CA Regional Water Quality Control Board
San Diego Region

# PUBLIC WORKSHOP:

# TENTATIVE CLEANUP AND ABATEMENT ORDER (CAO) NO. R9-2005-0126

June 29, 2005

# EVALUATION OF CLEANUP TO BACKGROUND SEDIMENT QUALITY CONDITIONS

- Technological feasibility
- Economic feasibility

# BACKGROUND SEDIMENT QUALITY CONDITIONS

**Finding 31 Background Sediment Quality**

**Based on Finding 15 – Baseline Sediment Quality Conditions**

# Technological Feasibility

"Technological feasibility is determined by assessing available technologies, which have been show to be effective under similar hydrogeologic conditions in reducing the concentration of the constituents of concern."

SWRCB Resolution 92-49

# Technological Feasibility

Categories of Remedial Response

- Natural Recovery
- Capping
- Sediment Removal via Dredging

# Technological Feasibility

Conditions Conducive to Dredging

- Proximity to shore and infrastructure
- Water depth
- Underlain by clean material
- High concentrations in discrete areas

# Technological Feasibility

Potential Limitations to Dredging

- Complexity and cost
- Presence of piers, bulkheads, pilings
- Site operations

# Technological Feasibility Conclusion

It is technologically feasible to cleanup to background

# Economic Feasibility

"Economic feasibility is the objective balancing of the incremental benefit of attaining further reductions in the concentrations as compared with the incremental cost of achieving those reductions."

SWRCB Resolution 92-49

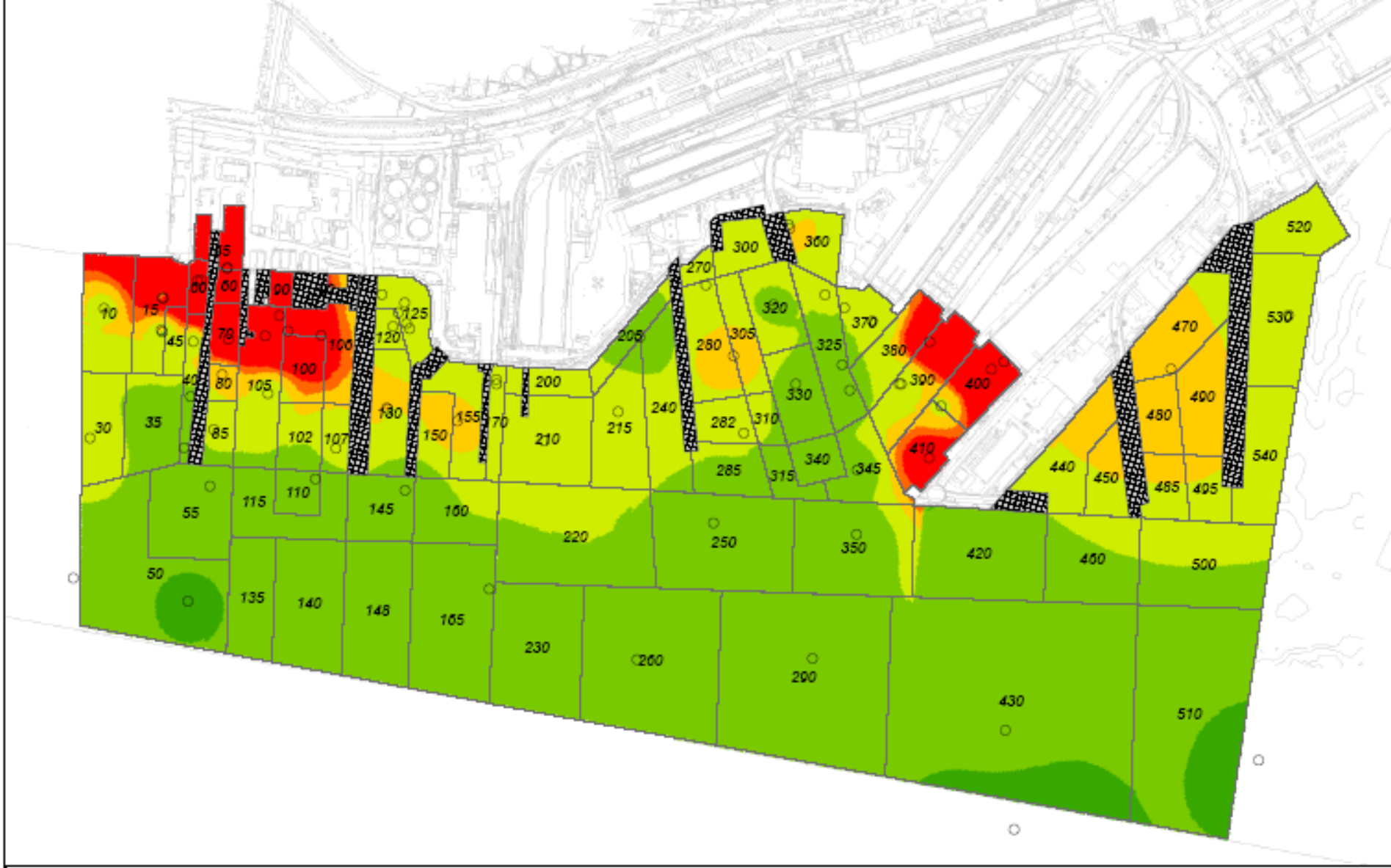
# Economic Feasibility

- Evaluated 7 alternative cleanup levels
  - Natural recovery
  - Lower Adverse Effects Threshold (LAET)
  - Four other levels higher than background
  - Background

# Economic Feasibility

| | Volume | Cost |
|---|---|---|
| **Natural Recovery** | **0** | **$900,000** |
| **LAET (Shipyard)** | **75,000** | **$15,000,000** |
| **20x Background** | 252,000 | $33,000,000 |
| **15x Background** | 295,000 | 37,000,000 |
| **10x Background** | 502,000 | $58,000,000 |
| **5x Background** | 886,000 | $96,000,000 |
| **Background** | **1,200,000** | **$122,000,000** |

# Figures




**Notes**

Base layer and SMU polygons based on CAD drawings from Anchor Envir.

Core Locations/Depths and Contaminant Data from Query Manager Database (NOAA CPRD)

Contaminant Surface: IDW Power 3 Neighbor 8

Coordinate System: UTM Zone 11 NAD83 Meters

**Legend**

- Tributyl Tin Station Locations
- Under Pier Areas
- SMU Polygons
- Numeric Designation
- CAD Base: Anchor

**Tributyl tin (TBT)**
**Concentration PPB**

- 12 - 22
- 23 - 110
- 111 - 220
- 221 - 330
- 331 - 440
- 441 - 3,700

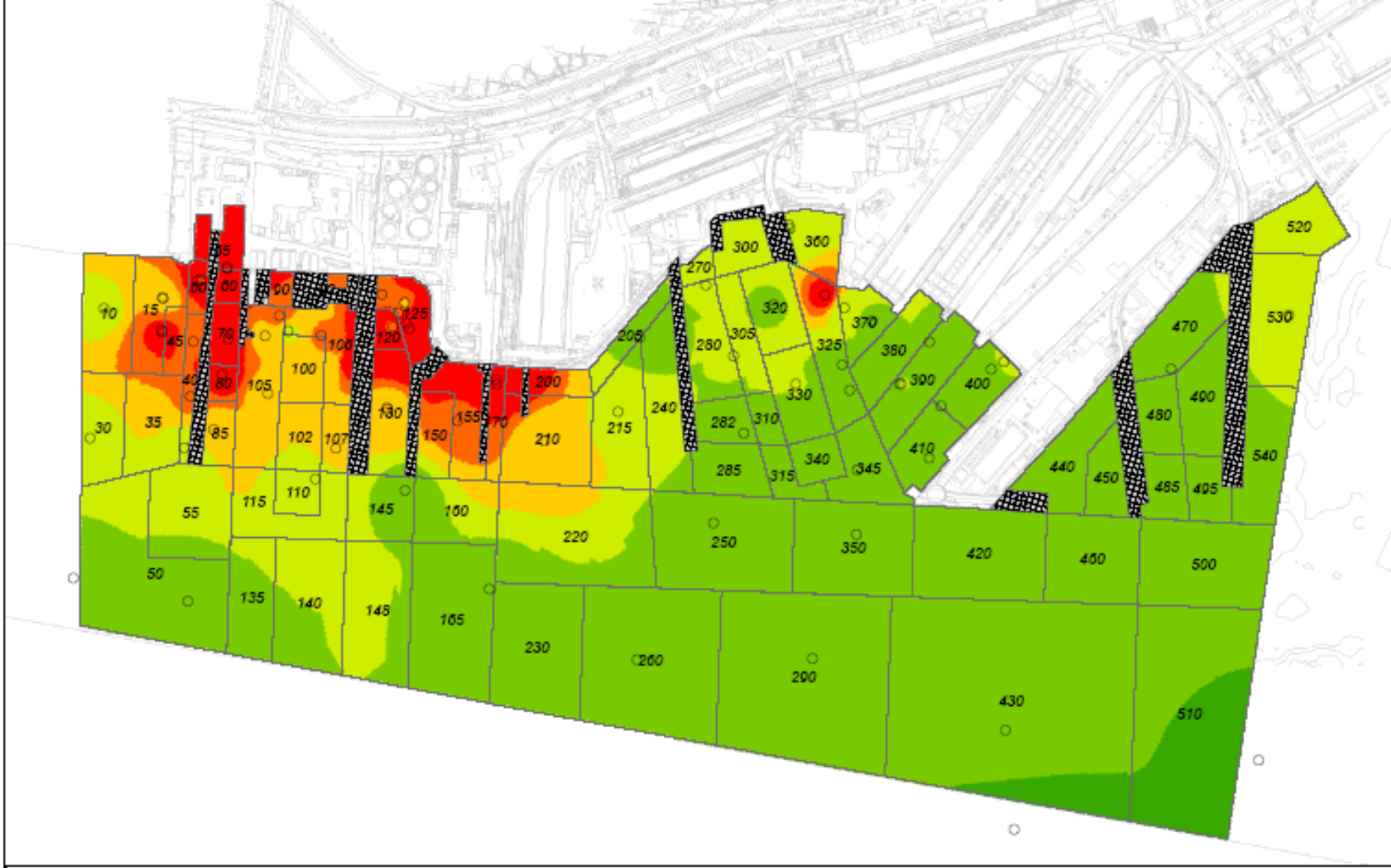
0 500 1,000 Feet

**Figure 1a. Tributyl Tin**
**Surface Sediment Concentration (PPB)**

Sediment Management Units
Southwest Marine &
NASSCO Shipyards

DRAFT

NOAA CPRD




**Notes**

Base layer and SMU polygons based on CAD drawings from Anchor Envir.

Core Locations/Depths and Contaminant Data from Query Manager Database (NOAA CPRD)

Contaminant Surface: IDW Power 3 Neighbor 8

Coordinate System: UTM Zone 11 NAD83 Meters

**Legend**

- HPAHs Station Locations
- Under Pier Areas
- SMU Polygons
- Numeric Designation
- CAD Base: Anchor

**High Molecular Weight PAH Concentration PPB**

- 264 - 673
- 674 - 3,365
- 3,366 - 6,730
- 6,731 - 10,095
- 10,096 - 13,460
- 13,461 - 58,200

0 500 1,000 Feet

**Figure 1c. High Molecular Weight PAH Surface Sediment Concentration (PPB)**

Sediment Management Units
Southwest Marine &
NASSCO Shipyards

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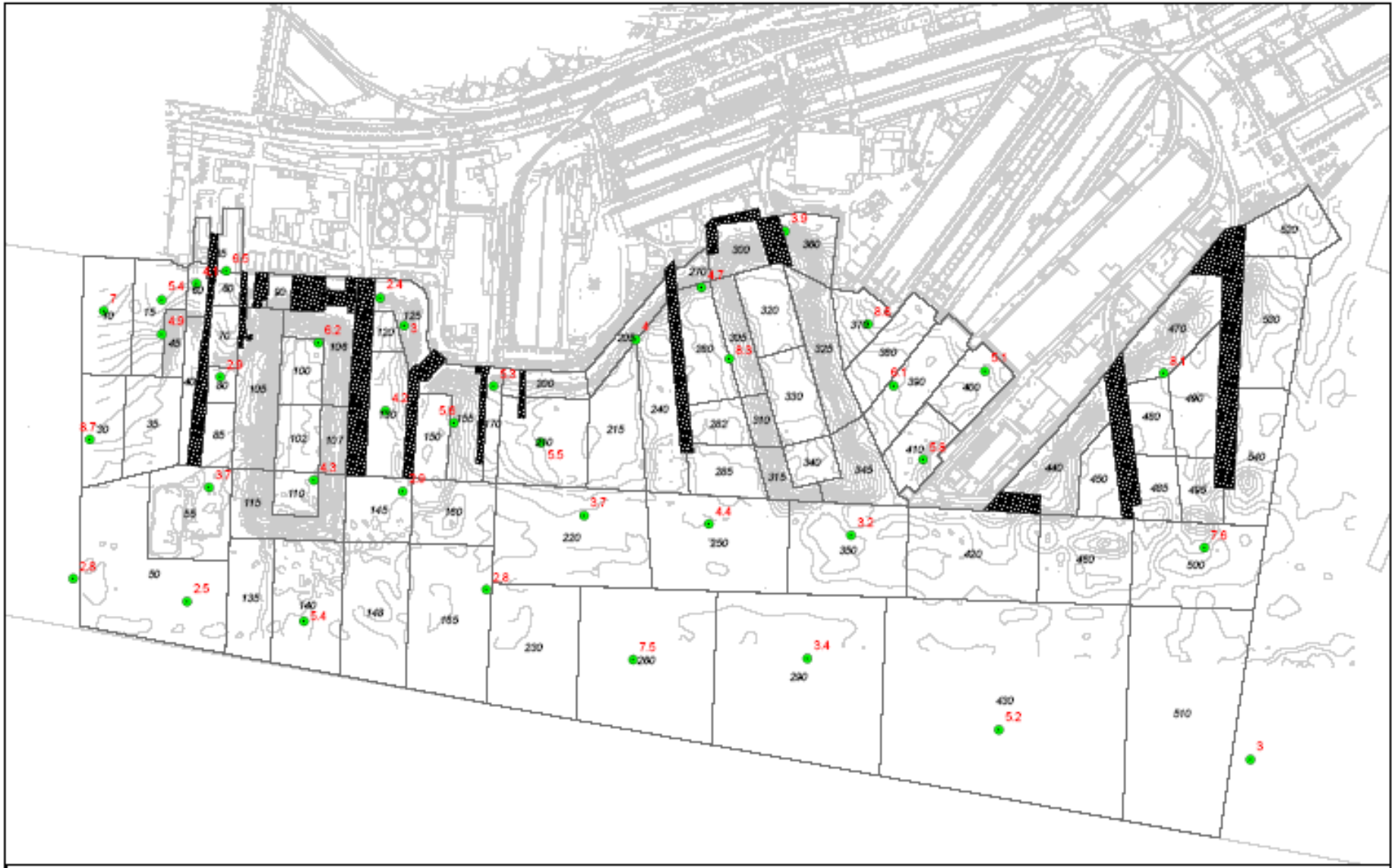

***Notes***

Base layer and SMU polygons based on CAD drawings from Anchor Environmental LLC

Maximum Core Depth (Feet) from Query Manager Database (NOAA CPRD)

Coordinate System: UTM Zone 11 NAD83 Meters

***Legend***

- Core Locations (Max Depth)
- Under Pier Areas
- SMU Polygons
- (Numeric Designation)
- CAD Base: Anchor

0 500 1,000 Feet

**Figure 2. Maximum Core Depth**

Sediment Management Units
Southwest Marine &
NASSCO Shipyards

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**Notes**

Base layer and SMU polygons based on CAD drawings from Anchor Environmental LLC

Contaminant Data (PPB)
from Query Manager Database (NOAA CPRD)

Contaminant Surfaces: IDW Power 3 Neighbor 8
Concentration Units PPB

Coordinate System: UTM Zone 11 NAD83 Meters

**Legend**

- Surface Sediment Station Locations
- Under Pier Areas

**Sediment Management Units**

- No Action
- Dredge
- CAD Base: Anchor

**TBT Conc.**

- 12 - 440
- 441 - 3,700

**HPAH Conc.**

- 264 - 13,460
- 13,461 - 58,200

**PPPAH Conc.**

- 294 - 24,680
- 24,681 - 65,557

**PCB Congener Conc.**

- 41 - 1,680
- 1,681 - 5,470

0 500 1,000 Feet

**Figure 6a. SMU Dredge Areas Scenario**
**Alternative A20X (TBT, PPAH, HPAH PCB)**
**Concentration > 20x Reference Pool Values**

Sediment Management Units
Southwest Marine &
NASSCO Shipyards

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**Notes**

Base layer and SMU polygons based on CAD drawings from Anchor Environmental LLC

Contaminant Data (PPB)
from Query Manager Database (NOAA CPRD)

Contaminant Surfaces: IDW Power 3 Neighbor 8
Concentration Units PPB

Coordinate System: UTM Zone 11 NAD83 Meters

**Legend**

- Surface Sediment Station Locations
- Under Pier Areas

**Sediment Management Units**

- No Action
- Dredge
- CAD Base: Anchor

| TBT Conc. | PPPAH Conc. |
|---|---|
| 12 - 330 | 294 - 18,510 |
| 331 - 3,700 | 18,511 - 65,557 |
| **HPAH Conc.** | **PCB Congener Conc.** |
| 264 - 10,095 | 41 - 1,260 |
| 10,096 - 58,200 | 1,261 - 5,470 |

0 500 1,000 Feet

**Figure 5a. SMU Dredge Areas Scenario Alternative A15X (TBT, PPAH, HPAH PCB) Concentration > 15x Reference Pool Values**

Sediment Management Units
Southwest Marine &
NASSCO Shipyards

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***Notes***

Base layer and SMU polygons based on CAD drawings from Anchor Environmental LLC

Contaminant Data (PPB)
from Query Manager Database (NOAA CPRD)

Contaminant Surfaces: IDW Power 3 Neighbor 8
Concentration Units PPB

***Legend***

- Surface Sediment Station Locations
- Under Pier Areas

**Sediment Management Units**

- No Action
- Dredge
- CAD Base: Anchor

| TBT Conc. | PPPAH Conc. |
|---|---|
| 12 - 220 | 294 - 12,340 |
| 221 - 3,700 | 12,341 - 65,557 |

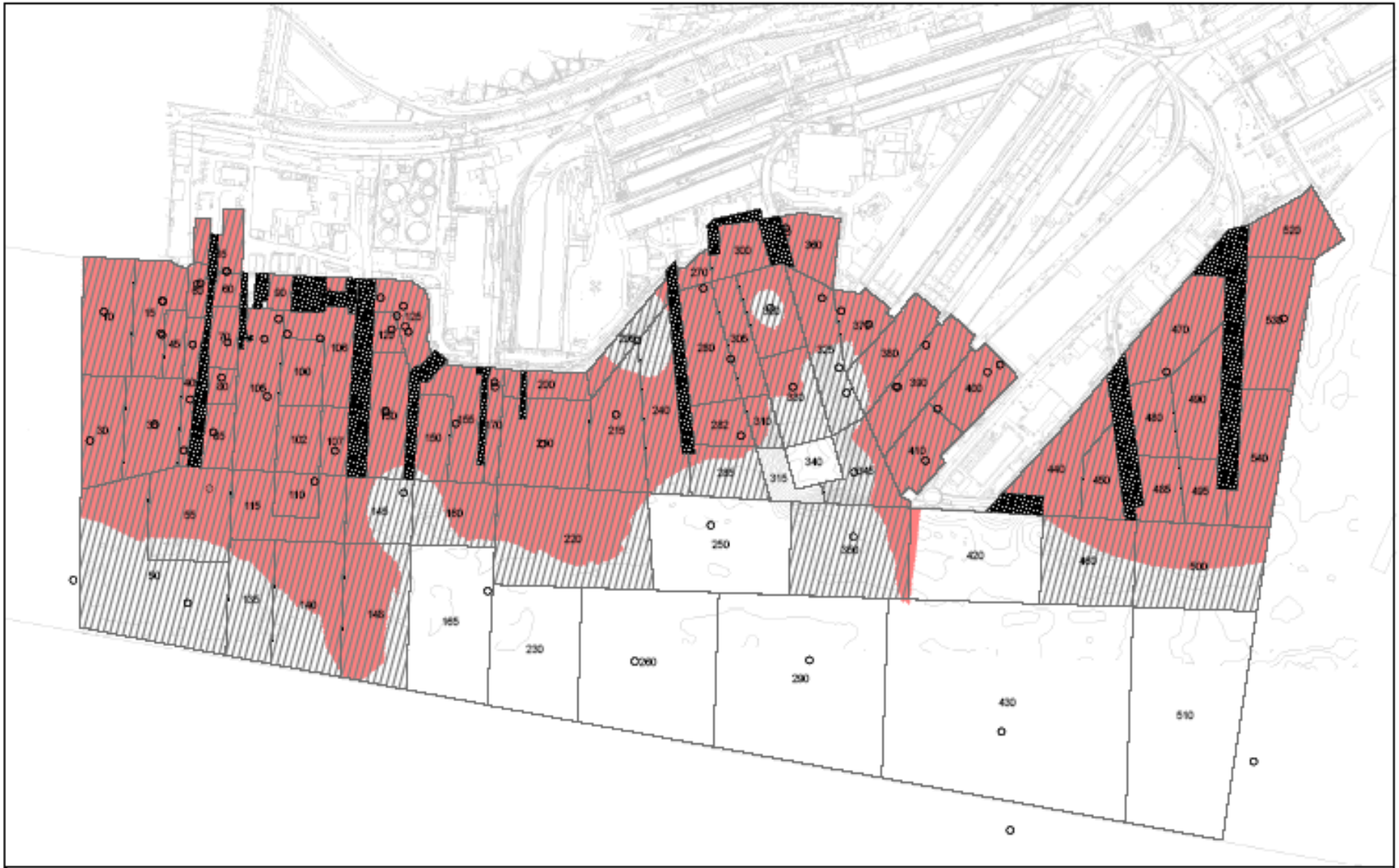
| HPAH Conc. | PCB Congener Conc. |
|---|---|
| 264 - 6,730 | 41 - 840 |
| 6,731 - 58,200 | 841 - 5,470 |

0 500 1,000 Feet

**Figure 4a. SMU Dredge Areas Scenario**
**Alternative A10X (TBT, PPAH, HPAH, PCB**
**Concentration > 10x Reference Pool Values**

Sediment Management Units
Southwest Marine &
NASSCO Shipyards

NOAA CPRD


Notes
Base layer and SMU polygons based on CAD drawings from Anchor Environmental LLC
Contaminant Data (PPB) from Query Manager Database (NOAA CPRD)
Contaminant Surfaces: IDW Power 3 Neighbor 8 Concentration Units PPB
Coordinate System: UTM Zone 11 NAD83 Meters
Legend
Surface Sediment Station Locations
Under Pier Areas
No Action
Dredge
CAD Base: Anchor
TBT Conc.
12 - 110
111 - 3,700
PPPAH Conc.
294 - 6,170
6,171 - 65,560
HPAH Conc.
264 - 3,365
3,366 - 58,200
PCB Congener Conc.
41 - 420
421 - 5,470
0
500
1,000 Feet
Figure 3a. SMU Dredge Areas Scenario
Alternative A5X (TBT, PPAH, HPAH, PCB)
Concentration > 5x Reference Pool Values
Sediment Management Units
Southwest Marine &
NASSCO Shipyards
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02.22.2005

# Economic Feasibility

## Other Criteria

- Short-term and long term effects on aquatic life, wildlife, and human health
- Effects on shipyards and economic activities
- Effects on local businesses and neighborhoods
- Effects on aquatic resources

# Economic Feasibility

**Criterion scale relative to current conditions**

| | | |
|---|---|---|
| + or – 5 | = | major |
| + or – 4 | = | moderate to major |
| + or – 3 | = | moderate |
| + or – 2 | = | minor to moderate |
| + or – 1 | = | minor |
| 0 | = | no change |

# Economic Feasibility

- **Not economically feasible to cleanup to background**

**Compared to 5x background, costs increase 27%**

- **Incremental cost outweighs incremental benefit**

| | Volume | Cost |
|---|---|---|
| **5x Background** | 885,580 | $96,000,000 |
| **Background** | 1,200,000 | $122,000,000 |