

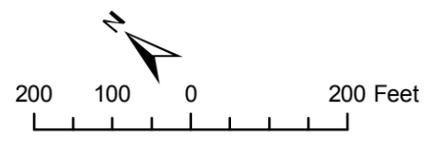
Chemistry Legend

4,4'-DDE - Surface Water		4,4'-DDE - Transition Water		4,4'-DDE - Ground Water	
total_or_dissolved, Exceedance_class		total_or_dissolved, Exceedance_class		total_or_dissolved, Exceedance_class	
■	D, Acute (1.05 mg/l)	●	D, Acute (1.05 mg/l)	▲	D, Acute (1.05 mg/l)
□	T, Acute (1.05 mg/l)	○	T, Acute (1.05 mg/l)	△	T, Acute (1.05 mg/l)
■	D, HH_Fishx10000 (0.00022 mg/l)	●	D, HH_Fishx10000 (0.0022 mg/l)	▲	D, HH_Fishx10000 (0.0022 mg/l)
□	T, HH_Fishx10000 (0.00022 mg/l)	○	T, HH_Fishx10000 (0.0022 mg/l)	△	T, HH_Fishx10000 (0.0022 mg/l)
	D, None Exceeded		D, None Exceeded		D, None Exceeded
	T, None Exceeded		T, None Exceeded		T, None Exceeded
	D, Not Detected		D, Not Detected		D, Not Detected
	T, Not Detected		T, Not Detected		T, Not Detected

REVISED DRAFT

DO NOT QUOTE OR CITE
This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.

Notes:
1) If both Total and Dissolved values occur coincidentally at a sampling location, the dissolved value will appear on top.

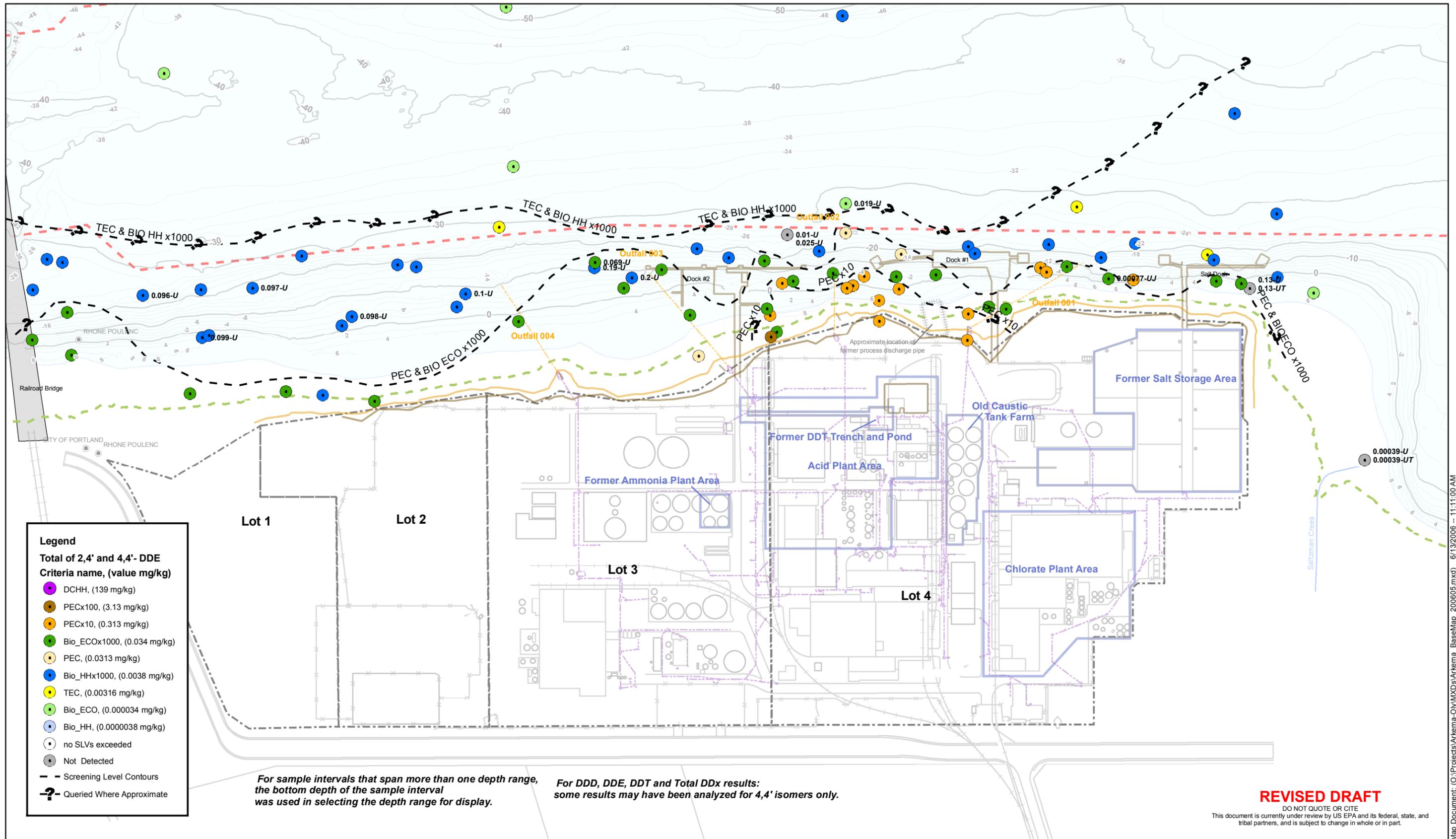


FEATURE SOURCES:
Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004. Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
Vertical Datum: North American Vertical Datum of 1988 (NAVD88).
Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
Units: International Feet.
Basemap: Basemap features updated in 2006 by David Evans and Associates. Ordinary high water line, top of bank, and other site features surveyed in April 2006.

—	Ordinary High Water	- - -	12ft_Contour	- - -	Navigation Channel
—	Top of Bank	 	Property Lines	—	River
- - -	E-Sewer-L	 	Outfalls	—	
- - -	Storm Drain				

Map-29
Arkema Site
Surface Water, Transition Zone Water,
and Groundwater Samples
4,4'-DDE

Map Document: (O:\Projects\Arkema-01\MapDocs\ArkemaSW_DotMap_Screened_20060622.mxd) 6/23/2006 - 6:06:12 PM



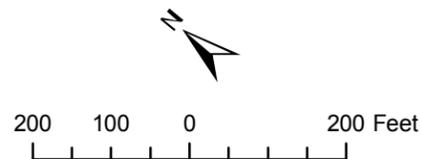
- Legend**
- Total of 2,4' and 4,4'- DDE Criteria name, (value mg/kg)**
- DCHH, (139 mg/kg)
 - PECx100, (3.13 mg/kg)
 - PECx10, (0.313 mg/kg)
 - Bio_ECOx1000, (0.034 mg/kg)
 - PEC, (0.0313 mg/kg)
 - Bio_HHx1000, (0.0038 mg/kg)
 - TEC, (0.00316 mg/kg)
 - Bio_ECO, (0.000034 mg/kg)
 - Bio_HH, (0.000038 mg/kg)
 - no SLVs exceeded
 - Not Detected
 - - Screening Level Contours
 - ? - Queried Where Approximate

For sample intervals that span more than one depth range, the bottom depth of the sample interval was used in selecting the depth range for display.

For DDD, DDE, DDT and Total DDx results: some results may have been analyzed for 4,4' isomers only.

REVISED DRAFT

DO NOT QUOTE OR CITE
This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.

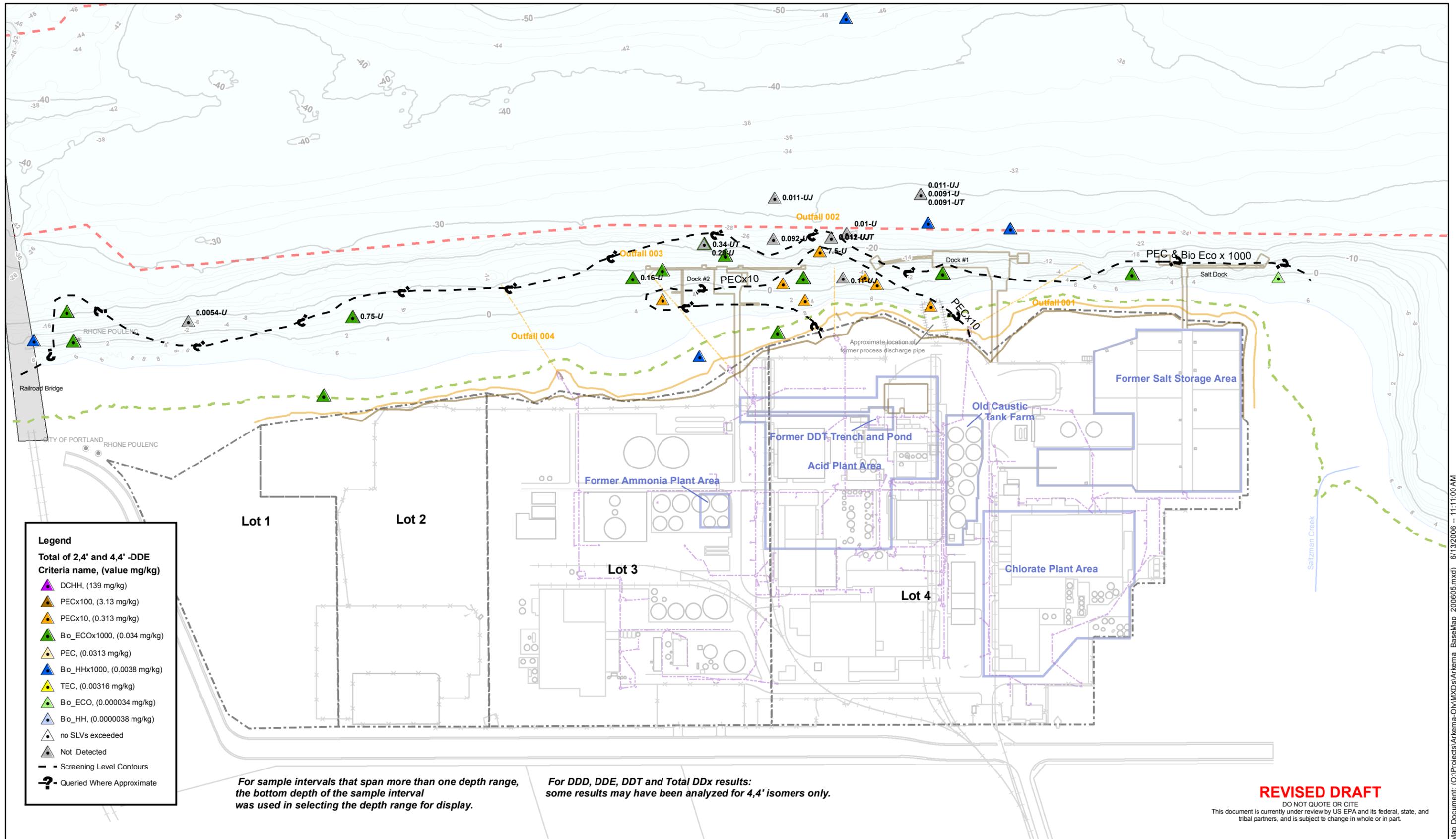


FEATURE SOURCES:
 Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004. Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
 Vertical Datum: North American Vertical Datum of 1988 (NAVD88).
 Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
 Units: International Feet.
 Basemap: Basemap features updated in 2006 by David Evans and Associates. Ordinary high water line, top of bank, and other site features surveyed in April 2006. Most buildings and structures on the Arkema site have been demolished or removed.
 OHW and Top of Slope lines were created from the April 2006 DEA survey, the +12ft contour line was derived from the combined lidar/bathymetry grid.
 Lot Lines: Created by importing pdf file from ERM, georeferencing to CAD lines (RMS error = 2.3042) and heads-up digitizing the lot lines.

- Ordinary High Water
- Top of Bank
- E-Sewer-L
- Storm Drain
- 12ft Contour
- Bridges
- Property Lines
- Navigation Channel
- River
- Outfalls

Map-30
Arkema Site
Surface & Sub-Surface Sediment Samples
Depth Range: Surface (0-1 ft)
Total of 2,4 and 4,4-DDE

Map Document: (O:\Projects\Arkema-01\MXDs\Arkema_Basemap_200605.mxd) 6/13/2006 -- 11:11:00 AM



Legend

Total of 2,4' and 4,4' -DDE Criteria name, (value mg/kg)

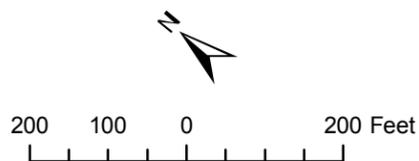
- ▲ DCHH, (139 mg/kg)
- ▲ PECx100, (3.13 mg/kg)
- ▲ PECx10, (0.313 mg/kg)
- ▲ Bio_ECOx1000, (0.034 mg/kg)
- ▲ PEC, (0.0313 mg/kg)
- ▲ Bio_HHx1000, (0.0038 mg/kg)
- ▲ TEC, (0.00316 mg/kg)
- ▲ Bio_ECO, (0.000034 mg/kg)
- ▲ Bio_HH, (0.000038 mg/kg)
- ▲ no SLVs exceeded
- ▲ Not Detected
- - - Screening Level Contours
- ?? Queried Where Approximate

For sample intervals that span more than one depth range, the bottom depth of the sample interval was used in selecting the depth range for display.

For DDD, DDE, DDT and Total DDx results: some results may have been analyzed for 4,4' isomers only.

REVISED DRAFT

DO NOT QUOTE OR CITE
This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.

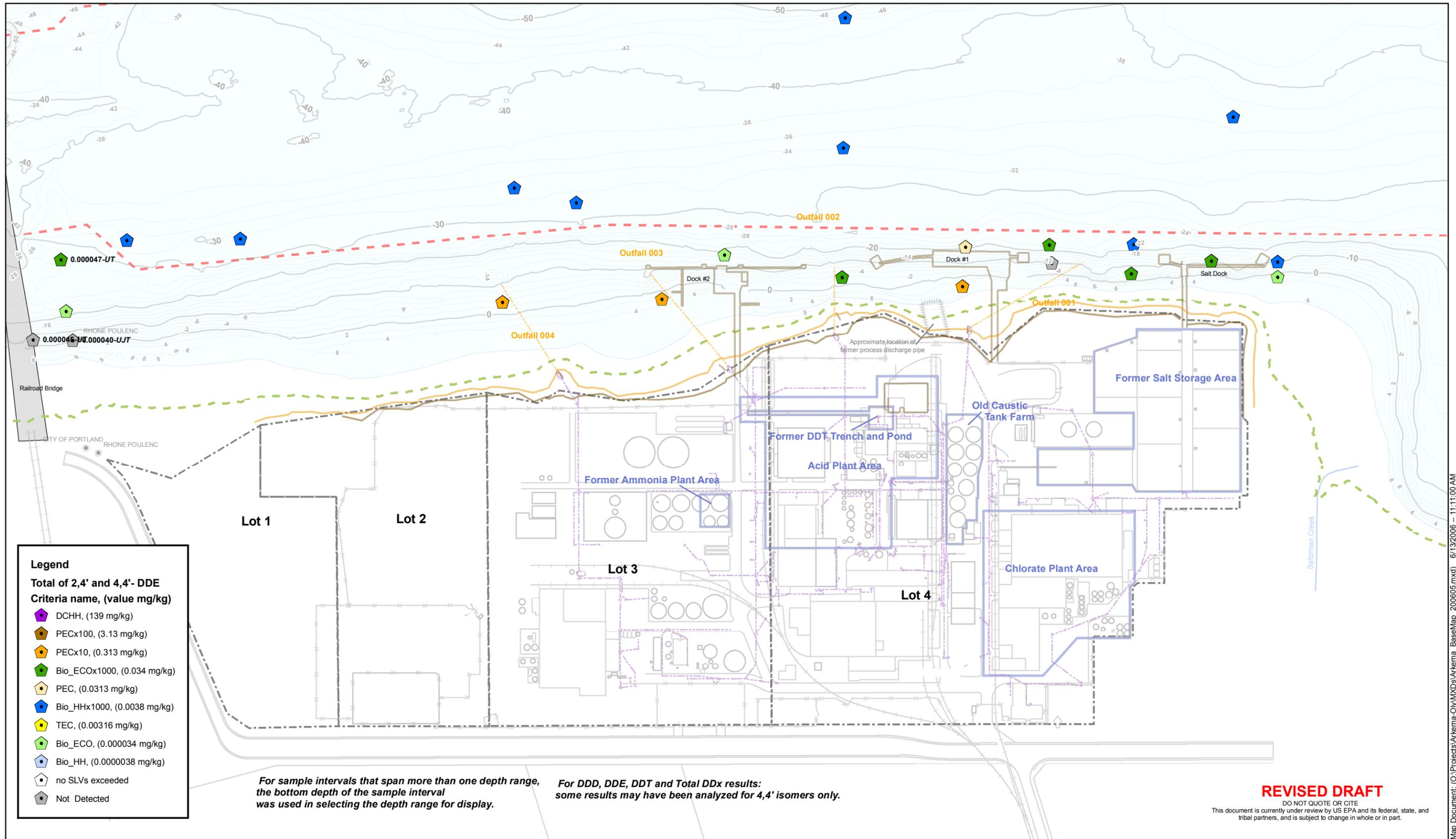


FEATURE SOURCES:
 Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004. Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
 Vertical Datum: North American Vertical Datum of 1988 (NAVD88).
 Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
 Units: International Feet.
 Basemap: Basemap features updated in 2006 by David Evans and Associates. Ordinary high water line, top of bank, and other site features surveyed in April 2006. Most buildings and structures on the Arkema site have been demolished or removed.
 OHW and Top of Slope lines were created from the April 2006 DEA survey, the +12ft contour line was derived from the combined lidar/bathymetry grid.
 Lot Lines: Created by importing pdf file from ERM, georeferencing to CAD lines (RMS error = 2.3042) and heads-up digitizing the lot lines.

— Ordinary High Water	— 12ft Contour	— Navigation Channel
— Top of Bank	— Bridges	— River
— E-Sewer-L	— Property Lines	— Outfalls
— Storm Drain	—	—

Map-31
Arkema Site
Surface & Sub-Surface Sediment Samples
Depth Range: Shallow Subsurface (1-4 ft)
Total of 2,4 and 4,4-DDE

Map Document: (O:\Projects\Arkema-01\MapDocs\Arkema_Basemap_200605.mxd) 6/13/2006 -- 11:11:00 AM



Legend

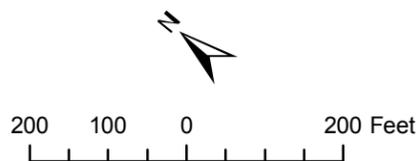
Total of 2,4' and 4,4'- DDE Criteria name, (value mg/kg)

- ◆ DCHH, (139 mg/kg)
- ◆ PECx100, (3.13 mg/kg)
- ◆ PECx10, (0.313 mg/kg)
- ◆ Bio_ECOx1000, (0.034 mg/kg)
- ◆ PEC, (0.0313 mg/kg)
- ◆ Bio_HHx1000, (0.0038 mg/kg)
- ◆ TEC, (0.00316 mg/kg)
- ◆ Bio_ECO, (0.000034 mg/kg)
- ◆ Bio_HH, (0.0000038 mg/kg)
- ◆ no SLVs exceeded
- ◆ Not Detected

For sample intervals that span more than one depth range, the bottom depth of the sample interval was used in selecting the depth range for display.

For DDD, DDE, DDT and Total DDx results: some results may have been analyzed for 4,4' isomers only.

REVISED DRAFT
DO NOT QUOTE OR CITE
This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.

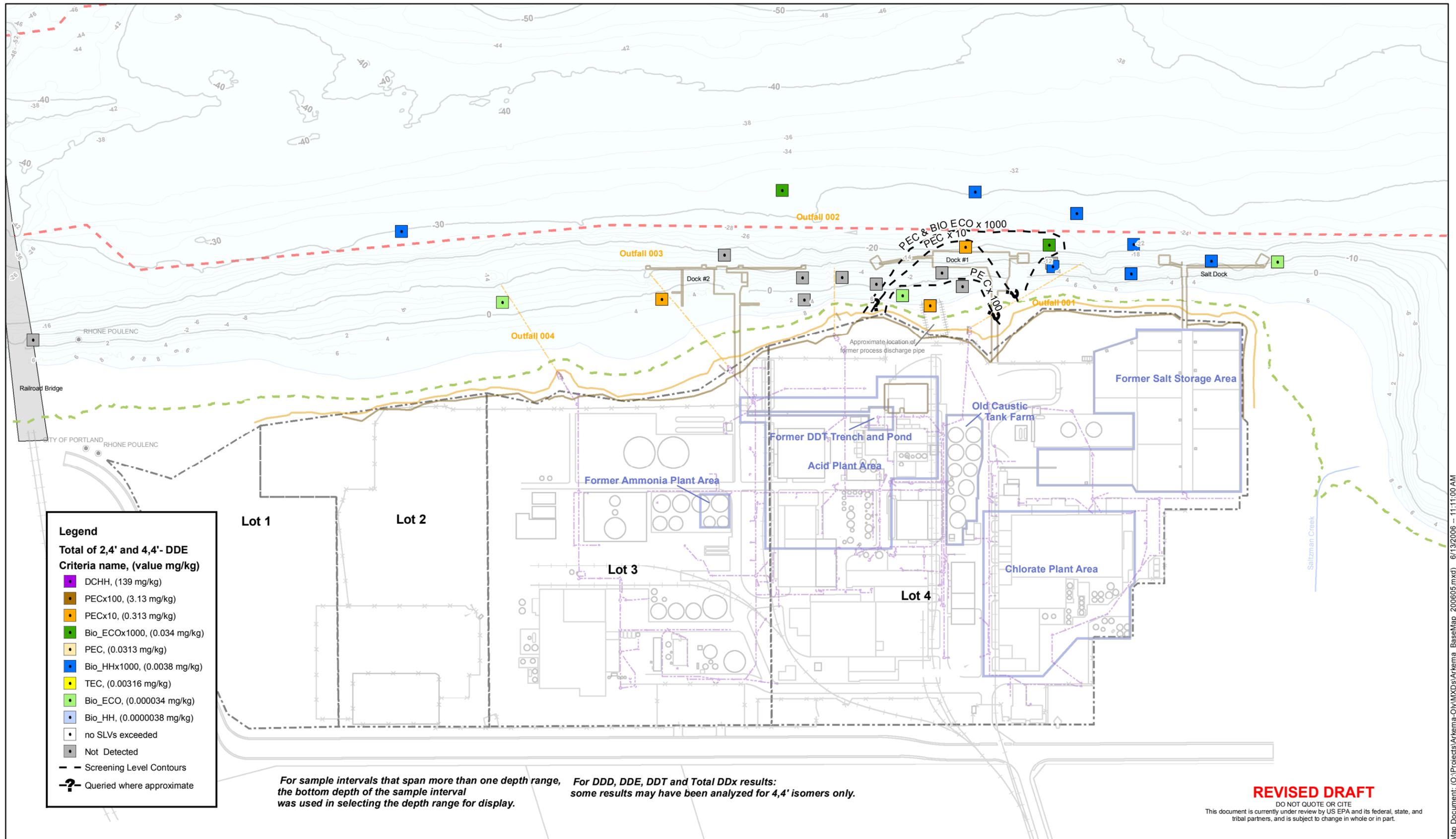


FEATURE SOURCES:
 Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004. Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
 Vertical Datum: North American Vertical Datum of 1988 (NAVD88).
 Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
 Units: International Feet.
 Basemap: Basemap features updated in 2006 by David Evans and Associates. Ordinary high water line, top of bank, and other site features surveyed in April 2006. Most buildings and structures on the Arkema site have been demolished or removed.
 OHW and Top of Slope lines were created from the April 2006 DEA survey, the +12ft contour line was derived from the combined lidar/bathymetry grid.
 Lot Lines: Created by importing pdf file from ERM, georeferencing to CAD lines (RMS error = 2.3042) and heads-up digitizing the lot lines.

— Ordinary High Water	- - - 12ft_Contour	- - - Navigation Channel
— Top of Bank	— Bridges	— River
- - - E-Sewer-L	— Property Lines	● Outfalls
- - - Storm Drain	- - - Property Lines	● Outfalls

Map-32
Arkema Site
Surface & Sub-Surface Sediment Samples
Depth Range: Intermediate Subsurface (4-8 ft)
Total of 2,4 and 4,4-DDE

Map Document: (O:\Projects\Arkema-01\MapDocs\Arkema_BaseMap_200605.mxd) 6/13/2006 11:11:00 AM



Legend

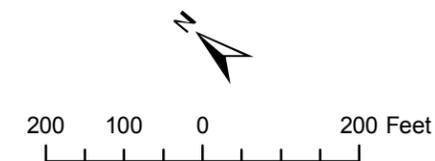
Total of 2,4' and 4,4'- DDE Criteria name, (value mg/kg)

- DCHH, (139 mg/kg)
- PECx100, (3.13 mg/kg)
- PECx10, (0.313 mg/kg)
- Bio_ECOx1000, (0.034 mg/kg)
- PEC, (0.0313 mg/kg)
- Bio_HHx1000, (0.0038 mg/kg)
- TEC, (0.00316 mg/kg)
- Bio_ECO, (0.000034 mg/kg)
- Bio_HH, (0.0000038 mg/kg)
- no SLVs exceeded
- Not Detected
- Screening Level Contours
- Queried where approximate

For sample intervals that span more than one depth range, the bottom depth of the sample interval was used in selecting the depth range for display.

For DDD, DDE, DDT and Total DDx results: some results may have been analyzed for 4,4' isomers only.

REVISED DRAFT
 DO NOT QUOTE OR CITE
 This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.

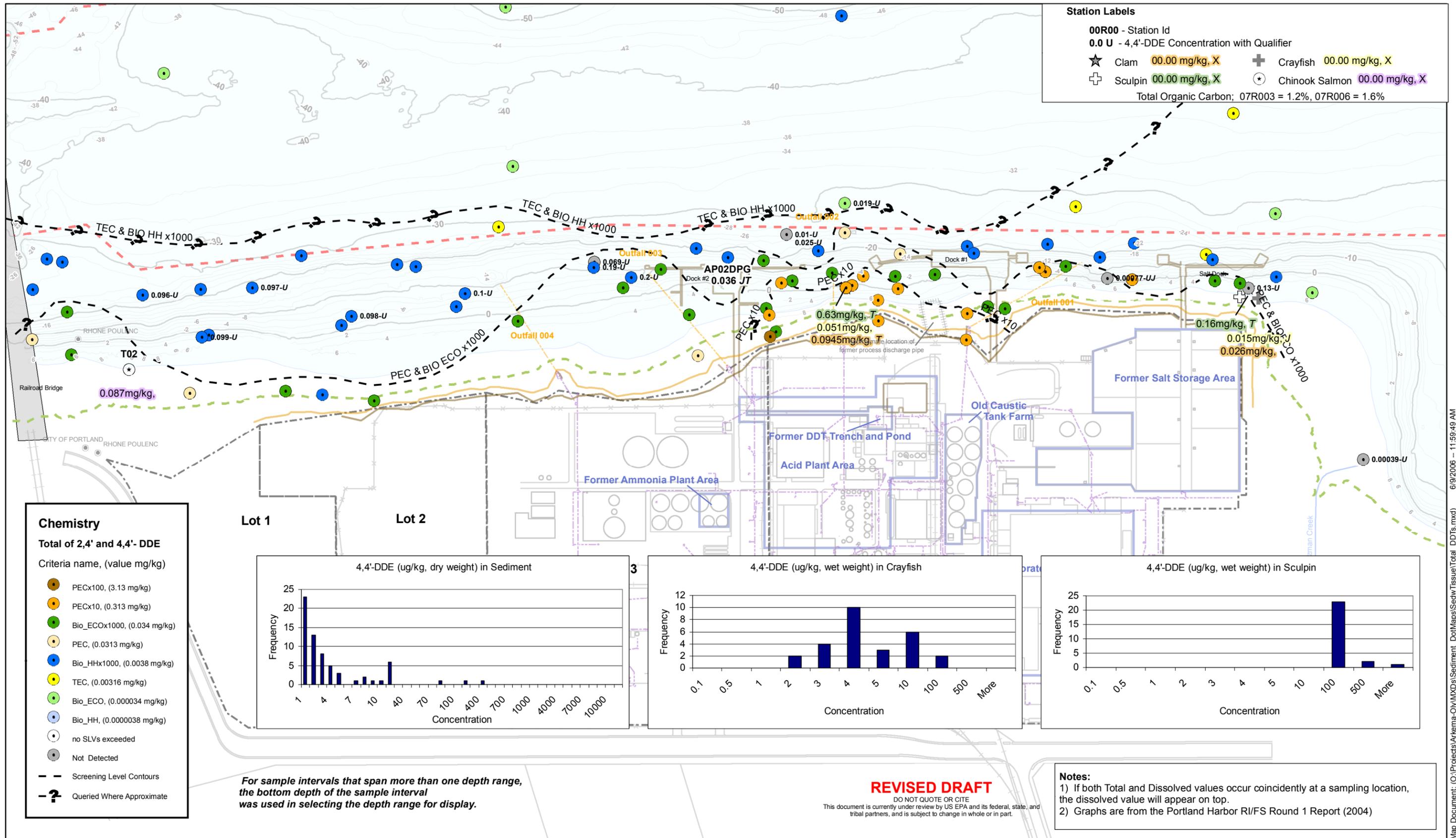


FEATURE SOURCES:
 Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004. Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
 Vertical Datum: North American Vertical Datum of 1988 (NAVD88).
 Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
 Units: International Feet.
 Basemap: Basemap features updated in 2006 by David Evans and Associates. Ordinary high water line, top of bank, and other site features surveyed in April 2006. Most buildings and structures on the Arkema site have been demolished or removed.
 OHW and Top of Slope lines were created from the April 2006 DEA survey, the +12ft contour line was derived from the combined lidar/bathymetry grid.
 Lot Lines: Created by importing pdf file from ERM, georeferencing to CAD lines (RMS error = 2.3042) and heads-up digitizing the lot lines.

--- Ordinary High Water	--- 12ft_Contour	--- Navigation Channel
--- Top of Bank	--- Bridges	--- River
--- E-Sewer-L	--- Property Lines	● Outfalls
--- Storm Drain	--- ?	

Map-33
Arkema Site
Surface & Sub-Surface Sediment Samples
Depth Range: Deep Subsurface (> 8 ft)
Total of 2,4 and 4,4-DDE

Map Document: (O:\Projects\Arkema-01\MXDs\Arkema_Basemap_200605.mxd) 6/13/2006 -- 11:11:00 AM



Station Labels

00R00 - Station Id
 0.0 U - 4,4'-DDE Concentration with Qualifier

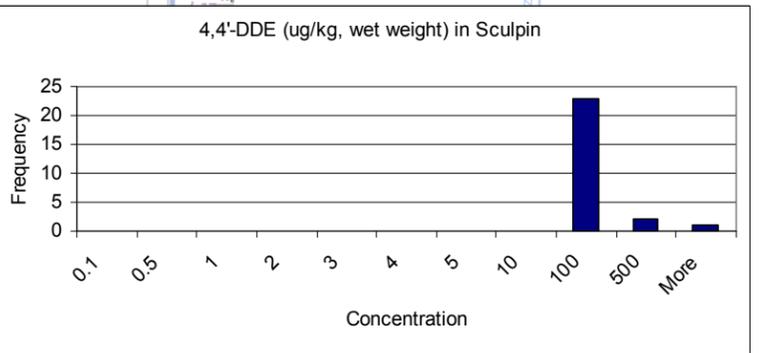
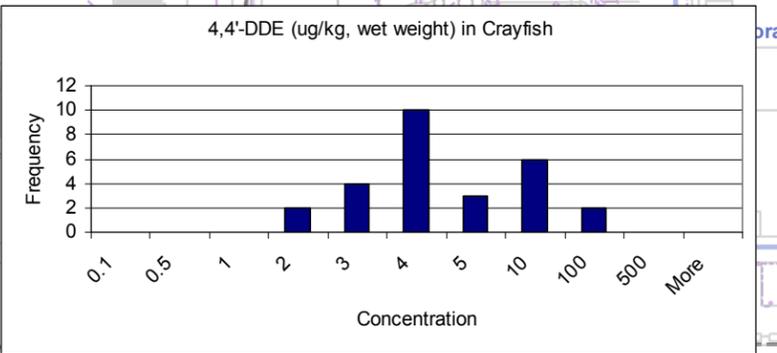
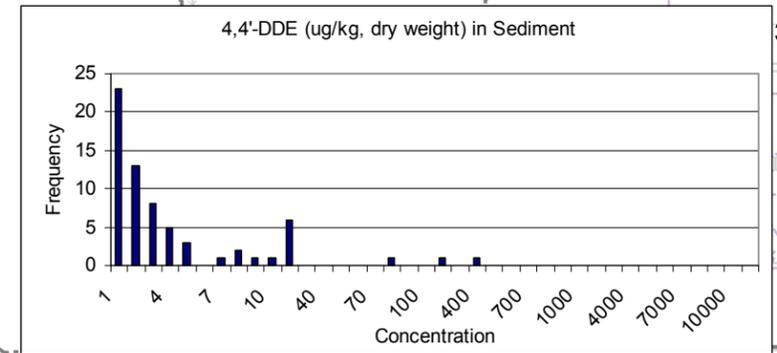
★ Clam 00.00 mg/kg, X + Crayfish 00.00 mg/kg, X
 + Sculpin 00.00 mg/kg, X * Chinook Salmon 00.00 mg/kg, X

Total Organic Carbon: 07R003 = 1.2%, 07R006 = 1.6%

Chemistry
 Total of 2,4' and 4,4'- DDE

Criteria name, (value mg/kg)

- PECx100, (3.13 mg/kg)
- PECx10, (0.313 mg/kg)
- Bio_ECOx1000, (0.034 mg/kg)
- PEC, (0.0313 mg/kg)
- Bio_HHx1000, (0.0038 mg/kg)
- TEC, (0.00316 mg/kg)
- Bio_ECO, (0.000034 mg/kg)
- Bio_HH, (0.000038 mg/kg)
- no SLVs exceeded
- Not Detected
- - Screening Level Contours
- ? Queried Where Approximate

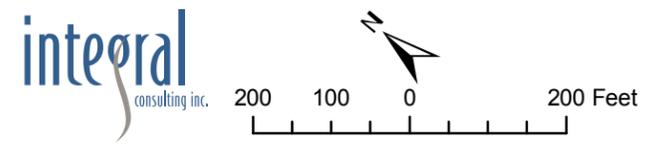


For sample intervals that span more than one depth range, the bottom depth of the sample interval was used in selecting the depth range for display.

REVISED DRAFT
 DO NOT QUOTE OR CITE
 This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.

Notes:

- 1) If both Total and Dissolved values occur coincidentally at a sampling location, the dissolved value will appear on top.
- 2) Graphs are from the Portland Harbor RI/FS Round 1 Report (2004)



FEATURE SOURCES:
 Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004. Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
 Vertical Datum: North American Vertical Datum of 1988 (NAVD88).
 Horizontal Datum: North American Datum of 1983 - 91 adjusted (NAD83/91), State Plane Coordinate System (SPCS), Oregon North Zone.
 Units: International Feet.
 Basemap: Basemap features updated in 2006 by David Evans and Associates. Ordinary high water line, top of bank, and other site features surveyed in April 2006. Basemap features reflect structures that have been removed from the site.
 OHW and Top of Slope lines were created from the April 2006 DEA survey, the +12ft contour line was derived from the combined lidar/bathymetry grid.

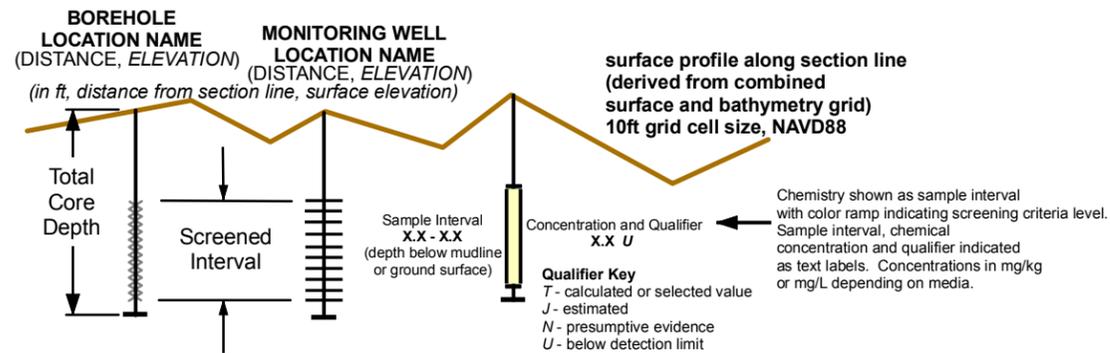
— Ordinary High Water - - 12ft_Contour - - Navigation Channel
 — Top of Bank - - Bridges - - River
 - - E-Sewer-L - - Property Lines - - Outfalls
 - - Storm Drain - -

Map-34
Arkema Site
Surface Sediment & Tissue Samples
Total of 2,4 and 4,4-DDE
Depth Range: Surface (0 - 1 ft)

Map Document: (O:\Projects\Arkema-Oy\MapDocs\Sediment_DotMaps\SedW\TissueTotal_DDTs.mxd) 6/9/2006 - 11:59:49 AM

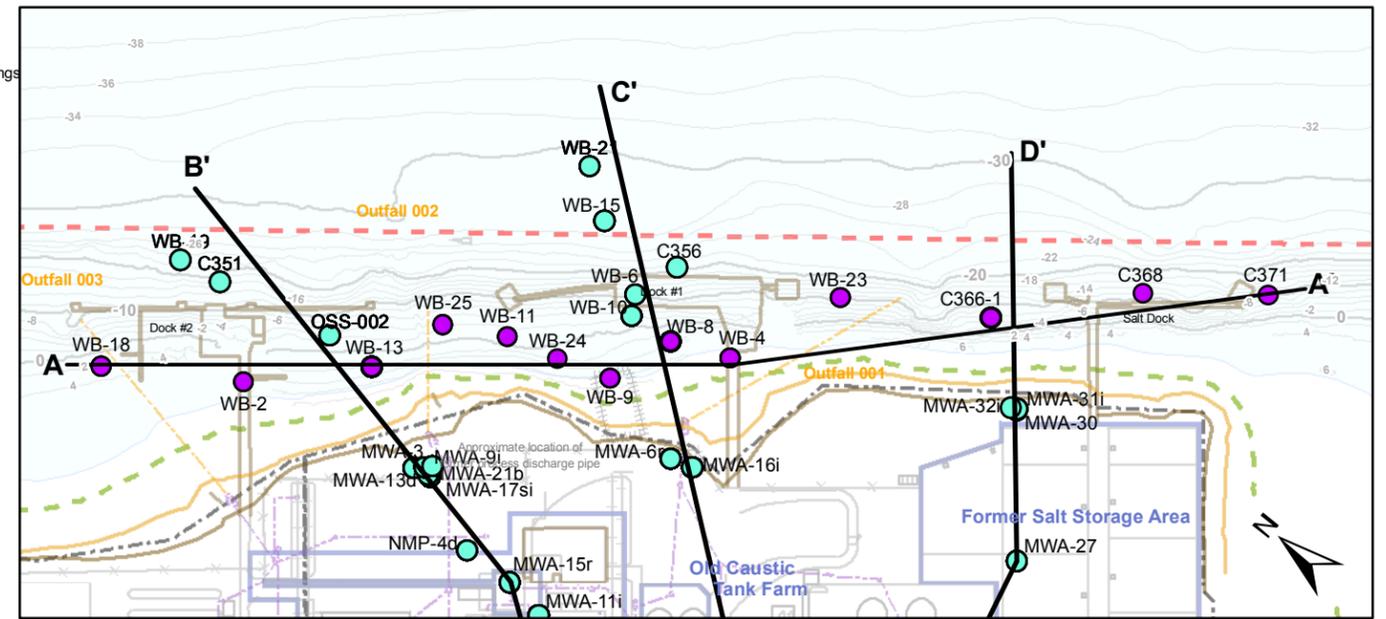
Notes:

- 1) Due to projection onto the section line, lithology was estimated at some well and borehole stations based on best professional judgment
- 2) Groundwater samples were not filtered. Reconnaissance groundwater sample concentrations may be biased high since they are generally more turbid than monitoring well groundwater samples.



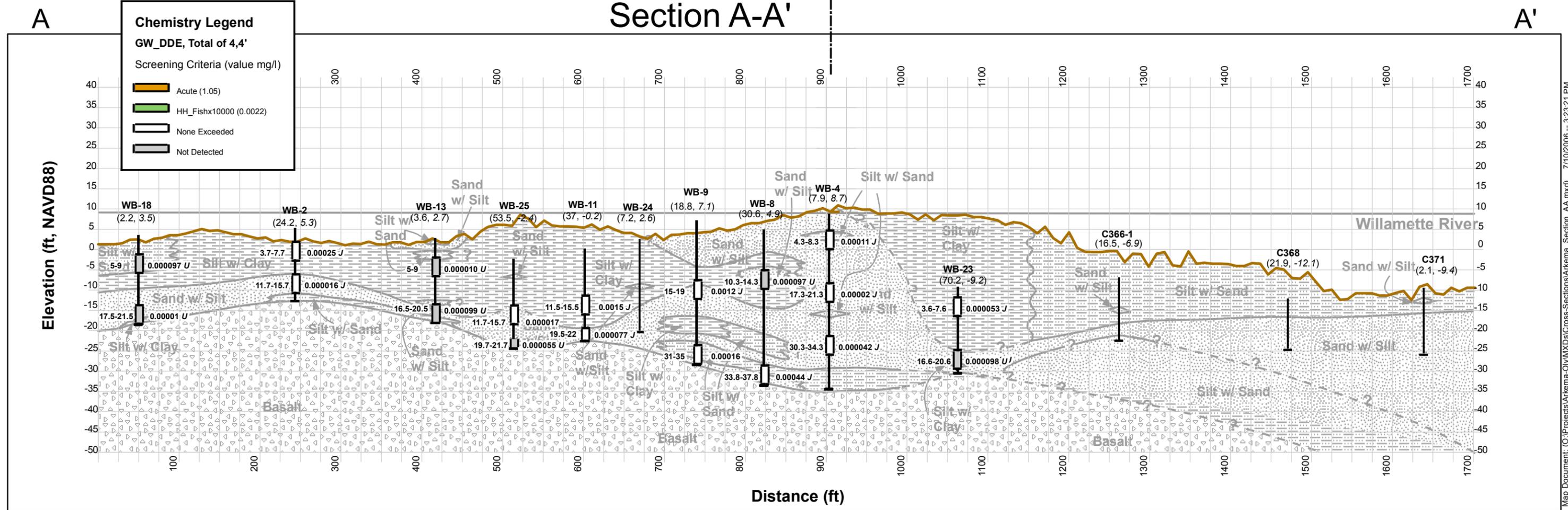
Map View Legend

- Section_AA Selected Wells and Borings
- Section_BB
- Section_CC
- Section_DD
- Navigation Channel
- River
- 12ft Contour
- Ordinary High Water
- Top of Bank
- Index Contour
- 2' contour



Plant North

Plant South



Section View: Vertical Exaggeration: 5X

- Fill
- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt
- Inferred soil or geologic contact (queried where uncertain)
- Shallow-zone groundwater surface (approximate) June 2003; based on monitoring well data only.

DRAFT
DO NOT QUOTE OR CITE
This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.

0 50 100 200 Feet

Map-35
Cross-Section A-A'
Groundwater Chemistry
DDE

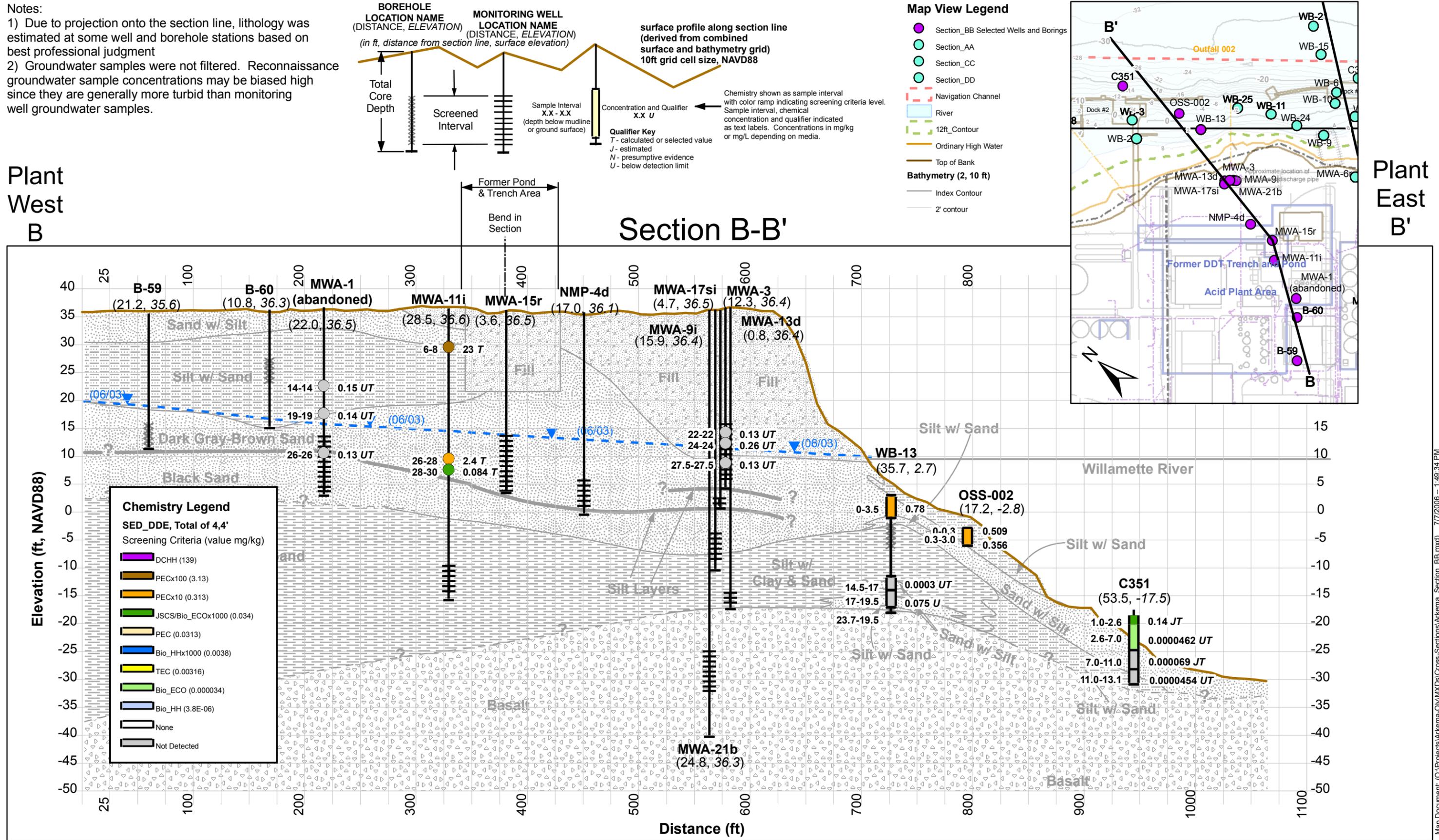
Map Document: (C:\Projects\Arkema-Oily\MXDs\Cross-Sections\Arkema_Section_AA.mxd) 7/10/2006 -- 3:23:21 PM

Notes:

- 1) Due to projection onto the section line, lithology was estimated at some well and borehole stations based on best professional judgment
- 2) Groundwater samples were not filtered. Reconnaissance groundwater sample concentrations may be biased high since they are generally more turbid than monitoring well groundwater samples.

Plant West
B

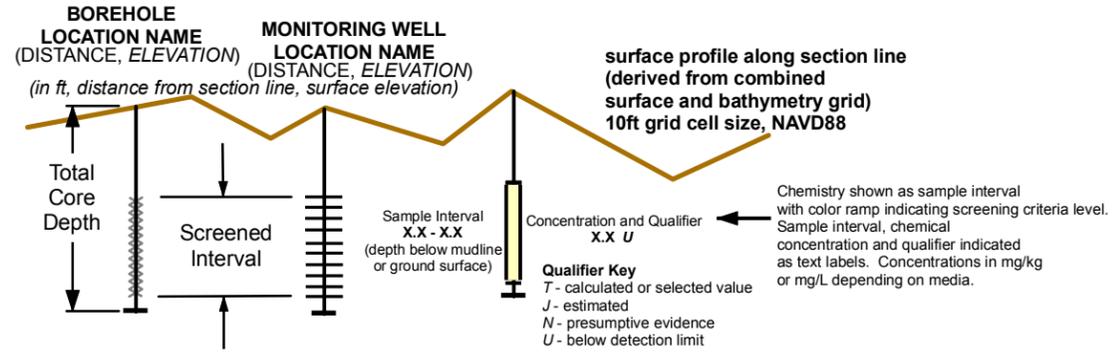
Plant East
B'



Map Document: (C:\Projects\Arkema-Oily\MXDs\Cross-Sections\Arkema_Section_BB.mxd) 7/7/2006 - 1:49:34 PM

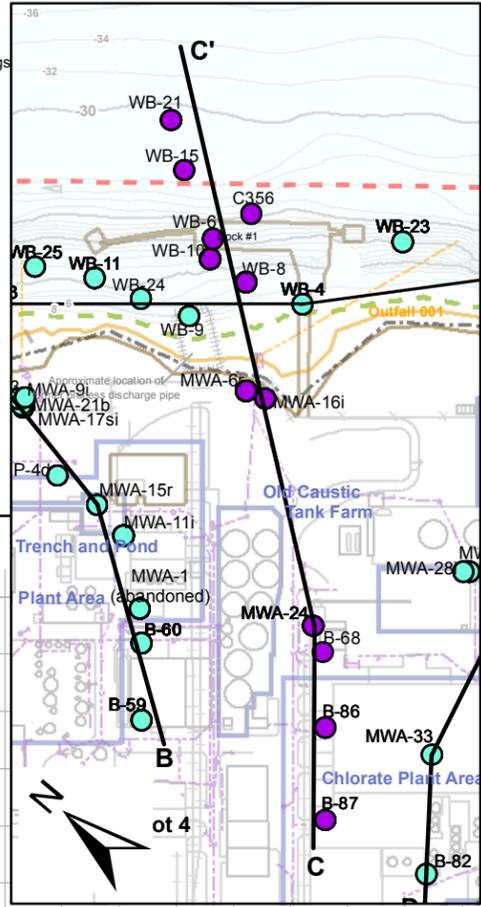
Notes:

- 1) Due to projection onto the section line, lithology was estimated at some well and borehole stations based on best professional judgment
- 2) Groundwater samples were not filtered. Reconnaissance groundwater sample concentrations may be biased high since they are generally more turbid than monitoring well groundwater samples.



Map View Legend

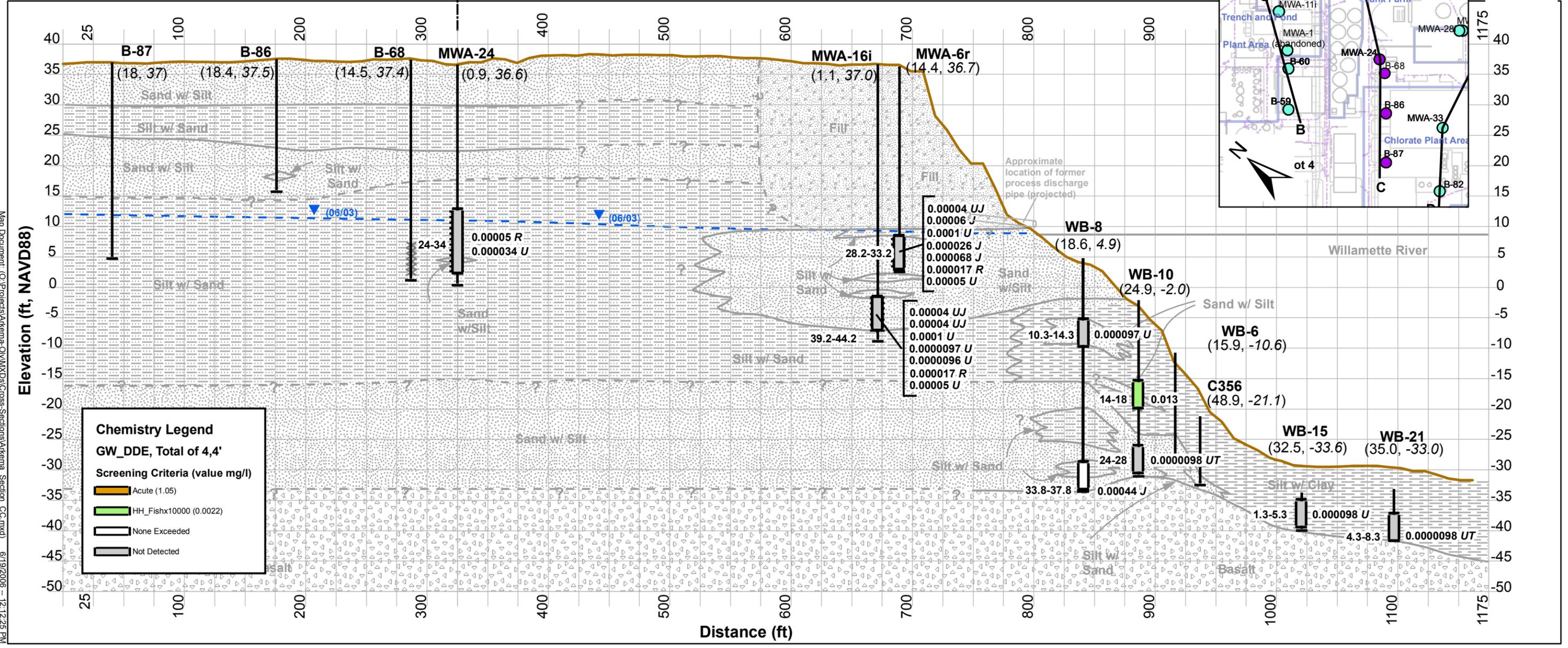
- Section_CC Selected Wells and Borings
- Section_AA
- Section_BB
- Section_DD
- Navigation Channel
- River
- 12ft Contour
- Ordinary High Water
- Top of Bank
- Bathymetry (2, 10 ft)
- Index Contour
- 2' contour



Plant West
C

Plant East
C'

Section C-C'



Map Document: C:\Projects\Arkema-Oily\MapDocs\Cross-Sections\Arkema_Section_CC.mxd 6/19/2006 - 12:12:25 PM

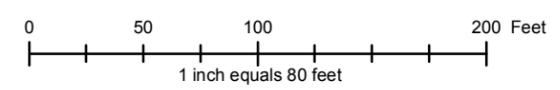


Section View: Vertical Exaggeration: 5X

- Fill
- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt
- Inferred soil or geologic contact (queried where uncertain)
- Shallow-zone groundwater surface (approximate) June 2003; based on monitoring well data only.

REVISED DRAFT

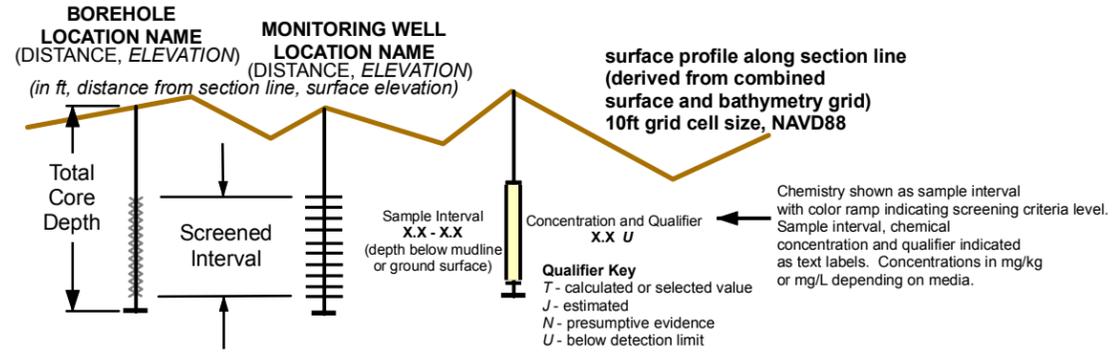
DO NOT QUOTE OR CITE
This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.



Map-39
Cross-Section C-C'
Groundwater Chemistry
DDE

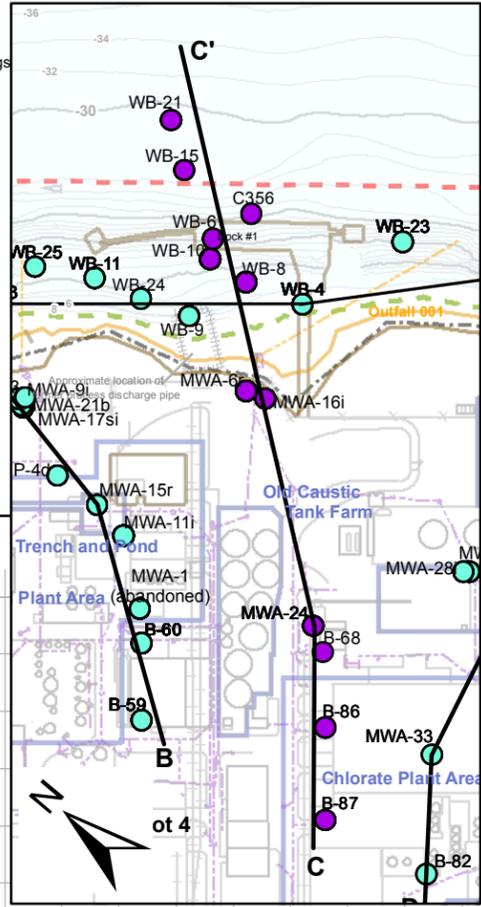
Notes:

- 1) Due to projection onto the section line, lithology was estimated at some well and borehole stations based on best professional judgment
- 2) Groundwater samples were not filtered. Reconnaissance groundwater sample concentrations may be biased high since they are generally more turbid than monitoring well groundwater samples.



Map View Legend

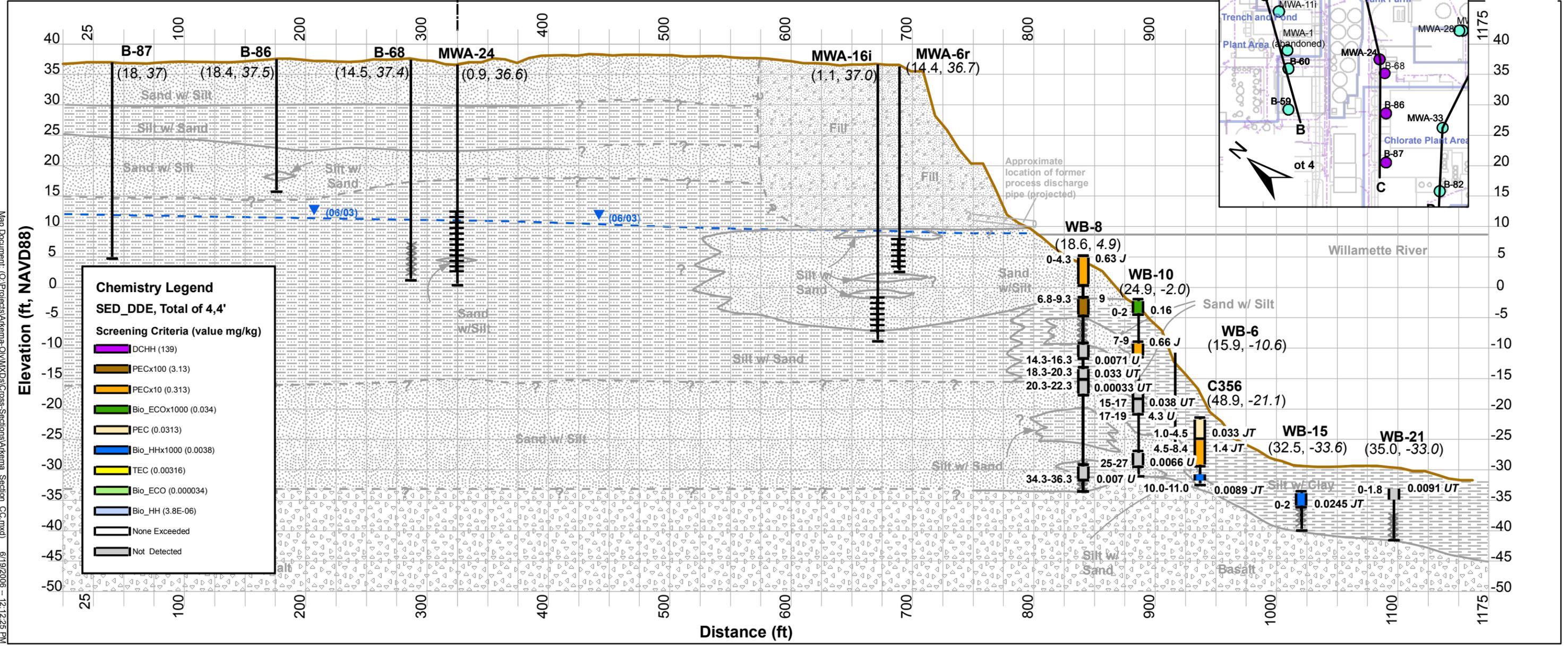
- Section_CC Selected Wells and Borings
- Section_AA
- Section_BB
- Section_DD
- Navigation Channel
- River
- 12ft Contour
- Ordinary High Water
- Top of Bank
- Bathymetry (2, 10 ft)
- Index Contour
- 2' contour



Plant West
C

Plant East
C'

Section C-C'



Map Document: C:\Projects\Arkema-Oil\MapDocs\Cross-Sections\Arkema_Section_CC.mxd 6/19/2006 - 12:12:25 PM

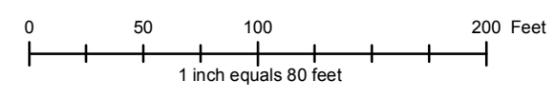


Section View: Vertical Exaggeration: 5X

- Fill
- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt
- Inferred soil or geologic contact (queried where uncertain)
- Shallow-zone groundwater surface (approximate) June 2003; based on monitoring well data only.

REVISED DRAFT

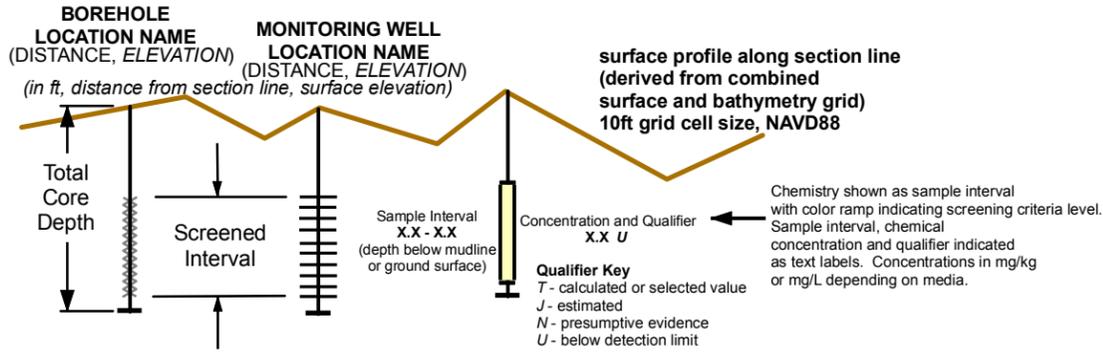
DO NOT QUOTE OR CITE
This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.



Map-40
Cross-Section C-C'
Soil/Sediment Chemistry
DDE

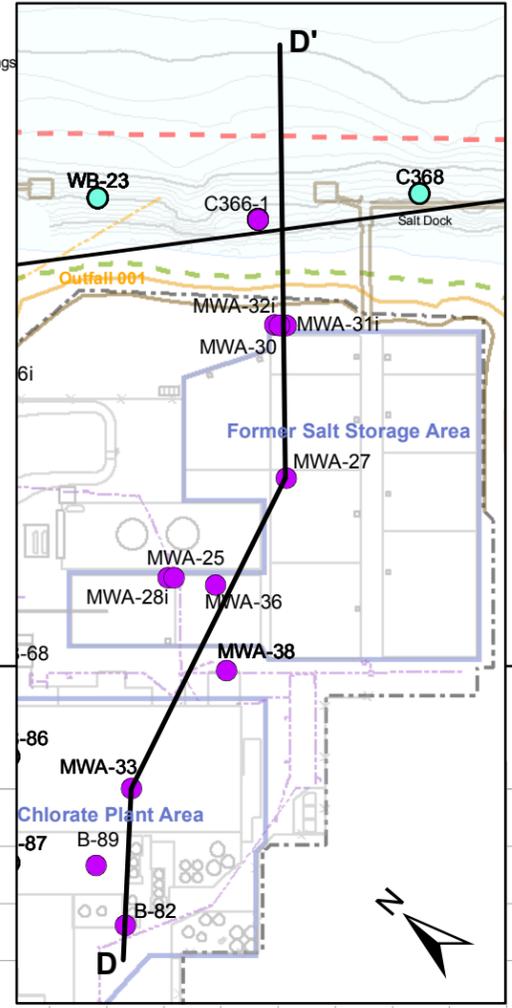
Notes:

- 1) Due to projection onto the section line, lithology was estimated at some well and borehole stations based on best professional judgment
- 2) Groundwater samples were not filtered. Reconnaissance groundwater sample concentrations may be biased high since they are generally more turbid than monitoring well groundwater samples.



Map View Legend

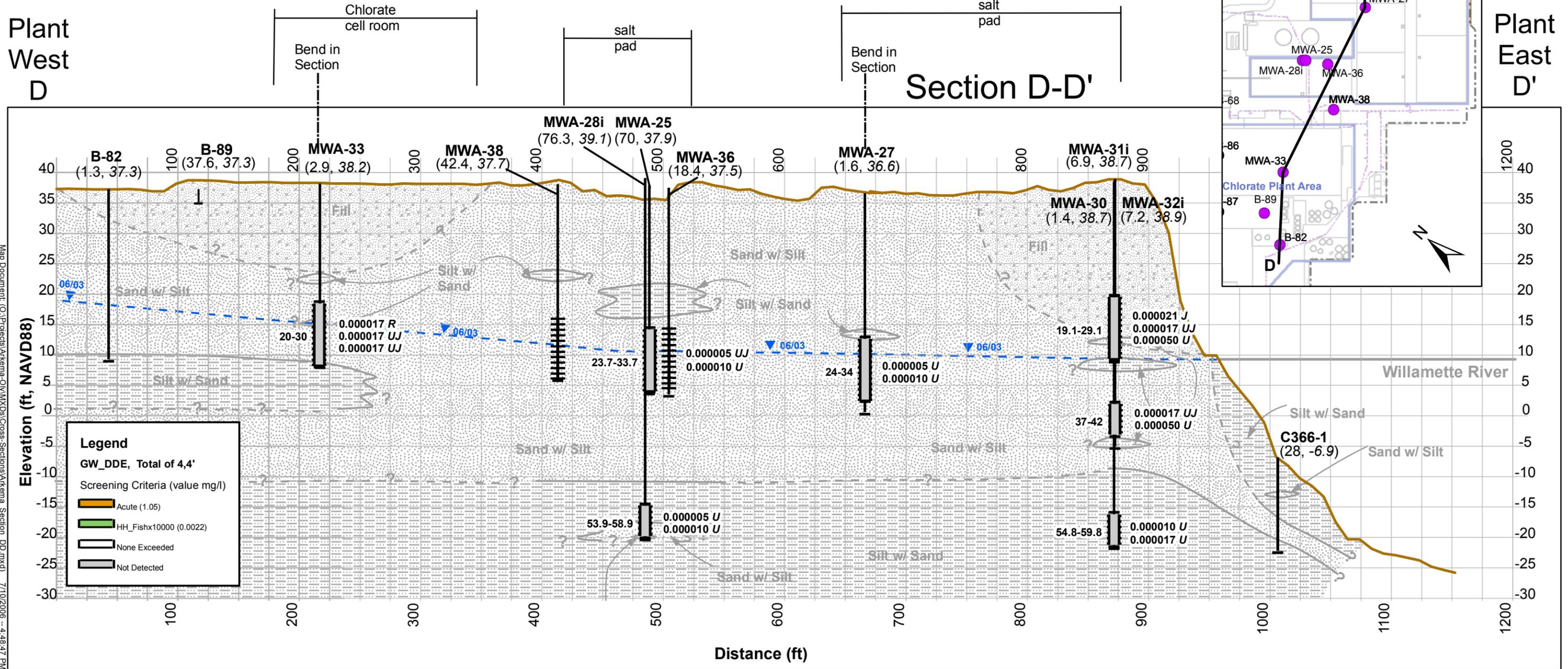
- Section_DD_Selected_Wells and Borings
- Section_AA
- Section_BB
- Section_CC
- Navigation Channel
- River
- 12ft_Contour
- Ordinary High Water
- Top of Bank
- Bathymetry (2, 10 ft)
- Index Contour
- 2' contour



Plant West
D

Plant East
D'

Section D-D'



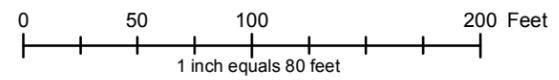
Map Document: (O:\Projects\Arkema-Oil\WXD\Cross-Sections\Arkema_Section_DD.mxd) 7/10/2006 - 4:48:47 PM

Section View: Vertical Exaggeration: 5X

- Fill
- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt
- Inferred soil or geologic contact (queried where uncertain)
- Shallow-zone groundwater surface (approximate) June 2003; based on monitoring well data only.

DRAFT

DO NOT QUOTE OR CITE
 This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.

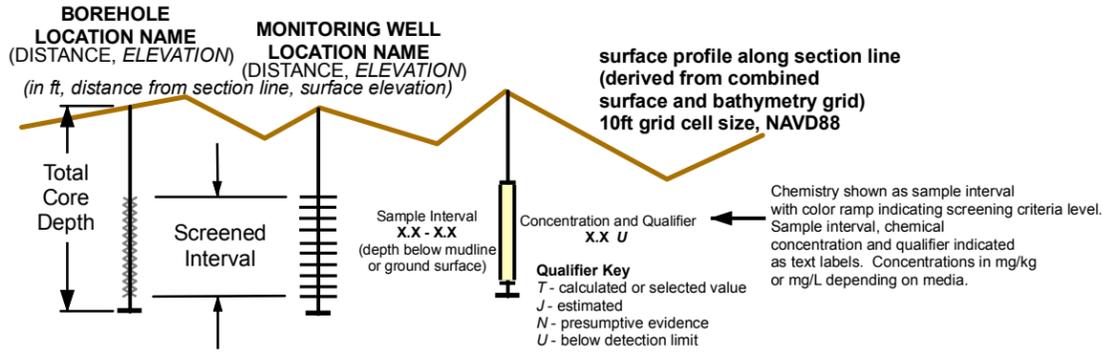


Map-41
 Cross-Section D-D'
 Groundwater Chemistry
 DDE



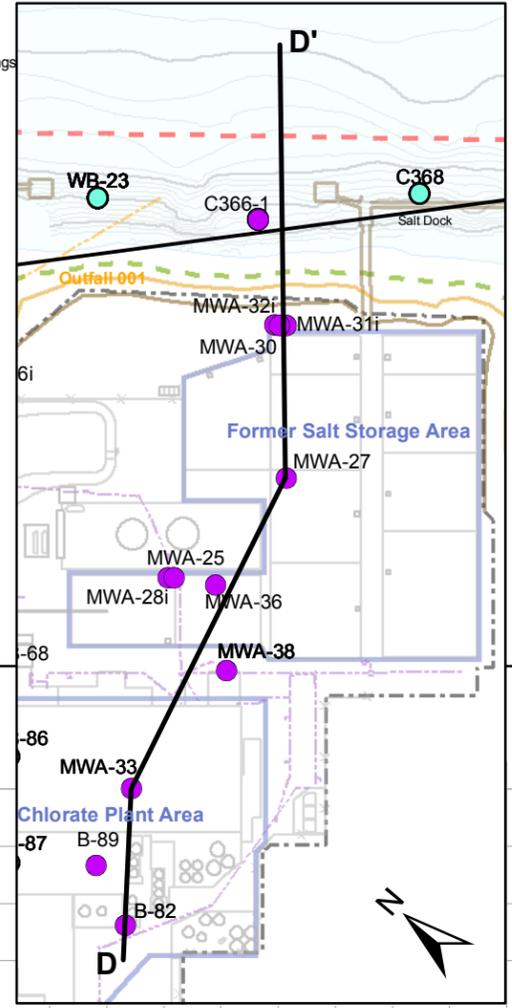
Notes:

- 1) Due to projection onto the section line, lithology was estimated at some well and borehole stations based on best professional judgment
- 2) Groundwater samples were not filtered. Reconnaissance groundwater sample concentrations may be biased high since they are generally more turbid than monitoring well groundwater samples.



Map View Legend

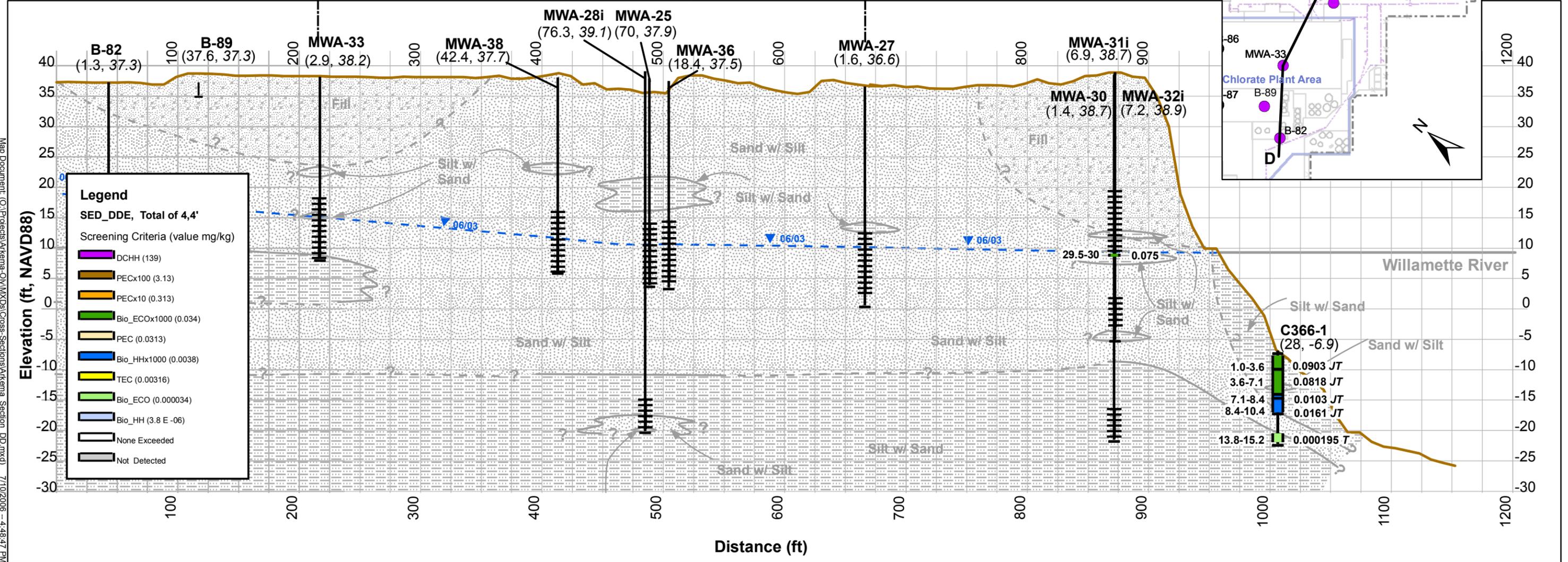
- Section_DD_Selected_Wells and Borings
- Section_AA
- Section_BB
- Section_CC
- Navigation Channel
- River
- 12ft_Contour
- Ordinary High Water
- Top of Bank
- Bathymetry (2, 10 ft)
- Index Contour
- 2' contour



Plant West
D

Plant East
D'

Section D-D'



Map Document: (O:\Projects\Arkema-Oil\MapDocs\Cross-Sections\Arkema_Section_DD.mxd) 7/10/2006 - 4:48:47 PM

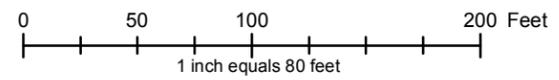


Section View: Vertical Exaggeration: 5X

- Fill
- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt
- Inferred soil or geologic contact (queried where uncertain)
- Shallow-zone groundwater surface (approximate) June 2003; based on monitoring well data only.

REVISED DRAFT

DO NOT QUOTE OR CITE
 This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.



Map-42
Cross-Section D-D'
 Soil/Sediment Chemistry
 DDE