

Table

Table 6-1**Chemical Partitioning Parameters for 2,3,7,8-TCDD, Tetrachlorobiphenyls, and 1,2,3,4,6,7,8-HpCDF**

Parameter	log Kow	Fraction Dissolved (fD)	Fraction Equilibrium (fE)
Source	Literature	hv-CWCM	hv-CWCM
2,3,7,8-TCDD	6.65	0.06 (0.012-0.19)	0.10 (0.04-0.36)
Tetra-PCB	6.00	0.42 (0.18-0.80)	0.55 (0.26-1.00)
1,2,3,4,6,7,8-HpCDF	8.67	0.007 (0.0011-0.014)	0.008 (0.0012-0.014)

Notes:

The octanol-water partition coefficient, K_{ow} , values are from the USEPA FFS model (LBG 2014). The fraction dissolved (fD) values are hv-CWCM measurements, from which the fraction equilibrium (fE) values are derived (see Appendix G).

When parentheses are shown, the first value is the mean and values in parentheses are minimum and maximum

hv-CWCM analysis includes all stations across the Lower Passaic River and Newark Bay.

Non-detects were excluded from the hv-CWCM analysis.

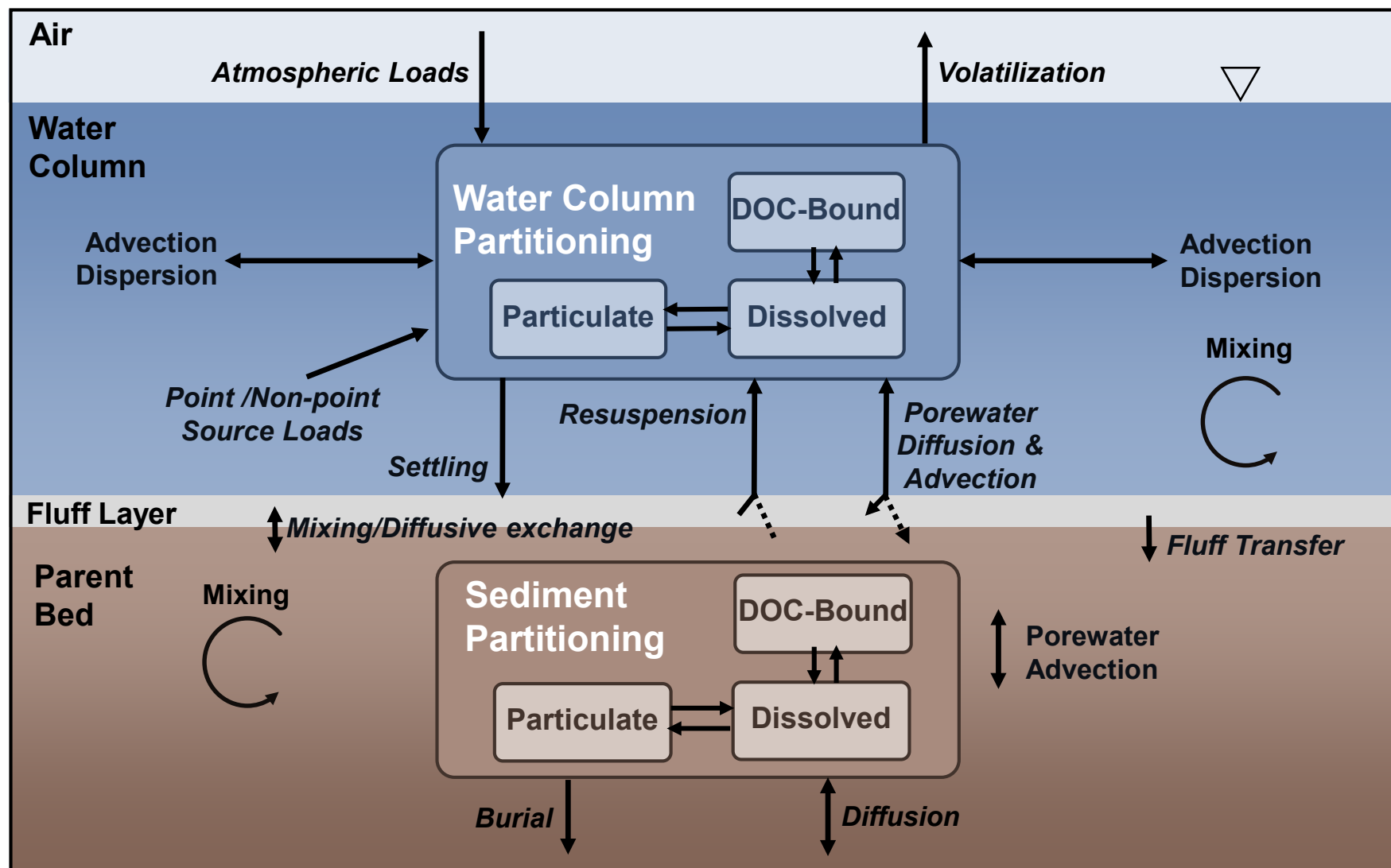
CWCM: Chemical Water Column Monitoring

HpCDF: Heptachlorodibenzofuran

PCB: polychlorinated biphenyl

TCDD: tetrachlorodibenzo-p-dioxin

Figures

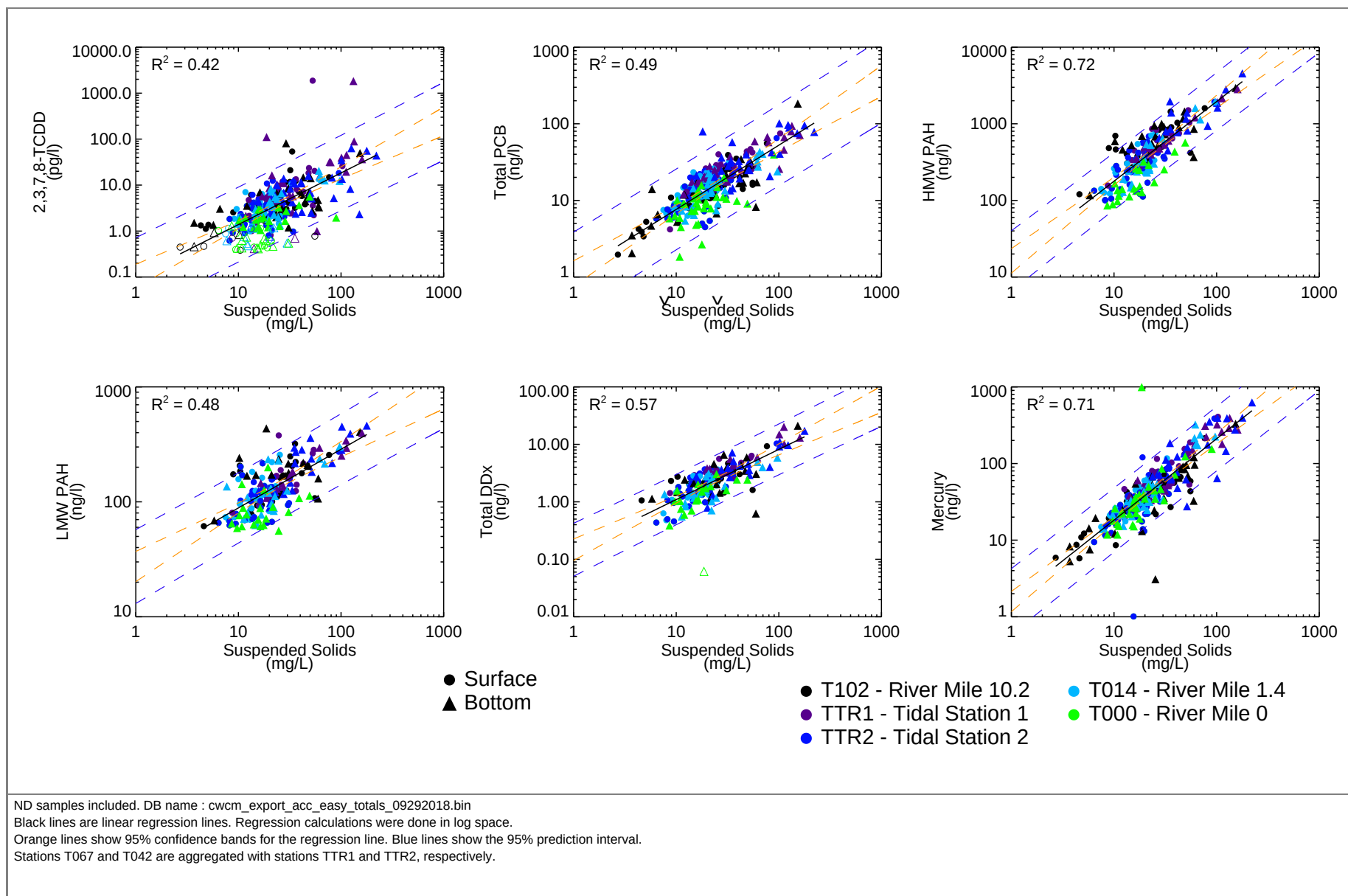


The process depicted by the dashed line is active only when the fluff layer is depleted

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Figure 6-1
Schematic Diagram of Contaminant Transport Processes in the Lower Passaic River

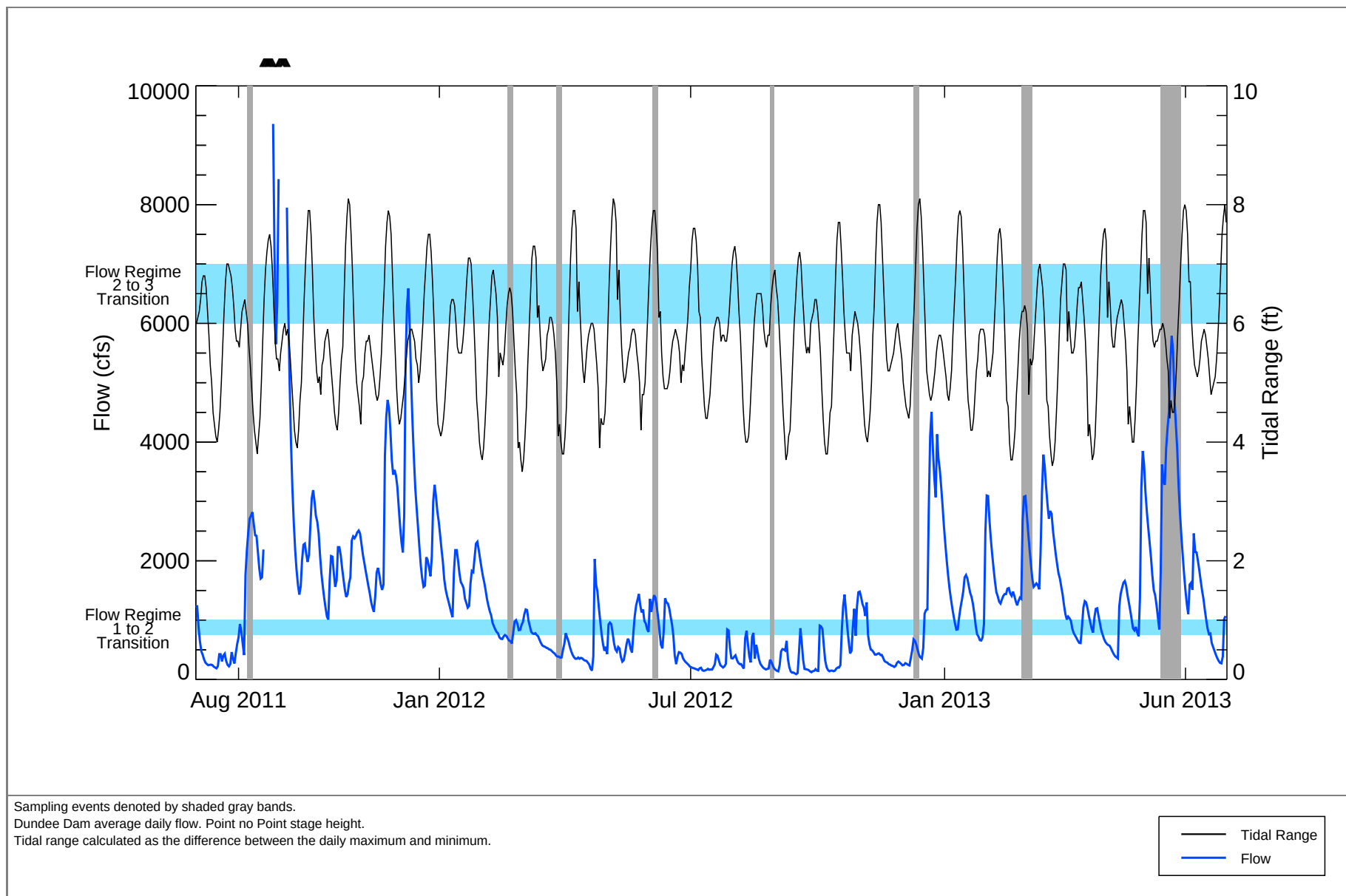
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Figure 6-2
LPR Water Column Contaminant vs. Suspended Solids Concentration

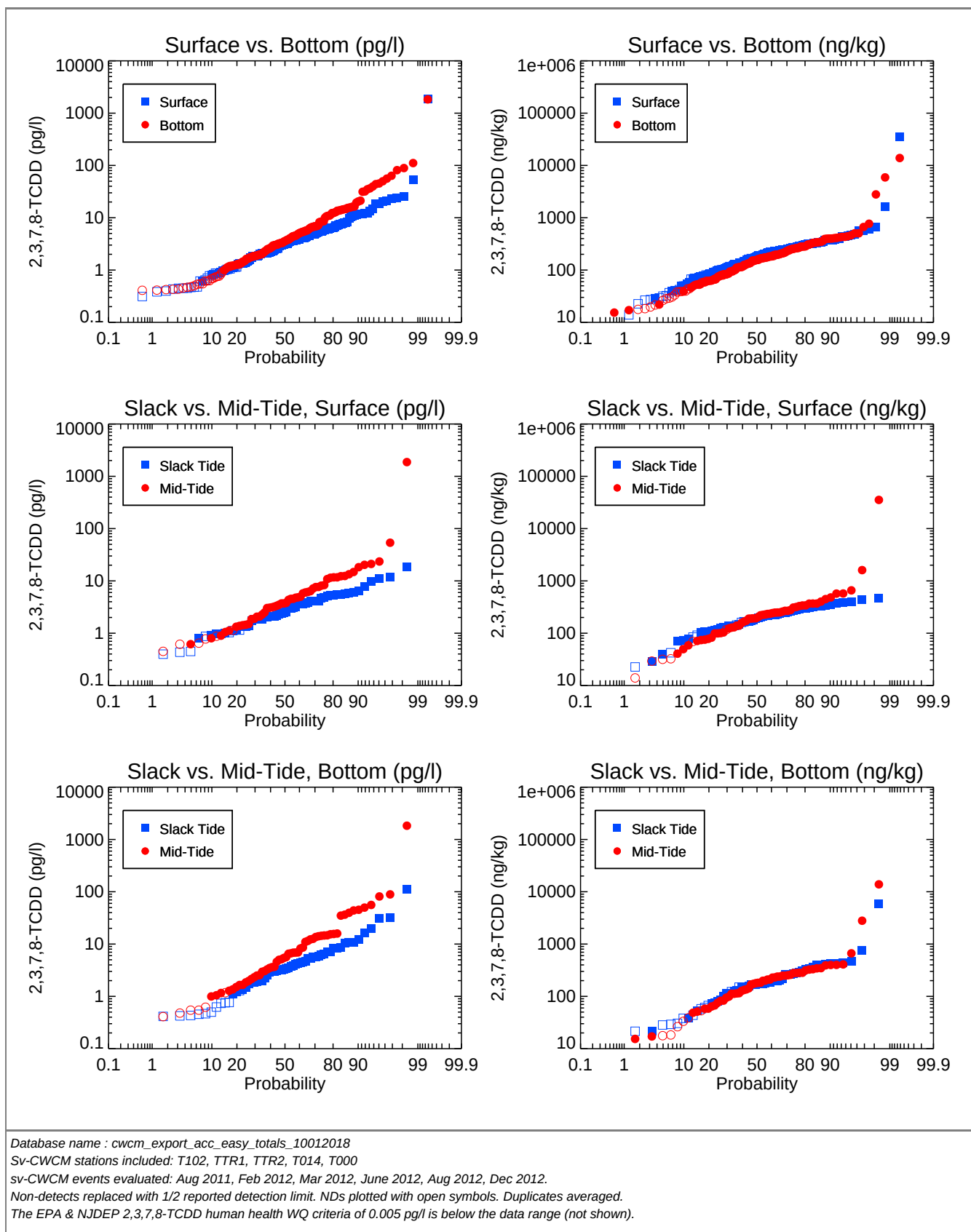
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Figure 6-3
Flow and Tidal Range During the sv-CWCM Sampling Events

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Figure 6-4a
Water Column 2,3,7,8-TCDD Concentrations at LPR sv-CWCM Stations by Depth and Tidal Phase

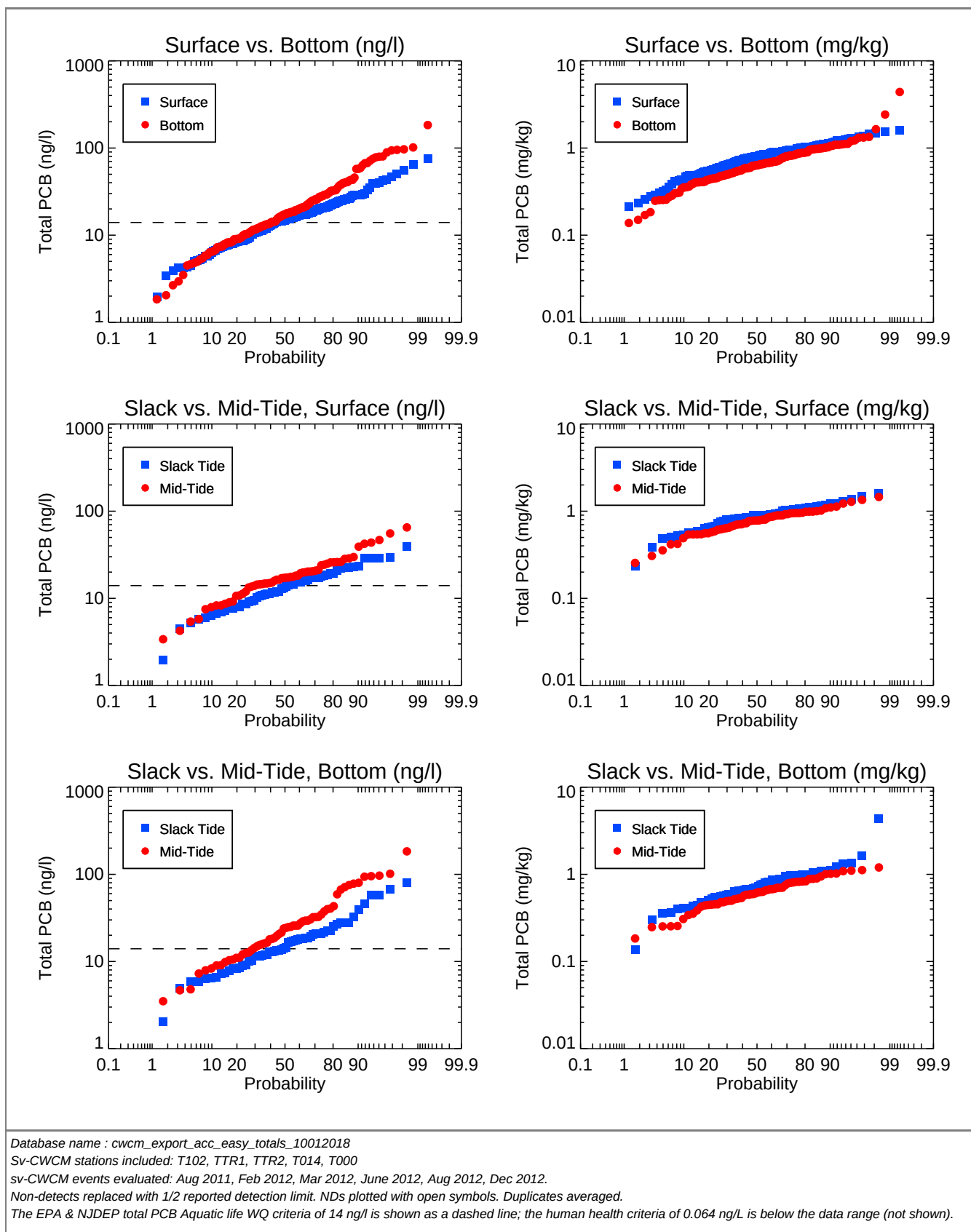


Figure 6-4b

Water Column Total PCB Concentrations at LPR sv-CWCM Stations by Depth and Tidal Phase

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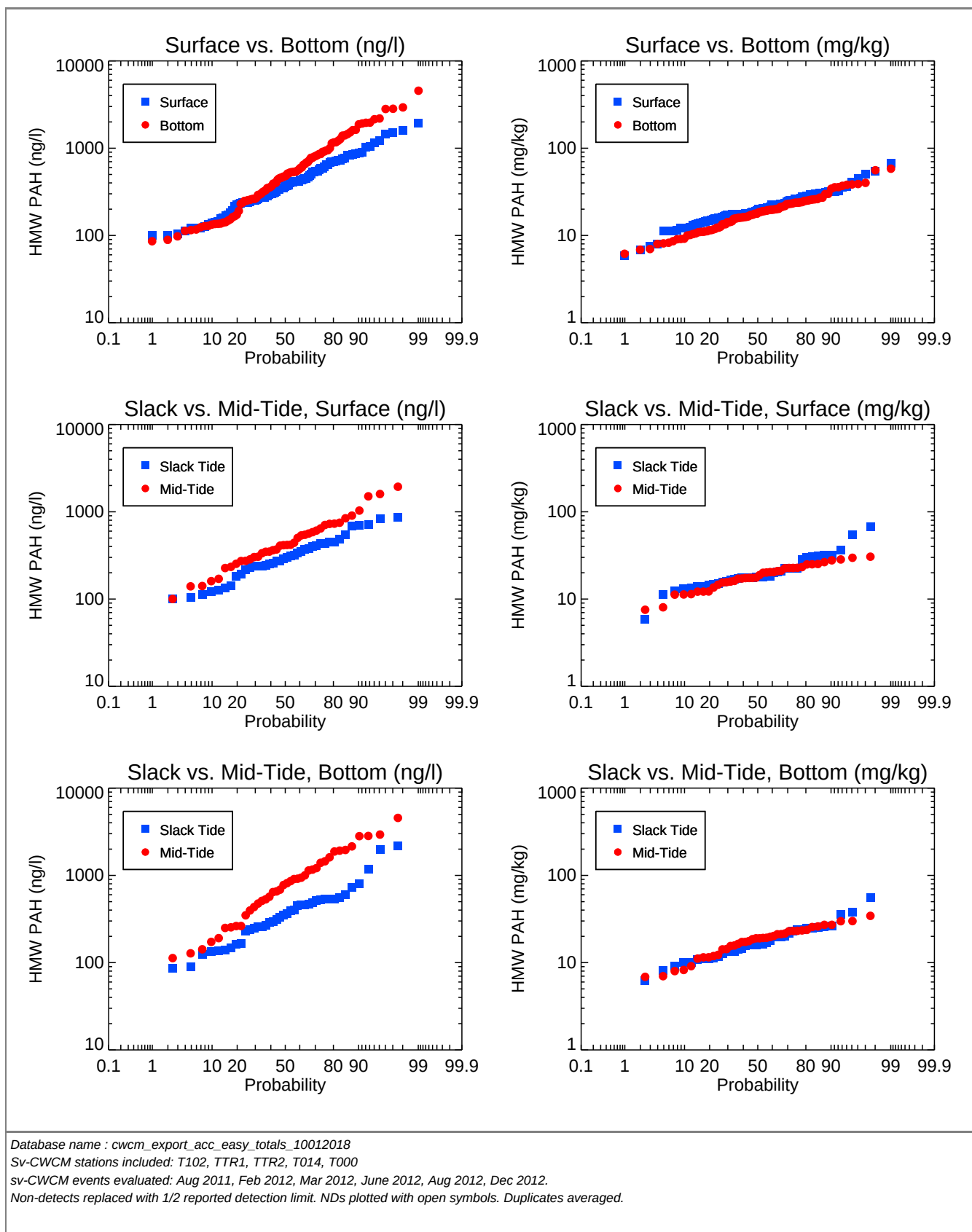


Figure 6-4c

Water Column HMW PAH Concentrations at LPR sv-CWCM Stations by Depth and Tidal Phase

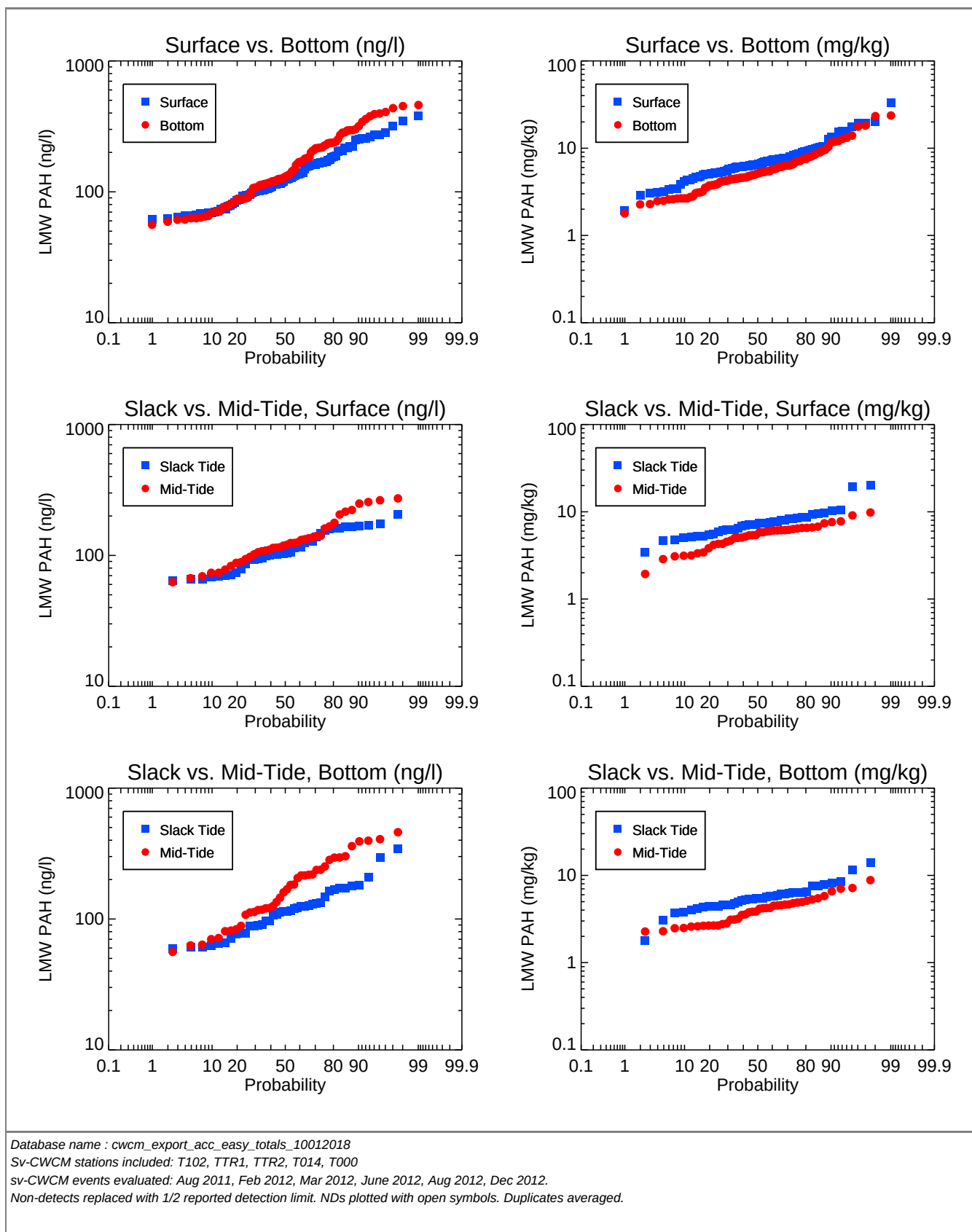
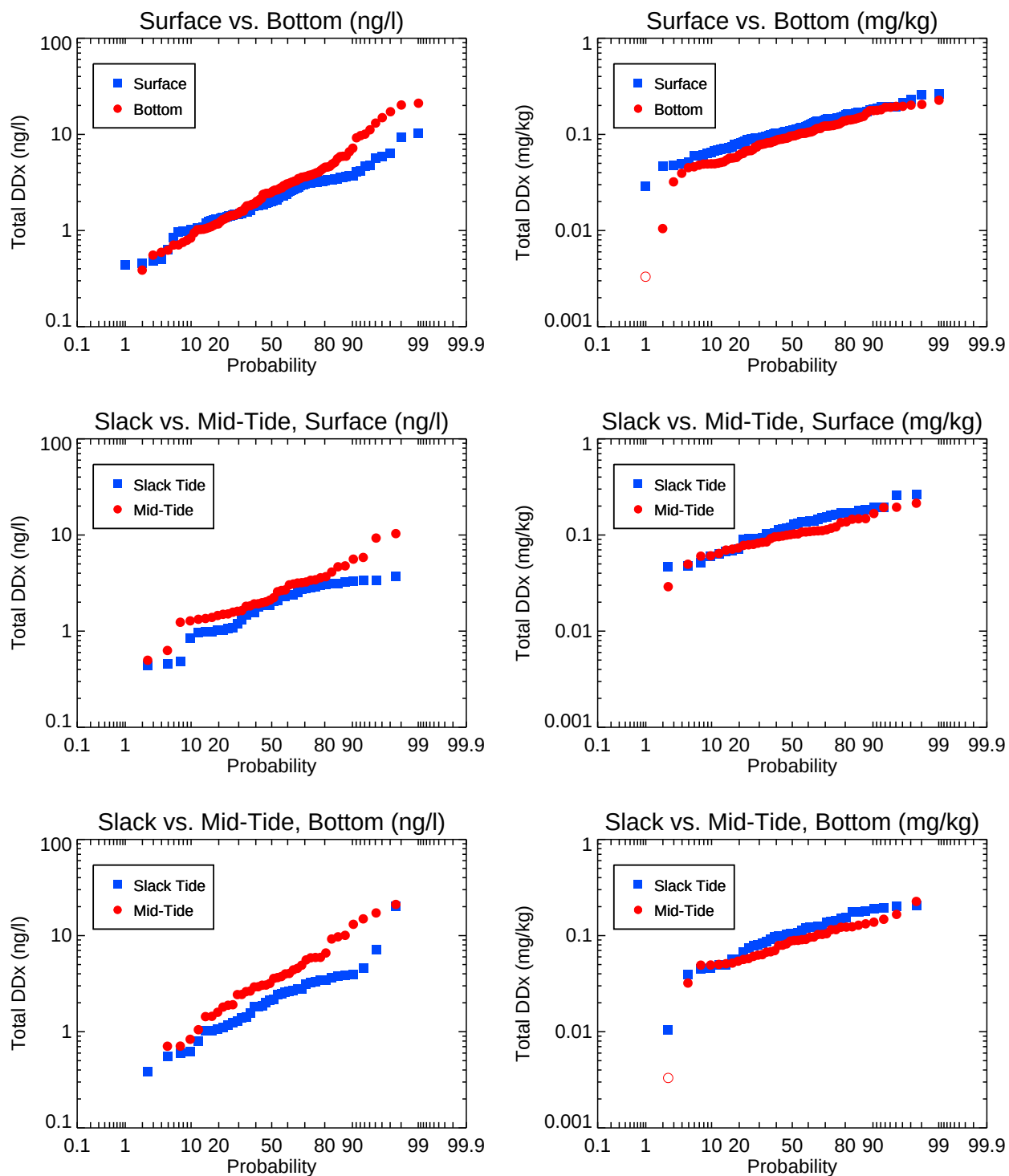


Figure 6-4d

Water Column LMW PAH Concentrations at LPR sv-CWCM Stations by Depth and Tidal Phase

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 sv-CWCM events evaluated: Aug 2011, Feb 2012, Mar 2012, June 2012, Aug 2012, Dec 2012.
 Non-detects replaced with 1/2 reported detection limit. NDs plotted with open symbols. Duplicates averaged.

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Figure 6-4e
Water Column Total DDx Concentrations at LPR sv-CWCM Stations by Depth and Tidal Phase

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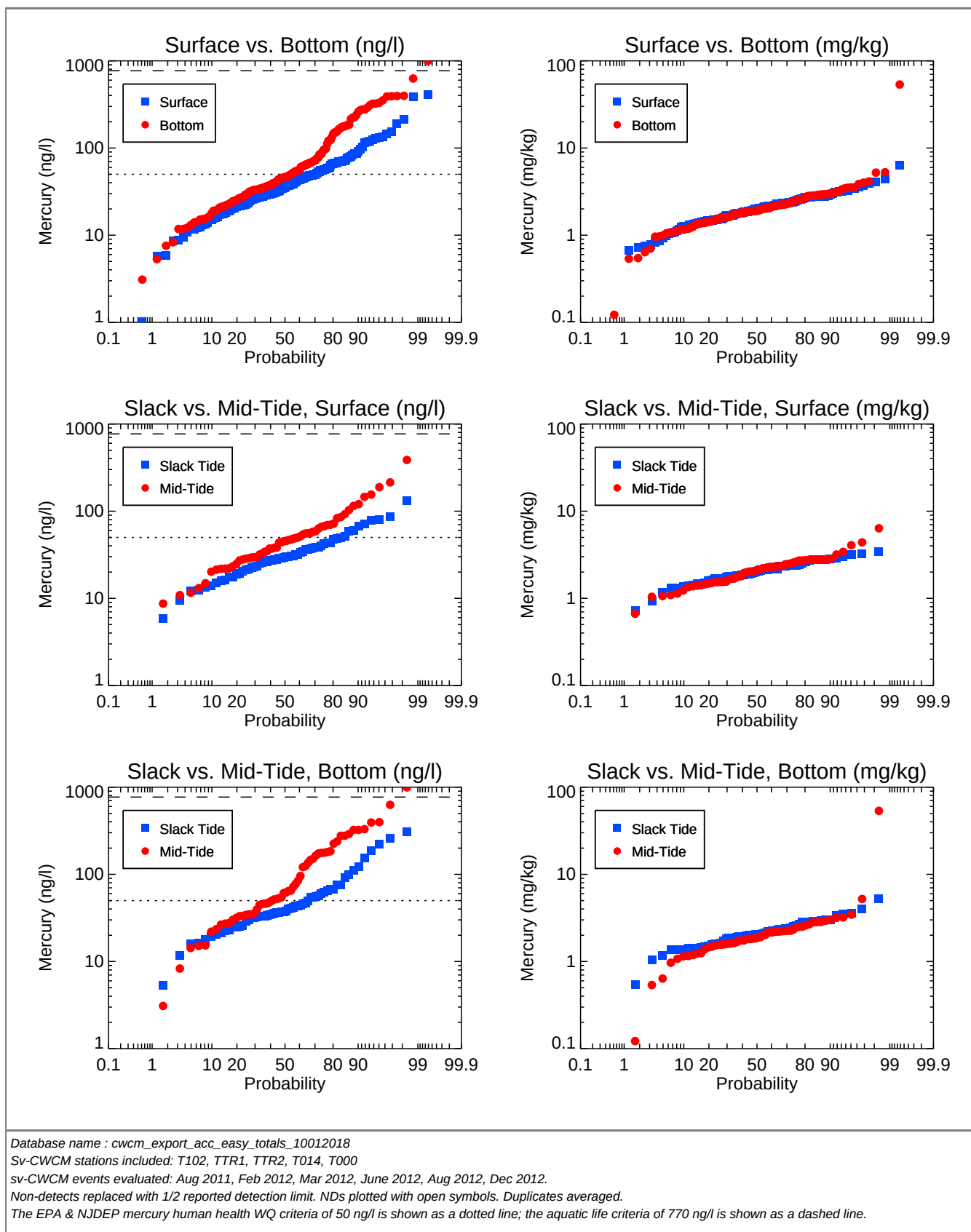
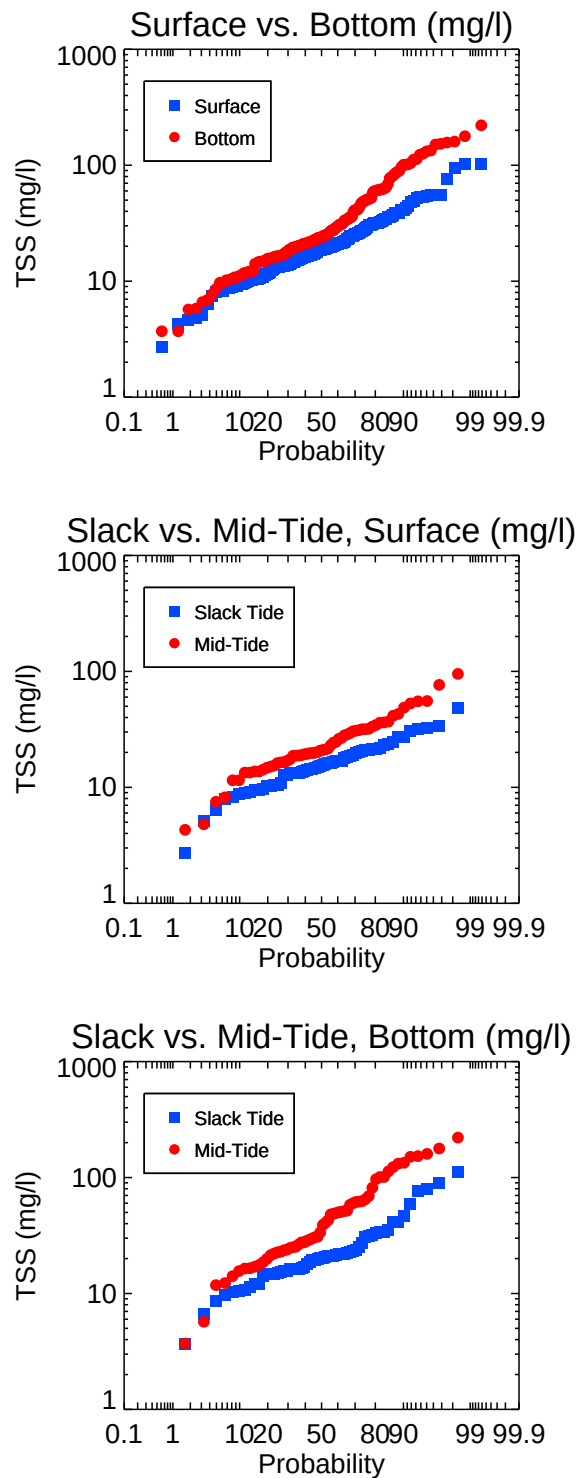


Figure 6-4f

Water Column Mercury Concentrations at LPR sv-CWCM Stations by Depth and Tidal Phase

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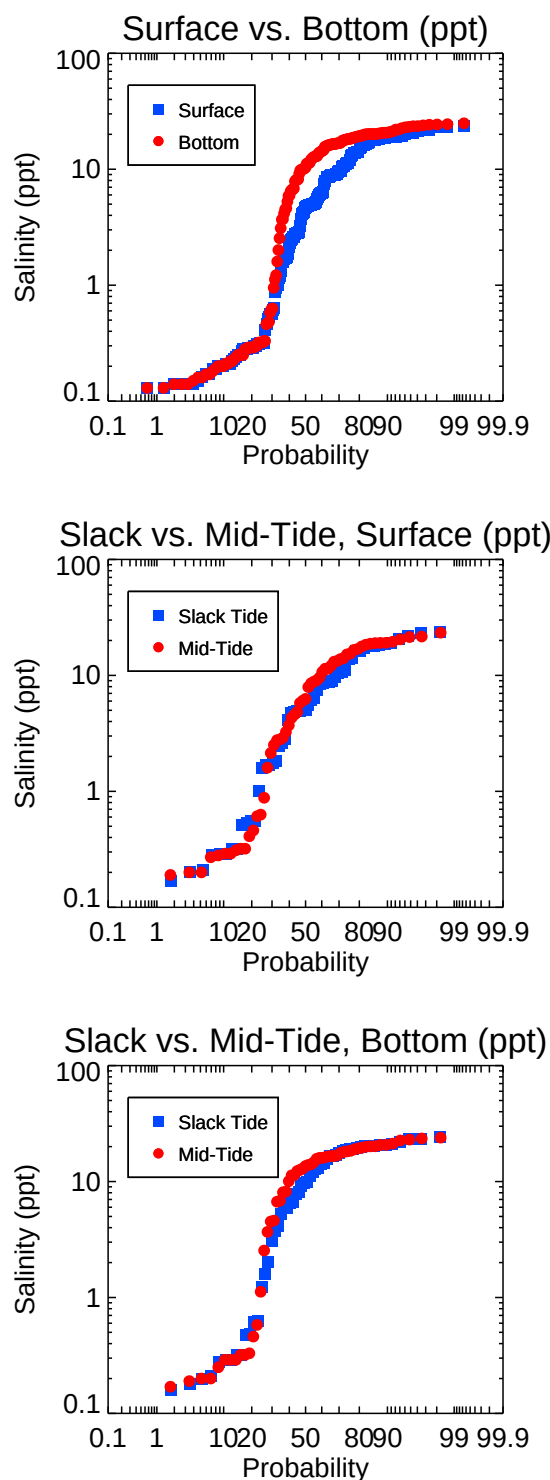
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Figure 6-4g
Water Column TSS Concentrations at LPR sv-CWCM Stations by Depth and Tidal Phase

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Sv-CWCM stations included: T102, TTR1, TTR2, T014, T000

sv-CWCM events evaluated: Aug 2011, Feb 2012, Mar 2012, June 2012, Aug 2012, Dec 2012.

Non-detects replaced with 1/2 reported detection limit. NDs plotted with open symbols. Duplicates averaged.

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Figure 6-4h

Water Column Salinity Concentrations at LPR sv-CWCM Stations by Depth and Tidal Phase

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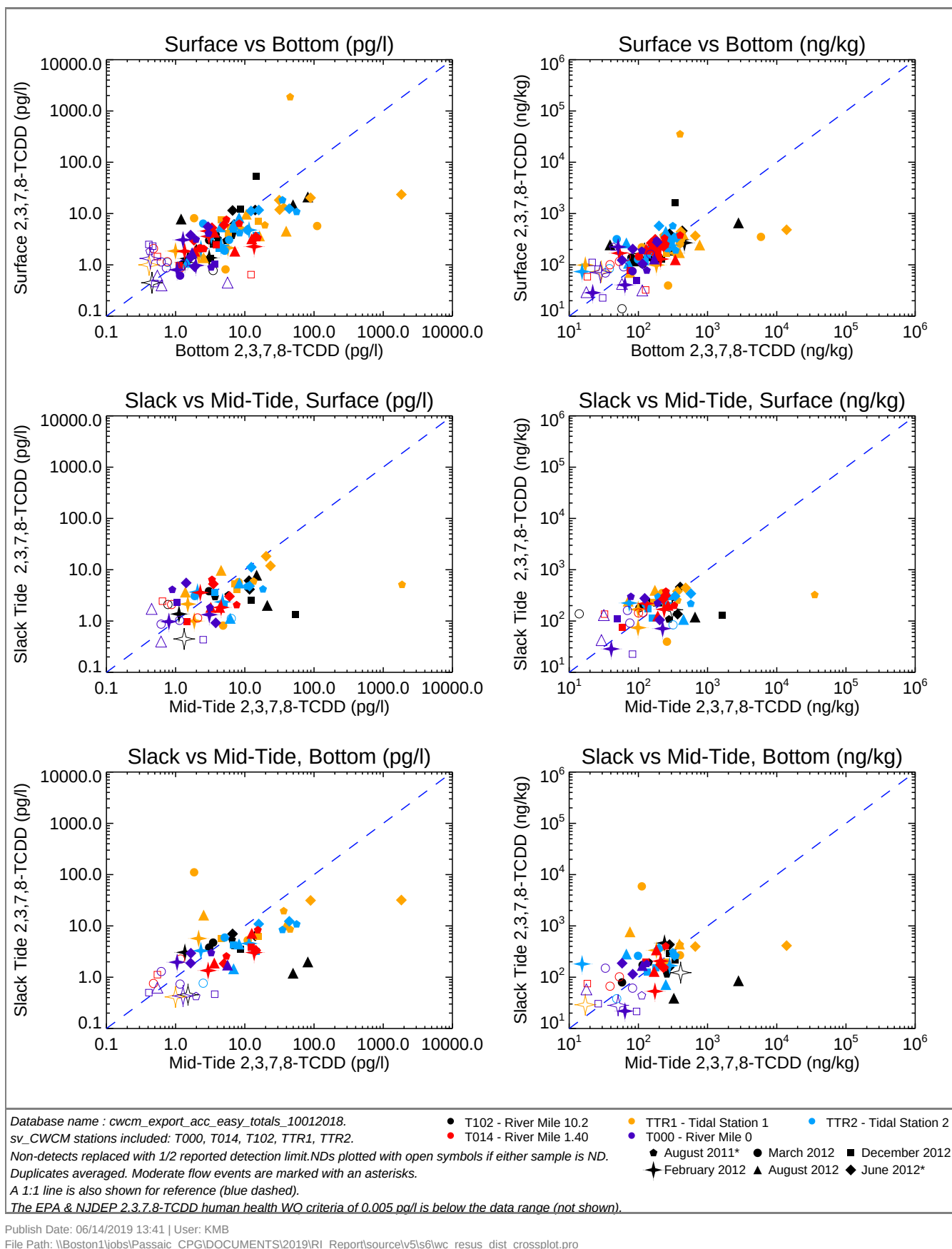


Figure 6-5a

Water Column 2,3,7,8-TCDD Concentrations at LPR sv-CWCM Stations by Depth and Tidal Phase

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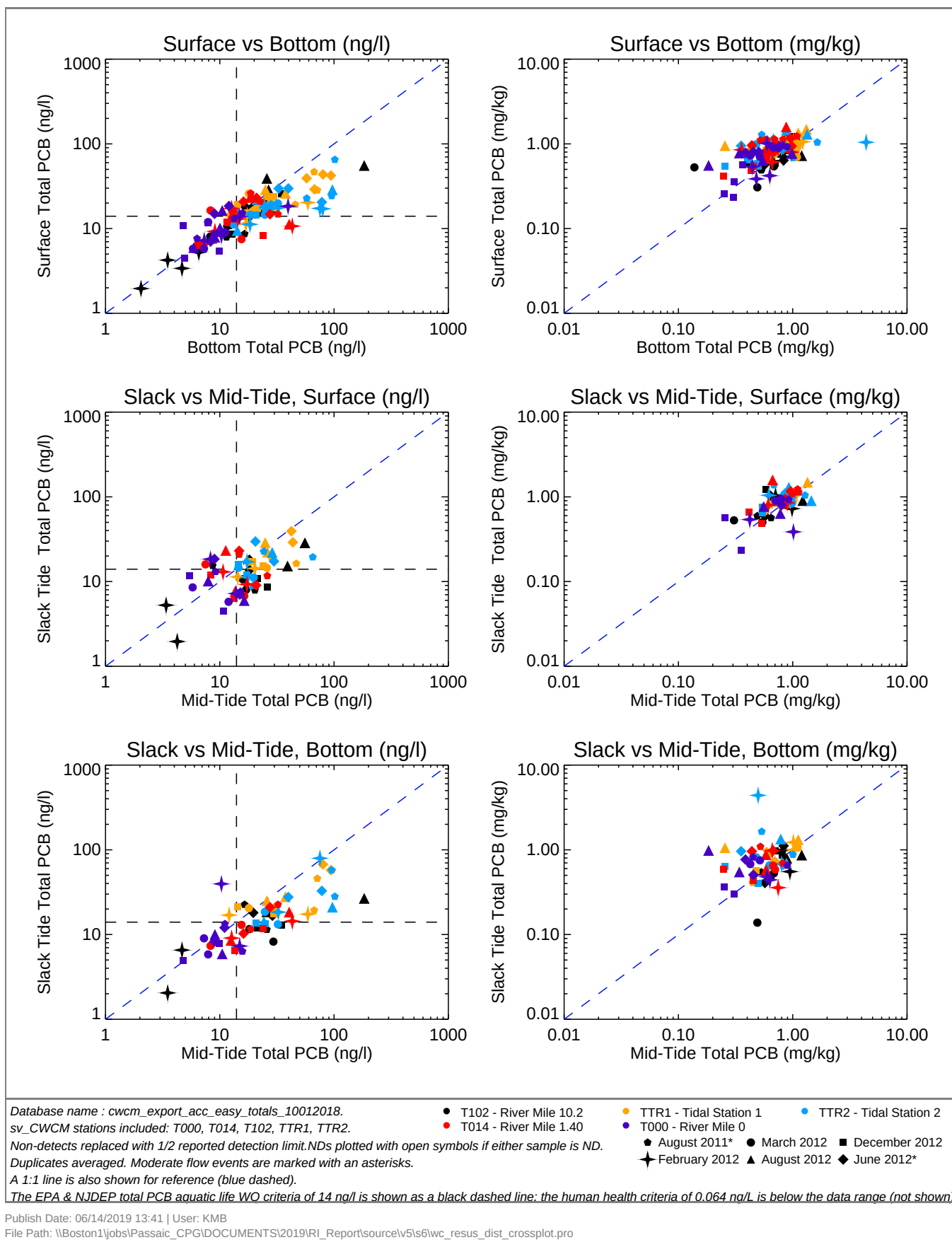


Figure 6-5b
Water Column Total PCB Concentrations at LPR sv-CWCM Stations by Depth and Tidal Phase

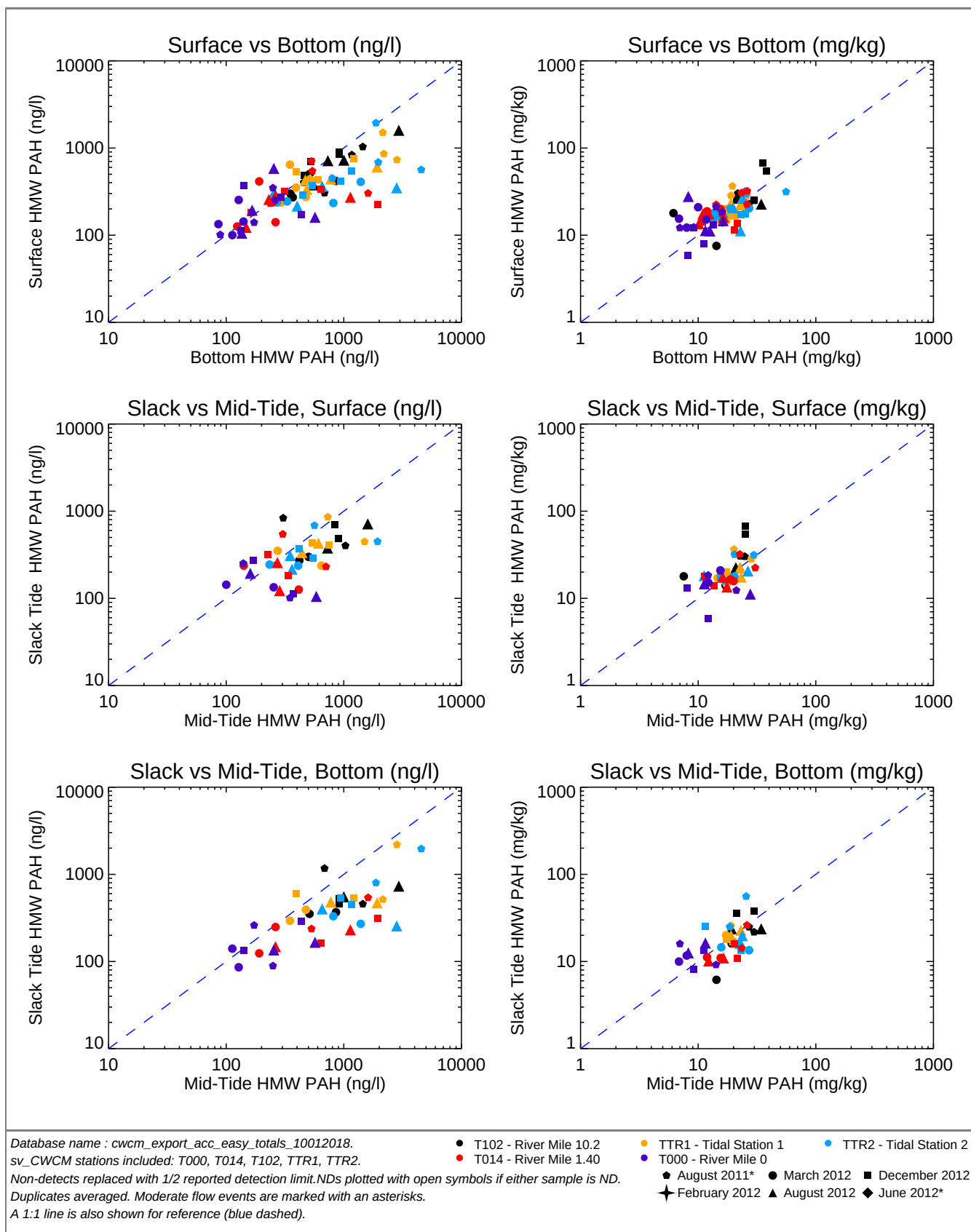


Figure 6-5c

Water Column HMW PAH Concentrations at LPR sv-CWCM Stations by Depth and Tidal Phase

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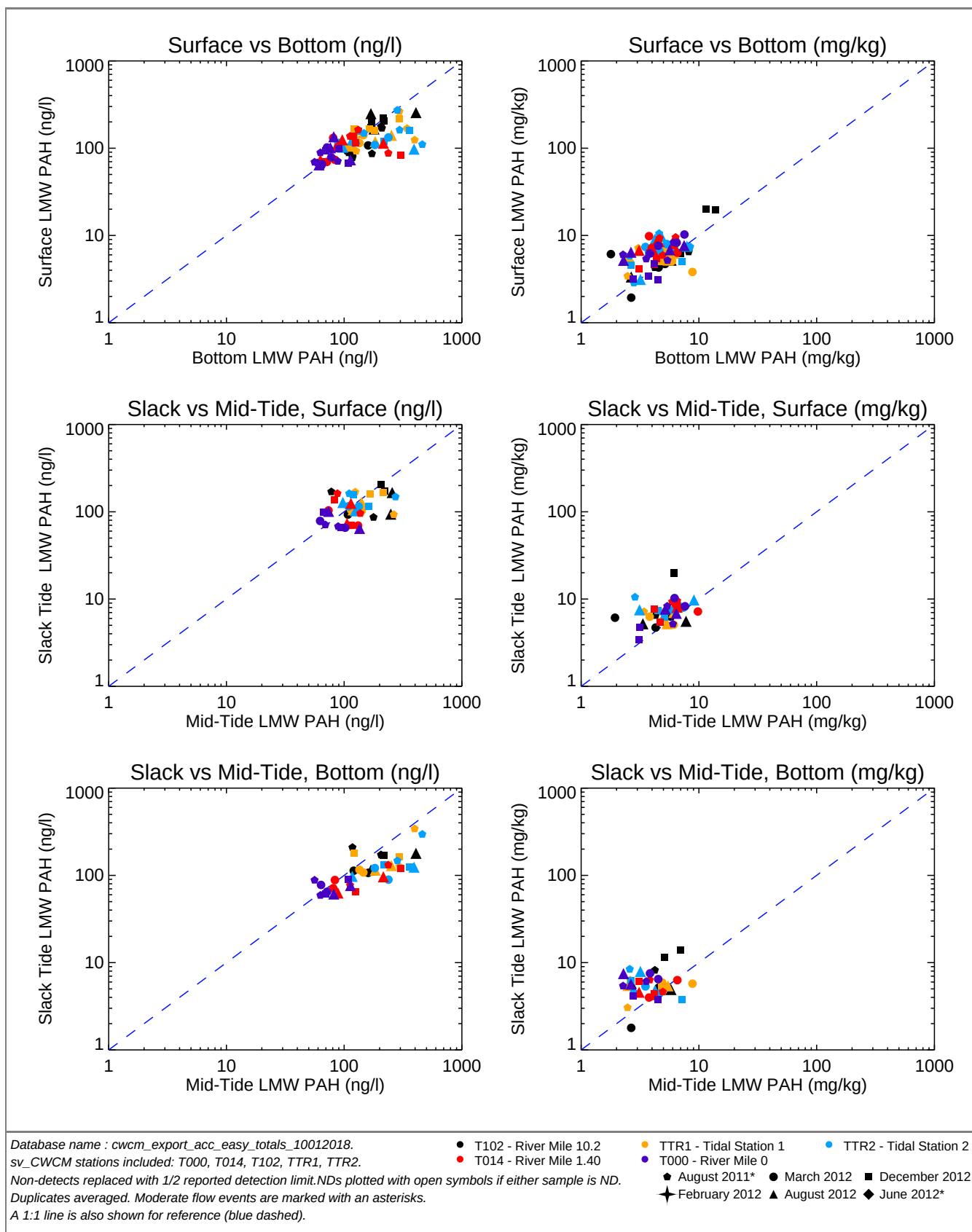


Figure 6-5d

Water Column LMW PAH Concentrations at LPR sv-CWCM Stations by Depth and Tidal Phase

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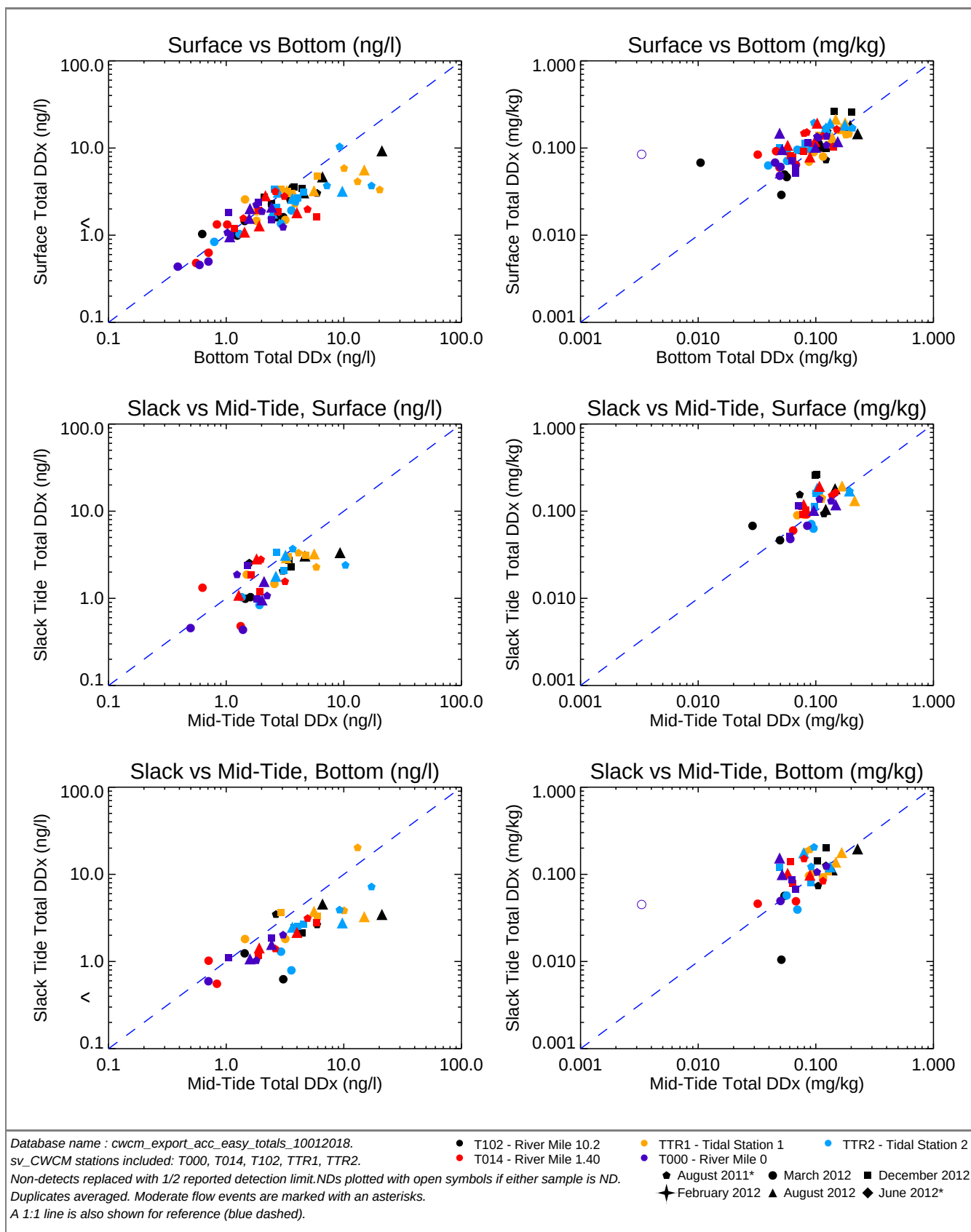


Figure 6-5e

Water Column Total DDx Concentrations at LPR sv-CWCM Stations by Depth and Tidal Phase

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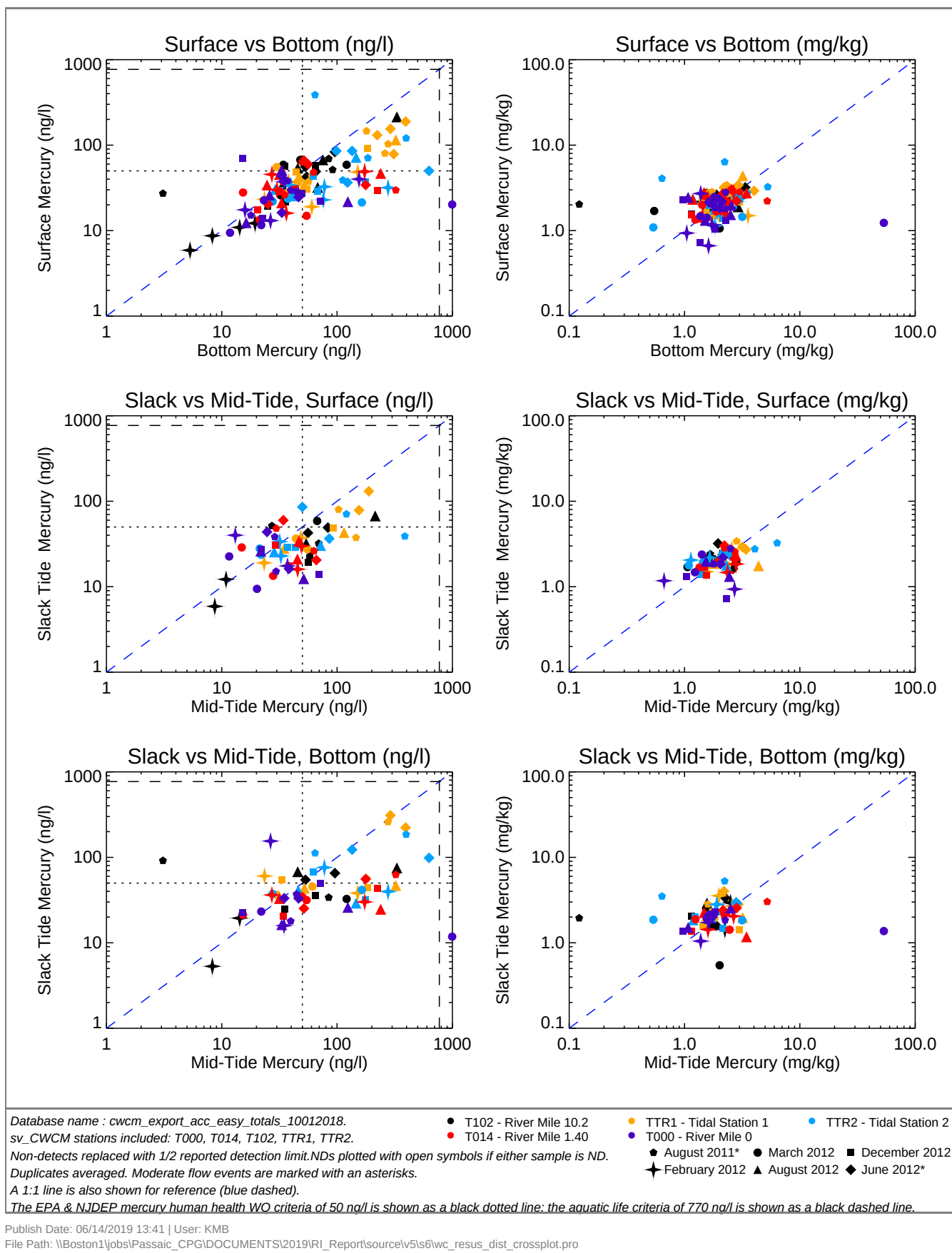
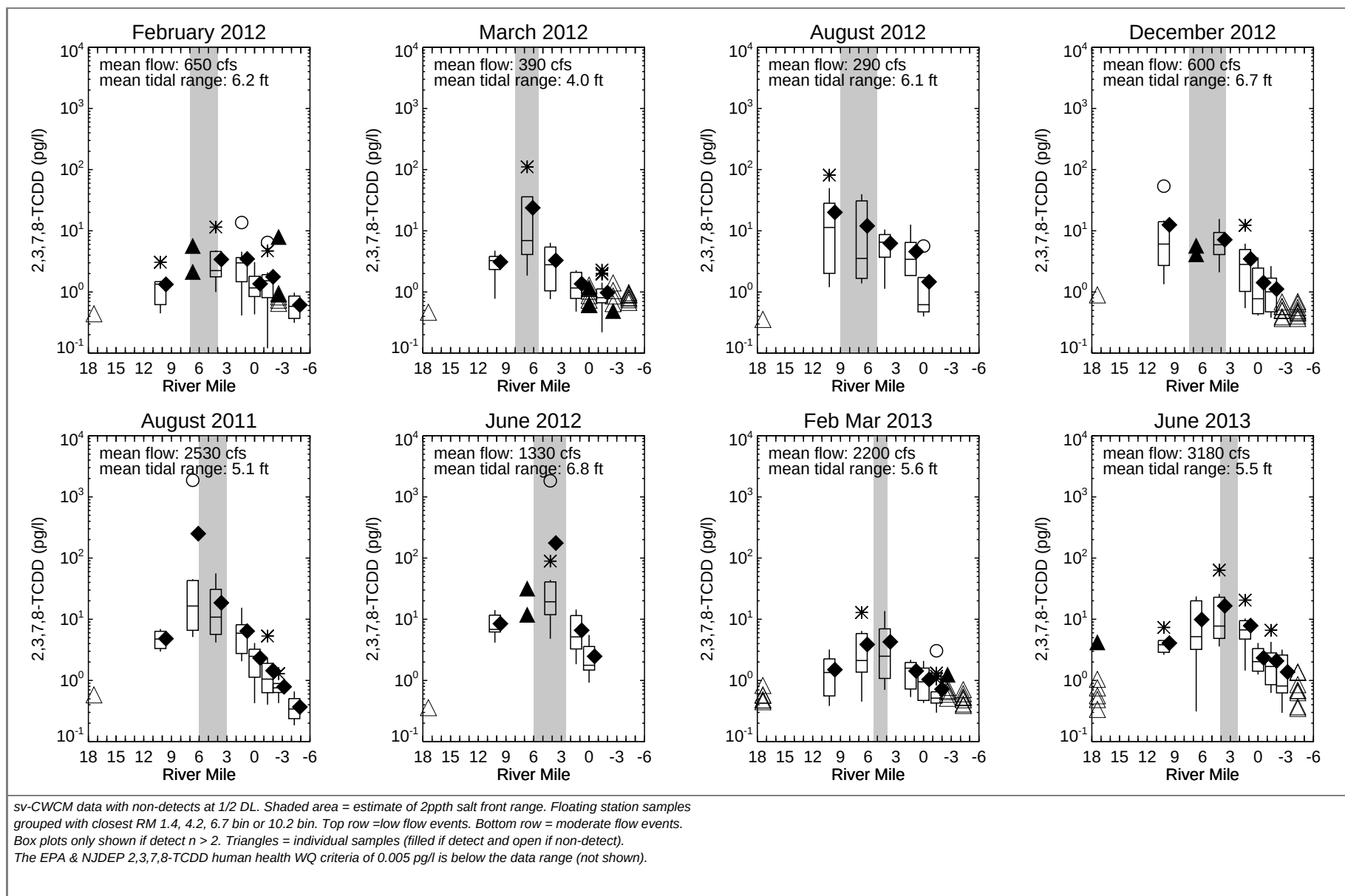


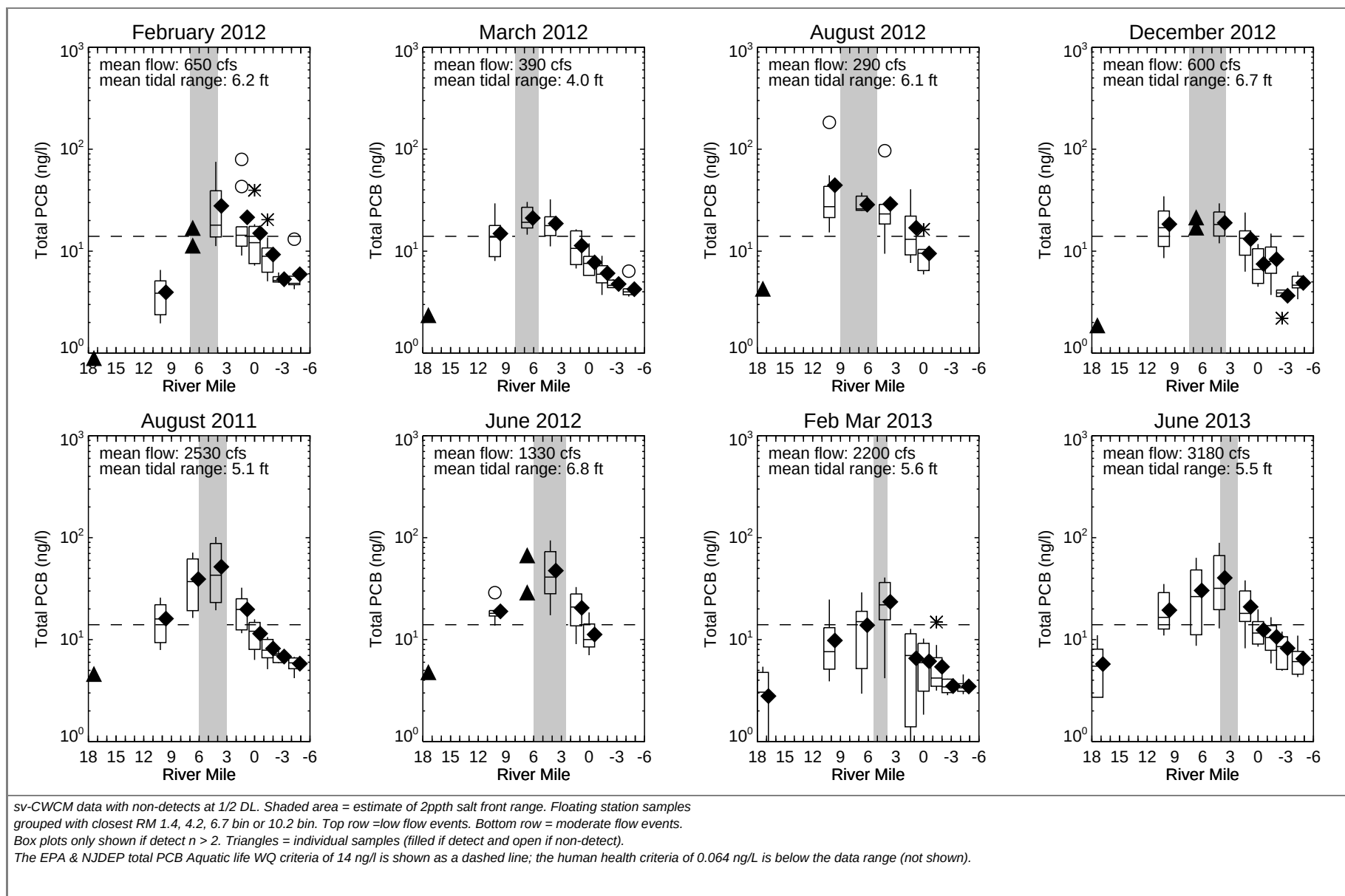
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Water Column Mercury Concentrations at LPR sv-CWCM Stations by Depth and Tidal Phase



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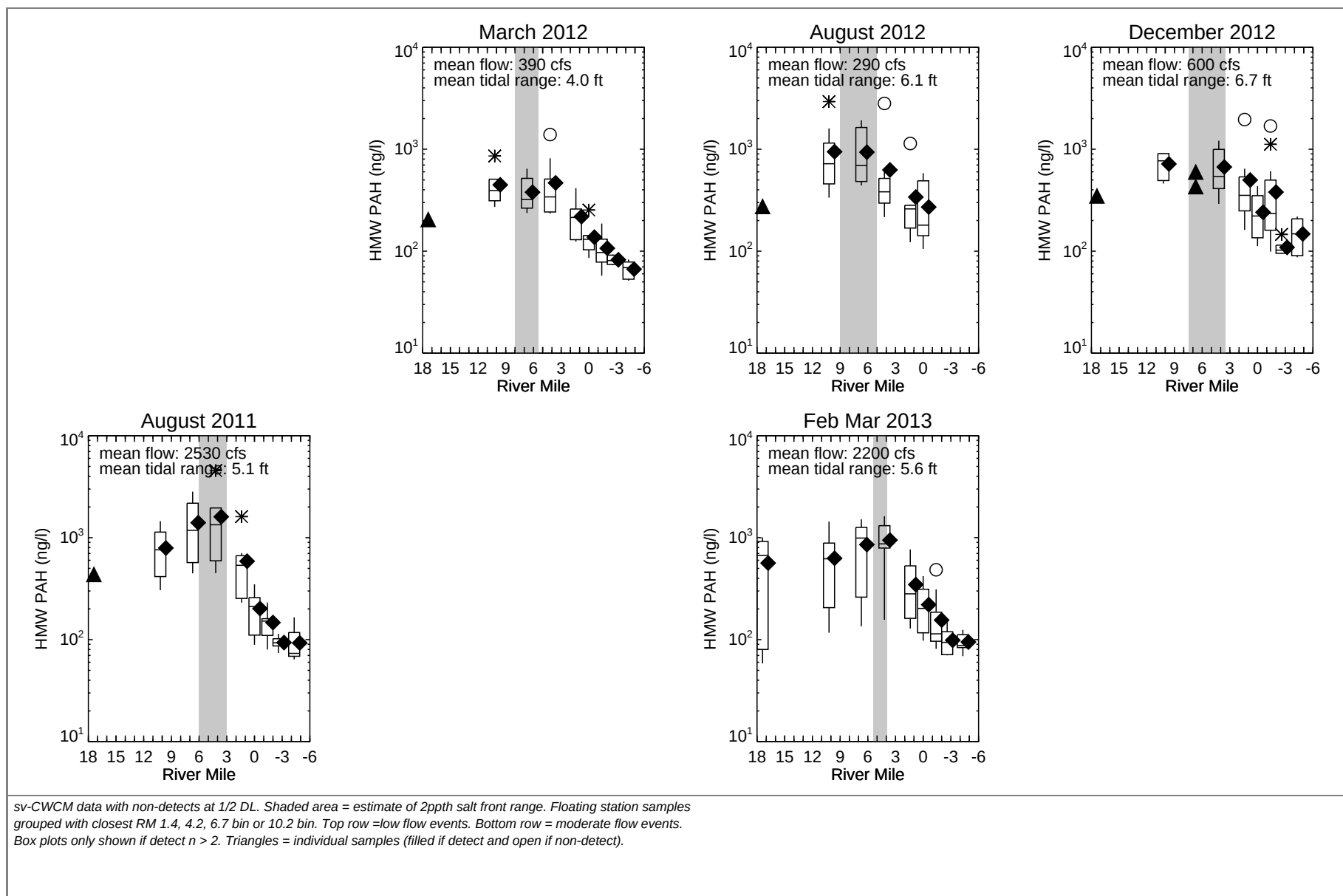
Figure 6-6a
2,3,7,8-TCDD Water Column Concentration vs. River Mile for sv-CWCM Events

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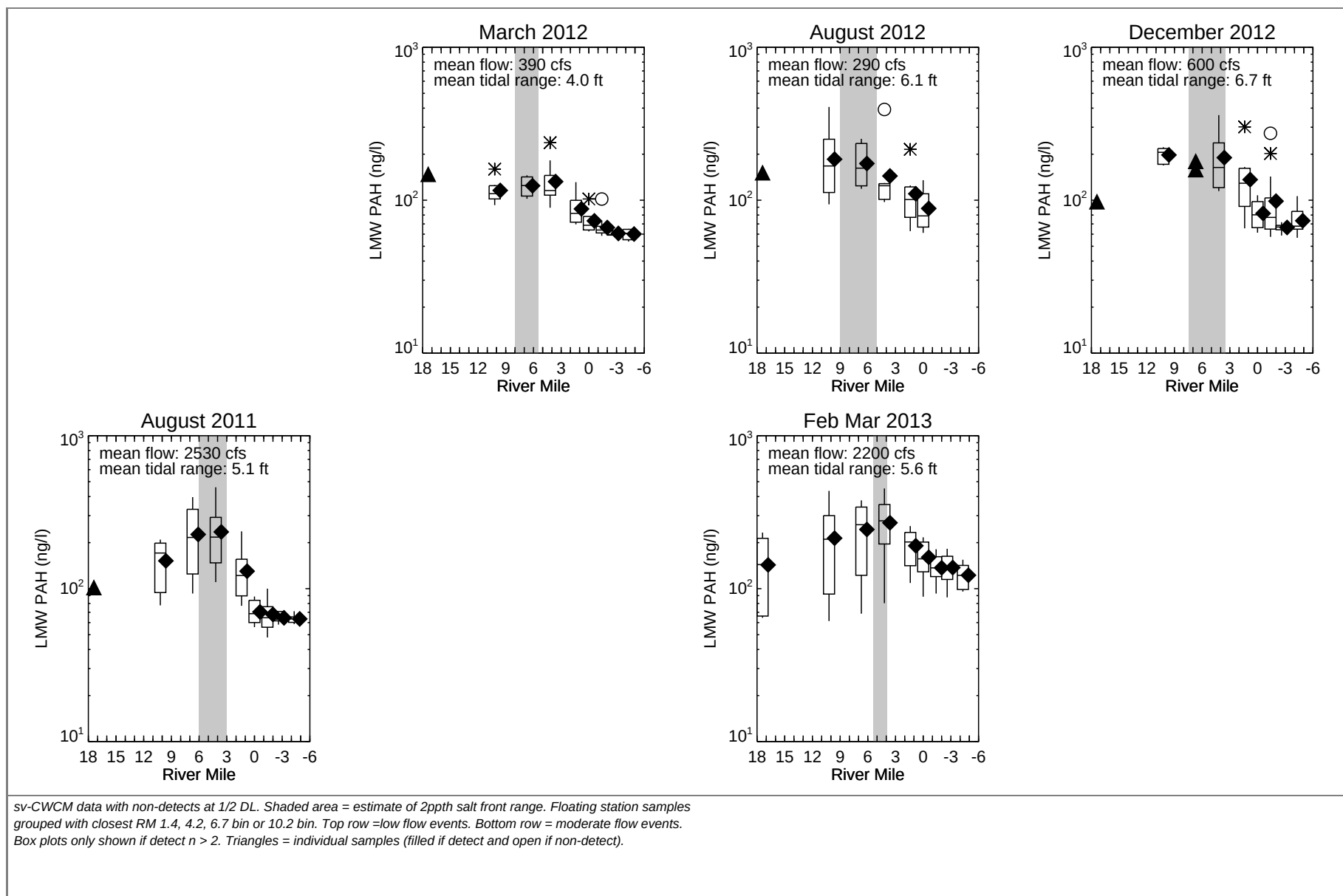
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Figure 6-6b
Total PCB Water Column Concentration vs. River Mile for sv-CWCM Events
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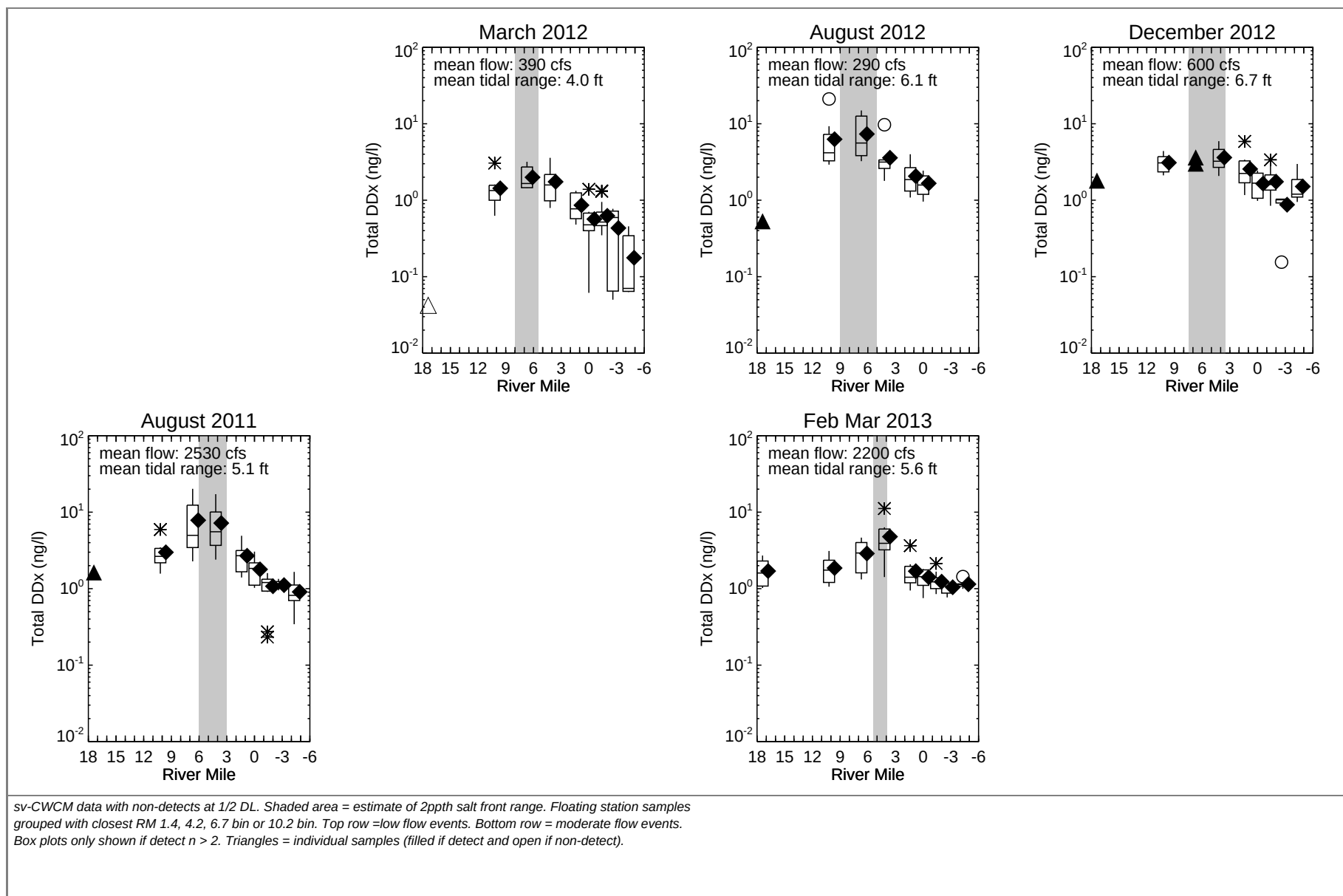
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Figure 6-6c
HMW PAH Water Column Concentration vs. River Mile for sv-CWCM Events
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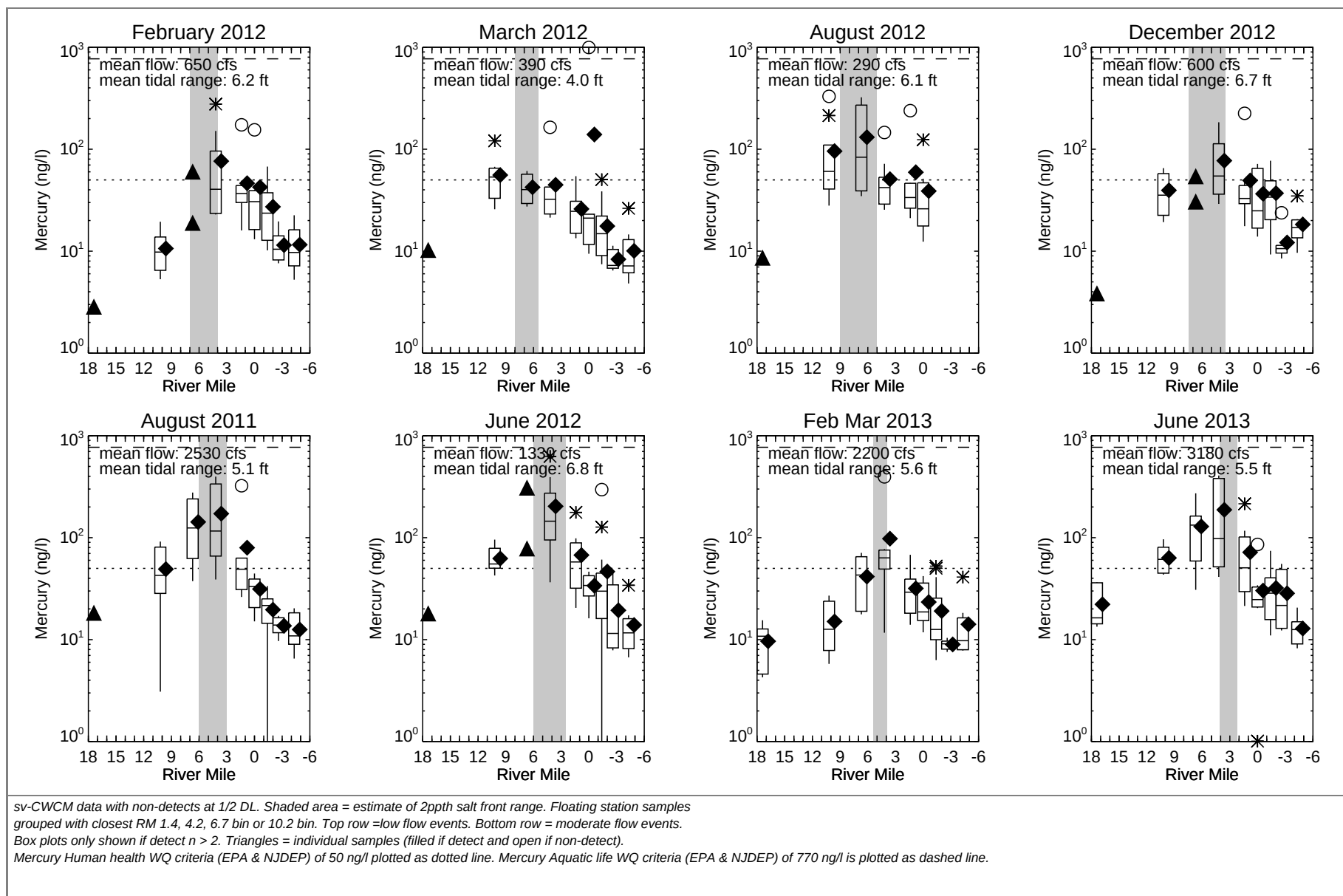
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Figure 6-6d
LMW PAH Water Column Concentration vs. River Mile for sv-CWCM Events
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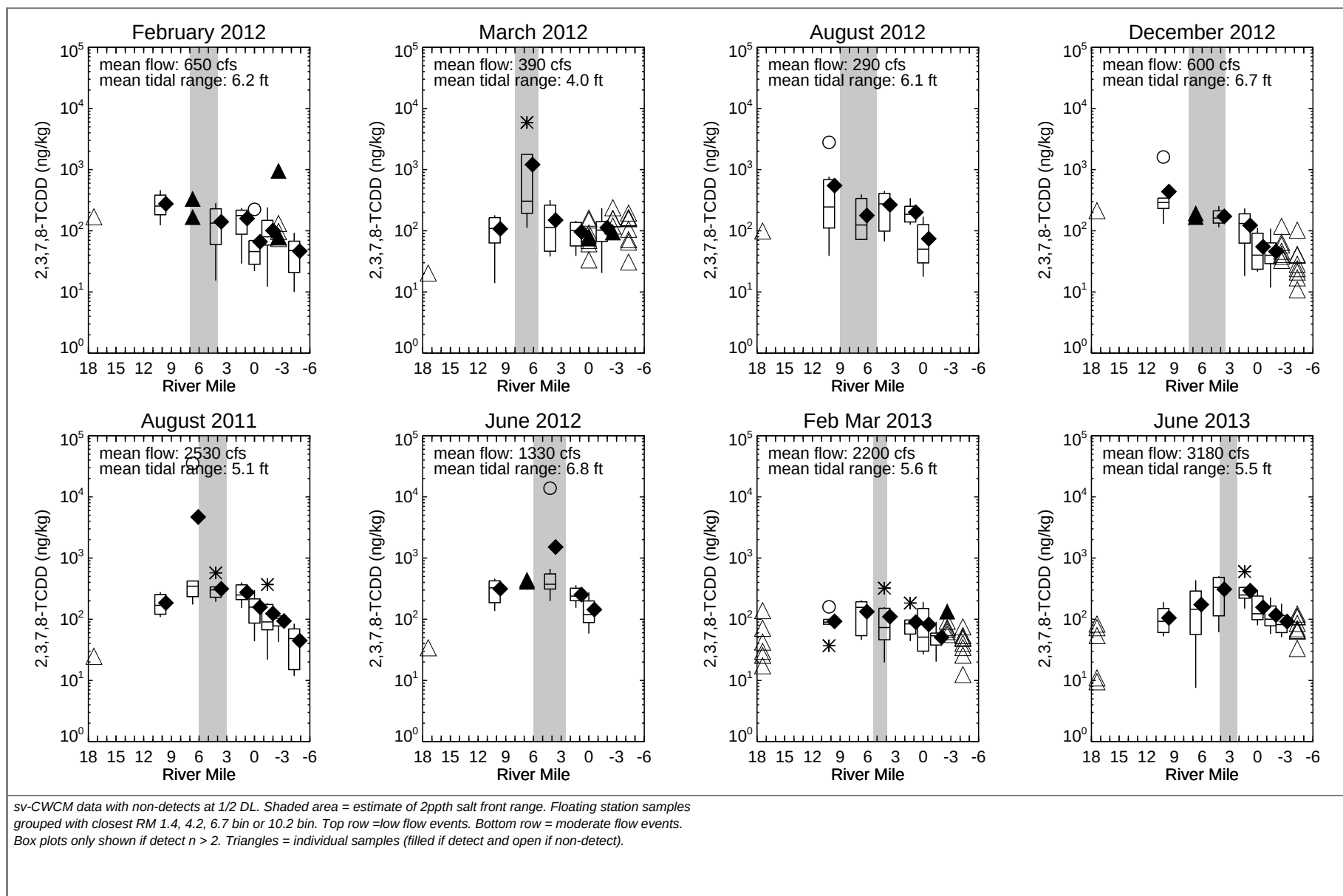
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Figure 6-6e
Total DDX Water Column Concentration vs. River Mile for sv-CWCM Events
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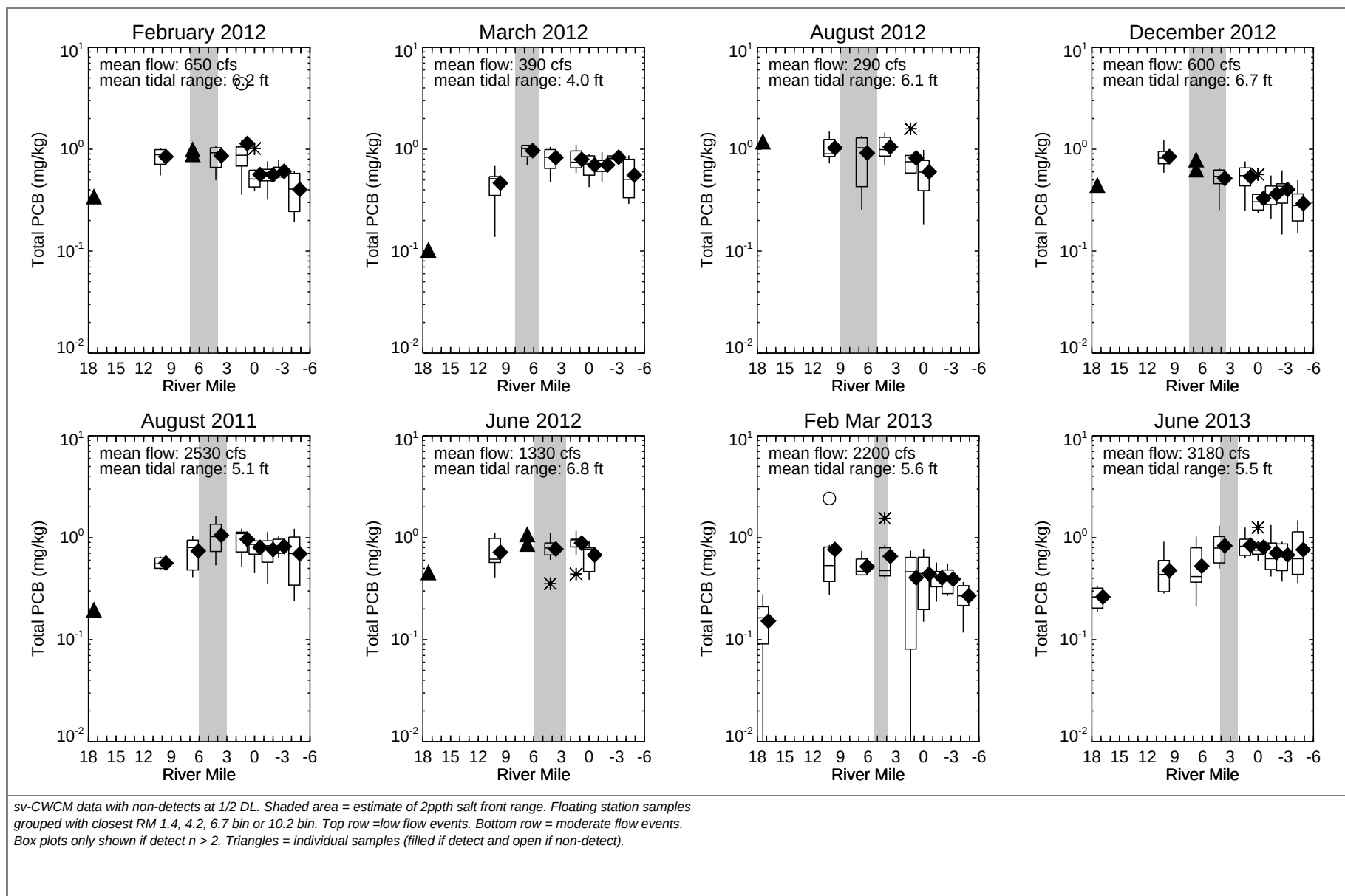
Figure 6-6f
Mercury Water Column Concentration vs. River Mile for sv-CWCM Events
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Figure 6-7a
Solids-Normalized 2,3,7,8-TCDD Water Column Concentration vs. River Mile for sv-CWCM Events

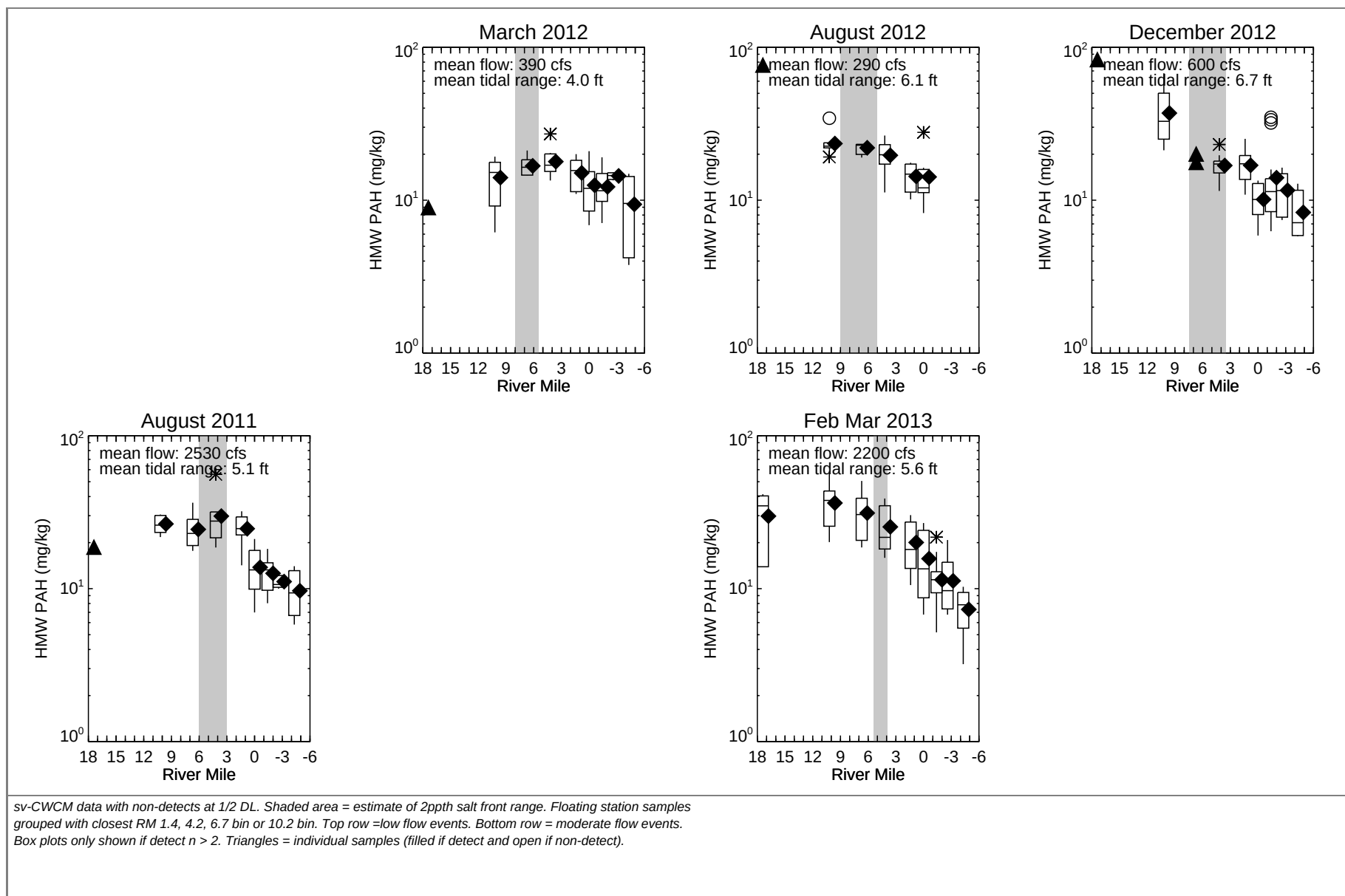
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Figure 6-7b
Solids-Normalized Total PCB Water Column Concentration vs. River Mile for sv-CWCM Events

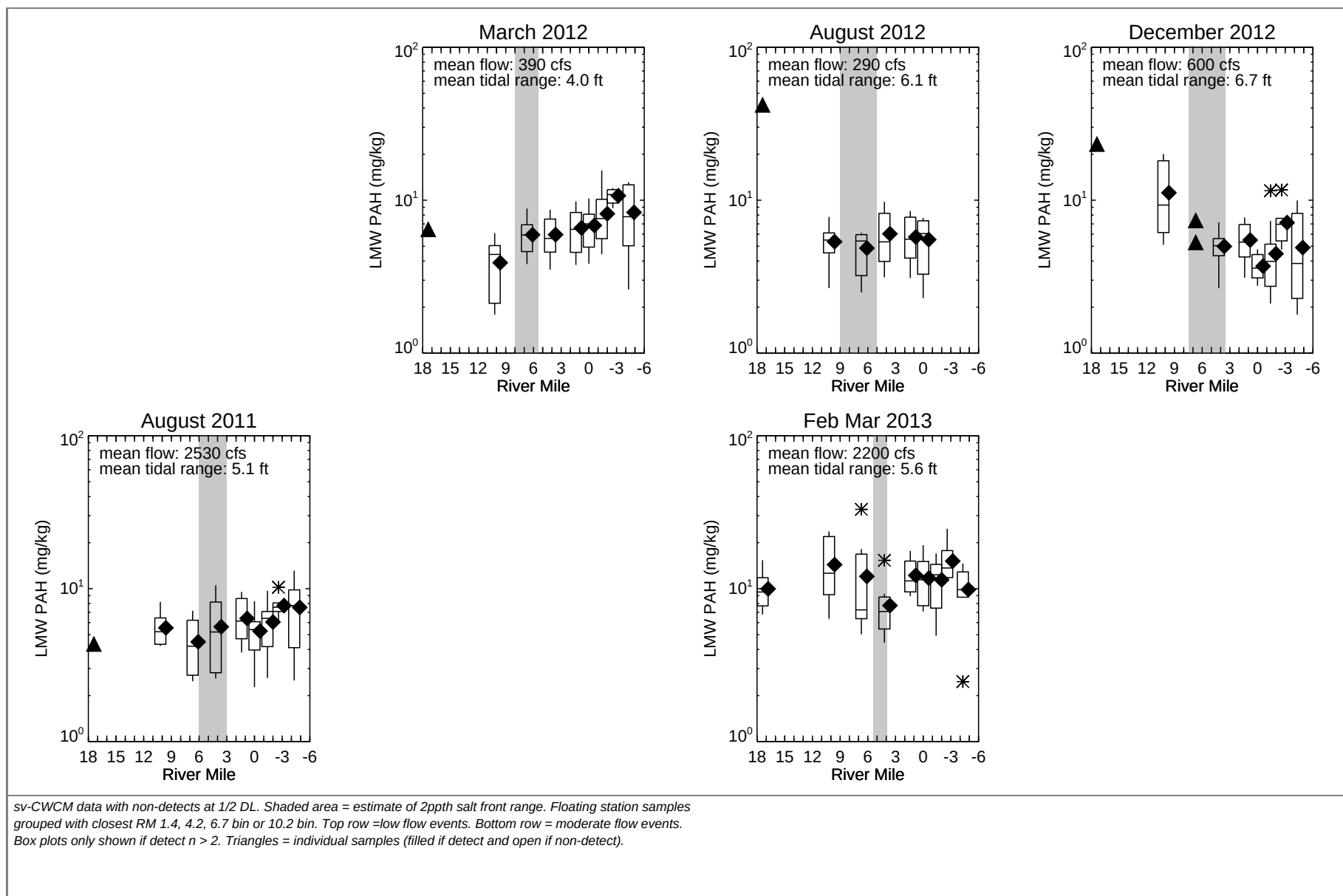
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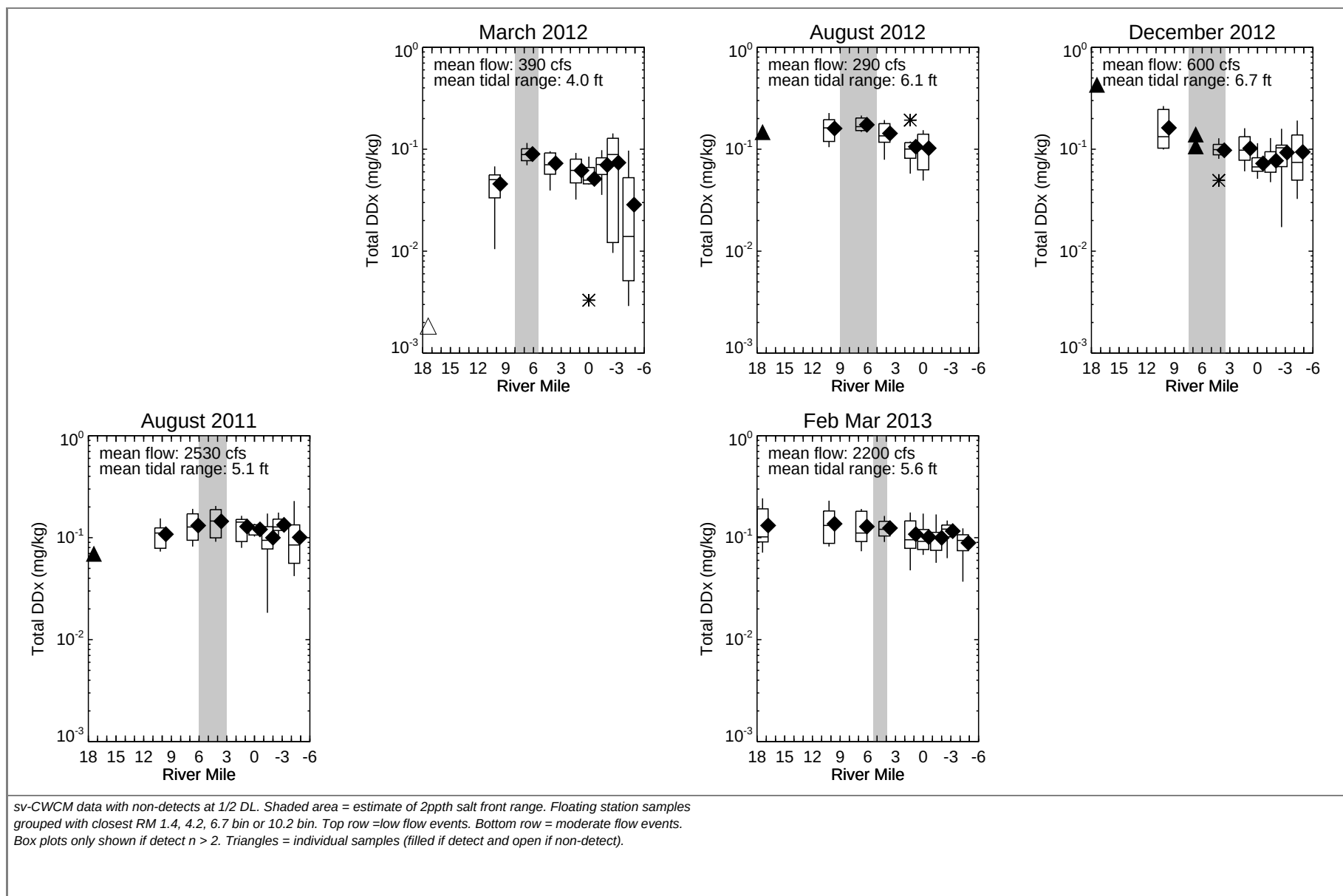
Figure 6-7c
Solids-Normalized HMW PAH Water Column Concentration vs. River Mile for sv-CWCM Events

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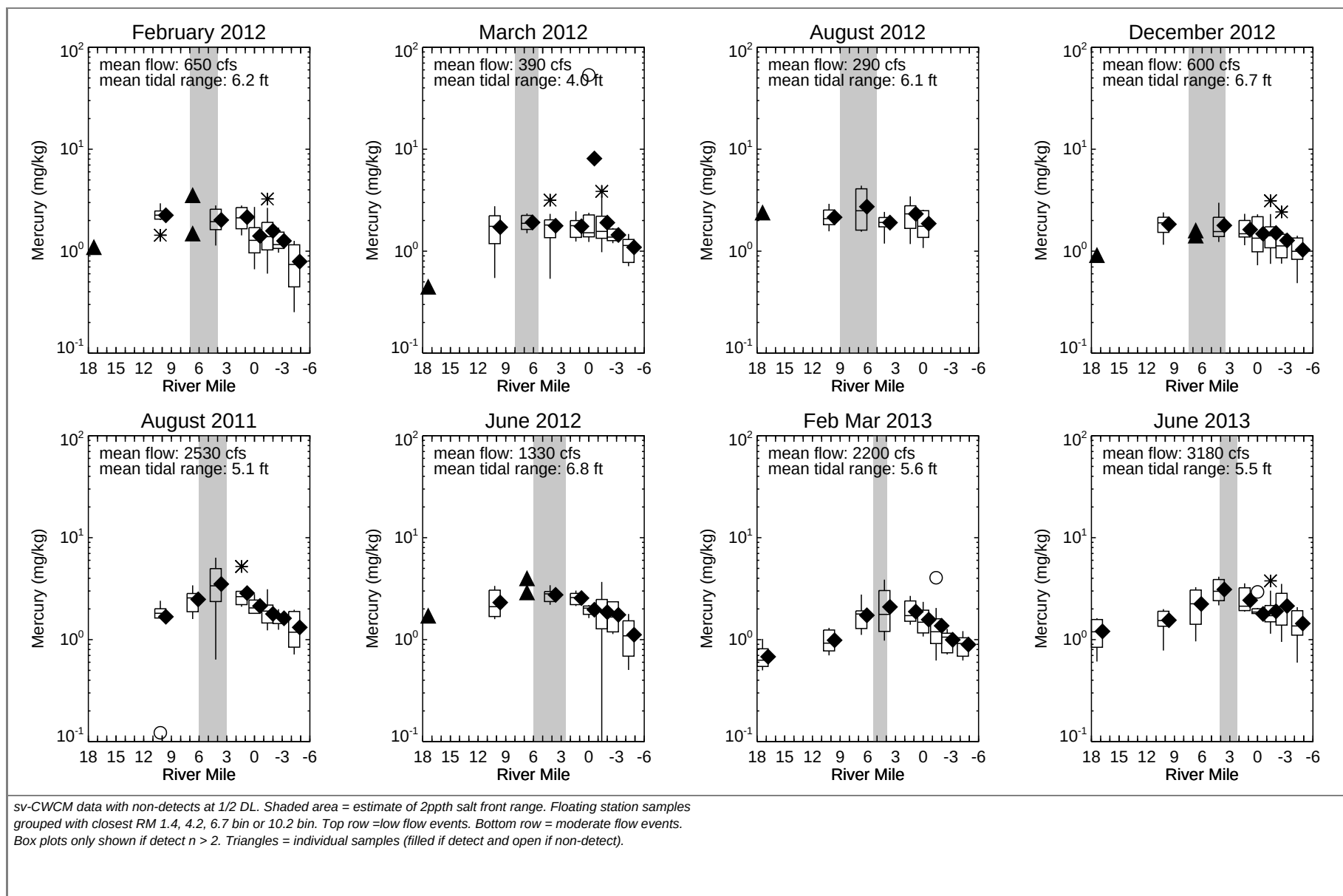
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Figure 6-7d
Solids-Normalized LMW PAH Water Column Concentration vs. River Mile for sv-CWCM Events
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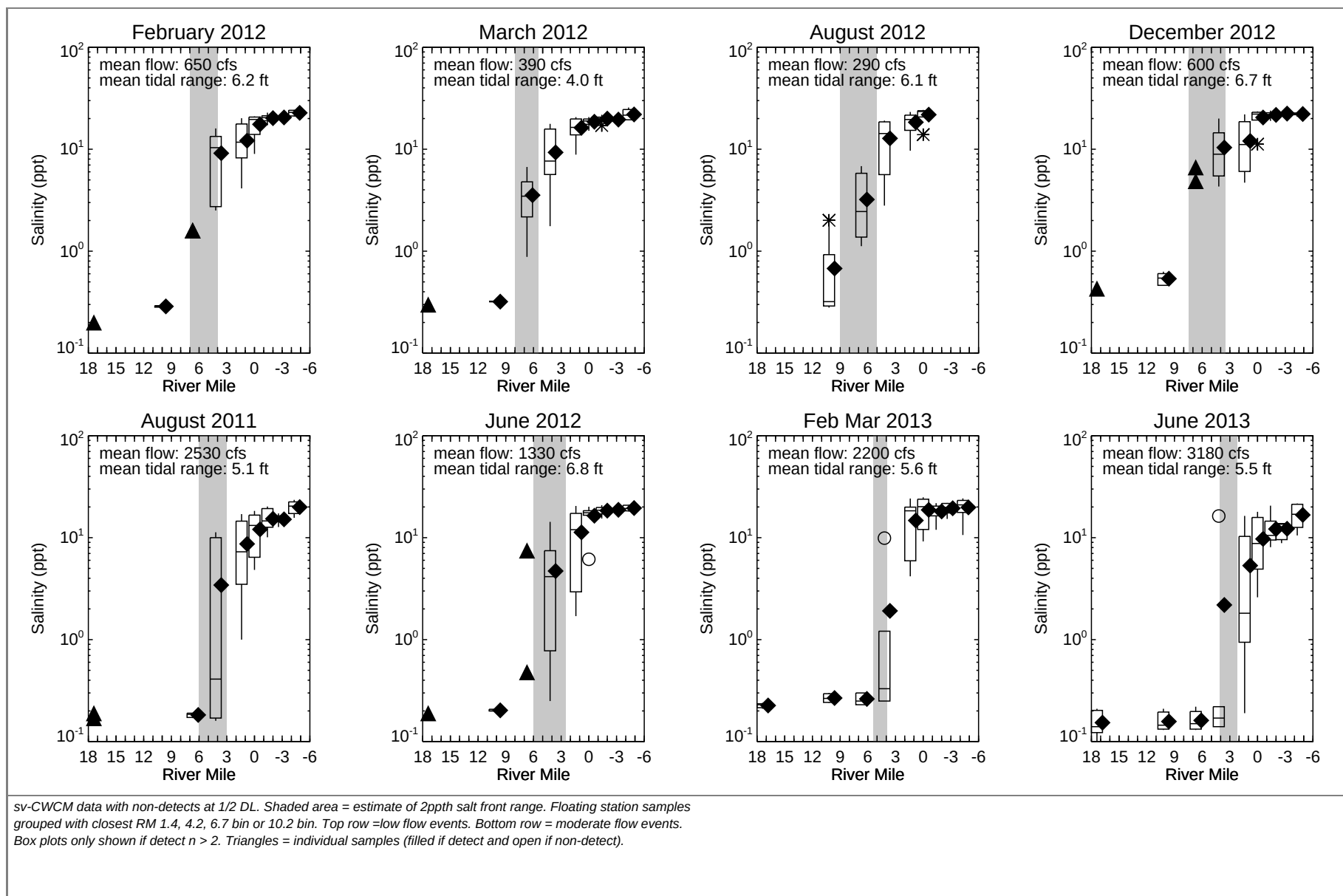
Figure 6-7e
Solids-Normalized Total DDX Water Column Concentration vs. River Mile for sv-CWCM Events
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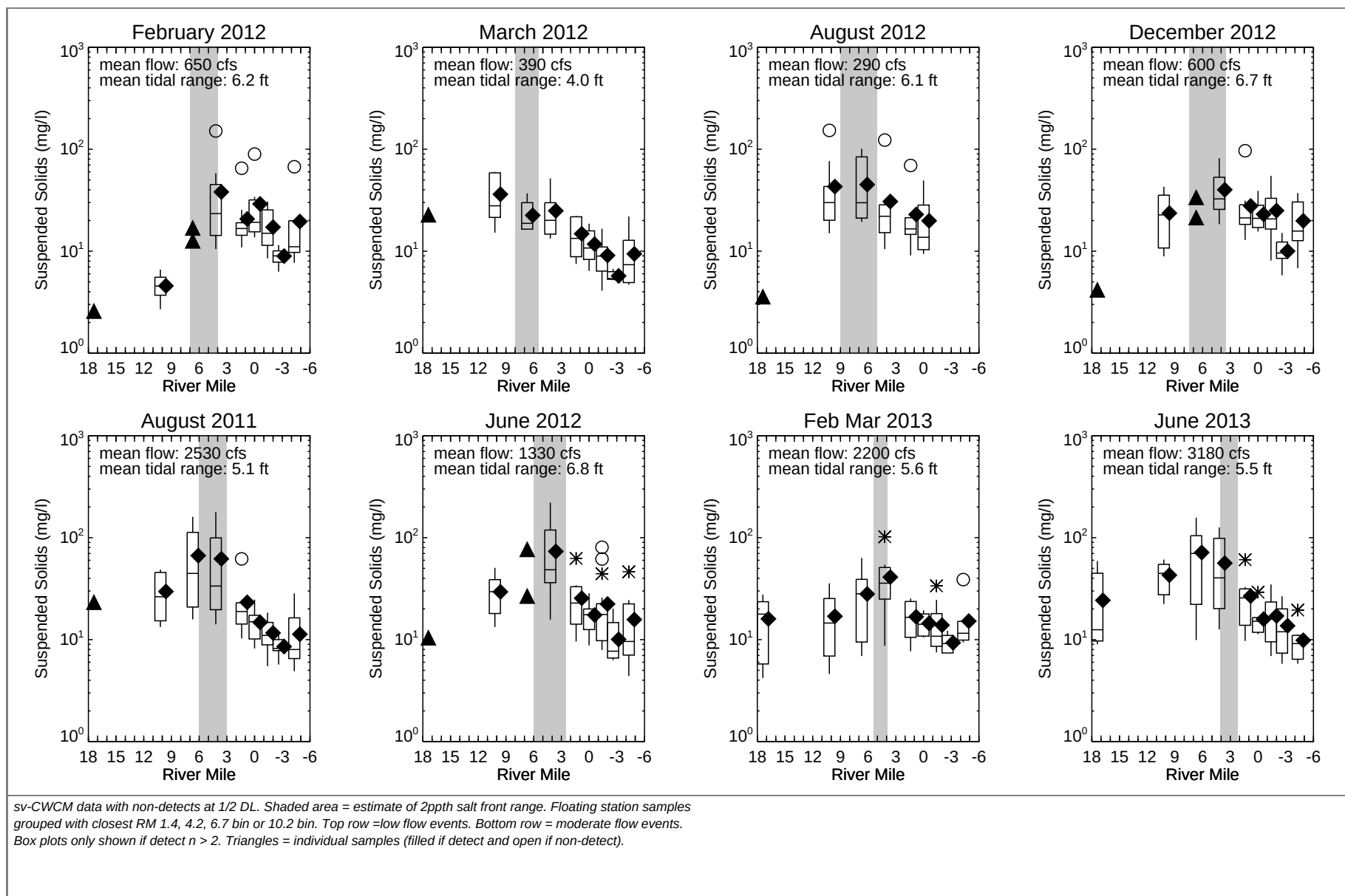
Figure 6-7f
Solids-Normalized Mercury Water Column Concentration vs. River Mile for sv-CWCM Events

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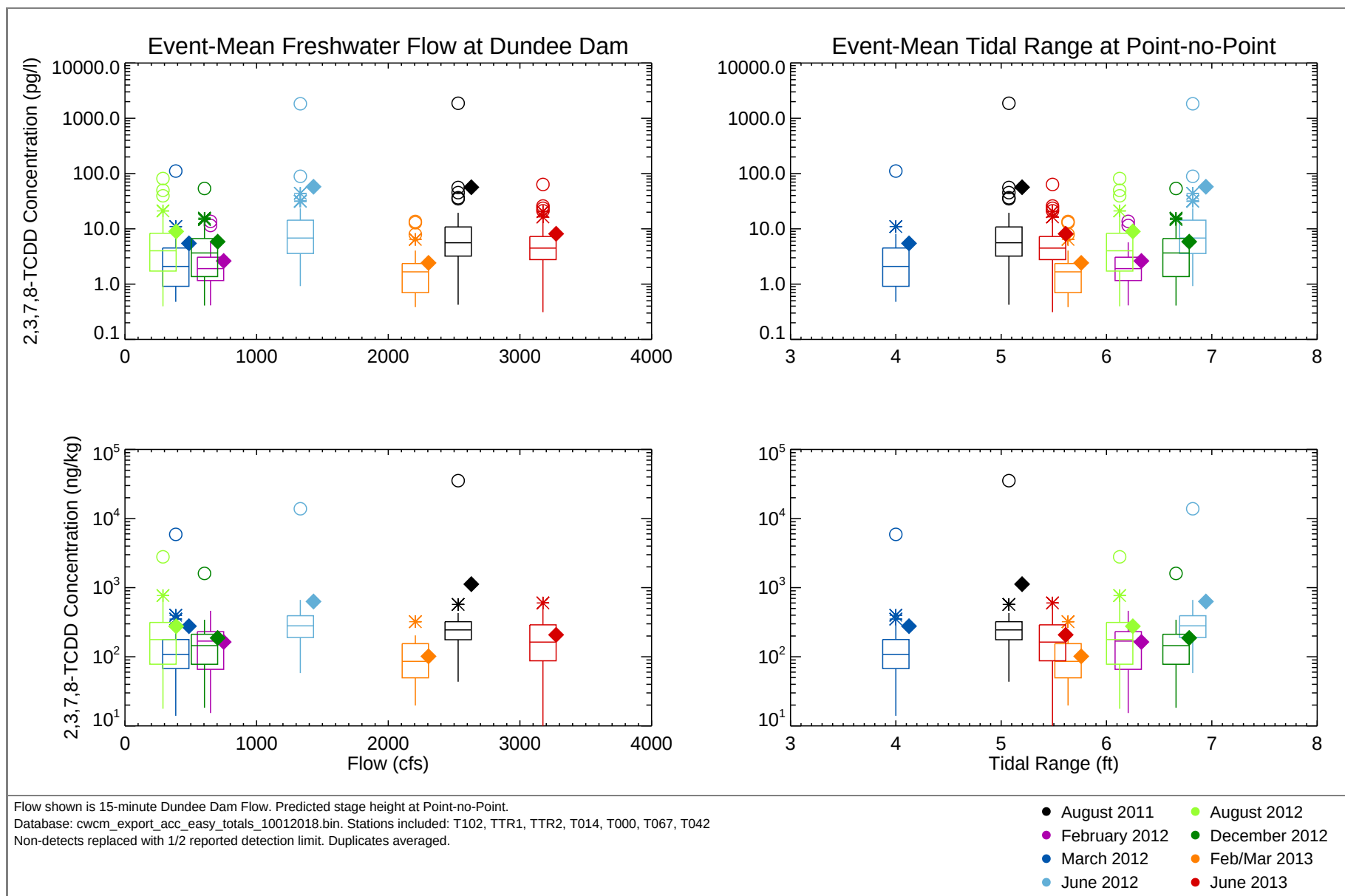
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Figure 6-8a
Salinity Water Column Concentration vs. River Mile for sv-CWCM Events
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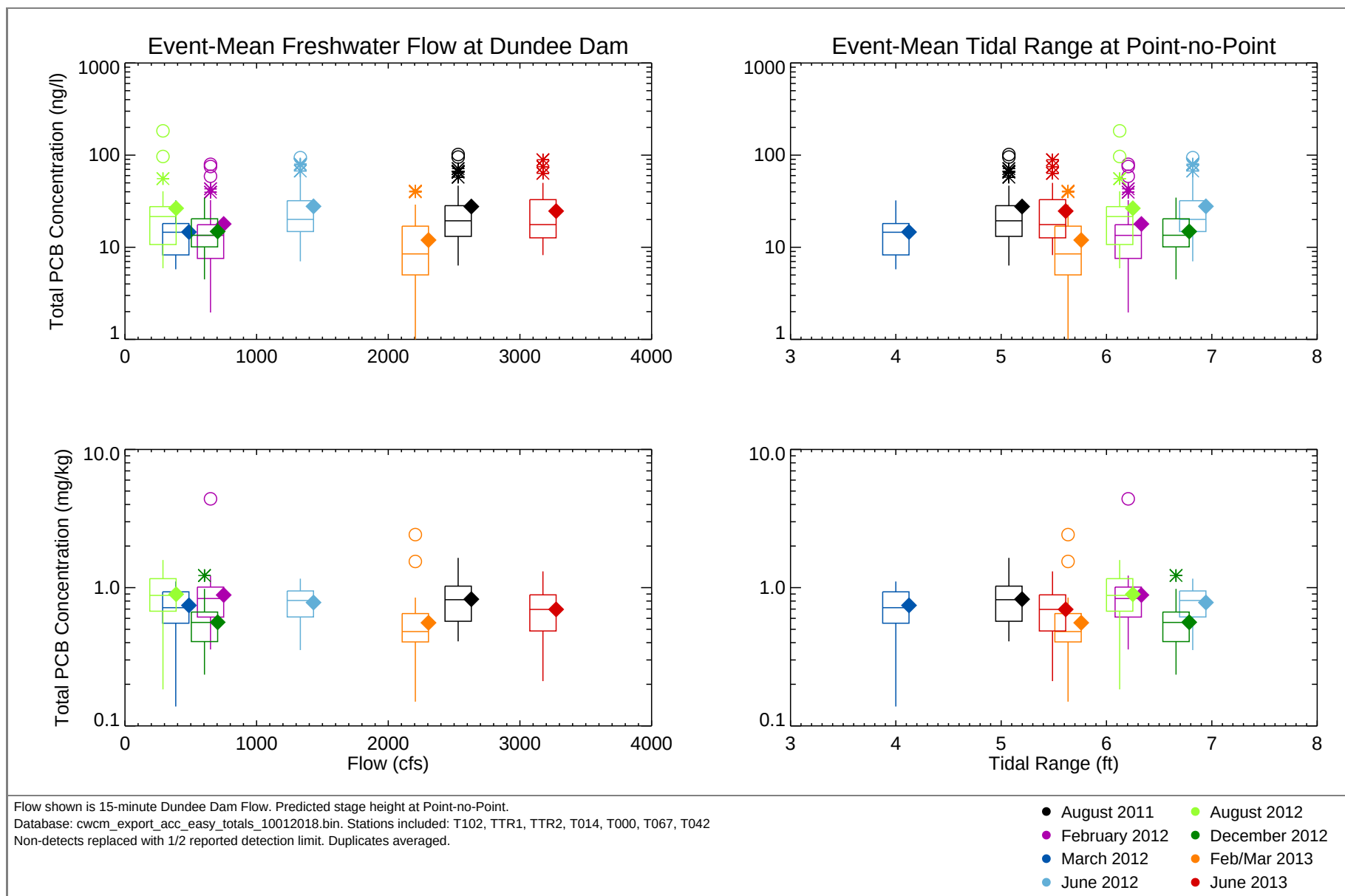
Figure 6-8b
Suspended Solids Concentration vs. River Mile for sv-CWCM events
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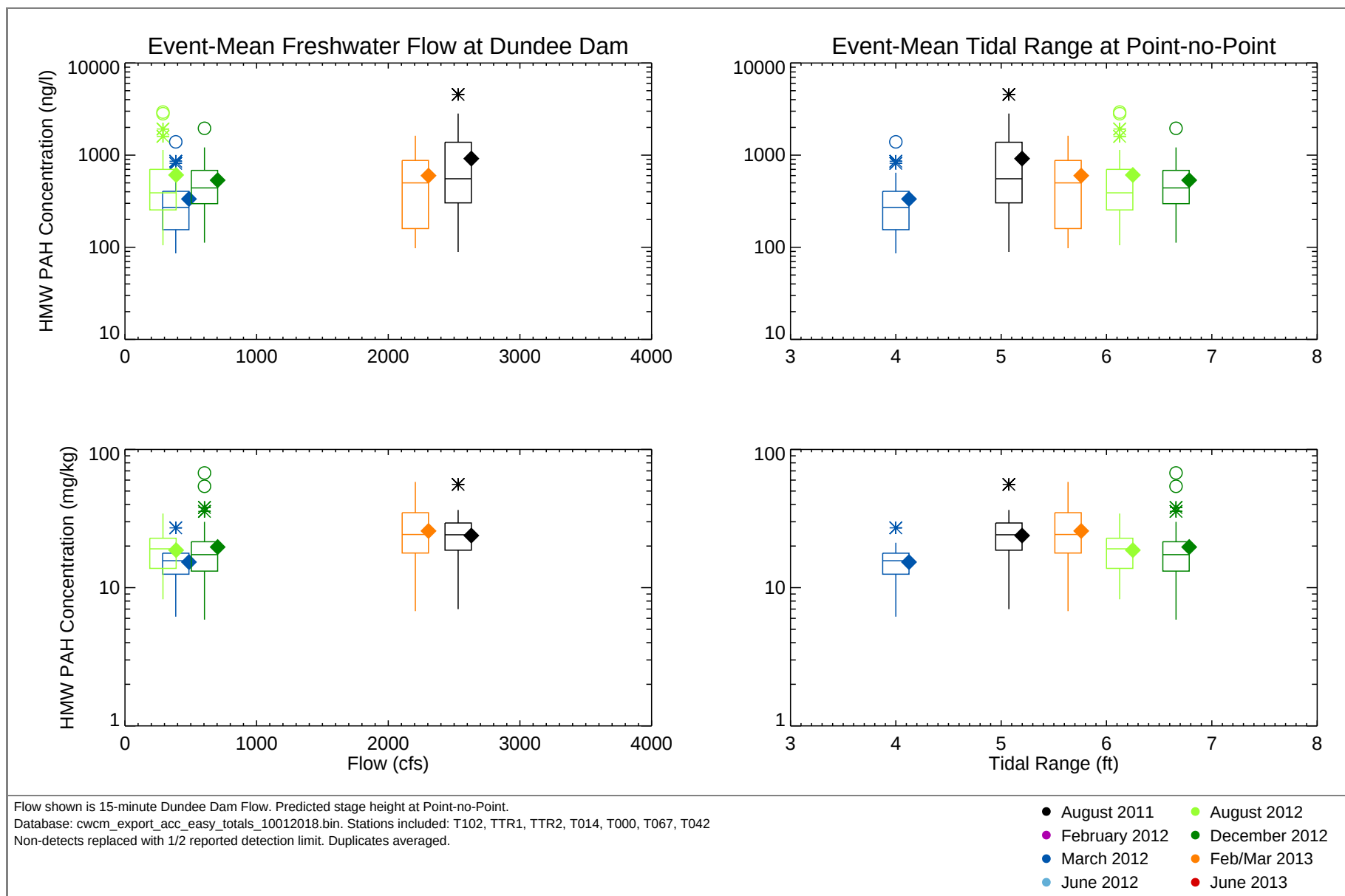
Figure 6-9a
2,3,7,8-TCDD Concentrations at LPR sv-CWCM Stations vs Flow and Tidal Range

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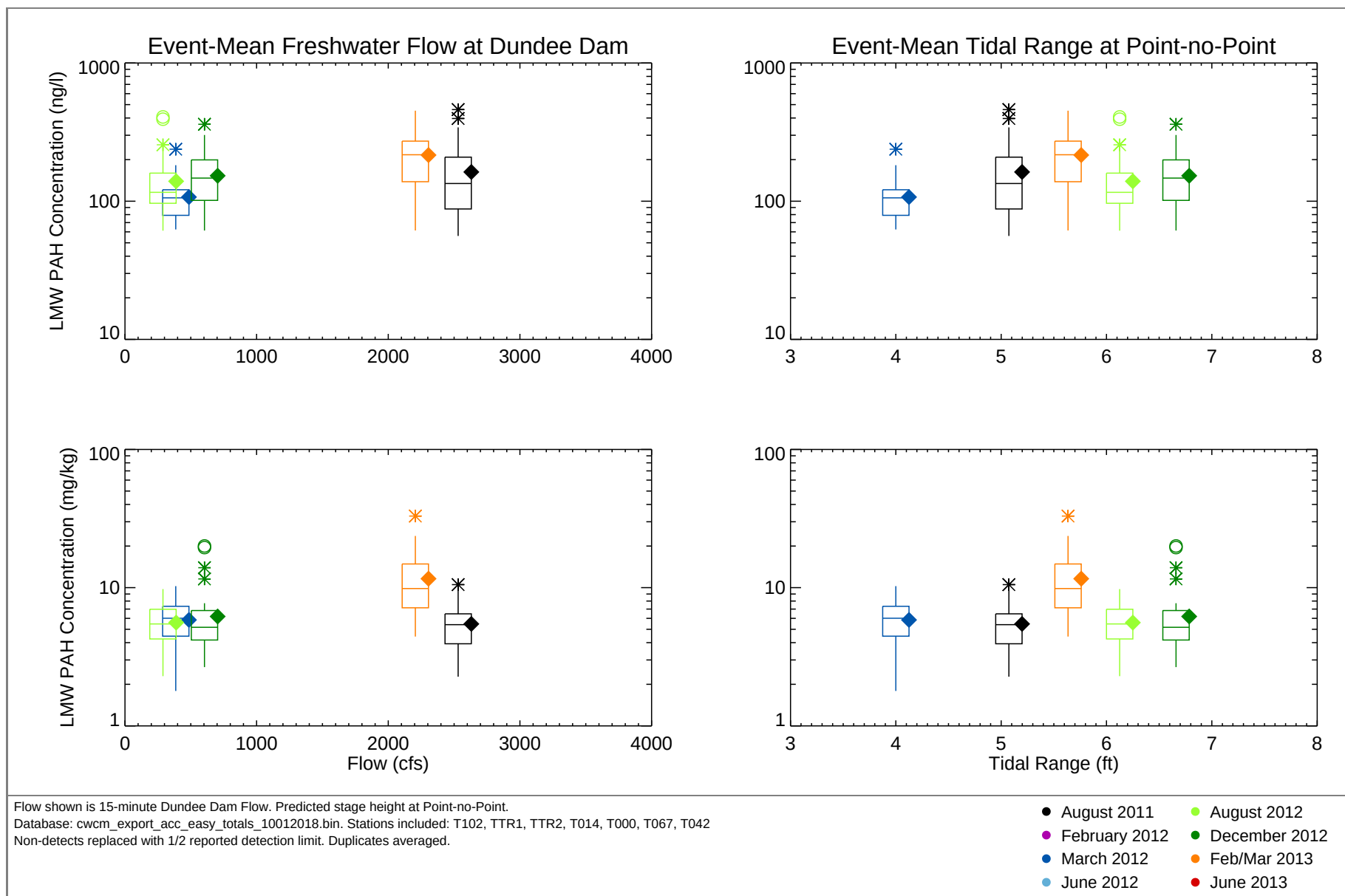
Figure 6-9b
Total PCB Concentrations at LPR sv-CWCM Stations vs Flow and Tidal Range



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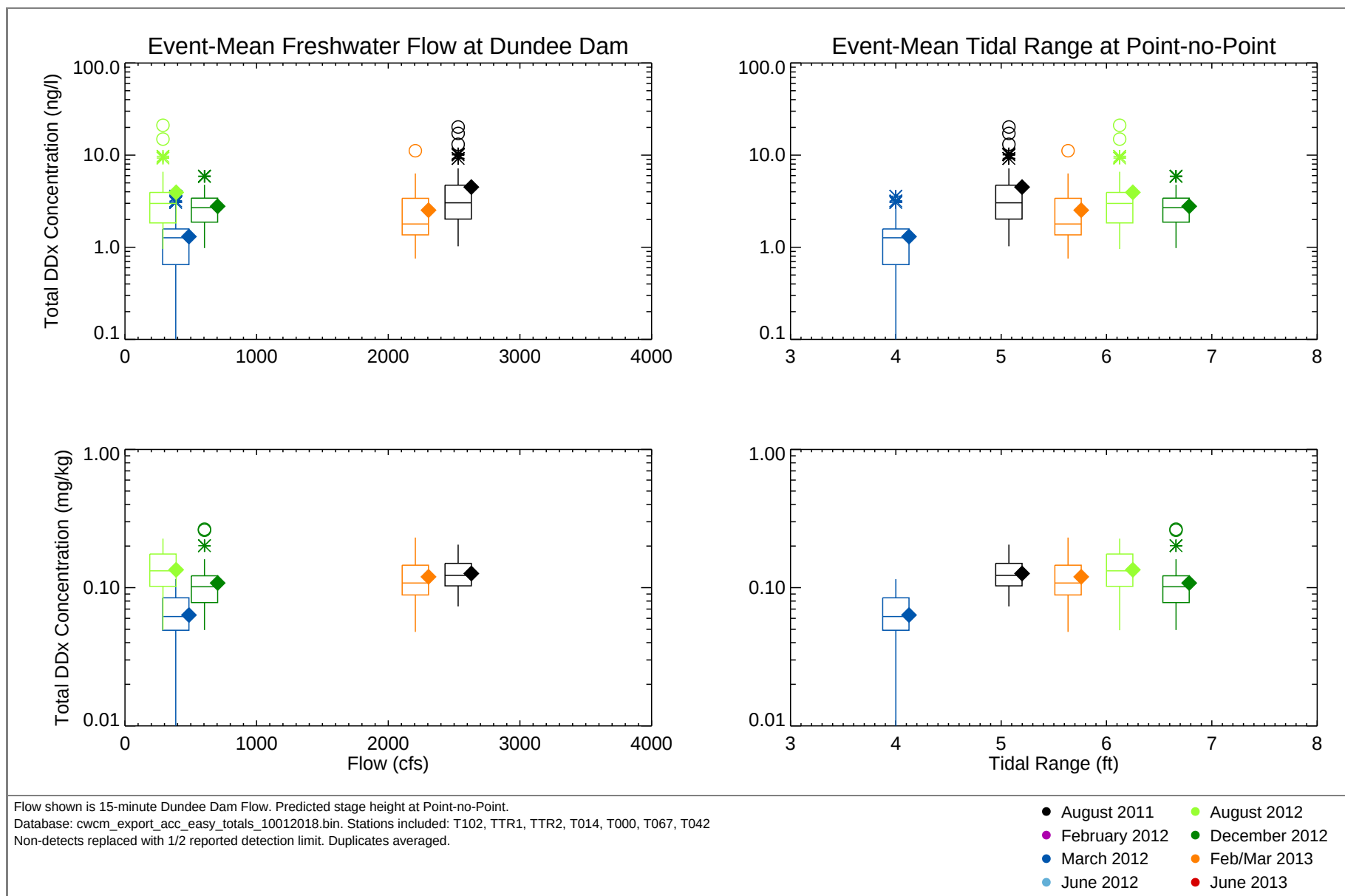
Figure 6-9c
HMW PAH Concentrations at LPR sv-CWCM Stations vs Flow and Tidal Range

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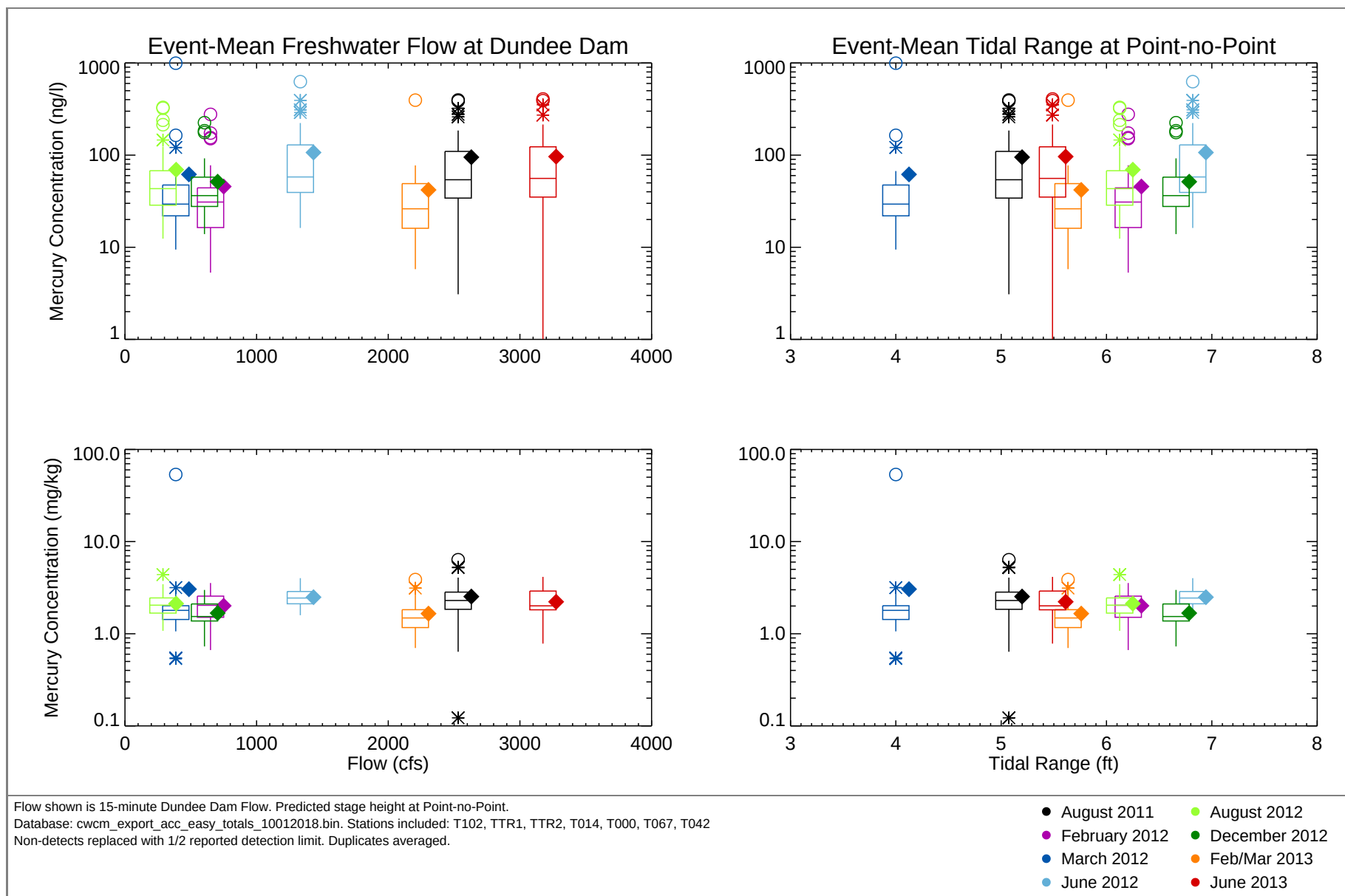
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Figure 6-9d
LMW PAH Concentrations at LPR sv-CWCM Stations vs Flow and Tidal Range



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Figure 6-9e
Total DDx Concentrations at LPR sv-CWCM Stations vs Flow and Tidal Range
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Figure 6-9f
Mercury Concentrations at LPR sv-CWCM Stations vs Flow and Tidal Range

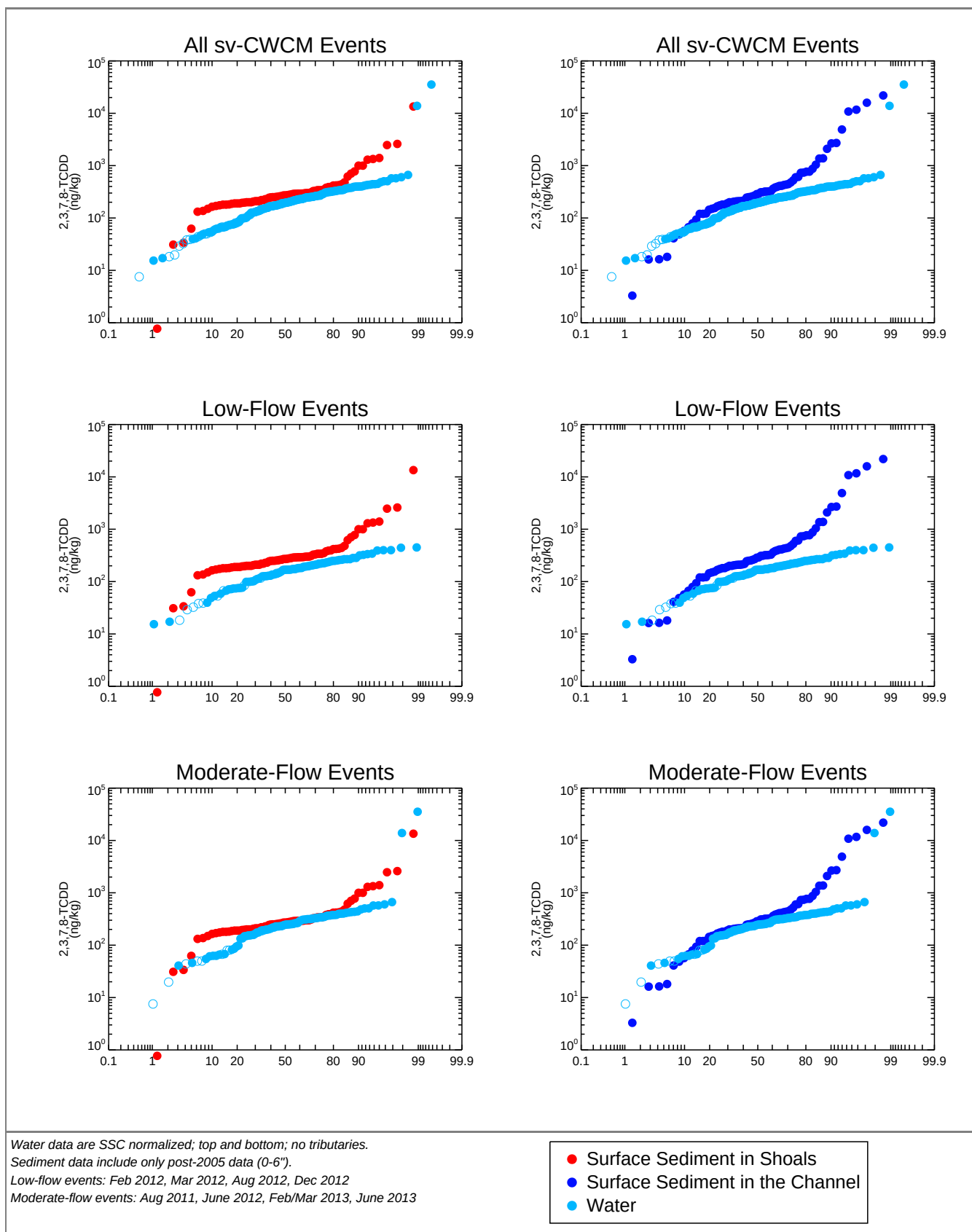
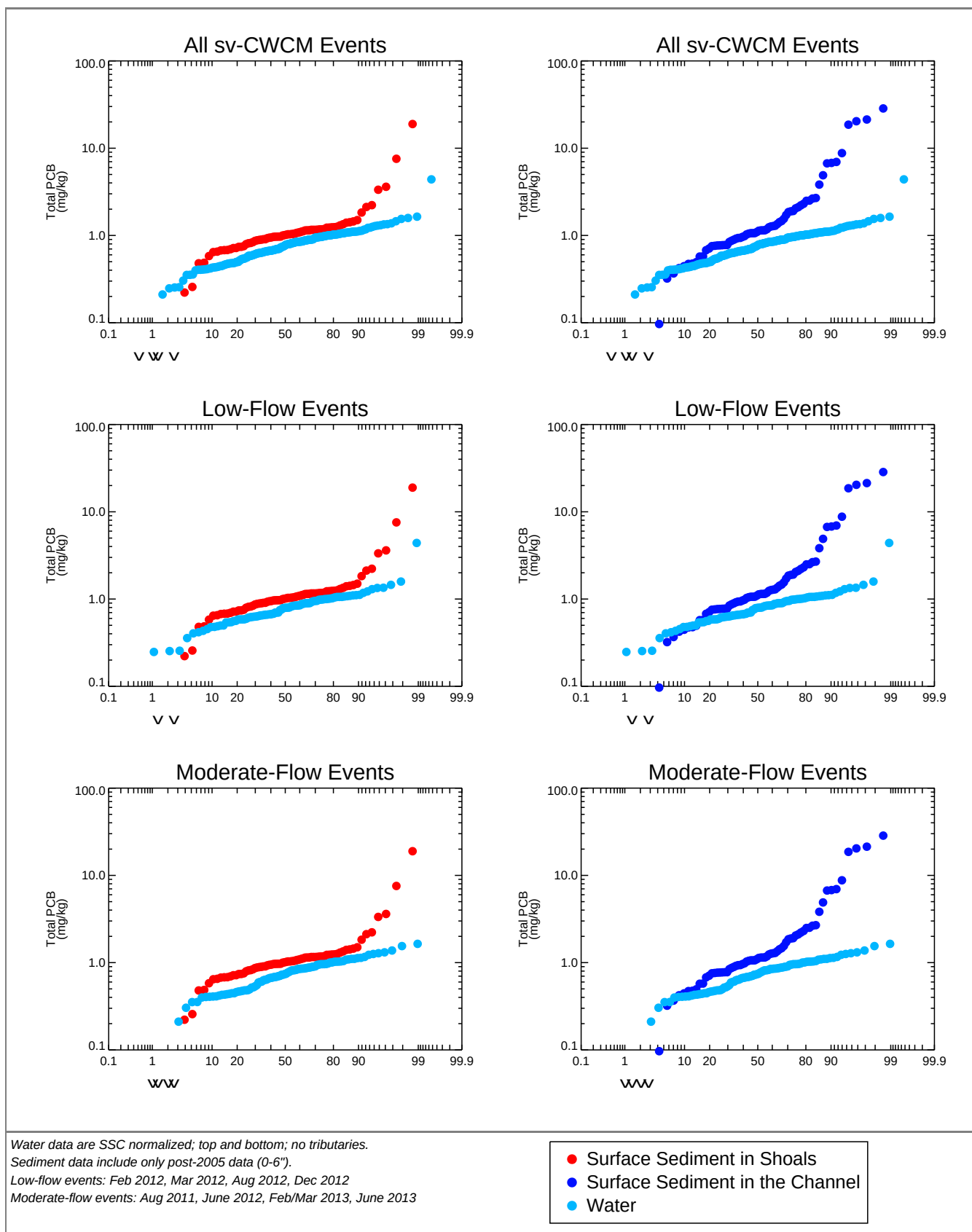


Figure 6-10a

Comparison of 2,3,7,8-TCDD Water Column and Sediment Bed Concentrations in RM 1 - 7

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Figure 6-10b
Comparison of Total PCB Water Column and Sediment Bed Concentrations in RM 1 - 7

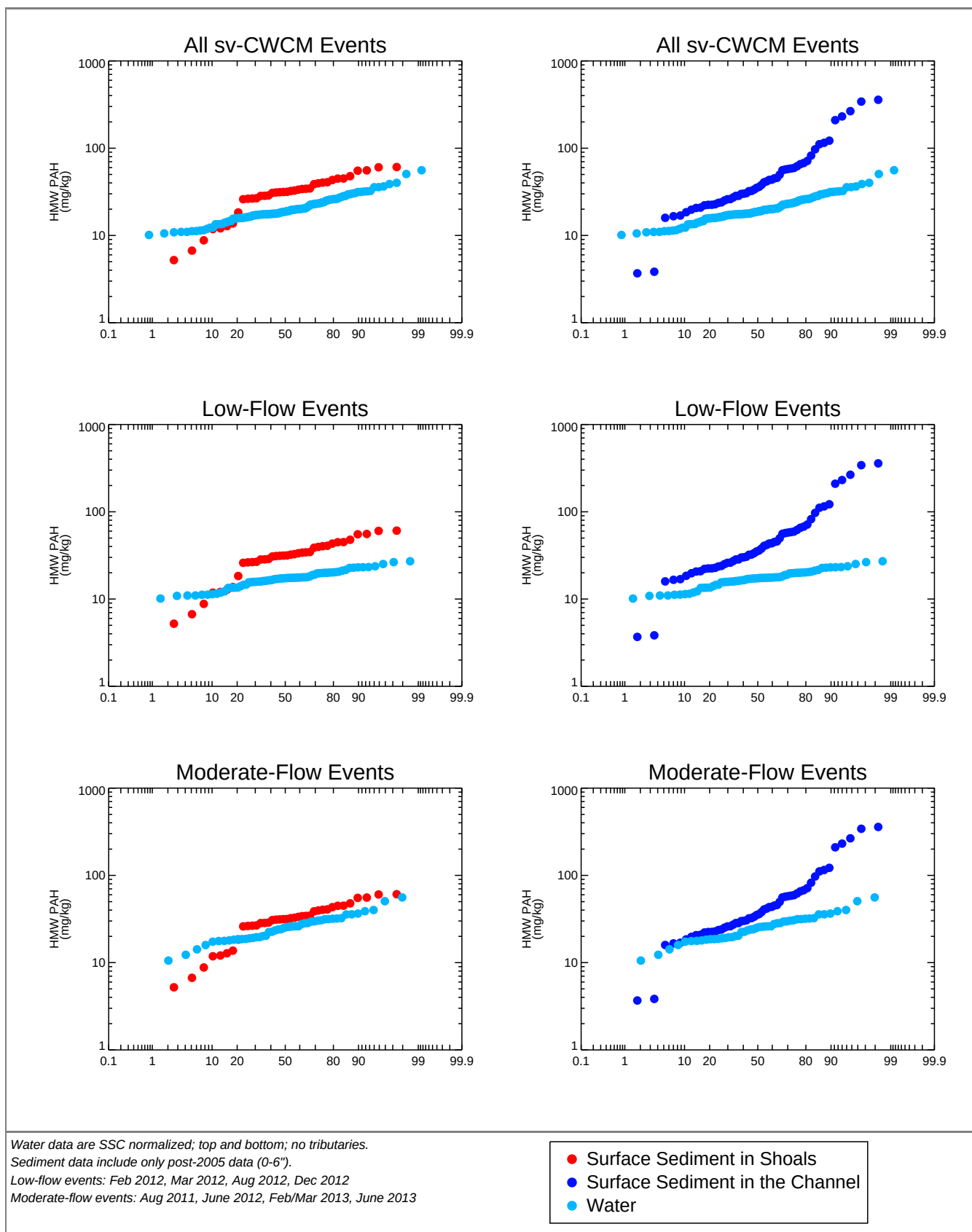
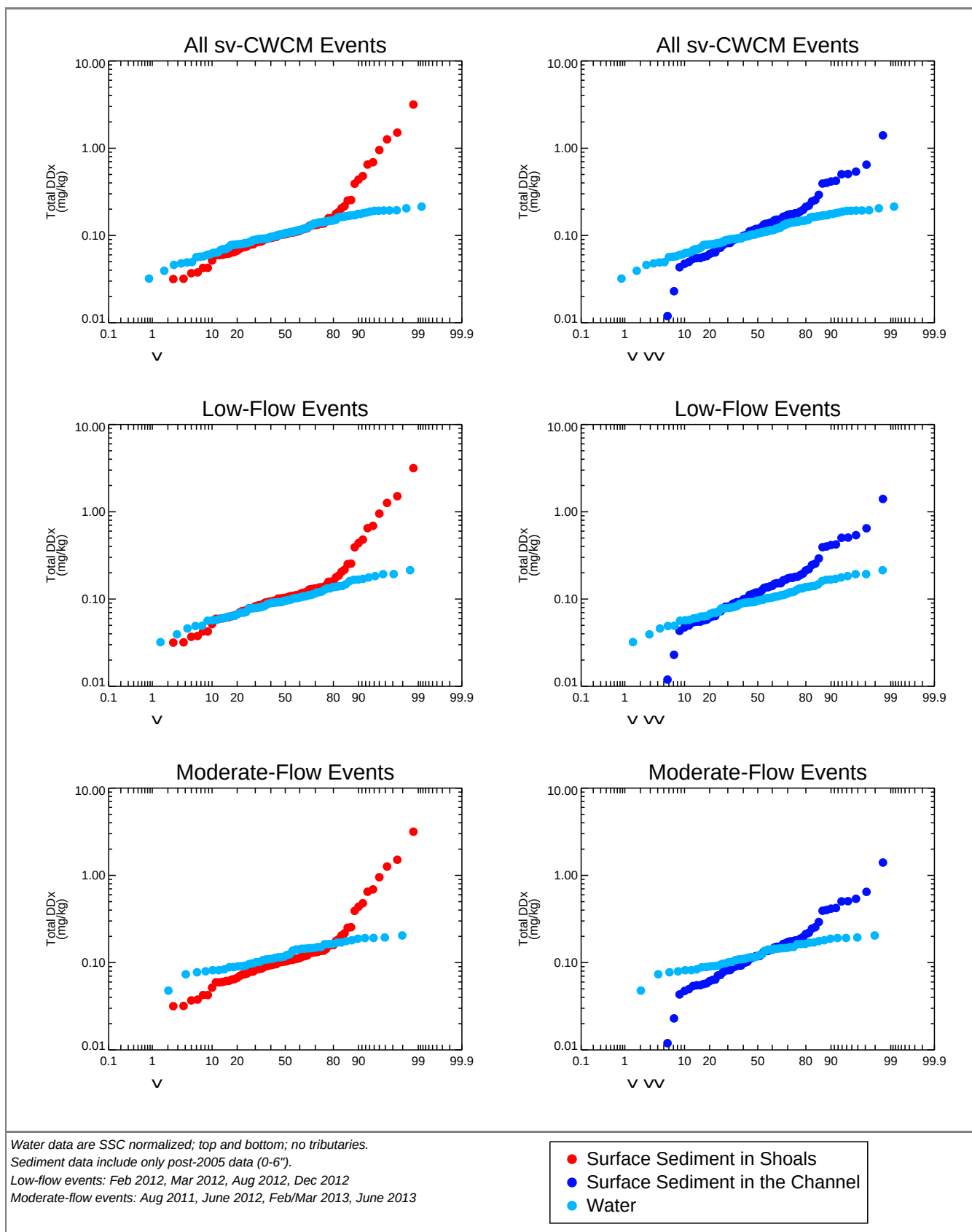


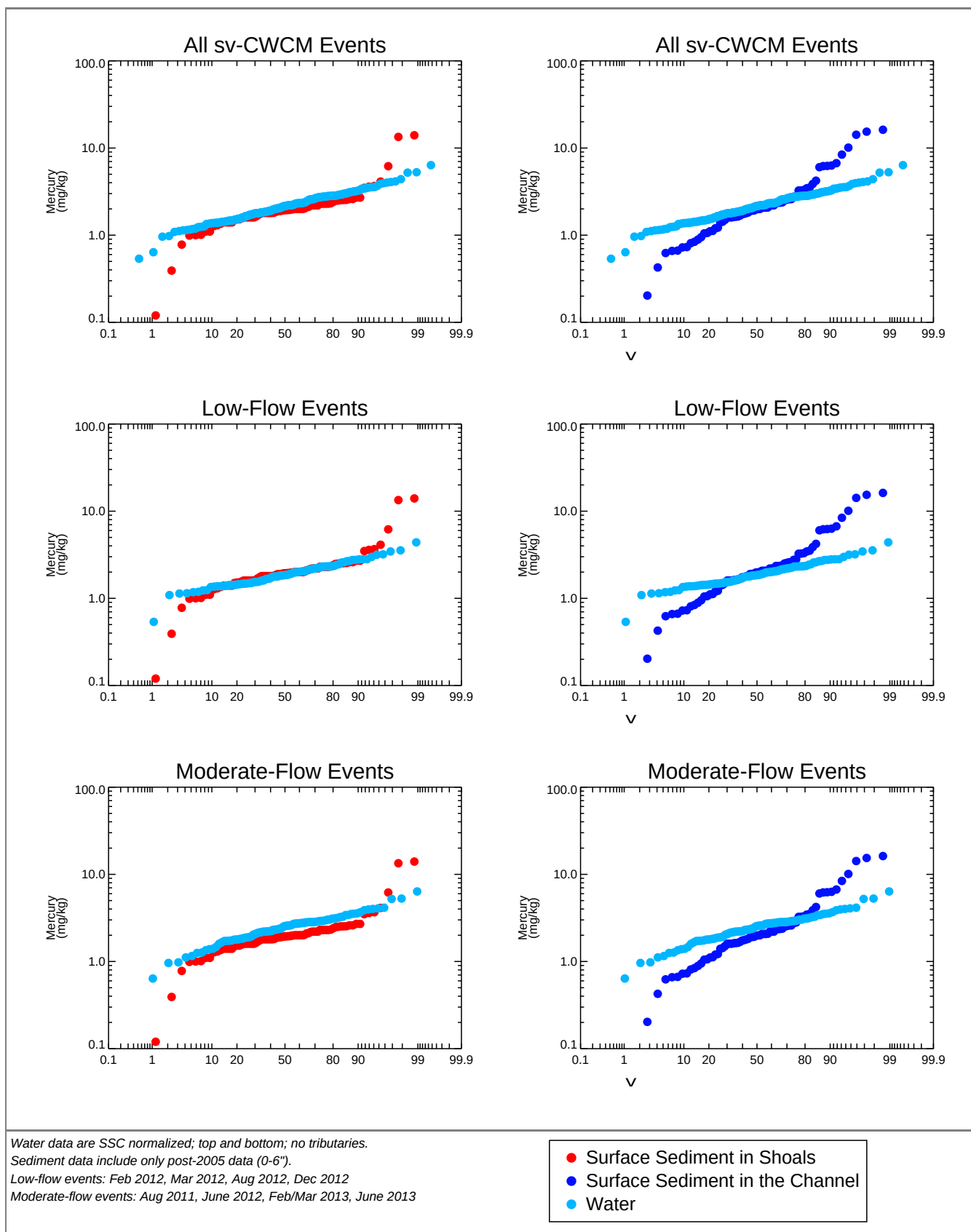
Figure 6-10c

Comparison of HMW PAH Water Column and Sediment Bed Concentrations in RM 1 - 7



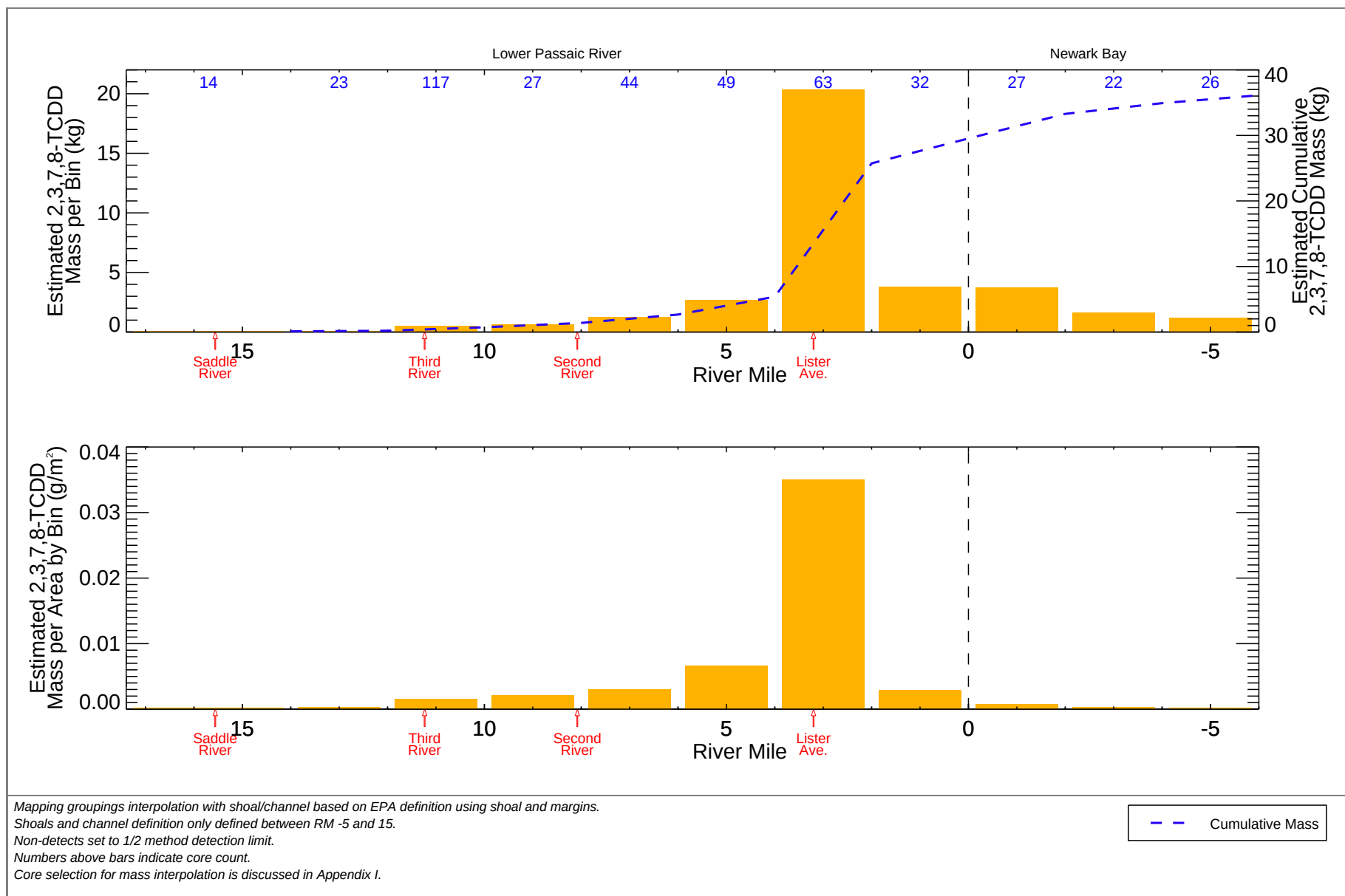
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 File Path: \\Boston1\jobs\Passaic_CPG\DOCUMENTS\2019\RI_Report\source\sv5\sed_dist_colored_wc_dist_plot_v2.pro

Figure 6-10e
Comparison of Total DDX Water Column and Sediment Bed Concentrations in RM 1 - 7



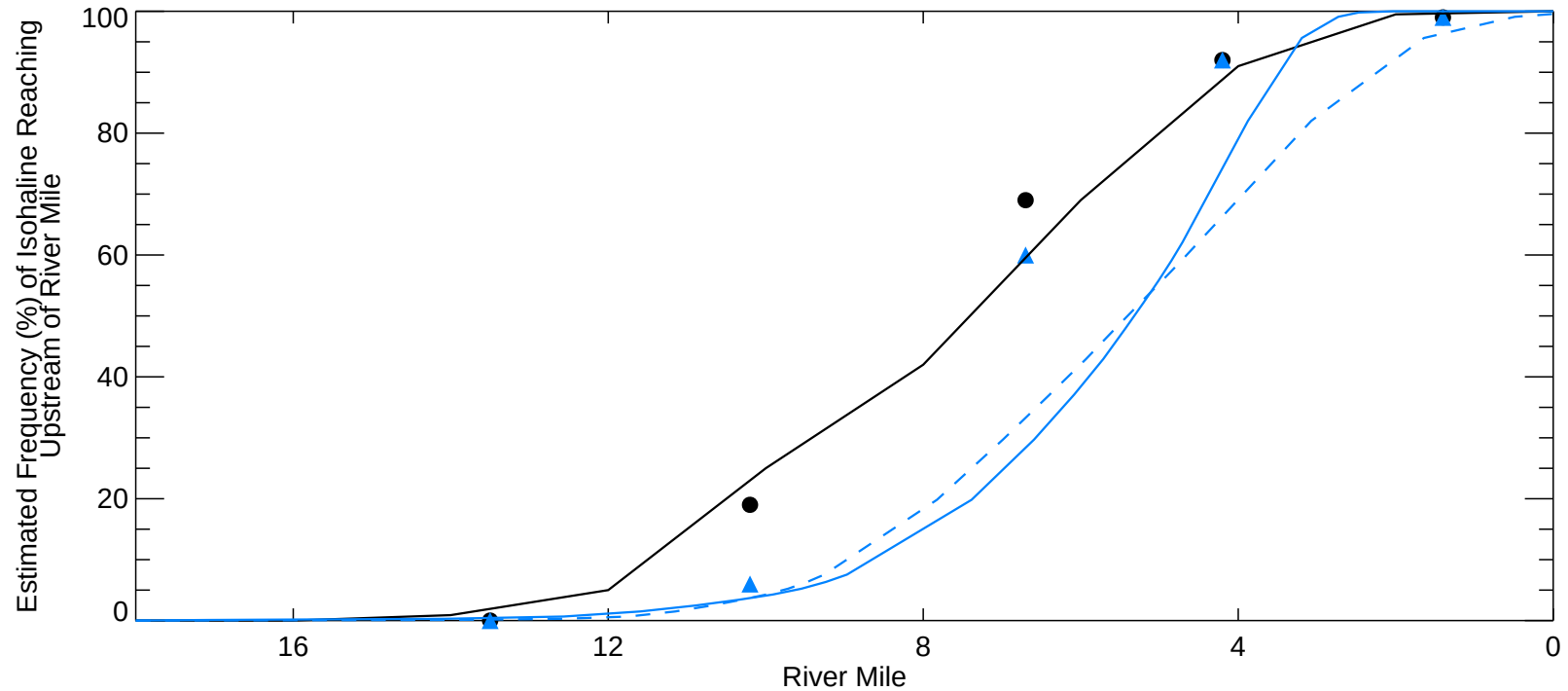
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Figure 6-10f
Comparison of Mercury Water Column and Sediment Bed Concentrations in RM 1 - 7



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 File Path: \\Boston1\jobs\Passaic_CPG\DOCUMENTS\2019\RI_Report\source\5\56\pascpg_mpabarplot_newExtent_RI.pro

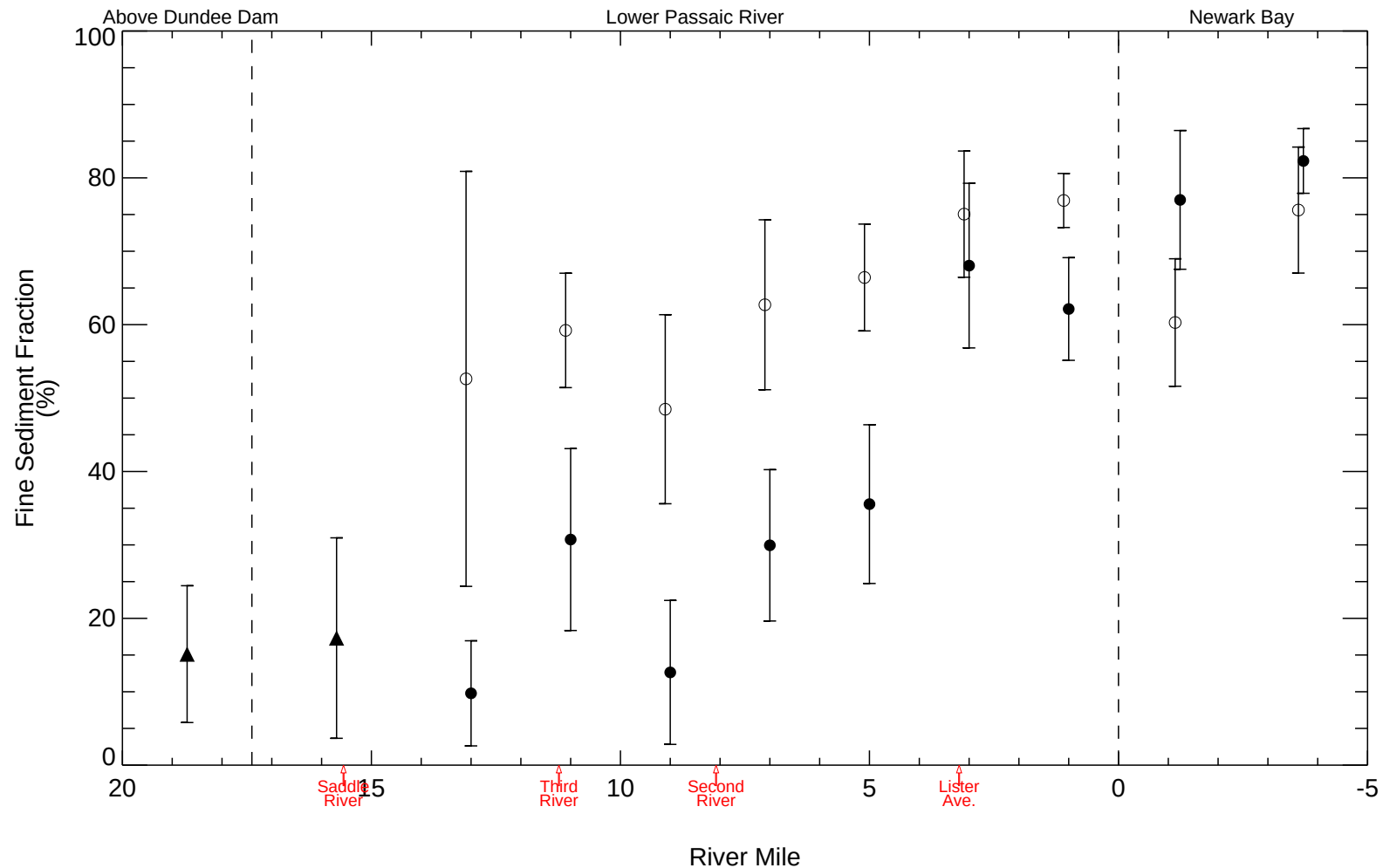
Figure 6-11
Estimated 2,3,7,8-TCDD Mass in the LPR and Newark Bay Sediments
 Remedial Investigation Report
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- 0.5 ppt - PWCM Survey Data (Max Daily Bottom Salinity)
- ▲ 2 ppt - PWCM Survey Data (Max Daily Bottom Salinity)
- 0.5 ppt - SEI/HQI Model (2011) Model Results (Visual Inspection) + Historical Flow Record
- 2 ppt - Chant et al. (2010) Flow Relationship + Historical Flow Record
- - 2 ppt - CPG Model Results (Regression) + Historical Flow Record

For lines, frequencies are approximate only, estimated using relationships from Chant et al. (2010), CPG model results, and SEI/HQI 2011 model results together with the historical flow record at Little Falls. PWCM data points are the observed frequency of maximum daily bottom salinity for the 2009 and 2010 deployments.

Figure 6-12
Estimates of Salinity Intrusion Frequency on the Lower Passaic River



Plots include all post 2000 data (listed in Table 4-1) with bottom depths less than 6 inches
 Error bars depict limits of ± 2 standard errors of the mean value within each spatial bin
 Data are aggregated in the two bins above RM 14 because navigation channel begins at RM 15.

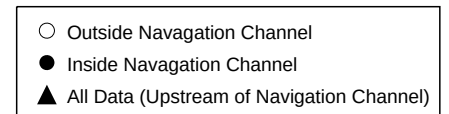
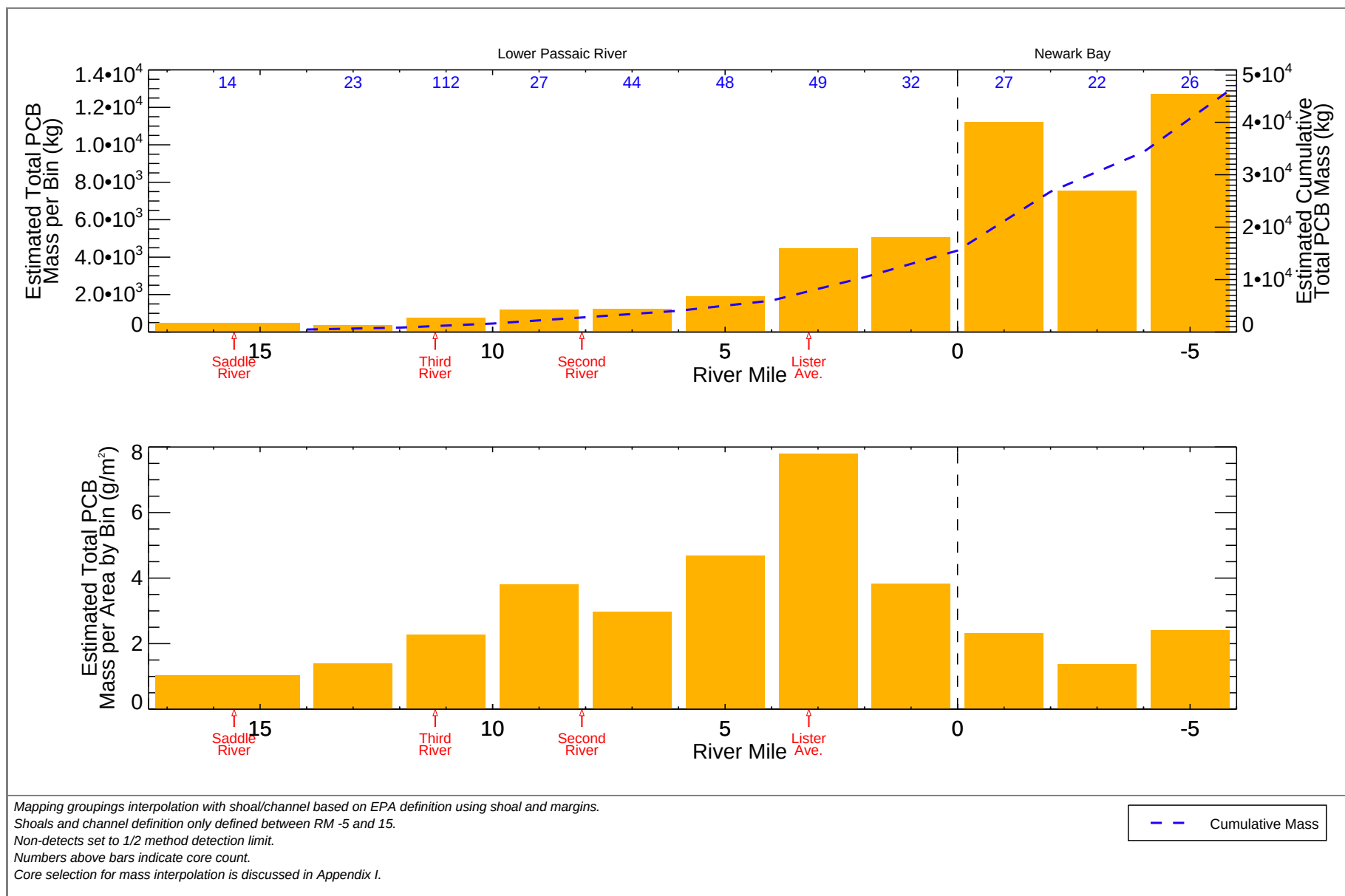
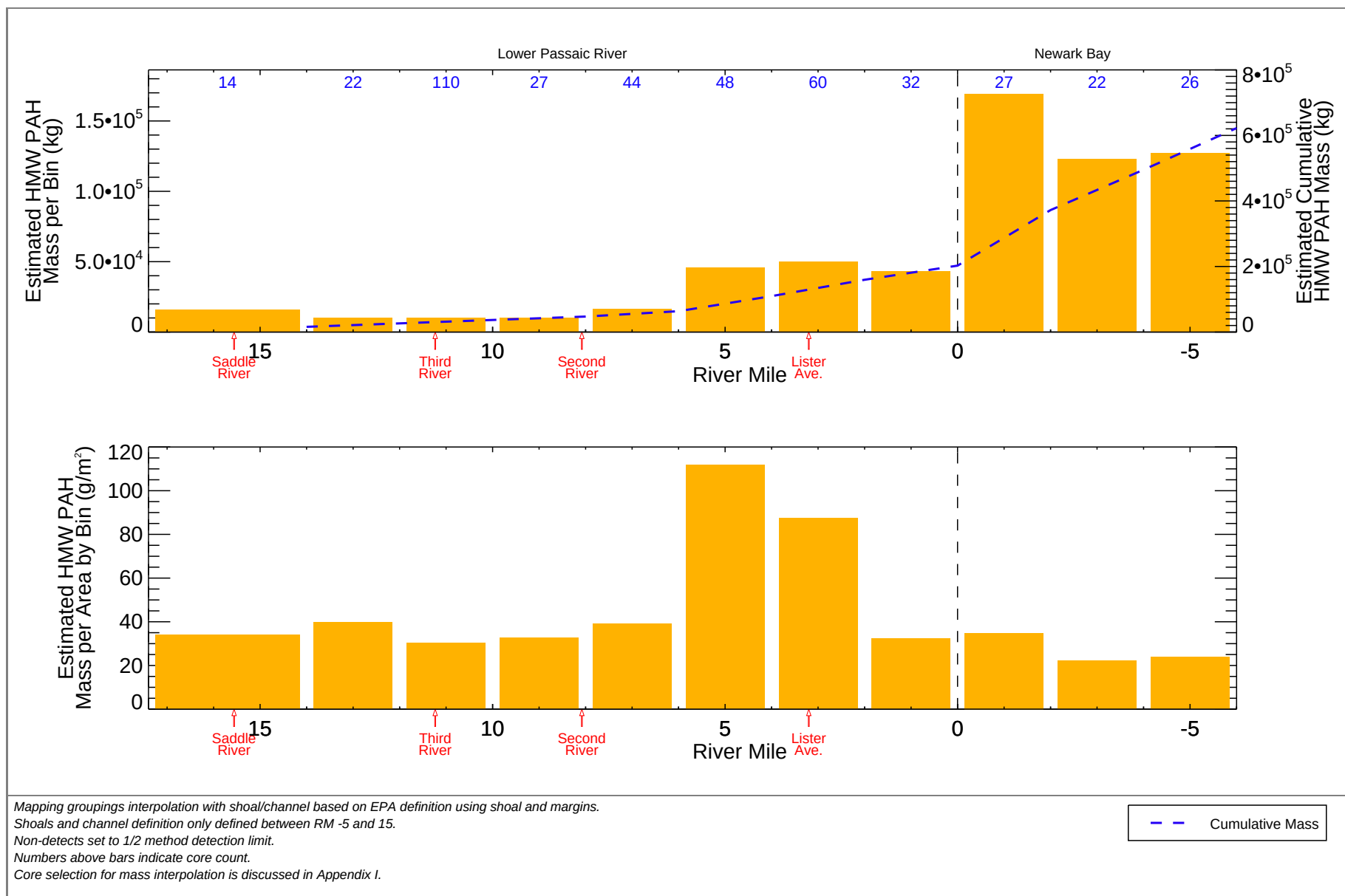


Figure 6-13
Fine Sediment Fraction in LPR Surface Sediments
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Figure 6-14a
Estimated Total PCB Mass in the LPR and Newark Bay Sediments
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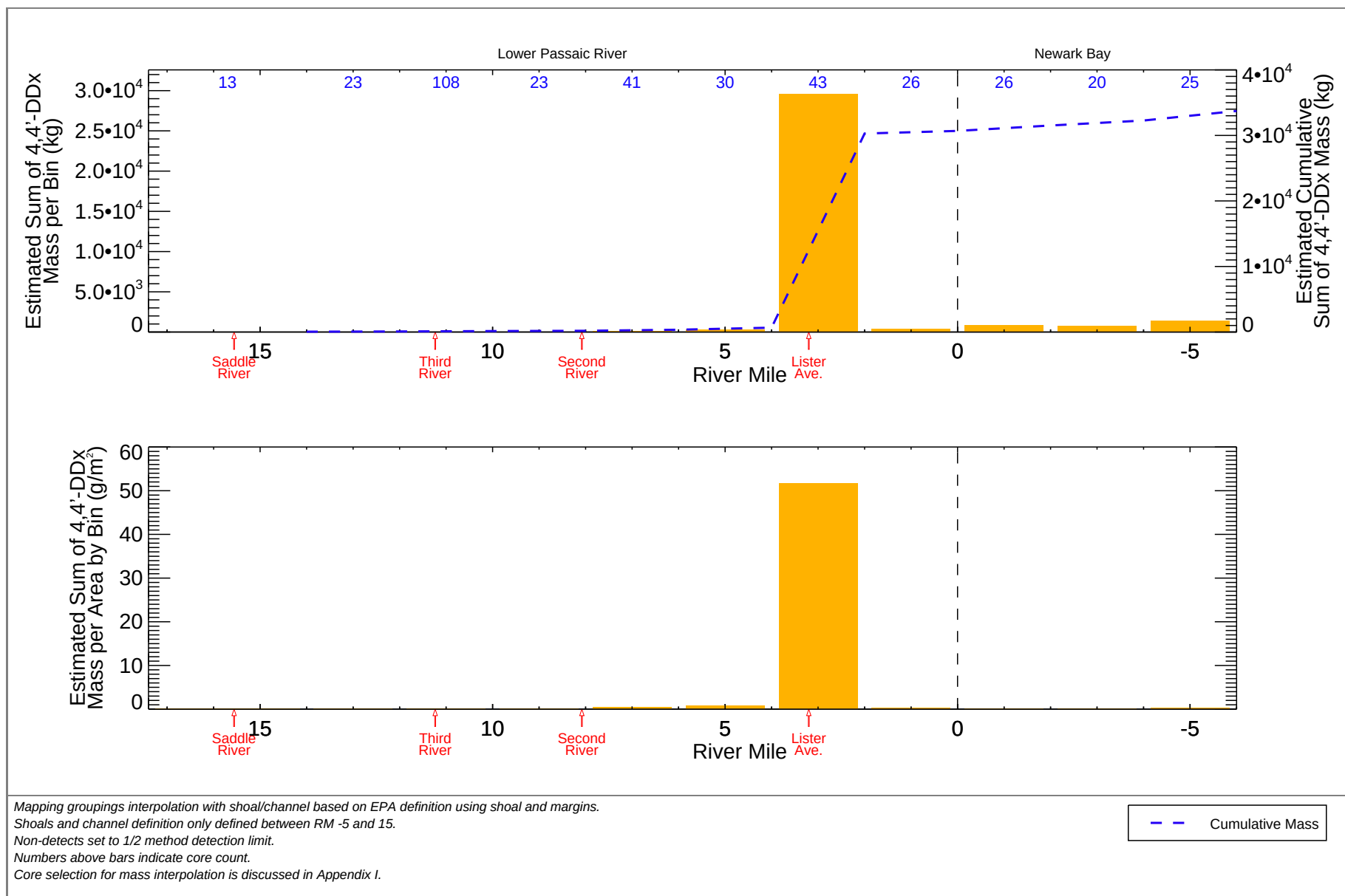
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 File Path: \\Boston1\jobs\Passaic_CPG\DOCUMENTS\2019\RI_Report\source\5\56\pascpg_mpabarplot_newExtent_RI.pro

Figure 6-14b
Estimated HMW PAH Mass in the LPR and Newark Bay Sediments
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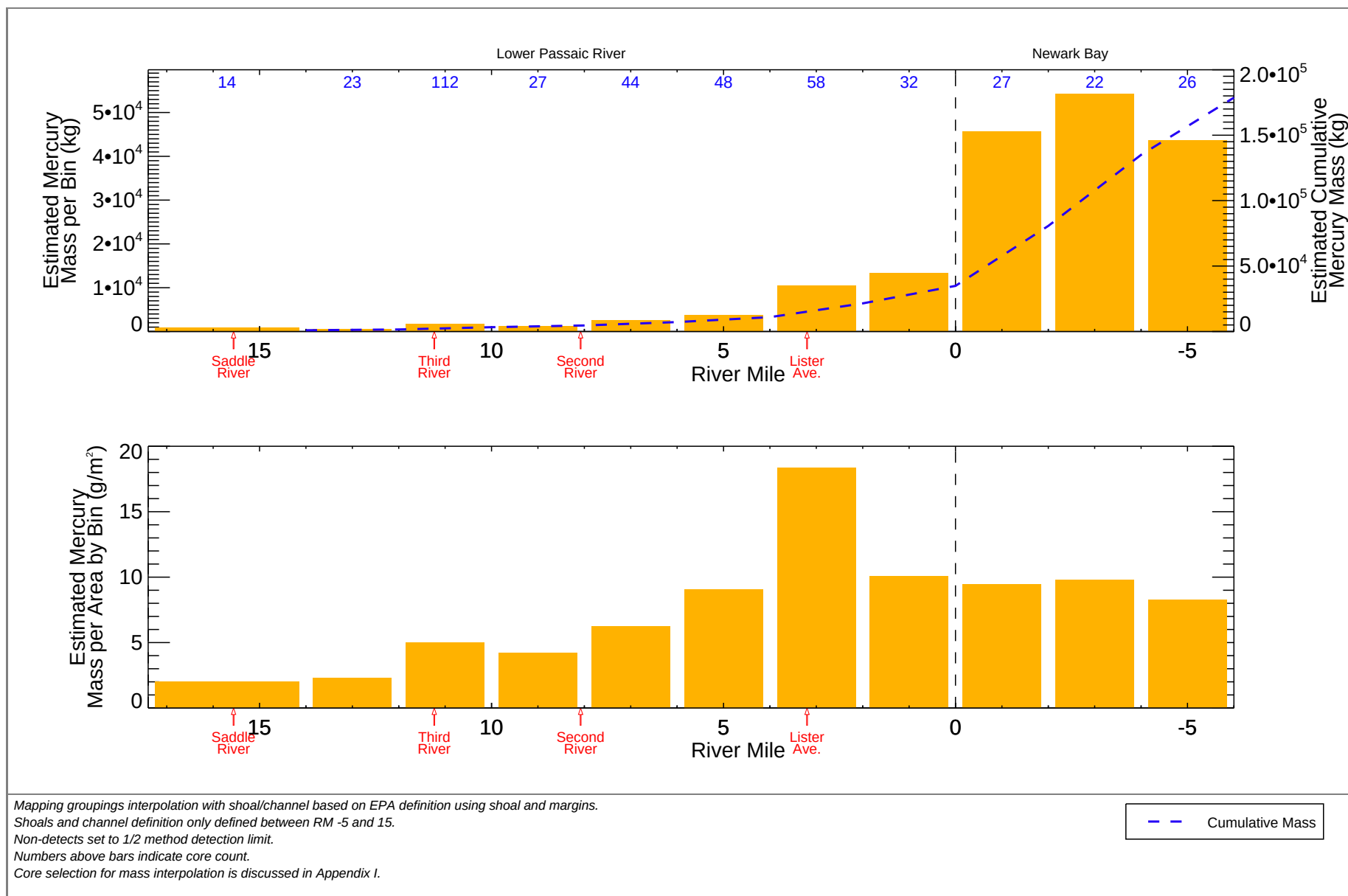
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Figure 6-14c
Estimated LMW PAH Mass in the LPR and Newark Bay Sediments
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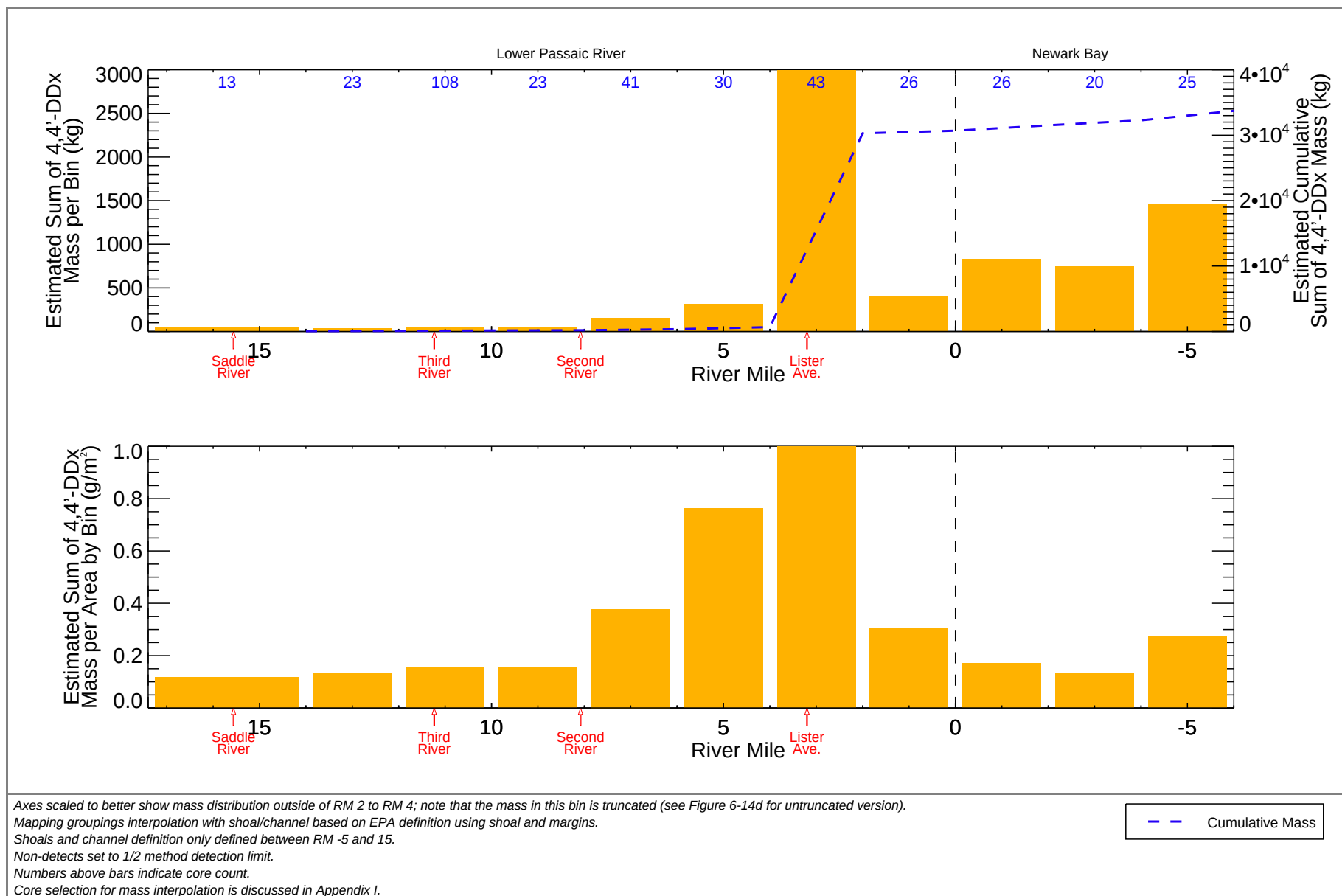
Figure 6-14d
Estimated Sum of 4,4'-DDx Mass in the LPR and Newark Bay Sediments
 Remedial Investigation Report
 Lower Passaic River Study Area Remedial Investigation/Feasibility Study



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Figure 6-14e
Estimated Mercury Mass in the LPR and Newark Bay Sediments

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Figure 6-15
Estimated Sum of 4,4'-DDX Mass in the LPR and Newark Bay Sediments (rescaled axis)