

Chemistry Legend

4,4'-DDT - Surface Water

total_or_dissolved, Exceedance_class

- D, Acute (0.0011 mg/l)
- T, Acute (0.0011 mg/l)
- D, HH_Fishx10000 (0.00022 mg/l)
- T, HH_Fishx10000 (0.00022 mg/l)
- D, Chronic (0.000001 mg/l)
- T, Chronic (0.000001 mg/l)
- D, None Exceeded
- T, None Exceeded
- D, Not Detected
- T, Not Detected

4,4'-DDT - Transition Water

total_or_dissolved, Exceedance_class

- D, HH_Fishx10000 (0.0022 mg/l)
- T, HH_Fishx10000 (0.0022 mg/l)
- D, Acute (0.0011 mg/l)
- T, Acute (0.0011 mg/l)
- D, Chronic (0.000001 mg/l)
- T, Chronic (0.000001 mg/l)
- D, None Exceeded
- T, None Exceeded
- D, Not Detected
- T, Not Detected

4,4'-DDT - Ground Water

total_or_dissolved, Exceedance_class

- D, HH_Fishx10000 (0.0022 mg/l)
- T, HH_Fishx10000 (0.0022 mg/l)
- D, Acute (0.0011 mg/l)
- T, Acute (0.0011 mg/l)
- D, Chronic (0.000001 mg/l)
- T, Chronic (0.000001 mg/l)
- D, None Exceeded
- T, None Exceeded
- D, Not Detected
- T, Not Detected

Screening Level Contours

- Queried Where Approximate

Notes:

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

REVISED DRAFT

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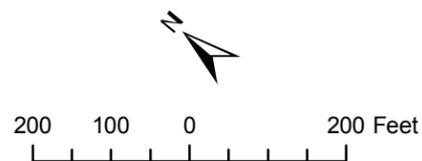
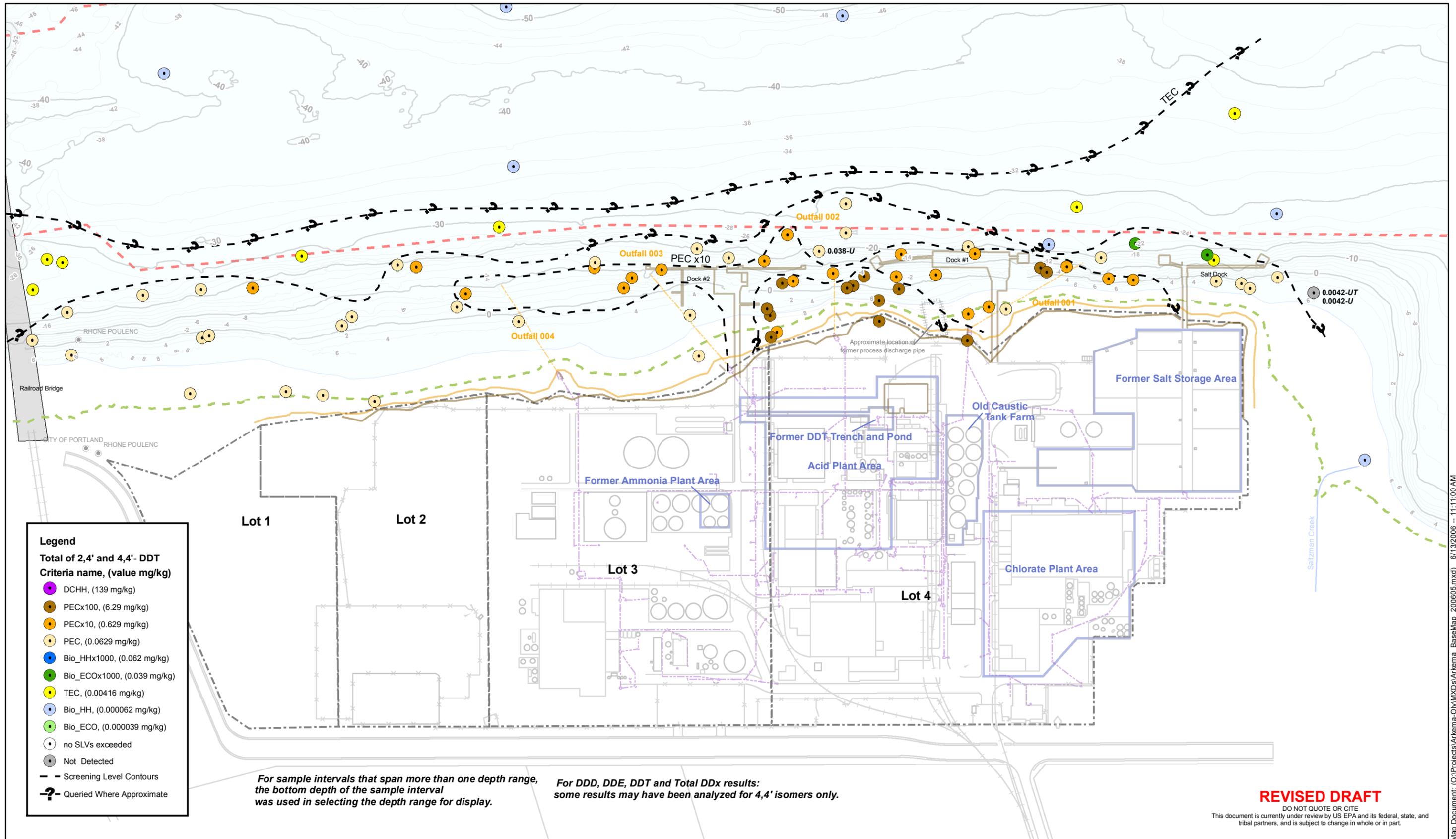
FEATURE SOURCES:

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

Map-1
Arkema Site
Surface Water, Transition Zone Water,
and Groundwater Samples
4,4-DDT

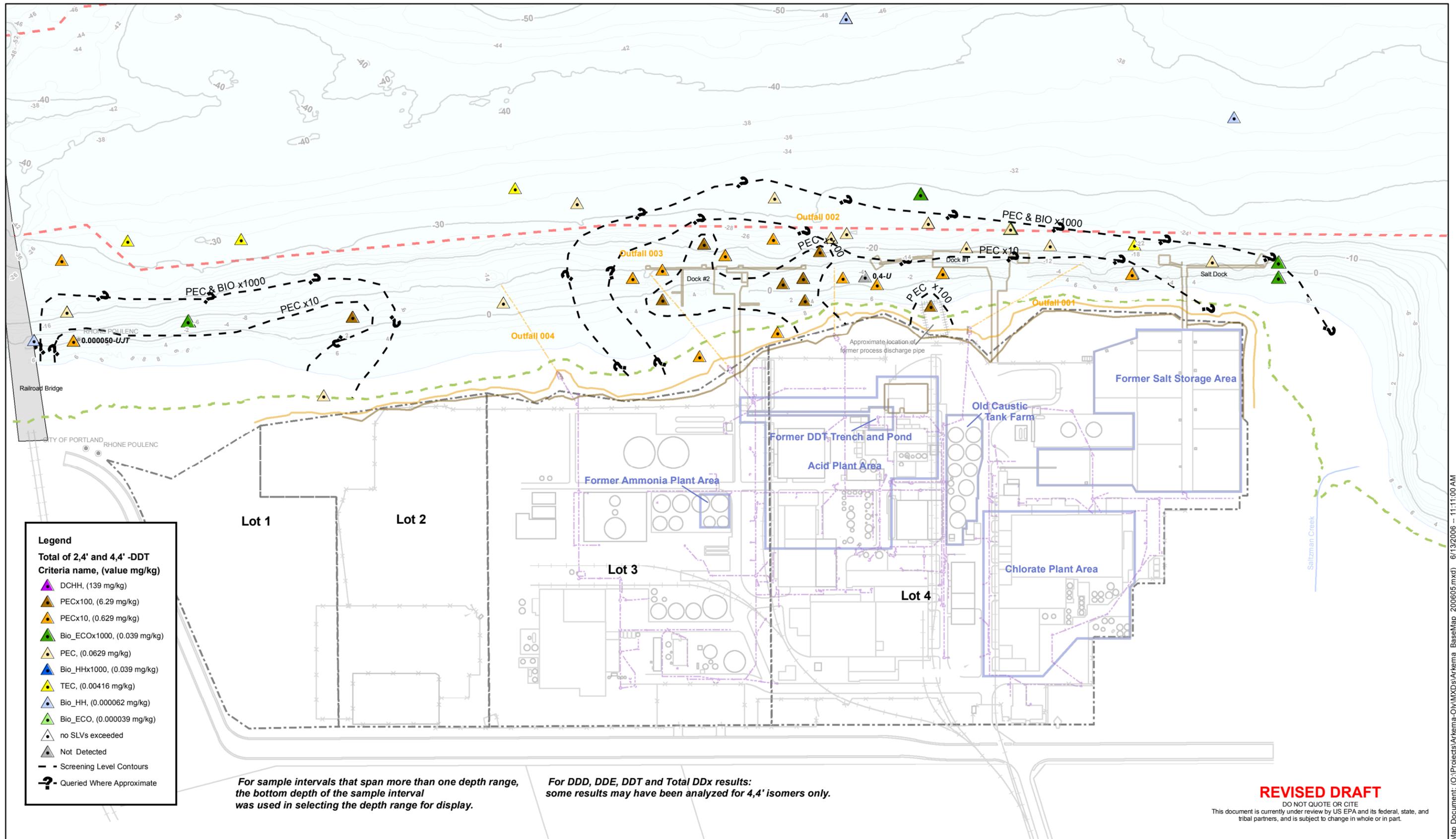
Map Document: (O:\Projects\Arkema-01\MXDs\ArkemaSW_DotMap_Screened_20060622.mxd) 6/23/2006 - 6:06:12 PM



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



Legend

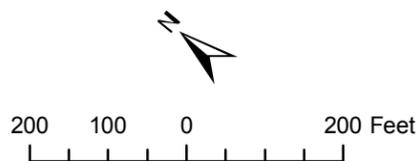
Total of 2,4' and 4,4' -DDT Criteria name, (value mg/kg)

- ▲ DCHH, (139 mg/kg)
- ▲ PECx100, (6.29 mg/kg)
- ▲ PECx10, (0.629 mg/kg)
- ▲ Bio_ECOx1000, (0.039 mg/kg)
- ▲ PEC, (0.0629 mg/kg)
- ▲ Bio_HHx1000, (0.039 mg/kg)
- ▲ TEC, (0.00416 mg/kg)
- ▲ Bio_HH, (0.000062 mg/kg)
- ▲ Bio_ECO, (0.000039 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.

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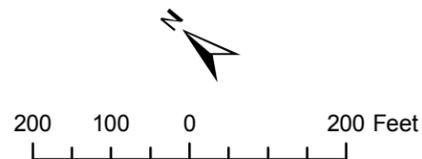
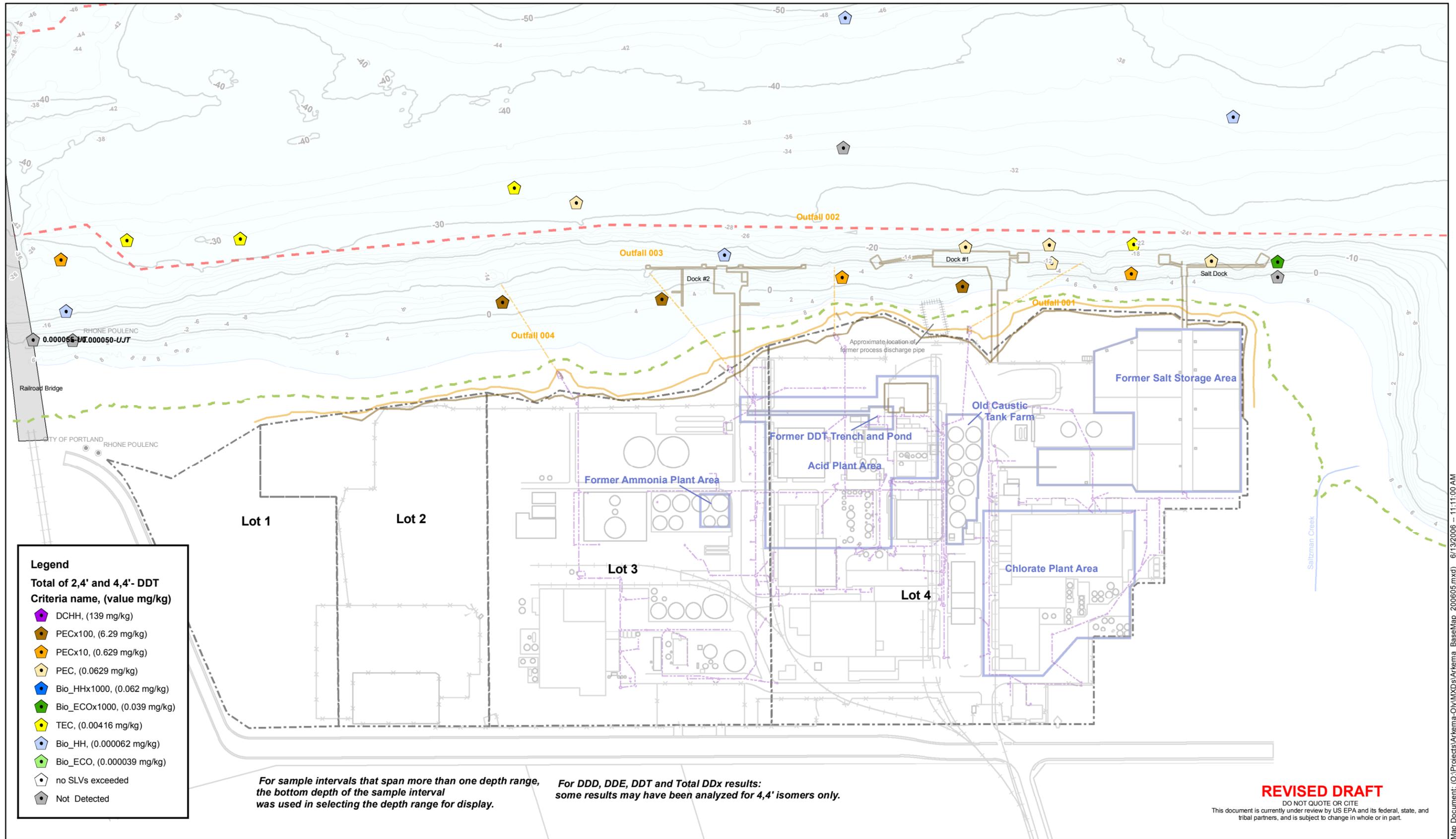


FEATURE SOURCES:
 Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004. Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
 Vertical Datum: North American Vertical Datum 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.

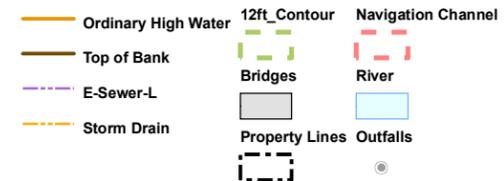
— Ordinary High Water	- - - 12ft Contour	- - - Navigation Channel
— Top of Bank	— Bridges	— River
- - - E-Sewer-L	— Property Lines	● Outfalls
- - - Storm Drain	- - - ?	

Map-3
Arkema Site
Surface & Sub-Surface Sediment Samples
Depth Range: Shallow Subsurface (1-4 ft)
Total of 2,4 and 4,4-DDT

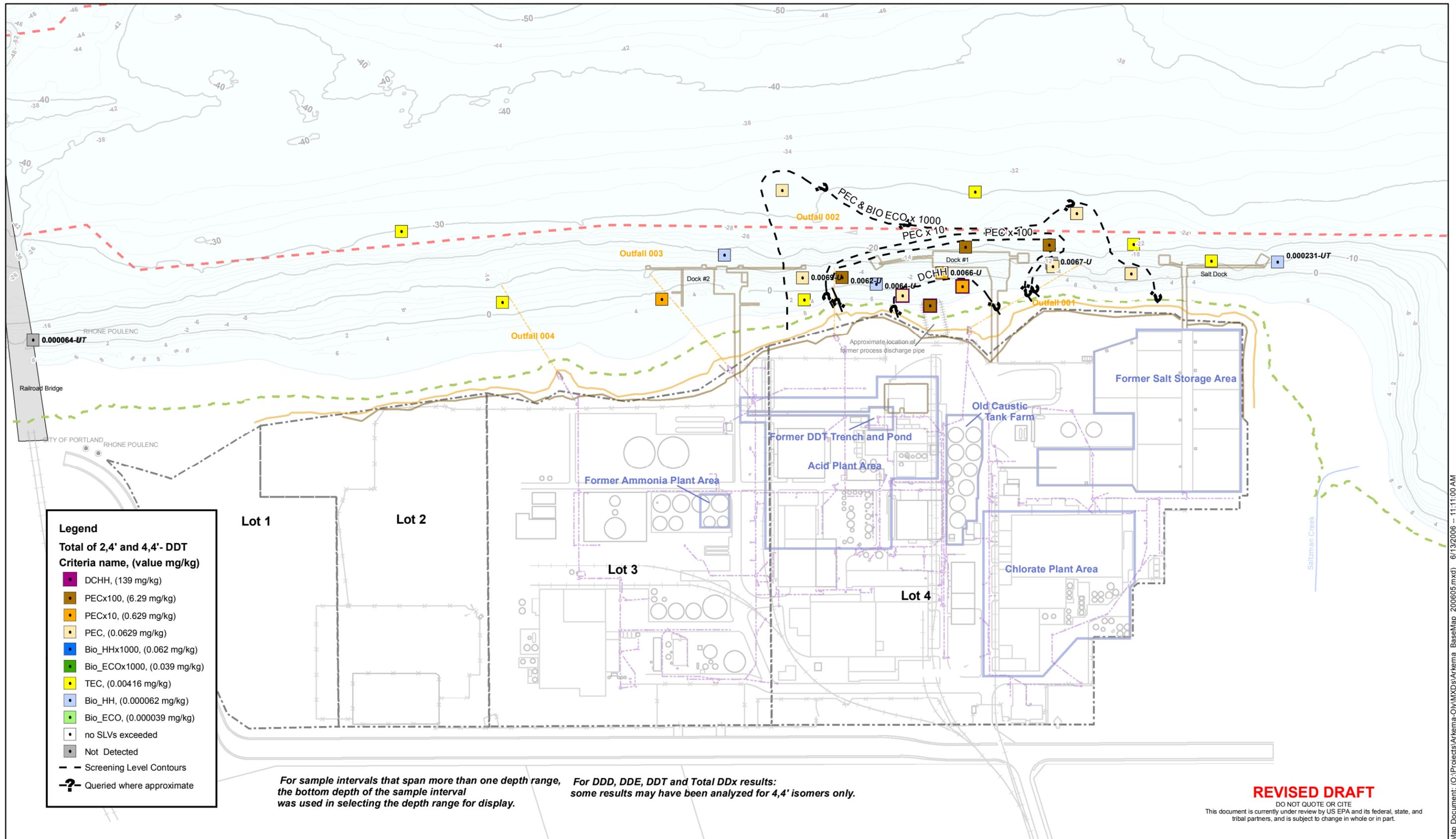
Map Document: (O:\Projects\Arkema-01\MapDocs\Arkema_Basemap_200605.mxd) 6/13/2006 -- 11:11:00 AM



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.



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



Legend

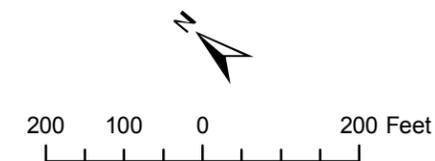
Total of 2,4' and 4,4'- DDT
Criteria name, (value mg/kg)

- DCHH, (139 mg/kg)
- PECx100, (6.29 mg/kg)
- PECx10, (0.629 mg/kg)
- PEC, (0.0629 mg/kg)
- Bio_HHx1000, (0.062 mg/kg)
- Bio_ECOx1000, (0.039 mg/kg)
- TEC, (0.00416 mg/kg)
- Bio_HH, (0.000062 mg/kg)
- Bio_ECO, (0.000039 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 DDT results: some results may have been analyzed for 4,4' isomers only.

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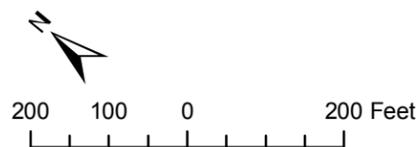
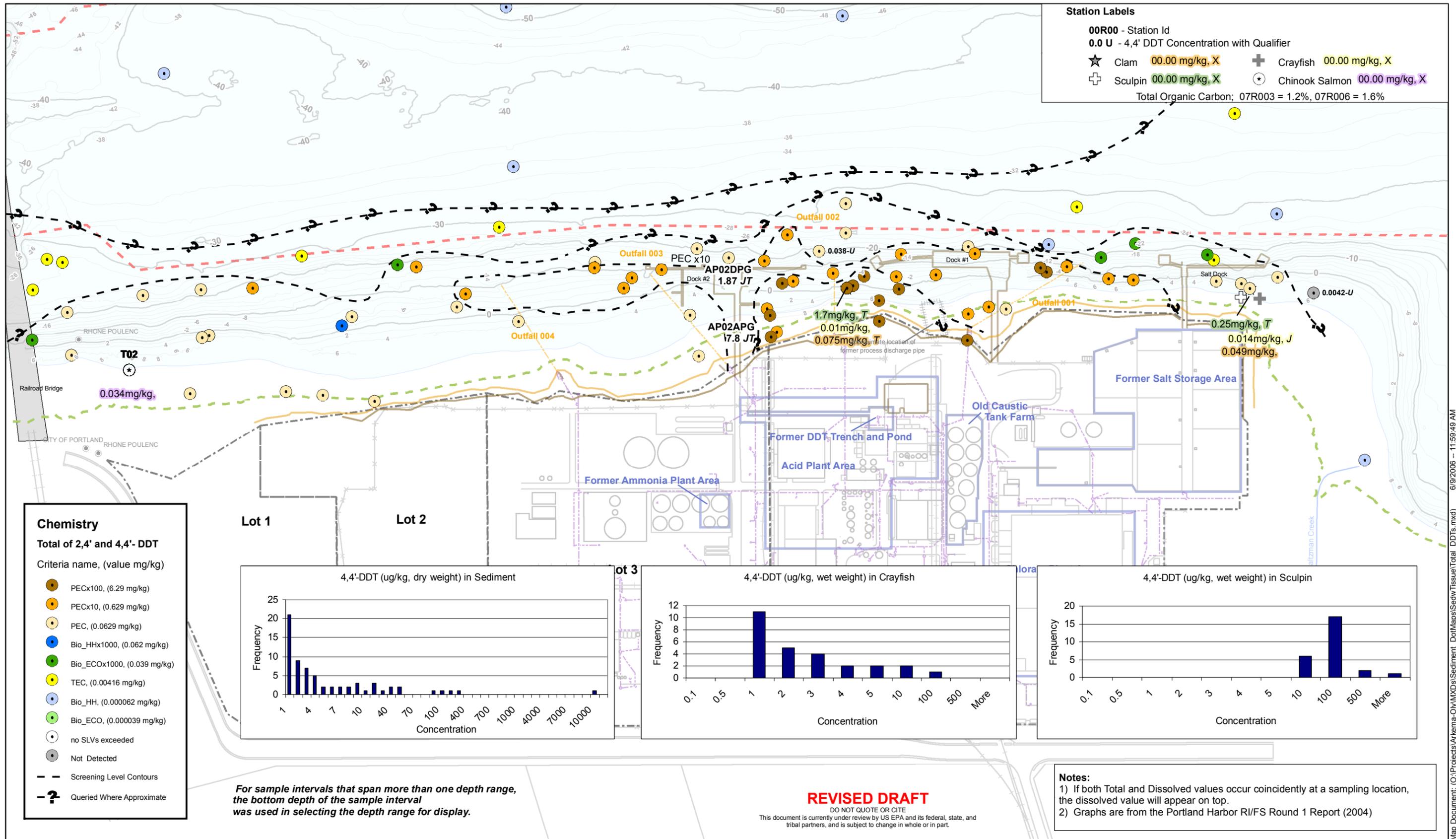


FEATURE SOURCES:
 Bathymetric Information: Multibeam bathymetric survey conducted by David Evans and Associates, Inc. from February 6 - March 6, 2004. Contours were derived from a Digital Terrain Model (DTM) based on a three-foot grid of multibeam data.
 Vertical Datum: North American Vertical Datum 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.

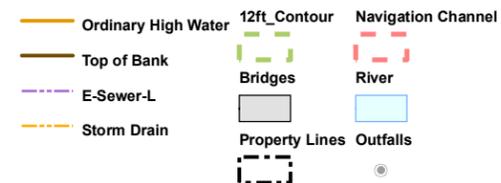
— Ordinary High Water	12ft_Contour	Navigation Channel
— Top of Bank	— Bridges	— River
— E-Sewer-L	— Property Lines	— Outfalls
— Storm Drain	—	—

Map-5
Arkema Site
Surface & Sub-Surface Sediment Samples
Depth Range: Deep Subsurface (> 8 ft)
Total of 2,4 and 4,4-DDT

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



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.

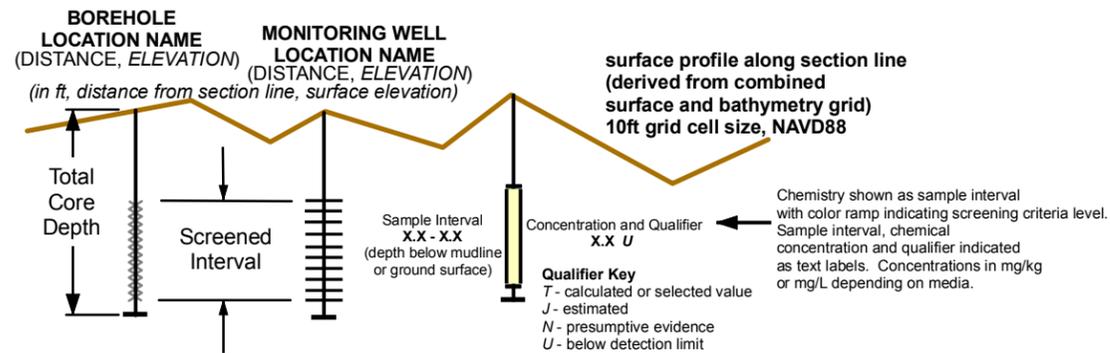


Map-6
Arkema Site
Surface Sediment & Tissue Samples
Total of 2,4 and 4,4-DDT
Depth Range: Surface (0 - 1 ft)

Map Document: (O:\Projects\Arkema-01\MapDocs\Sediment_DotMaps\SedWtTissueTotal_DDTs.mxd) 6/9/2006 - 11:59:49 AM

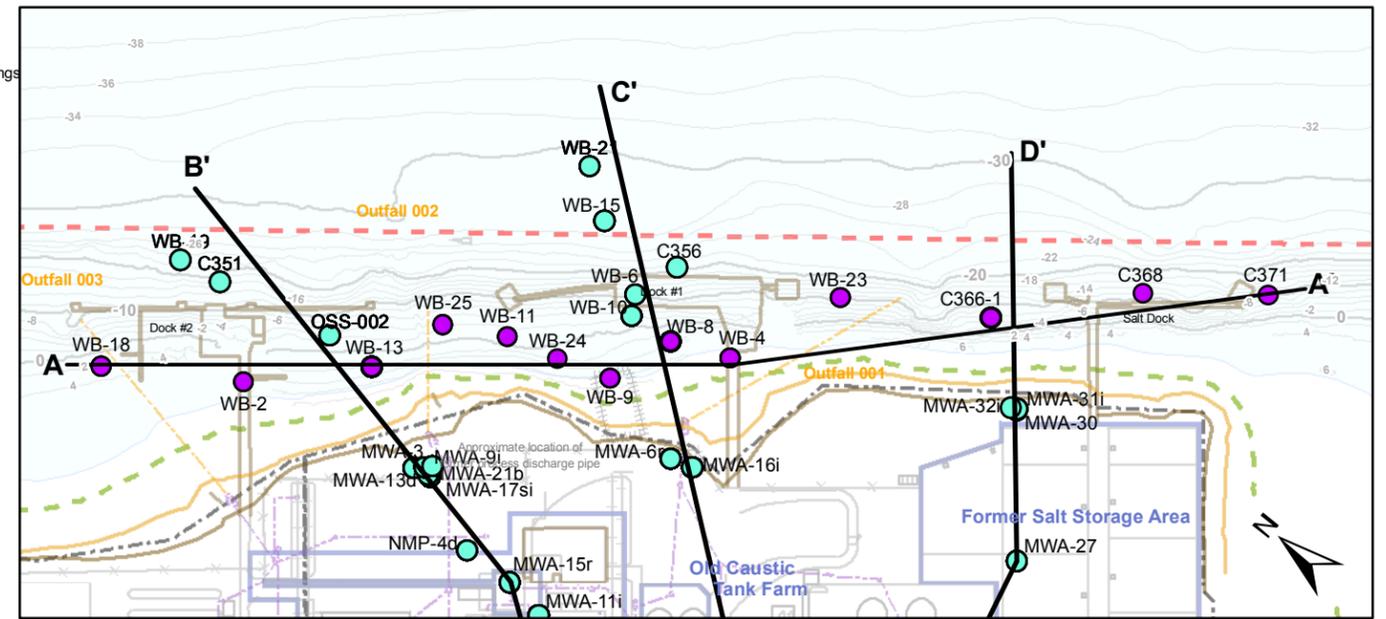
Notes:

- 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

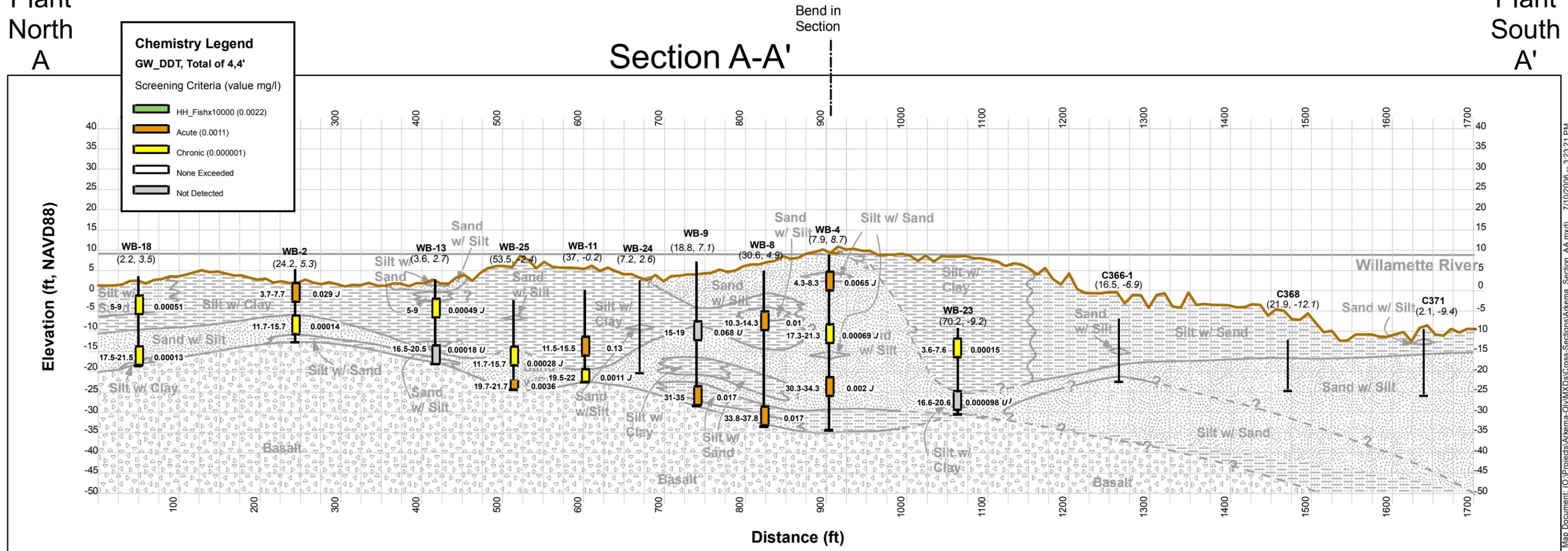
- Section_AA Selected Wells and Borings
- Section_BB
- Section_CC
- Section_DD
- Navigation Channel
- River
- 12ft Contour
- Ordinary High Water
- Top of Bank
- Bathymetry (2, 10 ft)
- Index Contour
- 2' contour



Plant North
A

Plant South
A'

Section A-A'



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.

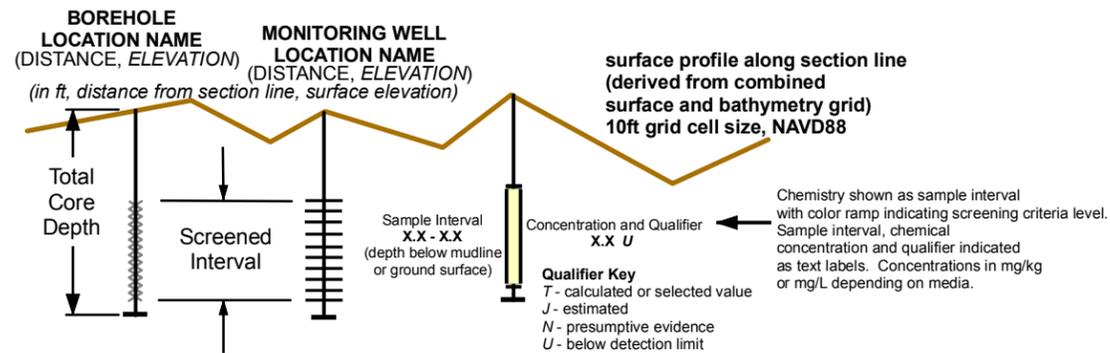
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Map-07
Cross-Section A-A'
Groundwater Chemistry
DDT

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

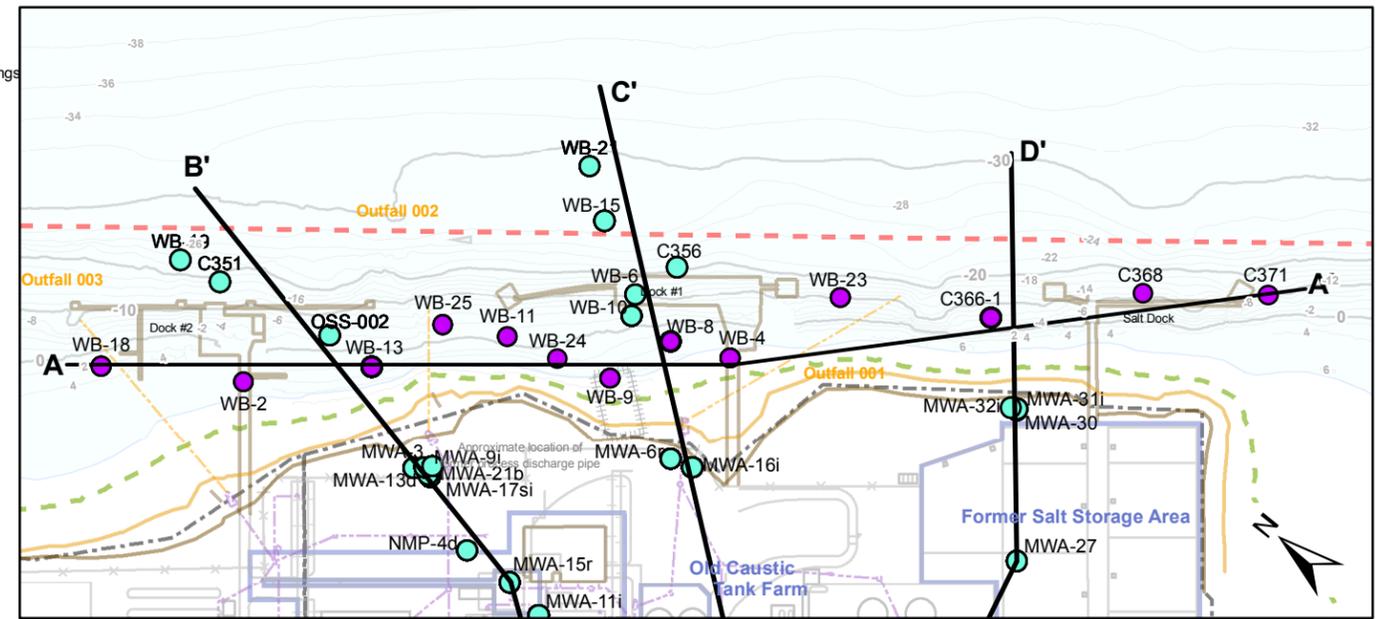
Notes:

- 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.



Map View Legend

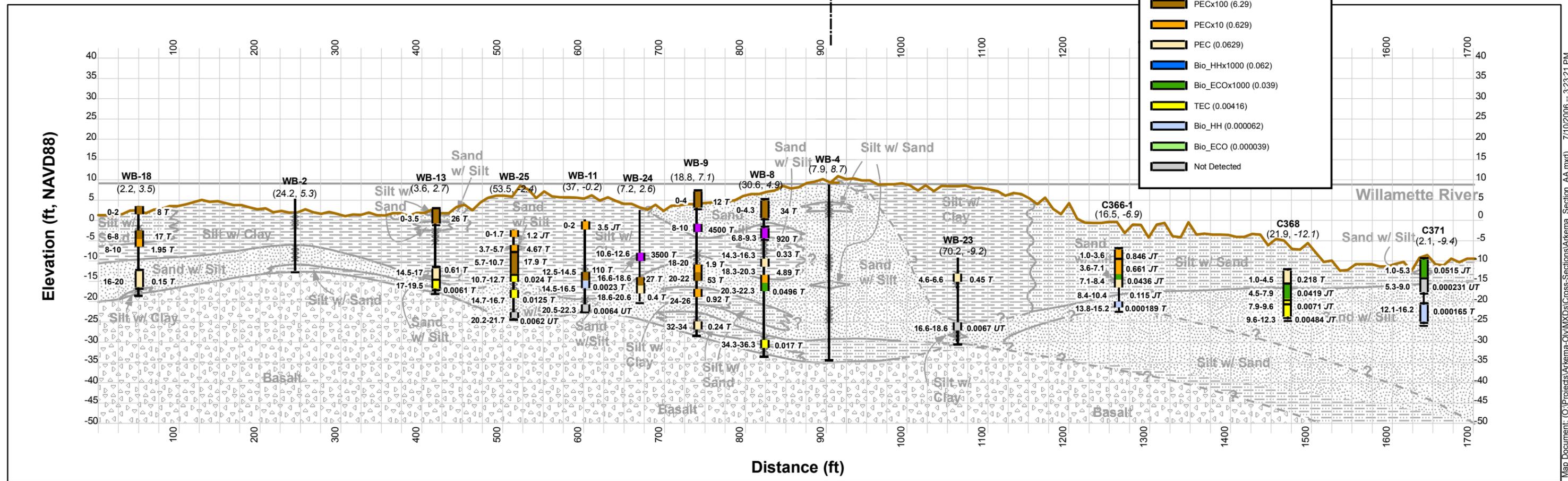
- Section_AA Selected Wells and Borings
- Section_BB
- Section_CC
- Section_DD
- Navigation Channel
- River
- 12ft Contour
- Ordinary High Water
- Top of Bank
- Bathymetry (2, 10 ft)
- Index Contour
- 2' contour



Plant North
A

Plant South
A'

Section A-A'



Section View: Vertical Exaggeration: 5X

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

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0 50 100 200 Feet

Map-8
Cross-Section A-A'
Sediment Chemistry
DDT

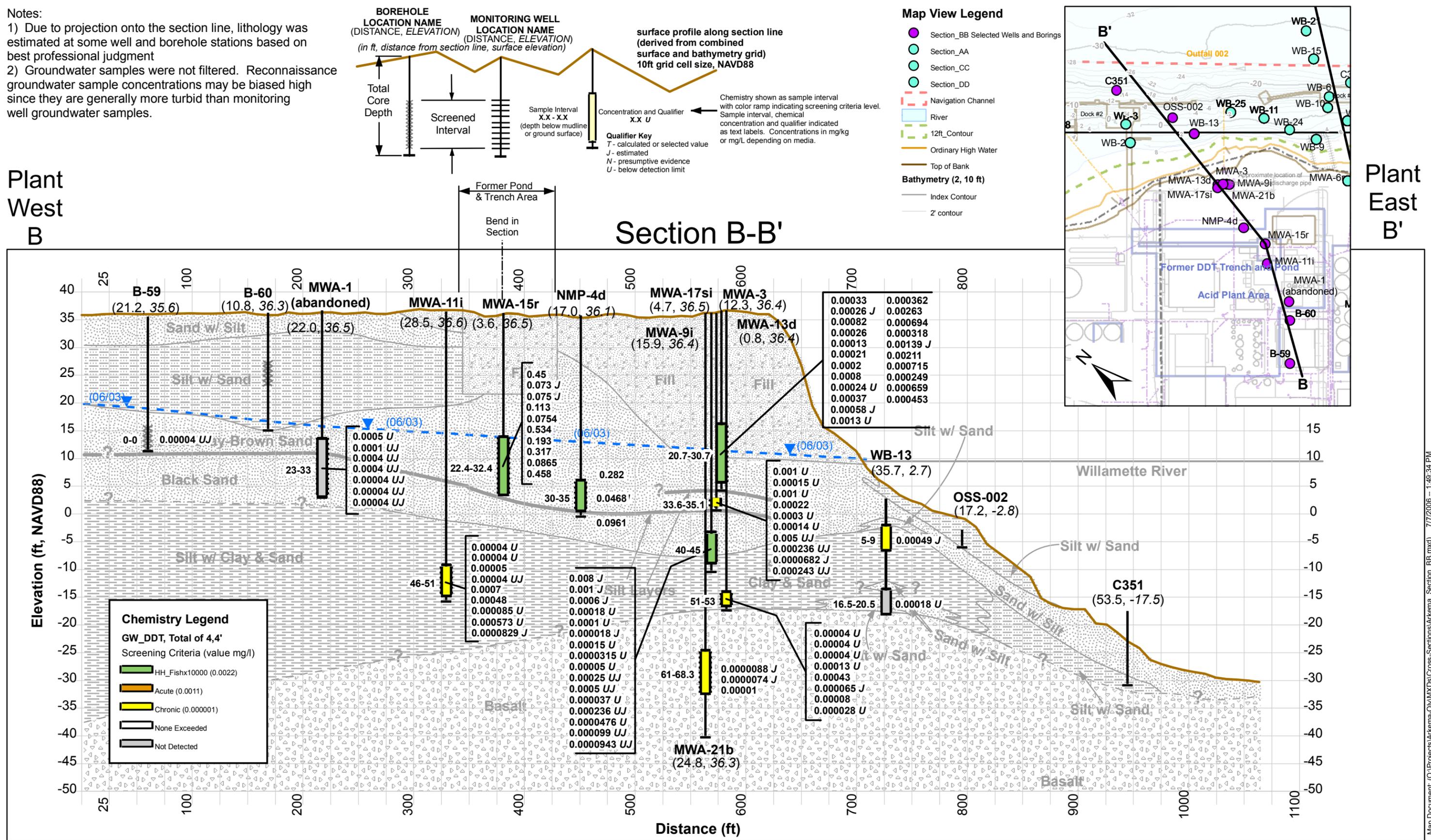
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Notes:

- 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.

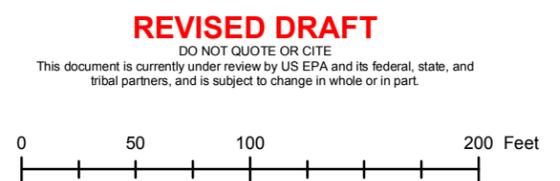
Plant West
B

Plant East
B'



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.
- Silt Layer



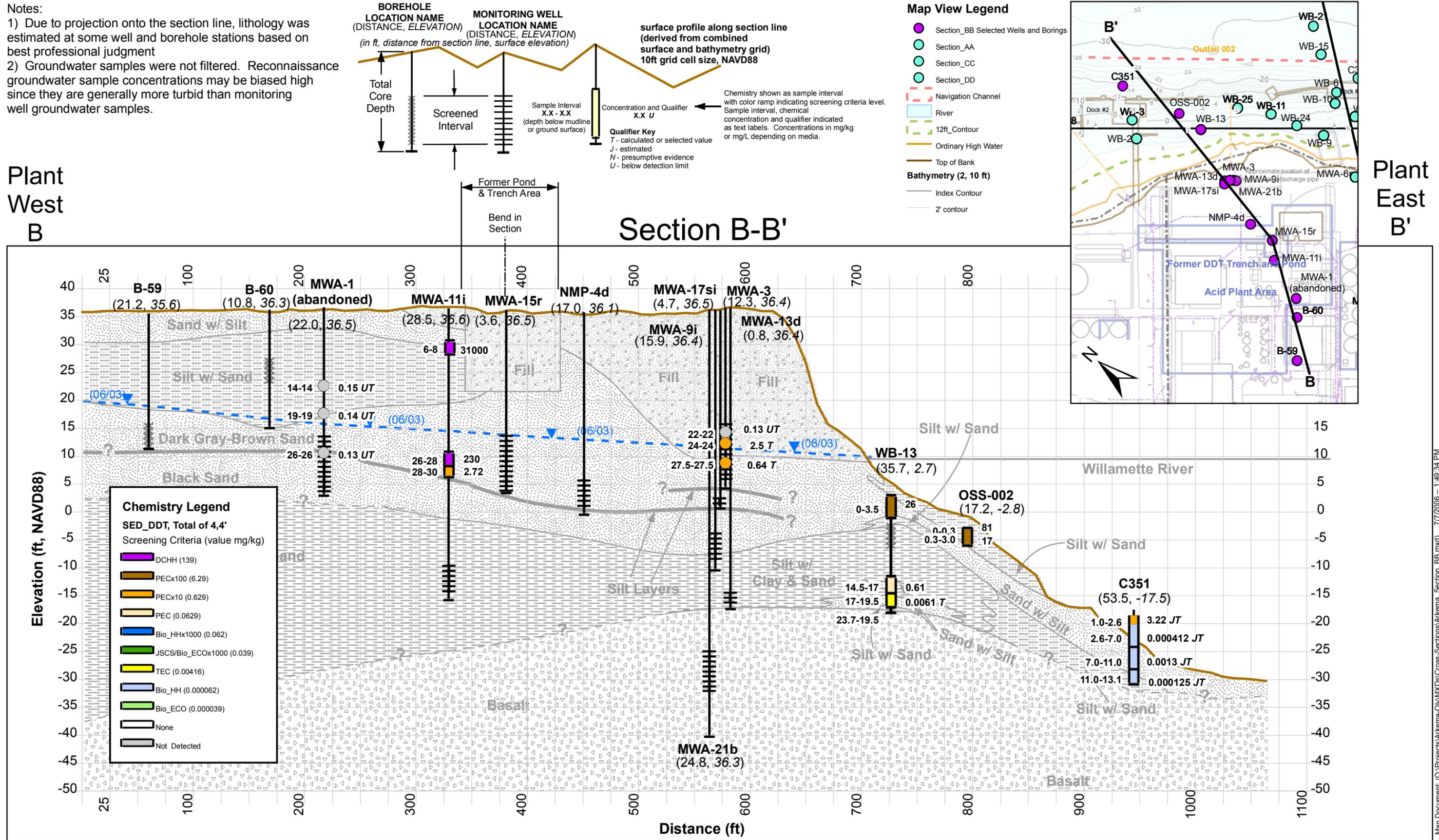
Map-9
Cross-Section B-B'
Groundwater Chemistry
DDT

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'



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.
- Silt Layer

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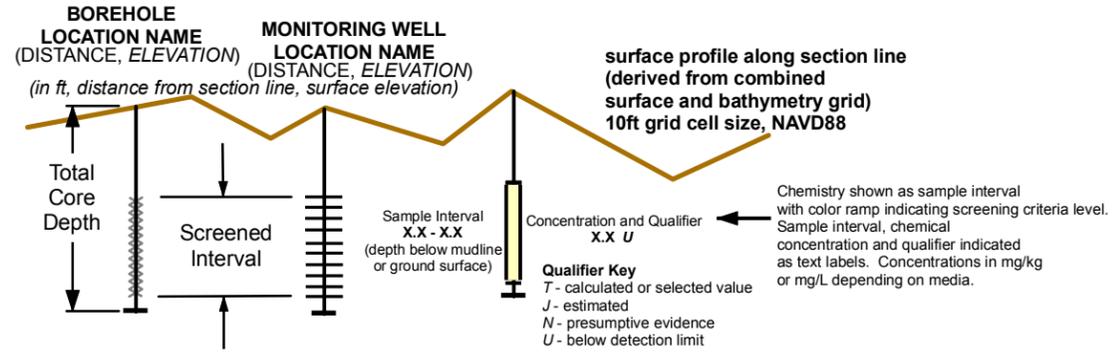
0 50 100 200 Feet

Map-10
Cross-Section B-B'
Soil/Sediment Chemistry
DDT

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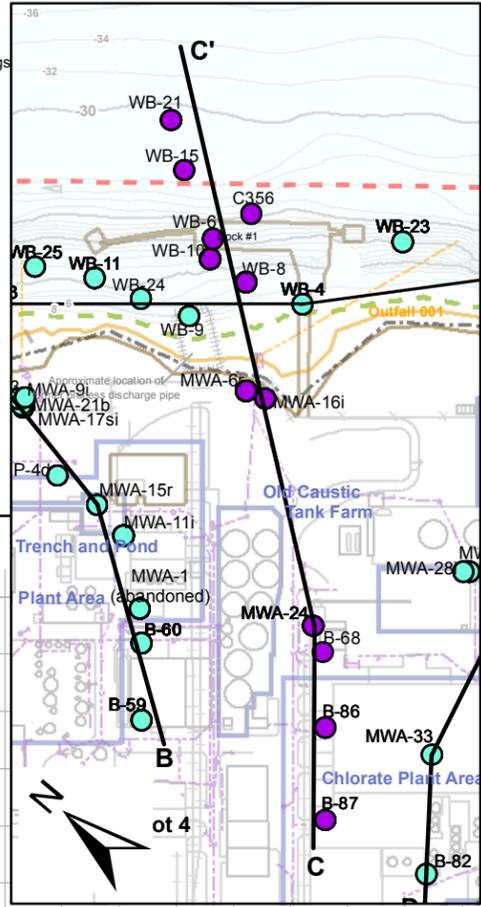
Notes:

- 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

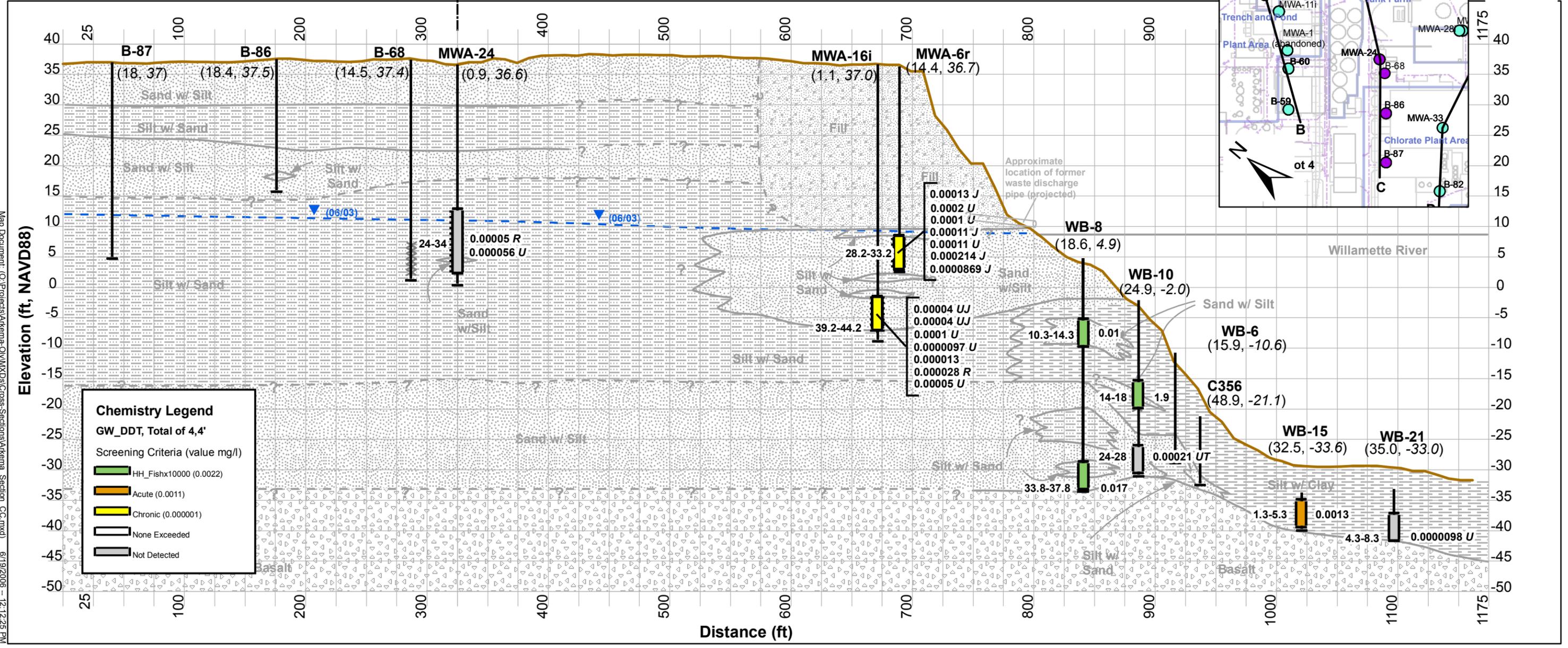
- Section_CC Selected Wells and Borings
- Section_AA
- Section_BB
- Section_DD
- Navigation Channel
- River
- 12ft Contour
- Ordinary High Water
- Top of Bank
- Bathymetry (2, 10 ft)
- Index Contour
- 2' contour



Plant West C

Plant East C'

Section C-C'

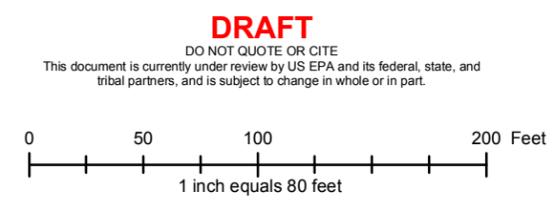


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Section View: Vertical Exaggeration: 5X

- 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.



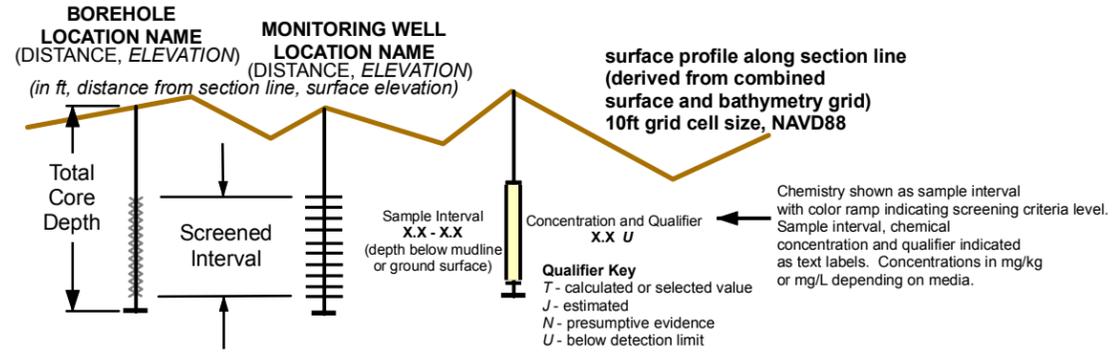
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Map-11
Cross-Section C-C'
Groundwater Chemistry
DDT

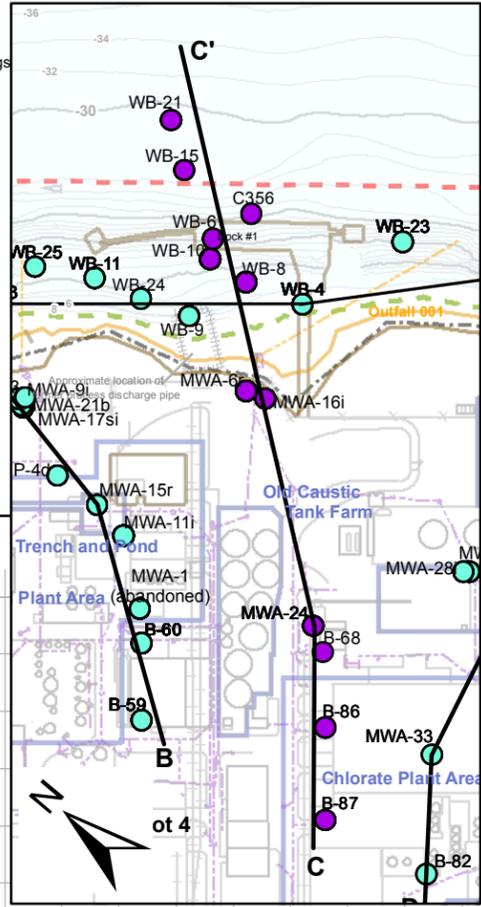
Notes:

- 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

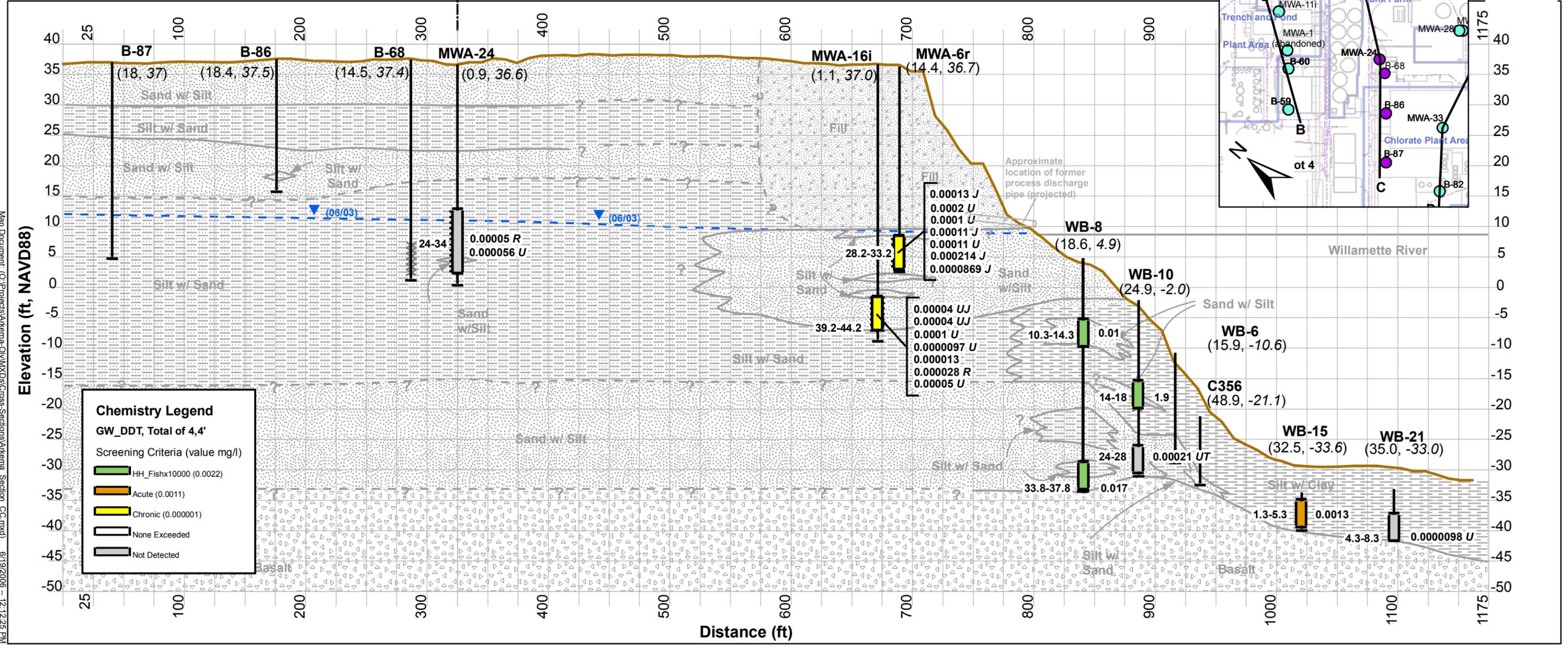
- Section_CC Selected Wells and Borings
- Section_AA
- Section_BB
- Section_DD
- Navigation Channel
- River
- 12ft Contour
- Ordinary High Water
- Top of Bank
- Bathymetry (2, 10 ft)
- Index Contour
- 2' contour



Plant West C

Plant East C'

Section C-C'



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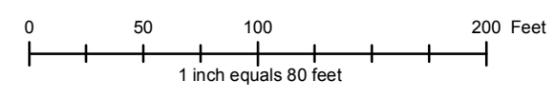


Section View: Vertical Exaggeration: 5X

- 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.

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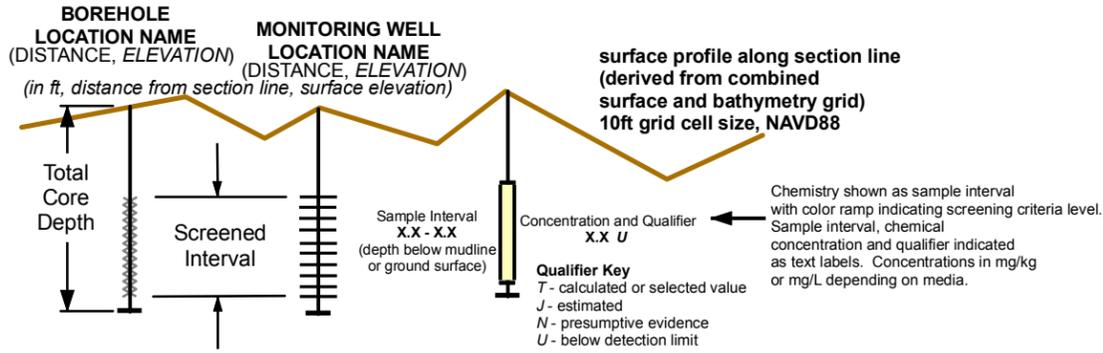
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Map-11
Cross-Section C-C'
Groundwater Chemistry
DDT

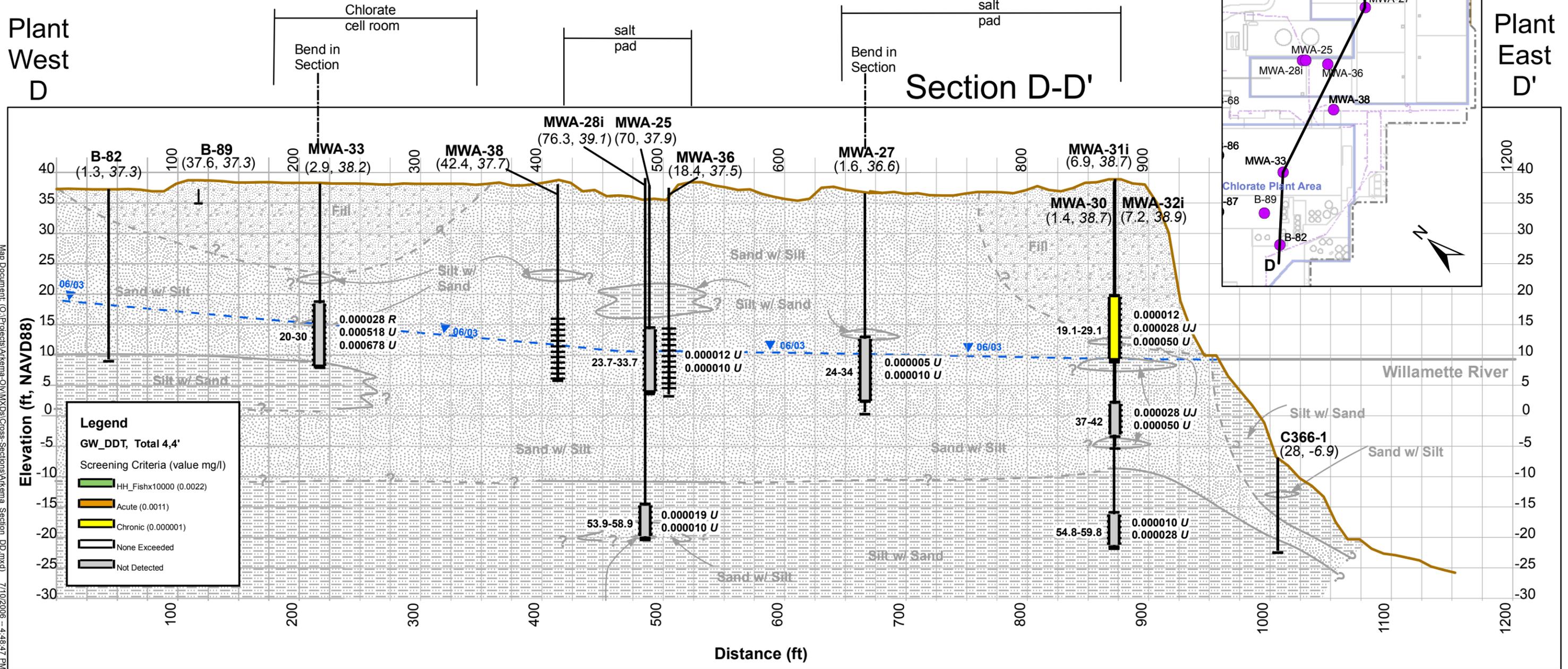
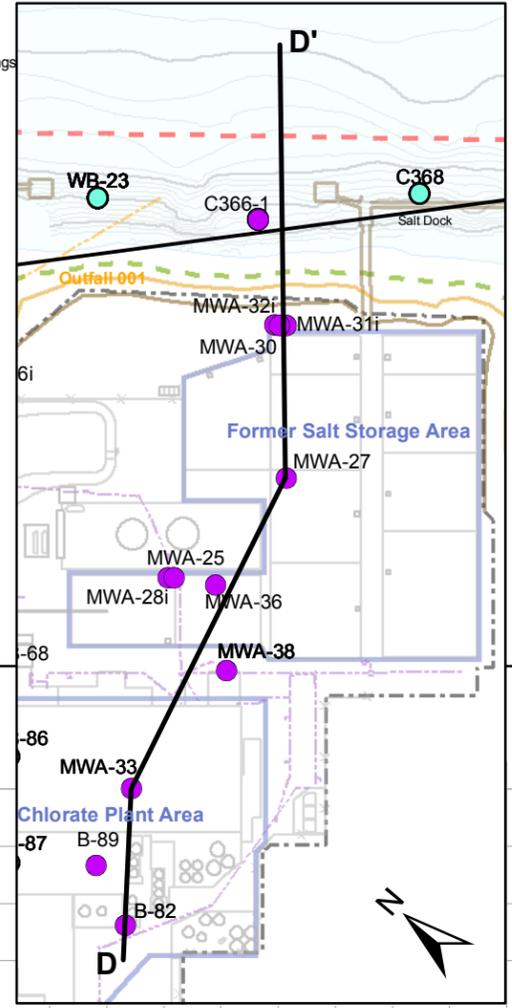
Notes:

- 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



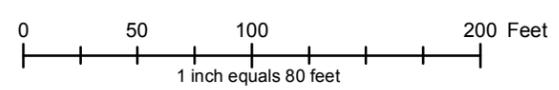
Map Document: (O:\Projects\Arkema-Oil\MapDocs\Cross-Sections\Arkema_Section_DD.mxd) 7/10/2006 - 4:48:47 PM



Section View: Vertical Exaggeration: 5X

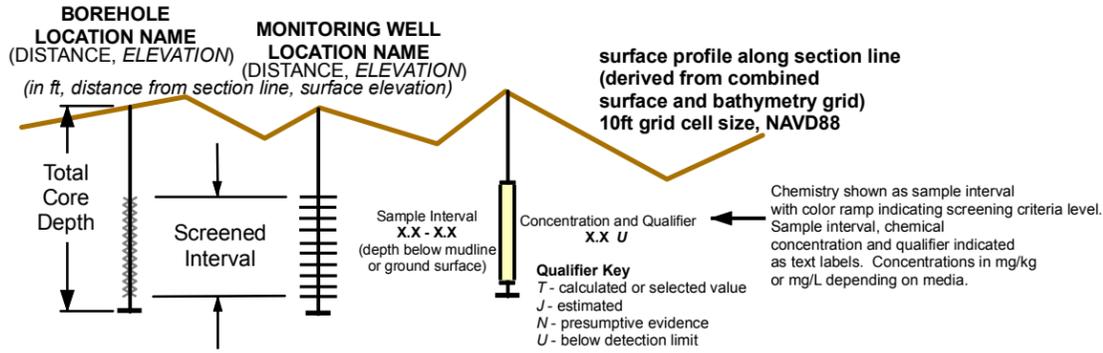
- Fill
- Sand with varying amounts of silt
- Silt with varying amounts of fine sand
- Silt with some clay and fine sand
- Basalt
- Inferred soil or geologic contact (queried where uncertain)
- Shallow-zone groundwater surface (approximate) June 2003; based on monitoring well data only.

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.



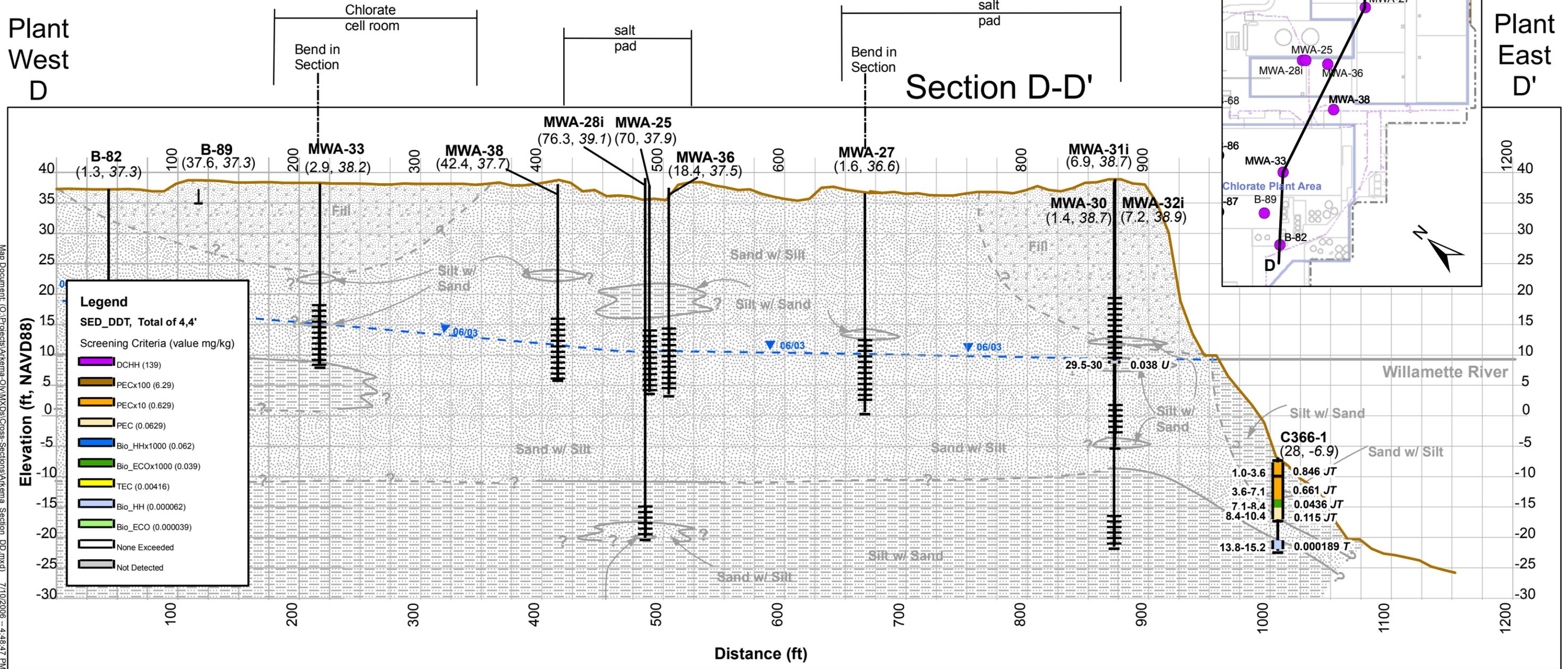
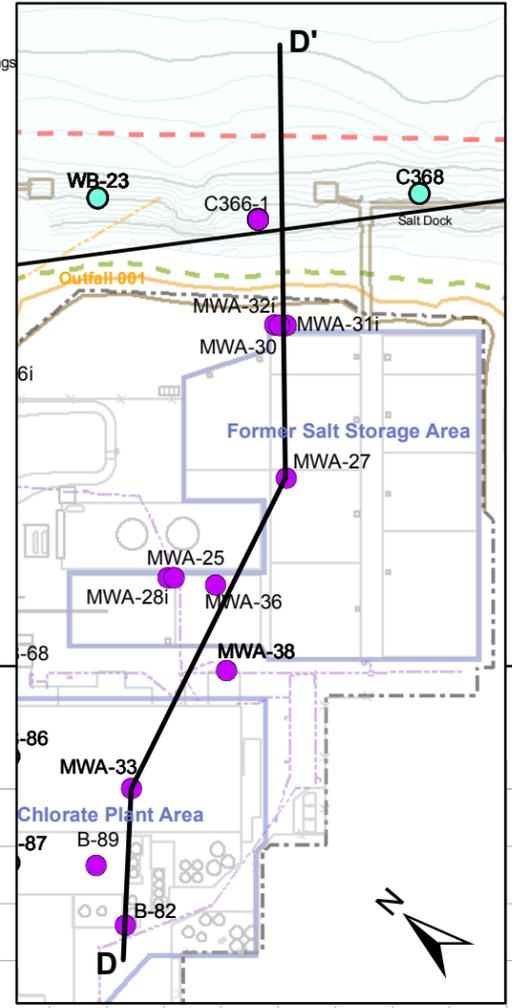
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Map Document: (O:\Projects\Arkema-Oil\WX\DS\Cross-Sections\Arkema_Section_DD.mxd) 7/10/2006 - 4:48:47 PM

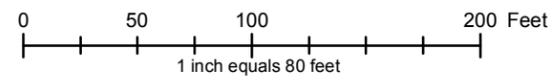


Section View: Vertical Exaggeration: 5X

- Fill
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- Sand with varying amounts of silt
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Map-14
Cross-Section D-D'
Soil/Sediment Chemistry
DDT