Source Control at PSNS

Mercury and PCB data

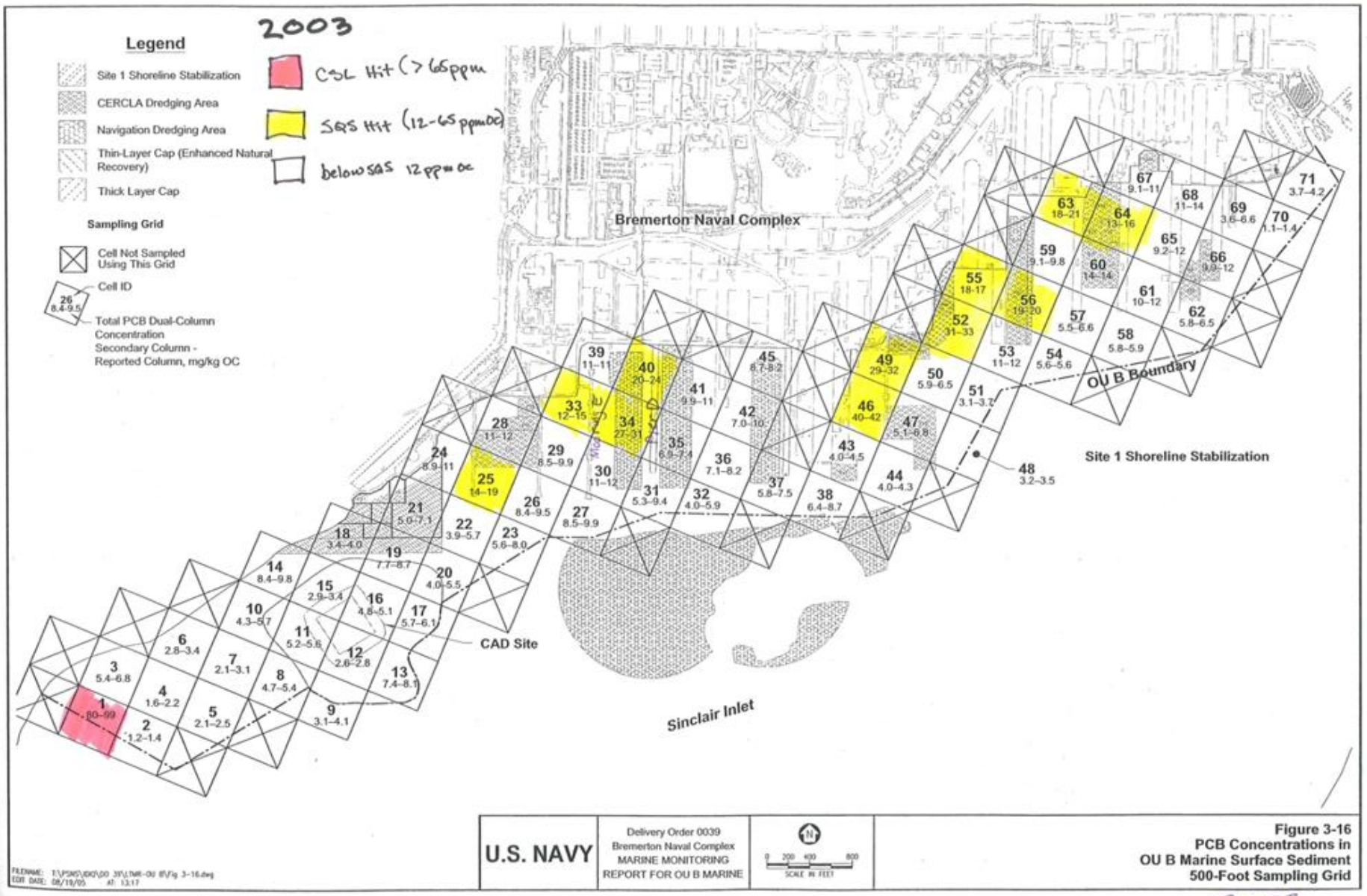
Purpose and Approach

- Purpose is to eliminate current activities and stormwater as potential sources and determine whether contamination is only from historical sources.
- Review PCB and mercury sediment monitoring data from 2003-2007 and prioritize areas with largest concentrations.
- List outfalls, piers and moorings that are near the areas of largest concentration.

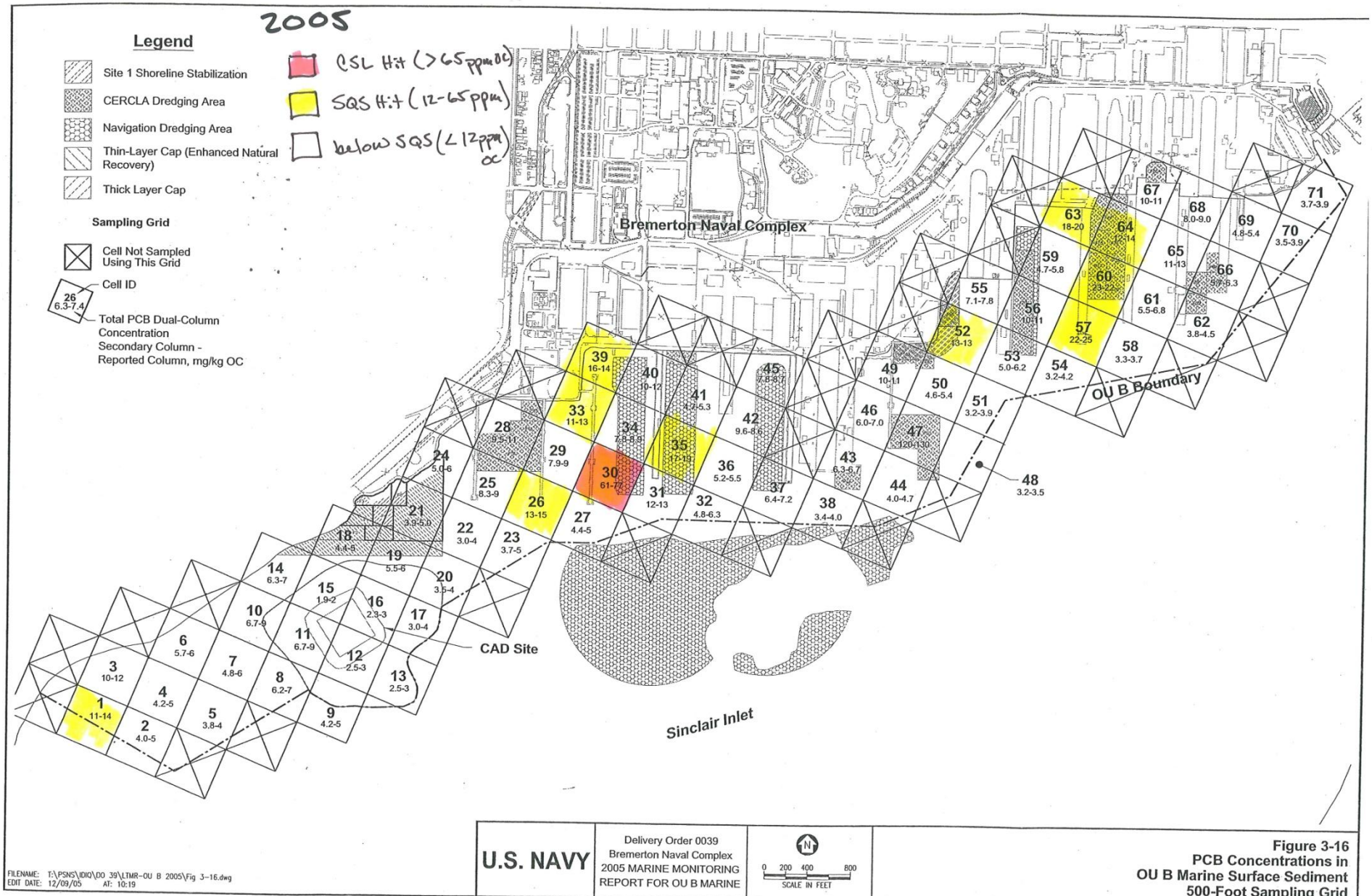
Next steps

- In the areas of concern, review activities on piers and moorings, outfall drainages (size of drainage area, upstream activities, existing data) and prioritize which have greatest potential to contain mercury or PCB.
- Storm drain solids monitoring and/or effluent monitoring to evaluate potential sources PCB and mercury.
- Review and update BMPs as appropriate for pier and mooring activities.
- Additional sediment samples (not composited) may be needed to further evaluate spatial gradients and determine sources.

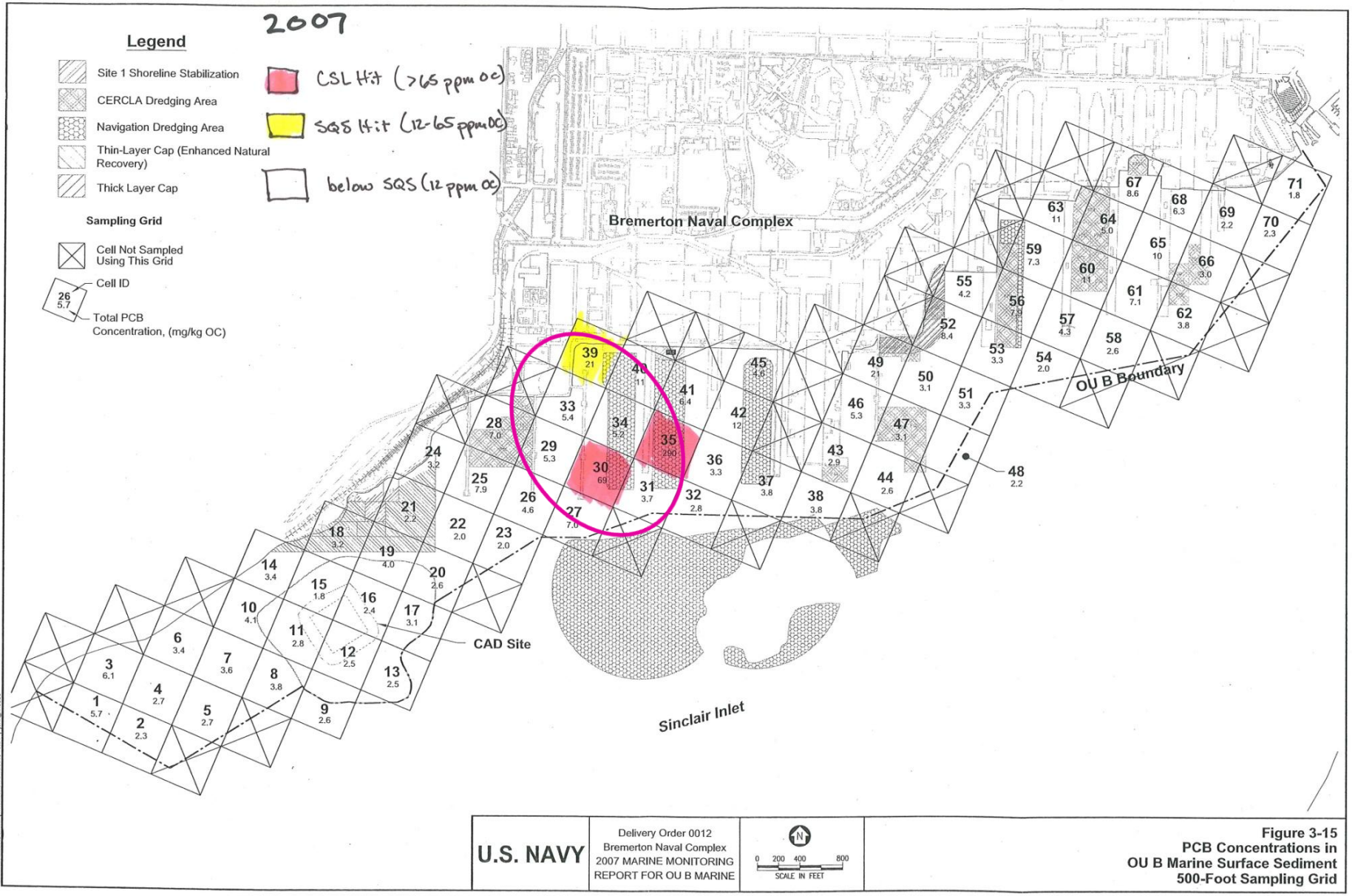
PCB 2003


2003
Legend
Site 1 Shoreline Stabilization
CERCLA Dredging Area
Navigation Dredging Area
Thin-Layer Cap (Enhanced Natural Recovery)
Thick Layer Cap
CSL Hit (>65ppm
SQS Hit (12-65 ppm OC)
below SQS 12 ppm OC
Sampling Grid
Cell Not Sampled Using This Grid
Cell ID
26
8.4-9.5
Total PCB Dual-Column Concentration
Secondary Column -
Reported Column, mg/kg OC
Bremerton Naval Complex
OU B Boundary
Site 1 Shoreline Stabilization
CAD Site
Sinclair Inlet
U.S. NAVY
Delivery Order 0039
Bremerton Naval Complex
MARINE MONITORING
REPORT FOR OU B MARINE
SCALE IN FEET
Figure 3-16
PCB Concentrations in
OU B Marine Surface Sediment
500-Foot Sampling Grid
2003

PCB 2005

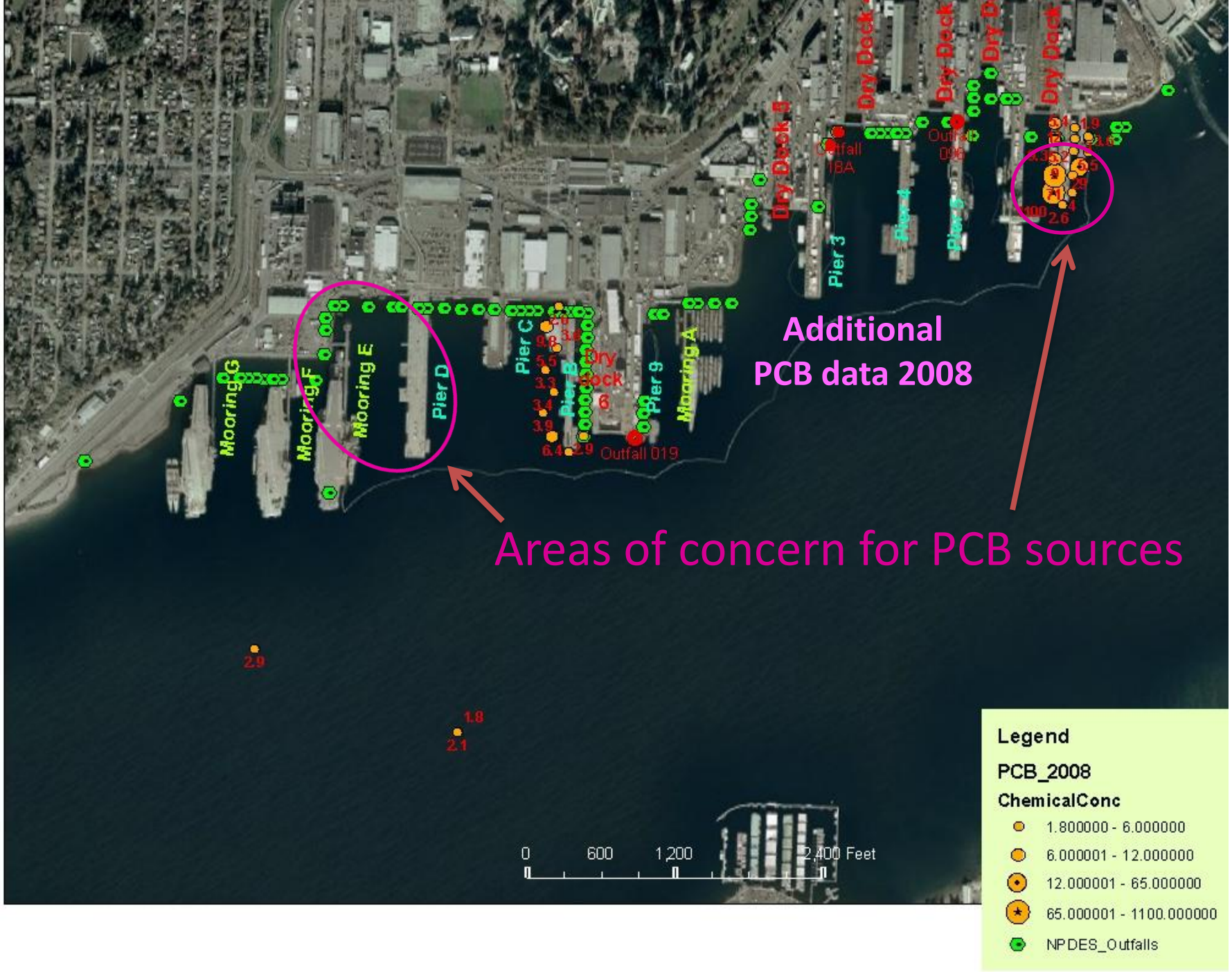

2005
Legend
Site 1 Shoreline Stabilization
CERCLA Dredging Area
Navigation Dredging Area
Thin-Layer Cap (Enhanced Natural Recovery)
Thick Layer Cap
CSL Hit (>65 ppm OC)
SQS Hit (12-65 ppm)
below SQS (<12 ppm OC)
Sampling Grid
Cell Not Sampled Using This Grid
Cell ID
26 6.3-7.4
Total PCB Dual-Column Concentration
Secondary Column - Reported Column, mg/kg OC
Bremerton Naval Complex
CAD Site
Sinclair Inlet
OU B Boundary
U.S. NAVY
Delivery Order 0039
Bremerton Naval Complex
2005 MARINE MONITORING
REPORT FOR OU B MARINE
0 200 400 800
SCALE IN FEET
Figure 3-16
PCB Concentrations in
OU B Marine Surface Sediment
500-Foot Sampling Grid
FILENAME: T:\PSNS\IDIQ\DO 39\LTMR-OU B 2005\Fig 3-16.dwg
EDIT DATE: 12/09/05 AT: 10:19
2005

PCB 2007


2007
Legend
Site 1 Shoreline Stabilization
CERCLA Dredging Area
Navigation Dredging Area
Thin-Layer Cap (Enhanced Natural Recovery)
Thick Layer Cap
Sampling Grid
Cell Not Sampled Using This Grid
Cell ID
Total PCB Concentration, (mg/kg OC)
CSL Hit (>65 ppm OC)
SQS Hit (12-65 ppm OC)
below SQS (12 ppm OC)
Bremerton Naval Complex
OU B Boundary
CAD Site
Sinclair Inlet
U.S. NAVY
Delivery Order 0012
Bremerton Naval Complex
2007 MARINE MONITORING
REPORT FOR OU B MARINE
0 200 400 800
SCALE IN FEET
Figure 3-15
PCB Concentrations in
OU B Marine Surface Sediment
500-Foot Sampling Grid
2007

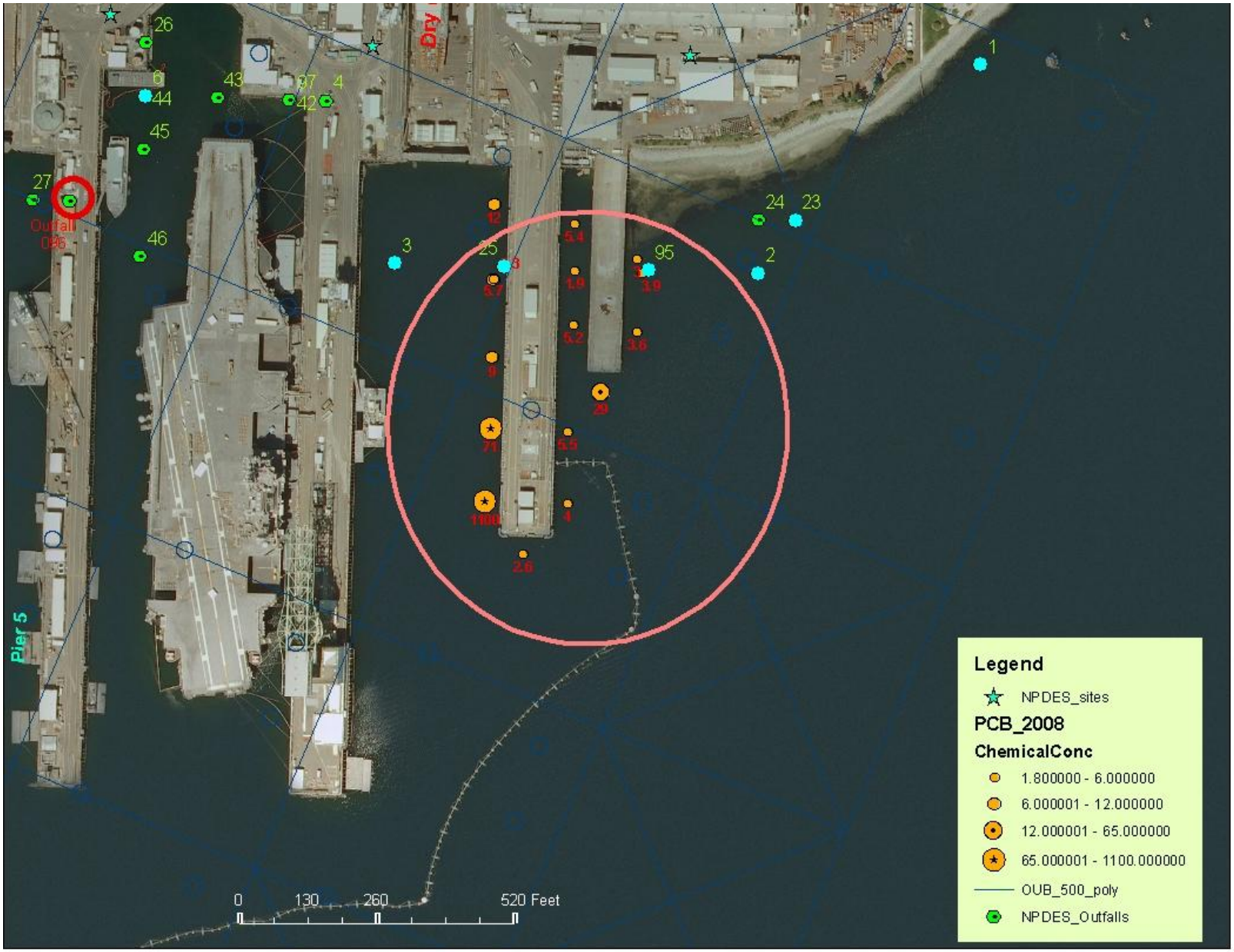
PCB Concentrations are increasing in Grids 30, 35, and 39.

Grid	2002	2005	2007
30	11-12	61-77	69
35	6.9-7.4	17-19	290
39	11-11	16-14	21


Additional
PCB data 2008
Areas of concern for PCB sources
Mooring G
Mooring F
Mooring E
Pier D
Pier C
Pier B
Dry Dock 6
Pier 9
Mooring A
Dry Dock 5
Dry Dock 4
Dry Dock 3
Dry Dock 2
Outfall 018A
Outfall 019
Outfall 009
Pier 3
Pier 4
Pier 5
0
600
1,200
2,400 Feet
Legend
PCB_2008
ChemicalConc
1.800000 - 6.000000
6.000001 - 12.000000
12.000001 - 65.000000
65.000001 - 1100.000000
NPDES_Outfalls

Area of Concern for PCB - 1

Area of Concern for PCB - 2



Areas to Investigate for PCB

Area 1

- Pier D
- Mooring E
- Outfalls 13, 14*, ***15***, 38, 39, 40, 41, 82, 83, 84, 85.

Bold italics identifies outfalls of concern identified by EPA in permit.

* Outfall 14 has a very large drainage area – more than 4 million sq ft.

Area 2

- Pier 7
- Outfalls ***25, 95***.

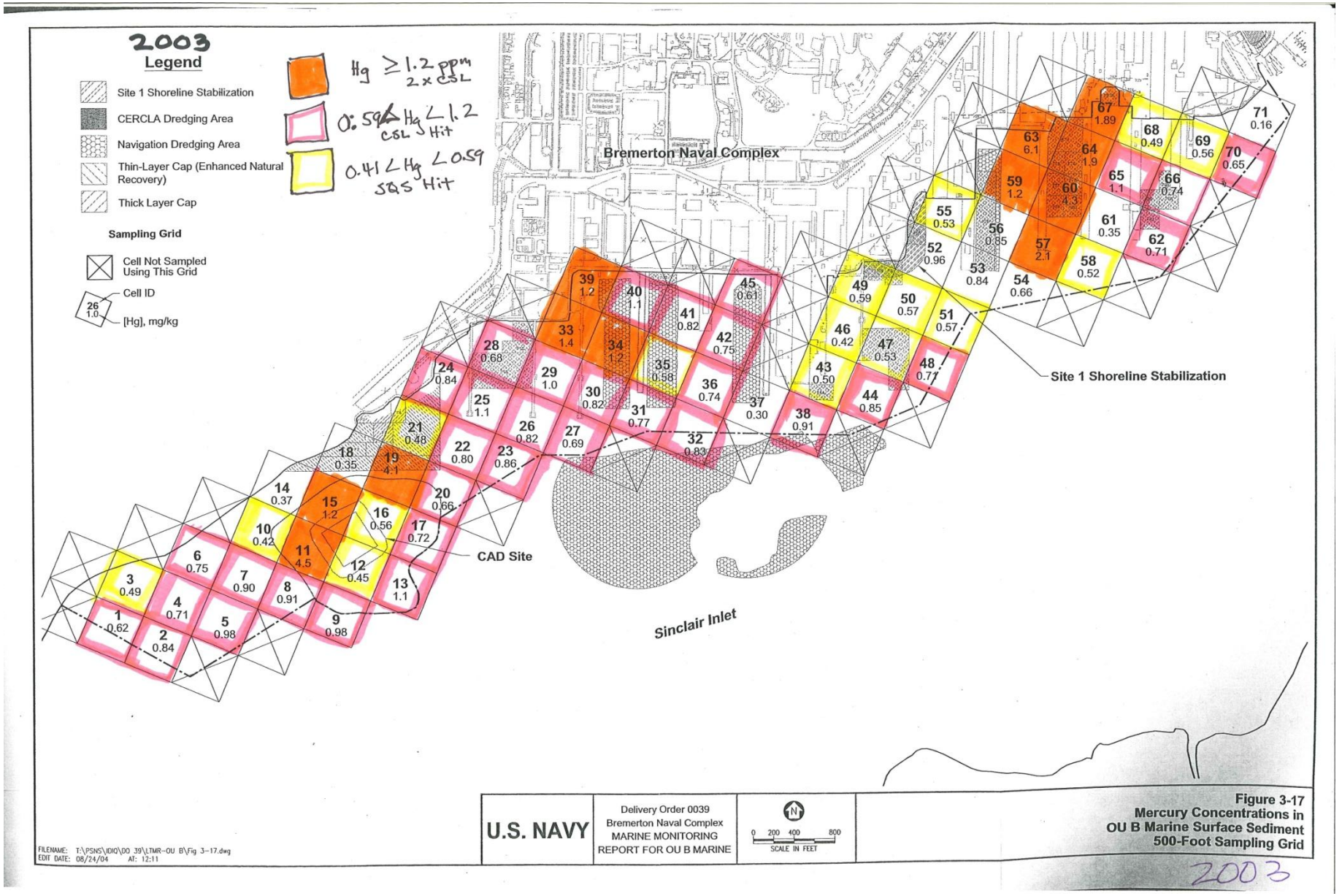
Bold italics identifies outfalls of concern identified by EPA in permit.

Possible Sources of PCB

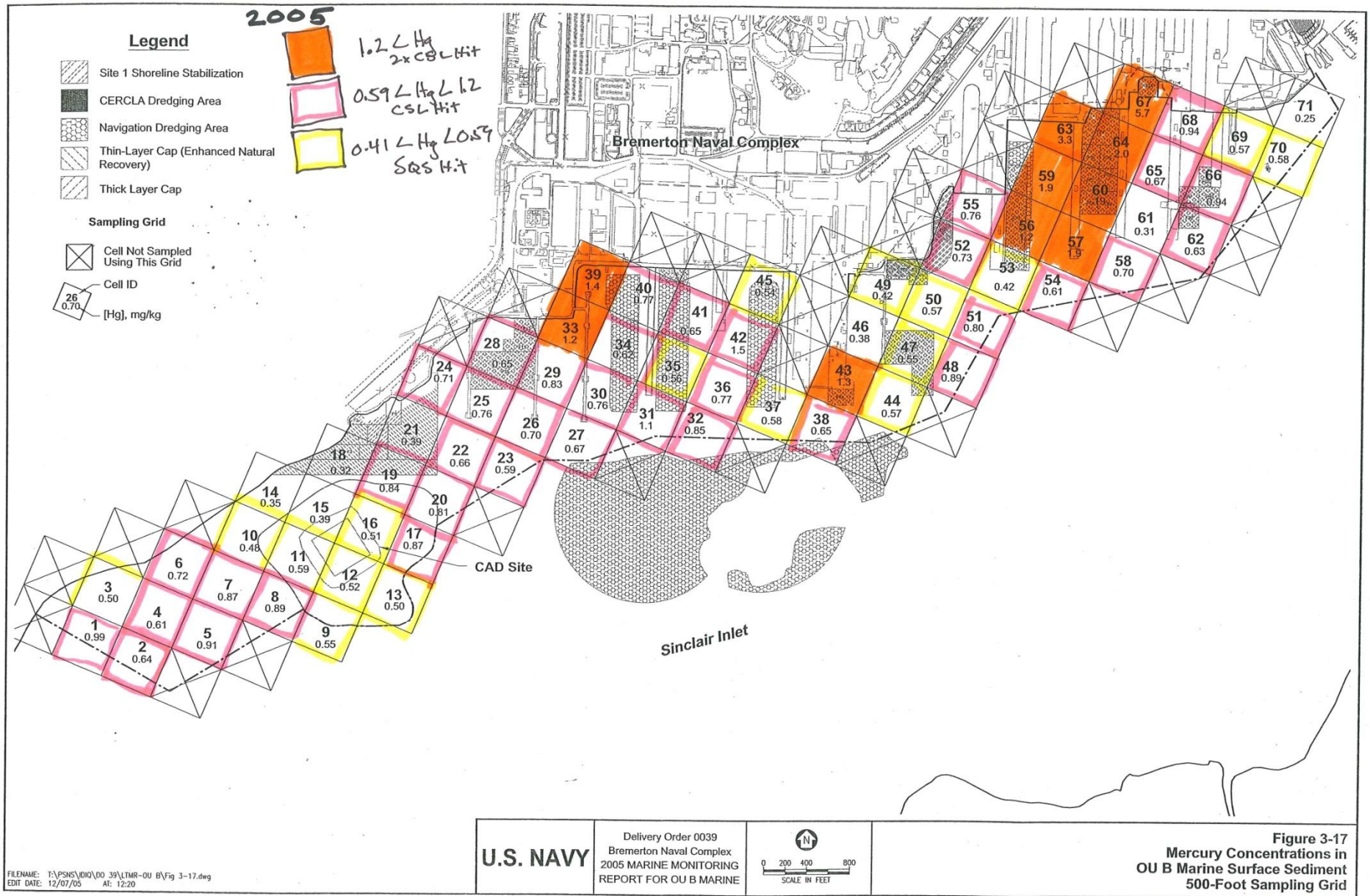
- In the past, marine paints have been up to 25% PCB by weight.
- PCBs were used in submarine felting material.
- PCBs have been frequently found in construction materials such as paint and caulk, especially in buildings constructed between 1950-1975.
- Stormwater
- Pier activities
- Top side chipping and painting.
- Sediment from under piers.

Mercury

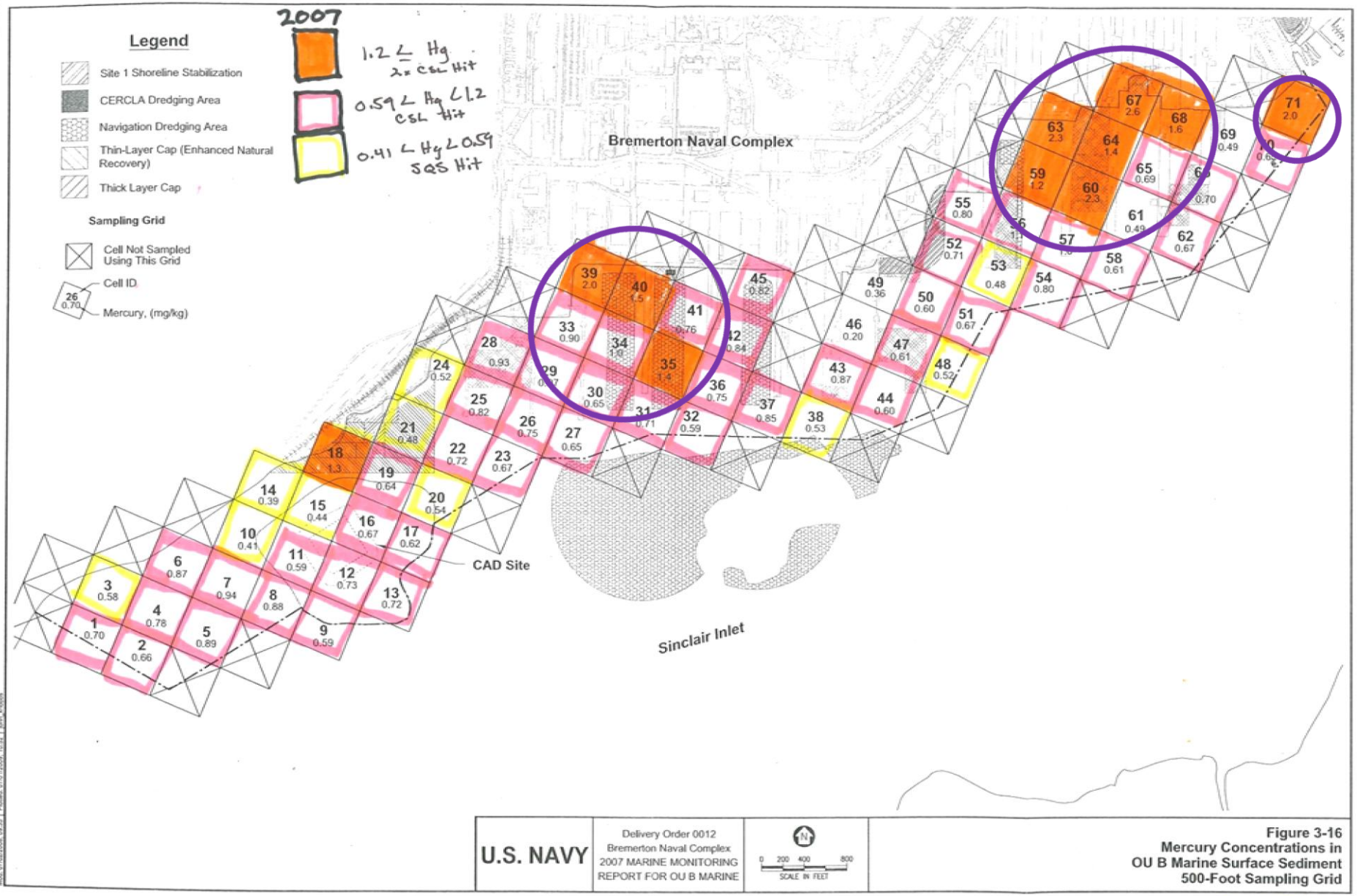
Mercury 2003



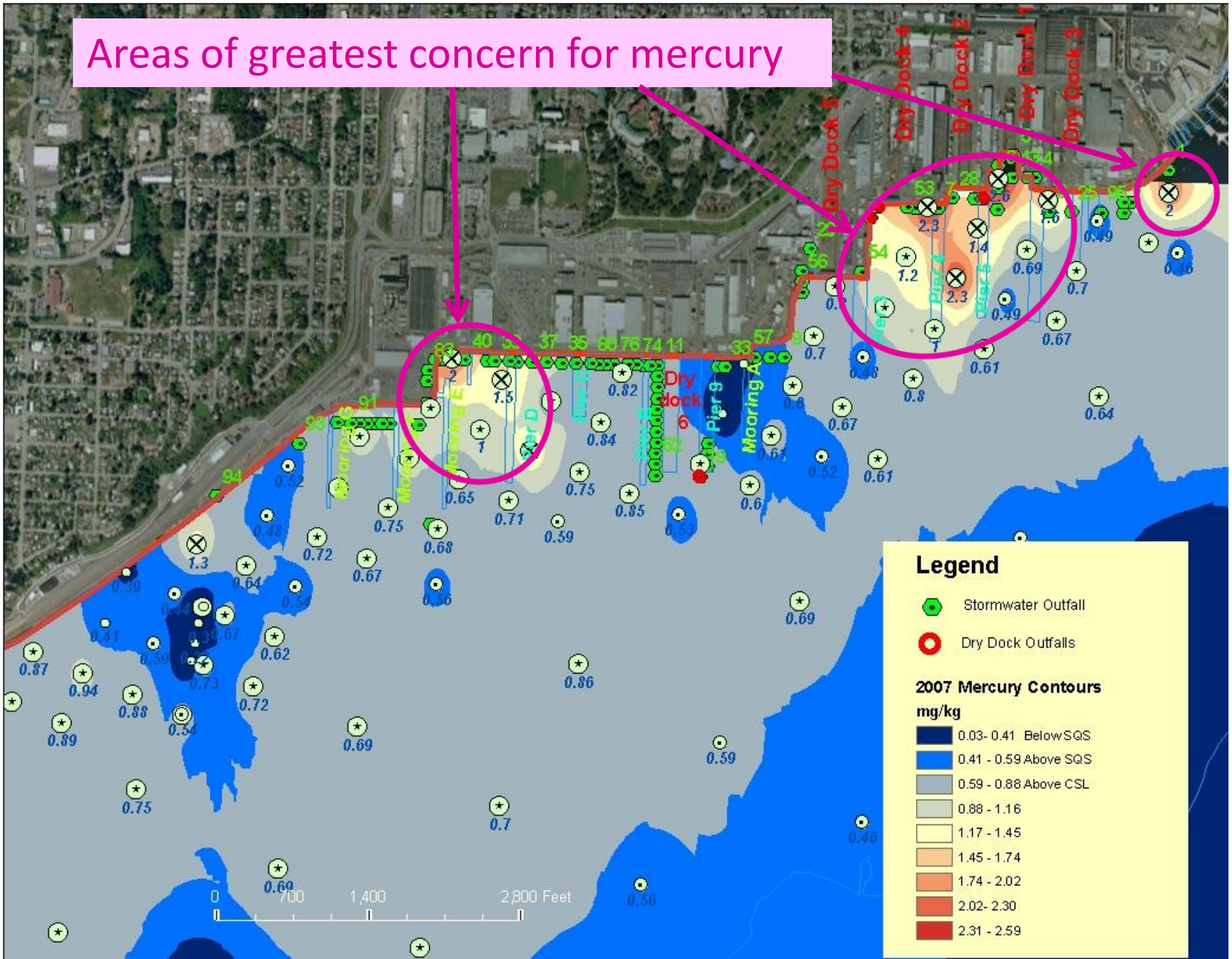
Mercury 2005



Mercury 2007

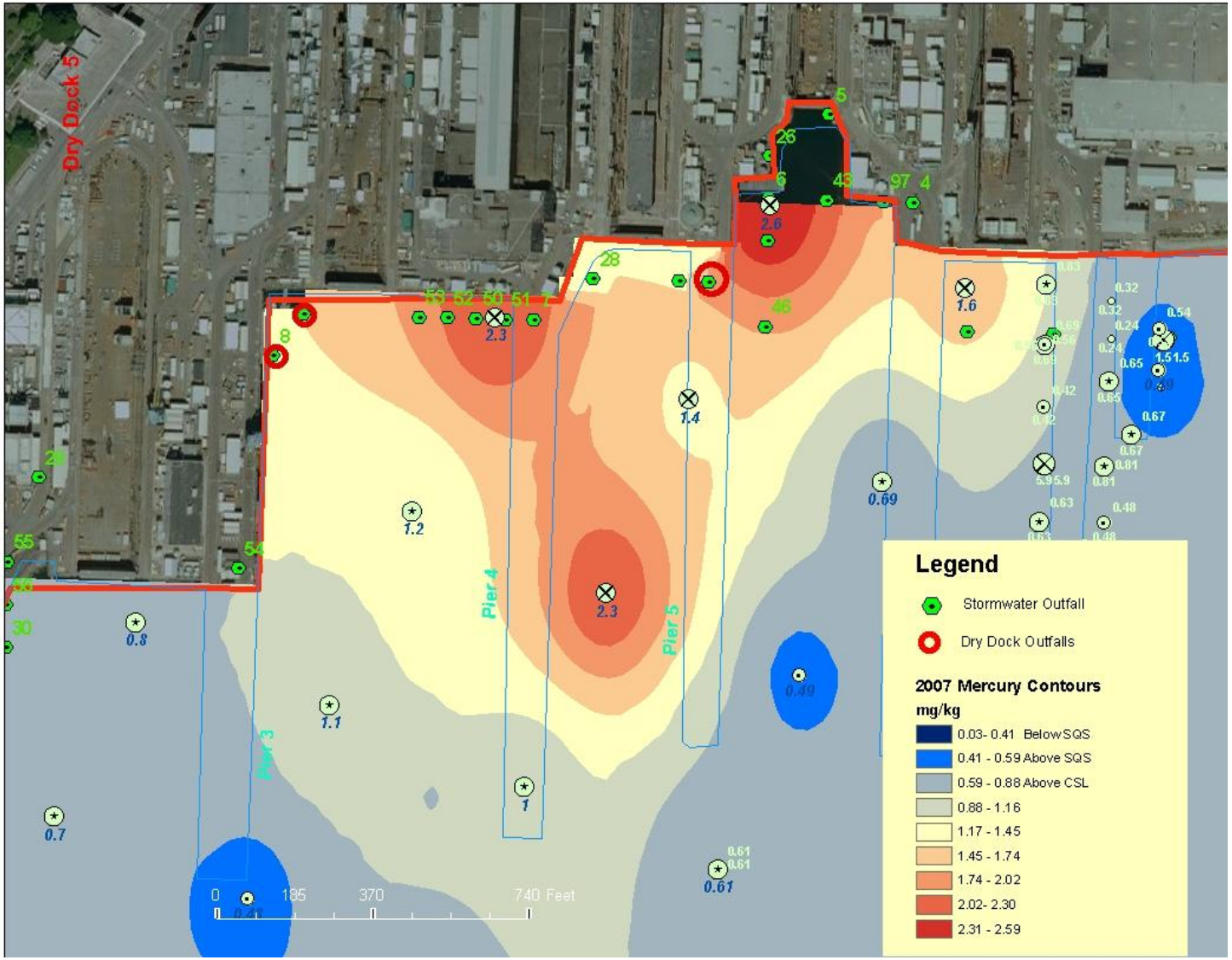


2007


Areas of greatest concern for mercury
Dry Dock 4
Dry Dock 2
Dry Dock 1
Dry Dock 3
Dry Dock 5
Dry Dock 6
Pier 9
Mooring A
Pier D
Legend
Stormwater Outfall
Dry Dock Outfalls
2007 Mercury Contours
mg/kg
0.03- 0.41 Below SQS
0.41 - 0.59 Above SQS
0.59 - 0.88 Above CSL
0.88 - 1.16
1.17 - 1.45
1.45 - 1.74
1.74 - 2.02
2.02- 2.30
2.31 - 2.59
0
700
1,400
2,800 Feet

Area of Greatest Concern for Mercury - 1

Area of Greatest Concern for Mercury - 2



Priority areas to investigate for mercury

Area 1

- Mooring E
- Pier D
- Stormwater Outfalls 13, 14, 37, 38, 39, 40, 41, 82, 83, 84, 85

Area 3

- Stormwater Outfall ***1***

Area 2

- Pier 4
- Pier 5
- Pier 6
- Stormwater Outfalls ***3***, 4, 5, ***6***, 7, ***25***, 26, 27, 28, 42, 43, ***44***, 35, 46, 48, 49, 50, 51, ***52***, 53, 97
- Dry dock Outfall 096

Bold italics indicates outfall identified by EPA as special concern.

In the past, anti-fouling paints used on ship bottoms have contained up to ½ pound of mercuric oxide per gallon of paint.