

APPENDIX H

Surface Water Results Figures





REMEDIAL INVESTIGATION REPORT

APPENDIX H – SURFACE WATER RESULTS FIGURES

Newark Bay Study Area
Newark Bay, New Jersey

May 2022

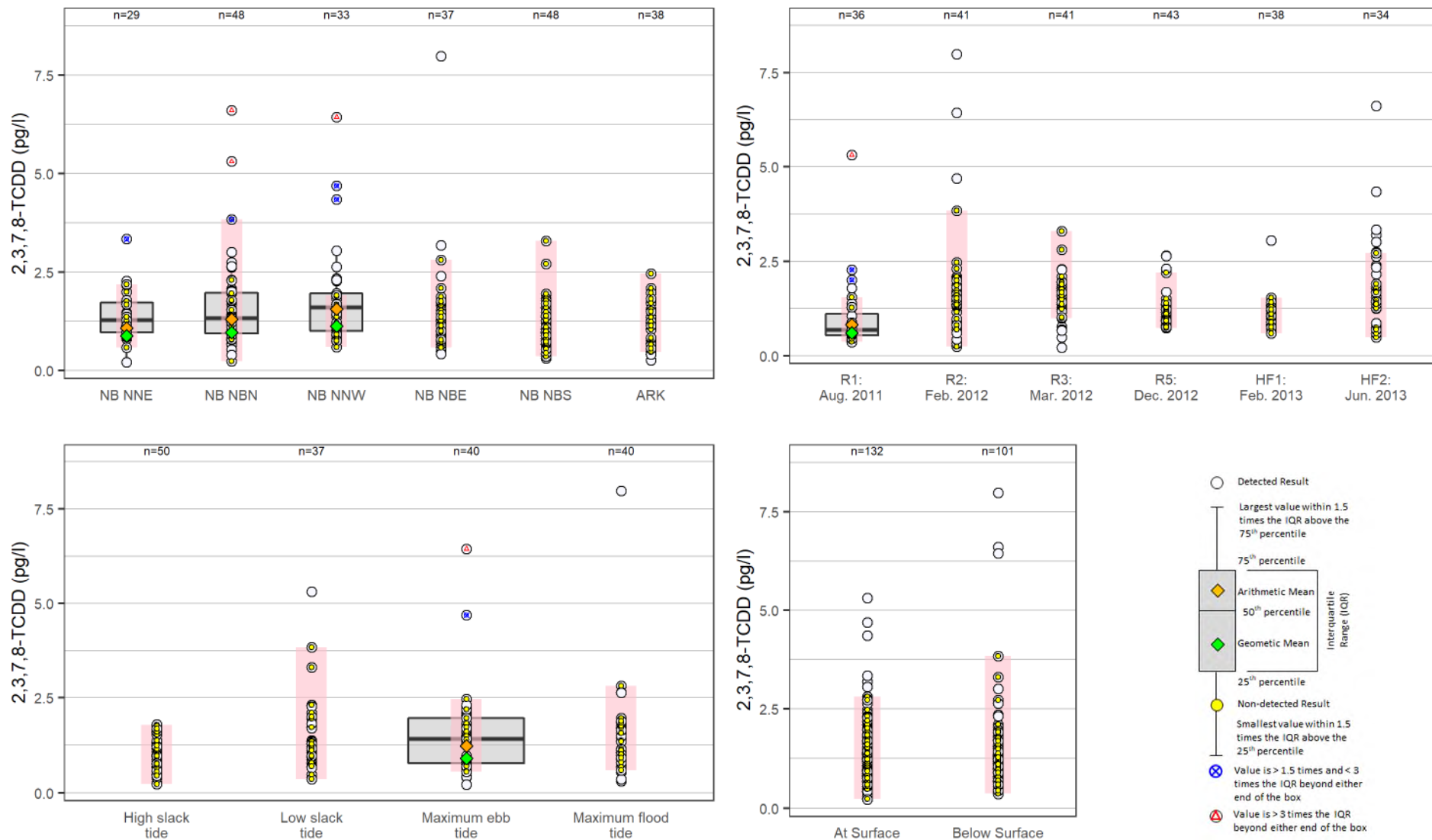
REMEDIAL INVESTIGATION REPORT
APPENDIX H – SURFACE WATER RESULTS FIGURES

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Notes:

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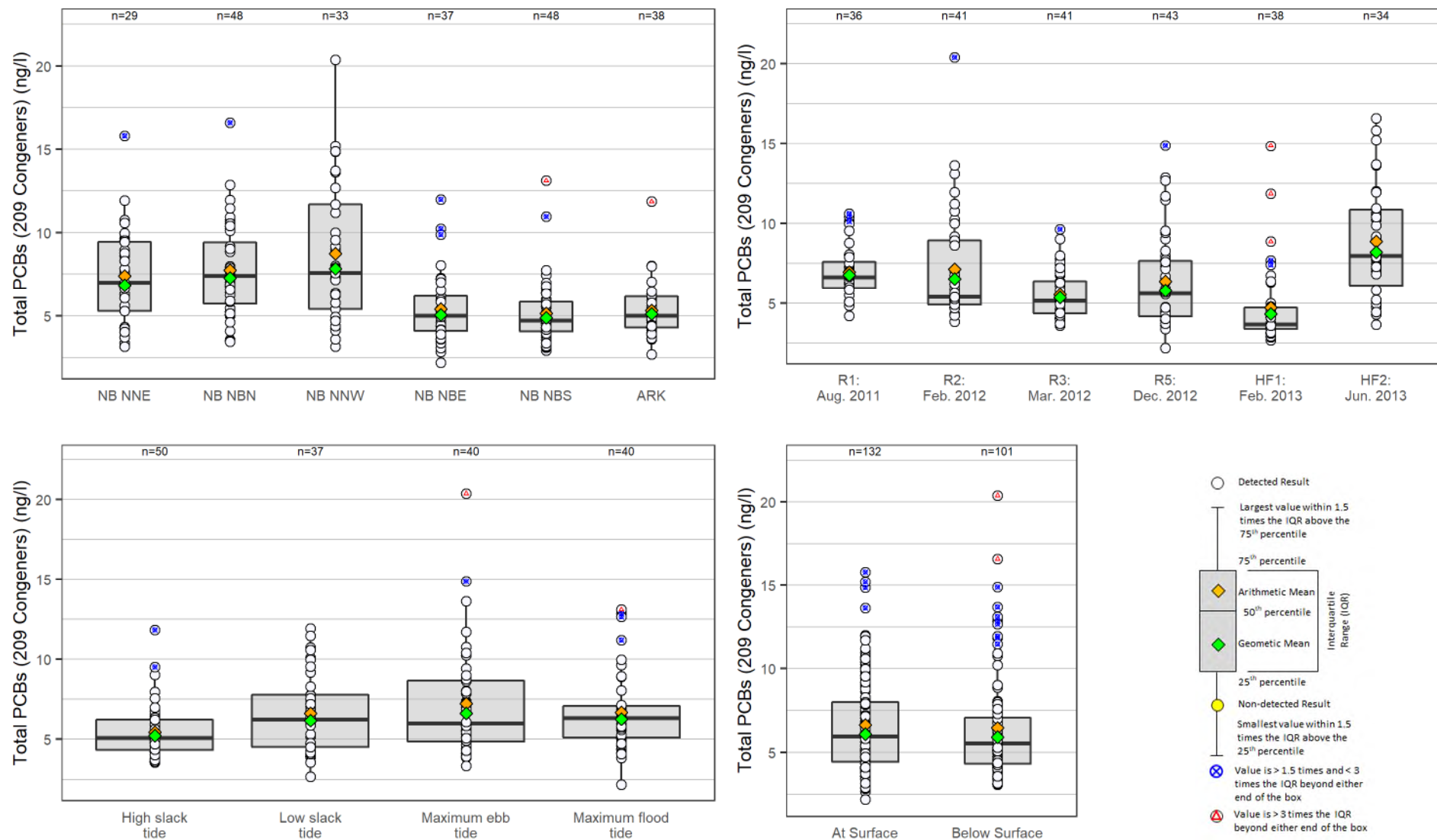
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SURFACE WATER RESULTS - 2,3,7,8- TETRACHLORODIBENZO-P-DIOXIN



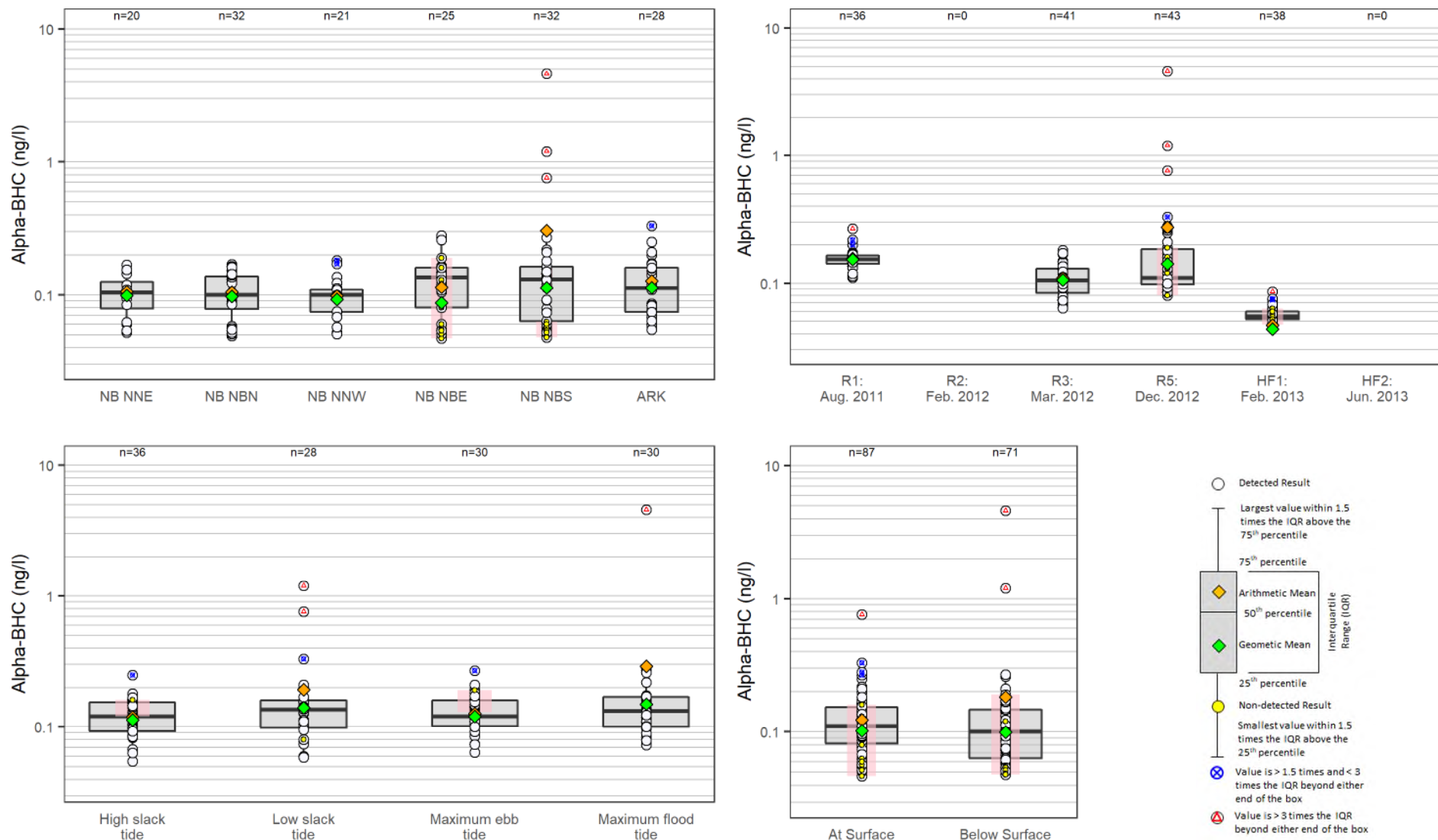
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FIGURE
H-1



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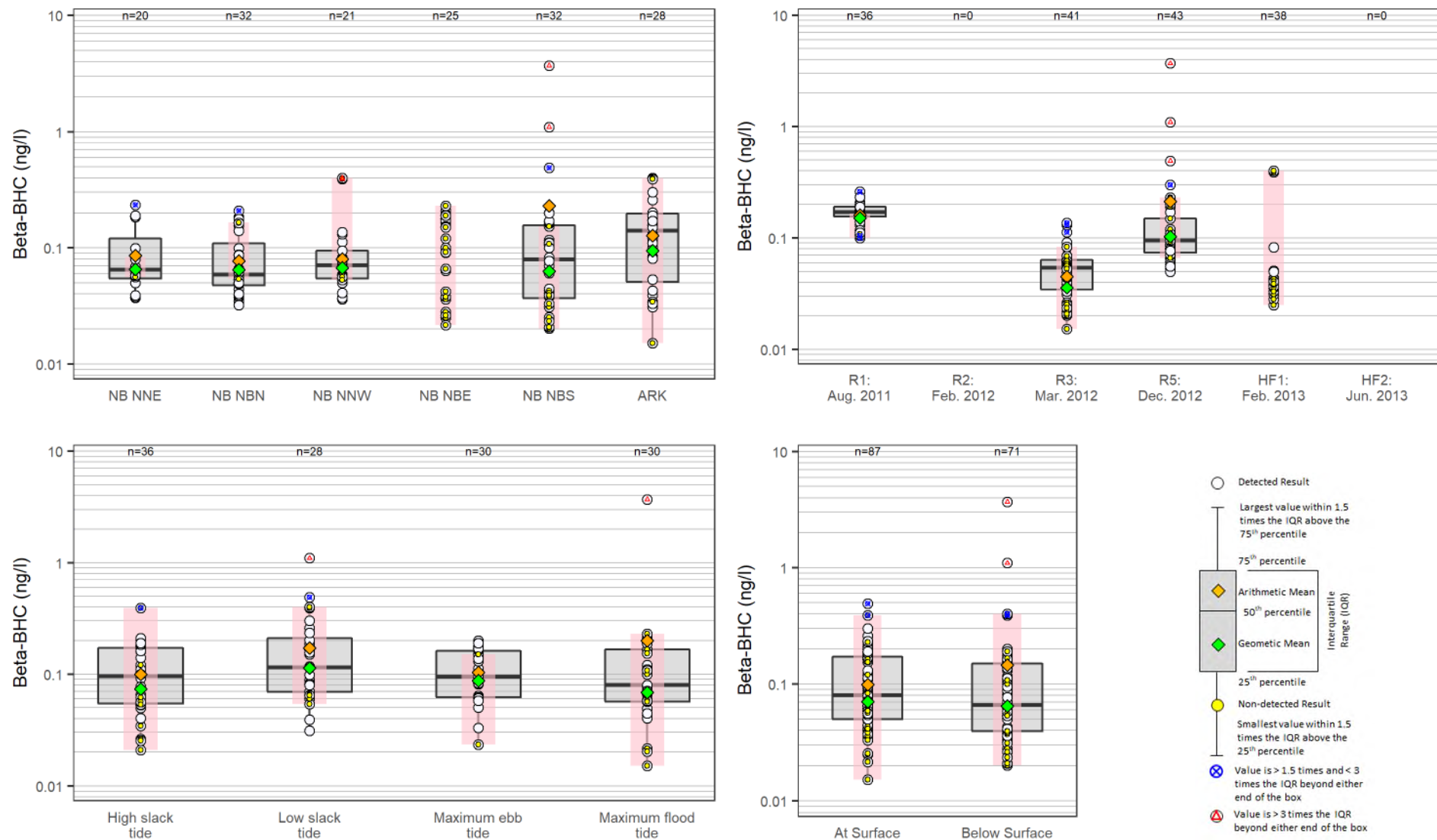
SURFACE WATER RESULTS - TOTAL PCB
CONGENERS 209



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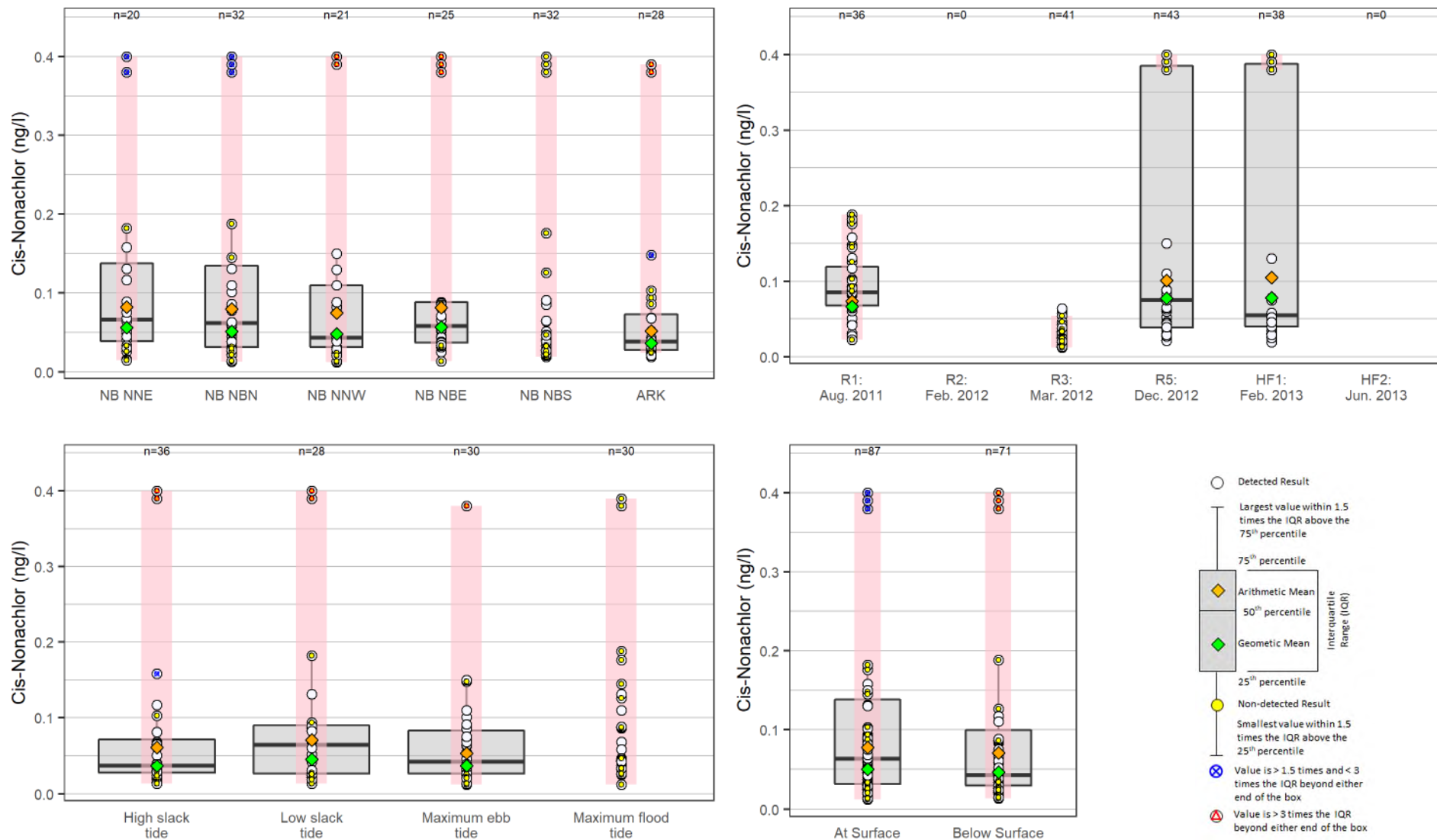
SURFACE WATER RESULTS – ALPHA-BHC



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SURFACE WATER RESULTS - BETA BHC



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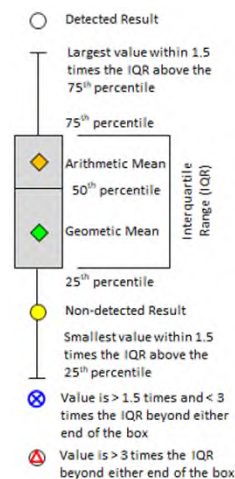
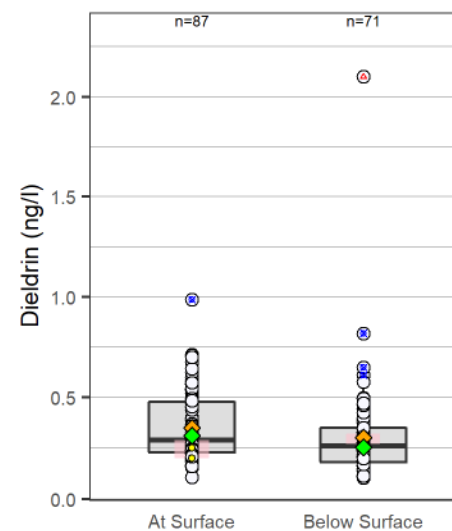
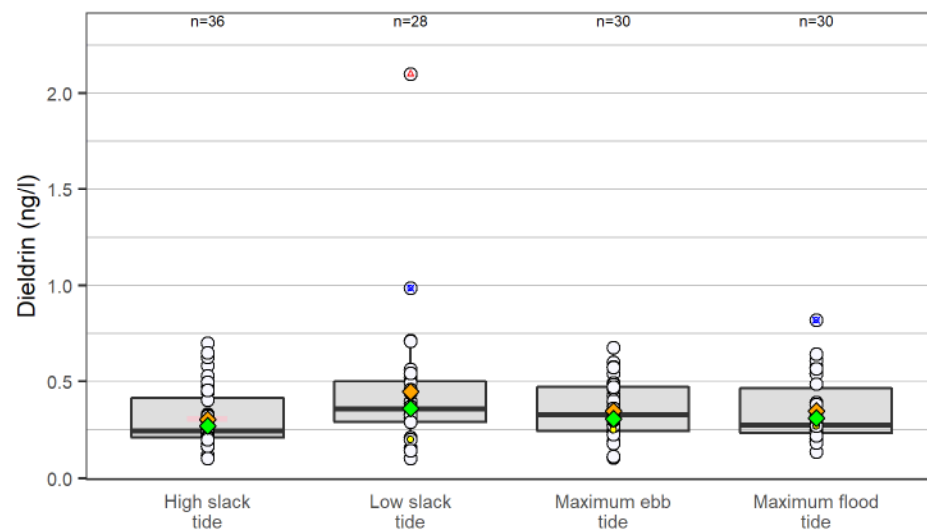
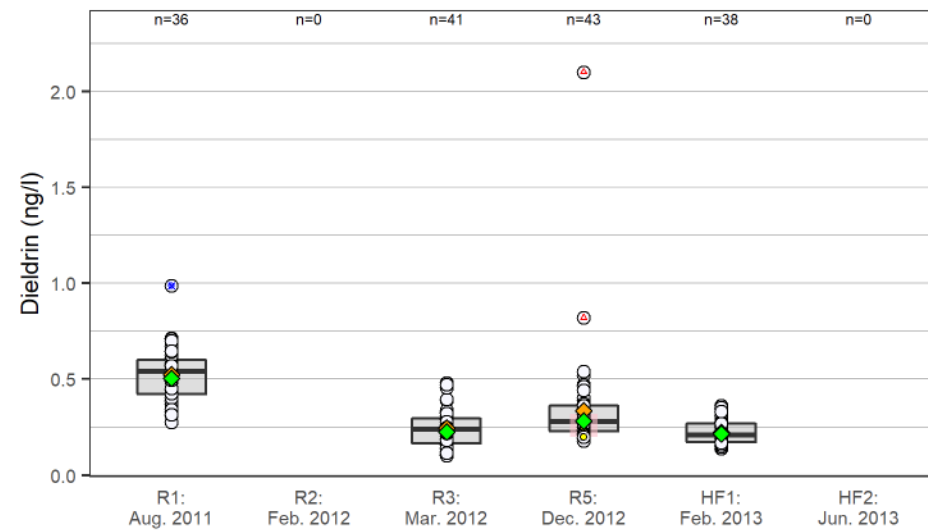
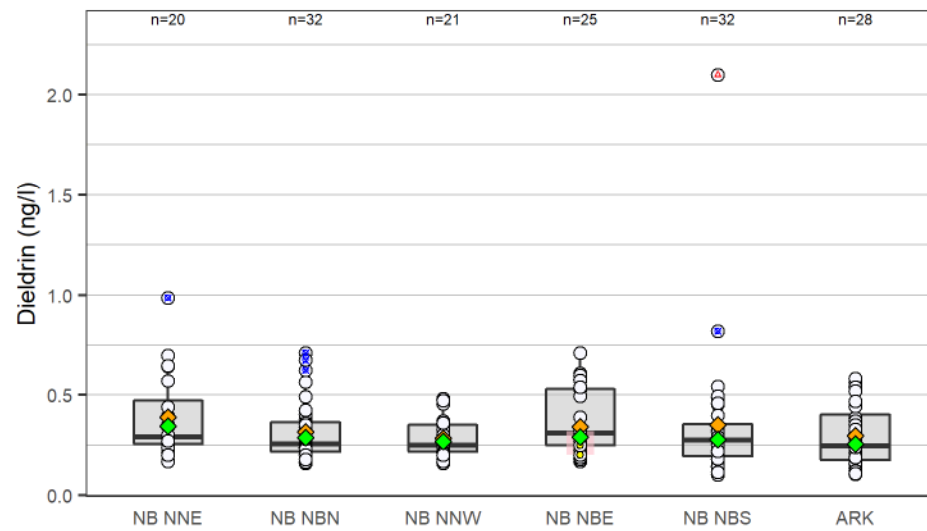
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SURFACE WATER RESULTS - CIS-NONACHLOR



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FIGURE
H-5



Notes:

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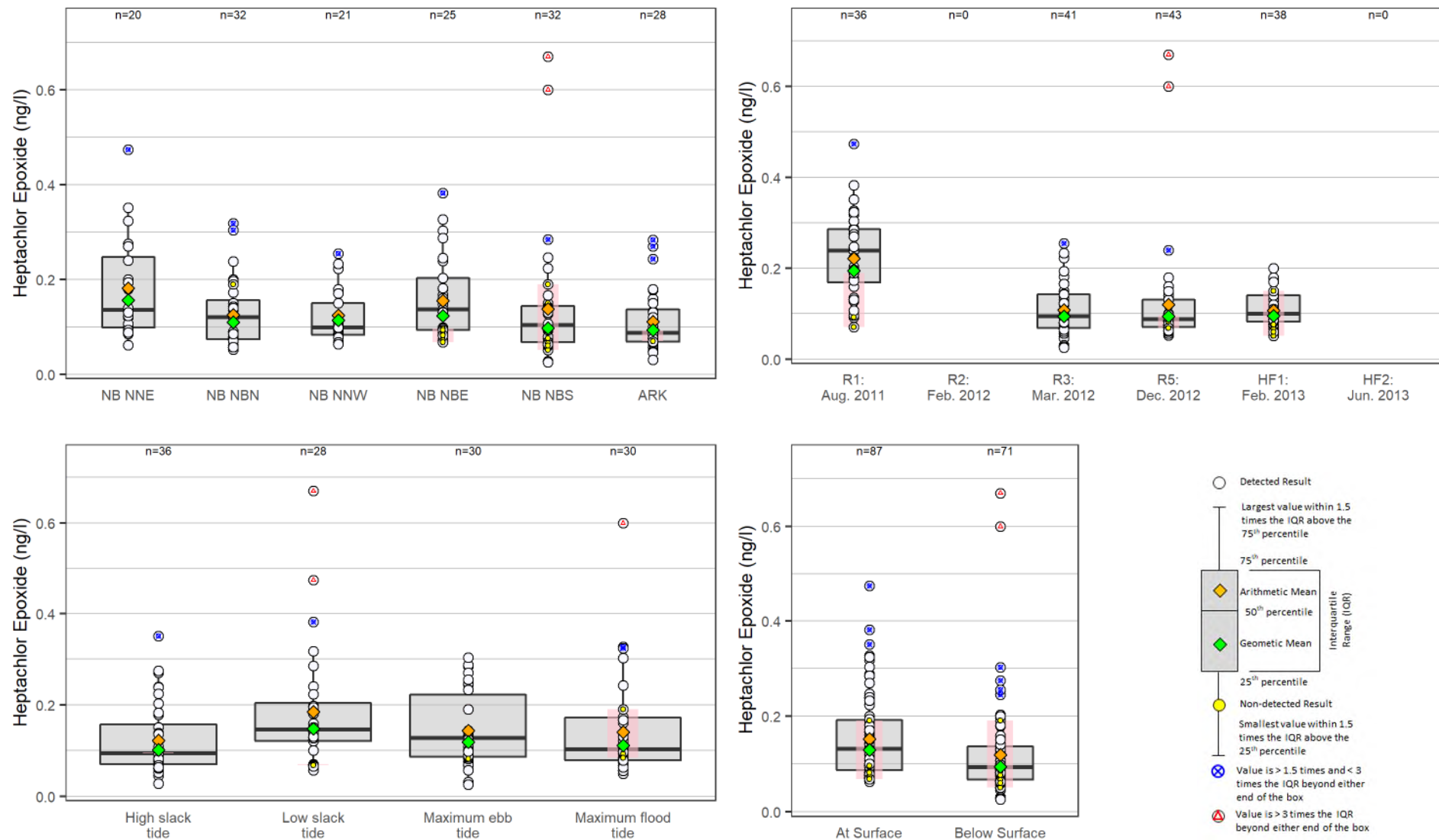
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SURFACE WATER RESULTS - DIELDRIN



Notes:

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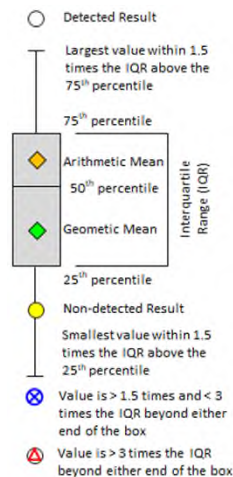
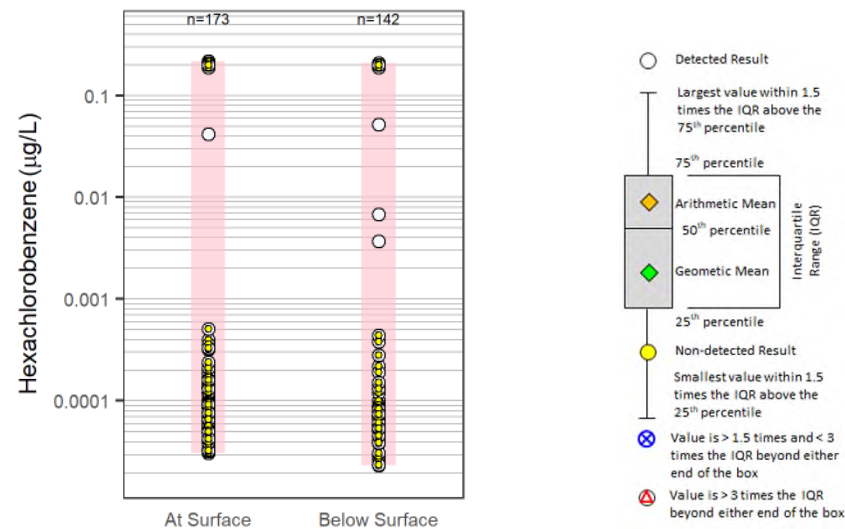
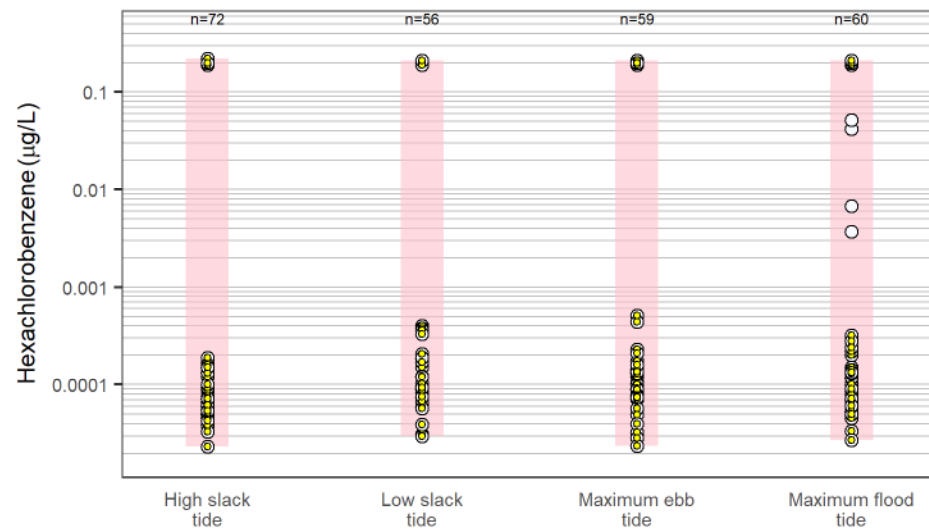
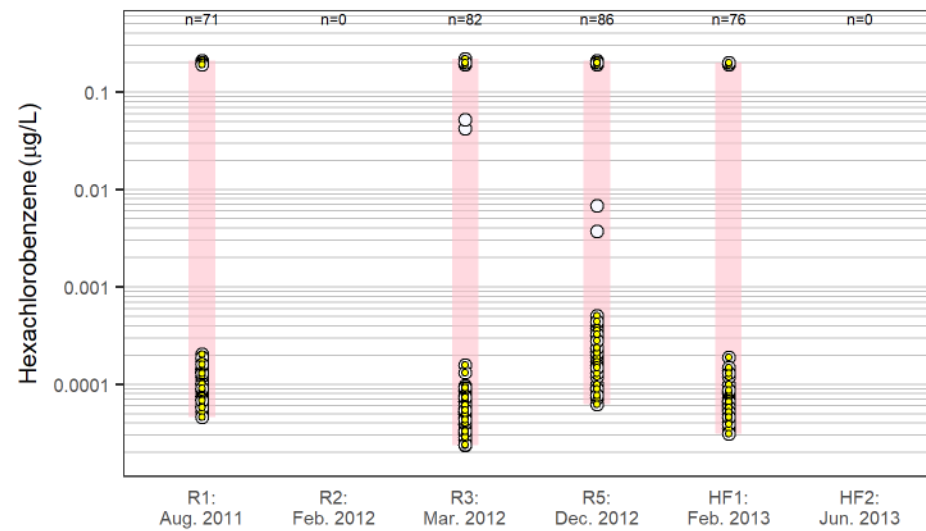
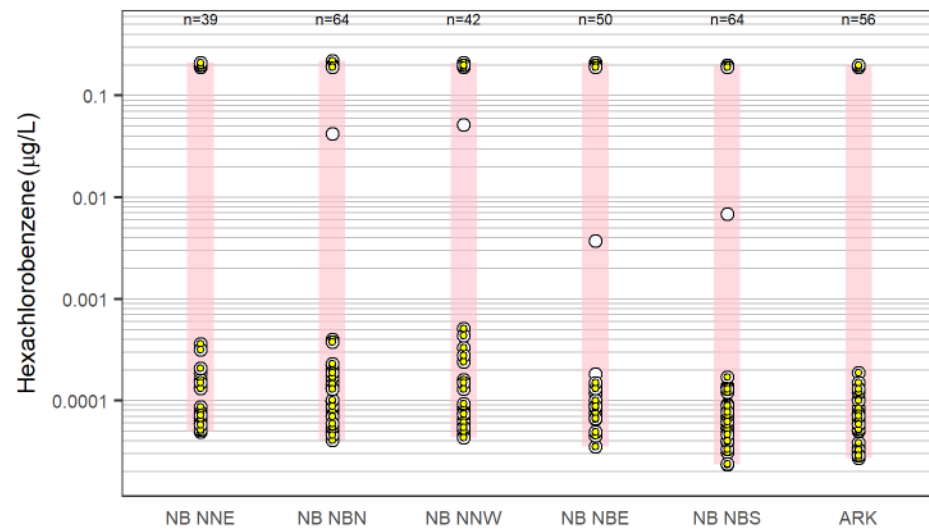
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SURFACE WATER RESULTS - HEPTACHLOR EPOXIDE



FIGURE
H-7



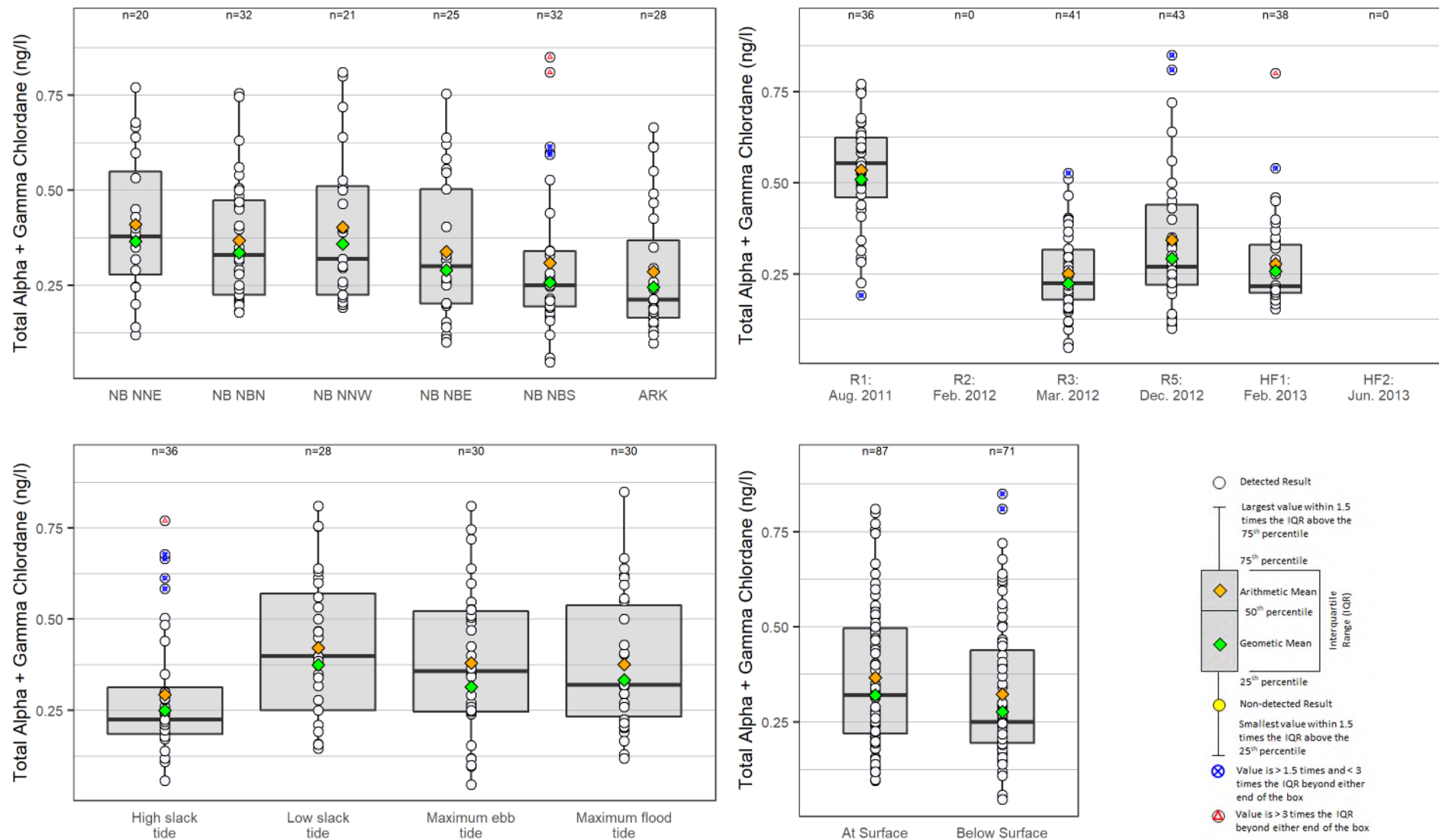
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SURFACE WATER RESULTS - HEXACHLOROBENZENE



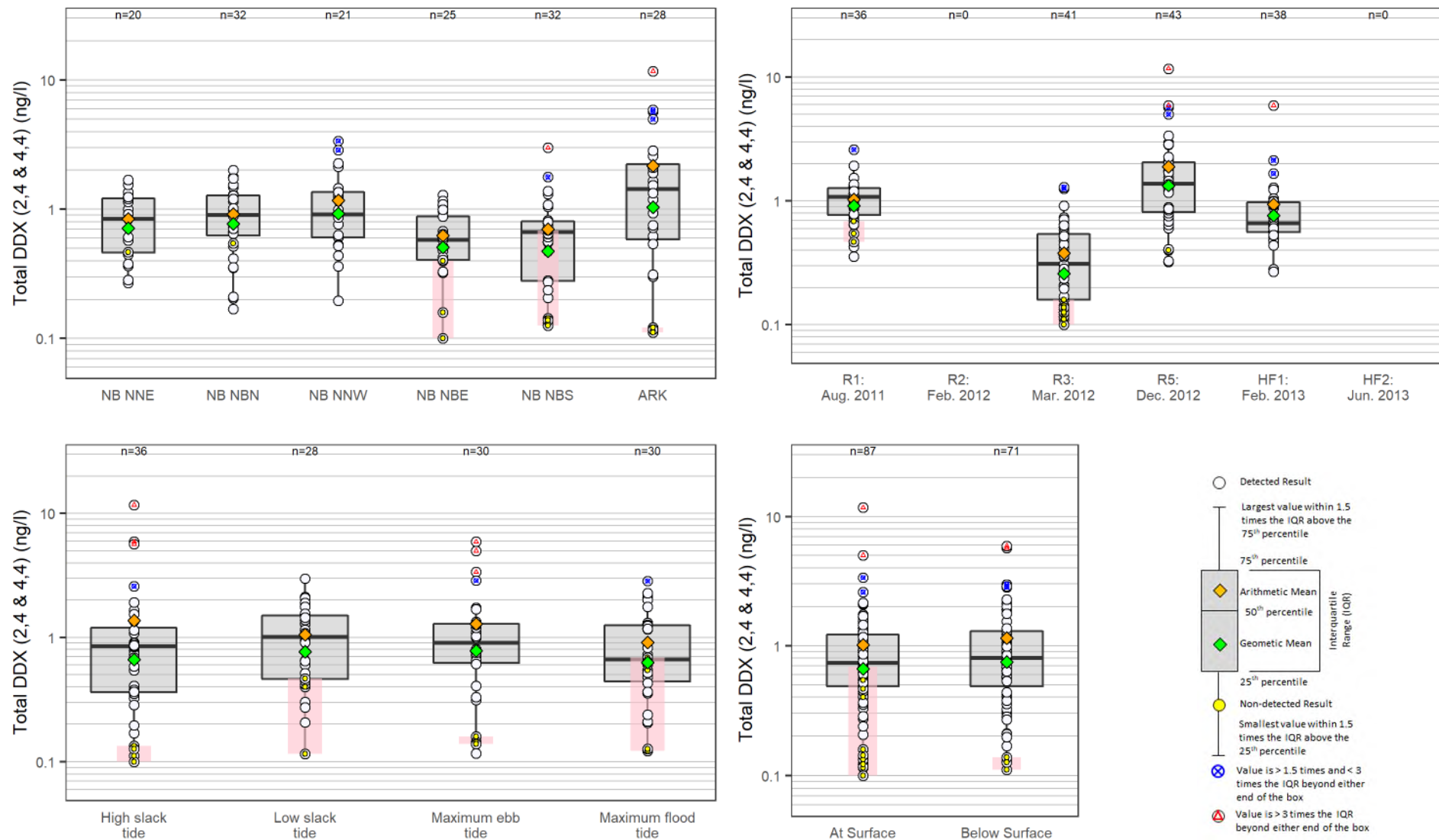
FIGURE
 H-8



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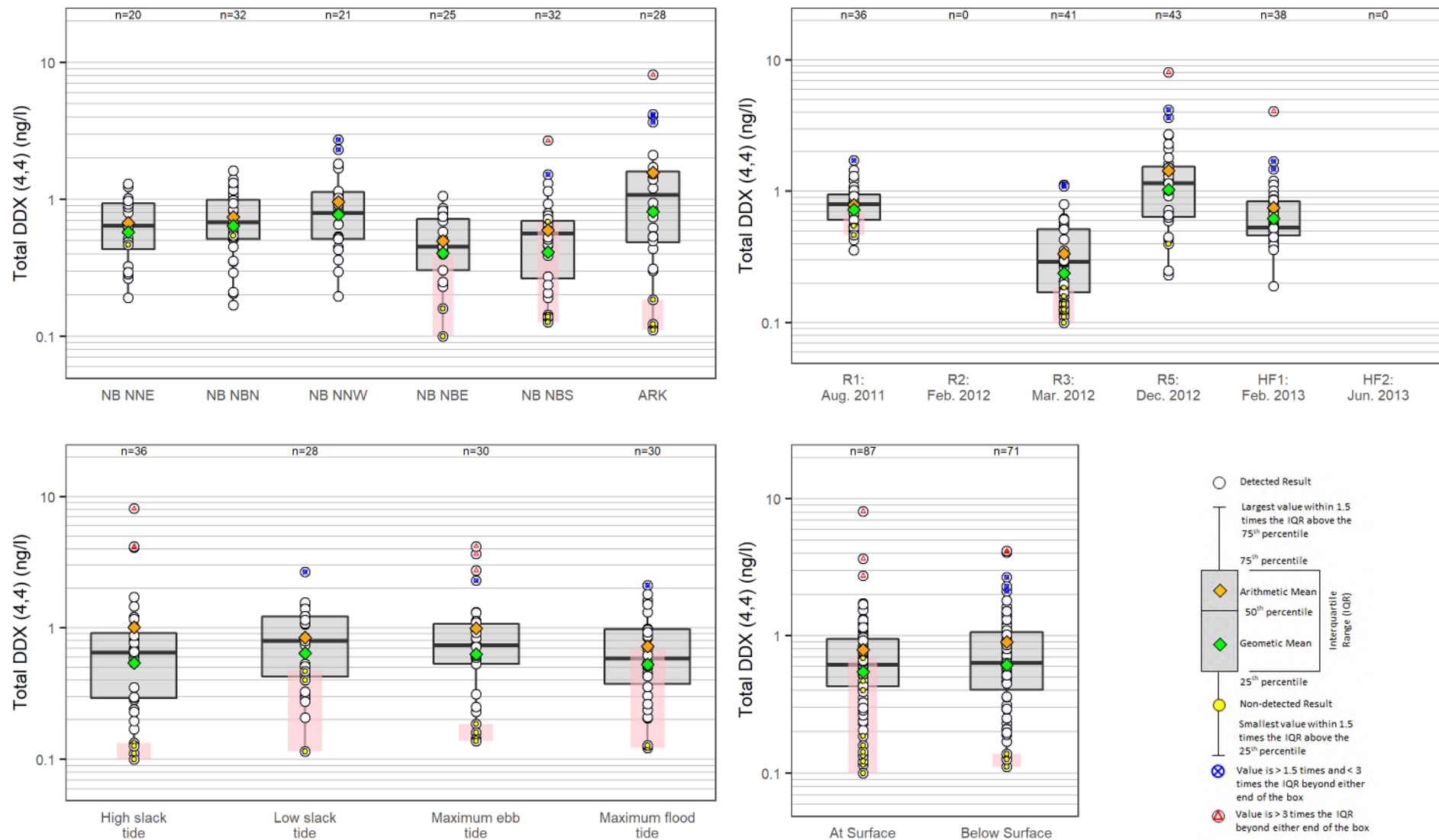
SURFACE WATER RESULTS - TOTAL ALPHA
 GAMMA CHLORDANE



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 REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - TOTAL DDX (2,4 AND 4,4)



Notes:

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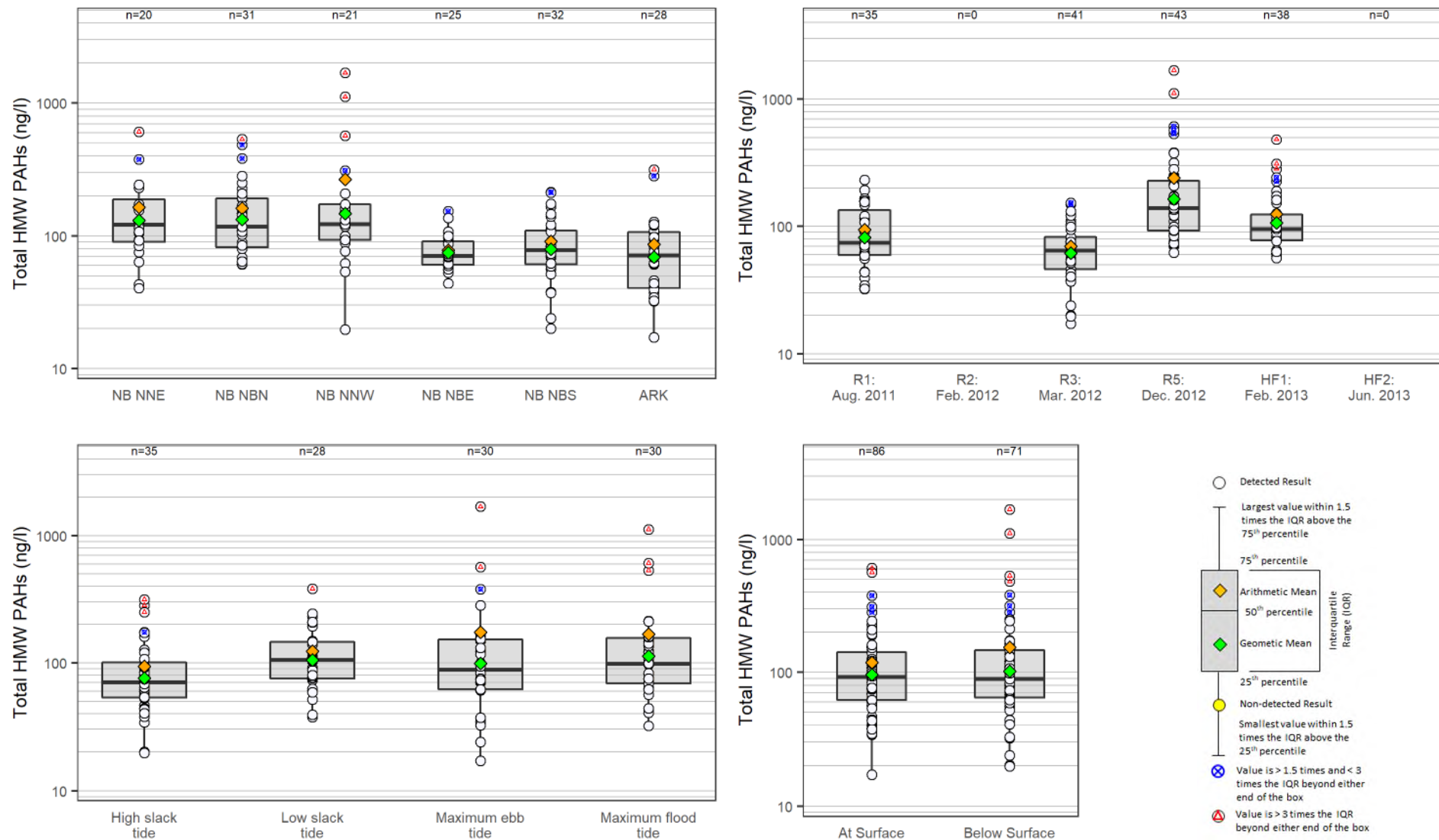
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SURFACE WATER RESULTS - TOTAL DDX (4,4)



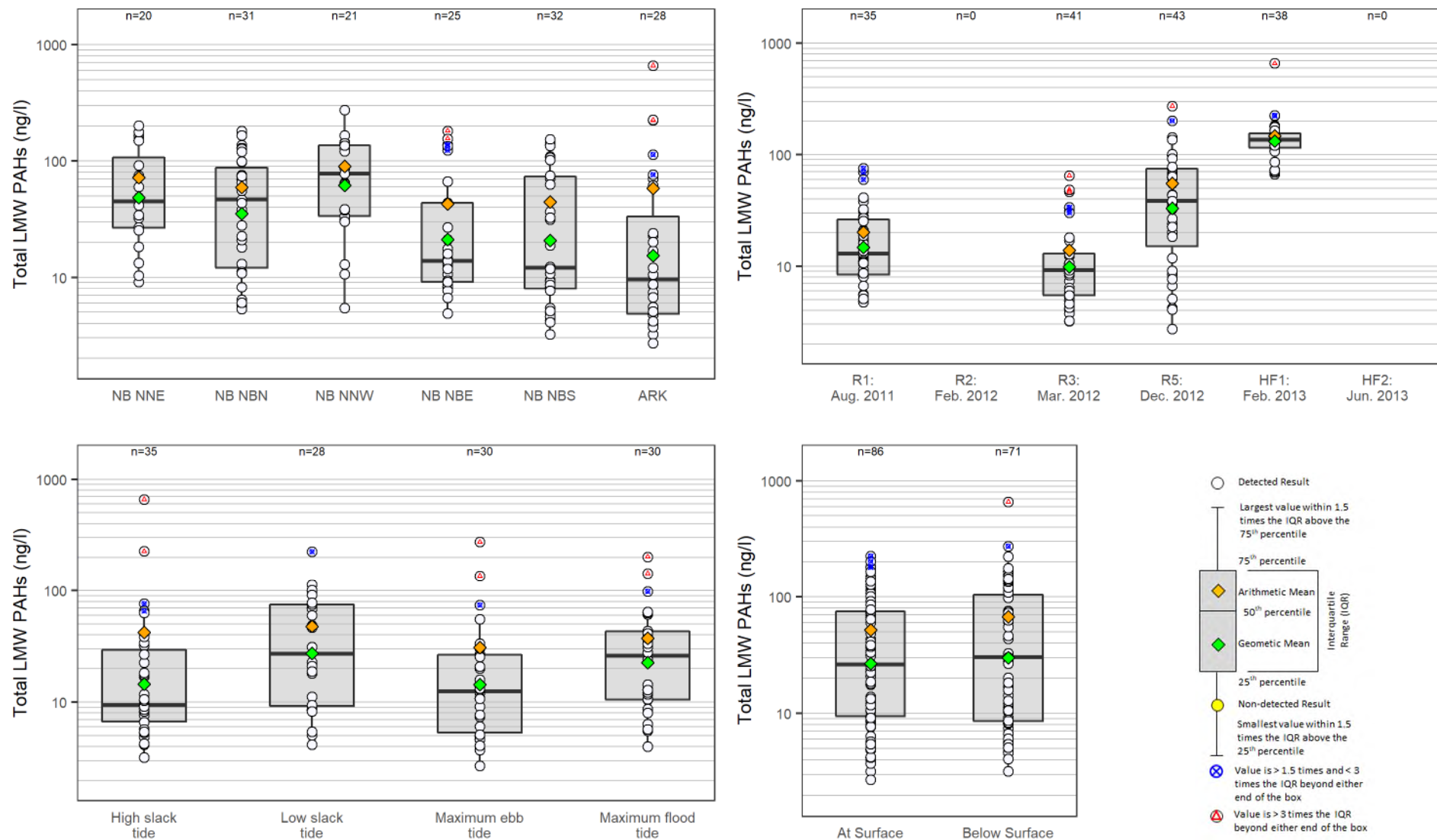
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FIGURE
H-4



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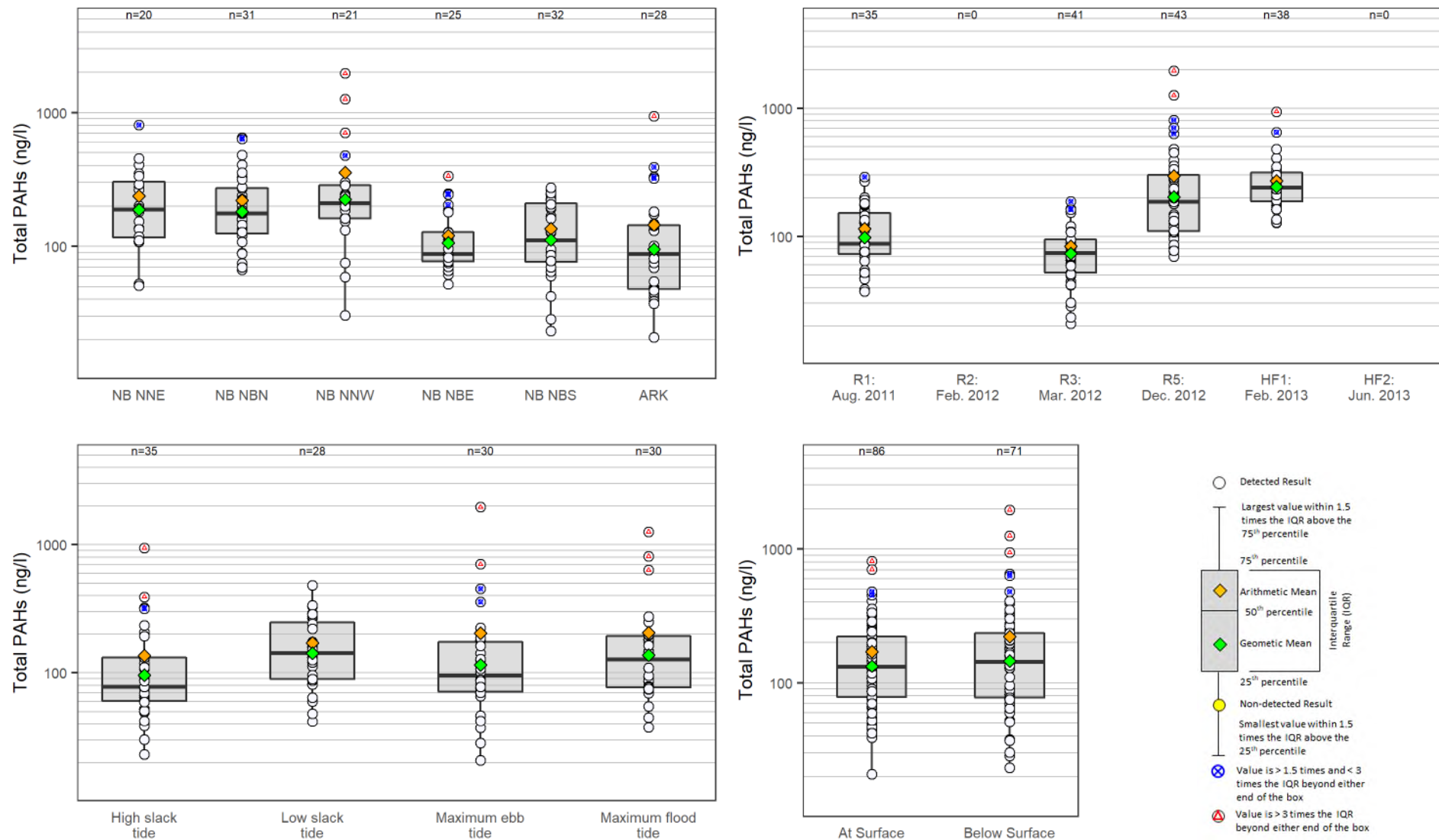
SURFACE WATER RESULTS - TOTAL HMW PAHS



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 NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION
 REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - TOTAL LMW PAHS



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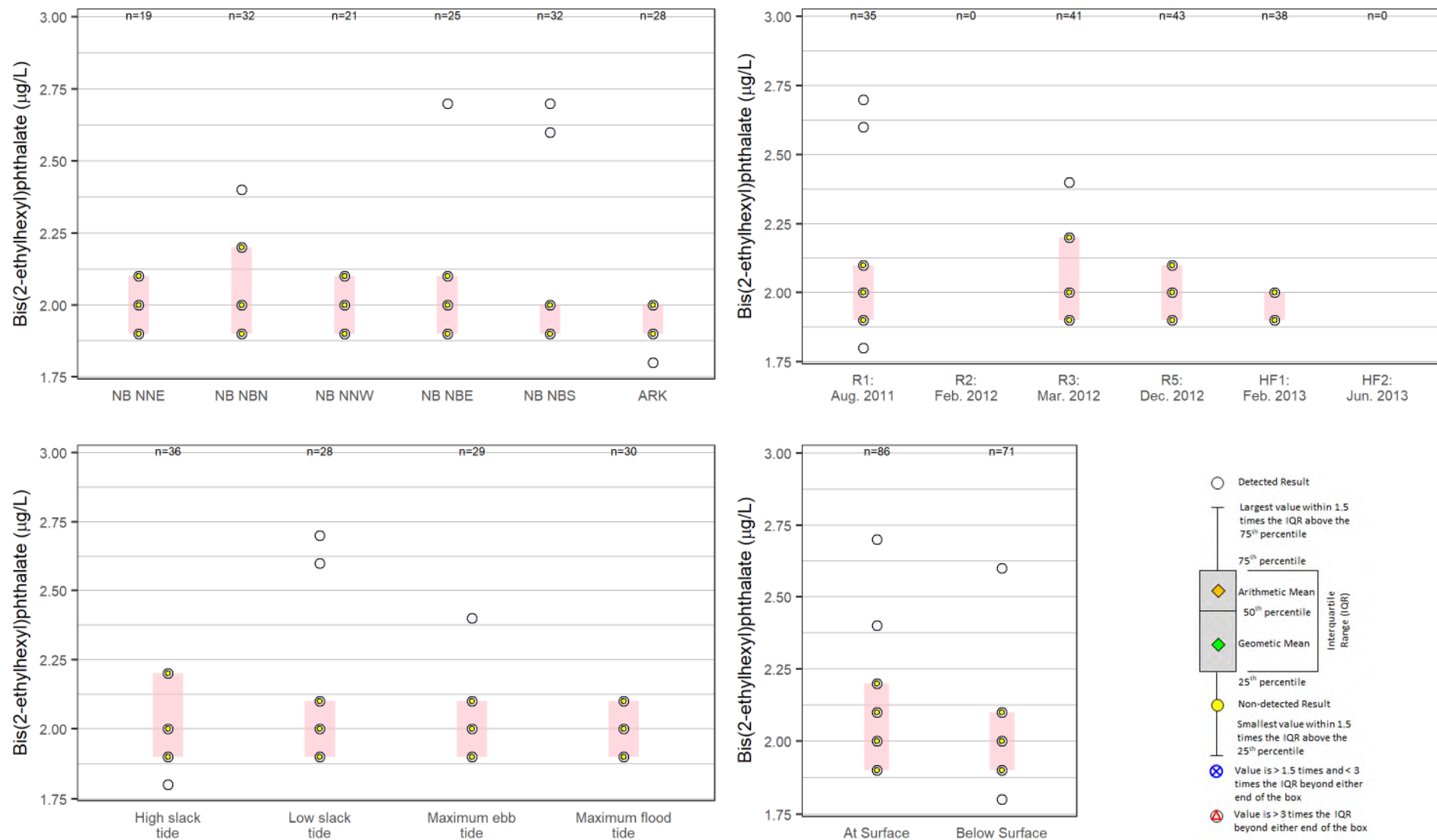
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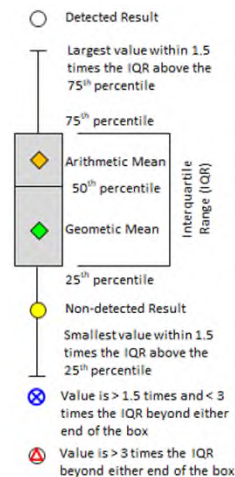
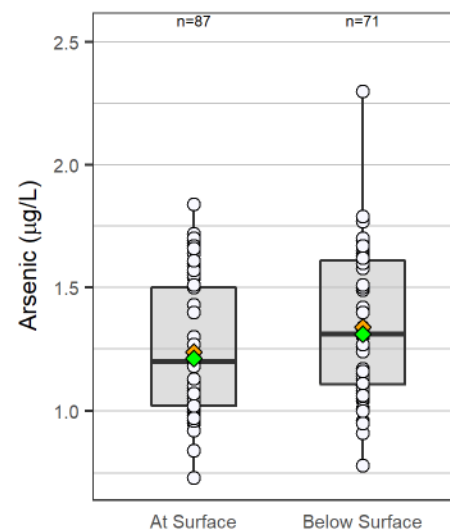
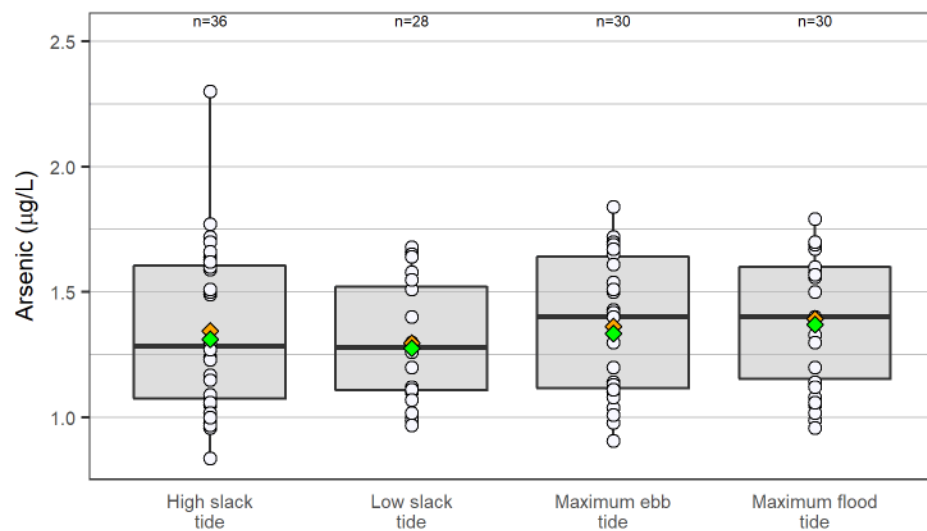
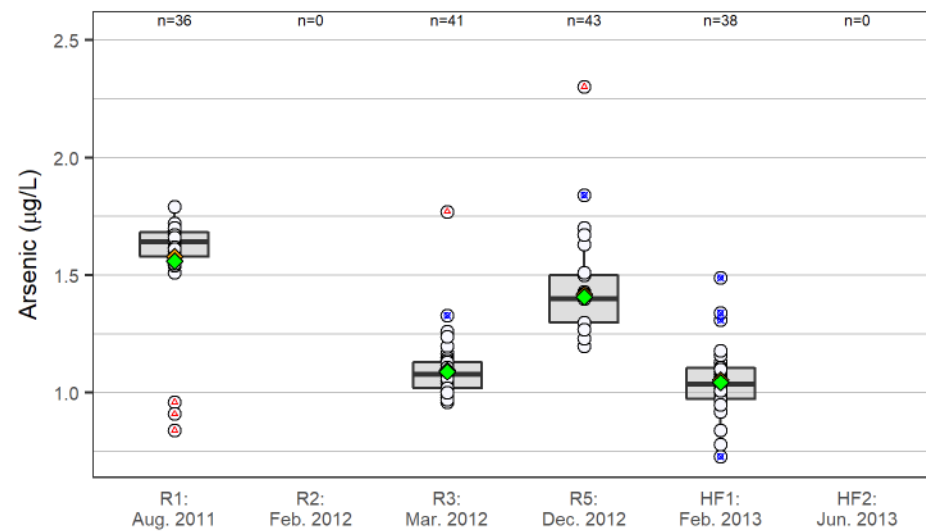
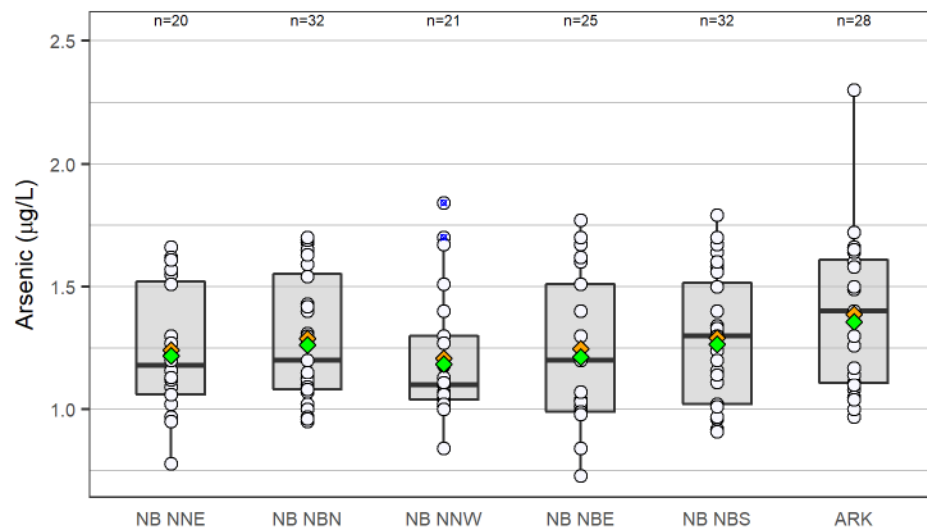
SURFACE WATER RESULTS - TOTAL PAHS



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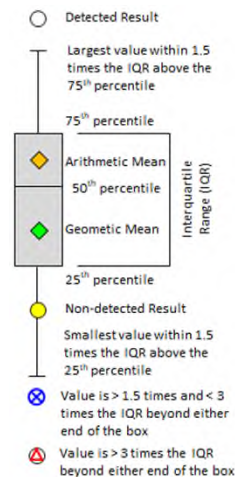
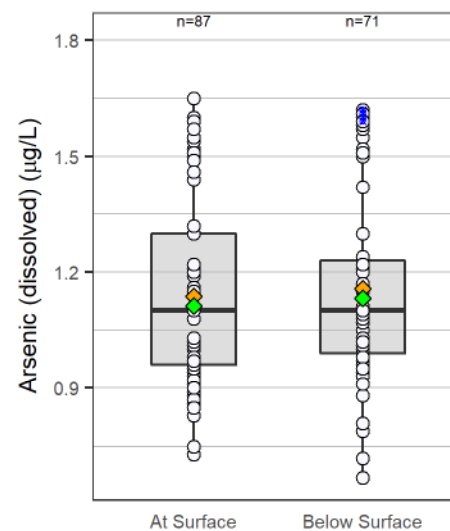
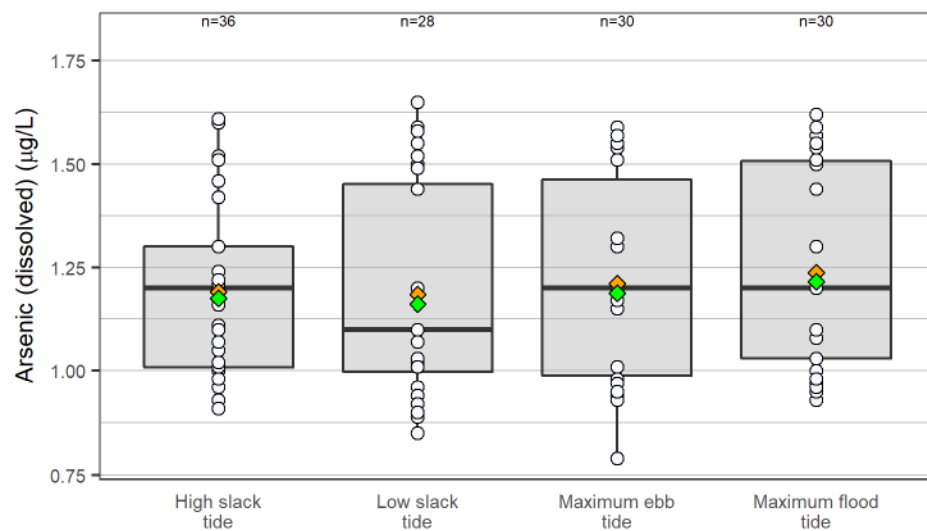
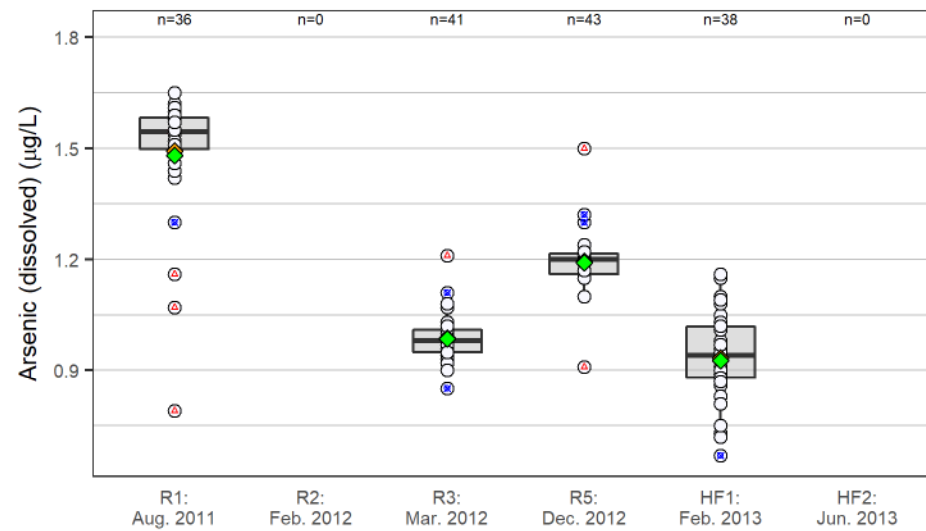
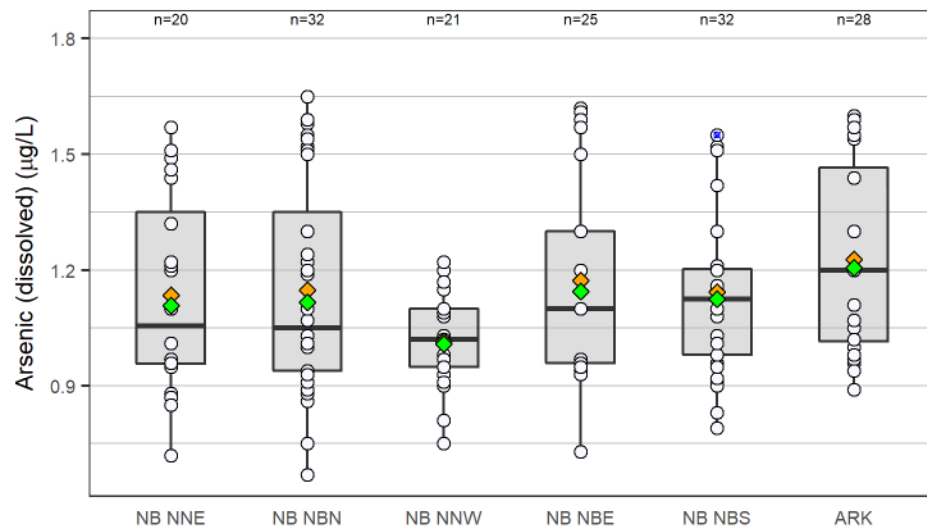
SURFACE WATER RESULTS – BIS(2-ETHYLHEXYL) PHTHALATE



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SURFACE WATER RESULTS - ARSENIC



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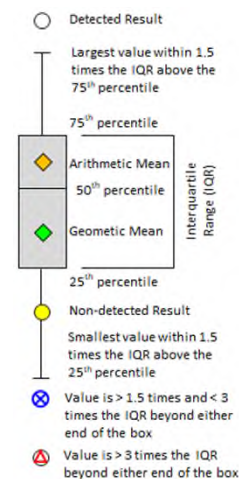
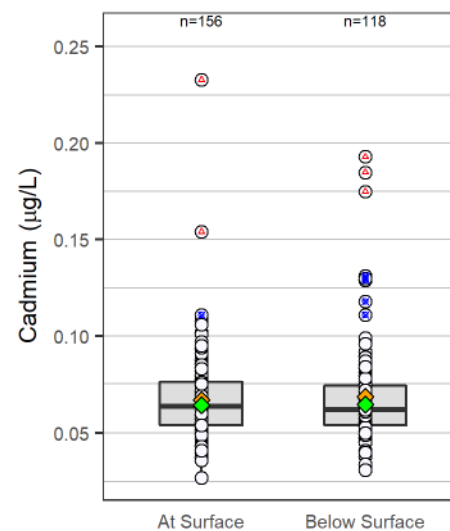
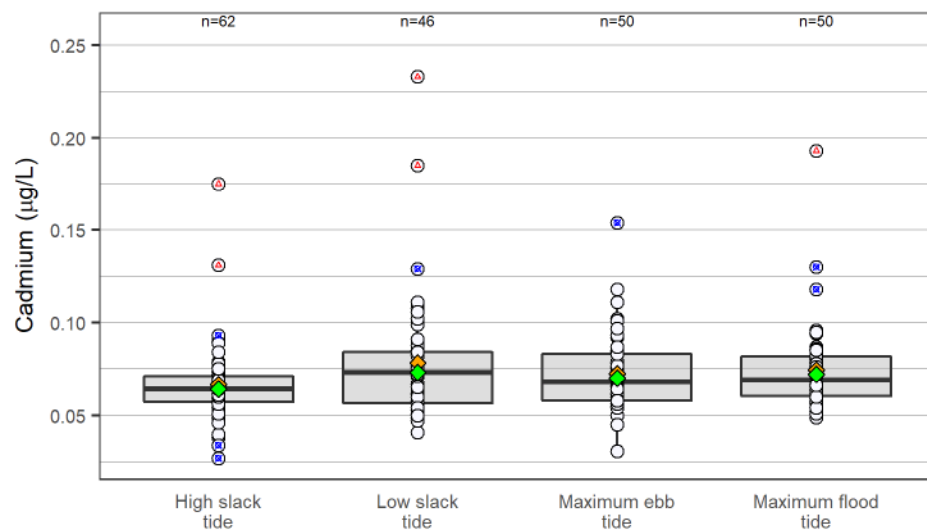
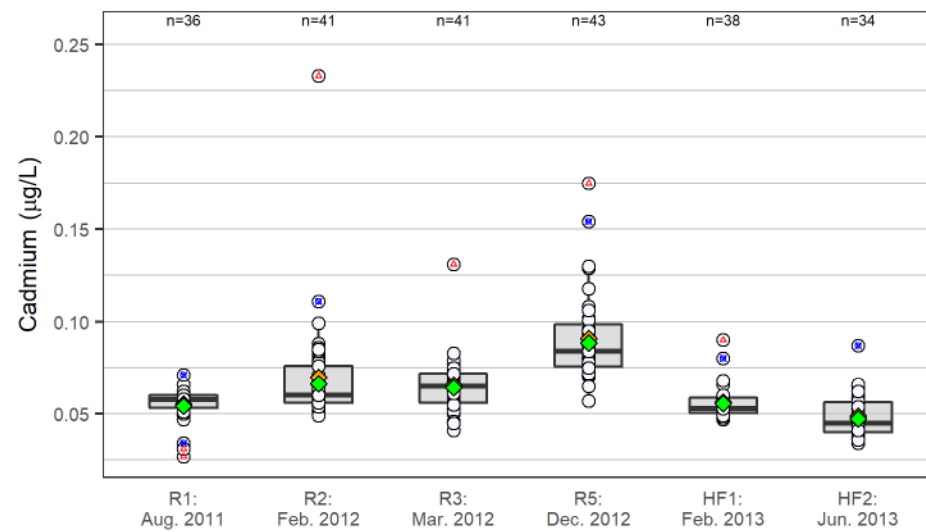
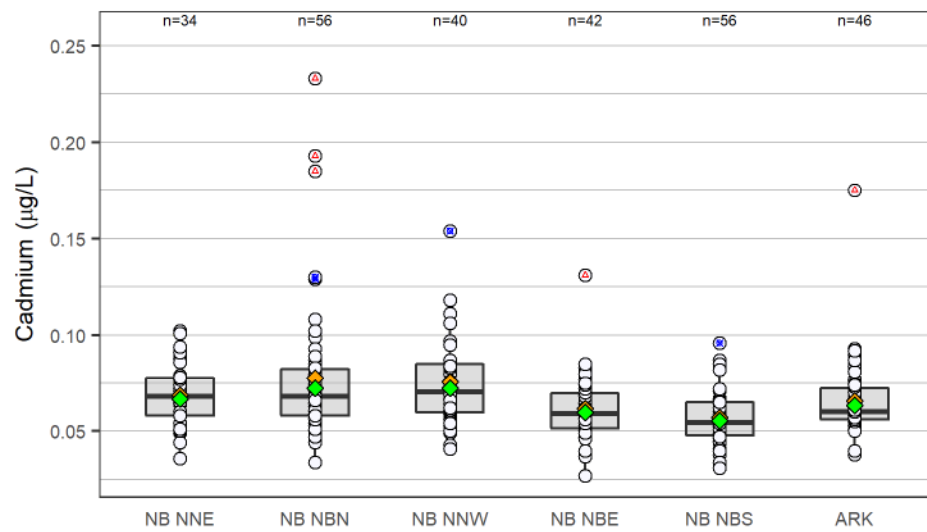
DIAMOND ALKALI SUPERFUND SITE NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - ARSENIC DISSOLVED



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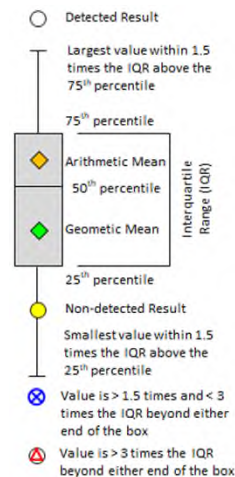
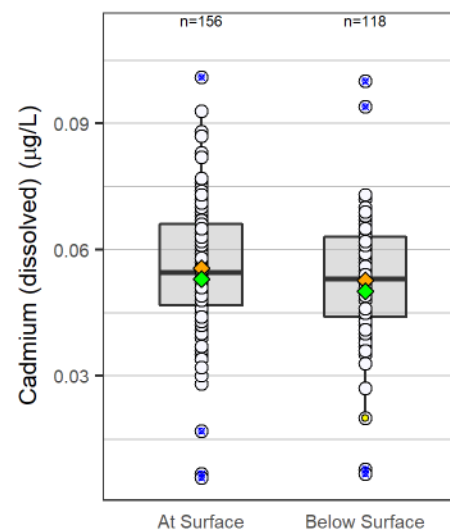
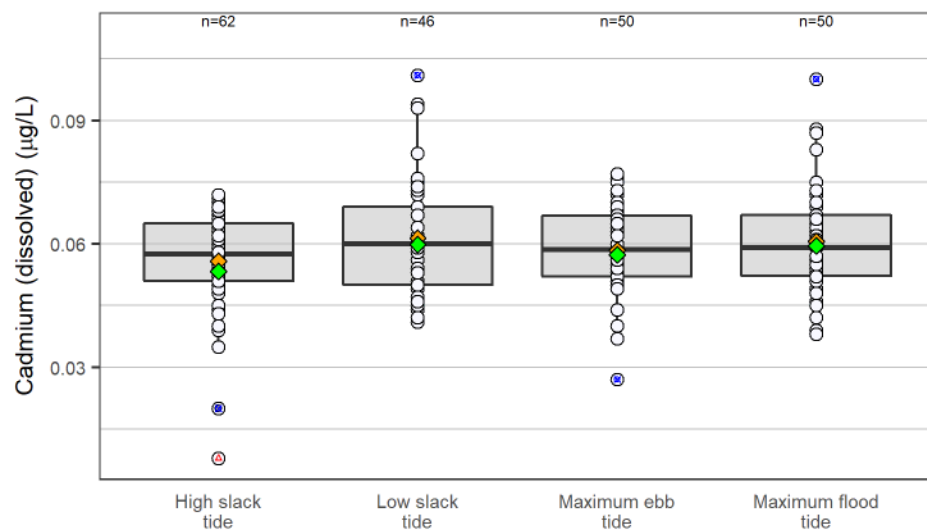
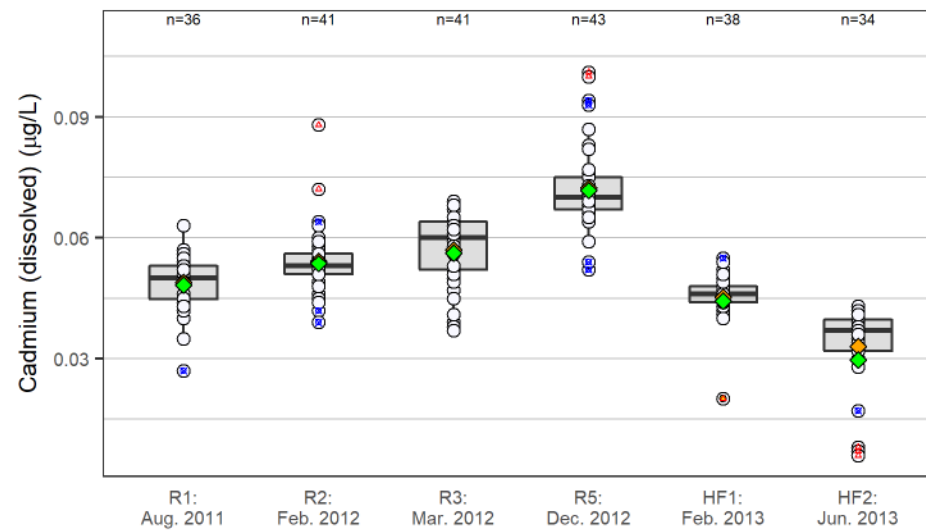
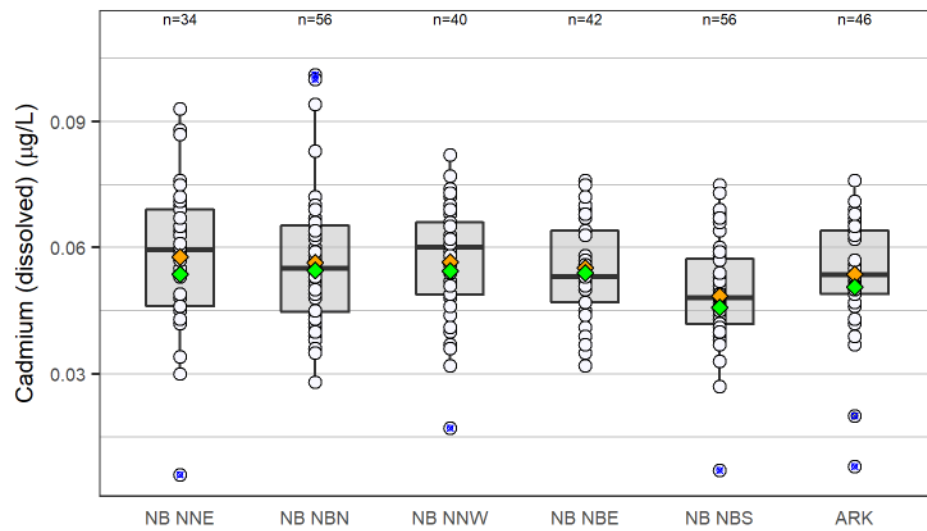
FIGURE
H-17



Notes:
 Surface water sampling conducted under the Chemical Water Column Monitoring Program (2011-2013). Data were downloaded from ourpassaic.org.
 Six sampling stations located in the Newark Bay Study Area (NNE, NBN, NNW, NBE, NBS, ARK).
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 For percentiles, non-detects included at the reporting limit.
 For arithmetic mean and geometric mean, non-detects included at 1/2 the reporting limit.
 Pink shaded area represents range of non-detect reporting limits.
 Percentiles/mean not estimated for n<8 and/or frequency of detection<50%.

DIAMOND ALKALI SUPERFUND SITE
 NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION
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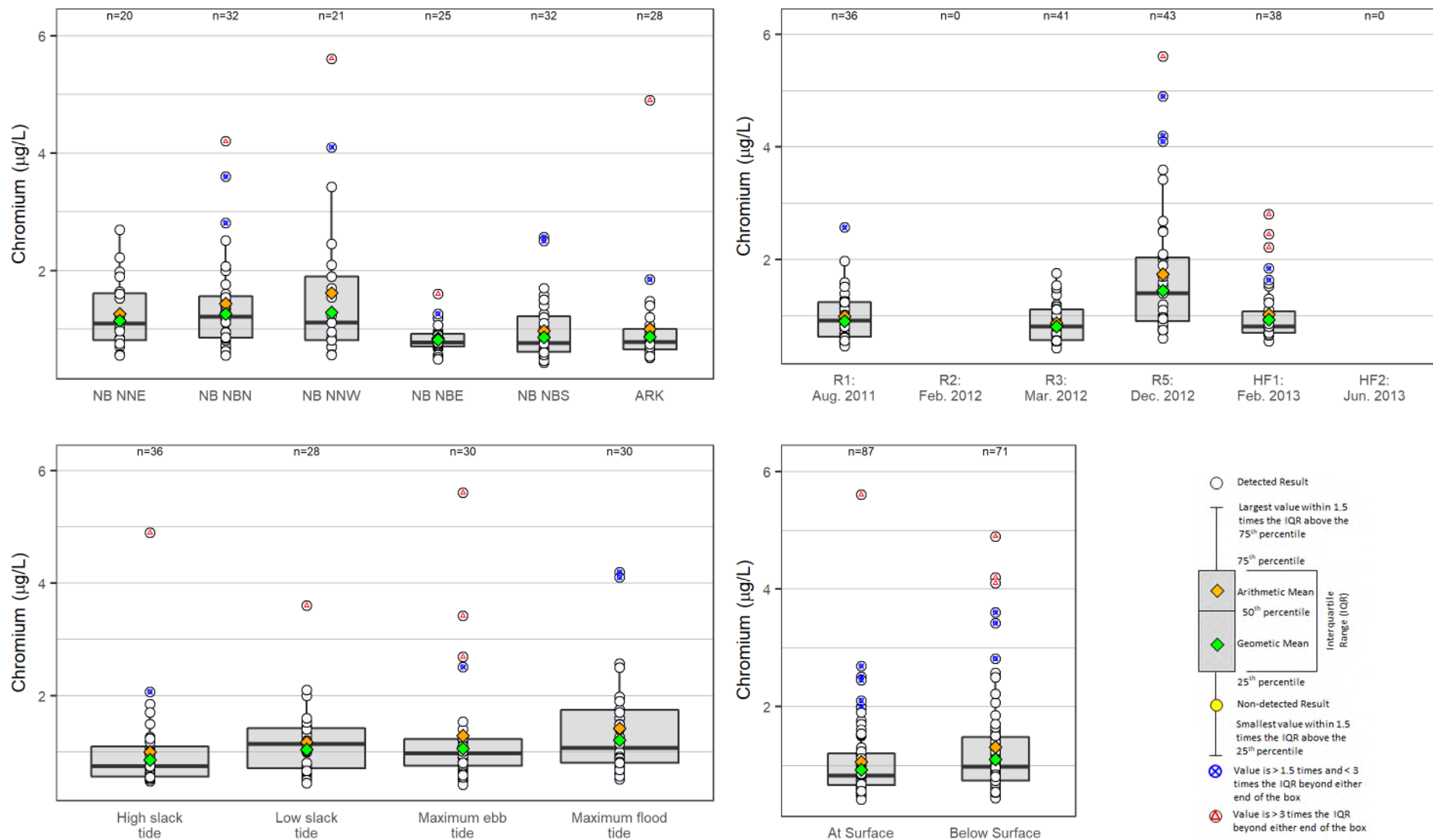
SURFACE WATER RESULTS - CADMIUM



Notes:
 Surface water sampling conducted under the Chemical Water Column Monitoring Program (2011-2013). Data were downloaded from ourpassaic.org.
 Six sampling stations located in the Newark Bay Study Area (NNE, NBN, NNW, NBE, NBS, ARK).
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 Pink shaded area represents range of non-detect reporting limits.
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DIAMOND ALKALI SUPERFUND SITE NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - CADMIUM DISSOLVED



Notes:

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For percentiles, non-detects included at the reporting limit.

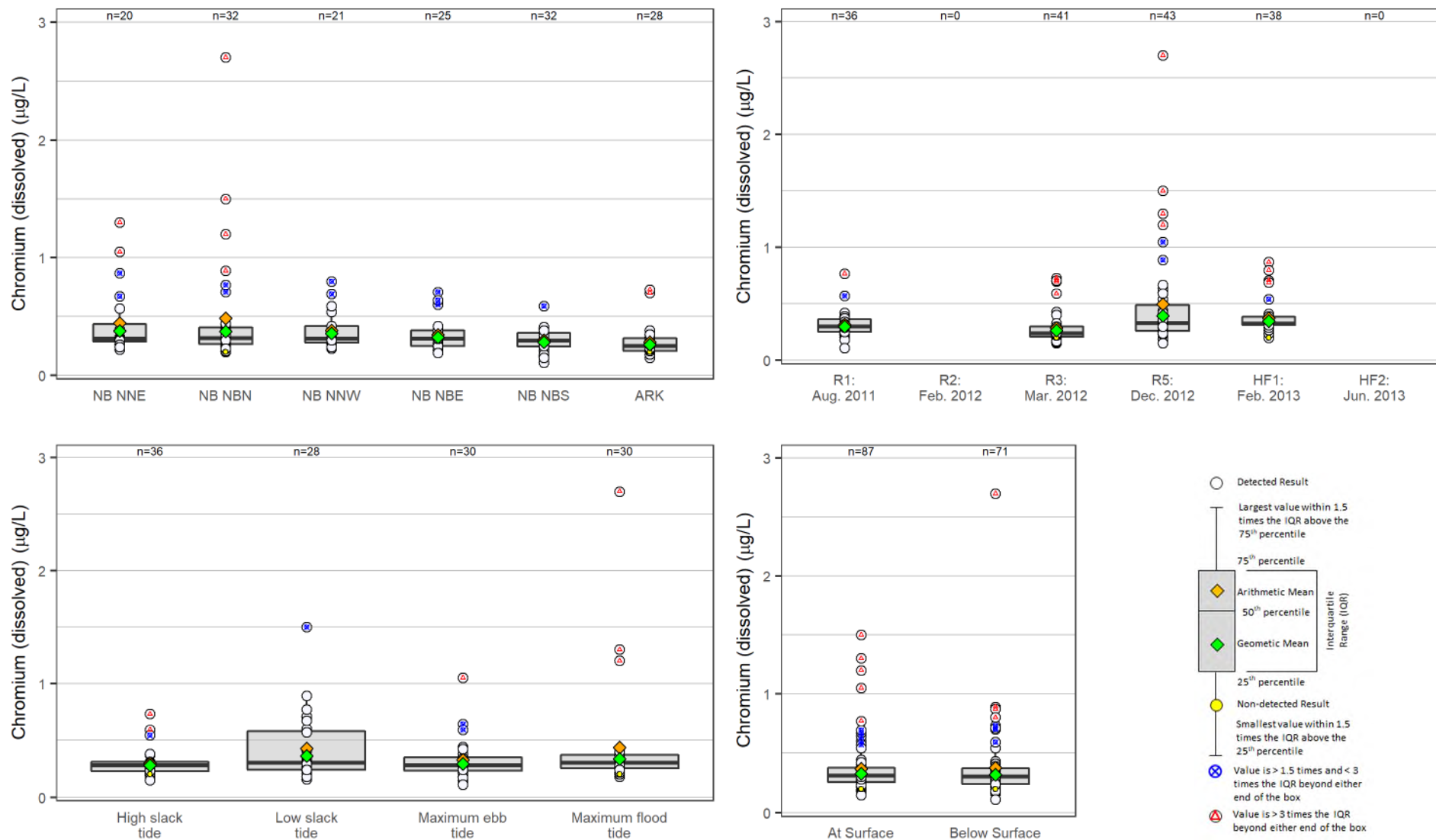
For arithmetic mean and geometric mean, non-detects included at 1/2 the reporting limit.

Pink shaded area represents range of non-detect reporting limits.

Percentiles/mean not estimated for n<8 and/or frequency of detection<50%.

DIAMOND ALKALI SUPERFUND SITE NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - CHROMIUM



Notes:

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n = number of samples

Non-detects plotted at the reporting limit.

For percentiles, non-detects included at the reporting limit.

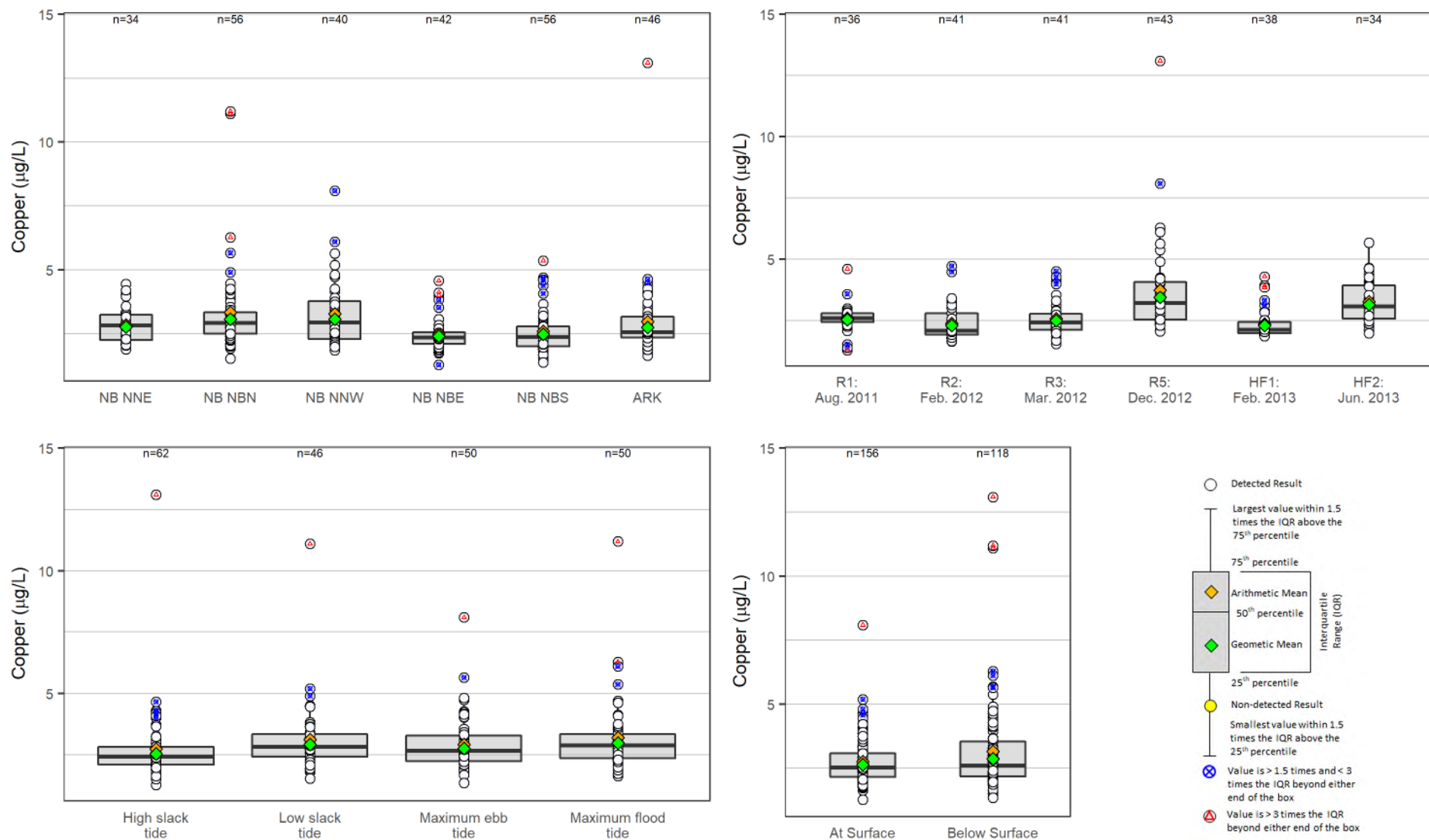
For arithmetic mean and geometric mean, non-detects included at 1/2 the reporting limit.

Pink shaded area represents range of non-detect reporting limits.

Percentiles/mean not estimated for n<8 and/or frequency of detection<50%.

DIAMOND ALKALI SUPERFUND SITE NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - CHROMIUM DISSOLVED



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For arithmetic mean and geometric mean, non-detects included at 1/2 the reporting limit.

Pink shaded area represents range of non-detect reporting limits.

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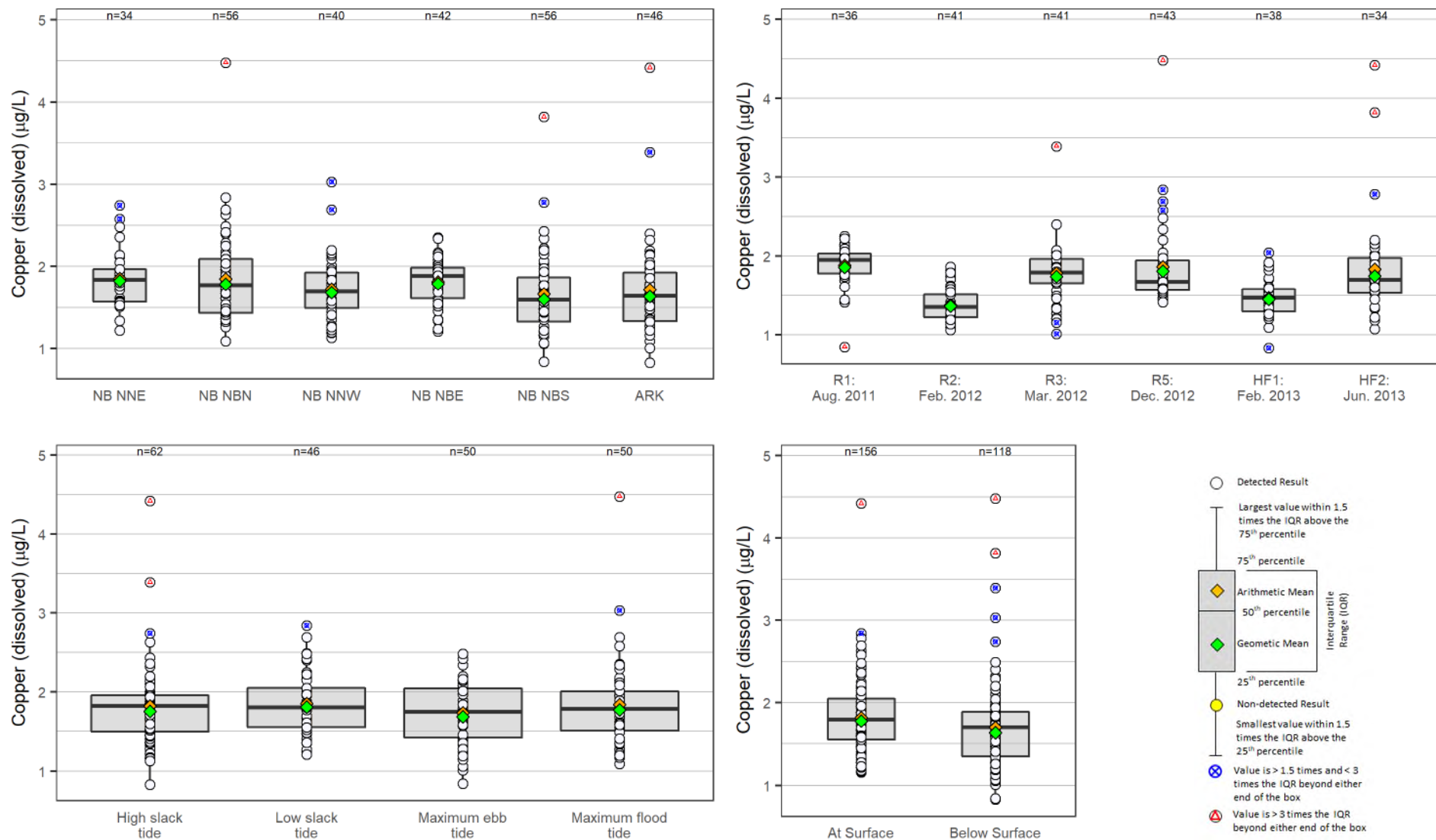
DIAMOND ALKALI SUPERFUND SITE NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - COPPER



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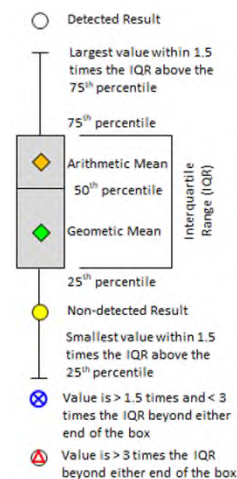
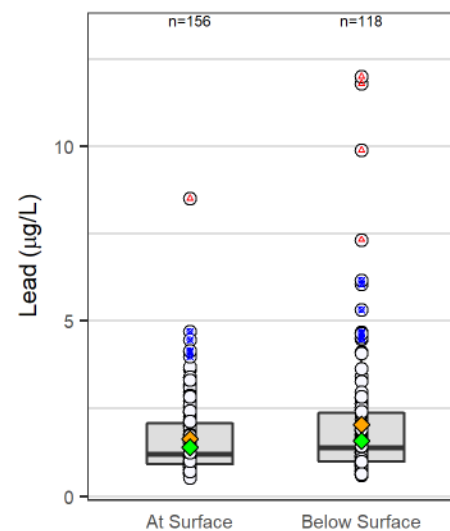
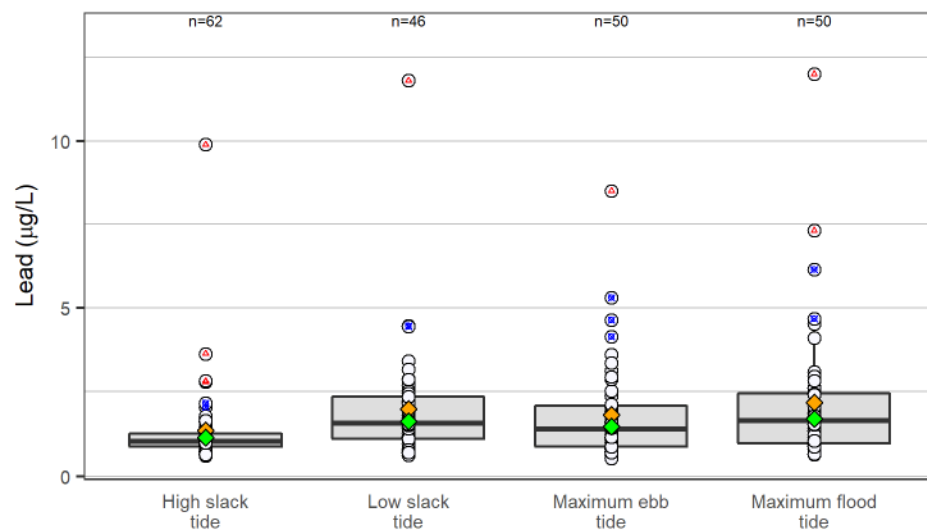
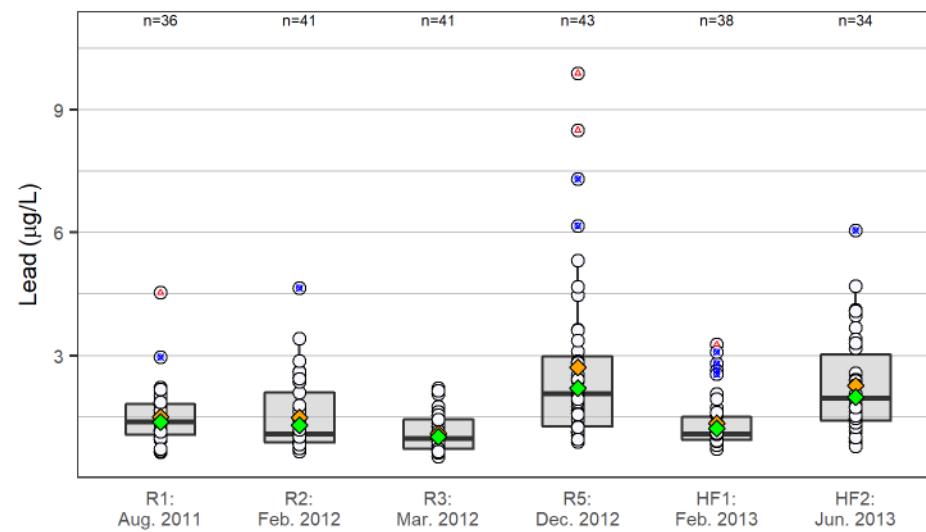
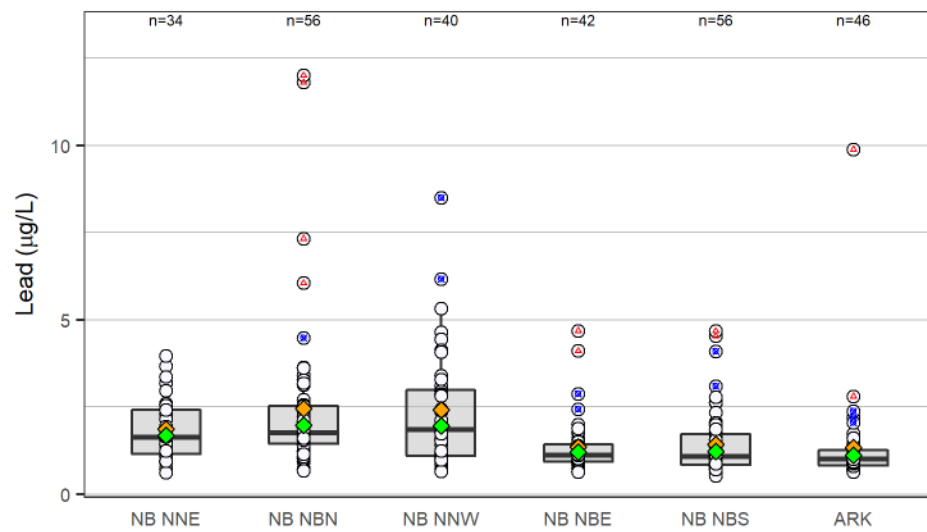
FIGURE
H-22



Notes:
 Surface water sampling conducted under the Chemical Water Column Monitoring Program (2011-2013). Data were downloaded from ourpassaic.org.
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 NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION
 REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - COPPER
 DISSOLVED



Notes:

Surface water sampling conducted under the Chemical Water Column Monitoring Program (2011-2013). Data were downloaded from ourpassaic.org.

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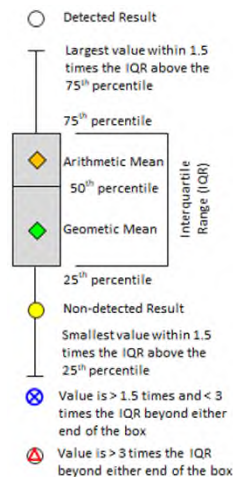
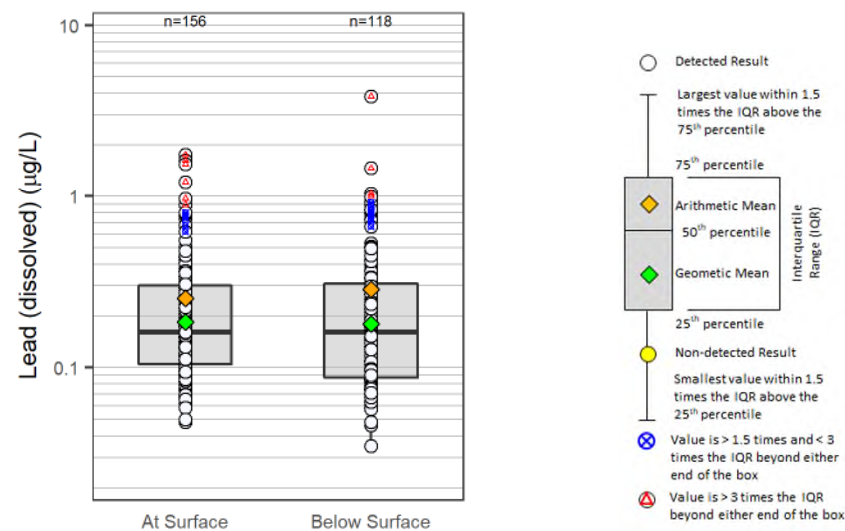
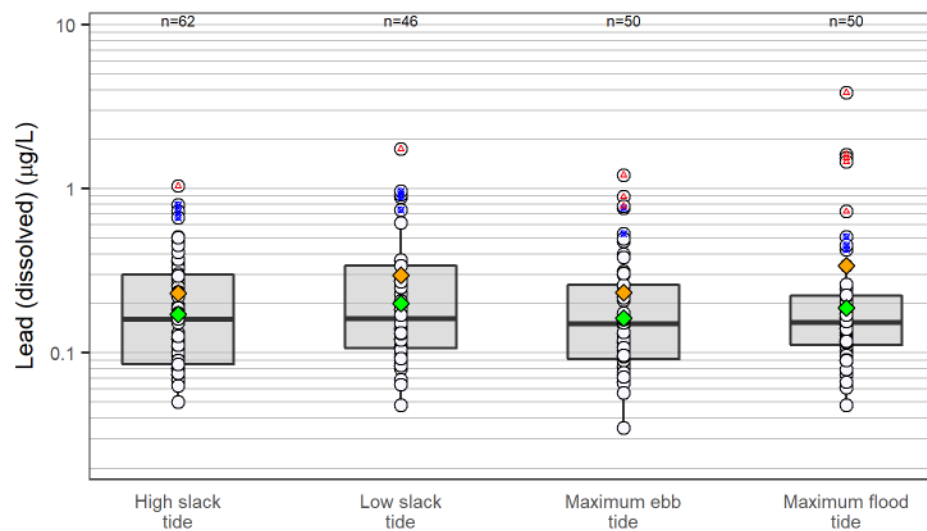
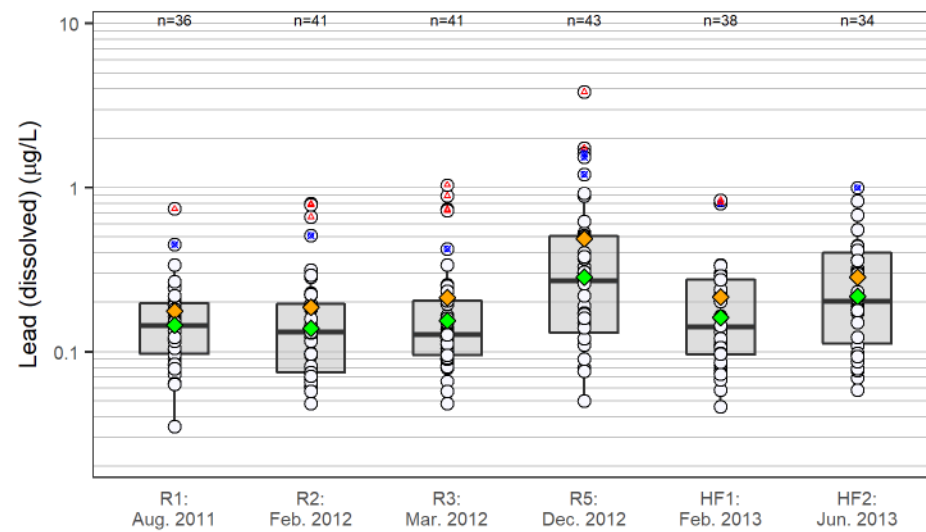
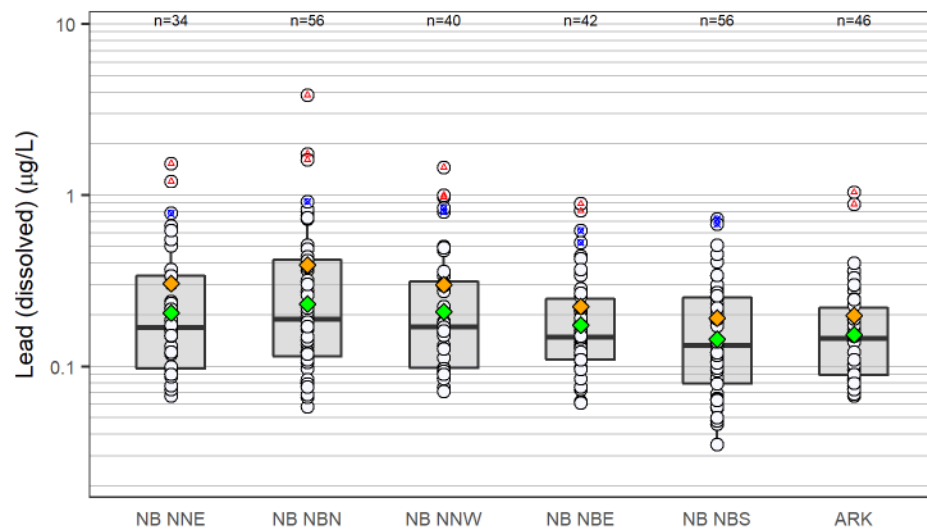
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Pink shaded area represents range of non-detect reporting limits.

Percentiles/mean not estimated for n<8 and/or frequency of detection<50%.

DIAMOND ALKALI SUPERFUND SITE NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION REMEDIAL INVESTIGATION REPORT

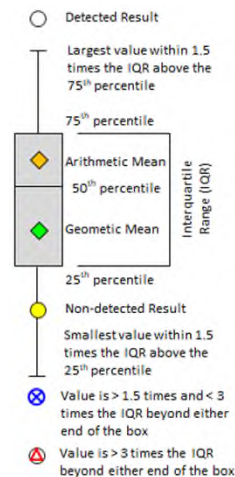
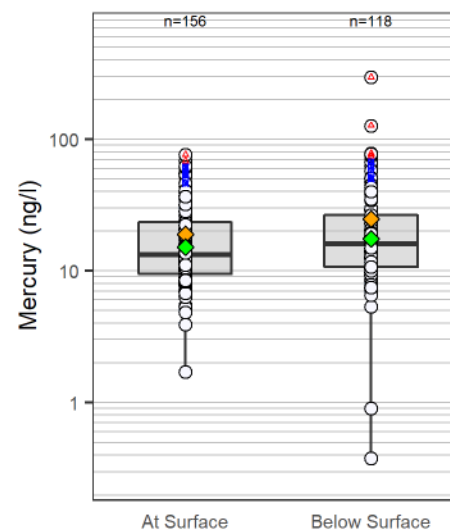
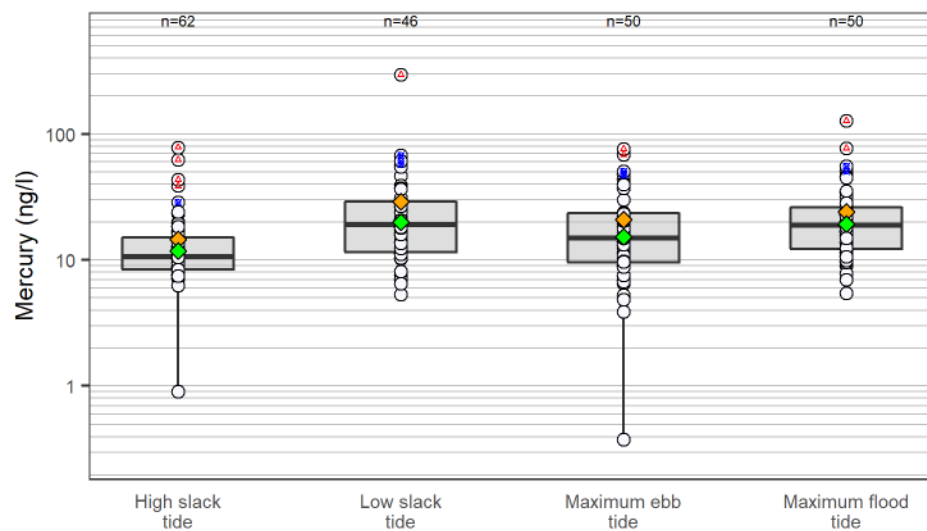
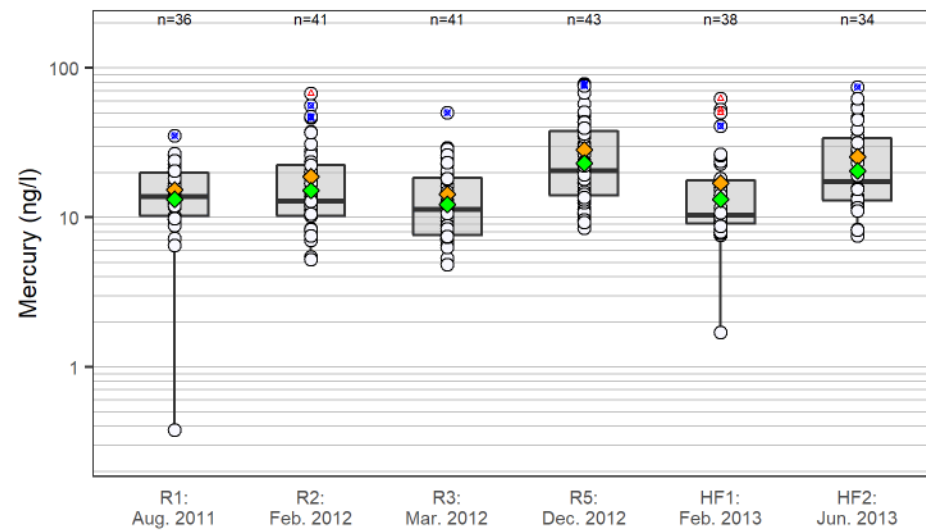
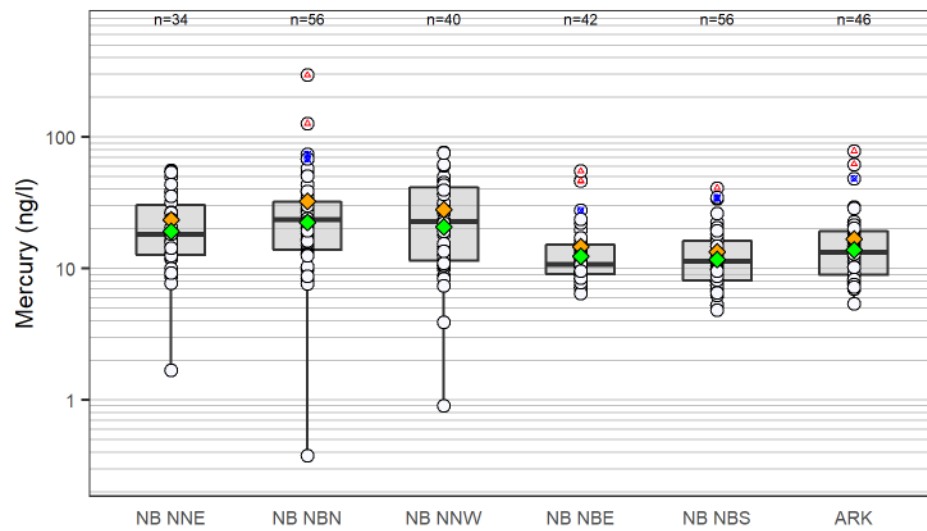
SURFACE WATER RESULTS - LEAD



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DIAMOND ALKALI SUPERFUND SITE
 NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION
 REMEDIAL INVESTIGATION REPORT

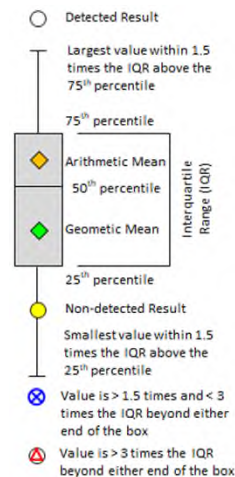
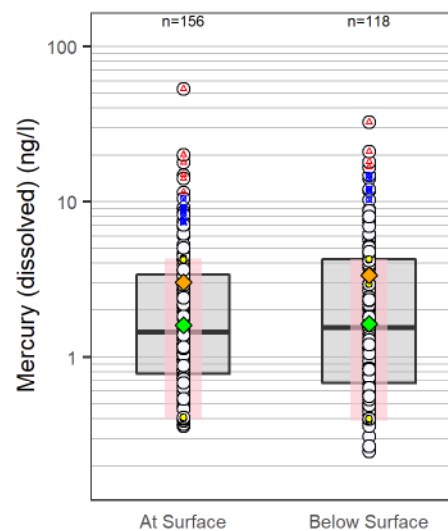
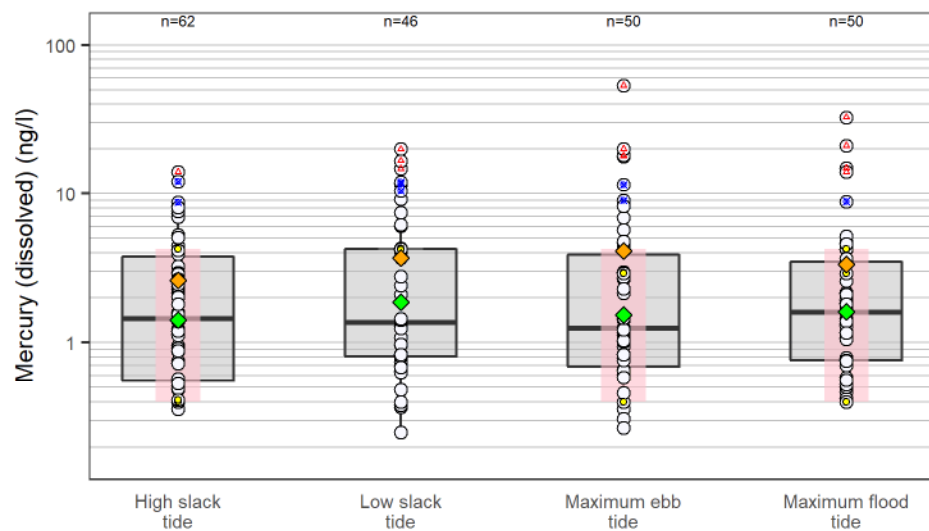
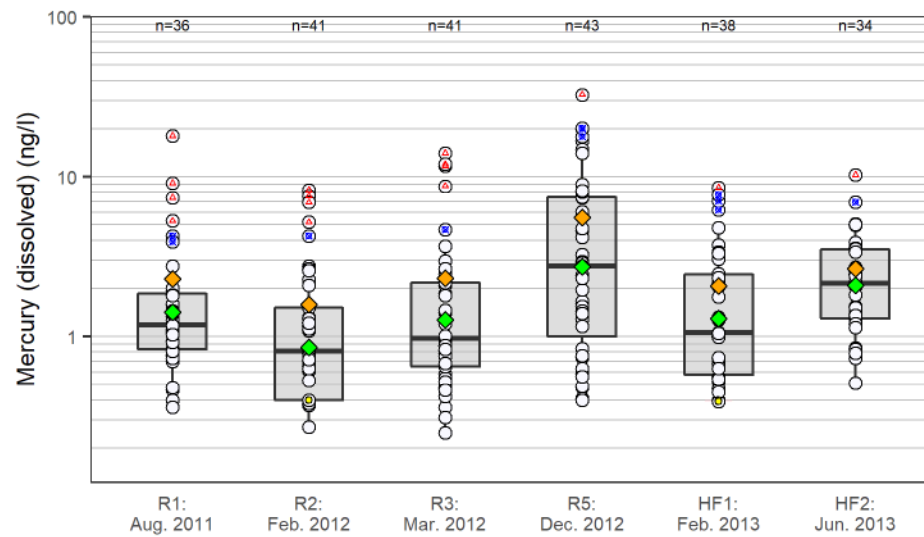
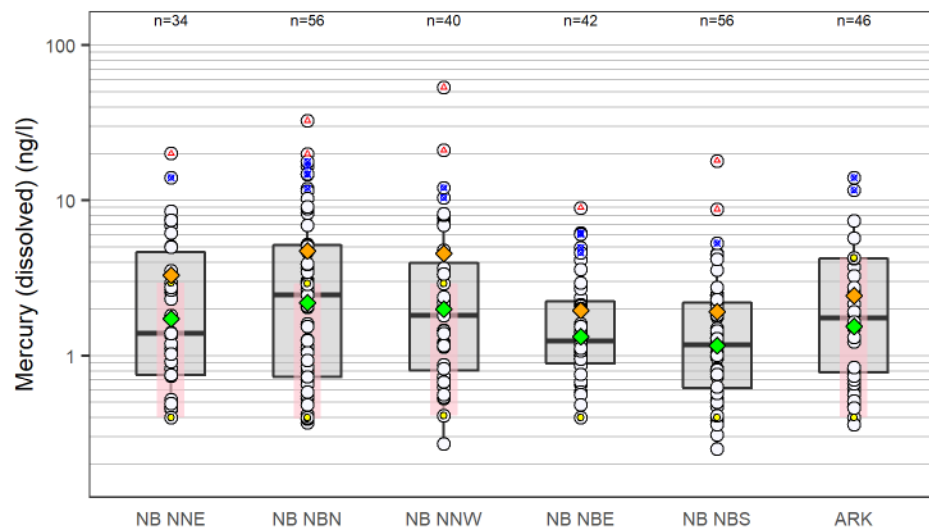
SURFACE WATER RESULTS - LEAD DISSOLVED



Notes:
 Surface water sampling conducted under the Chemical Water Column Monitoring Program (2011-2013). Data were downloaded from ourpassaic.org.
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DIAMOND ALKALI SUPERFUND SITE NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - MERCURY



Notes:

Surface water sampling conducted under the Chemical Water Column Monitoring Program (2011-2013). Data were downloaded from ourpassaic.org.

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n = number of samples

Non-detects plotted at the reporting limit.

For percentiles, non-detects included at the reporting limit.

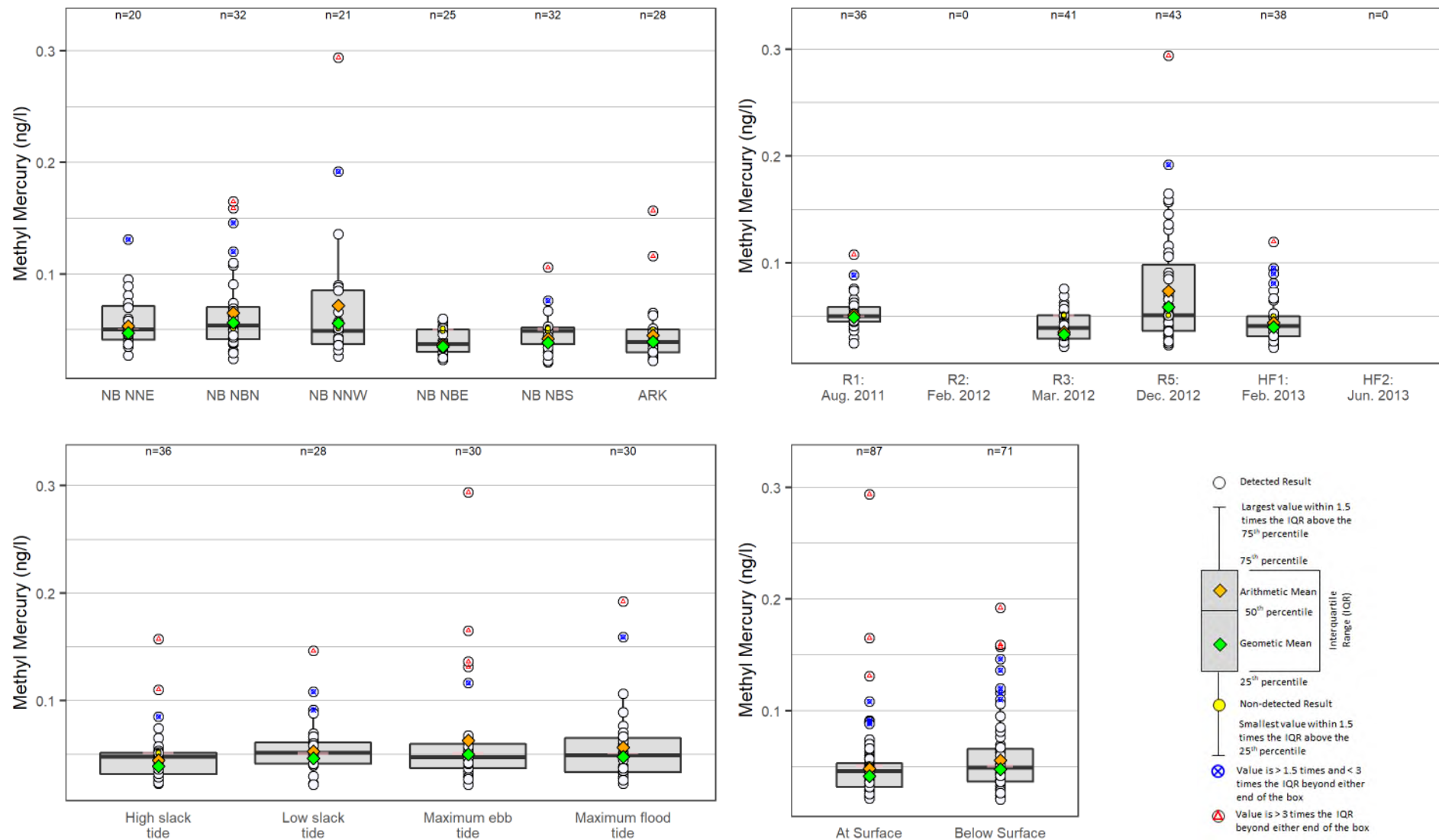
For arithmetic mean and geometric mean, non-detects included at 1/2 the reporting limit.

Pink shaded area represents range of non-detect reporting limits.

Percentiles/mean not estimated for n<8 and/or frequency of detection<50%.

DIAMOND ALKALI SUPERFUND SITE NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - MERCURY DISSOLVED



Notes:

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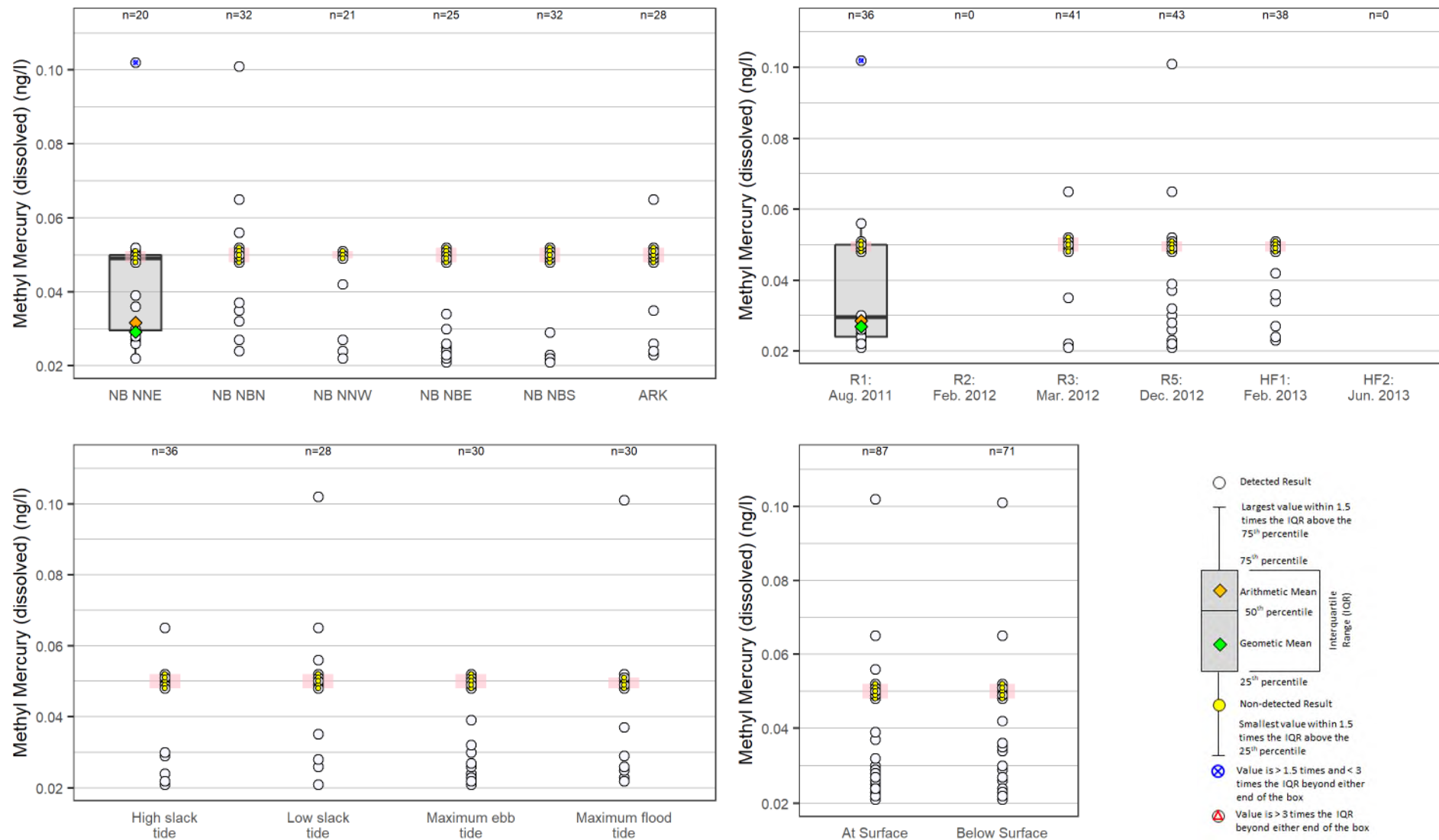
For arithmetic mean and geometric mean, non-detects included at 1/2 the reporting limit.

Pink shaded area represents range of non-detect reporting limits.

Percentiles/mean not estimated for n<8 and/or frequency of detection<50%.

DIAMOND ALKALI SUPERFUND SITE NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - METHYL MERCURY



Notes:

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For percentiles, non-detects included at the reporting limit.

For arithmetic mean and geometric mean, non-detects included at 1/2 the reporting limit.

Pink shaded area represents range of non-detect reporting limits.

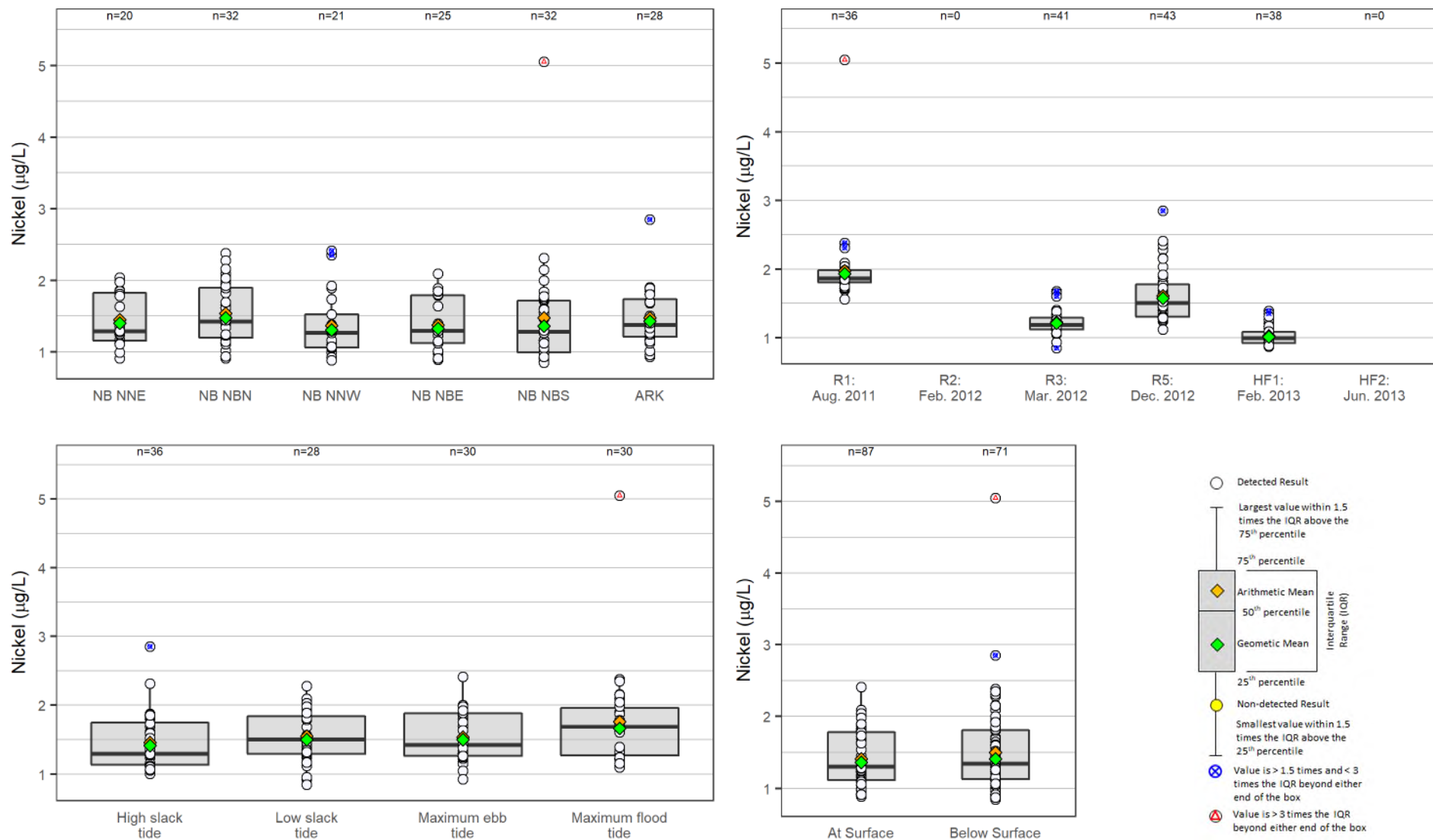
Percentiles/mean not estimated for n<8 and/or frequency of detection<50%.

DIAMOND ALKALI SUPERFUND SITE NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - METHYL MERCURY DISSOLVED



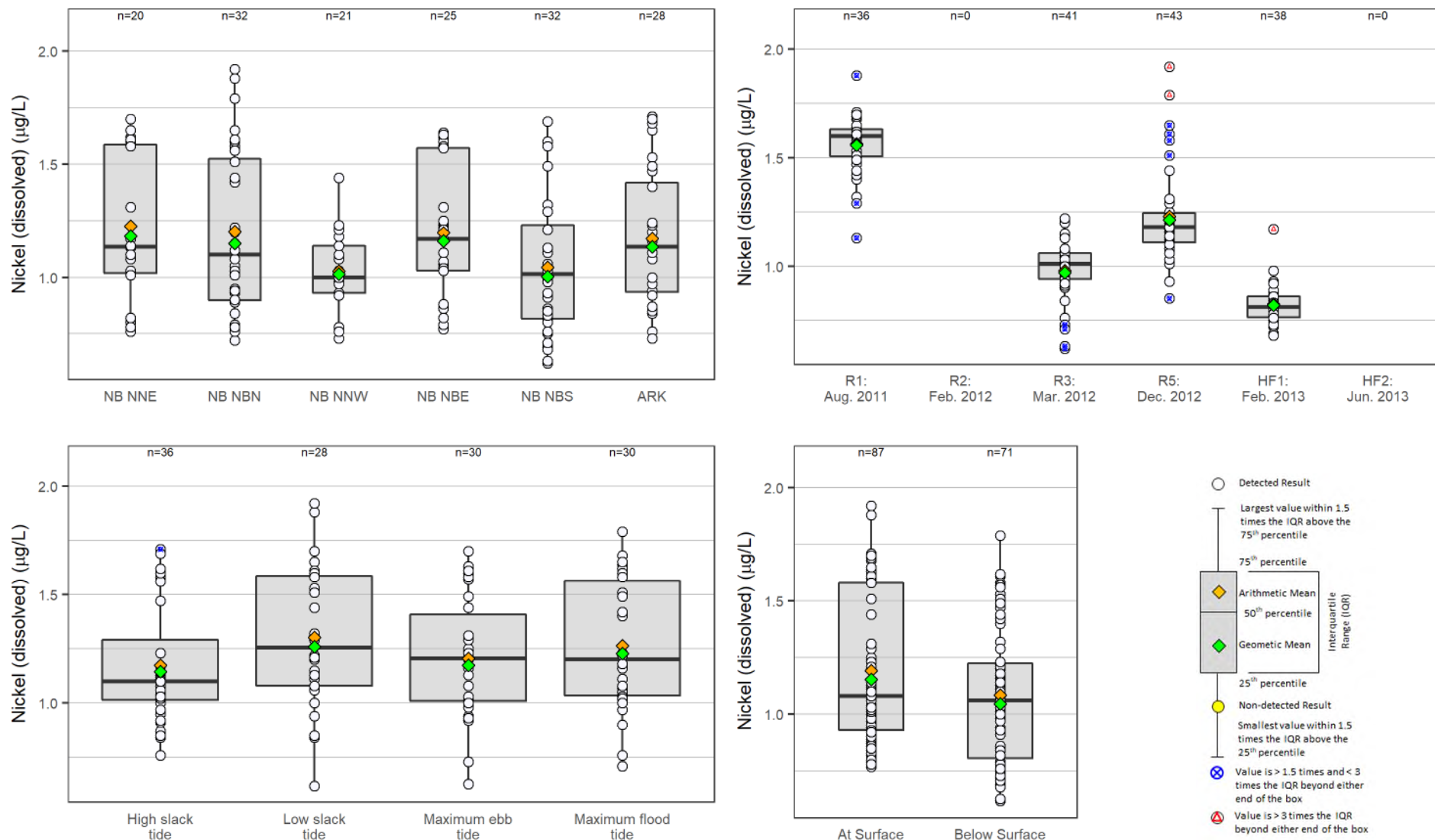
FIGURE
H-29



Notes:
 Surface water sampling conducted under the Chemical Water Column Monitoring Program (2011-2013). Data were downloaded from ourpassaic.org.
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DIAMOND ALKALI SUPERFUND SITE
 NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION
 REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - NICKEL



Notes:

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Six sampling stations located in the Newark Bay Study Area (NNE, NBN, NNW, NBE, NBS, ARK).

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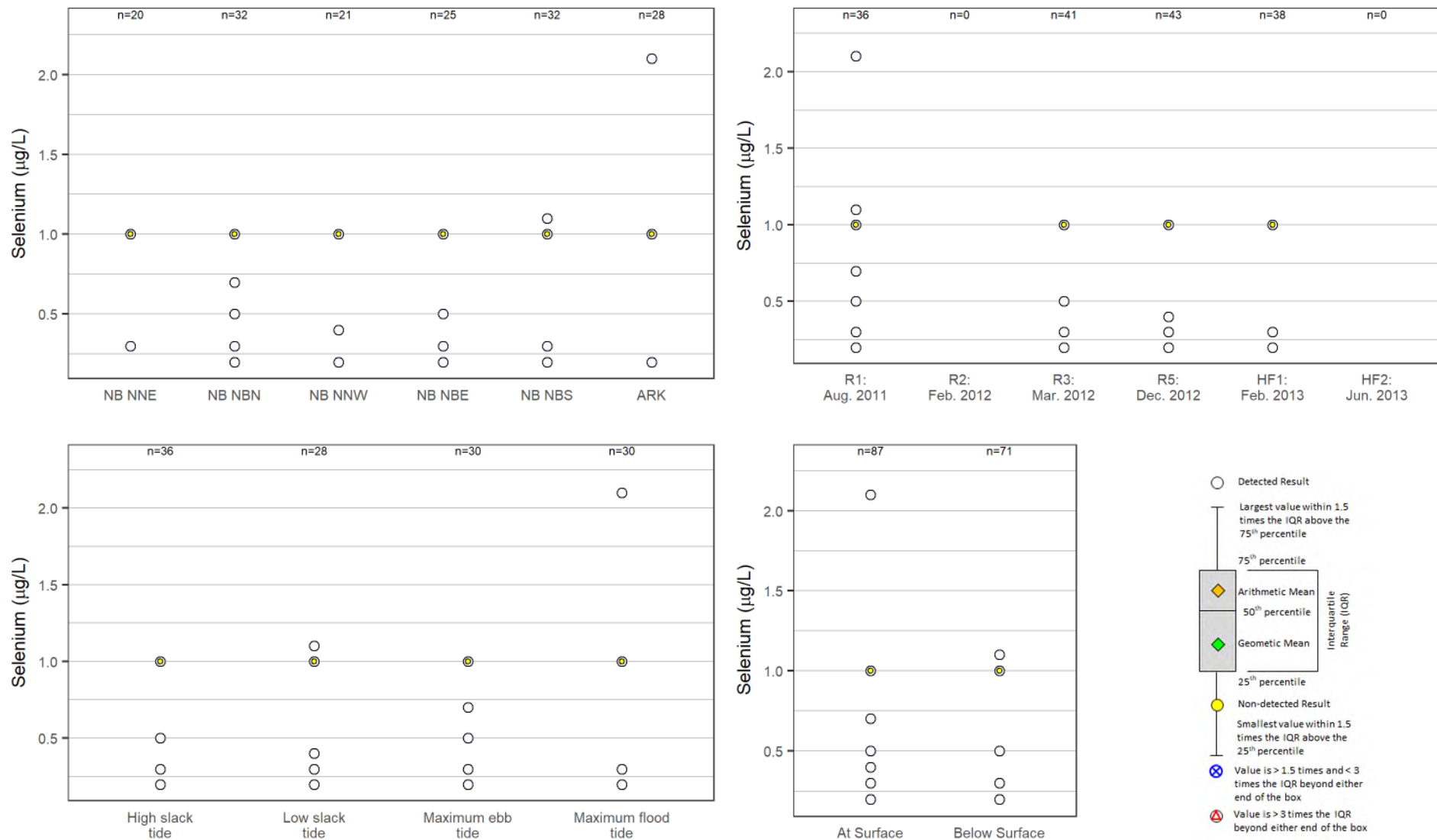
For arithmetic mean and geometric mean, non-detects included at 1/2 the reporting limit.

Pink shaded area represents range of non-detect reporting limits.

Percentiles/mean not estimated for n<8 and/or frequency of detection<50%.

DIAMOND ALKALI SUPERFUND SITE NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION REMEDIAL INVESTIGATION REPORT

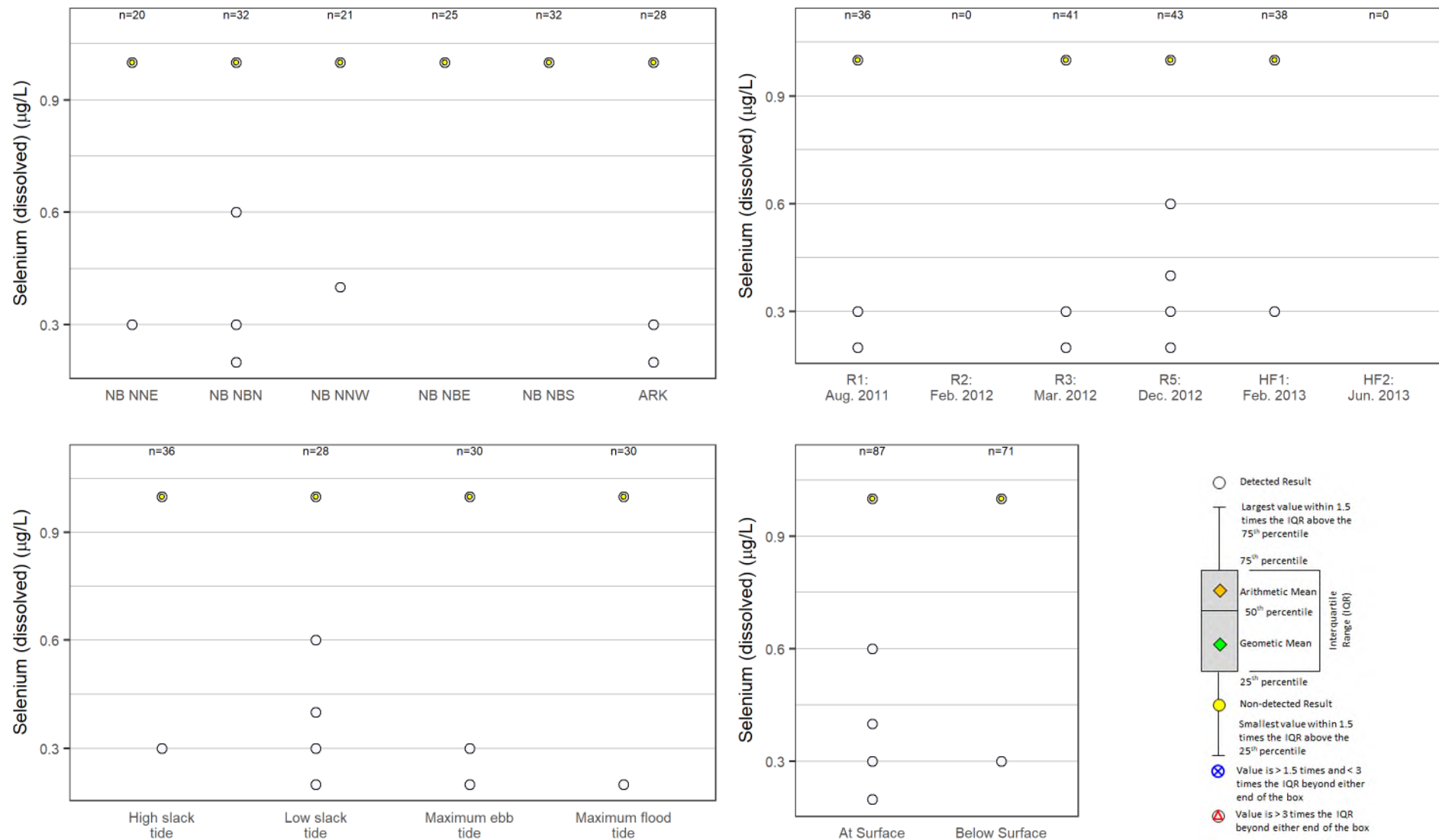
SURFACE WATER RESULTS - NICKEL DISSOLVED



Notes:
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DIAMOND ALKALI SUPERFUND SITE
 NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION
 REMEDIAL INVESTIGATION REPORT

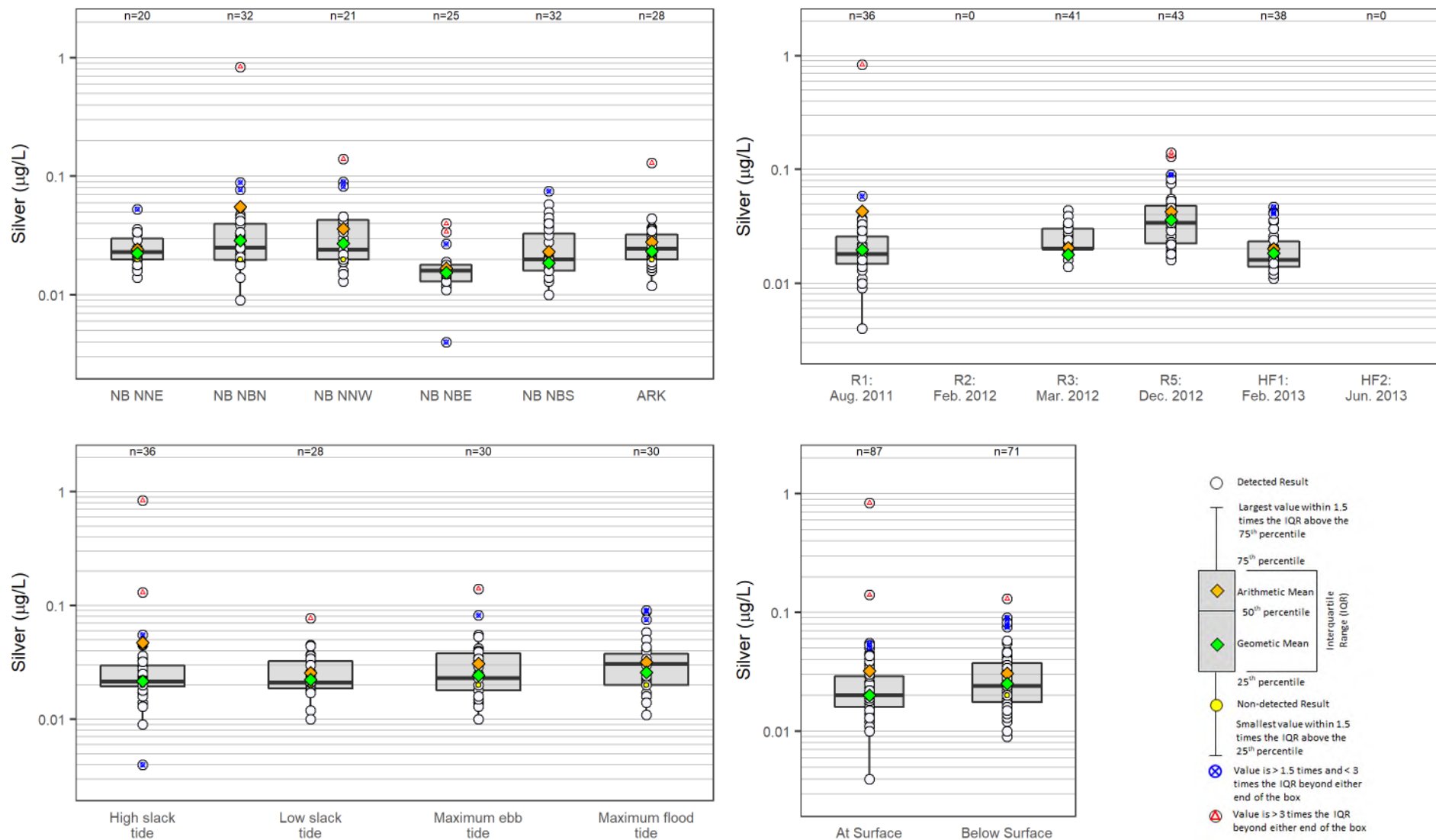
SURFACE WATER RESULTS - SELENIUM



Notes:
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DIAMOND ALKALI SUPERFUND SITE
 NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION
 REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - SELENIUM
 DISSOLVED



Notes:

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For percentiles, non-detects included at the reporting limit.

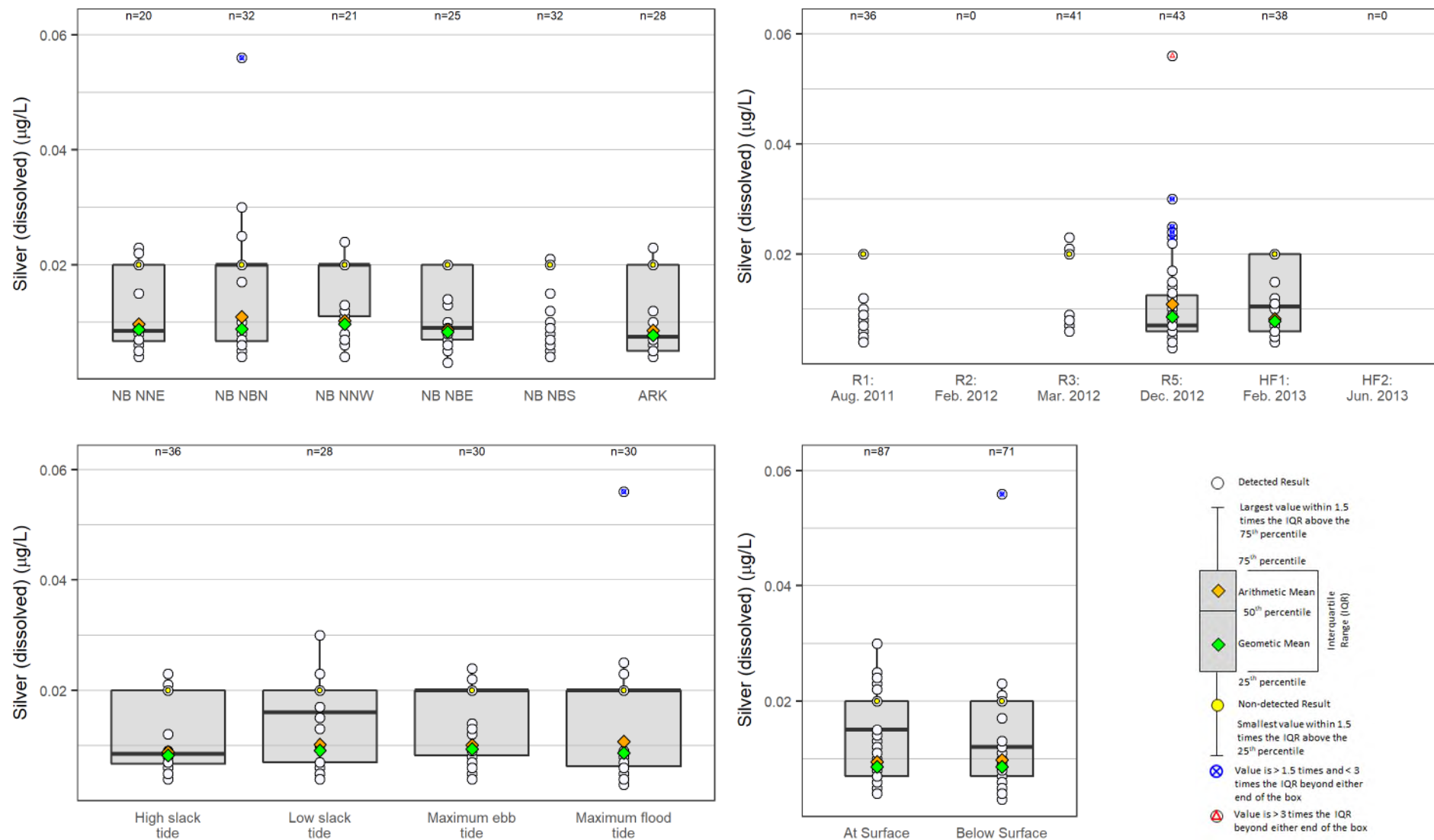
For arithmetic mean and geometric mean, non-detects included at 1/2 the reporting limit.

Pink shaded area represents range of non-detect reporting limits.

Percentiles/mean not estimated for n<8 and/or frequency of detection<50%.

DIAMOND ALKALI SUPERFUND SITE NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION REMEDIAL INVESTIGATION REPORT

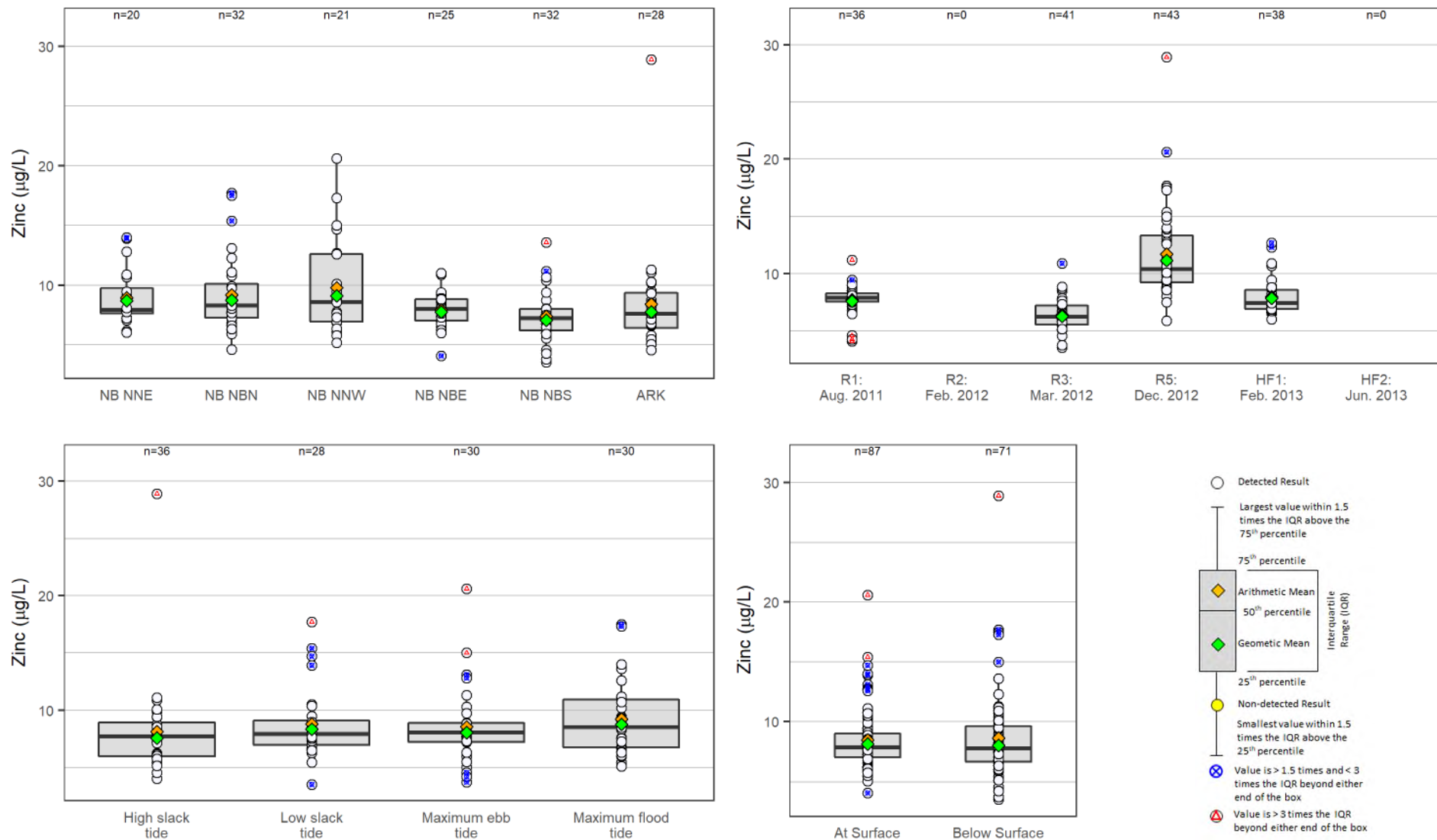
SURFACE WATER RESULTS - SILVER



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 Pink shaded area represents range of non-detect reporting limits.
 Percentiles/mean not estimated for n<8 and/or frequency of detection<50%.

DIAMOND ALKALI SUPERFUND SITE
 NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION
 REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - SILVER DISSOLVED



Notes:

Surface water sampling conducted under the Chemical Water Column Monitoring Program (2011-2013). Data were downloaded from ourpassaic.org.

Six sampling stations located in the Newark Bay Study Area (NNE, NBN, NNW, NBE, NBS, ARK).

At Surface samples were collected at a depth of 3 feet below the water surface. Below Surface samples were collected at a depth 3 feet above the sediment surface. The top panels and the bottom left panel show below and at surface data combined.

n = number of samples

Non-detects plotted at the reporting limit.

For percentiles, non-detects included at the reporting limit.

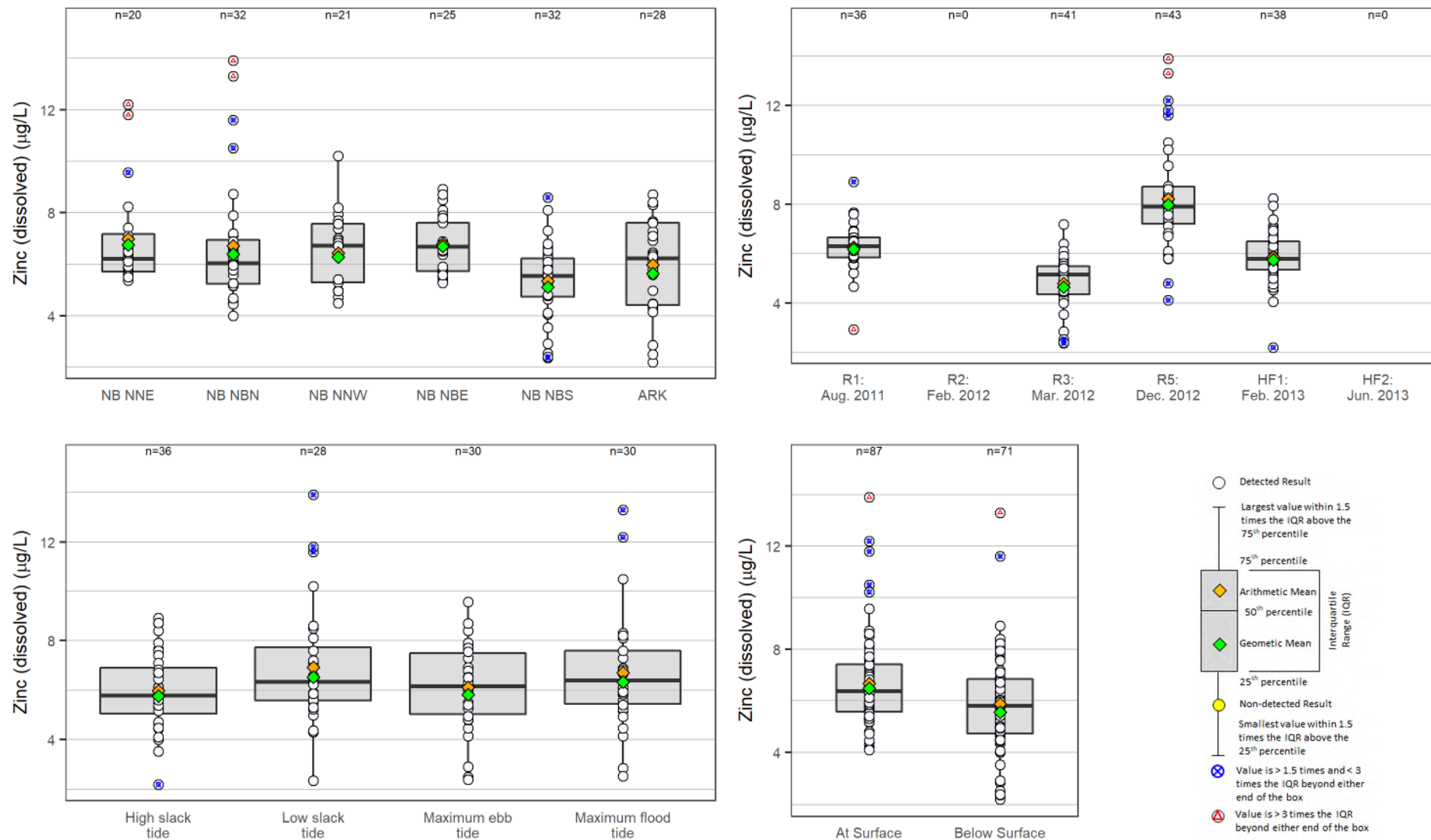
For arithmetic mean and geometric mean, non-detects included at 1/2 the reporting limit.

Pink shaded area represents range of non-detect reporting limits.

Percentiles/mean not estimated for n<8 and/or frequency of detection<50%.

DIAMOND ALKALI SUPERFUND SITE NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION REMEDIAL INVESTIGATION REPORT

SURFACE WATER RESULTS - ZINC



Notes:

Surface water sampling conducted under the Chemical Water Column Monitoring Program (2011-2013). Data were downloaded from ourpassaic.org.

Six sampling stations located in the Newark Bay Study Area (NNE, NBN, NNW, NBE, NBS, ARK).

At Surface samples were collected at a depth of 3 feet below the water surface. Below Surface samples were collected at a depth 3 feet above the sediment surface. The top panels and the bottom left panel show below and at surface data combined.

n = number of samples

Non-detects plotted at the reporting limit.

For percentiles, non-detects included at the reporting limit.

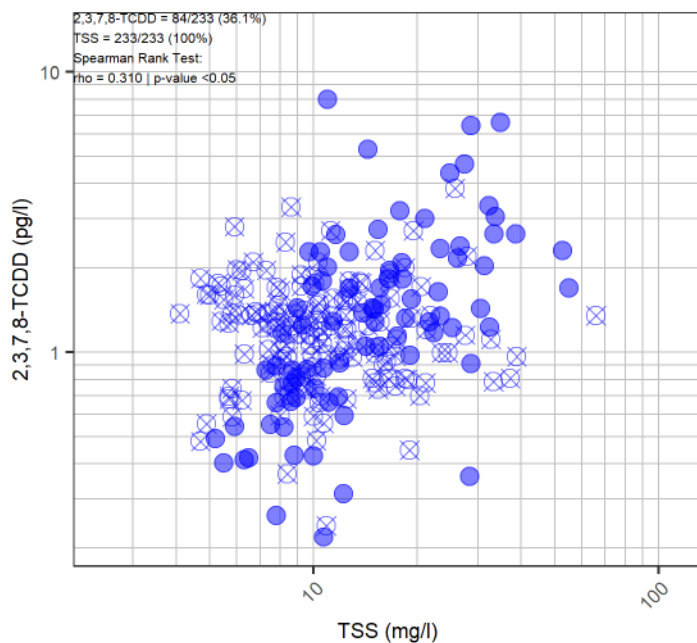
For arithmetic mean and geometric mean, non-detects included at 1/2 the reporting limit.

Pink shaded area represents range of non-detect reporting limits.

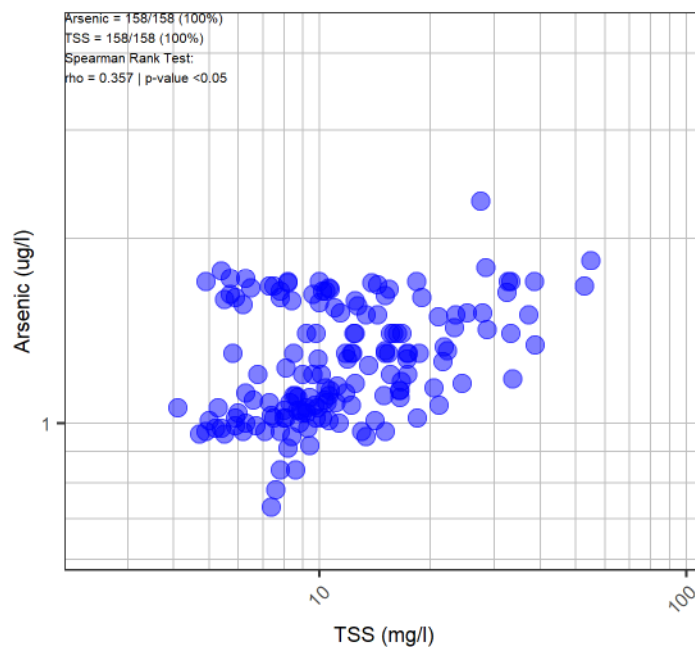
Percentiles/mean not estimated for n<8 and/or frequency of detection<50%.

DIAMOND ALKALI SUPERFUND SITE NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION REMEDIAL INVESTIGATION REPORT

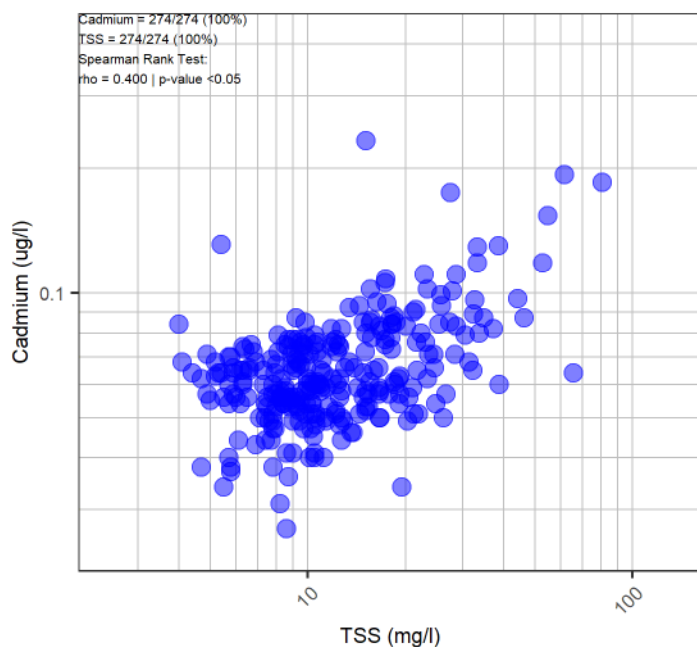
SURFACE WATER RESULTS - ZINC DISSOLVED



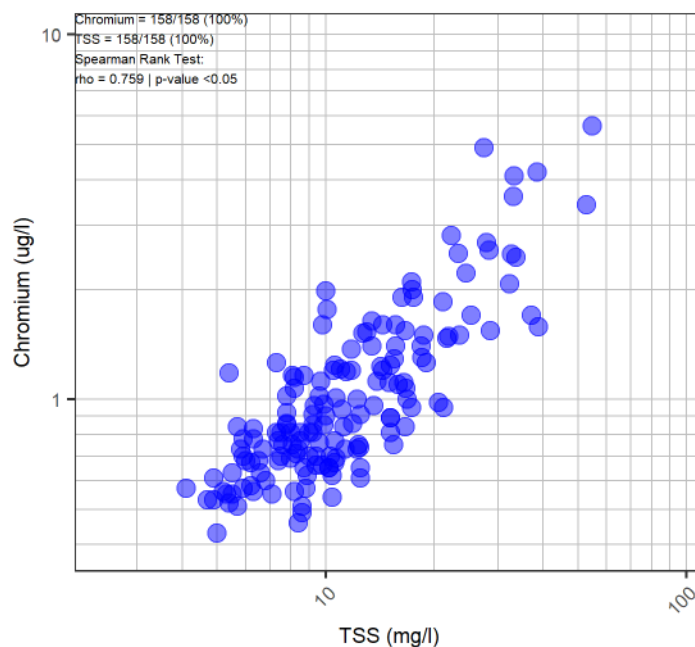
● Detect (Both)
⊗ Detect (TSS) | ND (2,3,7,8-TCDD)



● Detect (Both)



● Detect (Both)

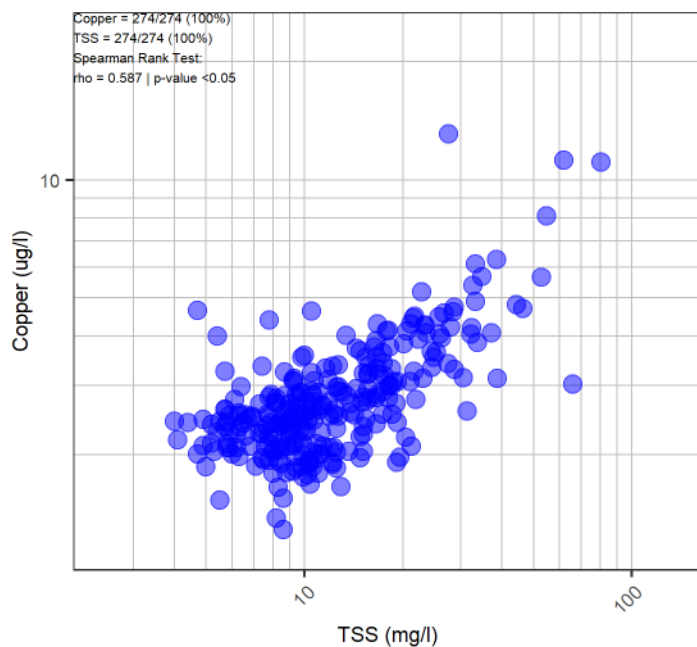


● Detect (Both)

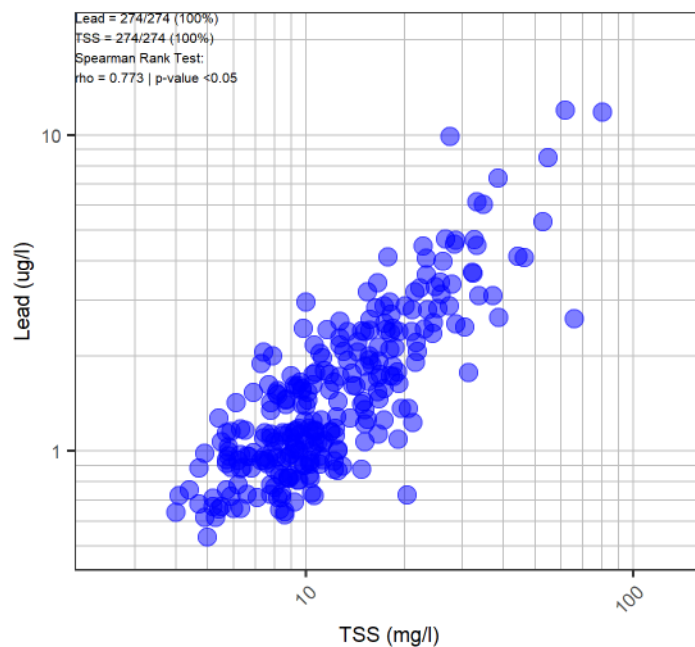
Notes:
For correlation analysis, non-detects included at 1/2 the reporting limit.
Non-detects plotted at the reporting limit.

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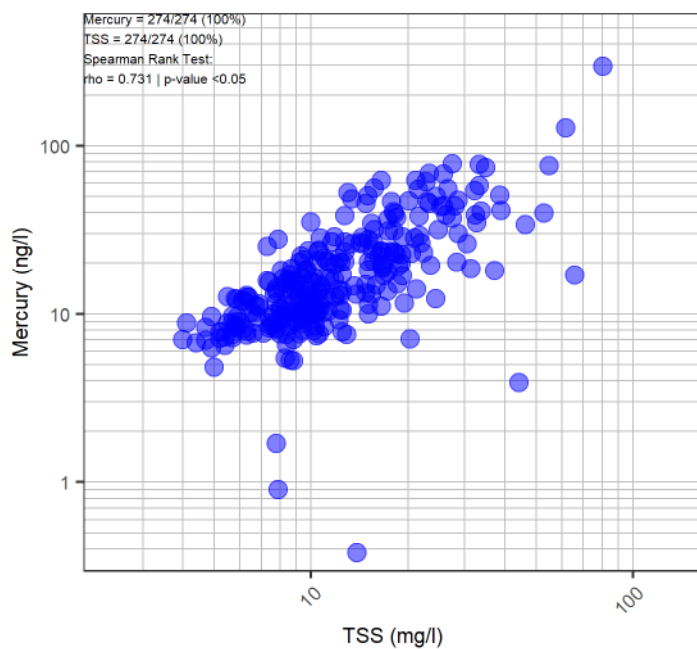
SURFACE WATER CORRELATION – COPCS
(2,3,7,8-TCDD, ARSENIC, CADMIUM,
CHROMIUM) AND TOTAL SUSPENDED SOLIDS



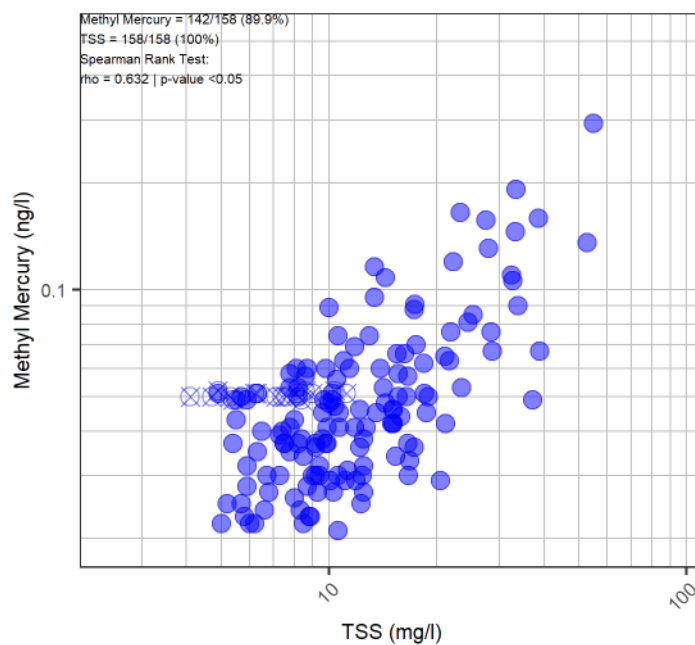
● Detect (Both)



● Detect (Both)



● Detect (Both)

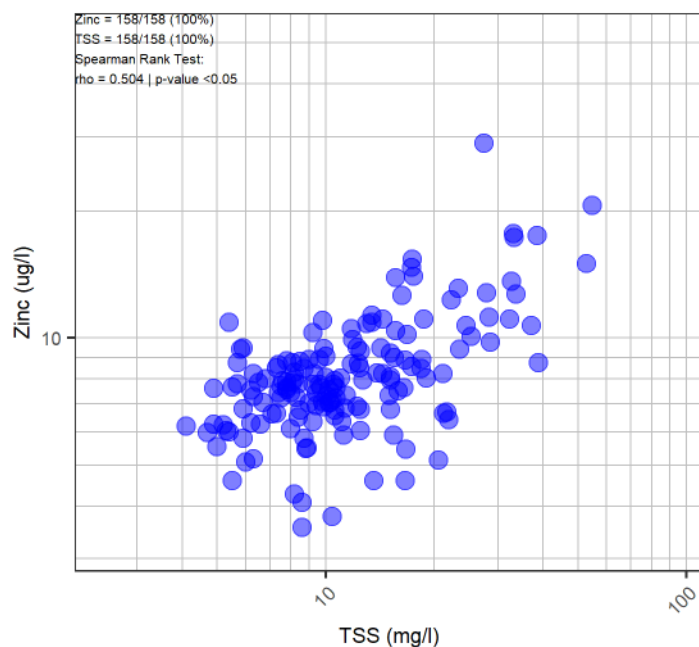
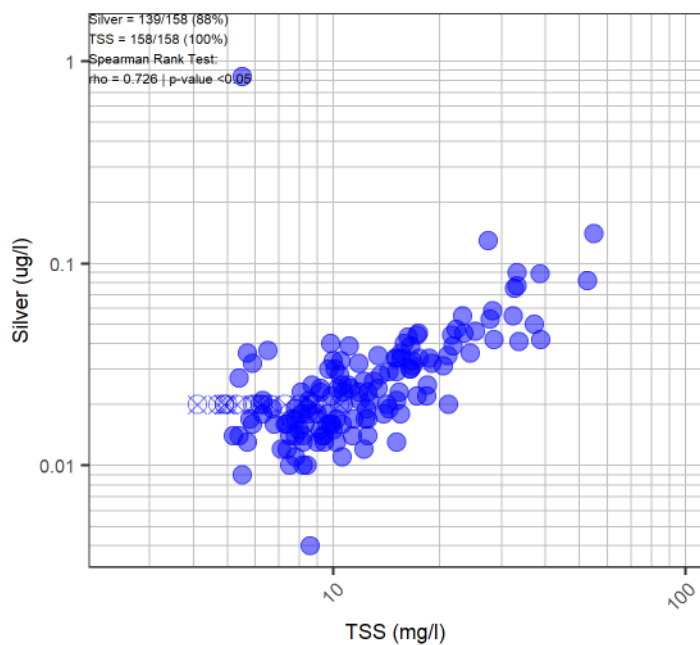
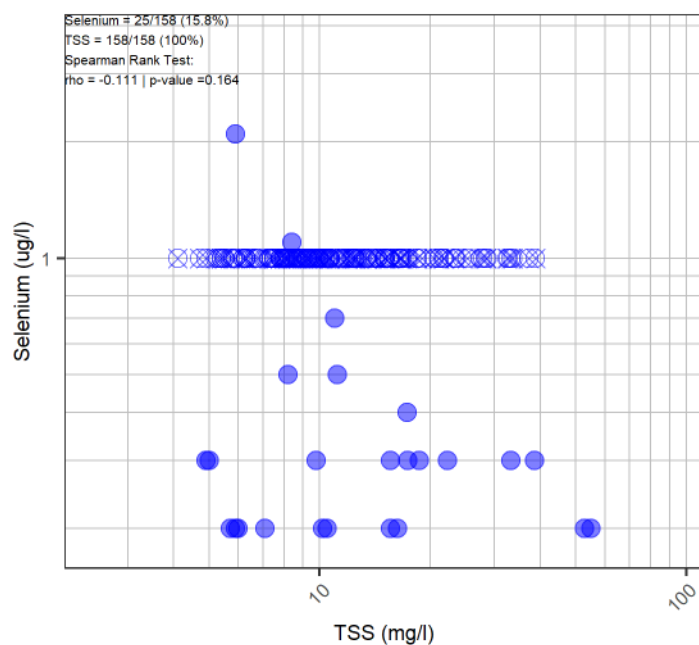
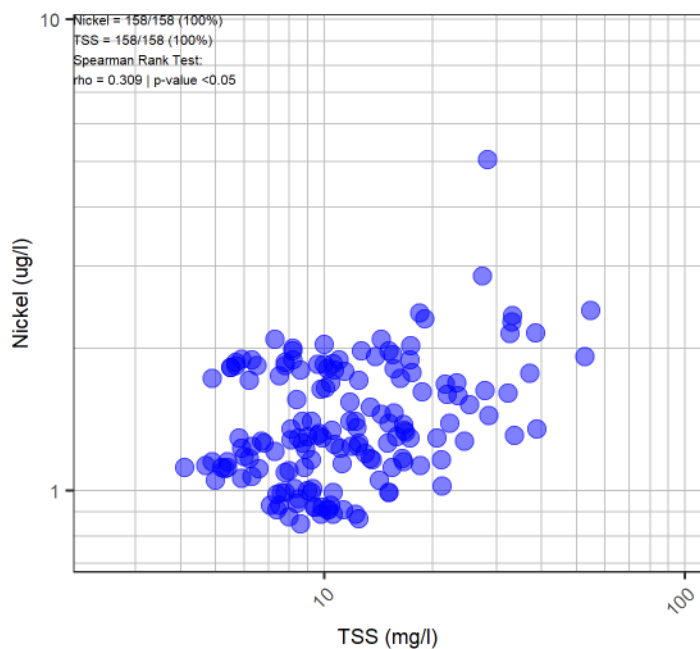


● Detect (Both)
⊗ Detect (TSS) | ND (Methyl Mercury)

Notes:
For correlation analysis, non-detects included at 1/2 the reporting limit.
Non-detects plotted at the reporting limit.

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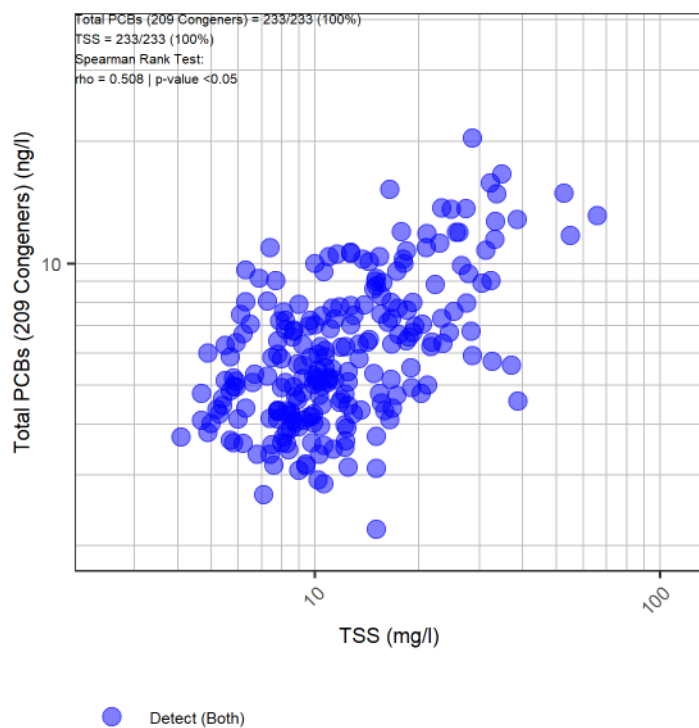
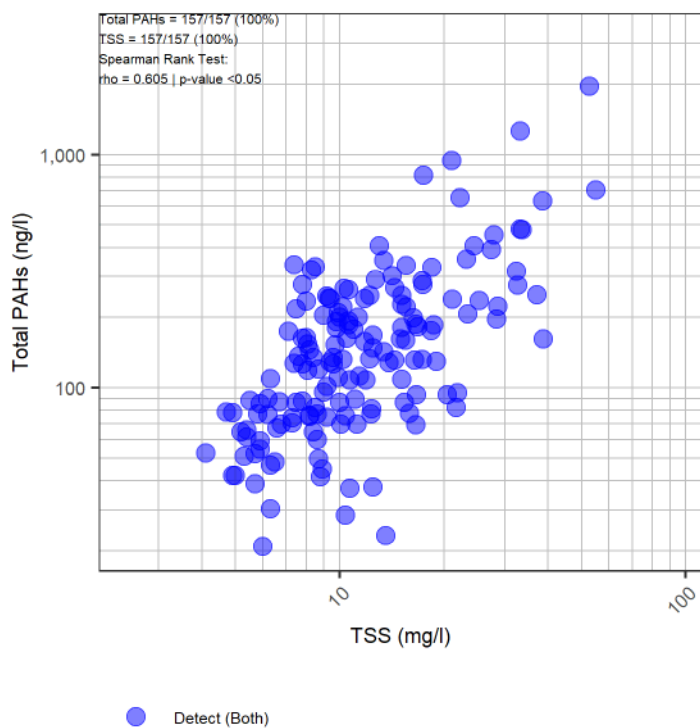
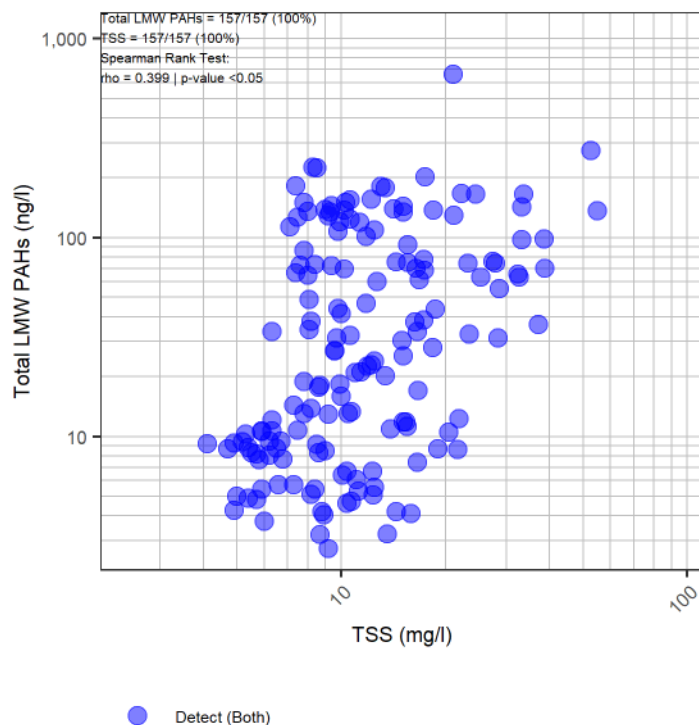
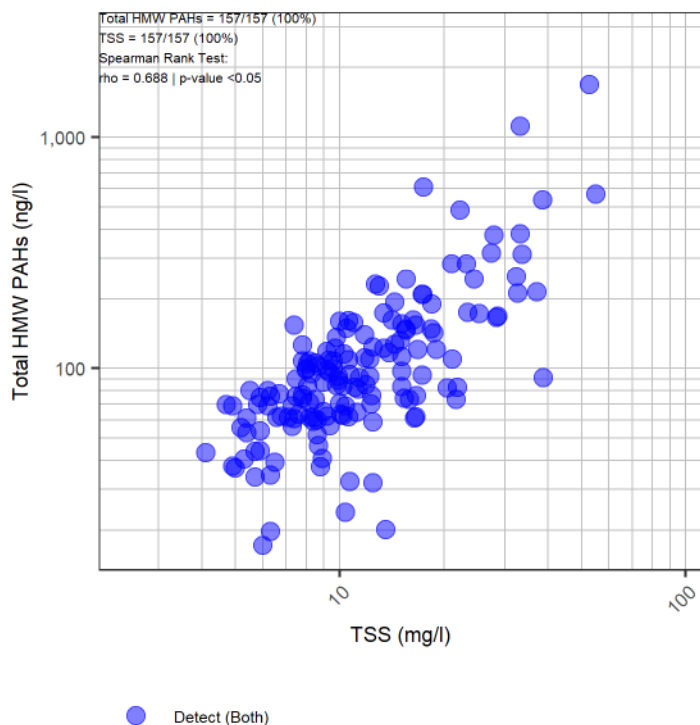
SURFACE WATER CORRELATION – COPCS
(COPPER, LEAD, MERCURY, METHYL
MERCURY) AND TOTAL SUSPENDED SOLIDS



Notes:
For correlation analysis, non-detects included at 1/2 the reporting limit.
Non-detects plotted at the reporting limit.

DIAMOND ALKALI SUPERFUND SITE
NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION
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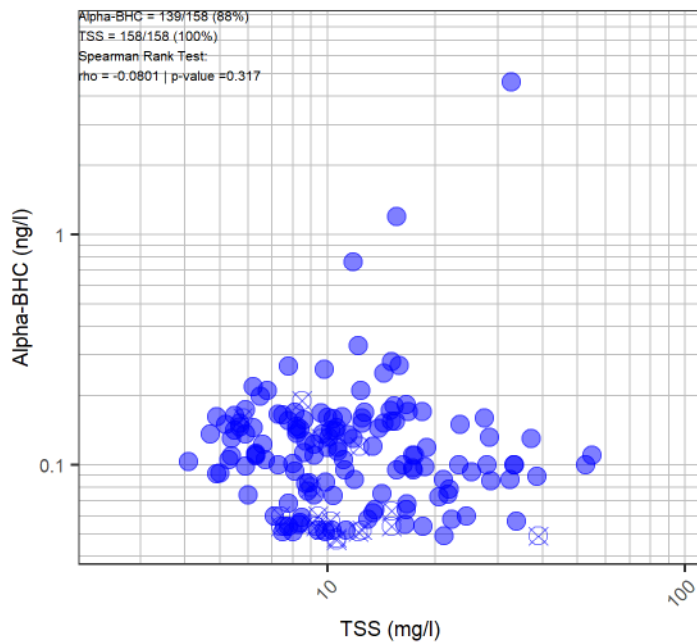
SURFACE WATER CORRELATION – COPCS
(NICKEL, SELENIUM, SILVER, ZINC) AND
TOTAL SUSPENDED SOLIDS



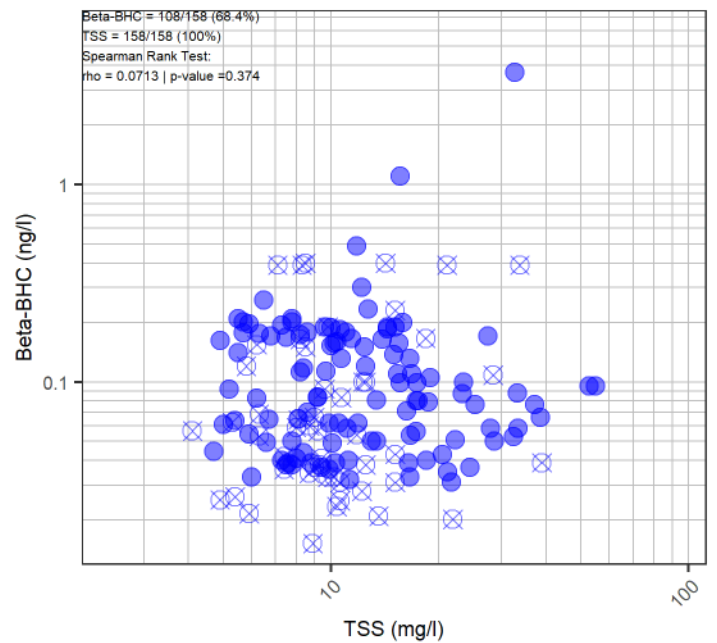
Notes:
For correlation analysis, non-detects included at 1/2 the reporting limit.
Non-detects plotted at the reporting limit.

DIAMOND ALKALI SUPERFUND SITE
NEWARK BAY STUDY AREA REMEDIAL INVESTIGATION
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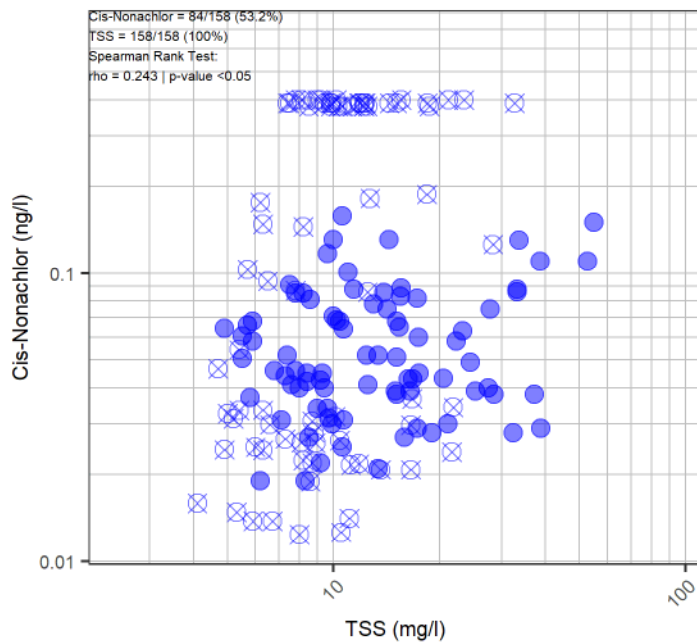
SURFACE WATER CORRELATION – COPCS
(PAHS, PCBs) AND TOTAL SUSPENDED
SOLIDS



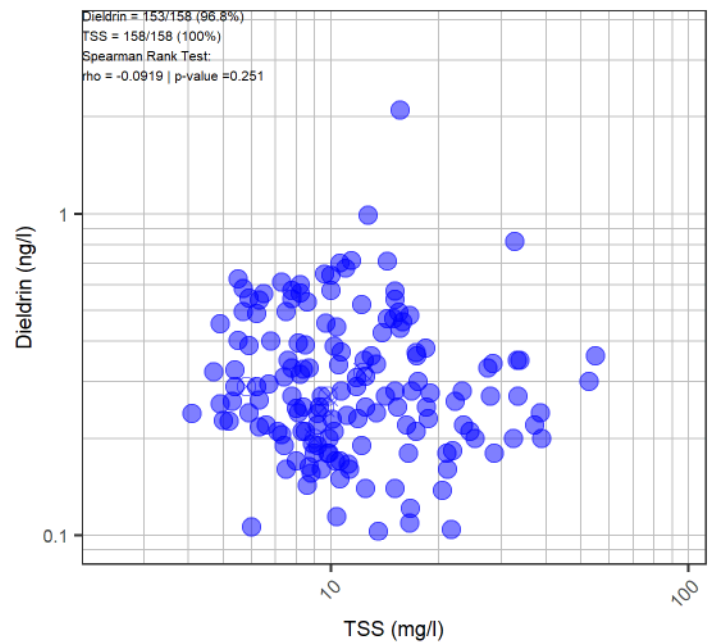
● Detect (Both)
⊗ Detect (TSS) | ND (Alpha-BHC)



● Detect (Both)
⊗ Detect (TSS) | ND (Beta-BHC)



● Detect (Both)
⊗ Detect (TSS) | ND (Cis-Nonachlor)

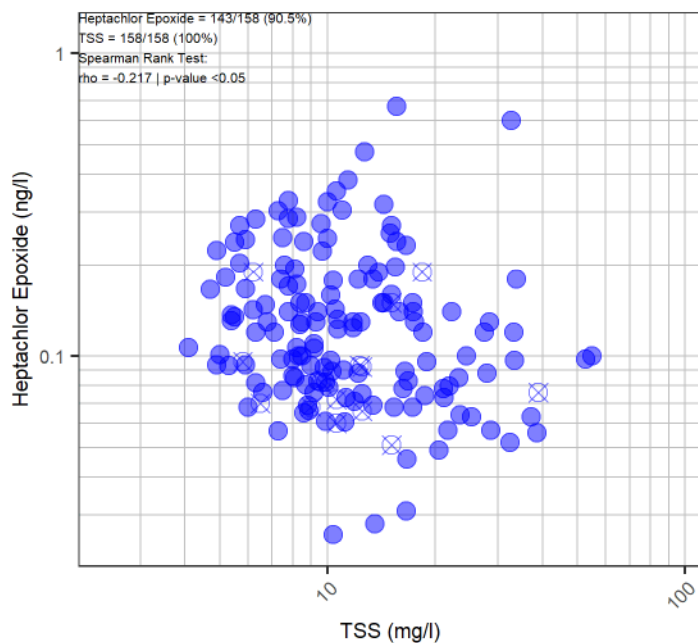


● Detect (Both)
⊗ Detect (TSS) | ND (Dieldrin)

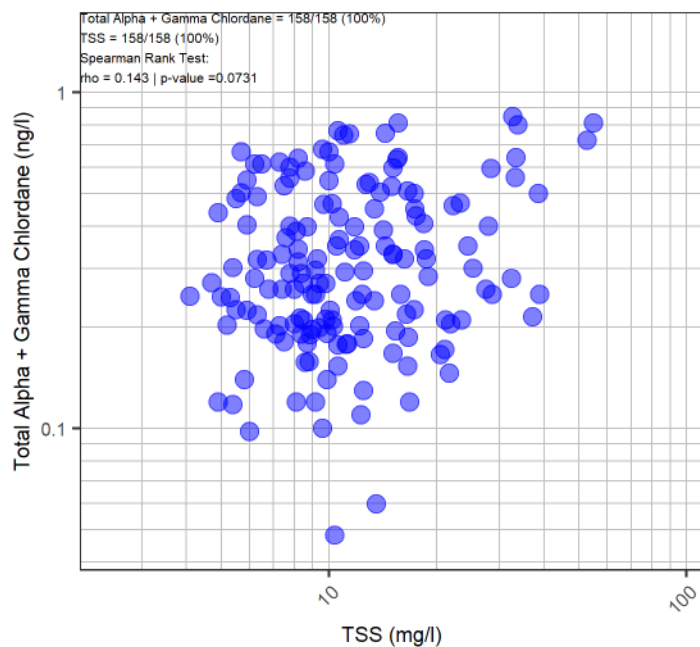
Notes:
For correlation analysis, non-detects included at 1/2 the reporting limit.
Non-detects plotted at the reporting limit.

DIAMOND ALKALI SUPERFUND SITE
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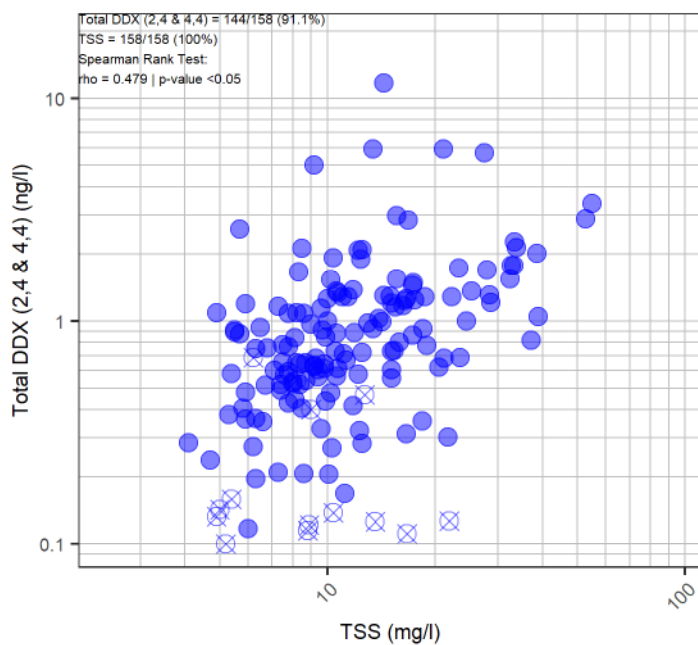
SURFACE WATER CORRELATION – COPCS
(PESTICIDES) AND TOTAL SUSPENDED
SOLIDS



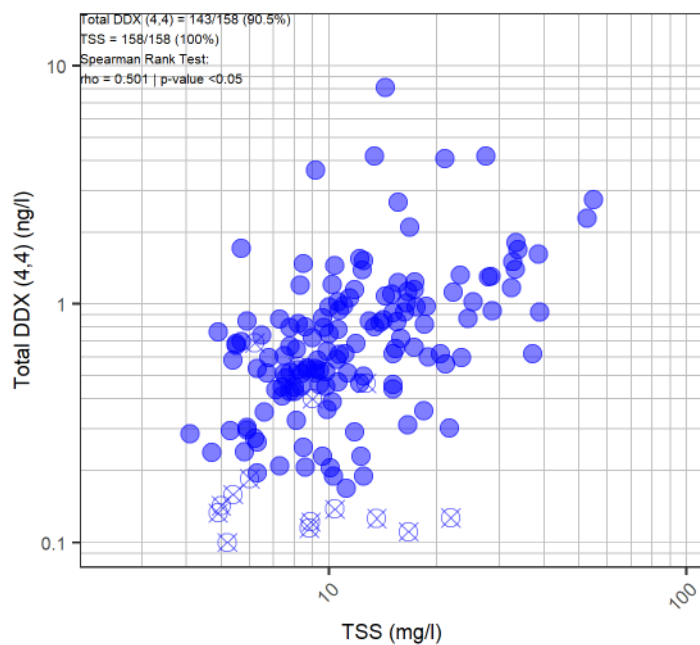
● Detect (Both)
⊗ Detect (TSS) | ND (Heptachlor Epoxide)



● Detect (Both)



● Detect (Both)
⊗ Detect (TSS) | ND (Total DDX (2,4 & 4,4))

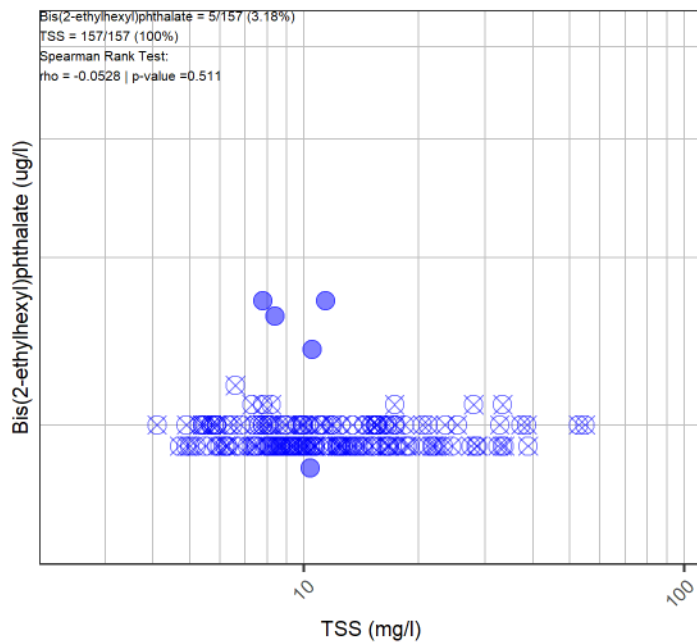


● Detect (Both)
⊗ Detect (TSS) | ND (Total DDX (4,4))

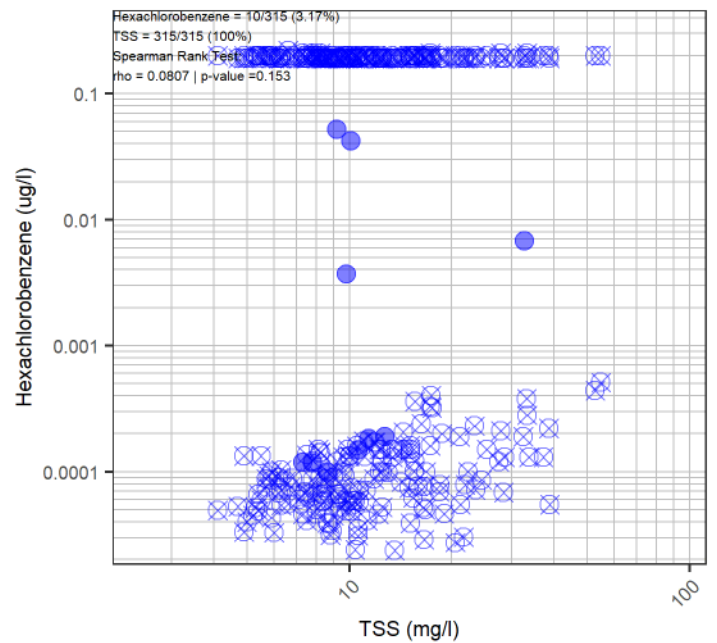
Notes:
For correlation analysis, non-detects included at 1/2 the reporting limit.
Non-detects plotted at the reporting limit.

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SURFACE WATER CORRELATION – COPCS
(PESTICIDES) AND TOTAL SUSPENDED
SOLIDS



● Detect (Both)
⊠ Detect (TSS) | ND (Bis(2-ethylhexyl)phthalate)



● Detect (Both)
⊠ Detect (TSS) | ND (Hexachlorobenzene)

Notes:
For correlation analysis, non-detects included at 1/2 the reporting limit.
Non-detects plotted at the reporting limit.

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SURFACE WATER CORRELATION – COPCS
(PESTICIDES) AND TOTAL SUSPENDED
SOLIDS