

**SCAPE**  
**ARCADIS**  
**CONVEY**  
**RE:FOCUS**  
**SFEI**

# **HAYWARD REGIONAL SHORELINE ADAPTATION MASTER PLAN**

**FOR THE HAYWARD AREA SHORELINE PLANNING  
AGENCY (HASPA)**

**PART OF A JOINT POWERS AGREEMENT OF THE CITY OF HAYWARD, HAYWARD AREA RECREATION AND PARK  
DISTRICT, AND EAST BAY REGIONAL PARK DISTRICT**

**HAYWARD REGIONAL SHORELINE MASTER PLAN**

## **APPENDIX B COST ESTIMATE**



# DESIGN ALTERNATIVES COST ESTIMATE

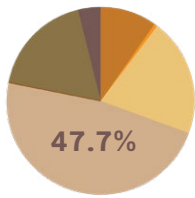
*Note: This cost estimate was used strictly as a planning tool to compare the Design Alternatives. It reflects costs for a specific moment in time and the actual cost will fluctuate over time as projects are phased.*

*This cost estimate is based on precedent projects that were selected based on similarities and available cost data, with an emphasis on the San Francisco Bay region. There was a focus on easily understandable units and a large contingency was added to account for design and engineering calculations, quantities, and methods not yet identified.*

# DESIGN ALTERNATIVES COST ESTIMATE

## SUMMARY

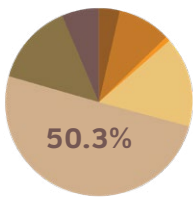
### #1: CLOSER TO THE BAY



COST ITEM		
Bay Trail	\$956,741	0.2%
Erosion Protection	\$42,376,154	9.6%
Interpretive Center	\$3,180,000	0.7%
Line of Protection	\$88,326,679	20.0%
Stormwater Management	\$210,144,572	47.7%
Tidal Habitat	\$79,033,609	17.9%
Wastewater Treatment	\$16,922,500	3.8%

**TOTAL (WITHOUT CONTINGENCY) \$440,940,300**

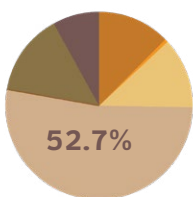
### #2: DOWN THE MIDDLE



COST ITEM		
Bay Trail	\$20,957,444	3.7%
Erosion Protection	\$51,297,654	9.1%
Interpretive Center	\$4,750,000	0.8%
Line of Protection	\$87,920,512	15.6%
Stormwater Management	\$283,302,319	50.3%
Tidal Habitat	\$79,415,646	14.1%
Wastewater Treatment	\$35,031,500	6.2%

**TOTAL (WITHOUT CONTINGENCY) \$562,675,100**

### #3: FURTHER INLAND



COST ITEM		
Bay Trail	\$635,927	0.1%
Erosion Protection	\$73,628,457	12.4%
Interpretive Center	\$5,000,000	0.8%
Line of Protection	\$71,731,813	12.0%
Stormwater Management	\$314,120,048	52.7%
Tidal Habitat	\$83,379,637	14.0%
Wastewater Treatment	\$47,654,000	8.0%

**TOTAL (WITHOUT CONTINGENCY) \$596,149,900**

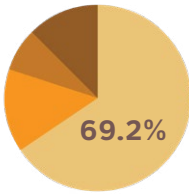
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# DESIGN ALTERNATIVES COST ESTIMATE


## LINE OF PROTECTION

Flood Protection Levee, Ecotone Levee, Levee Raising (outboard of the LOP), Levee Raising (inland of the LOP)

### #1: CLOSER TO THE BAY

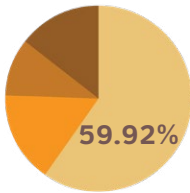


#### COST ITEM


	Flood Protection Levee	\$57,917,632	69.2%
	Ecotone Levee	\$12,721,792	15.2%
	Levee raising (outboard of LOP)	\$6,779,376	8.1%
	Levee raising (inland of LOP)	\$10,880,480	13.0%

**TOTAL (WITHOUT CONTINGENCY) \$83,696,000**

### #2: DOWN THE MIDDLE

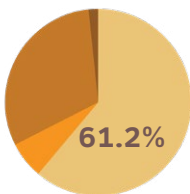


#### COST ITEM

	Flood Protection Levee	\$52,684,800	59.92%
	Ecotone Levee	\$13,815,980	15.71%
	Levee raising (outboard of LOP)	\$8,920,800	10.15%
	Levee raising (inland of LOP)	\$12,498,932	14.22%

**TOTAL (WITHOUT CONTINGENCY) \$87,920,512**

### #3: FURTHER INLAND



#### COST ITEM

	Flood Protection Levee	\$43,864,800	61.2%
	Ecotone Levee	\$4,521,620	6.3%
	Levee raising (outboard of LOP)	\$22,188,600	30.9%
	Levee raising (inland of LOP)	\$1,156,793	1.6%

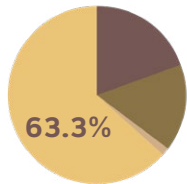
**TOTAL (WITHOUT CONTINGENCY) \$71,731,813**





# DESIGN ALTERNATIVES COST ESTIMATE

## TIDAL HABITAT

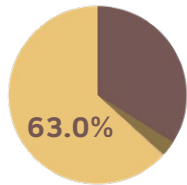
Tidal Marsh, Muted Tidal Marsh, New Muted Marsh Tide Gate, Sediment Augmentation





### #1: CLOSER TO THE BAY



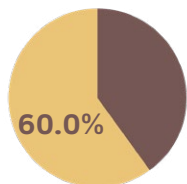
COST ITEM		
	Tidal Marsh	\$15,490,587 19.6%
	Muted Tidal Marsh	\$12,408,276 15.7%
	New Muted Tidal Marsh Gate	\$1,106,470 1.4%
	Sediment Augmentation	\$50,028,274 63.3%
<b>TOTAL (WITHOUT CONTINGENCY)</b>		<b>\$79,033,609</b>





### #2: DOWN THE MIDDLE



COST ITEM		
	Tidal Marsh	\$27,041,642 34.1%
	Muted Tidal Marsh	\$2,101,504 2.6%
	New Muted Tidal Marsh Gate	\$272,500 0.3%
	Sediment Augmentation	\$50,000,000 63.0%
<b>TOTAL (WITHOUT CONTINGENCY)</b>		<b>\$79,415,646</b>

### #3: FURTHER INLAND



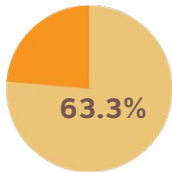
COST ITEM		
	Tidal Marsh	\$33,379,637 40.0%
	Muted Tidal Marsh	\$- -
	New Muted Tidal Marsh Gate	\$- -
	Sediment Augmentation	\$50,000,000 60.0%
<b>TOTAL (WITHOUT CONTINGENCY)</b>		<b>\$83,379,637</b>

# DESIGN ALTERNATIVES COST ESTIMATE

## EROSION PROTECTION

Erosion Control, Gravel Beach w/ headlands

### #1: CLOSER TO THE BAY

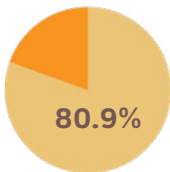


#### COST ITEM

 Erosion Control	\$32,480,000	63.3%
 Gravel Beach with headlands	\$9,896,154	19.3%

**TOTAL (WITHOUT CONTINGENCY) \$42,376,154**

### #2: DOWN THE MIDDLE

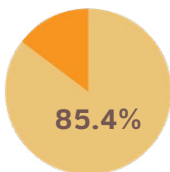


#### COST ITEM

 Erosion Control	\$41,401,500	80.9%
 Gravel Beach with headlands	\$9,896,154	19.3%

**TOTAL (WITHOUT CONTINGENCY) \$51,297,654**

### #3: FURTHER INLAND



#### COST ITEM

 Erosion Control	\$62,849,500	85.4%
 Gravel Beach with headlands	\$10,778,957	14.6%

**TOTAL (WITHOUT CONTINGENCY) \$73,628,457**

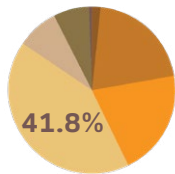


# DESIGN ALTERNATIVES COST ESTIMATE

## STORMWATER MANAGEMENT

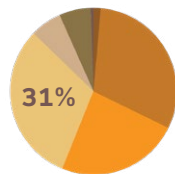
New Tide Gate, PS Bockman Channel, PS Sulfur Creek, PS Line A, PS Line F, Salt Pond/Stormwater Retention, Groundwater Management

### #1: CLOSER TO THE BAY



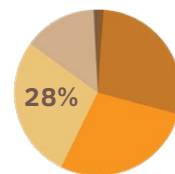
COST ITEM		
New Tide Gates	\$3,945,800	1.9%
PS Bockman Channel	\$43,147,778	20.5%
PS Sulfur Creek	\$43,147,778	20.5%
PS Line A	\$87,943,591	41.8%
PS Line F	\$16,294,866	7.8%
Salt Pond/Stormwater Retention	\$14,850,760	7.1%
Groundwater Management	\$814,000	0.4%
<b>TOTAL (WITHOUT CONTINGENCY)</b>	<b>\$210,144,572</b>	

### #2: DOWN THE MIDDLE



COST ITEM		
New Tide Gates	\$3,945,800	1.4%
PS Bockman Channel	\$87,943,591	31.0%
PS Sulfur Creek	\$67,815,955	23.9%
PS Line A	\$87,943,591	31.0%
PS Line F	\$17,163,262	6.1%
Salt Pond/Stormwater Retention	\$17,676,120	6.2%
Groundwater Management	\$814,000	0.3%
<b>TOTAL (WITHOUT CONTINGENCY)</b>	<b>\$283,302,319</b>	

### #3: FURTHER INLAND



COST ITEM		
New Tide Gates	\$3,945,800	1.3%
PS Bockman Channel	\$87,943,591	28.0%
PS Sulfur Creek	\$87,943,591	28.0%
PS Line A	\$87,943,591	28.0%
PS Line F	\$43,971,795	14.0%
Salt Pond/Stormwater Retention	\$1,557,680	0.5%
Groundwater Management	\$814,000	0.3%
<b>TOTAL (WITHOUT CONTINGENCY)</b>	<b>\$314,120,048</b>	



# DESIGN ALTERNATIVES COST ESTIMATE

## WASTEWATER TREATMENT

Freshwater Treatment Marsh, Horizontal Levee



### #1: CLOSER TO THE BAY



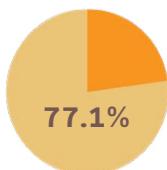
COST ITEM			
	Freshwater Treatment Marsh	\$-	-
	Horizontal Levee	\$16,922,500	100.0%
<b>TOTAL (WITHOUT CONTINGENCY)</b>		<b>\$16,922,500</b>	


### #2: DOWN THE MIDDLE



COST ITEM			
	Freshwater Treatment Marsh	\$-	-
	Horizontal Levee	\$35,031,500	100.0%
<b>TOTAL (WITHOUT CONTINGENCY)</b>		<b>\$35,031,500</b>	

### #3: FURTHER INLAND



COST ITEM			
	Freshwater Treatment Marsh	\$10,890,000	22.9%
	Horizontal Levee	\$36,764,000	77.1%
<b>TOTAL (WITHOUT CONTINGENCY)</b>		<b>\$47,654,000</b>	

# DESIGN ALTERNATIVES COST ESTIMATE




## BAY TRAIL

New Bay Trail (terrestrial surface prep), New Bay Trail (materials), New Bay Trail- bridge on piles

### #1: CLOSER TO THE BAY

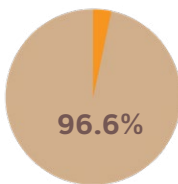


**COST ITEM**




	New Bay Trail (terrestrial surface prep)	\$-	-
	New Bay Trail (terrestrial materials)	\$956,741	100.0%
	New Bay Trail- bridge on piles	\$-	-

**TOTAL (WITHOUT CONTINGENCY) \$956,741**

### #2: DOWN THE MIDDLE



**COST ITEM**




	New Bay Trail (terrestrial surface prep)	\$713,092	3.4%
	New Bay Trail (terrestrial materials)	\$-	-
	New Bay Trail- bridge on piles	\$20,244,352	96.6%

**TOTAL (WITHOUT CONTINGENCY) \$20,957,444**

### #3: FURTHER INLAND



**COST ITEM**

	New Bay Trail (terrestrial surface prep)	\$635,927	100.0%
	New Bay Trail (terrestrial materials)	\$-	-
	New Bay Trail- bridge on piles	\$-	-

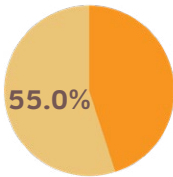
**TOTAL (WITHOUT CONTINGENCY) \$635,927**

# DESIGN ALTERNATIVES COST ESTIMATE

## HAYWARD SHORELINE INTERPRETIVE CENTER

Interpretive Center Alteration 1, Interpretive Center Alteration 2A, Interpretive Center Alteration 2B, Interpretive Center Alteration 3

### #1: CLOSER TO THE BAY

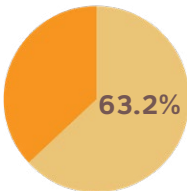


#### COST ITEM

 Protected in place	\$1,430,000	45.0%
 Renovations	\$1,750,000	55.0%

**TOTAL (WITHOUT CONTINGENCY) \$3,180,000**

### #2: DOWN THE MIDDLE

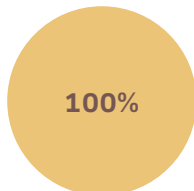


#### COST ITEM

 Current center on pilings	\$3,000,000	63.2%
 Renovations	\$1,750,000	36.8%

**TOTAL (WITHOUT CONTINGENCY) \$4,750,000**

### #3: FURTHER INLAND



#### COST ITEM

 Relocation	\$5,000,000	100%
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**TOTAL (WITHOUT CONTINGENCY) \$5,000,000**

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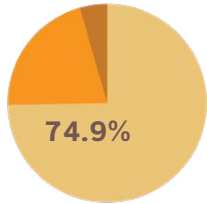
# PREFERRED ALTERNATIVE COST ESTIMATE

*Note: This cost estimate was used strictly as a planning tool for comparative purposes only. It reflects costs for a specific moment in time and the actual cost will fluctuate over time as projects are phased.*

*This cost estimate is based on precedent projects that were selected based on similarities and available cost data, with an emphasis on the San Francisco Bay region. There was a focus on easily understandable units and a large contingency was added to account for design and engineering calculations, quantities, and methods not yet identified.*

# PREFERRED ALTERNATIVE COST ESTIMATE

## LINE OF PROTECTION

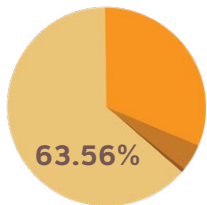


### COST ITEM

	Flood Protection Levee	\$78,290,800	74.9%
	Ecotone Levee	\$21,638,660	20.7%
	Levee Raising (Salt marsh mouse preserve)	\$4,627,426	4.4%

**TOTAL (WITHOUT CONTINGENCY) \$104,556,900**

## TIDAL HABITAT

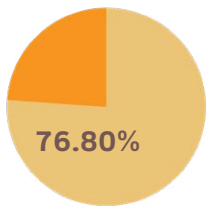


### COST ITEM

	Tidal Marsh	\$24,831,524	31.57%
	Muted Tidal Marsh	\$3,561,344	4.53%
	New Muted Tidal Marsh Gate	\$272,500	0.35%
	Sediment Augmentation	\$50,000,000	63.56%

**TOTAL (WITHOUT CONTINGENCY) \$78,665,400**

## EROSION PROTECTION

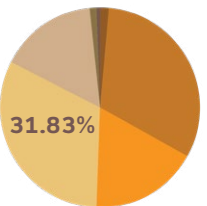


### COST ITEM








	Erosion Control	\$32,620,000	76.80%
	Gravel Beach with headlands	\$10,122,368	23.83%

**TOTAL (WITHOUT CONTINGENCY) \$42,742,400**

## STORMWATER MANAGEMENT

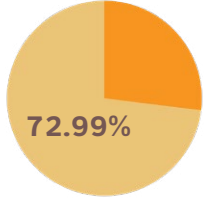


### COST ITEM

	New Tide Gates	\$3,945,800	1.43%
	PS Bockman Channel	\$87,943,591	31.83%
	PS Sulfur Creek	\$48,365,439	17.51%
	PS Line A	\$87,943,591	31.83%
	PS Line F	\$43,971,795	15.92%
	Salt Pond/Stormwater Retention	\$3,277,552	1.19%
	Groundwater Management	\$814,000	0.29%

**TOTAL (WITHOUT CONTINGENCY) \$276,261,800**



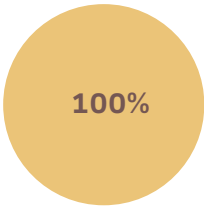


## WASTEWATER TREATMENT

### COST ITEM

	Freshwater Treatment Marsh	\$10,890,000	27.01%
	Horizontal Levee	\$29,424,500	72.99%

**TOTAL (WITHOUT CONTINGENCY) \$40,314,500**

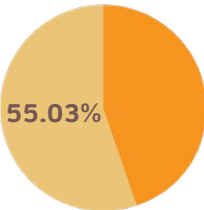


## BAY TRAIL

### COST ITEM

	New Bay Trail (terrestrial surface prep)	\$806,541	100%
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**TOTAL (WITHOUT CONTINGENCY) \$806,500**



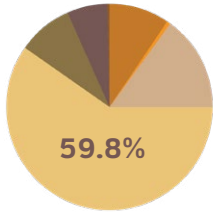
## HAYWARD SHORELINE INTERPRETIVE CENTER

### COST ITEM

	Protected in place	\$1,430,000	44.97%
	Renovations	\$1,750,000	55.03%

**TOTAL (WITHOUT CONTINGENCY) \$3,180,000**

# PREFERRED ALTERNATIVE COST ESTIMATE



## COST SUMMARY

### COST ITEM

Bay Trail	\$806,541.00	0.2%
Erosion Protection	\$42,742,368.38	9.3%
Interpretive Center	\$3,180,000.00	0.7%
Line of Protection	\$68,743,066.00	14.9%
Stormwater Management	\$276,261,767.42	59.8%
Tidal Habitat	\$40,575,864.33	8.8%
Wastewater Treatment	\$29,424,500.00	6.4%

**TOTAL (WITHOUT CONTINGENCY) \$461,734,100**

## TOTAL

### COST ITEM

<b>SUBTOTAL</b>	<b>\$547,547,927</b>
DESIGN (10%)	\$54,754,793
MOBILIZATION (7%)	\$38,328,355
<b>TOTAL</b>	<b>\$640,631,075</b>
CONTINGENCY (50%)	\$320,315,537

**TOTAL (WITH CONTINGENCY) \$960,946,600**

## ANNUALIZED OPERATIONS & MAINTENANCE

COST ITEM	LOW END	HIGH END
Bay Trail	\$8,000	\$16,000
Erosion Control	\$427,000	\$854,000
Interpretive Center	\$64,000	\$96,000
Line of Protection	\$637,000	\$1,275,000
Stormwater Management	\$5,492,000	\$8,254,000
Tidal Habitat	\$299,000	\$596,000
Wastewater Treatment	\$806,000	\$1,210,000

**TOTAL \$7,733,000 \$12,301,000**

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