

POLB West Basin & Approach Borrow

Dredging for Beneficial Reuse & Improved Navigation

WEDA Pacific Chapter Conference 2015



Port of
LONG BEACH
The Green Port

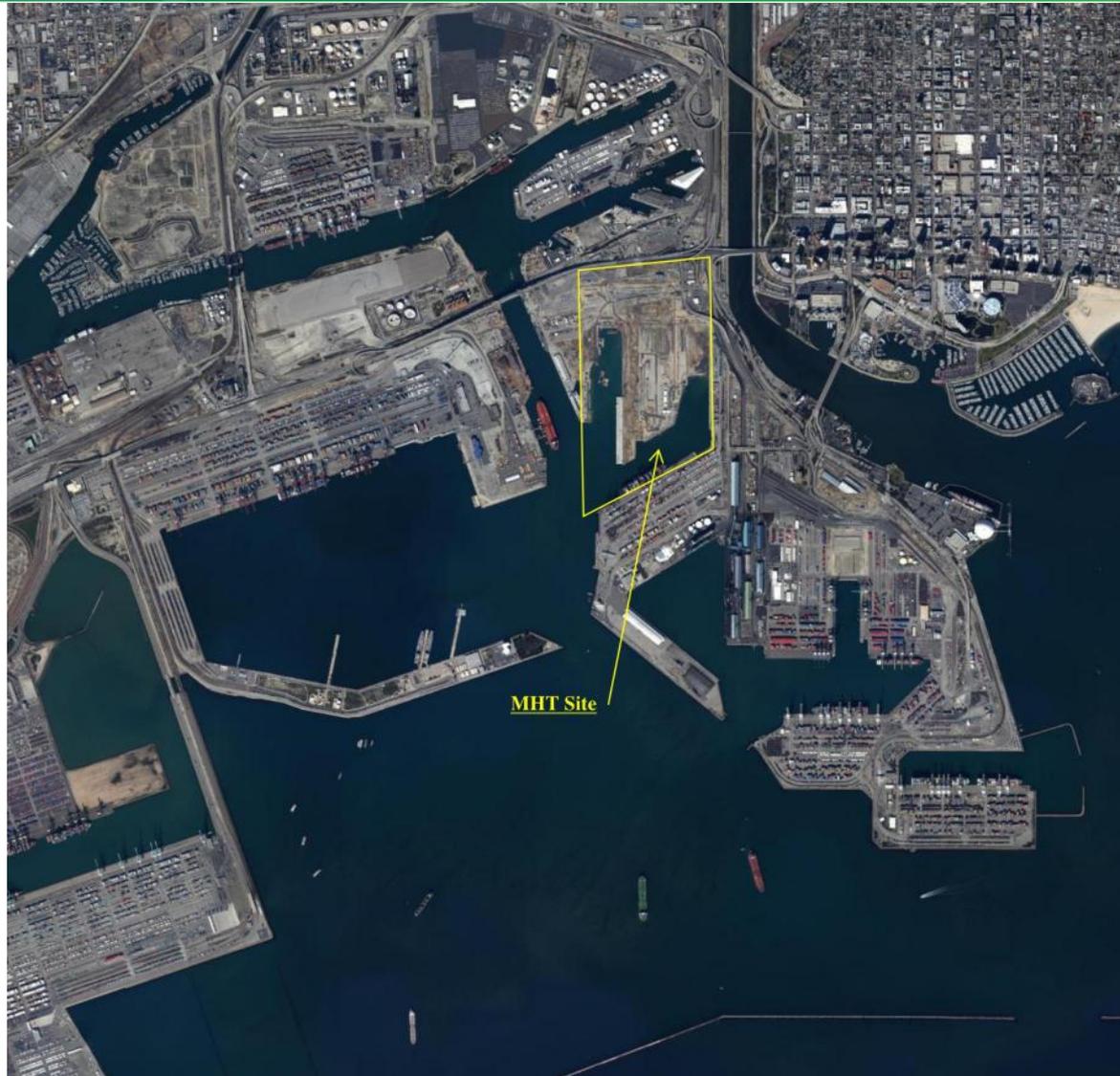
kpff
Engineering
Opportunities.



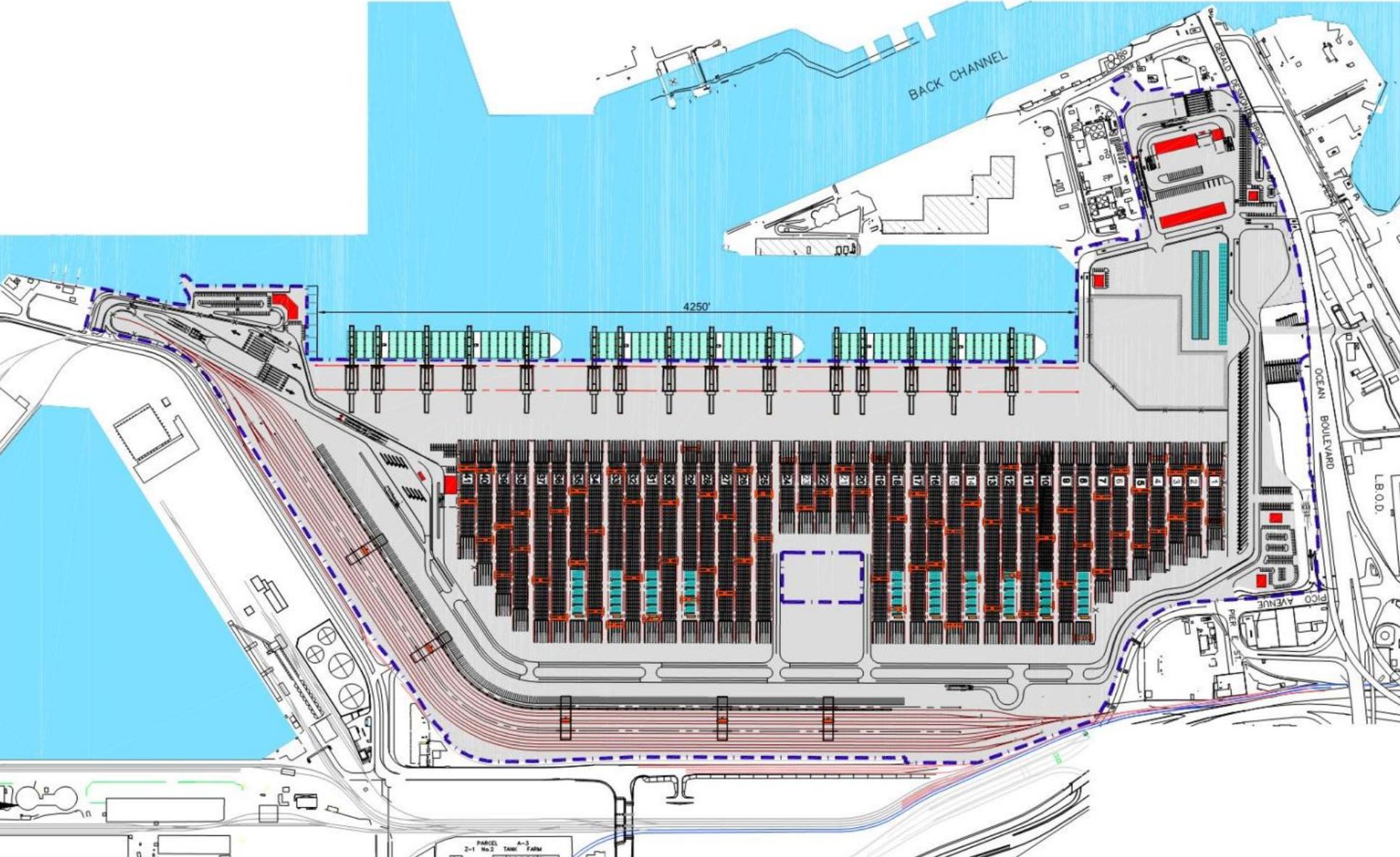
INTRODUCTION

- 2005 Green Port Policy
 - Mitigate Environmental Impacts
- Current Capitol Plan
 - Develop cleaner, more efficient facilities
- Middle Harbor Terminal (MHT)
 - Technologically advanced
 - Environmentally friendly

INTRODUCTION



INTRODUCTION





PROJECT OBJECTIVES

- Strategic Planning & Permitting
 - West Basin & Approach as Borrow Site
 - Provide majority of MHT Phase 3 Fill
 - Clean up residual contamination
 - Improve Navigational Safety

WEST BASIN

Existing Conditions:

- Approximately 700 acres
- Provides Access to:
 - Pier T Container Terminal
 - MARAD
 - SeaLaunch
 - DOD
- Current minimum depth = -50 Feet MLLW

WEST BASIN

Proposed Borrow Project

- 200 acre dredge footprint
- Depth = -55 Feet MLLW
- 1.6M CY
- Eliminate high spots & improved approach
- Improved Navigational Safety

WEST BASIN



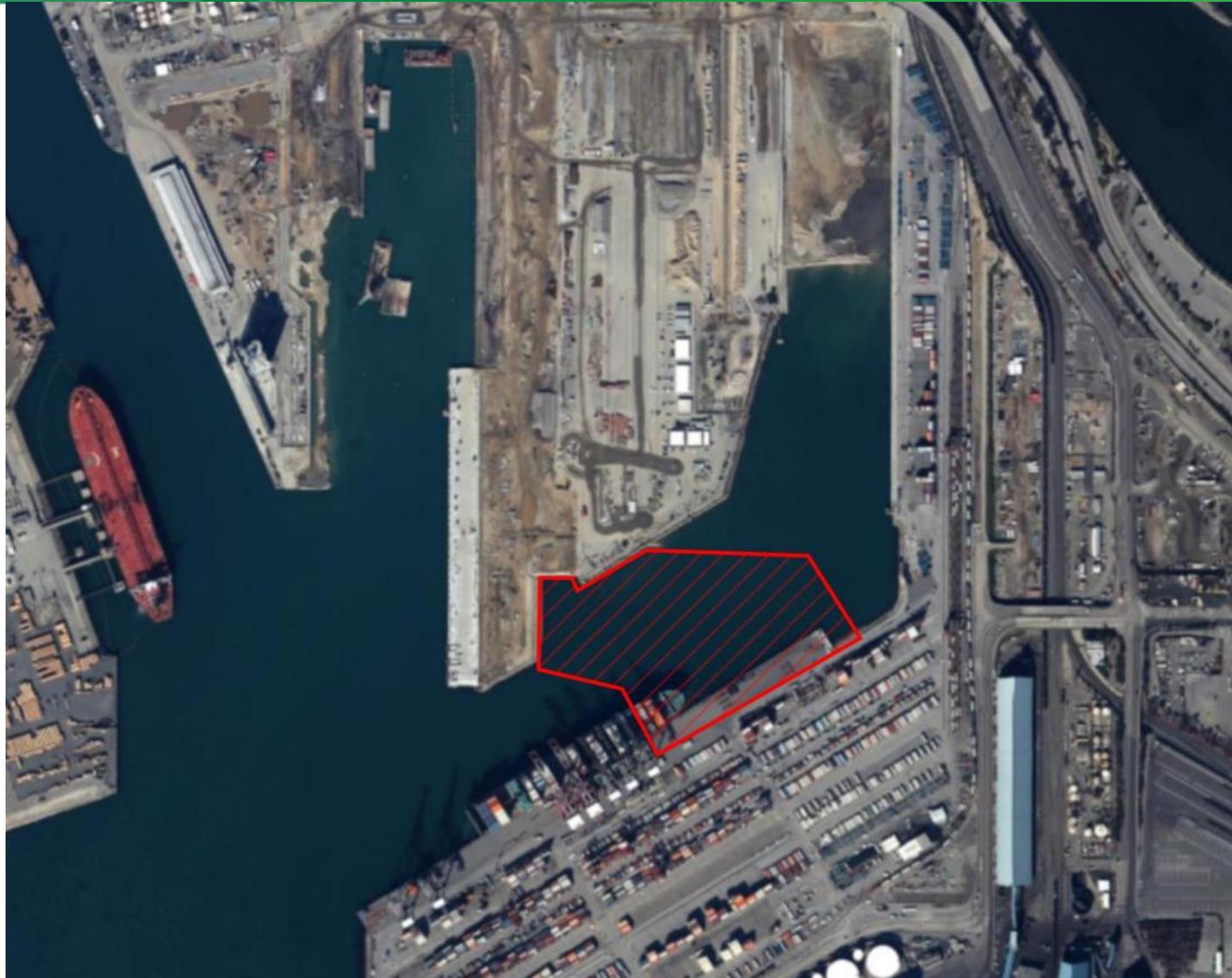
Design Approach

- Meet MHT fill needs
- Benefit Port pilots
- Strategic dredging footprint
 - Understand approach & berthing paths
 - Develop minimum criteria
 - Refine footprint to achieve goals of Pilots & MHT

WEST BASIN – DREGDE FOOTPRINT



MIDDLE HARBOR TERMINAL PHASE 3 FILL SITE



WEST BASIN – PRE POLB DEVELOPMENT





WEST BASIN – EARLY DESIGN TASK

- Eelgrass & *Caulerpa taxifolia* surveys
- Sediment Characterization
- Sampling plan – sectioned basin into DUs
 - Combined chemical & geotechnical sampling
 - 72 samples (combination of borings & vibracores)

WEST BASIN – DREDGE UNITS (DUS)



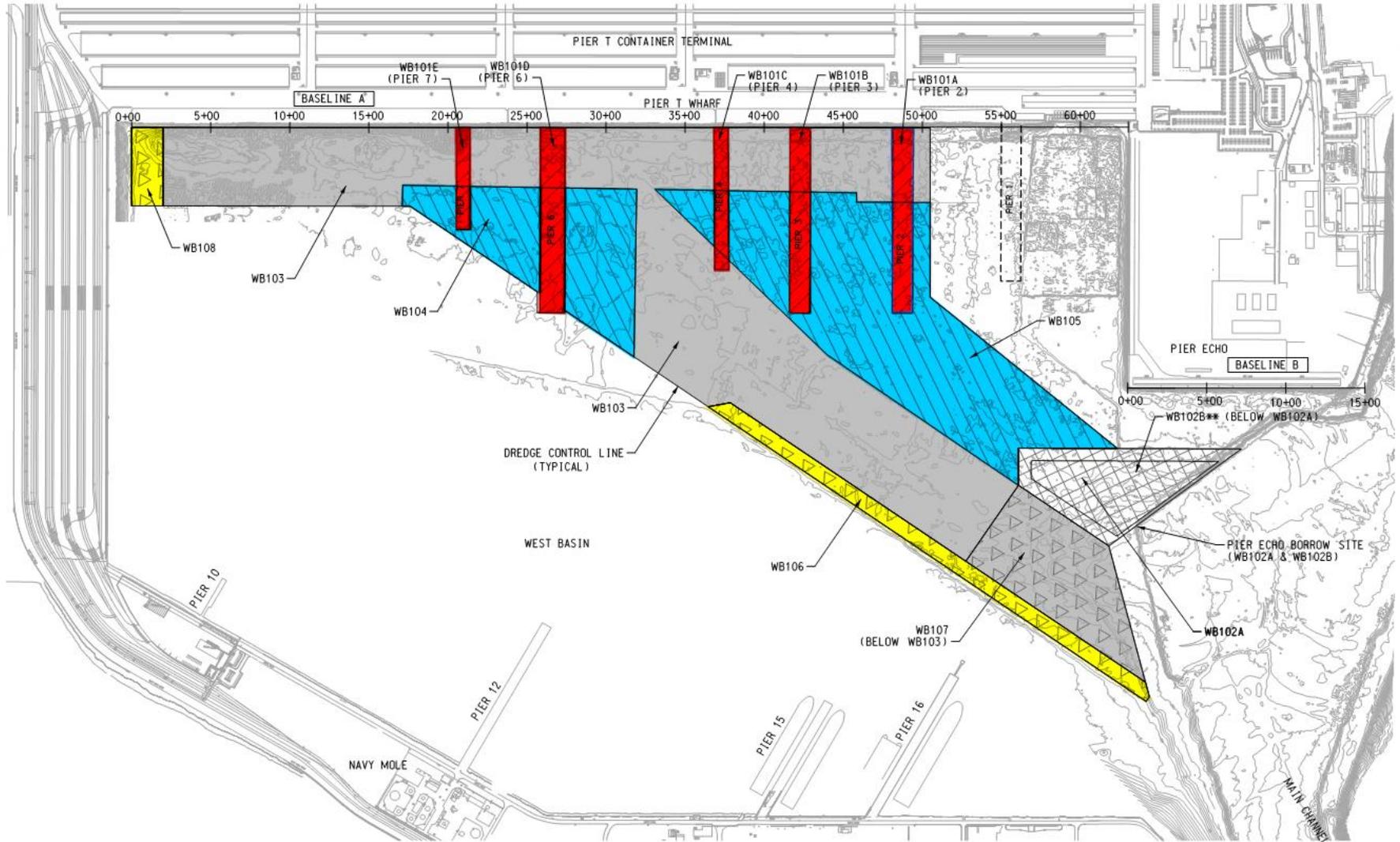
WEST BASIN

- Sediment Characterization
 - Some DUs not suitable for ocean disposal
 - Place “unsuitable” material below 0 MLLW
- Fill site capacity challenged below 0 MLLW
 - 410,000 CY from West Basin
 - 205,000 CY from other sources

WEST BASIN – UNSUITABLE DREDGE UNITS (DUS)

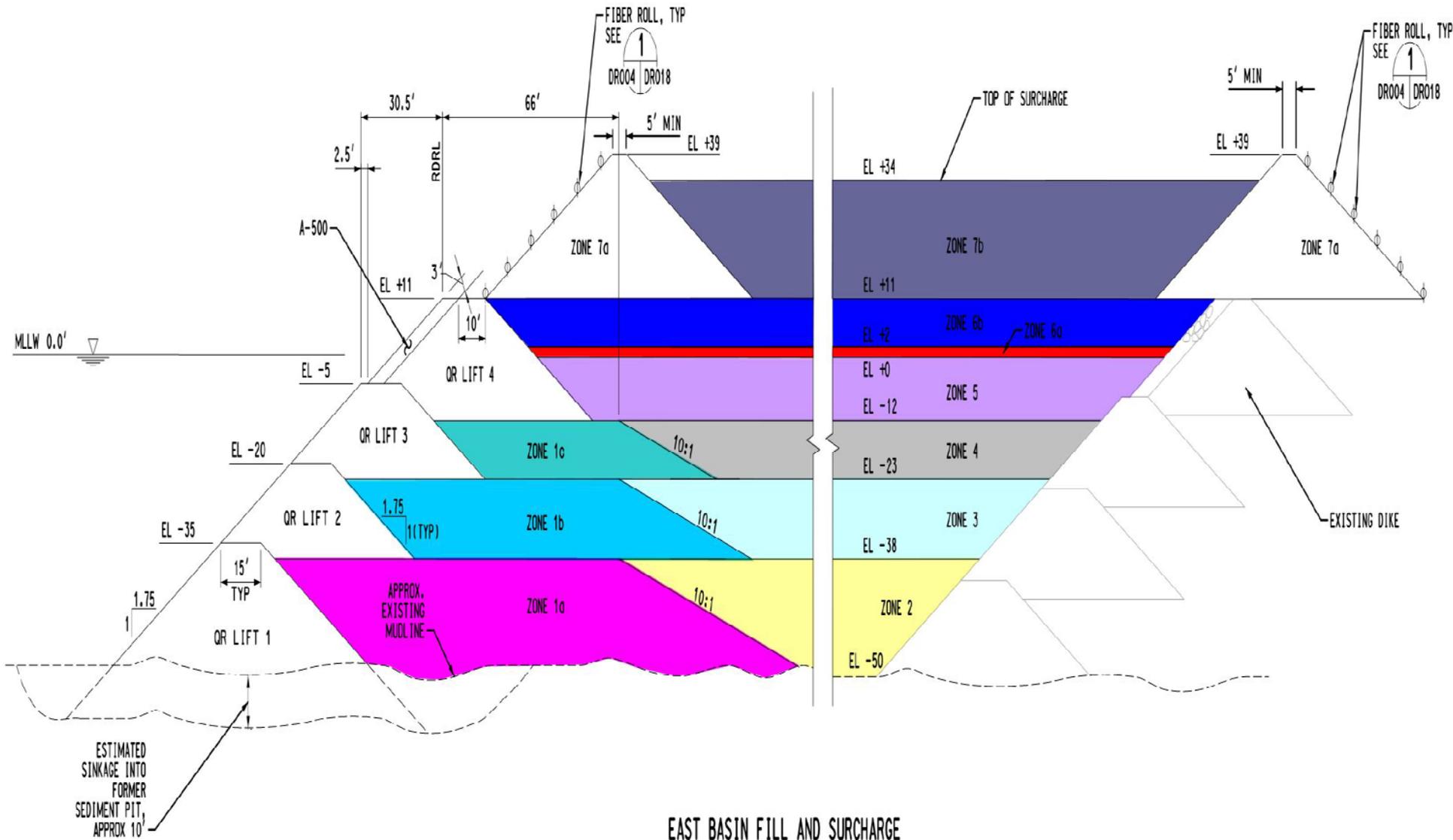


West Basin – Dredge Areas



WEST BASIN BORROW SITE DREDGE AREA DESIGNATION AND FILL PLACEMENT CONSTRAINTS PLAN

Fill Placement



EAST BASIN FILL AND SURCHARGE

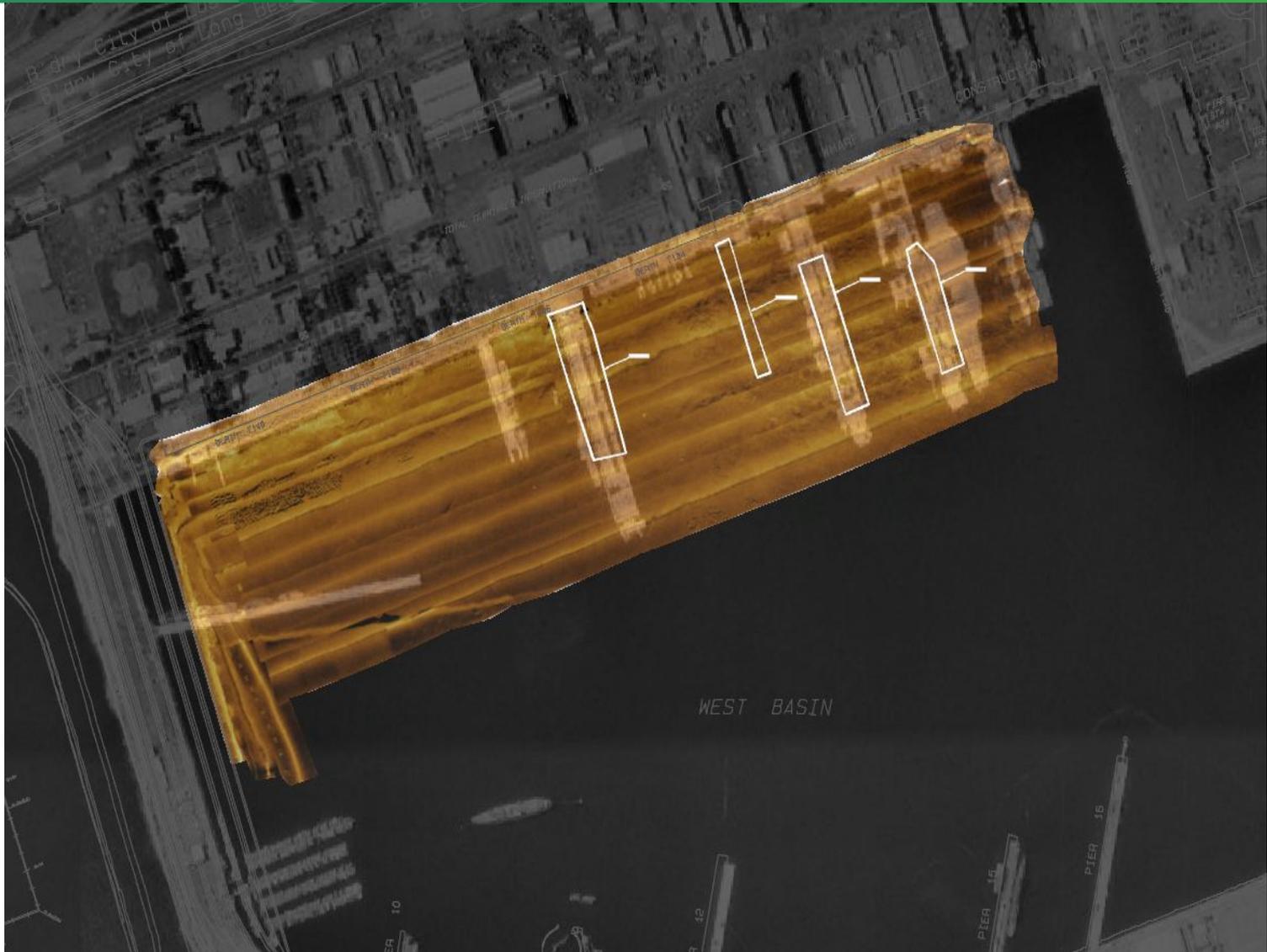
West Basin – Piles Remnants at Former Piers

- Eelgrass Surveys discovered submerged piles
- Piles were in footprints of former piers
- Estimated ~10,000 piles in original construction
- Extensive research to estimate remaining
 - Historic documents
 - Interviews with demolition personnel
 - Field investigations

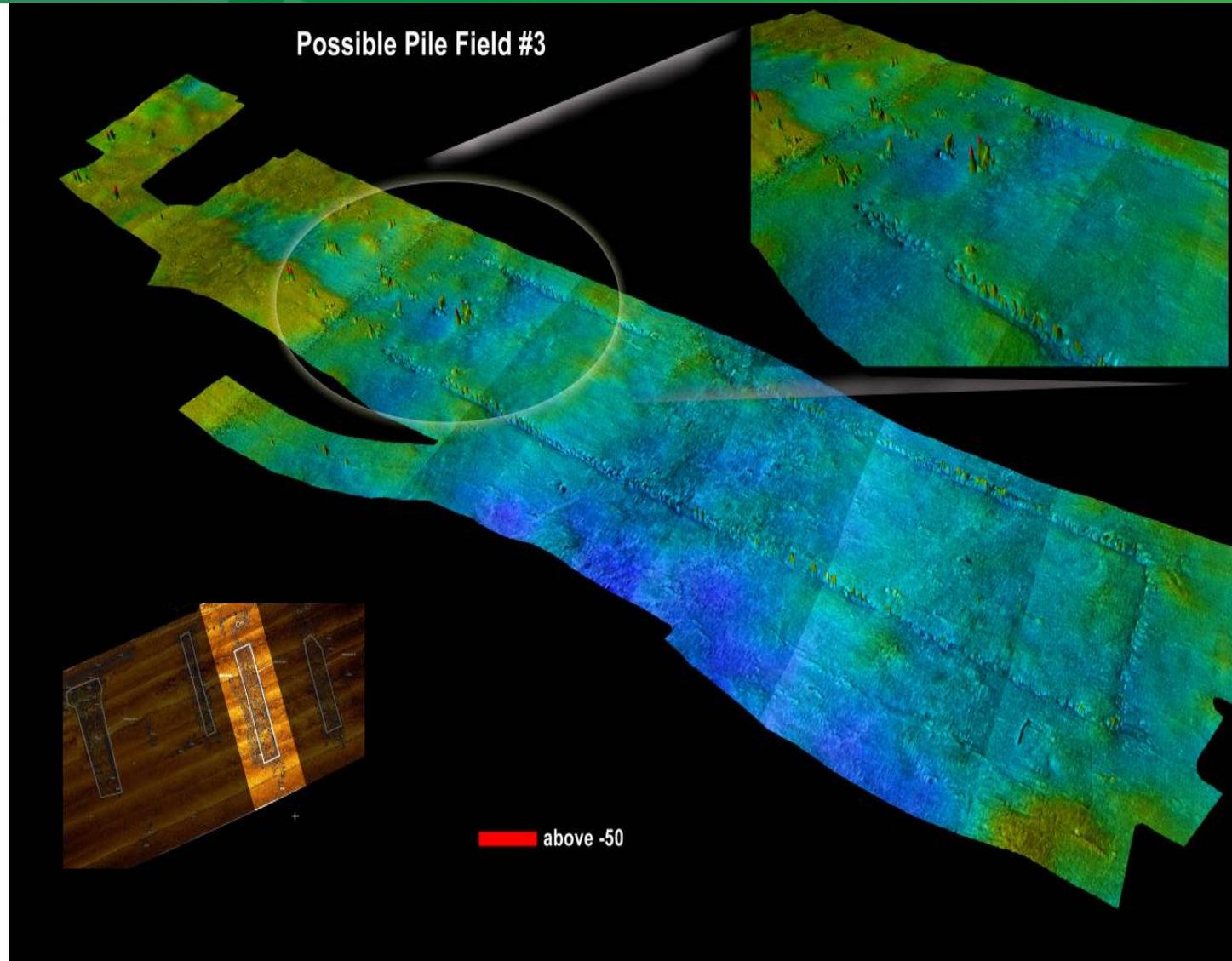
West Basin – Former Navy Piers



WEST BASIN – FORMER NAVY PIERS (SIDE SCAN)



WEST BASIN – FORMER NAVY PIERS (3D Isometric)



WEST BASIN – PIER T CONTAINER TERMINAL

EXISTING CONDITONS

- Pier T is largest active terminal at POLB
- 5,000-foot wharf
- Average 10 vessels per week
- Developed 17 wharf segments (WS-areas)
- Specified constraints for WS work
- Goal: Minimize impact to terminal operations

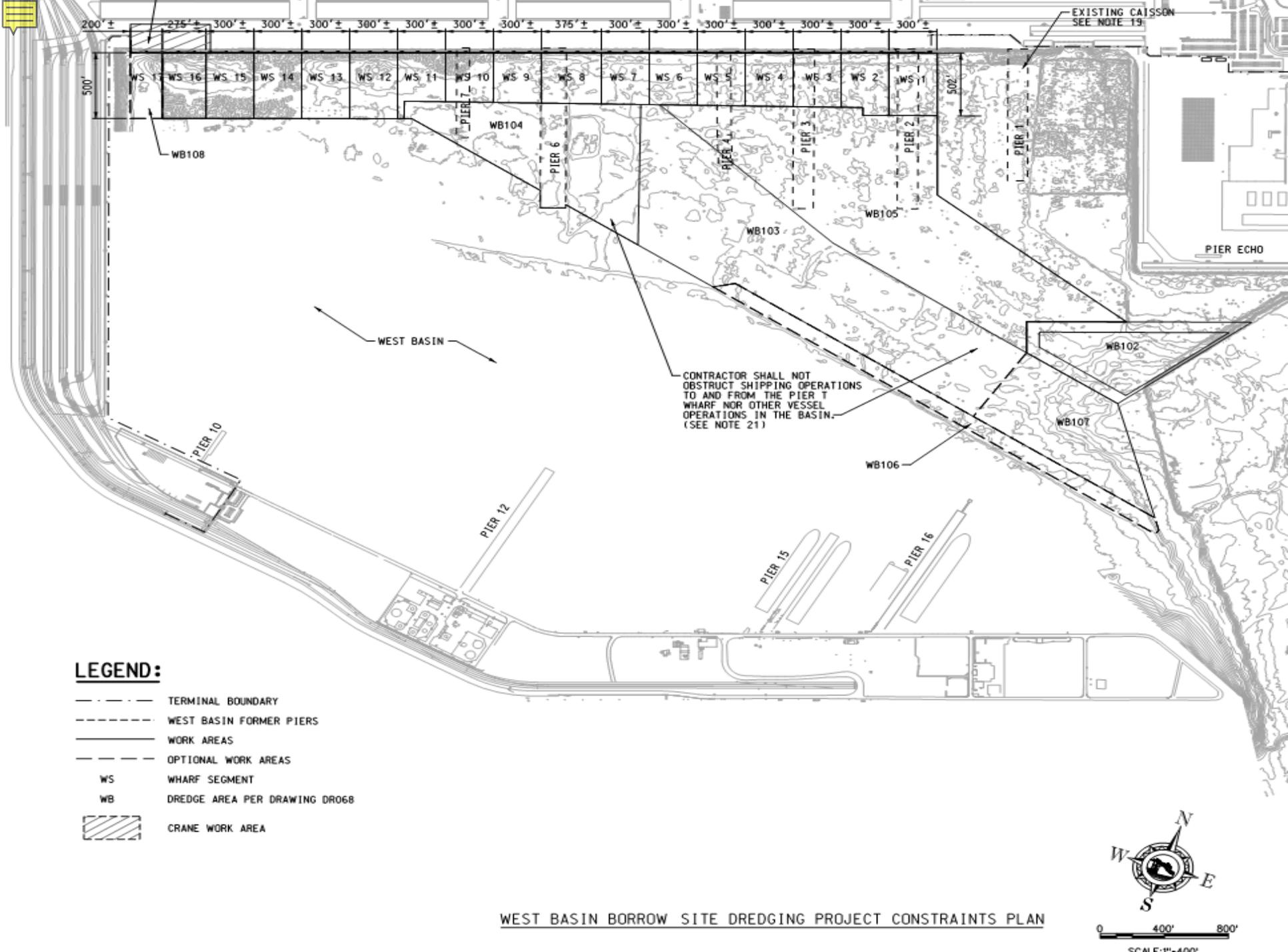
WEST BASIN – PIER T CONTAINER TERMINAL

DESIGN APPROACH

- Goal: Minimize impact to terminal operations
- Developed 17 wharf segments (WS-areas)
- Specified constraints for work within WS-areas

West Basin – Pier T Container Terminal

- Specified WS-area Constraints
 - Only work in a single WS-area at a time
 - Start work in WS-area 2
 - Complete WS-area before moving to next
 - Minimum 72-hour work windows
 - Daily communication with terminal operator & pilots



EXISTING CAISSON
SEE NOTE 19

PIER ECHO

WEST BASIN

CONTRACTOR SHALL NOT
OBSTRUCT SHIPPING OPERATIONS
TO AND FROM THE PIER T
WHARF NOR OTHER VESSEL
OPERATIONS IN THE BASIN.
(SEE NOTE 21)

LEGEND:

- TERMINAL BOUNDARY
- - - WEST BASIN FORMER PIERS
- WORK AREAS
- - - OPTIONAL WORK AREAS
- WS WHARF SEGMENT
- WB DREDGE AREA PER DRAWING DR068
- ▨ CRANE WORK AREA



WEST BASIN BORROW SITE DREDGING PROJECT CONSTRAINTS PLAN

0 400' 800'
SCALE: 1"=400'



CONCLUSIONS

- Example of Green Port Policy in action
- Beneficial Reuse
- Win – Win



THANK YOU TO THE PROJECT TEAM

- POLB
 - Program Management
 - Environmental Planning
 - Design
- Anchor QEA
- Moffat Nichol
- KPFF Consulting Engineers