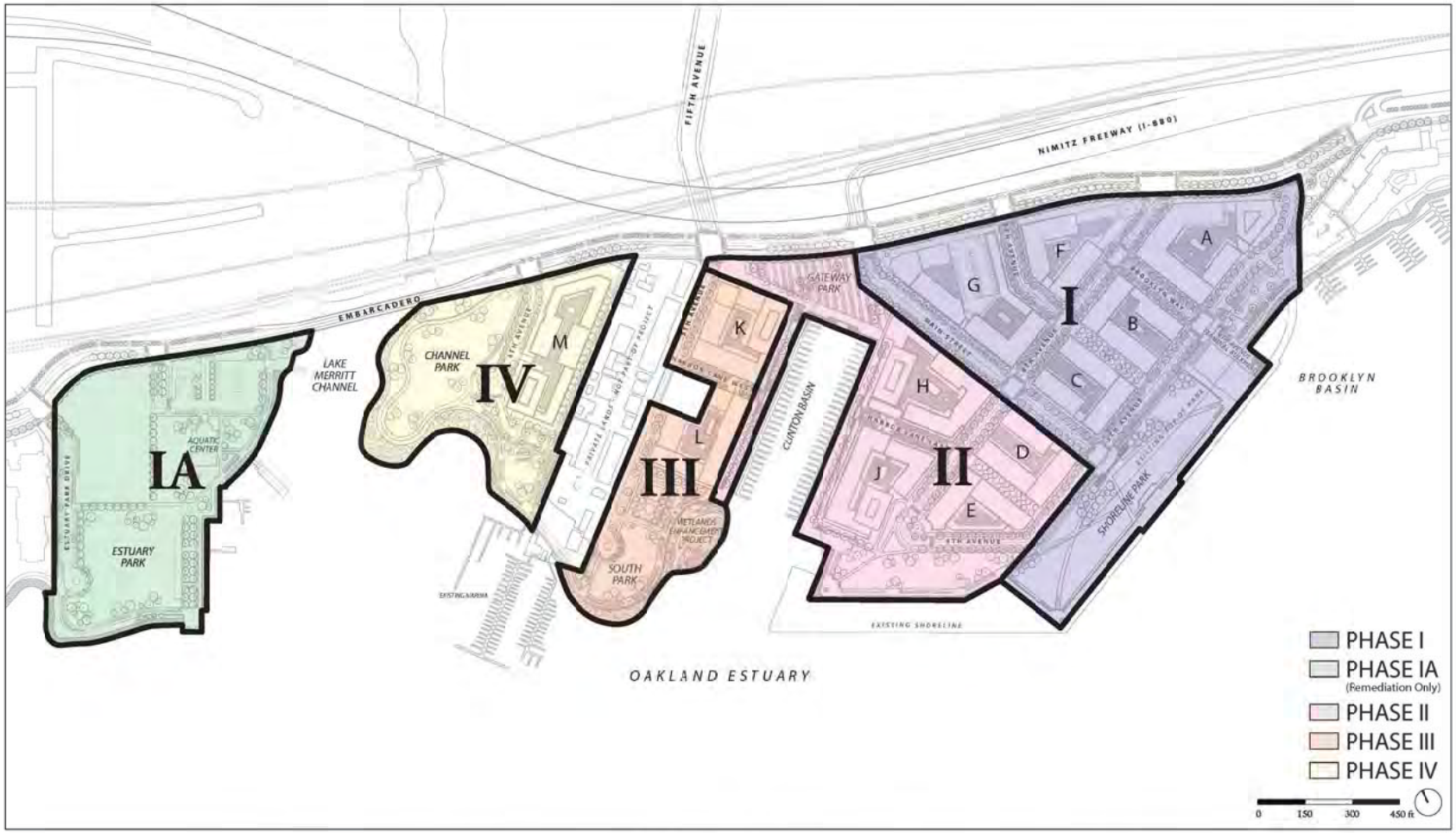
ATTACHMENT 2

Waste Discharge Requirements
and
Water Quality Certification
Oak to Ninth Project
City of Oakland, Alameda County

Project Phasing, Project Shoreline Improvement Designs, Construction Quantities Table, and Table of Permitted Fill Quantities



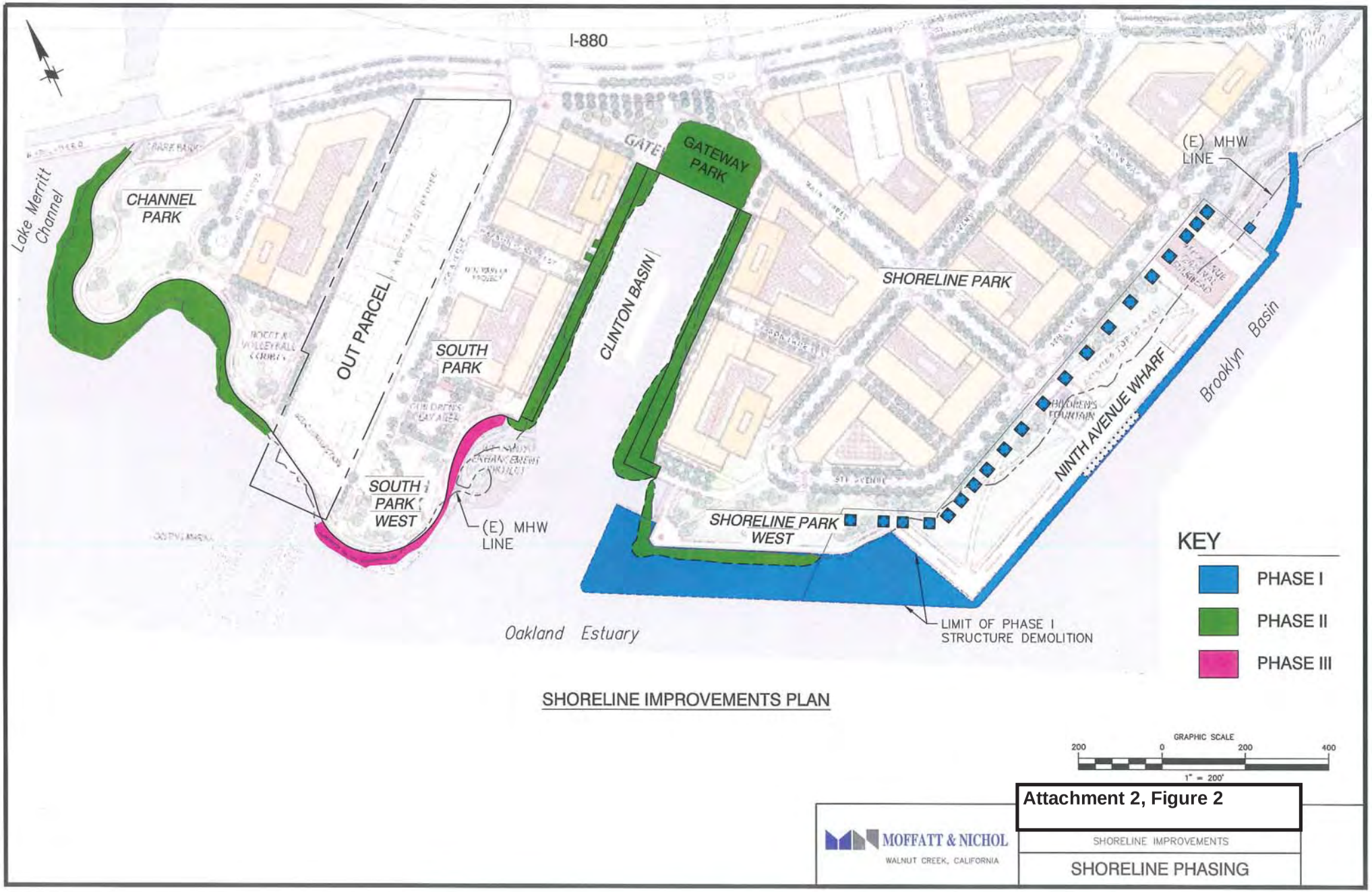
PHASING PLAN

Brooklyn Basin - Oak to 9th Development Plan

Prepared for Oakland Harbor Partners by ROMA Design Group in association with MVE Architects, Moffatt & Nichol and BKF Engineers

JUNE 2006

Attachment 2, Figure 1



SHORELINE IMPROVEMENTS PLAN

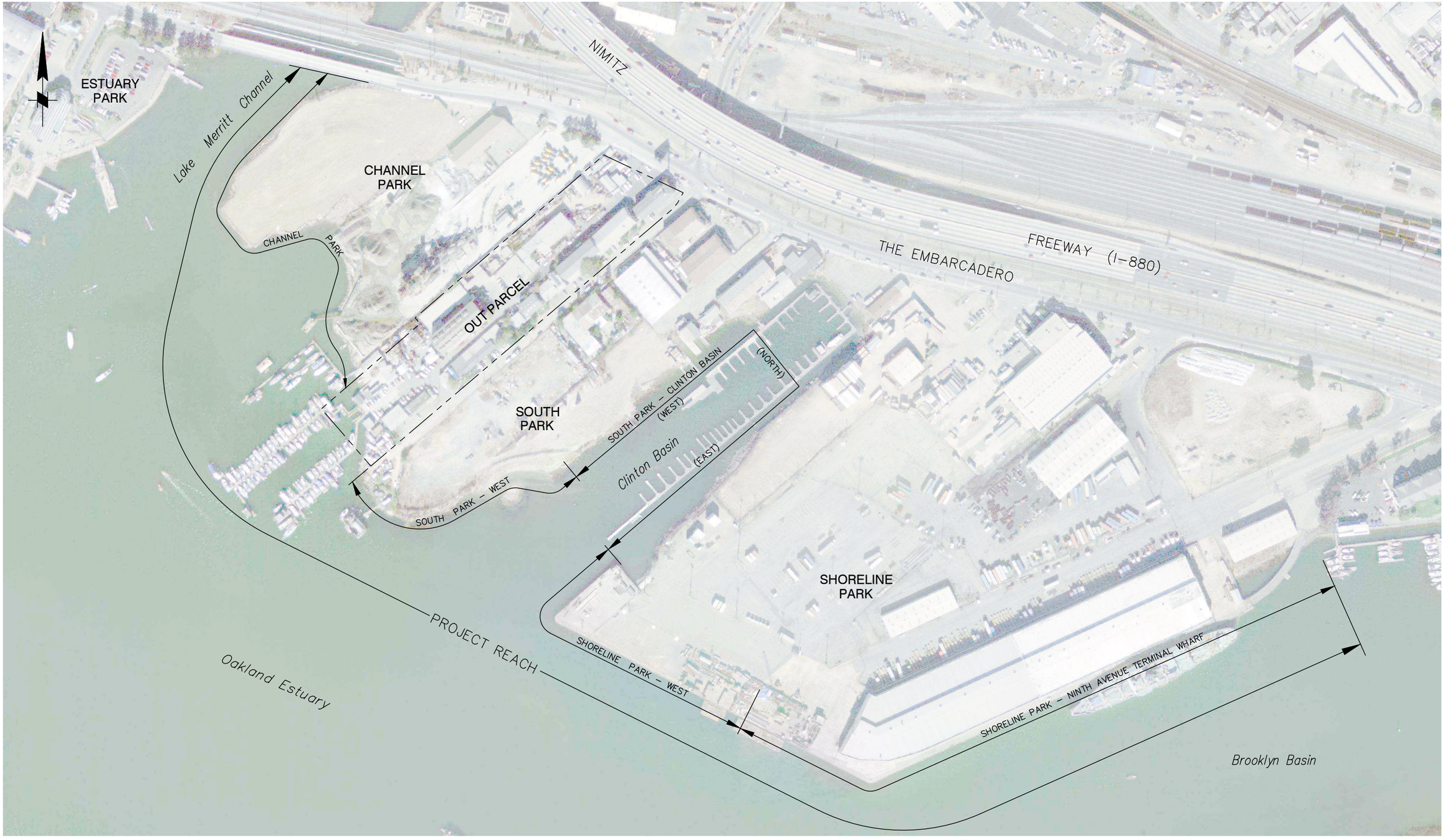
GRAPHIC SCALE
200 0 200 400
1" = 200'

Attachment 2, Figure 2

MOFFATT & NICHOL
WALNUT CREEK, CALIFORNIA

SHORELINE IMPROVEMENTS

SHORELINE PHASING



SITE PLAN

SCALE: 1" = 250'

GRAPHIC SCALE

250 0 250 500

1" = 250'

moffatt & nichol

WALNUT CREEK, CALIFORNIA

ATTACHMENT 2, FIGURE 3

SHORELINE IMPROVEMENTS

SITE PLAN

Table 1: Construction Quantities

SEGMENT	DESCRIPTION	UNIT	QUANTITY	
Channel Park				
0+00 to 12+00	Shoreline Debris Removal	LF	1,200	
	Excavation/Dredging	CY	7,500	††
	Geomembrane	SY	7,000	††
	Filter Fabric	SY	3,000	††
	New Armor Rock(new: 0.02ac/170 LF; rehab 0.29ac/1200 LF)	TON	3,000	††
South Park (West)				
14+50 to 21+00	Shoreline Debris Removal	LF	700	
	Excavation/Dredging	CY	1,400	††
	Geomembrane	SY	2,000	††
	Filter Fabric	SY	1,600	††
	New Armor Rock (new: 0.05ac/250 LF; rehab 0.09ac/700LF)	TON	19,600	††
South Park (Clinton Basin) - West Side				
21+80 to 28+50	Shoreline Debris Removal	LF	670	
	Fill to Riprap Subgrade	CY	10	**
	Excavation/Dredging	CY	4,500	**
	Filter Fabric	SY	2,980	**
	Bedding	TON	0	**
	Armor Rock (200# Nominal(†); new: 0.35ac/1020 LF)	TON	2,530	**
	Precast Concrete Piles 65' Long 18" square	EA	69	
	Cast-in Place Concrete (Pile Caps) Precast	CY	138	
	Bridge Planks	EA	176	
	Precast Fascia Elements	EA	23	
	Cast-in-Place Concrete (Deck & Curb) Railing	CY	380	
		LF	670	
South Park (Clinton Basin) - North Side				
28+50 to 30+90	Shoreline Debris Removal	LF	250	
	Fill	CY	0	*
	Fill For Gateway Park (up to Finish Grade)	CY	22,400	**
	Steel Sheet Pile	SF	19,800	*
	Tieback Anchors	EA	31	*
	Concrete Sheet Pile Cap	CY	50	*
	Railing	LF	300	

Table 1: Construction Quantities

SEGMENT	DESCRIPTION	UNIT	QUANTITY	
South Park (Clinton Basin) - East Side				
30+90 to 38+00	Shoreline Debris Removal	LF	670	
	Fill to Riprap Subgrade (or FG) Excavation/	CY	5,500	**
	Dredging	CY	3,500	**
	Filter Fabric	SY	3,000	**
	Bedding	TON	0	**
	New Armor Rock (200# Nominal; rehab 0.39ac/1340 LF)	TON	2,540	**
	Precast Concrete Piles 65' long 18" Square Cast-	EA	75	
	in-Place Concrete (Pile Caps) Precast Bridge	CY	147	
	Planks	EA	192	
	Precast Fascia Elements	EA	25	
	Cast-in-Place Concrete (Deck & Curb)	CY	410	
	Railing	LF	798	
Shoreline Park (West)				
38+20 to 42+00	Bedding	TON	0	*
	Filter Fabric	SY	0	*
	New Armor Rock (50# Nominal; rehab: 0.35ac/560 LF)	TON	890	*
Shoreline Park (Ninth Avenue Terminal Wharf)				
	Deck Demolition for Retrofit Pile Caps	SF	13,520	
	Five Foot Diameter Retrofit Piles 100' Long	EA	80	
	Cast-in-Place Concrete for Pile Caps	CY	3,004	
	Seismic Joint	LF	40	
	New Armor Rock (rehab: 0.01ac/50LF)			

* Revised December 2007 ** Revised August 2010

† 200# Nominal referes to the size of the rock: a 200-lb. rock
†† Rev July 2014

Table 2: Permit Related Quantities

BAYFILL (As Defined By BCDC)

Reach	Begin	End	Length (ft)	Bayfill - Area (at MHW)*		
				Solid (sf)	Shaded (sf)	Floating (sf)
Channel Park	0+00	12+00	1,200	(28,060 sf; 0.64ac)	0	0
South Park (West)	14+50	21+00	650	(498 sf; 0.01ac)	0	0
South Park (Clinton Basin)	21+00	38+20	1,720	23,547 sf; 0.54ac ***	36,570 sf; 0.83ac***	(5,800 sf; 0.13ac) ** †
Shoreline Park (West)	38+20	42+50	430	(1,300 sf; 0.03ac)	(69,500 sf; 1.59ac)***	0
Shoreline Park (Ninth Avenue Wharf)	42+50	56+00	1,350	(1,200sf; 0.03ac)	(64,750 sf; 1.48ac)***	0
Total			5,350	(7,511 sf; 0.17ac)***	(97,680 sf; 2.24ac)***	(5,800 sf; 0.13ac) **

VOLUME OF FILL BELOW MHW

Reach	Begin	End	Length (ft)	Fill Volume (excludes revetment) (cy)	Revetment Volume (cy)	
Channel Park	0+00	12+00	1,200	50 ***	70	††
South Park (West)	14+50	21+00	650	150 ***	160	††
South Park (Clinton Basin)	21+00	38+20	1,720	19,700 ***	3,000	***
Shoreline Park (West)	38+20	42+50	430	0	600	***
Shoreline Park (Ninth Avenue Wharf)	42+50	56+00	1,350	0	50	*** (outfall structure)
Total			5,350	19,900 ***	3,880	††

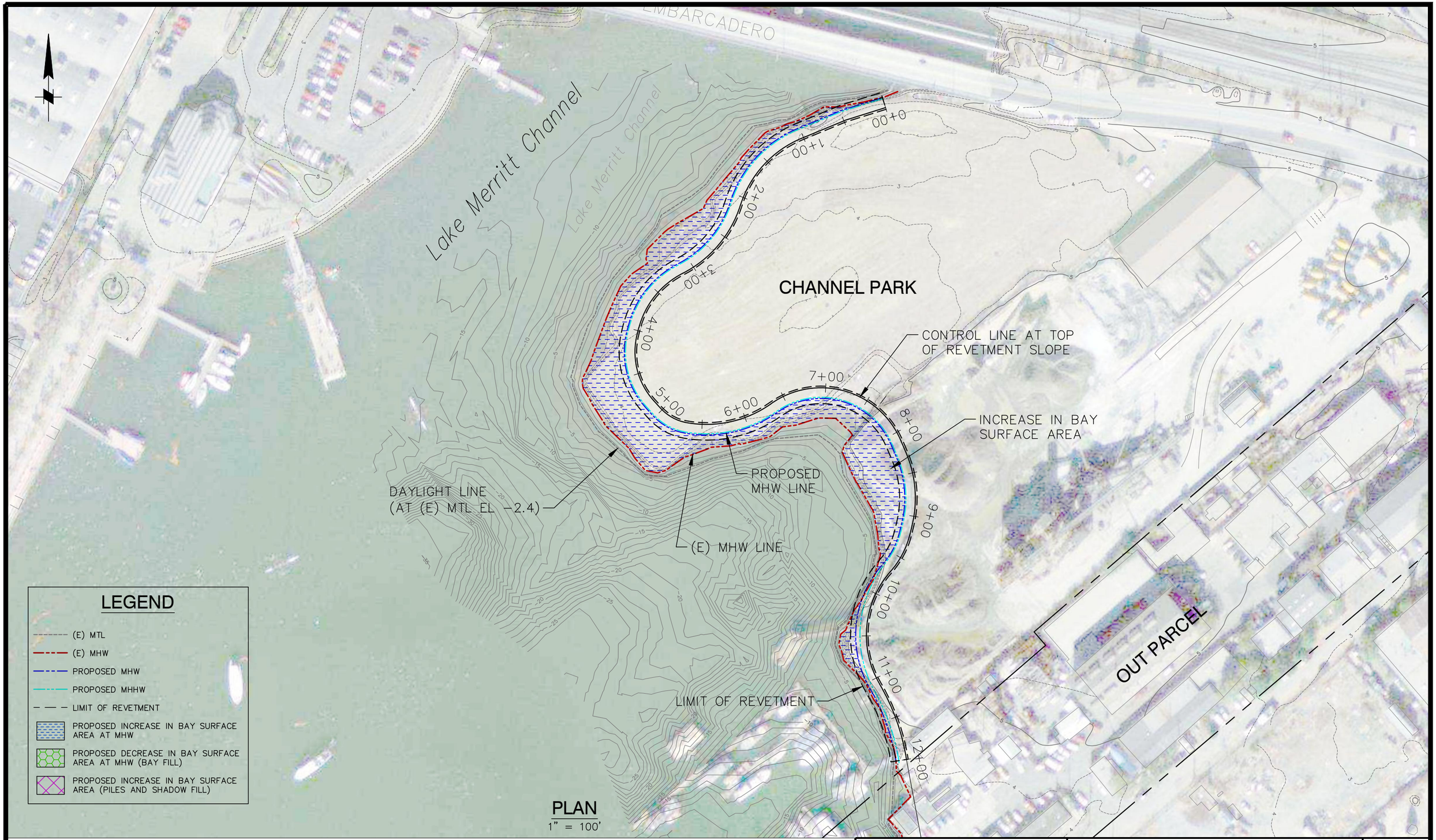
VOLUME OF DREDGING

Reach	Begin	End	Length (ft)	Excavation Below MHW (cy)		
Channel Park	0+00	12+00	1,200	1,100	††	
South Park (West)	14+50	21+00	650	500	††	
South Park (Clinton Basin)	21+00	38+20	1,720			
Shoreline Work Only				8,000	***	
Additional Work for Navigation						
Shoreline Park (West)	38+20	42+50	430	0		
Shoreline Park (Ninth Avenue Wharf)	42+50	56+00	1,350	100	***	(outfall structure)
Total			5,350	9,700	††	

area in parenthesis ( ) denotes increase in Bay

** Revised December 2007 *** Revised August 2010 †† Rev July 2014

† Includes demolition of 25.800 SF (existing marina)



PLAN
1" = 100'

GRAPHIC SCALE
100 0 100 200
1" = 100'

moffatt & nichol
WALNUT CREEK, CALIFORNIA

ATTACHMENT 2, FIGURE 4

SHORELINE IMPROVEMENTS

CHANNEL PARK

CHANNEL PARK

OUT PARCEL

SOUTH PARK

Oakland Estuary

Clinton Basin

10+00
11+00
12+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
25+00
26+00
35+00
36+00
37+00
38+00

CONTROL LINE AT TOP OF SLOPE

(E) MTL EL −2.4

LIMIT OF REVETMENT

MARSH (MTL TO MHHW)

(E) MHW LINE

PROPOSED MHW LINE

LEGEND

- (E) MTL
- (E) MHW
- PROPOSED MHW
- PROPOSED MHHW
- LIMIT OF REVETMENT
- PROPOSED INCREASE IN BAY SURFACE AREA AT MHW
- PROPOSED DECREASE IN BAY SURFACE AREA AT MHW (BAY FILL)
- PROPOSED INCREASE IN BAY SURFACE AREA (PILES AND SHADOW FILL)

PLAN

1" = 100'

GRAPHIC SCALE

100 0 100 200

1" = 100'

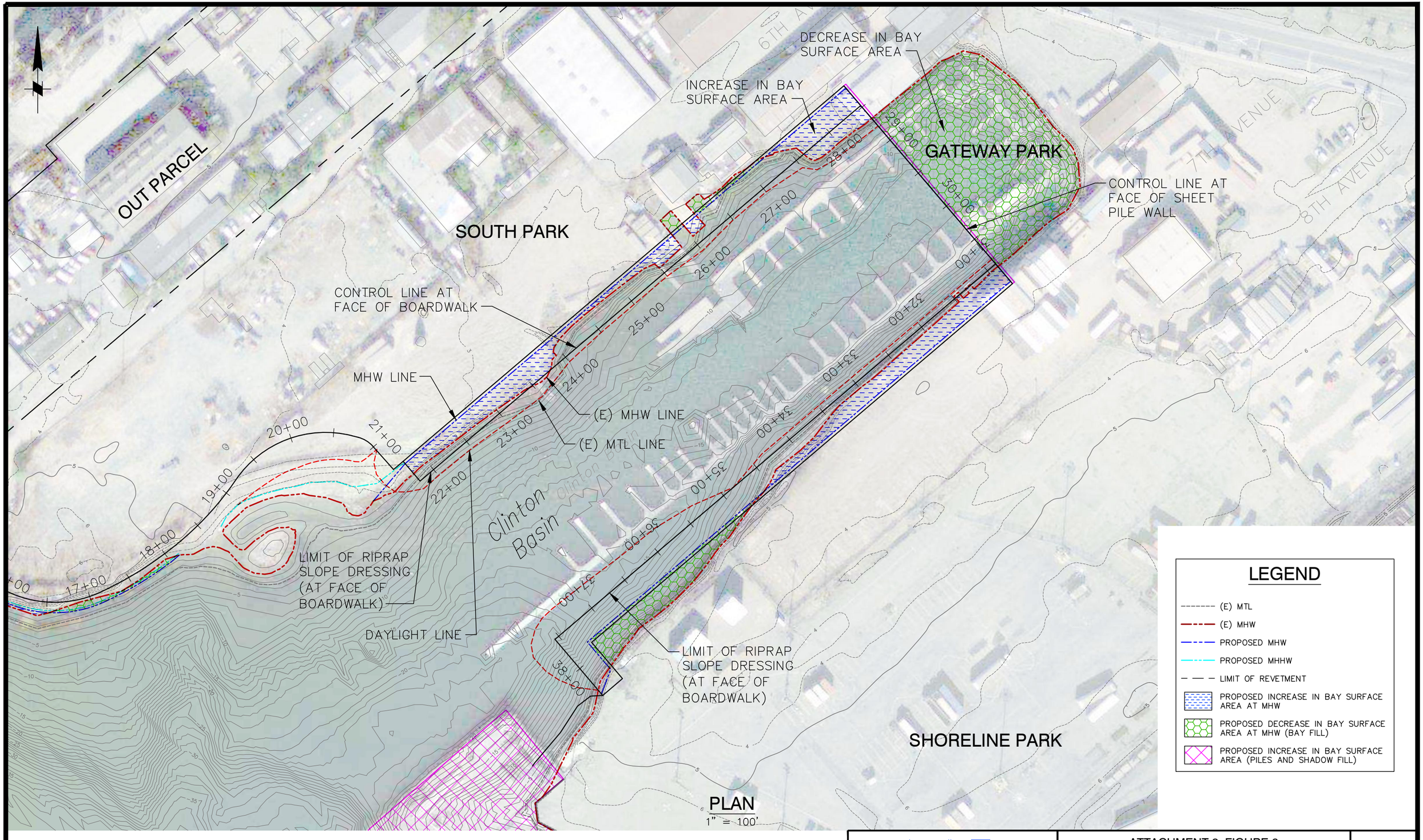
moffatt & nichol

WALNUT CREEK, CALIFORNIA

ATTACHMENT 2, FIGURE 5

SHORELINE IMPROVEMENTS

SOUTH PARK - WEST



LEGEND

- (E) MTL
- (E) MHW
- PROPOSED MHW
- PROPOSED MHHW
- LIMIT OF REVETMENT
- PROPOSED INCREASE IN BAY SURFACE AREA AT MHW
- PROPOSED DECREASE IN BAY SURFACE AREA AT MHW (BAY FILL)
- PROPOSED INCREASE IN BAY SURFACE AREA (PILES AND SHADOW FILL)

PLAN

1" = 100'

GRAPHIC SCALE

100 0 100 200

1" = 100'

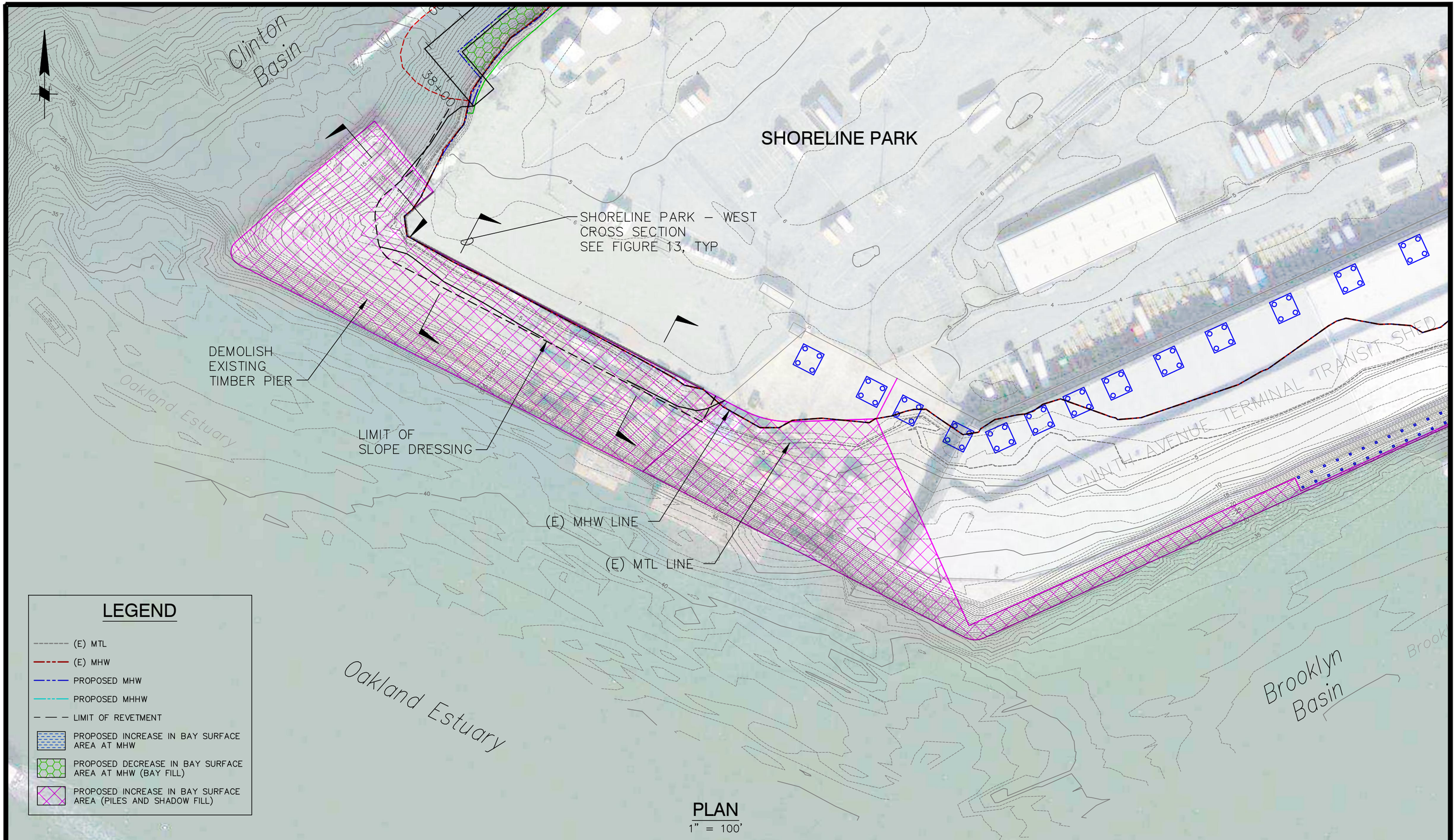
moffatt & nichol

WALNUT CREEK, CALIFORNIA

ATTACHMENT 2, FIGURE 6

SHORELINE IMPROVEMENTS

SOUTH PARK - CLINTON BASIN



PLAN
1" = 100'

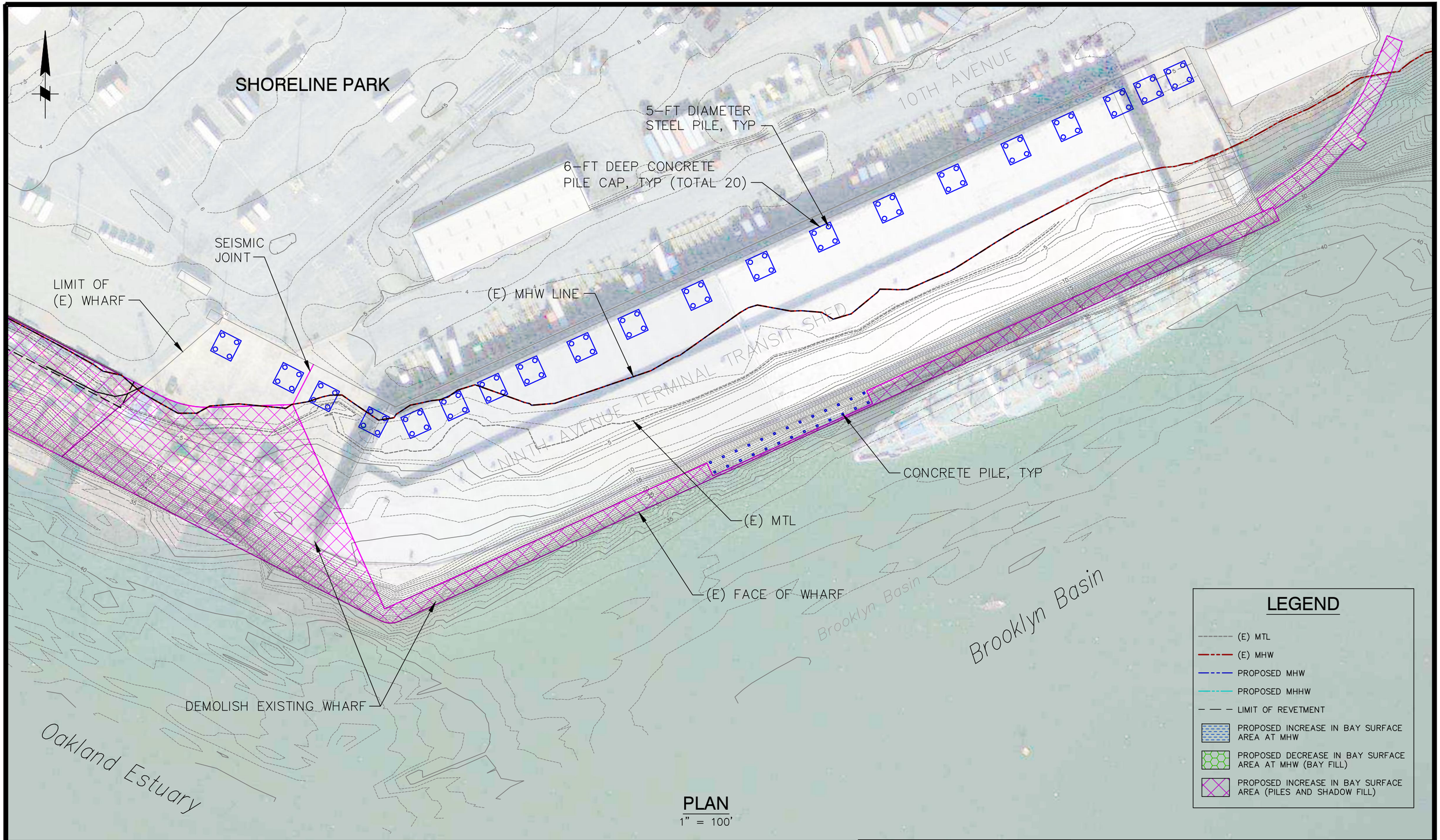
GRAPHIC SCALE
100 0 100 200
1" = 100'

moffatt & nichol
WALNUT CREEK, CALIFORNIA

ATTACHMENT 2, FIGURE 7

SHORELINE IMPROVEMENTS

SHORELINE PARK - WEST



PLAN
1" = 100'

GRAPHIC SCALE
100 0 100 200
1" = 100'

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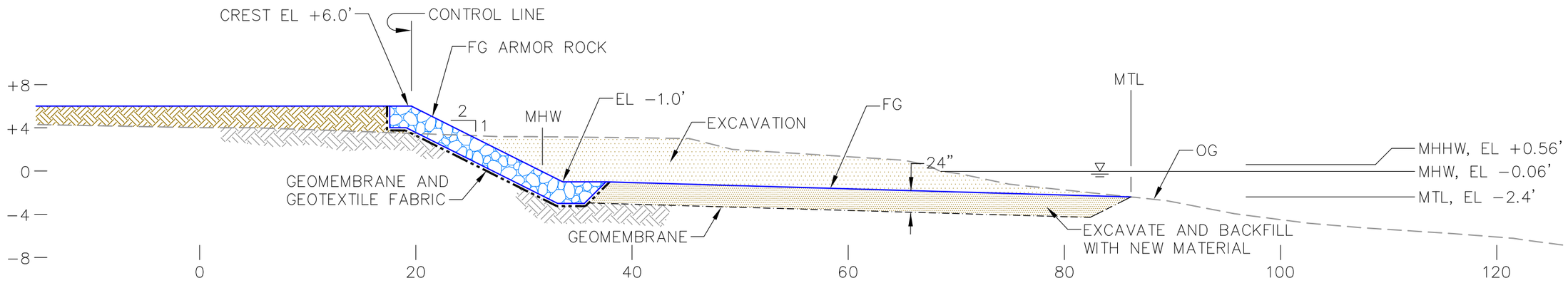
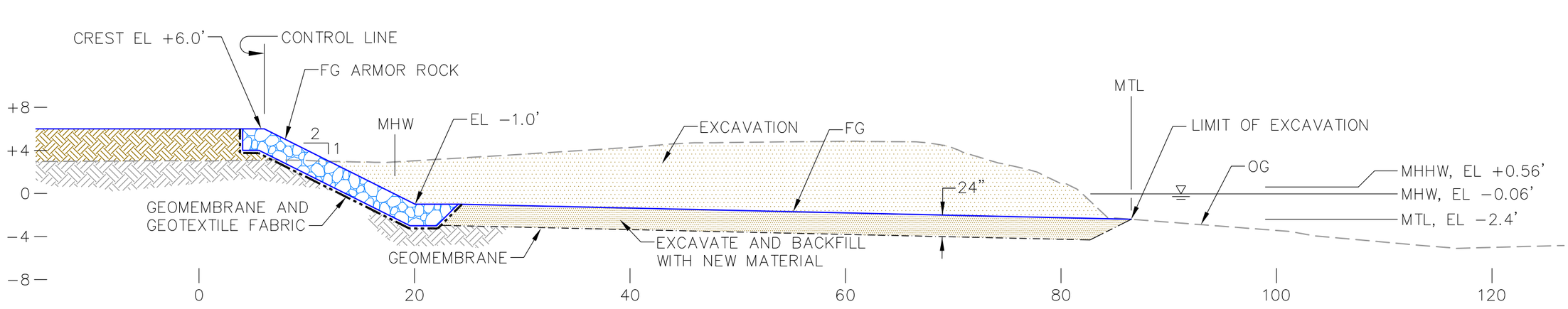
ATTACHMENT 2, FIGURE 8

SHORELINE IMPROVEMENTS

NINTH AVENUE WHARF



CHANNEL PARK - ALONG MERRITT CHANNEL



CHANNEL PARK - ALONG ESTUARY

GRAPHIC SCALE
10 0 10 20
1" = 10'

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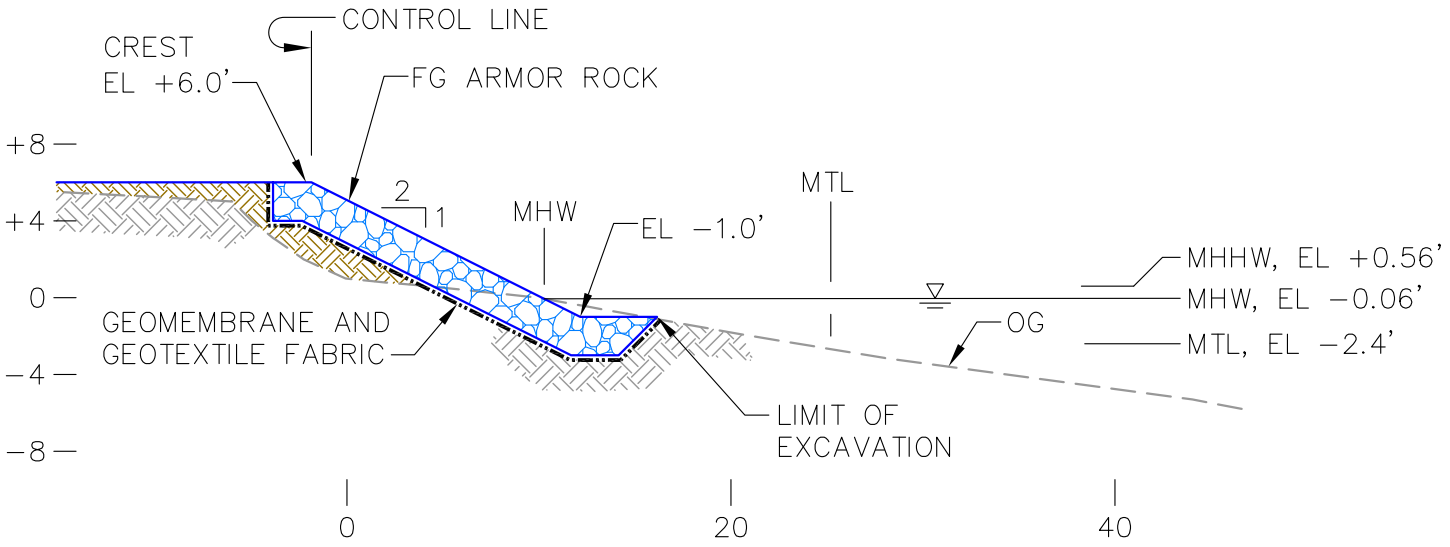
ATTACHMENT 2, FIGURE 9

SHORELINE IMPROVEMENTS

CHANNEL PARK - TYPICAL CROSS SECTIONS



SOUTH PARK (WEST) - TYPICAL SECTION

GRAPHIC SCALE

10 0 10 20

1" = 10'

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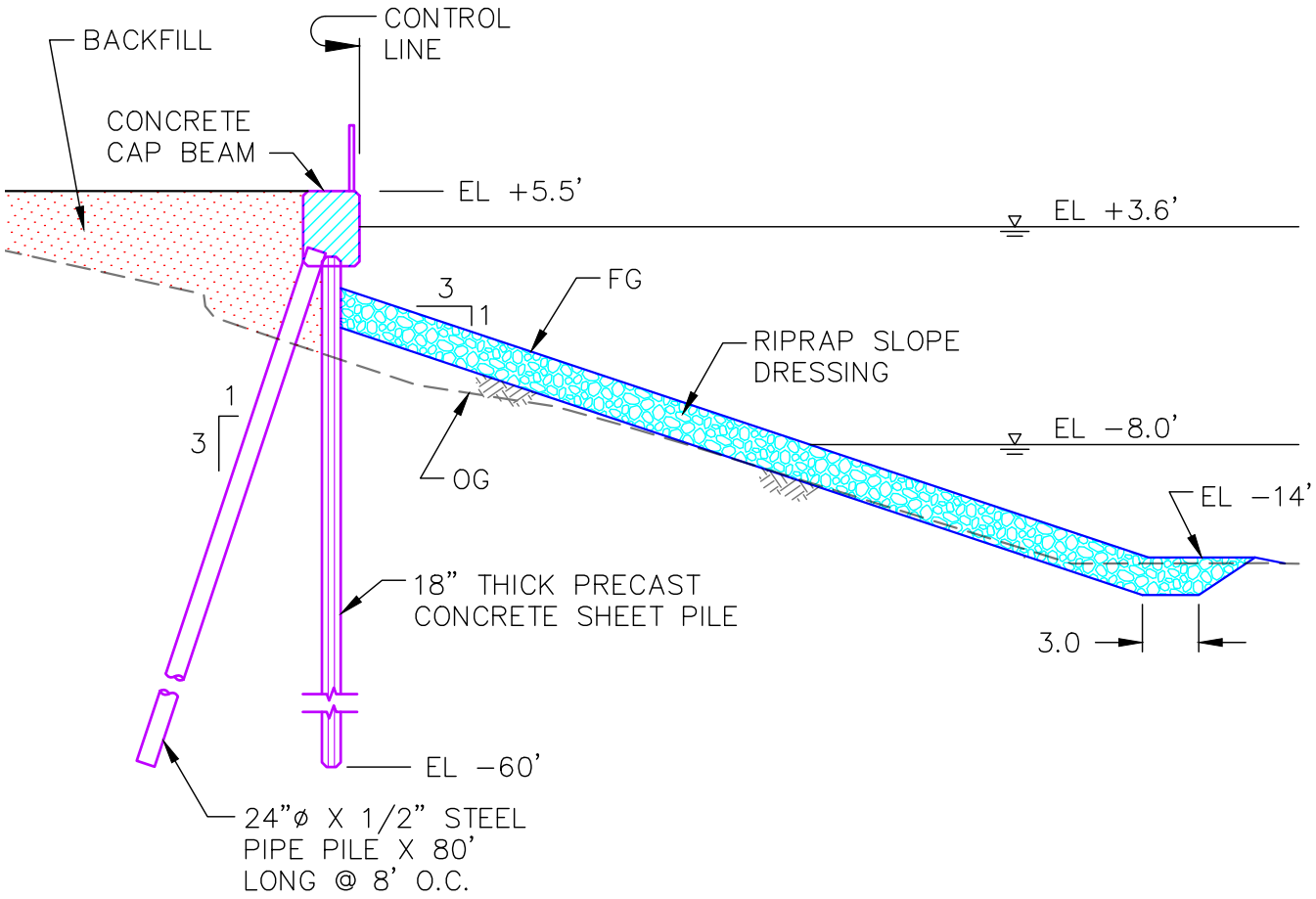
ATTACHMENT 2, FIGURE 10

SHORELINE IMPROVEMENTS

SOUTH PARK (WEST) - TYPICAL CROSS SECTION



ALTERNATIVE 1 - VERTICAL SHEET PILE BULKHEAD (ANCHORED CONCRETE SHEETPILE OPTION SHOWN)

TYPICAL SECTION

1" = 10'

GRAPHIC SCALE

10 0 10 20

1" = 10'

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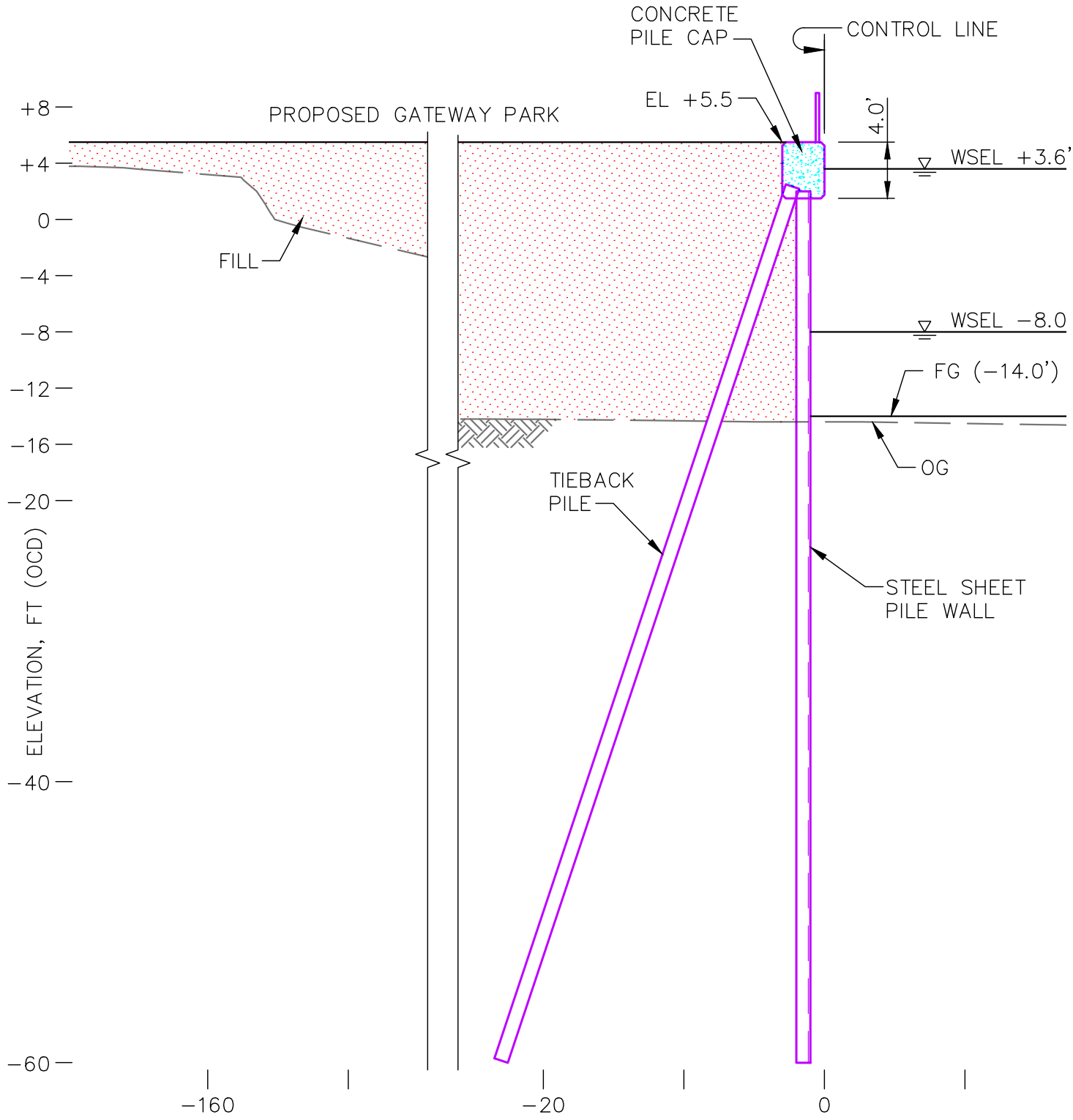
WALNUT CREEK, CALIFORNIA

ATTACHMENT 2, FIGURE 11

SHORELINE IMPROVEMENTS

SOUTH PARK - CLINTON BASIN



ALTERNATIVE 1 - VERTICAL SHEET PILE BULKHEAD
(STEEL SHEET PILE OPTION SHOWN - NORTH SEGMENT ONLY)

GRAPHIC SCALE

10 0 10 20

1" = 10'

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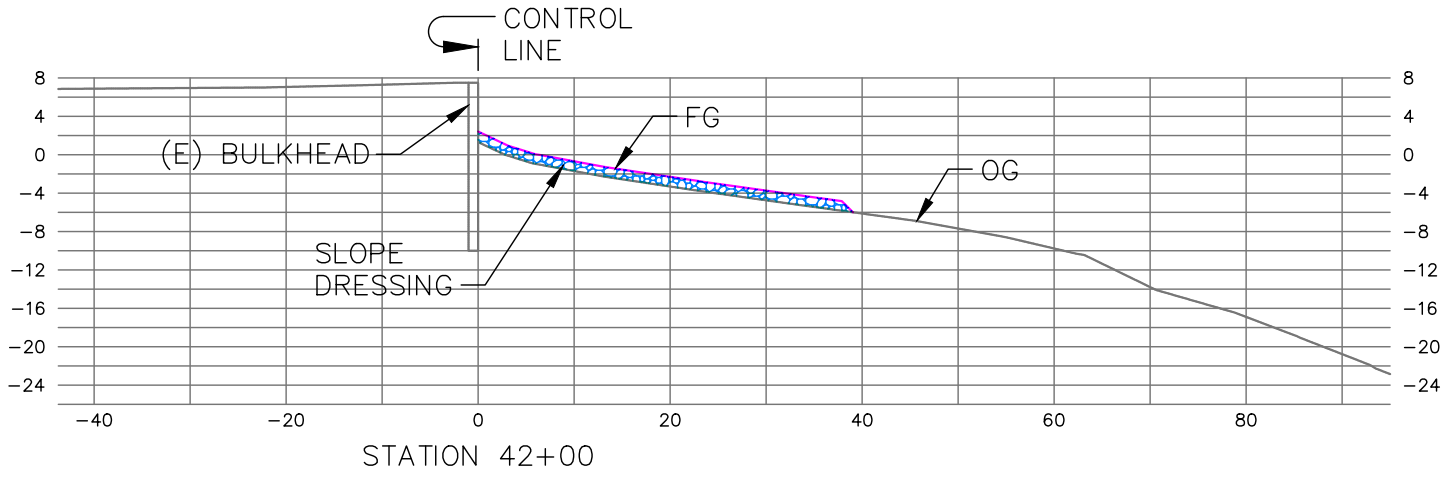
WALNUT CREEK, CALIFORNIA

ATTACHMENT 2, FIGURE 12

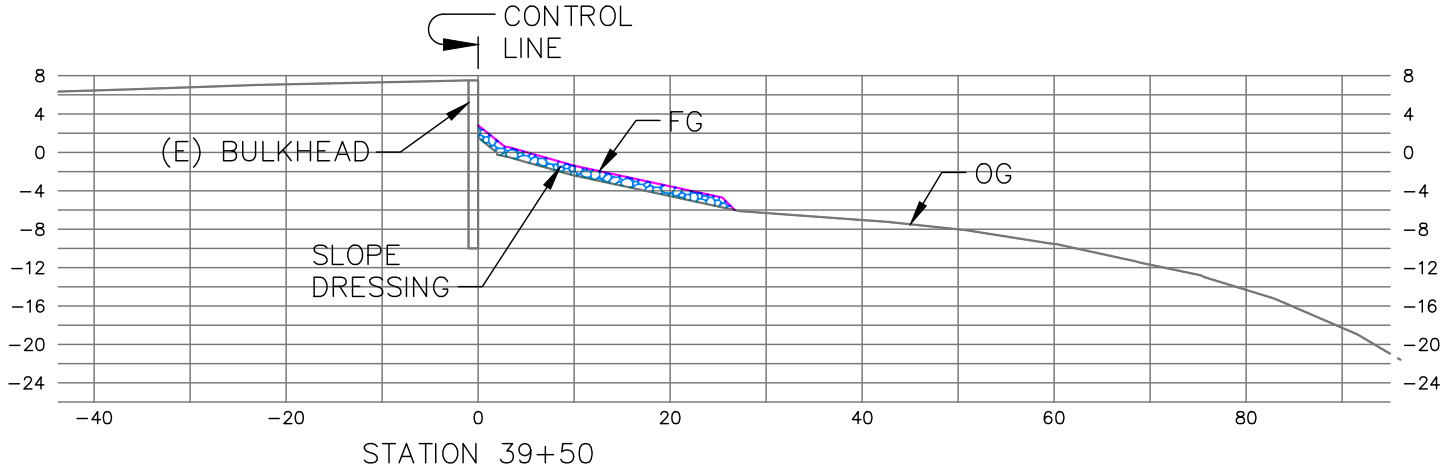
SHORELINE IMPROVEMENTS

SOUTH PARK - CLINTON BASIN



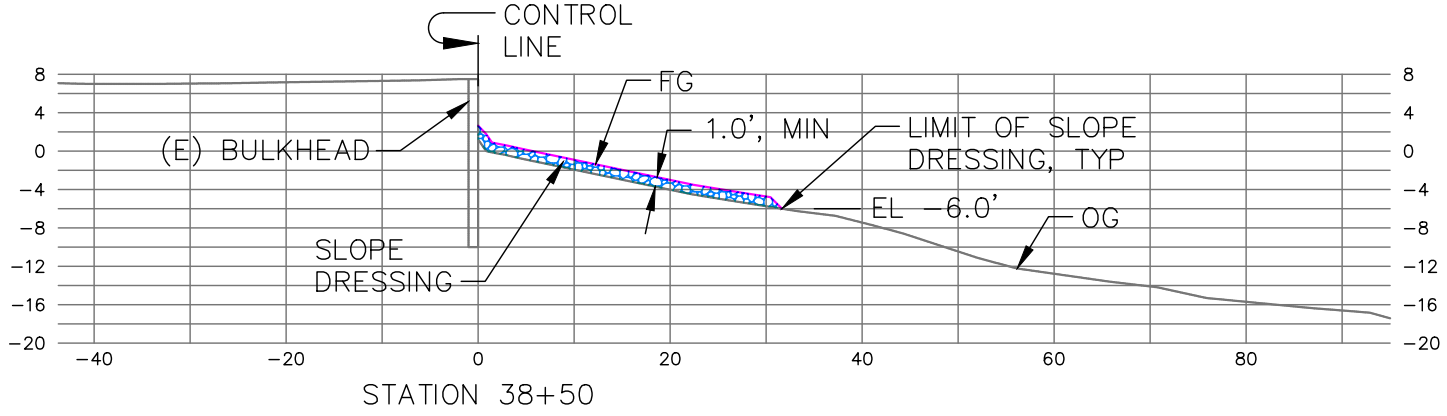
STATION 42+00

SHORELINE PARK - WEST



STATION 39+50

SHORELINE PARK - WEST



STATION 38+50

SHORELINE PARK - WEST

GRAPHIC SCALE

20 0 20 40

1" = 20'

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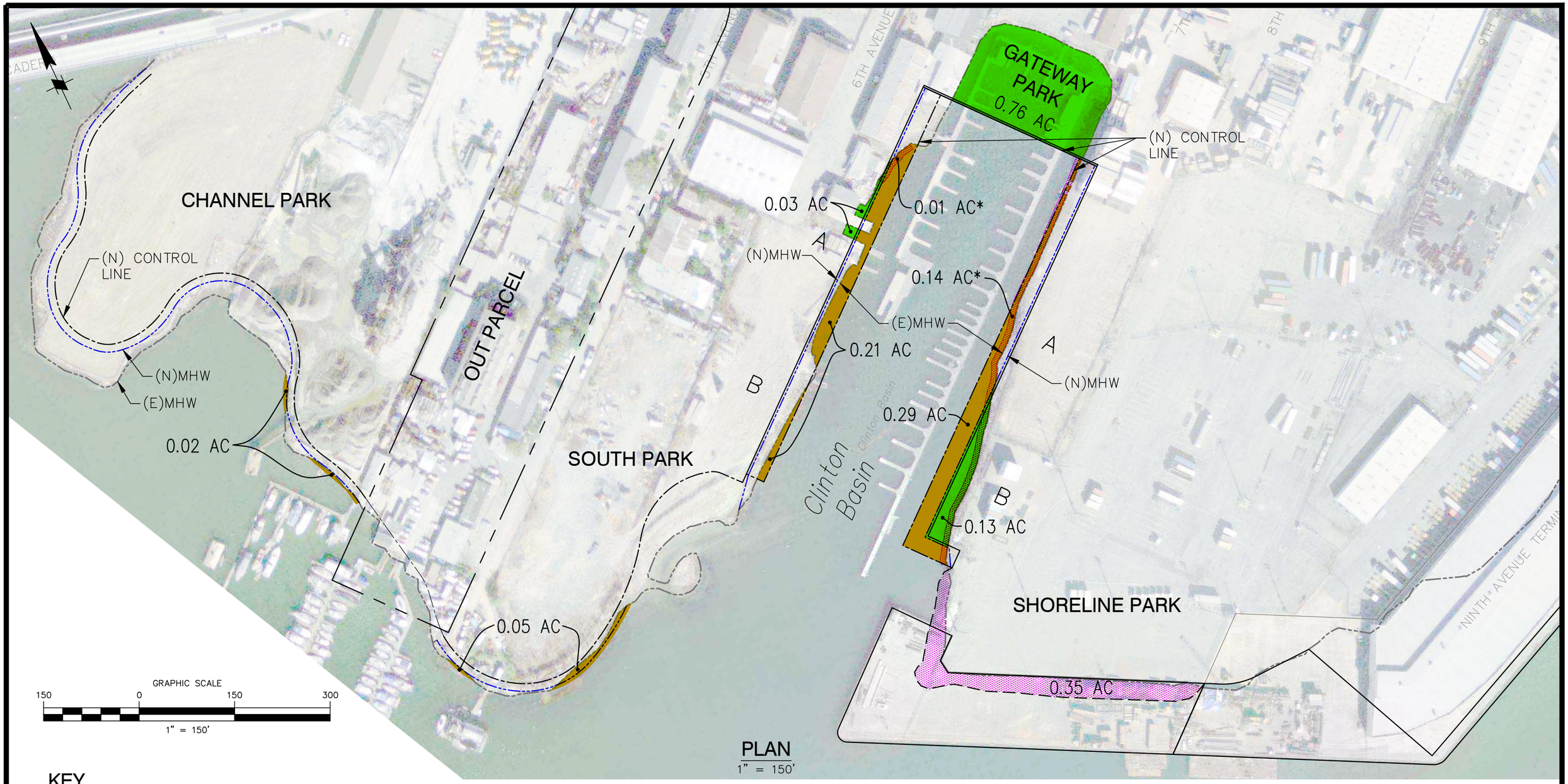
WALNUT CREEK, CALIFORNIA

ATTACHMENT 2, FIGURE 13

SHORELINE IMPROVEMENTS

SHORELINE PARK - WEST
TYPICAL CROSS SECTIONS



PLAN
1" = 150'

KEY

IMPACT: (E) BAY BOTTOM TO BECOME UPLAND	= 0.92 AC
IMPACT: (E) BAY BOTTOM TO BECOME REVETMENT	= 0.92 AC
DEDUCT: AREA OF (E) REVETMENT	= (0.50 AC)

TOTAL BAY BOTTOM IMPACT = 1.34 AC

* ESTIMATED AREA OF (E) RIPRAP ALONG CLINTON BASIN

IMPACTS (AT BAY BOTTOM)

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WALNUT CREEK, CALIFORNIA

ATTACHMENT 2, FIGURE 14

SHORELINE IMPROVEMENTS

SOUTH PARK - CLINTON BASIN
SURFACE AREA AFFECTED (AT BAY BOTTOM)

PLAN
1" = 200'

KEY

	MITIGATION: (E) UPLAND TO BECOME NATURAL SUBSTRATE	= 0.04 AC
	MITIGATION: (E) UPLAND TO BECOME OPEN WATER /MUDFLAT	= 0.65 AC
	MITIGATION: REMOVE (E) SHADOW FILL	= 2.24 AC (NET)

MITIGATION (AT BAY BOTTOM)

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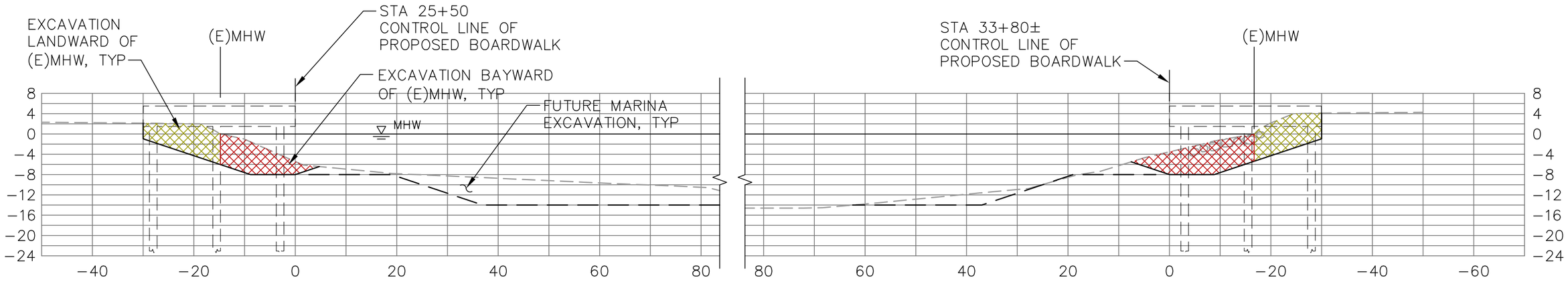
WALNUT CREEK, CALIFORNIA

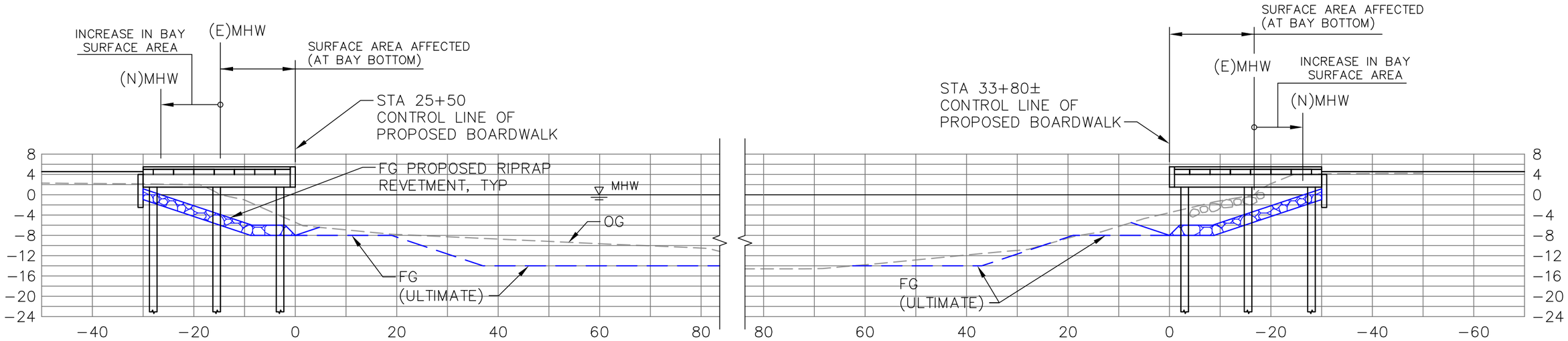
ATTACHMENT 2, FIGURE 15

SHORELINE IMPROVEMENTS

SOUTH PARK - CLINTON BASIN
SURFACE AREA AFFECTED (AT BAY BOTTOM)



EXCAVATION



FILL

SECTION A-A
CLINTON BASIN - STA 25+50 (NORTH) & STA 33+80 (SOUTH)

KEY

- EXCAVATION BAYWARD OF (E)MHW
- EXCAVATION LANDWARD OF (E)MHW
- NEW RIPRAP REVETMENT

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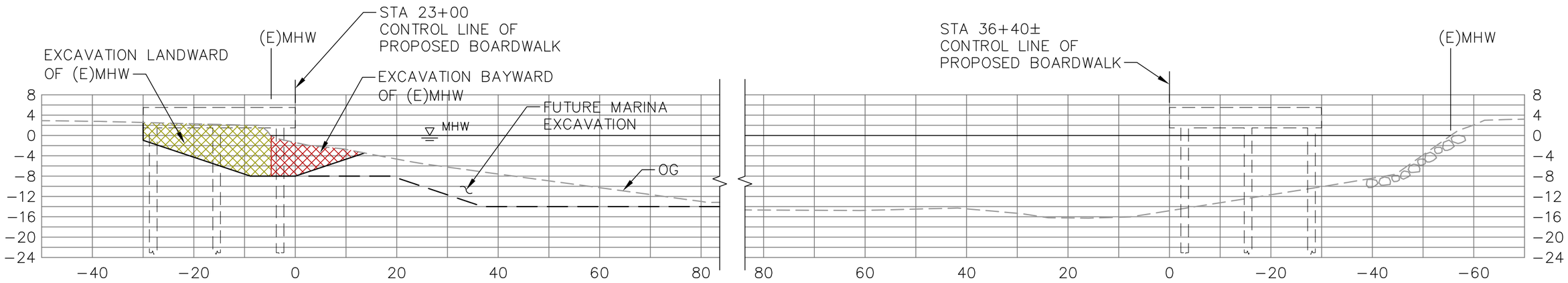
WALNUT CREEK, CALIFORNIA

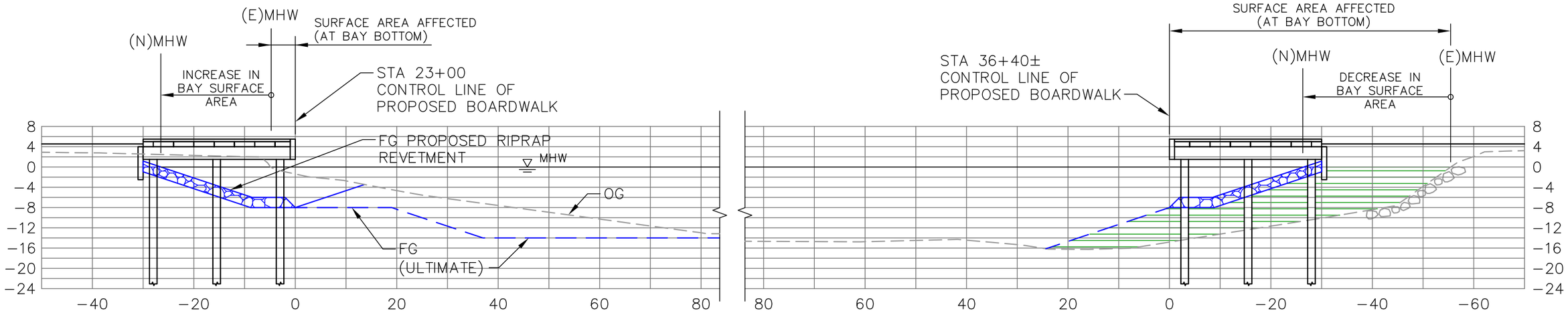
ATTACHMENT 2, FIGURE 16

SHORELINE IMPROVEMENTS

SOUTH PARK - CLINTON BASIN



EXCAVATION



FILL

SECTION B-B
CLINTON BASIN - STA 23+00 (NORTH) & STA 36+40 (SOUTH)

KEY

- EXCAVATION BAYWARD OF (E)MHW
- EXCAVATION LANDWARD OF (E)MHW
- CLEAN FILL BAYWARD OF (E)MHW
- NEW RIPRAP REVETMENT

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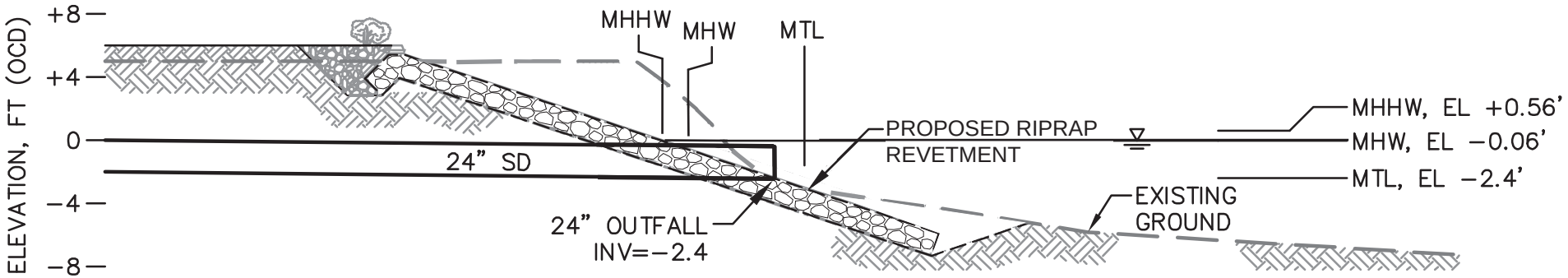
WALNUT CREEK, CALIFORNIA

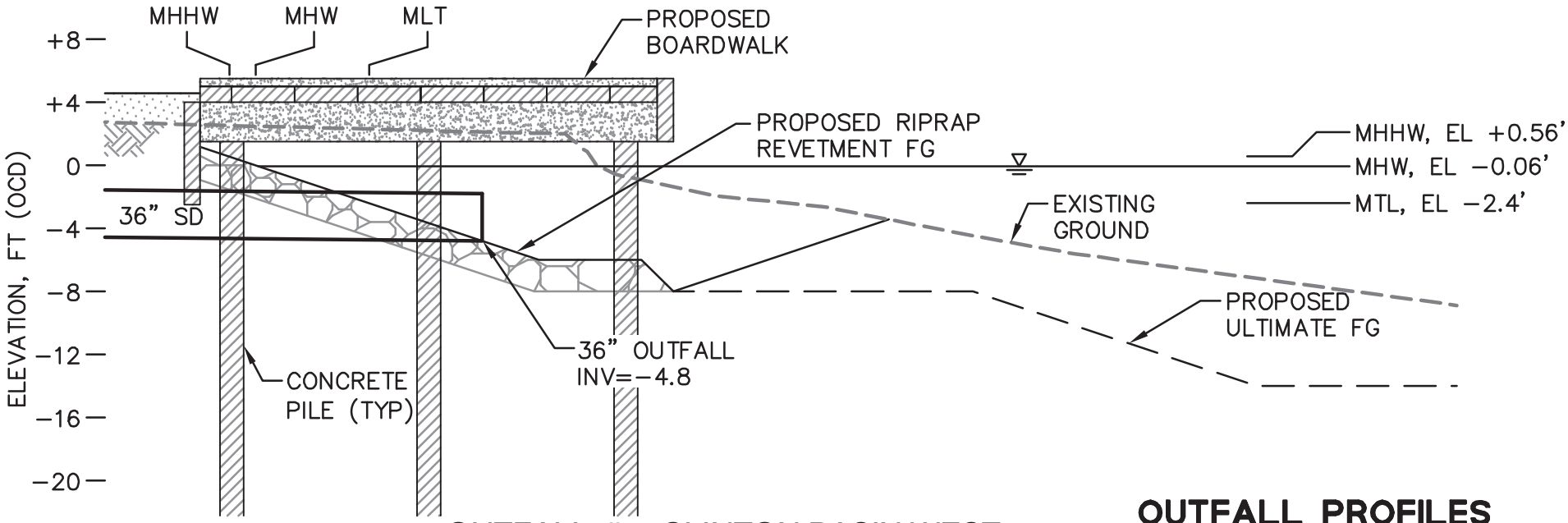
ATTACHMENT 2, FIGURE 17

SHORELINE IMPROVEMENTS

SOUTH PARK - CLINTON BASIN



OUTFALL #1: CHANNEL PARK



OUTFALL #2: CLINTON BASIN WEST

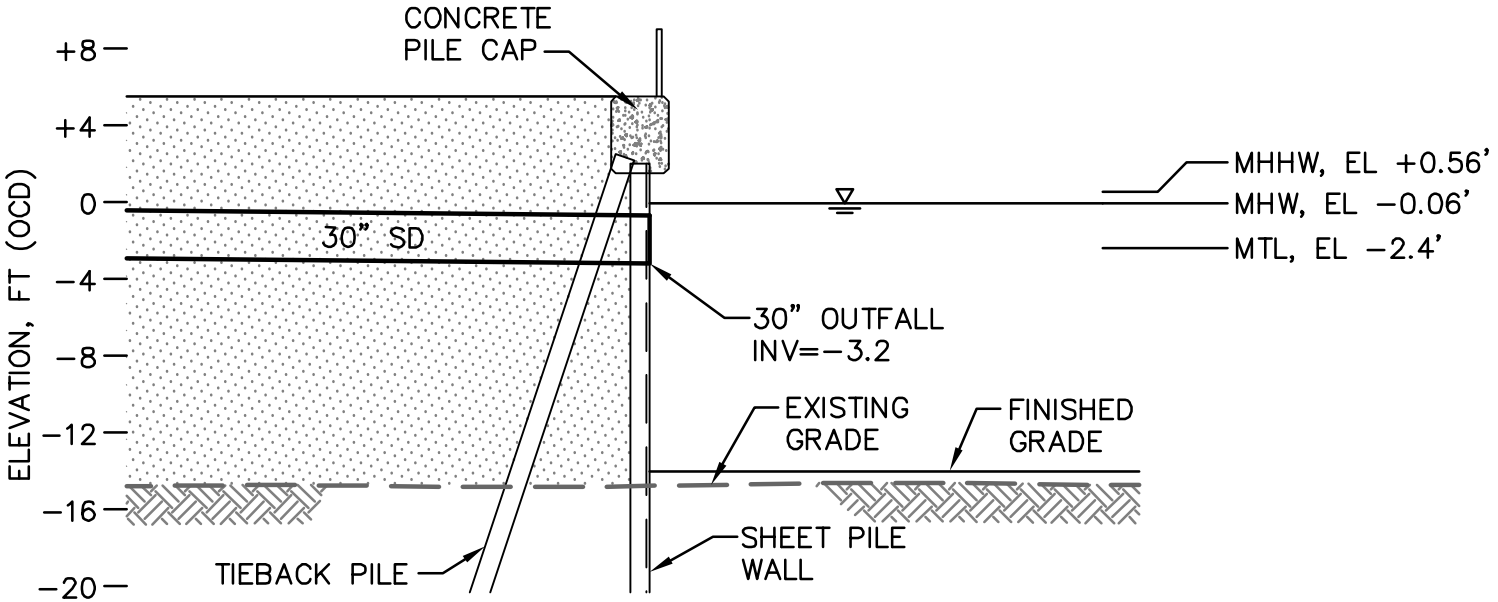
NOTE: FOR DETAIL OF SHORELINE IMPROVEMENTS REFER TO "OAK TO NINTH AVENUE DEVELOPMENT PROPOSED SHORELINE IMPROVEMENTS" SEPTEMBER 2010, PREPARED BY MOFFATT & NICHOL.

GRAPHIC SCALE
0 10 20

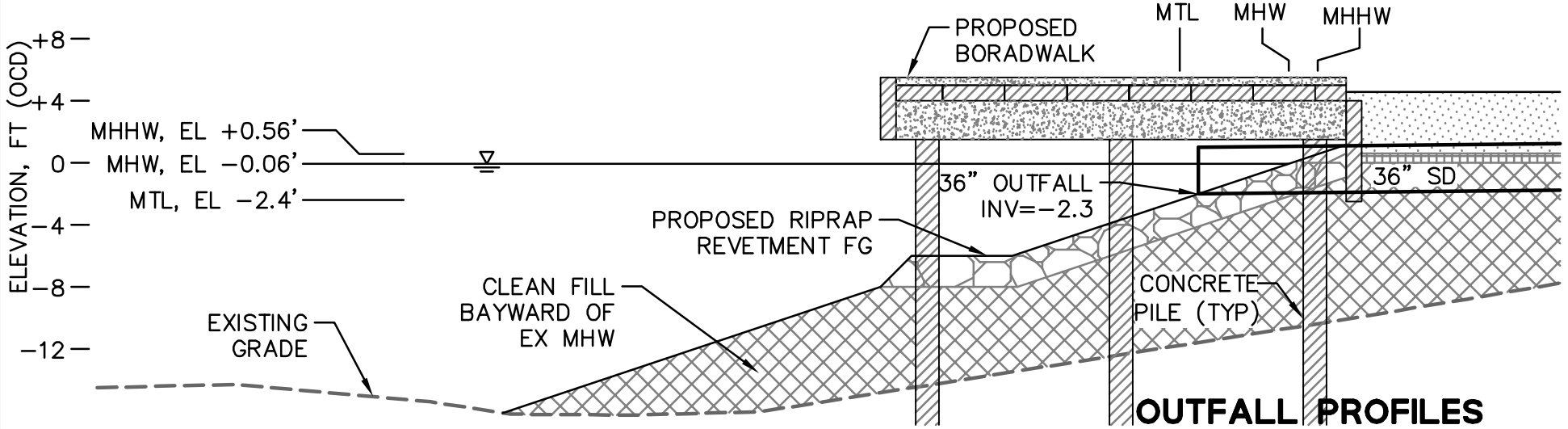
OUTFALL PROFILES

BkF
ENGINEERS / SURVEYORS / PLANNERS
255 SHORELINE DRIVE
SUITE 200
REDWOOD CITY, CA 94065
650/482-6300
650/482-6399 (FAX)

Attachment 2, Figure 18



OUTFALL #3: CLINTON BASIN NORTH



OUTFALL #4: CLINTON BASIN EAST

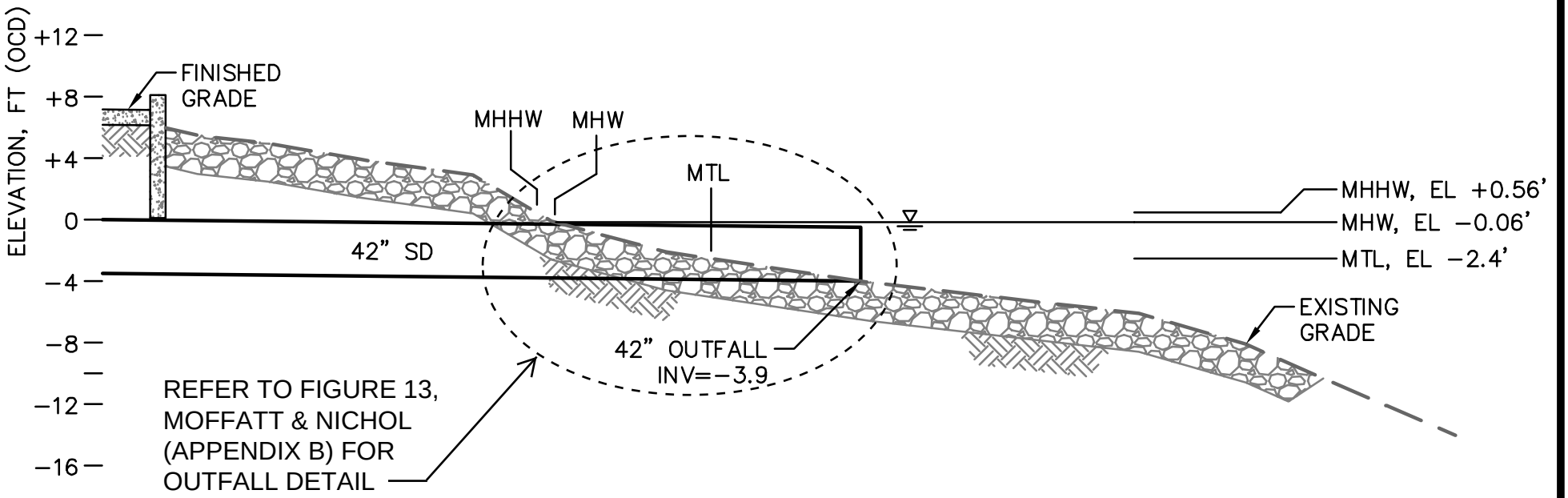
OUTFALL PROFILES

NOTE: FOR DETAIL OF SHORELINE IMPROVEMENTS REFER TO "OAK TO NINTH AVENUE DEVELOPMENT PROPOSED SHORELINE IMPROVEMENTS" SEPTEMBER 2010, PREPARED BY MOFFATT & NICHOL.

GRAPHIC SCALE
0 10 20

BkF
ENGINEERS / SURVEYORS / PLANNERS
255 SHORELINE DRIVE
SUITE 200
REDWOOD CITY, CA 94065
650/482-6300
650/482-6399 (FAX)

Attachment 2, Figure 19



OUTFALL #5: SHORELINE PARK

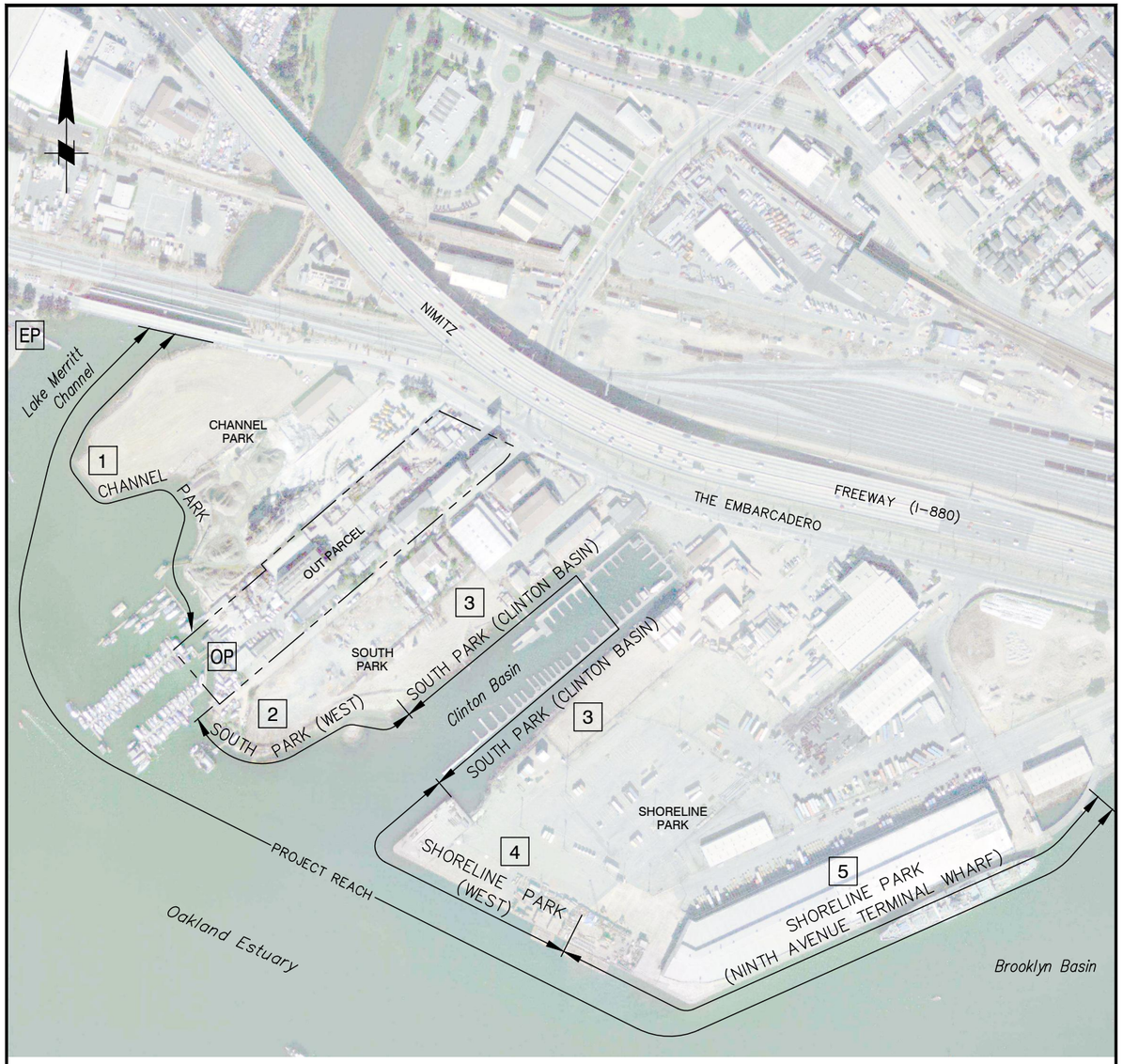
NOTE: FOR DETAIL OF SHORELINE IMPROVEMENTS REFER TO "OAK TO NINTH AVENUE DEVELOPMENT PROPOSED SHORELINE IMPROVEMENTS" OCTOBER 2006, ERRATA DECEMBER 6, 2007

OUTFALL CROSS SECTIONS

BkF
ENGINEERS / SURVEYORS / PLANNERS
255 SHORELINE DRIVE
SUITE 200
REDWOOD CITY, CA 94065
650/482−6300
650/482−6399 (FAX)

GRAPHIC SCALE
0 10 20

Attachment 2, Figure 20



SHORELINE LOCATION MAP

SCALE: 1" = 400'

GRAPHIC SCALE

400 0 400 800

1" = 400'

moffatt & nichol

WALNUT CREEK, CALIFORNIA

ATTACHMENT 2, FIGURE 21

SHORELINE IMPROVEMENTS

SHORELINE LOCATION MAP

ATTACHMENT 2, TABLE 3: IMPACT/MITIGATION CONSTRUCTION SCHEDULE

PROJECT PHASE ***	SITE LOCATION	PROJECT IMPACTS					PROJECT MITIGATIONS	
		AMOUNT AND TYPE OF MATERIAL [BAYWARD OF (E)MHW]		DECREASE IN BAY SURFACE AREA AT MHW (NET) *	SURFACE AREA AFFECTED AT BAY BOTTOM [BAYWARD OF (E)MHW]		BAY SURFACE AREA AT MHW (NET)	SURFACE AREA AFFECTED AT BAY BOTTOM [BAYWARD OF (E)MHW]
		EXCAVATION	FILL		Fill in (E) Open Water	Revetment in (E) Open Water		
I (2012-2015)	Shoreline Park (Ninth Avenue Wharf)	100 cy (for outfall structure)	● 50 cy Revetment (concrete outfall structure)	None	None	0.01 ac (Temporary)	● Solid Fill: 0.03 ac Increase in Bay Surface Area ● Shadow Fill: 1.48 ac Removal ● Floating Fill: none	None
	Shoreline Park (West)	None	None	None	None	None	● Solid Fill: 0.03 ac Increase in Bay Surface Area ● Shadow Fill: 1.60 ac Removal ● Floating Fill: none	None
II (2016-2020)	Shoreline Park (West)	None	● 600 cy Revetment (Slope Dressing)	None	None	0.35 ac (Temporary)	● Solid Fill: none ● Shadow Fill: none ● Floating Fill: none	None
	South Park (Clinton Basin) †	8,000 cy (shoreline protection)	● 3,000 cy Revetment ● 19,700 cy Fill	● Solid Fill: -0.54 ac ● Shadow Fill: -0.84 ac (Boardwalk)	0.92 ac (Permanent)	0.35 ac (Permanent) 0.39 ac (Temporary)	● Solid Fill: [offset by Phase II Channel Park] ● Shadow Fill: [offset by Phase I Removal] ● Floating Fill: 0.59 ac Removal	0.04 ac New Open Water
	Channel Park	1,100 cy ††	● 70 cy Revetment †† ● 50 cy Fill ● 950 cy Re-placed Fill ††	None	None	0.02 ac (Permanent) 0.29 ac (Temporary)	● Solid Fill: 0.64 ac Increase in Bay Surface Area ● Shadow Fill: none ● Floating Fill: none	0.64 ac New Open Water
III (2020-2022)	South Park (West) ‡	500 cy ††	● 160 cy Revetment †† ● 150 cy Fill ● 400 cy Re-placed Fill ††	None	None	0.05 ac (Permanent) 0.09 ac (Temporary)	● Solid Fill: 0.01 ac Increase in Bay Surface Area ● Shadow Fill: none ● Floating Fill: none	0.01 ac New Open Water
TOTALS		Excavate 9,700 cy ††	● 3,880 cy Revetment †† ● 19,900 cy Fill ● 1,350 cy Re-placed Fill ††	● Solid Fill: -0.54 ac ● Shadow Fill: -0.84 ac (Boardwalk)	0.92 ac (Permanent)	0.42 ac (Permanent) 1.13 ac (Temporary)	● Solid Fill: 0.71 ac Increase in Bay Surface Area ● Shadow Fill: 3.08 ac Removal ● Floating Fill: 0.59 ac Removal	0.69 ac New Open Water

* Negative values shown indicate decreases in Bay Surface Area at MHW

** Positive values shown indicate total mitigation credits at the end of each phase

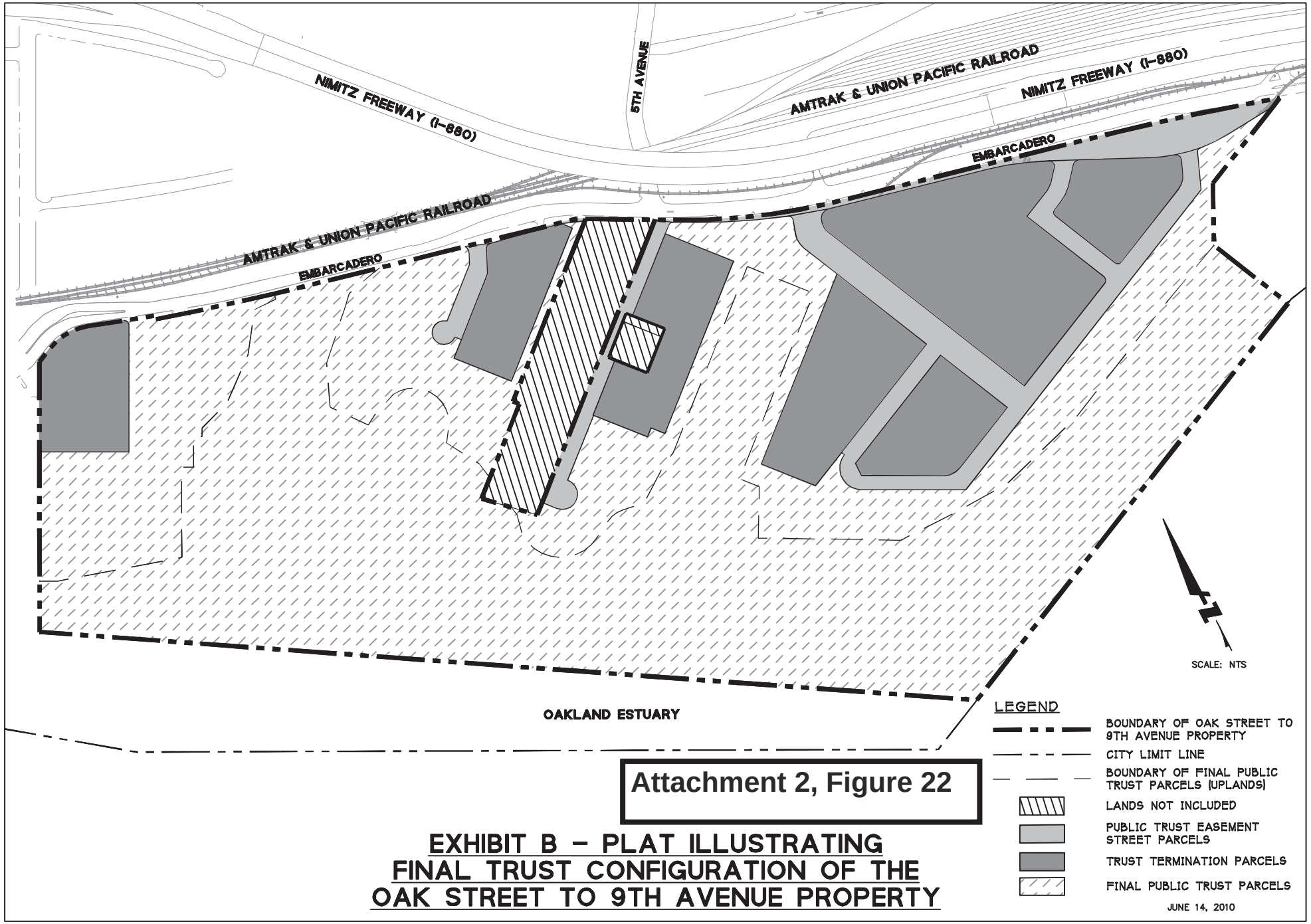
*** Phase timeline shown is anticipated and may vary due to actual conditions

† Additional impact not listed in this table: Existing drainage ditch (0.003 ac) to be filled during this phase; see "Wetland Mitigation Plan"

‡ Additional impact not listed in this table: Existing seasonal pool (0.014 ac) to be filled during this phase; see "Wetland Mitigation Plan"

†† Revised June 2014

OAK STREET TO 9TH AVENUE PROPERTY



Attachment 2, Figure 22

EXHIBIT B – PLAT ILLUSTRATING FINAL TRUST CONFIGURATION OF THE OAK STREET TO 9TH AVENUE PROPERTY