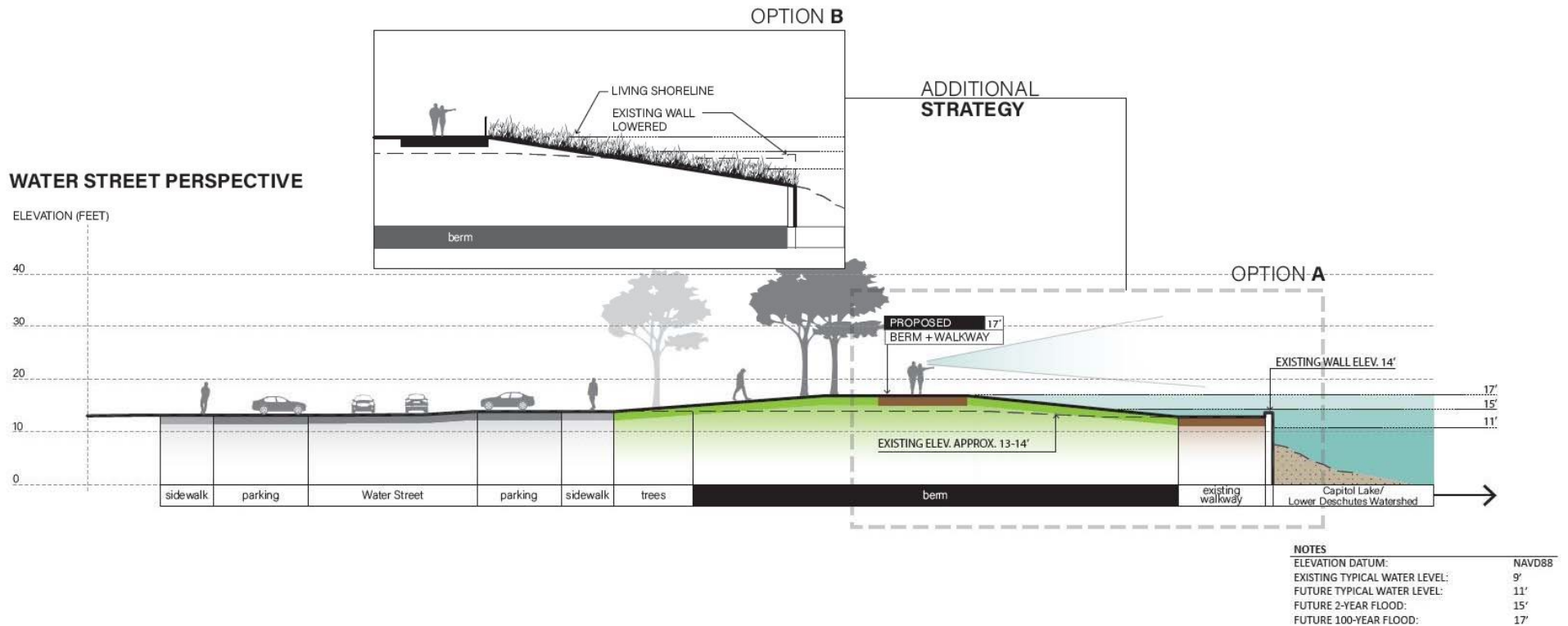
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Mid-term 24" SLR Strategies



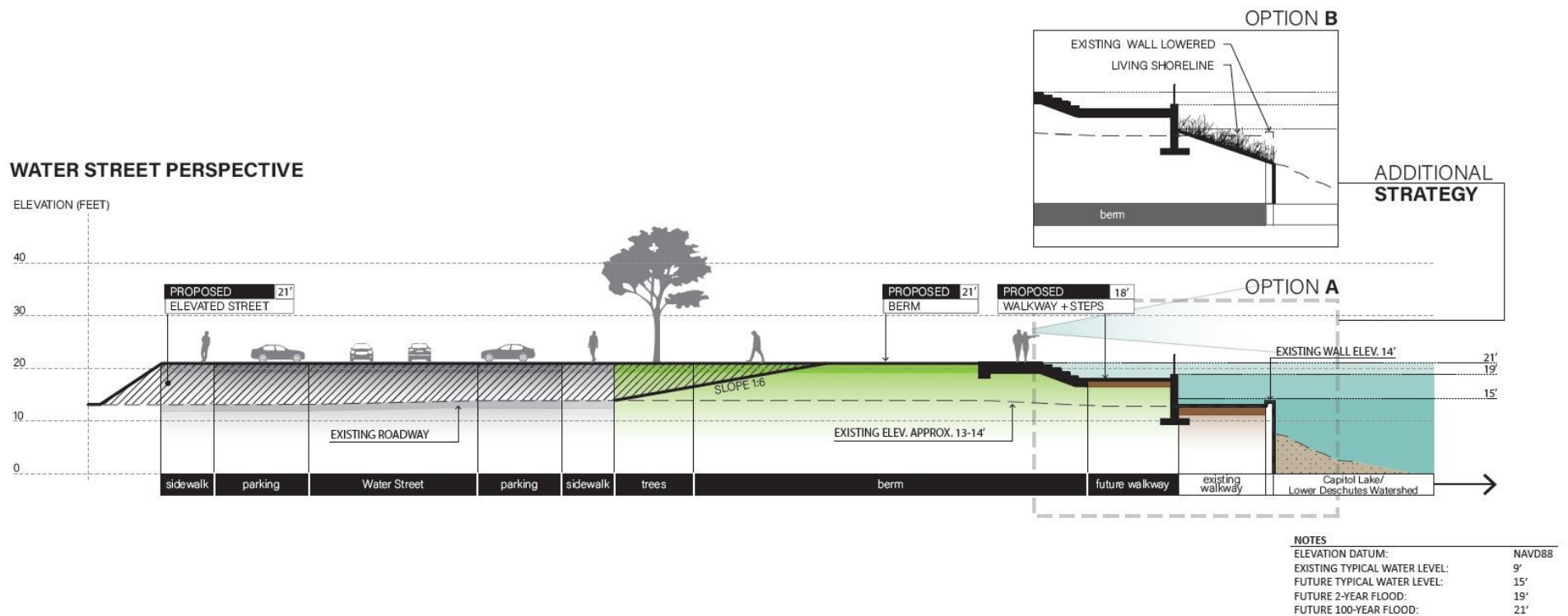
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Mid-term 24" SLR Strategies



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Long Term 68" SLR Strategies

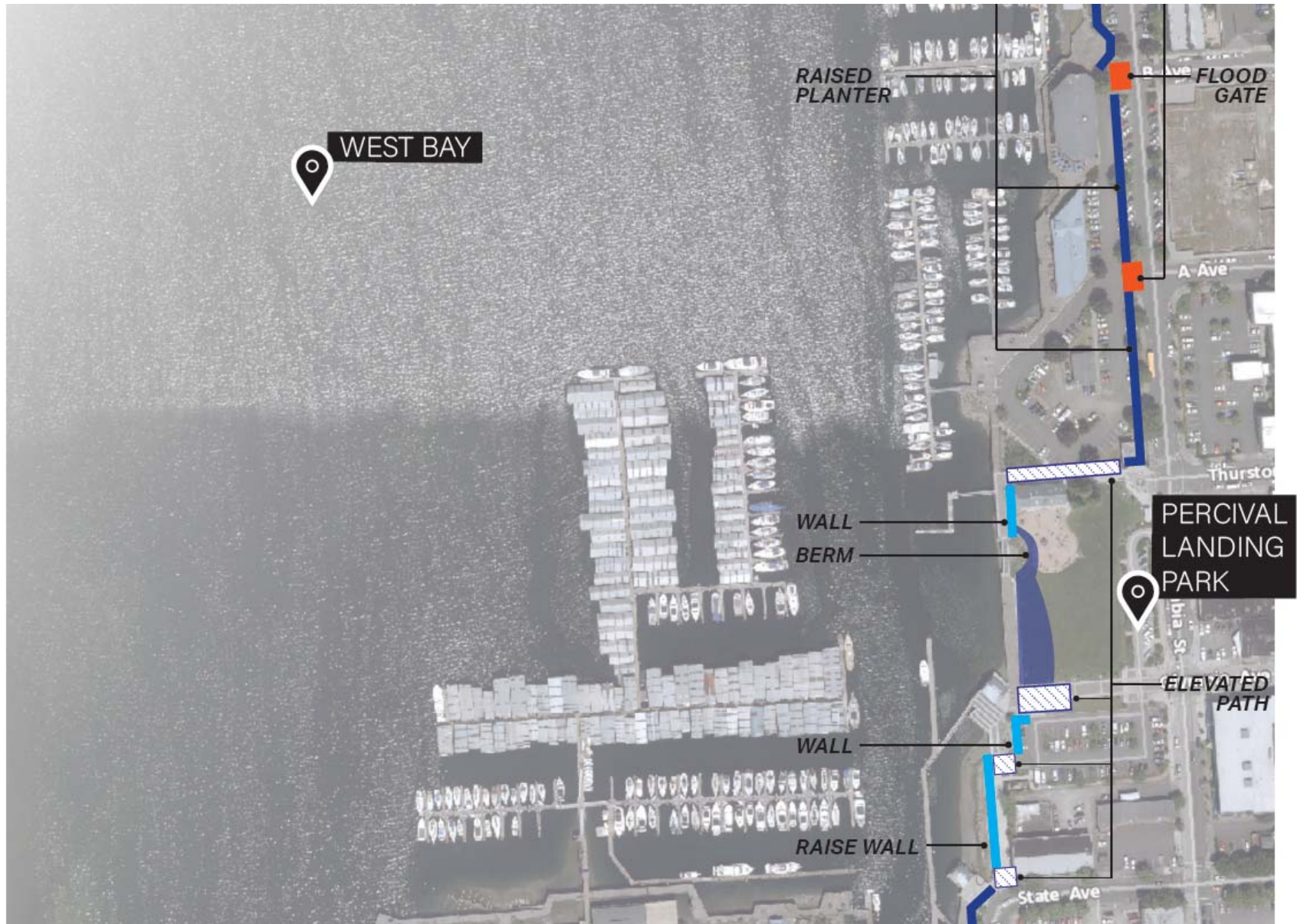


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Percival Landing Strategies

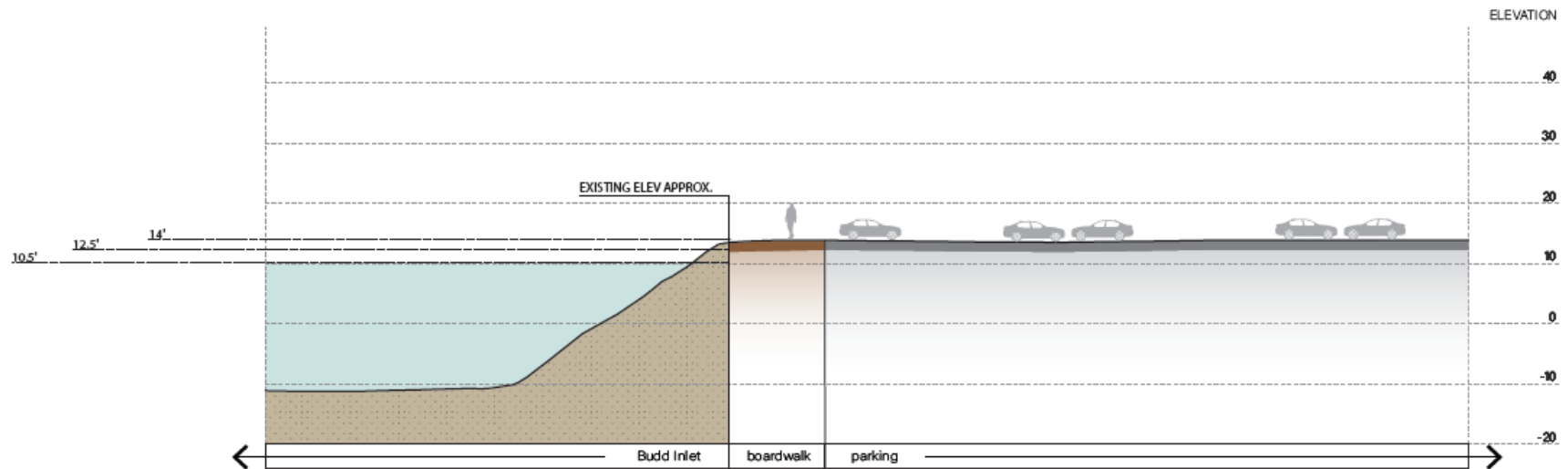


Sea Level Rise Response Planning



Sea Level Rise Response Planning

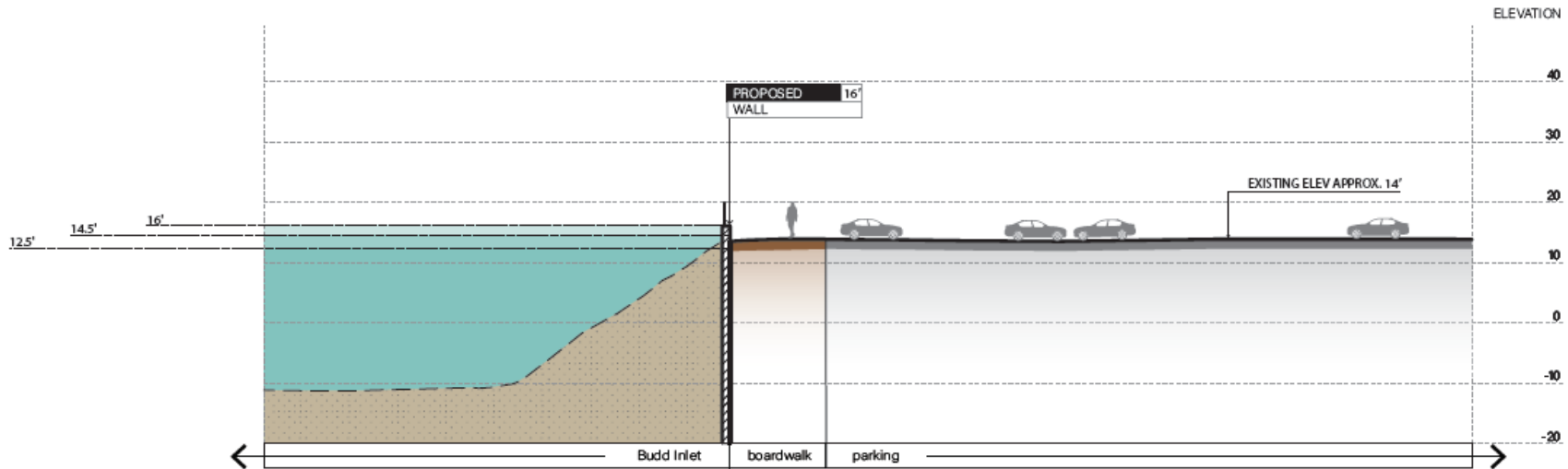
Existing Conditions



NOTES
ELEVATION DATUM: NAVD88
DAILY HIGH TIDE: 10.5'
KING TIDE: 12.5'
100 YEAR FLOOD: 14'

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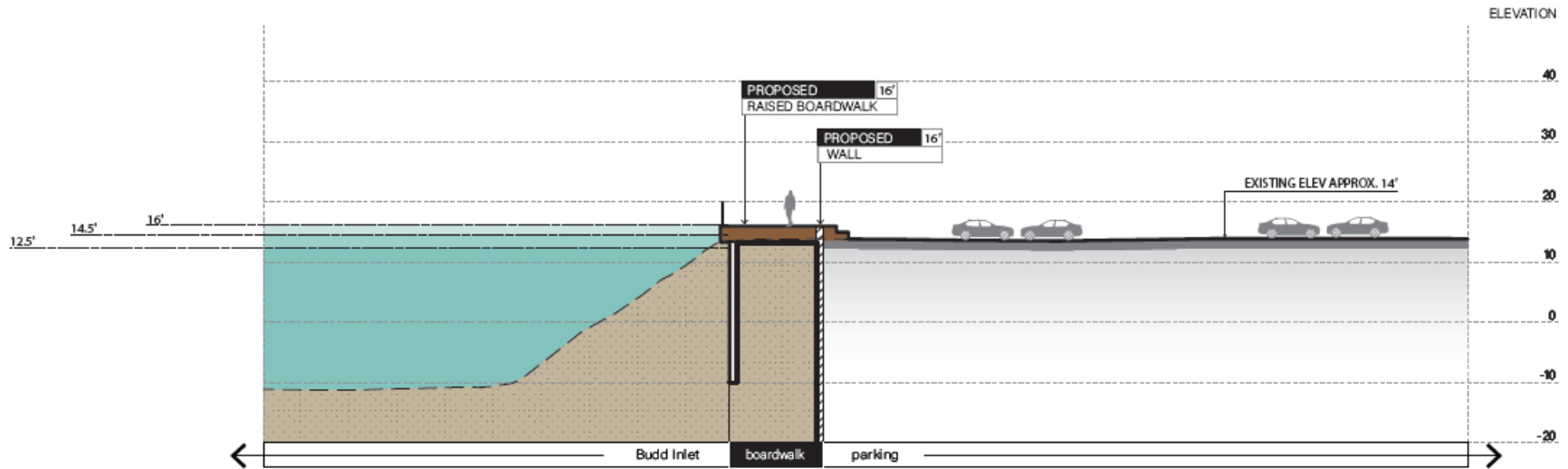
Strategy #1 – Construct New Wall 24"



NOTES	
ELEVATION DATUM:	NAVD88
FUTURE DAILY HIGH TIDE:	12.5'
FUTURE KING TIDE:	14.5'
FUTURE 100 YEAR FLOOD:	16'

Sea Level Rise Response Planning

Strategy #2 – Elevate Boardwalk 24"

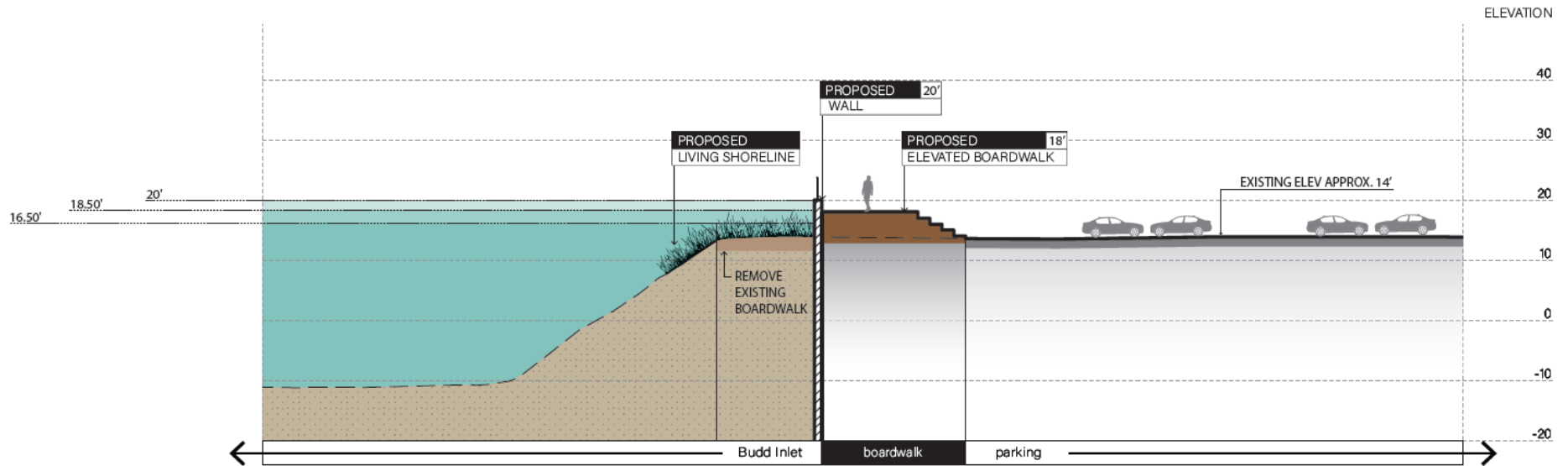


NOTES

ELEVATION DATUM:	NAVD88
FUTURE DAILY HIGH TIDE:	12.5'
FUTURE KING TIDE:	14.5'
FUTURE 100 YEAR FLOOD:	16'

Sea Level Rise Response Planning

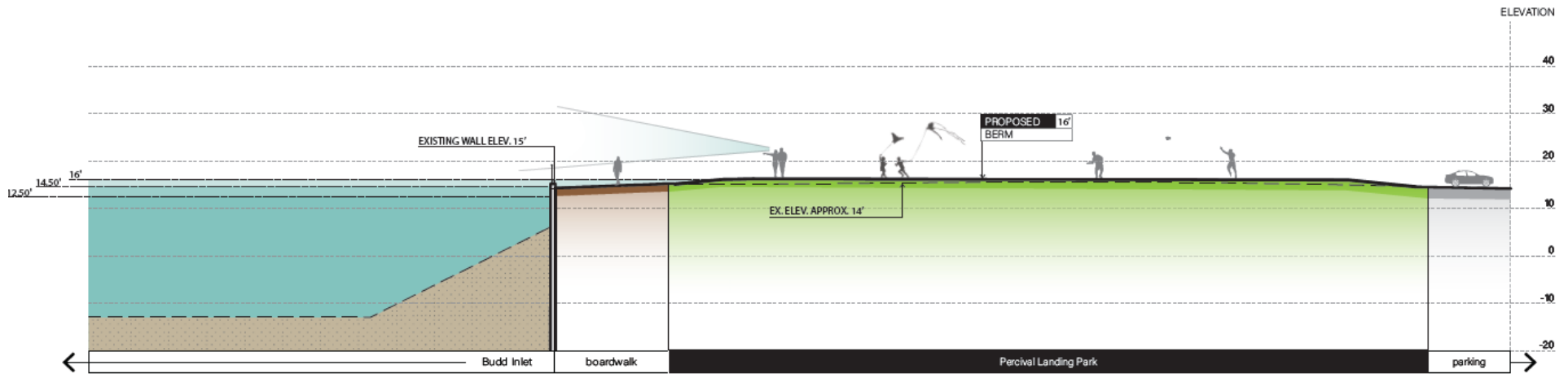
Strategy #3 – Elevate and Relocate Boardwalk 24"



NOTES
ELEVATION DATUM: NAVD88
FUTURE DAILY HIGH TIDE: 16.5'
FUTURE KING TIDE: 18.5'
FUTURE 100 YEAR FLOOD: 20'

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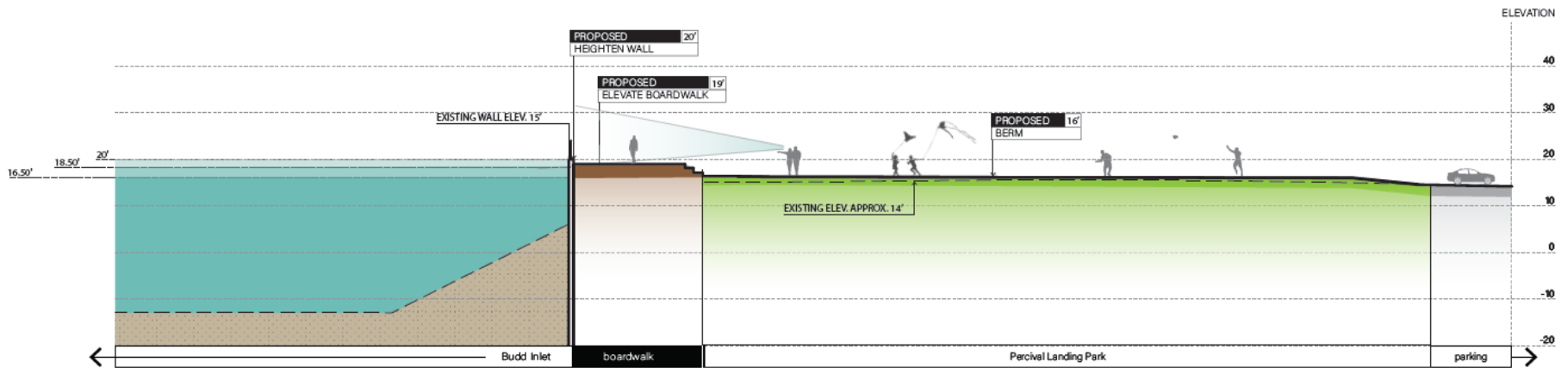
Strategy #4 – Construct a New Berm 24"



NOTES	
ELEVATION DATUM:	NAVD88
FUTURE DAILY HIGH TIDE:	12.5'
FUTURE KING TIDE:	14.5'
FUTURE 100 YEAR FLOOD:	16'

Sea Level Rise Response Planning

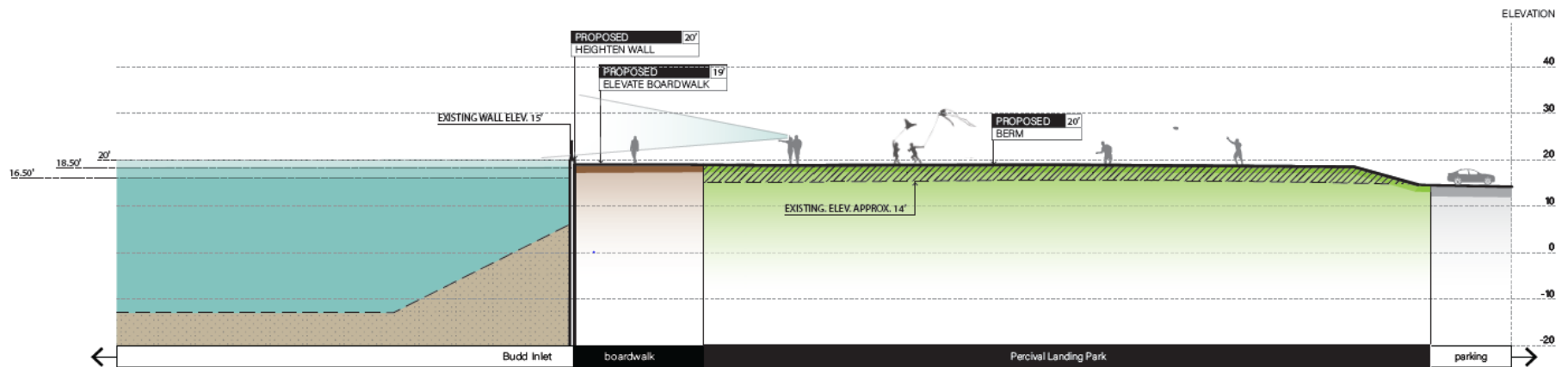
Strategy #5A – Raise Boardwalk and Heighten Wall 68"



NOTES
ELEVATION DATUM: NAVD88
FUTURE DAILY HIGH TIDE: 16.5'
FUTURE KING TIDE: 18.5'
FUTURE 100 YEAR FLOOD: 20'

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Strategy #5B – Raise Boardwalk and Landscape 68"



NOTES
ELEVATION DATUM: NAVD88
FUTURE DAILY HIGH TIDE: 16.5'
FUTURE KING TIDE: 18.5'
FUTURE 100 YEAR FLOOD: 20'

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Strategy 6 – Street Raising - *Coming*



Sea Level Rise Response Planning

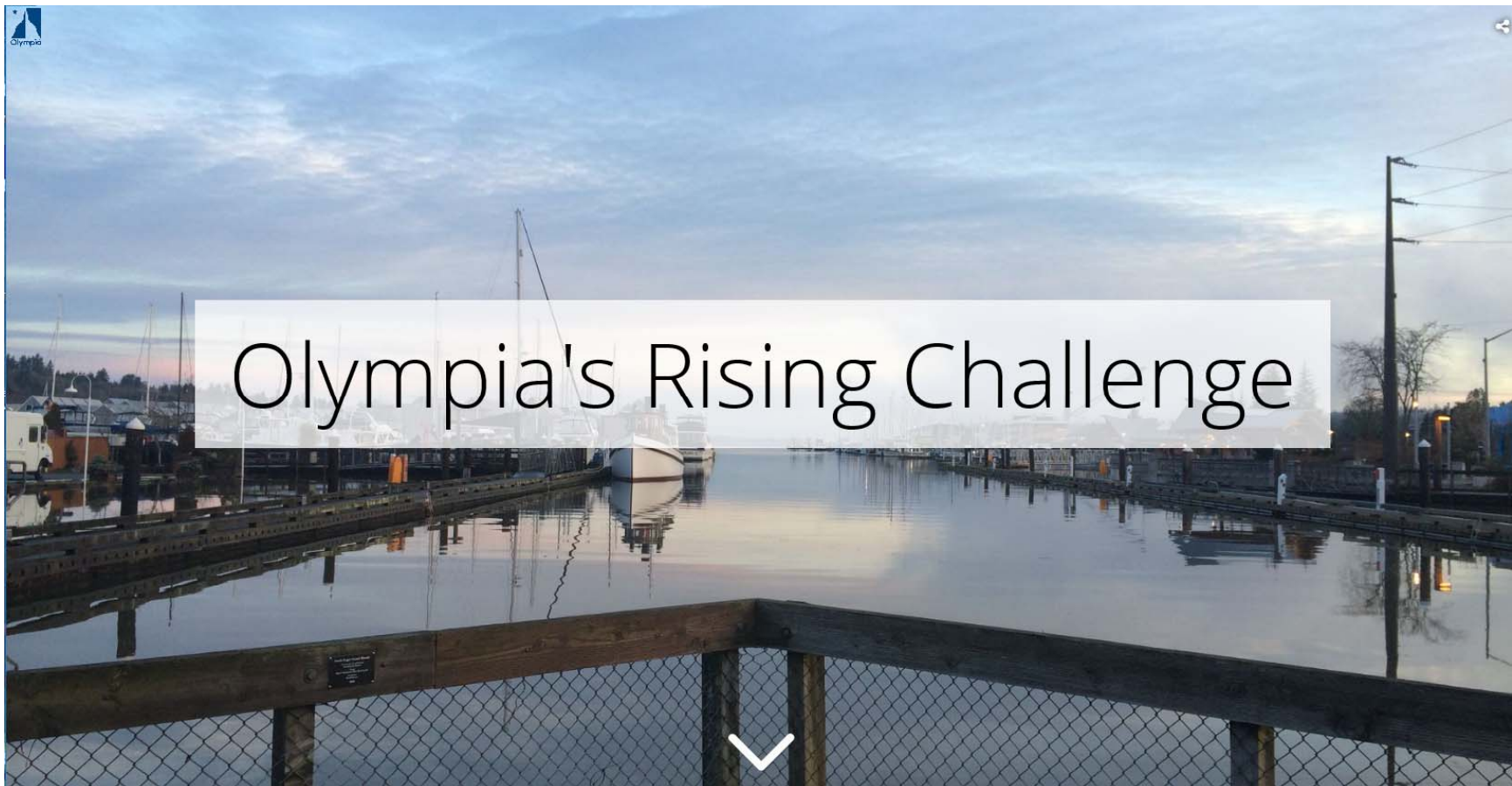
Percival Landing Conditions Assessment (2014)

Phase	Section	Constructed	Age
1	Percival Landing East	2011	7
2	Percival Landing East	1978	40
3	Percival Landing North	1984	34
4	Percival Landing West	1988	30

- Overall condition of timber portions of boardwalk are fair to satisfactory
- Additional repairs are needed to maintain sound structure
- Cost of repairs will increase in the future
- Several timber and concrete bulkheads require replacement and are vulnerable to seismic damage (poor condition)
- Marine timber structures typically have useful service life of 20 to 30 years

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New Story Maps Coming Soon





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Next Steps

- Complete architectural renderings of potential shoreline protection (August)
- Post architectural renderings and story maps (September 1st)
- Complete preliminary estimates of cost for strategies (August-September)
- Meet with affected interests – downtown property owners, State agencies (August-October)
- Host self-guided shoreline walking tour (September 8th)



Sea Level Rise Response Planning

Next Steps (cont.)

- Present adaptation strategies to elected officials including costs and initial governance and financial approaches (September 17th at LOTT Wet Center)
- Present strategies at community workshop/meeting (September 19th at LOTT Wet Center)
- Wrap up the Plan (December/January)
- Continue discussions with downtown community and partners (2019)

Sea Level Rise Response Planning

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