UPDATED SURVEY

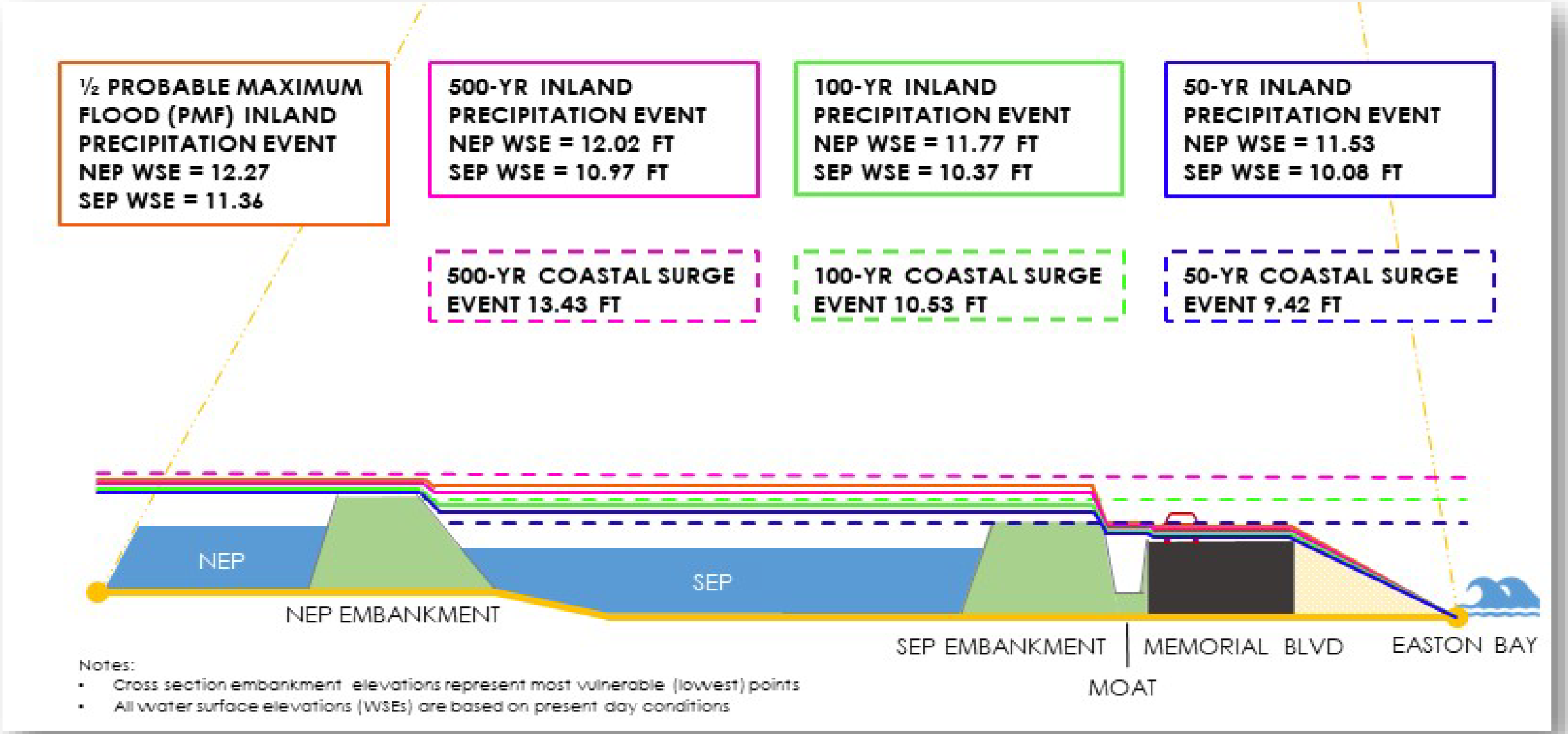
- Completed August 2022

Embankments	Lowest Assumed Embankment Elevations (2019)	Lowest Surveyed Embankment Elevations (June and August 2022)
NEPD	13.38	11.55
SEPD	11.13	9.64

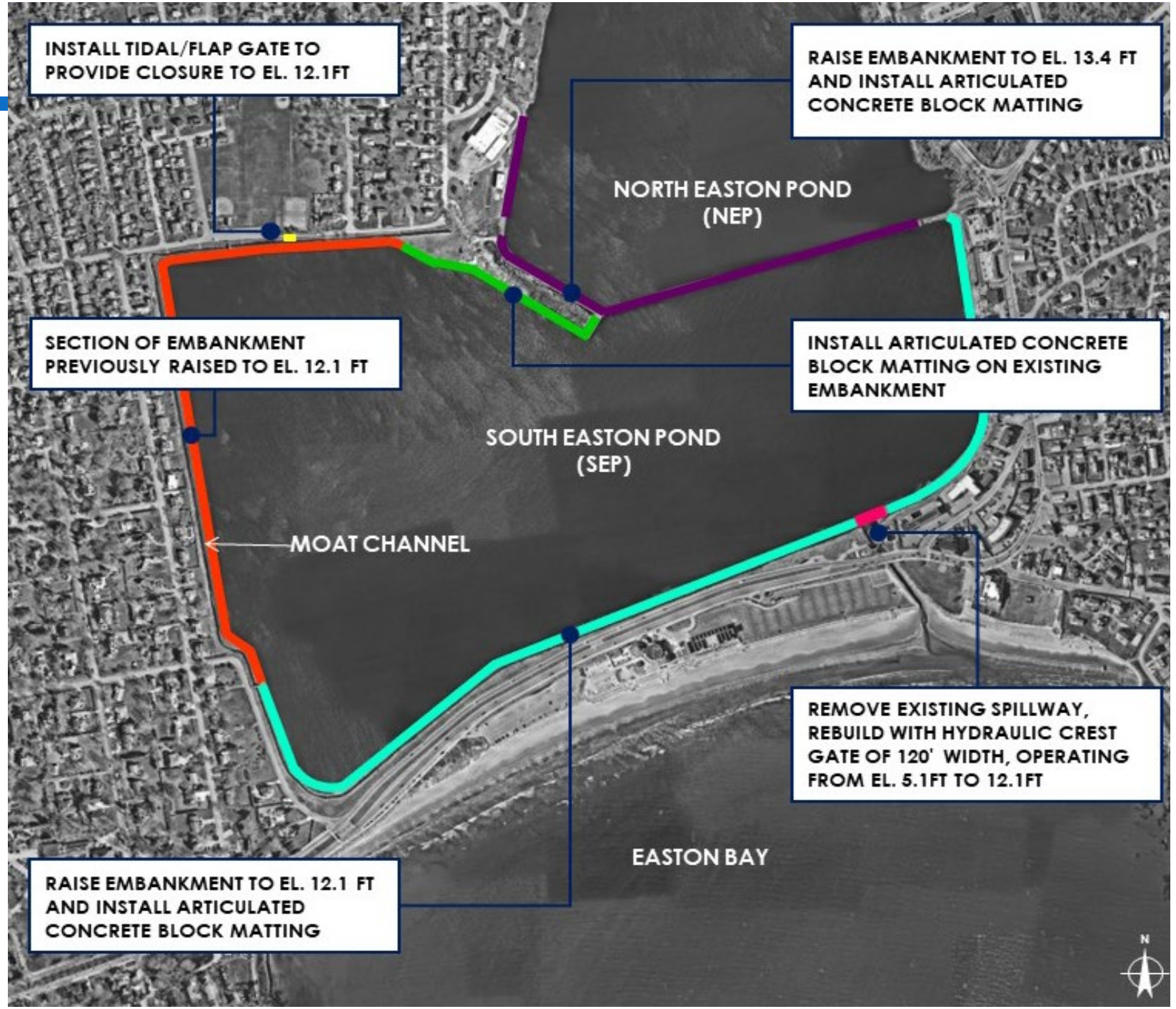
EXISTING AND PROJECTED VULNERABILITIES

	South Easton Pond Dam	North Easton Pond Dam
Existing Conditions		
Inland Storm that Overtops Embankment	50-year	50-year
Coastal Storm that Overtops Spillway	20-year	50-year
Coastal Storm that Overtops Embankment	100-year	200-year
Projected 2070 Conditions		
Inland Storm that Overtops Embankment	10-year	50-year
Coastal Storm that Overtops Spillway	1-year	5-year
Coastal Storm that Overtops Embankment	5-year	50-year

EXISTING VULNERABILITIES



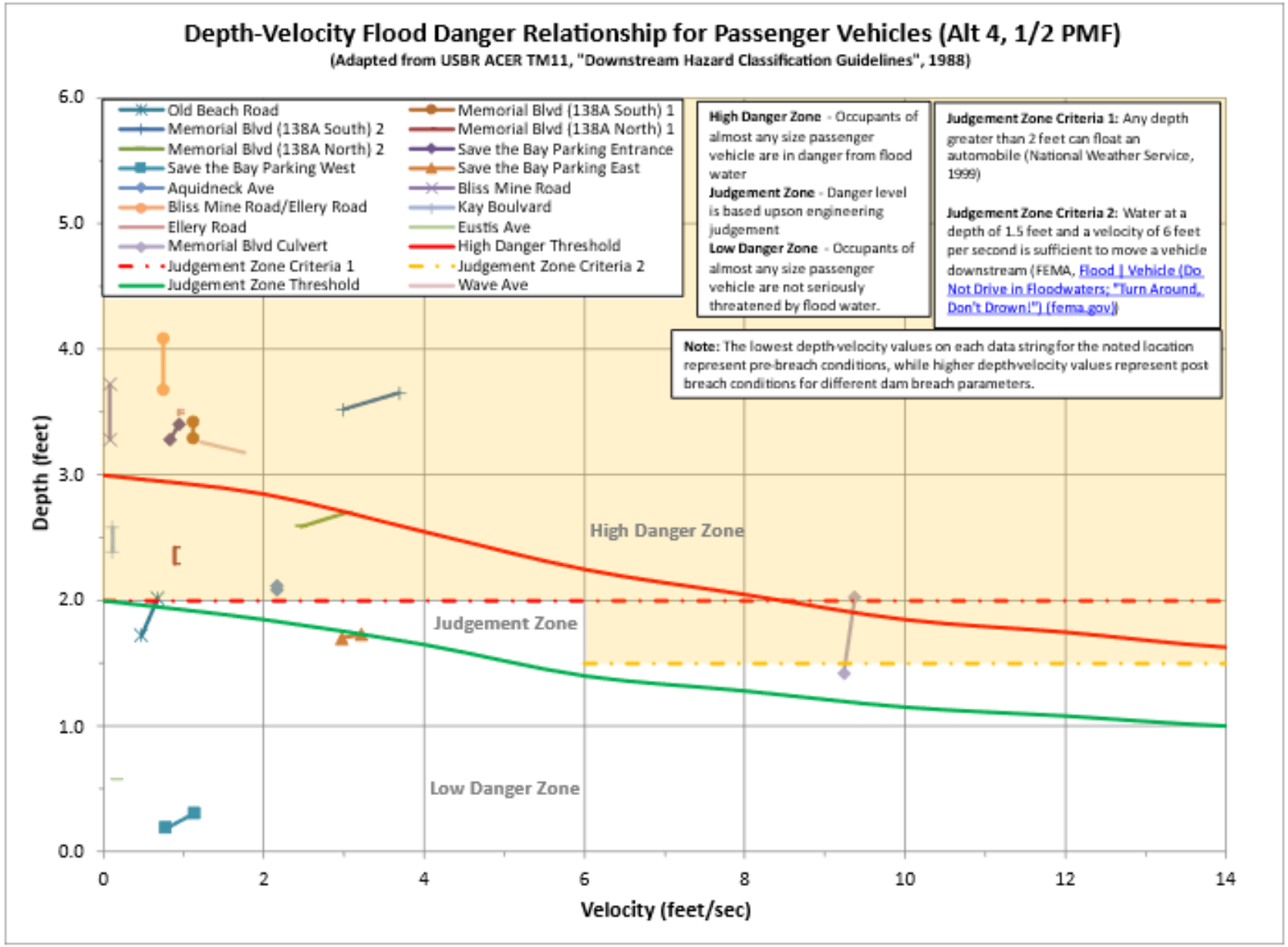
RECOMMENDED IMPROVEMENTS



MODIFICATIONS FROM ALTERNATIVE 4

- New Tidal/Flap Gate in Moat at Braga Park
  - Avoids need for new raised embankment at sedimentation basin
  - Allow floodwaters to continue to enter SEP
    - Raised embankment would divert floodwater into neighborhood
- Reconstruct SEPD spillway
  - Lower spillway to elevation 5.1 feet and widen to 120 feet
  - Add crest gate
    - Protect against salt water intrusion and inland floods
  - Critical to maintain downstream hazard risk in case of breach
    - Raised embankment = more water released in a breach

EXAMPLE FLOOD DANGER ASSESSMENT



PROPOSED FLOOD PROTECTION IMPROVEMENT

Climate Conditions	Scenario	Overtopping via Inland Flooding	Saltwater Intrusion
Present Day	Existing Conditions	10-year Storm	10-year Coastal Surge
	Recommended Alternative	500-year Storm	200-year Coastal Surge
2070	Existing Conditions	Lower than 10-year [1]	MHHW, no Surge [2]
	Recommended Alternatives	500-year Storm	20-year Coastal Surge

[1] The smallest inland flood modeled was that of the 10-year precipitation. Modeling predicted this storm would overtop the existing SEP Dam embankments under predicted 2070 climate conditions.

[2] Modeling suggests the 2070 1-year coastal surge would overtop the SEP Dam primary spillway under existing conditions. Therefore, existing conditions protect only through mean higher high water (high tide) for predicted 2070 climate conditions.

PROPOSED FLOOD PROTECTION IMPROVEMENT

½ PROBABLE MAXIMUM FLOOD (PMF) INLAND PRECIPITATION EVENT
NEP WSE = 13.43
SEP WSE = 11.25

500-YR INLAND PRECIPITATION EVENT
NEP WSE = 12.41 FT
SEP WSE = 9.79 FT

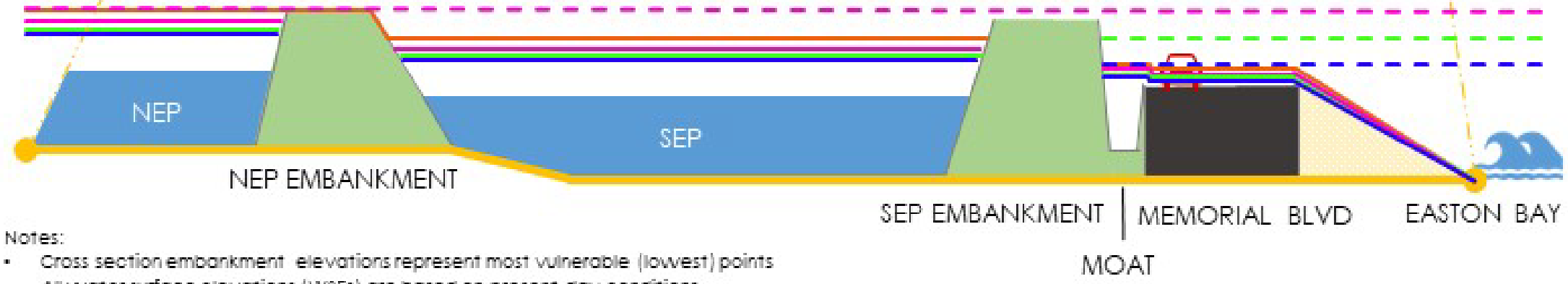
100-YR INLAND PRECIPITATION EVENT
NEP WSE = 11.73 FT
SEP WSE = 9.28 FT

50-YR INLAND PRECIPITATION EVENT
NEP WSE = 11.45
SEP WSE = 8.98 FT

500-YR COASTAL SURGE EVENT 13.43 FT

100-YR COASTAL SURGE EVENT 10.53 FT

50-YR COASTAL SURGE EVENT 9.42 FT



Notes:
- Cross section embankment elevations represent most vulnerable (lowest) points
- All water surface elevations (WSEs) are based on present day conditions

OPINION OF COST

Item	Opinion of Cost
Erosion and Sediment Control	$475,000
Site Access	$150,000
Embankment Improvements	$14,150,000
South Pond Spillway Replacement	$1,700,000
Site Restoration	$150,000
Gate Installation	$5,600,000
Mob/Demob and Water Control	$6,750,000
General Conditions	$1,200,000
Engineering	$4,500,000
Subtotal	**$34,500,000**
Contingency	$8,600,000
Total	**$43,100,000**
USE	**$37.9 to $53.5 Million**

BENEFIT COST ANALYSIS

- Used professional expected damages and historical damages
- BCA = 1.20 (must be >1.0)
- Item that generated the most benefits was loss of potable water
- Next steps to apply for BRIC grant:
  - Gather supporting documentation (certified letters, utilities information, etc.)