Columbia River PCB Cleanup

Alcoa Evergreen Smelter Site
Vancouver, WA

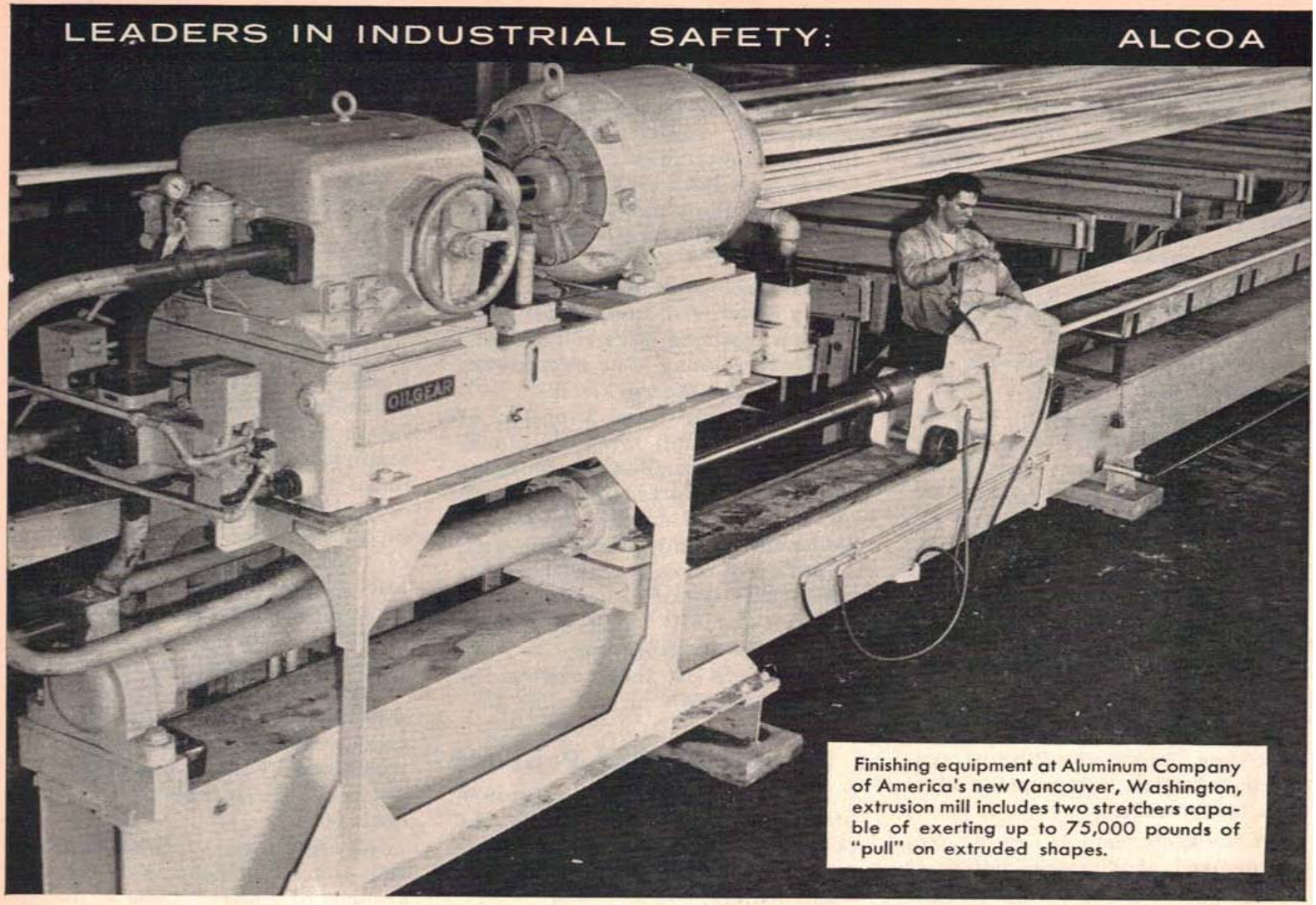
1940


2007


2007


2008

LEADERS IN INDUSTRIAL SAFETY: ALCOA



Finishing equipment at Aluminum Company of America's new Vancouver, Washington, extrusion mill includes two stretchers capable of exerting up to 75,000 pounds of "pull" on extruded shapes.

One of the things that impresses visitors to Alcoa is the strong emphasis on safety. It isn't surprising, then, to find fire-resistant Pydraul used in Alcoa hydraulic equipment... eliminating a potential source of fire.

FIRE-RESISTANT PYDRAUL F-9 CHANGES FIRE ZONES TO SAFETY ZONES

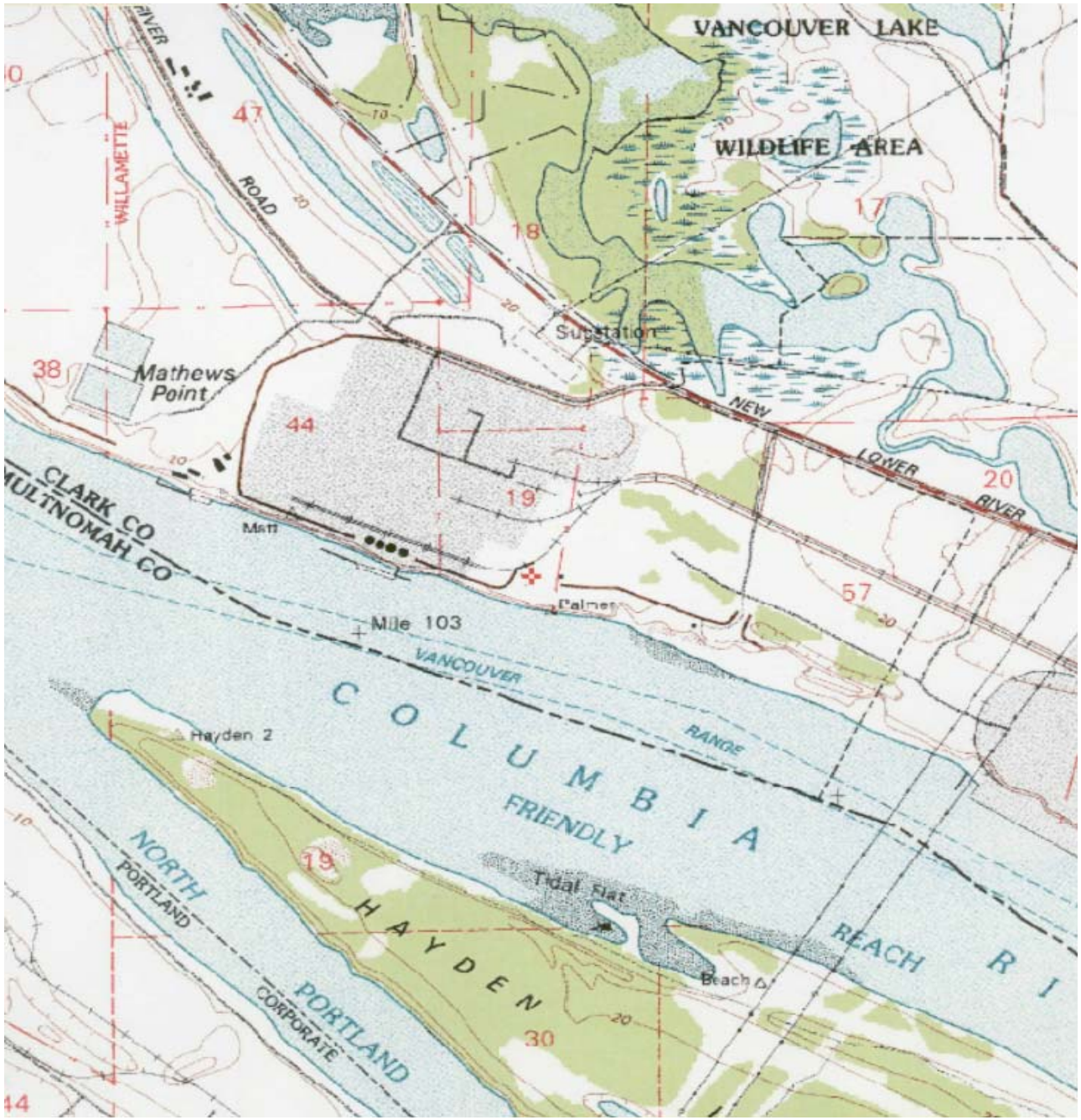
Site Presentation

Site Location

MTCA Process

Upland Contamination & Cleanup

River Contamination & Cleanup


VANCOUVER LAKE
WILDLIFE AREA
WILLAMETTE
RIVER
ROAD
Substation
Mathews Point
NEW
LOWER
RIVER
CLARK CO
MULTNOMAH CO
Mile 103
VANCOUVER
RANGE
COLUMBIA
FRIENDLY
Hayden 2
NORTH
PORTLAND
HAYDEN
Tidal Flat
Beach
PORTLAND
CORPORATE
REACH
47
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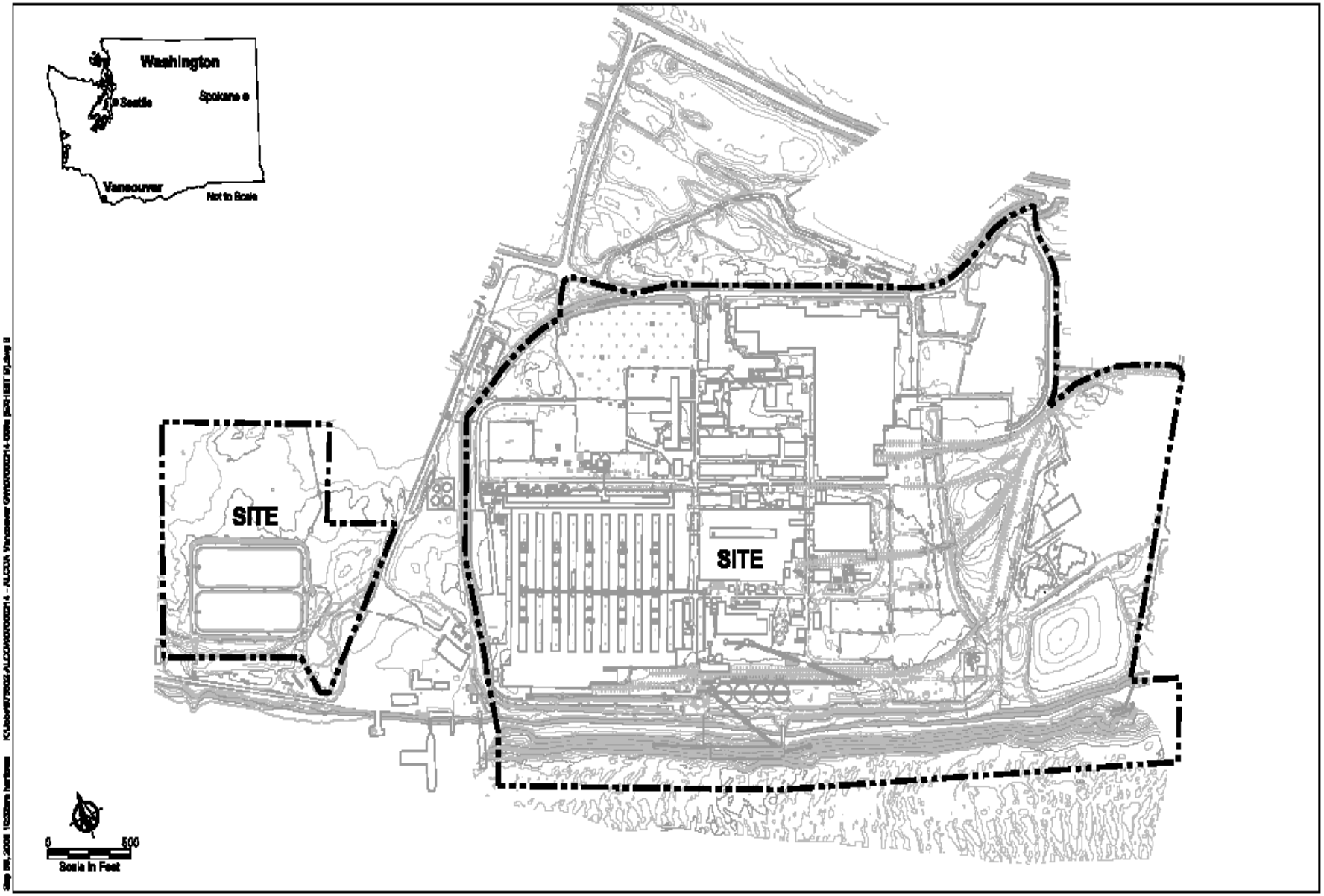

Exhibit B
Site Diagram
ALCOA/Evergreen Site
Vancouver, Washington

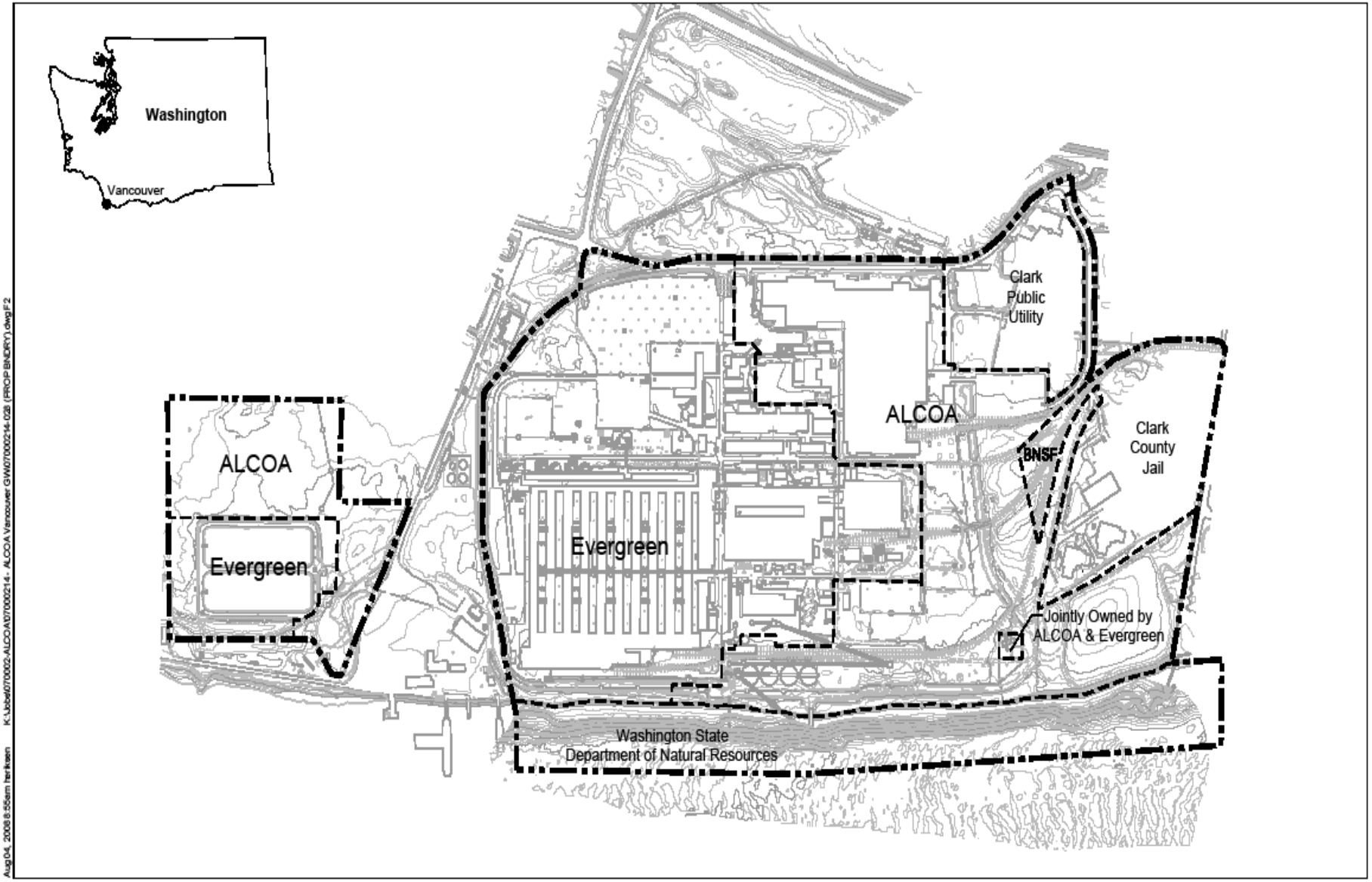

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Figure 2
Site Boundaries and Property Ownership
ALCOA/Evergreen Site CAP
Vancouver, Washington

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BRIDGEWATER GROUP, INC.

1 Sludge Pond
2 Stormwater Lagoons
3 Crowley Site
4 Transformer/Rectifier Yards
5 Potlines
6 Dike UST
7 Carbon Plant
8 Carbon Plant Emission Control System
9 Alumina and Raw Material Handling
10 Dock
11 Vanexco/Rod Mill Facilities
12 ACPC Facilities
13 Carbon Storage
14 Scrap Metal Recycling Area
15 SPL Storage Area
16 Bonneville Power Station
17 Clark County Public Utility
18 Hydraulic Oil Lagoons
19 Soluble Oil Area
20 North and North 2 Landfills
21 Northeast Parcel (Clark County Jail)
22 East Landfill
23 South Bank Area
24 CPU Outfall

Figure 2-1
Historical Site Layout
ALCOA/Evergreen Site
Vancouver, Washington

River Cleanup

- RI sample collection 1999 – 2001
- Source Control 1990 - 2008
- Feasibility Study 2007
- Sediment Cleanup – Dredge And Cap 2008 - 2009
- Clam Removal 2008

Upland Areas

Current Cleanup Work

- Crowley Lagoons – TPH
- Dike Storage Tanks – TPH
- Soluble Oil Area – TPH & PCBs

Evergreen Enforcement Order Cleanup Work (2007 – 2008)

- Storm water Lagoons – F & PAHs
- Rectifier & Transformers Areas – PCBs & TPH
- Carbon Plant – PAHs
- Carbon Plant Emission Control System Lagoons

- Carbon Storage Area - PAHs
- Casthouse & Lay down Areas – PCBs
- Scrap Metal Recycling Area – Metals, PCBs & TPH

Alcoa Cleanups (1988 – 2008)

- Alumina and Raw Material Handling Areas – F
- Vanexco/Rod Mill Facilities – PCBs & TPH
- Hydraulic Oil Lagoons – TPH & PCBs
- ACPC Wire Mill – PCBs
- Soluble Oil Area - PCBs & TPH
- Spent Potliner Area – CN & F

- **North & North 2 Landfills – TPH & TCE**
- **Northeast Parcel (County Jail) – Misc solid waste (PCBs)**
- **South Bank Area – PCBs**
- **East Landfill – TPH, PCBs, TCE & PAHs**

Evergreen Rectifier & Transformer Areas (Potlines)

- **Contaminated soil and concrete in Transformer Yard**
- **PCBs contamination**
- **Cleanup level 1 mg/kg**
- **All contaminated materials removed.**
- **10,100 tons of material removed to landfills.**

Evergreen Cast House & Lay Down Area

- **PCBs found in concrete and soil subfloors and structural fill.**
- **Cleanup to Industrial standards**
- **10 mg/kg PCBs**
- **All material removed to off site landfills**
- **Area deed restricted and covered with concrete rubble cap.**

Vanexco & Alcoa Rod Mill Cleanup

- Site started as an independent cleanup and finally finished as a consent decree in 1995
- PCBs found in concrete and soils
- Soils levels at 2,000 mg/kg and concrete at 16,000 mg/kg left at 35 ft
- Deed restricted
- Groundwater monitoring
- Covered with impervious cap.

ACPC (Alcoa) Wire Mill

- PCBs found in concrete and soil.
- Industrial cleanup level of 10 mg/kg
- Deed restricted and covered
- Removal is cleanup option.

Scrap Metal Recycling Area

- **Contaminants found in soil – metals, cyanide, fluoride, PCBs & TPH.**
- **Cleanup to Industrial Standards.**
  - **PCBs 10 mg/kg**
  - **TPH – 2000 mg/kg diesel range**
  - **1400 tons removed**
- **Soils cleaned up to industrial levels and deed restricted**

Alcoa Wire Mill Hydraulic Oil Lagoons

- Hydraulic oil from wire mill – TPH & PCBs
- Soils with TPH at 43,000 – 14,100 mg/kg
- Cleanup levels 500 mg/kg TPH and PCBs 1 mg/kg
- 12,000 cubic yards oily soil removed to extrusion building and bio-remediated.
- Soils removed and filled excavations after meeting cleanup levels.

Northeast Parcel Landfill (County Jail)

- **Landfill with smelter solid waste and PAHs & PCBs in soils.**
  - **Method A residential cleanup levels.**
  - **All landfill debris removed from site.**
    - **5,800 tons of PCB contaminated soils removed off site to landfills.**
    - **17,000 tons of PAH contaminated soils moved to East landfill and covered with one foot of clean soil.**
  - **County purchase site and constructed a jail**


8 13 97

North & North 2 Landfills

- Soils with TCE, vinyl chloride, PAHs and metals.
- Groundwater with TCE and PAHs.
- Cleanup standards Industrial levels PCBs 10 mg/kg, PAHs 20 mg/kg, TCE 30 ug/kg
- Removal to East Landfill
- 38,000 cubic yards removed
- Six inch clean soil cap.

East Landfill

- 150,000 cubic yards of waste with 57,000 yards of material above MTCA levels
- Contaminants – TPH, TCE, PCBs, PAHs and metals in soils and waste.
- Groundwater TCE above cleanup standard of 5 ug/L
- Landfill has double lined cap.
- River has armored shoreline.


Bio-
Diffusion
Area
Port of Vancouver
(Glacier NW)
East
Landfill
Storm Water
Pond
Vanalco
Waste Water
Treatment Plant
South Bank
Area of
Concern
East Landfill Revetment


STORIE
503-287-716


STORIE
503-287-7166
STORIE
503-287-7166
STORIE
503-287-7166

Columbia River Cleanup

Contaminant – PCBs one hot spot source

Where Located – Columbia River at aluminum smelter (2800 ft.)

Cleanup Level – 97 ug/kg

Remediation Level - 320 ug/kg

Cleanup Plan – dredge and cap

River protection – sediment monitoring

Source – South Bank

- PCBs found in bank near East Landfill
- PCB Sampling in East Landfill
- Groundwater and soil samplings on East Landfill bank
- Cleanup consists of removal of contaminated soils
- PCB Upland Cleanup standard – 10 mg/kg


Bio-
Diffusion
Area
Port of Vancouver
(Glacier NW)
East
Landfill
Storm Water
Pond
Vanalco
Waste Water
Treatment Plant
South Bank
Area of
Concern
East Landfill Revetment

South Bank PCB Discovery Timeline

- Winter 1997 Installation of power plant NPDES outfall line.
- NPDES chemical screening PCBs found at 3000 to 6000 ug/gm.
- Upland investigations of landfill areas 1998-1999.
- Sediment sampling 1999 – 2001
- USACE tissue sampling 2005
- Cleanup negotiations 2007 -2008
- Cleanup 2008 - 2009

USACE Tissue Data

- **Up stream PCB tissue data (23 – 47 ug/kg) River mile 104 - 108**
- **Smelter area tissue data (3,500 ug/kg) River mile 103**

- **Surface sediment at River mile 104 data (1.4 ug/kg – 27 ug/kg)**
- **SWAC sediment at River mile 103 1,130 ug/kg**

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0 0.125 0.25 0.5
Miles

Figure 2-6
USACE *Corbicula* Sampling Locations
ALCOA/Evergreen Site
Vancouver, Washington

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Figure 2-5
Sediment Sampling Locations
ALCOA/Evergreen Site
Vancouver, Washington

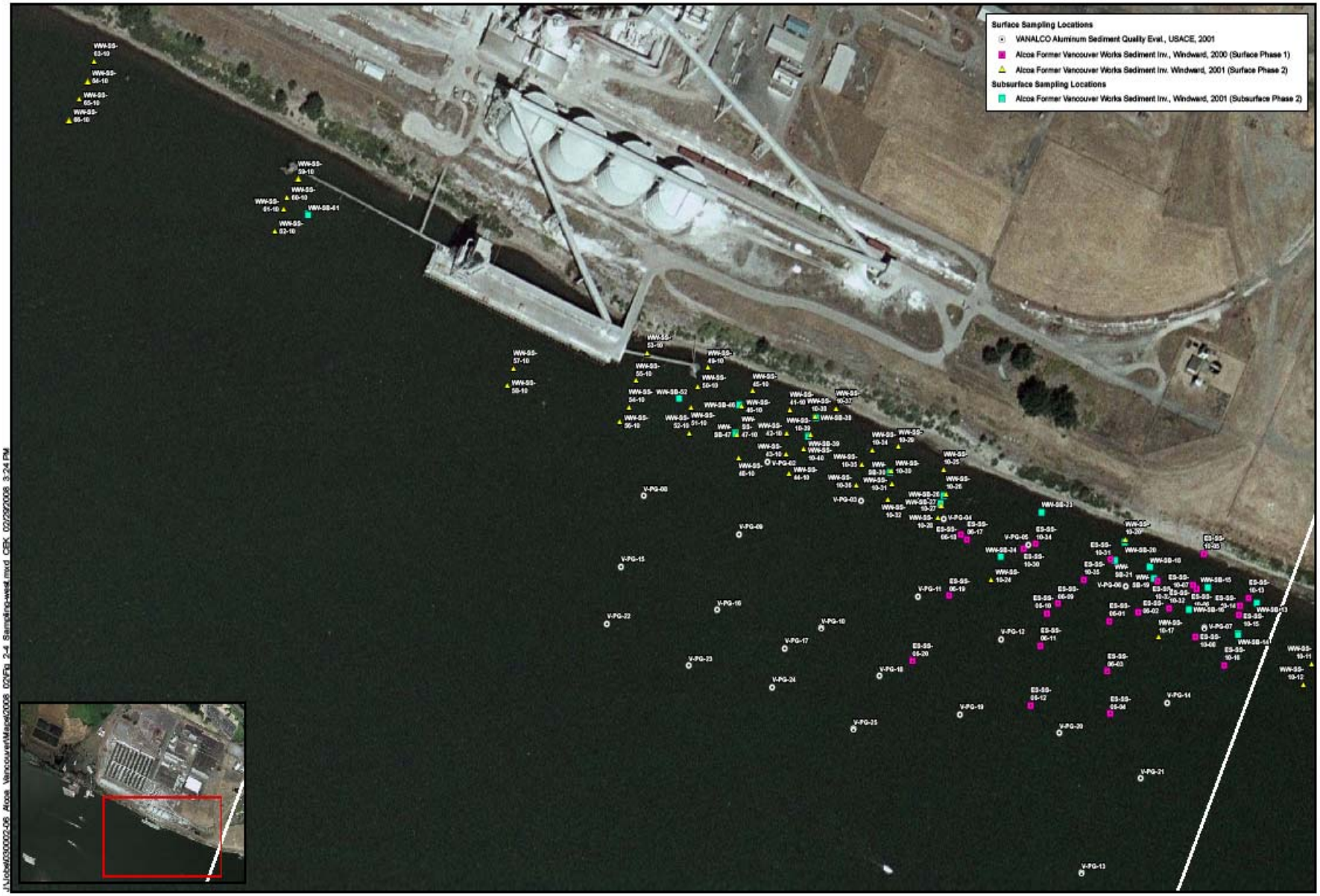


Figure 2-4
Sediment Sampling Locations
ALCOA/Evergreen Site
Vancouver, Washington

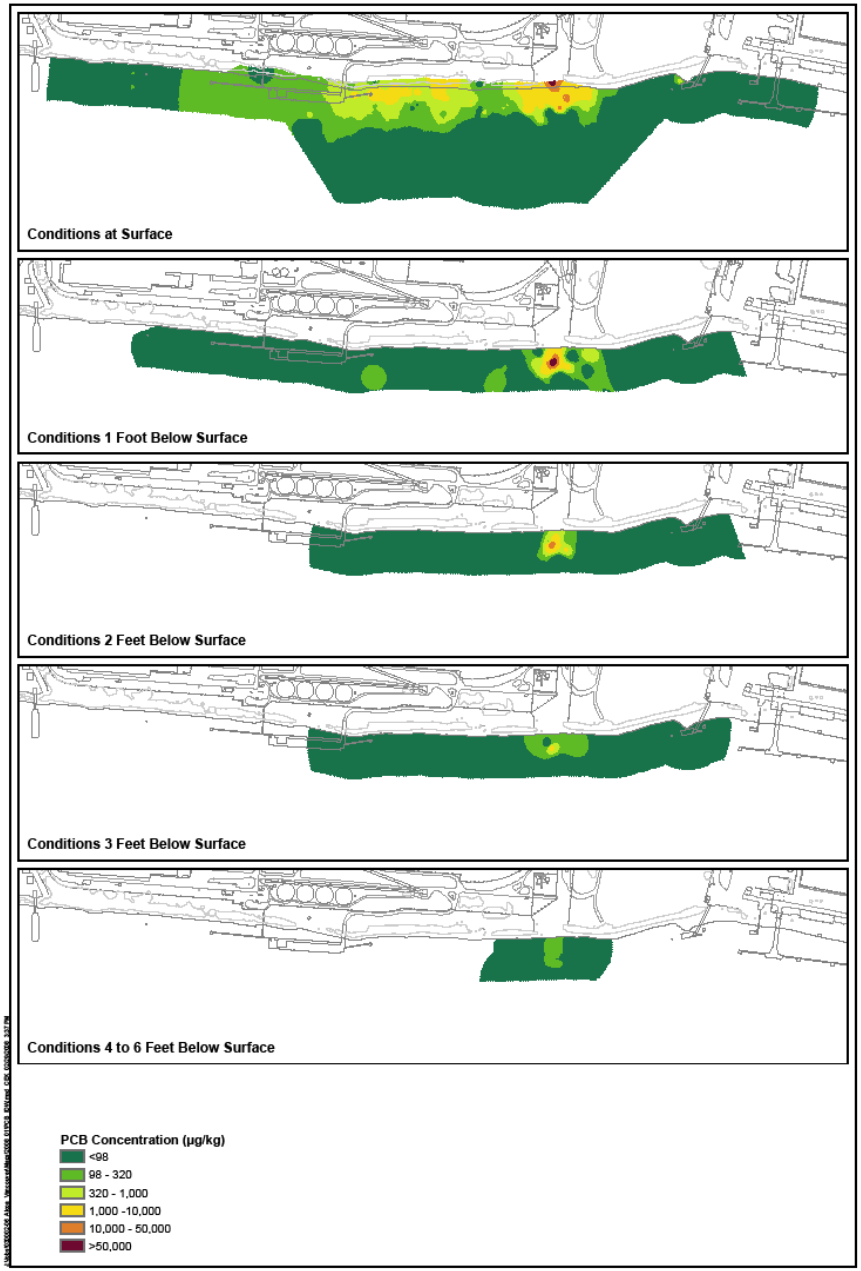
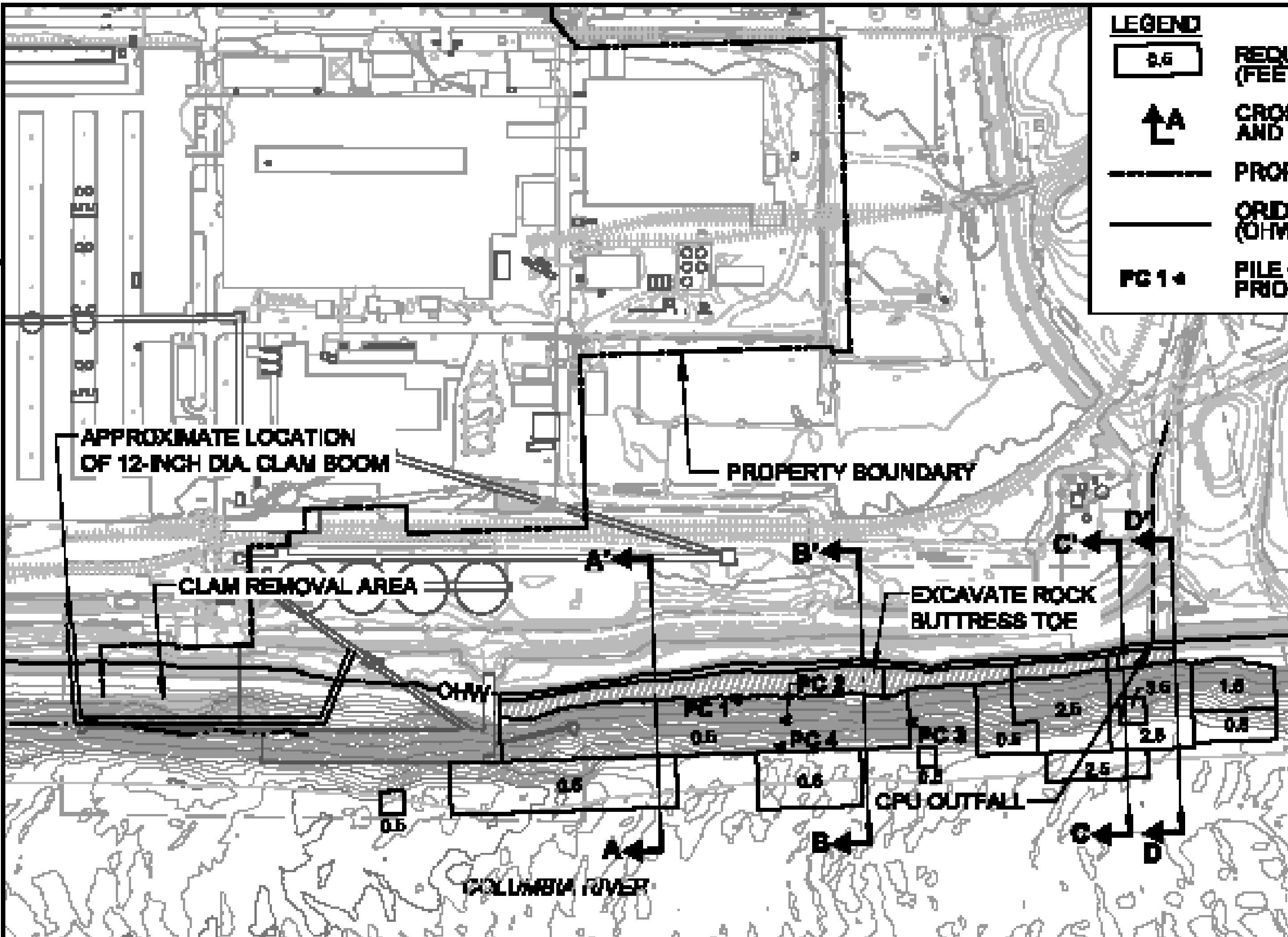


Figure 7-1
IDW Interpolation of PCB Concentrations as a Function of Depth
ALCOA/Evergreen Site
Vancouver, Washington



LEGEND

0.5	REQUIRED DREDGE DEPTH (FEET BELOW EXISTING SURFACE)
A	CROSS SECTION LOCATION AND DESIGNATION
	PROPERTY BOUNDARY
	ORDINARY HIGH WATER (OHW 16.7 FEET)
PC 1	PILE CLUSTER (TO BE REMOVED PRIOR TO DREDGING)

0 300
Scale in Feet

NOTES:
1. TOPOGRAPHIC SURVEY PROVIDED BY ORION GPS DATED NOVEMBER 2007. BATHYMETRIC SURVEY PROVIDED BY ETRAC DATED DECEMBER 2007.
2. HORIZONTAL DATUM IS WASHINGTON STATE PLANE - SOUTHZONE (NAD 83) U.S. SURVEY FEET.
3. VERTICAL DATUM IS NGVD29.
4. CPU OUTFALL IS A NON-CONTACT INDUSTRIAL COOLING DISCHARGE LINE INSTALLED BY CLARK PUBLIC UTILITY IN 1997.

DREDGE PLAN

PURPOSE: SEDIMENT REMEDIATION

DATUM: LAT: 45°36'44.6" N
LONG: 122°44'3.4" W
VERTICAL: NGVD29

ADJACENT PROPERTY OWNERS:
CLARK COUNTY CORRECTIONS
PORT OF VANCOUVER, EVERGREEN

NAME: FORMER ALCOA VANCOUVER WORKS

REFERENCE #:

SITE LOCATION ADDRESS:
5509 NW LOWER RIVER ROAD
VANCOUVER , WA 98660-1021

PROPOSED: DREDGE AND DISPOSE OF CONTAMINATED SEDIMENTS, PLACE CLEAN BACKFILL, AND ENHANCE SHORELINE

IN: VANCOUVER
NEAR/AT:
COUNTY OF: CLARK
STATE: WA

DATE: FEBRUARY 2008 SHEET: 2 OF 8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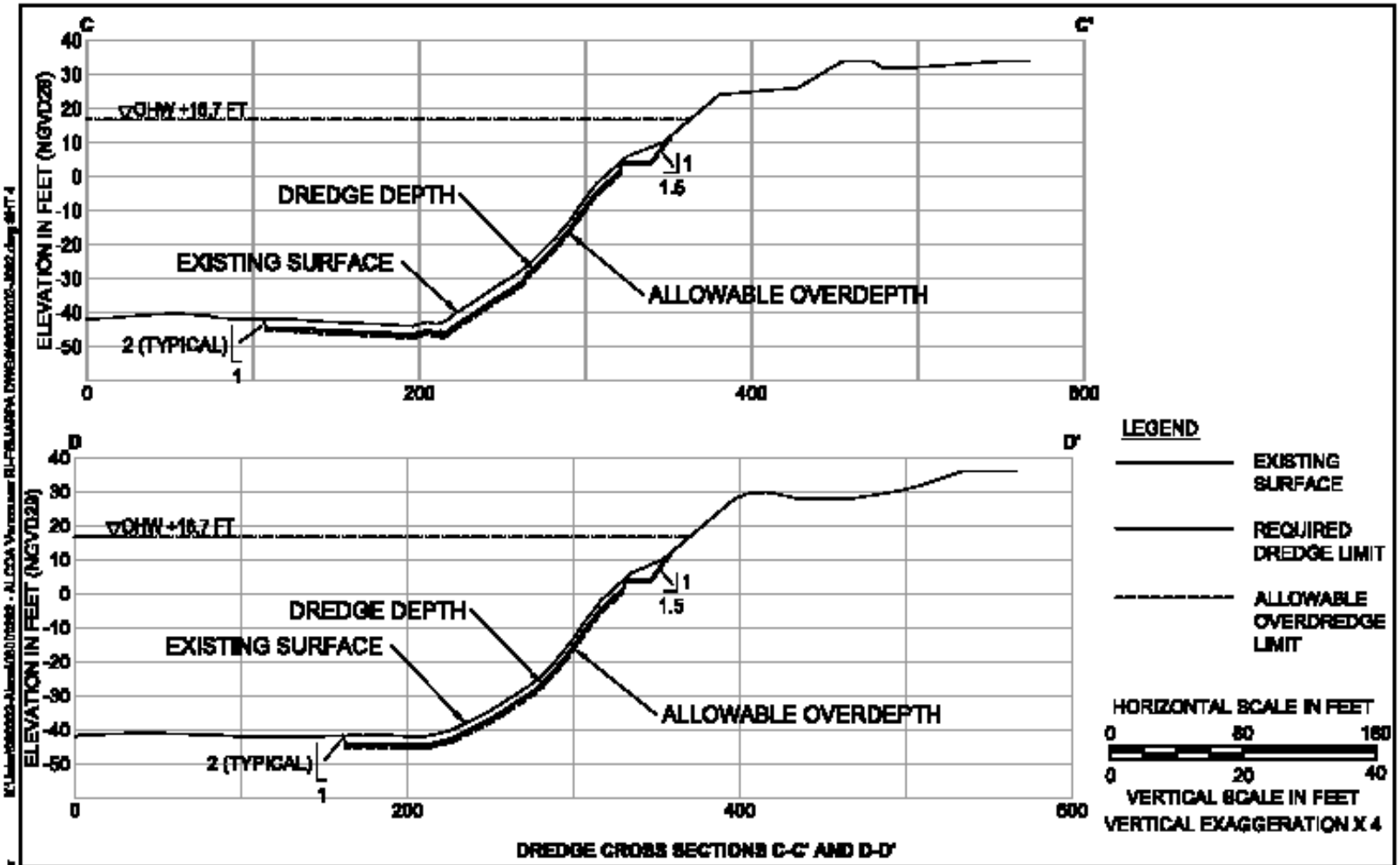
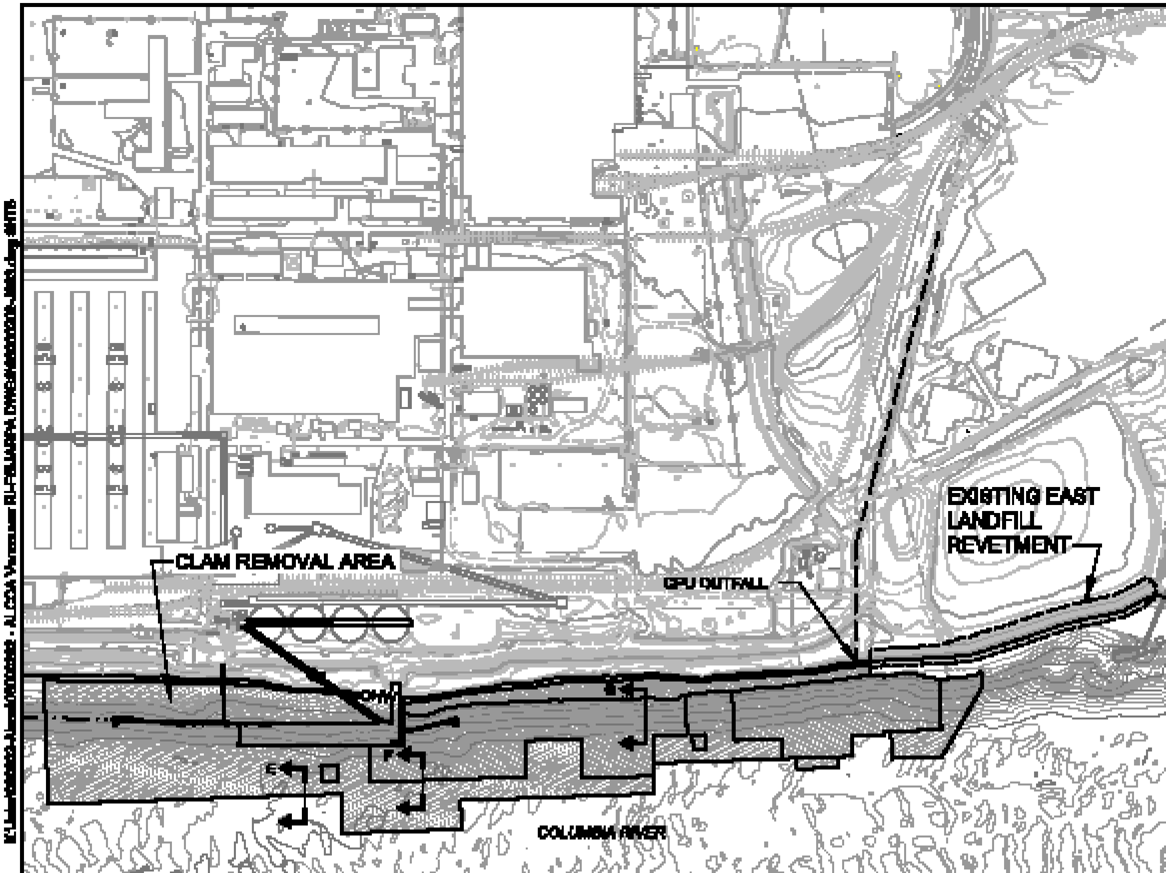
DIRT


DIRT
HITACHI



DREDGE CROSS SECTIONS C-C' AND D-D'

PURPOSE: SEDIMENT REMEDIATION DATUM: LAT: 45°36'44.6" N LONG: 122°40'9.4" W VERTICAL: NGVD29 ADJACENT PROPERTY OWNERS: CLARK COUNTY CORRECTIONS PORT OF VANCOUVER, EVERGREEN	NAME: FORMER ALCOA VANCOUVER WORKS REFERENCE #: SITE LOCATION ADDRESS: 5908 NW LOWER RIVER ROAD VANCOUVER, WA 98660-1021	PROPOSED: DREDGE AND DISPOSE OF CONTAMINATED SEDIMENTS, PLACE CLEAN BACKFILL, AND ENHANCE SHORELINE IN: VANCOUVER NEAR/AT: COUNTY OF: CLARK STATE: WA DATE: FEBRUARY 2008 SHEET: 4 OF 6



LEGEND

- CONSTRUCT ROCK BUTTRESS
- RETURN TO GRADE WITH CLEAN SAND
- PLACE 6" ENHANCED NATURAL RECOVERY LAYER OF CLEAN SAND

0 400
Scale in Feet

NOTES:

1. TOPOGRAPHIC SURVEY PROVIDED BY ORION GPS DATED NOVEMBER 2007. BATHYMETRIC SURVEY PROVIDED BY ETRAC DATED DECEMBER 2007.
2. HORIZONTAL DATUM IS WASHINGTON STATE PLANE - SOUTHZONE (NAD 83) U.S. SURVEY FEET.
3. VERTICAL DATUM IS NGVD29.
4. CPU OUTFALL IS A NON-CONTACT INDUSTRIAL COOLING DISCHARGE LINE INSTALLED BY CLARK PUBLIC UTILITY IN 1997.

MATERIAL PLACEMENT PLAN

PURPOSE: SEDIMENT REMEDIATION DATUM: LAT: 45°38'44.6" N LONG: 122°44'8.4" W VERTICAL: NGVD29 ADJACENT PROPERTY OWNERS: CLARK COUNTY CORRECTIONS PORT OF VANCOUVER, EVERGREEN	NAME: FORMER ALCOA VANCOUVER WORKS REFERENCE #: SITE LOCATION ADDRESS: 5509 NW LOWER RIVER ROAD VANCOUVER , WA 98660-1021	PROPOSED: DREDGE AND DISPOSE OF CONTAMINATED SEDIMENTS, PLACE CLEAN BACKFILL, AND ENHANCE SHORELINE IN: VANCOUVER NEAR/AT: COUNTY OF: CLARK STATE: WA DATE: FEBRUARY 2008 SHEET: 5 OF 8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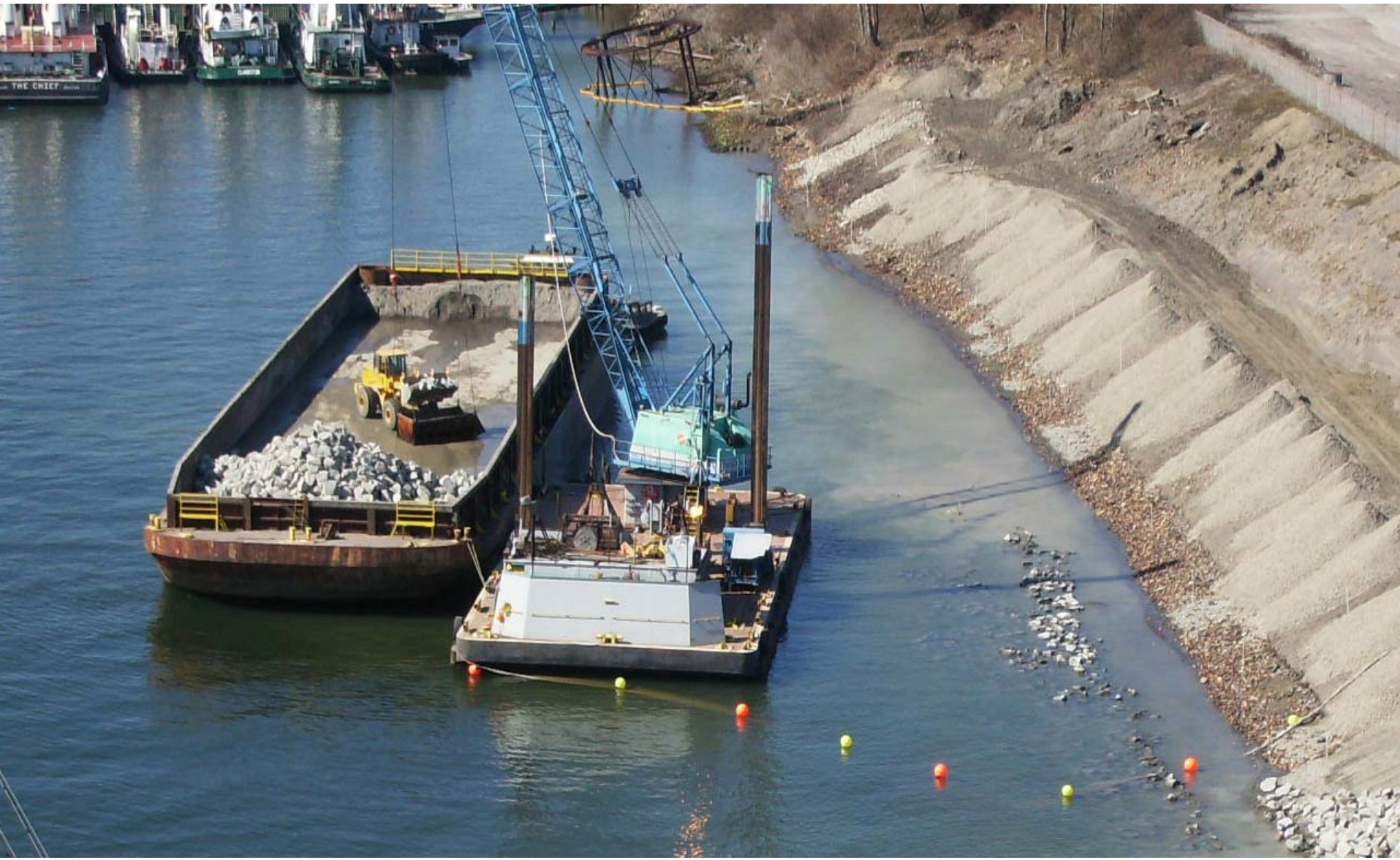


03/28/2009

Continuing Actions at Site

- Project finished in March 2009
- Groundwater monitoring
- Deed restriction on residential land development
- Development of Site by Port of Vancouver
- Terminal Five rail yard development.