Appendix F
Nature and Extent of Chemicals of Potential Concern Supporting Material: Biota

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Table 1a
2,3,7,8-TCDD in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	ng/kg	32/32	100	0.31 EMPC-J	41	14	na
	whole body[a]	individual and composite	ng/kg	20/21	95.2	0.32 J	47	18	0.21
Brown bullhead	whole body	individual	ng/kg	6/6	100	7.8	190	91	na
Carp	fillet (with skin)	individual	ng/kg	12/12	100	10	730	270	na
	whole body	individual	ng/kg	12/12	100	5.2	1400	410	na
Channel catfish	fillet (skinless)	individual	ng/kg	11/11	100	9.6	77	28	na
	whole body[b]	individual	ng/kg	11/11	100	22	160	70	na
Gizzard shad	whole body	composite	ng/kg	3/3	100	11	44	30	na
Largemouth bass	fillet (with skin)	individual and composite	ng/kg	2/3	66.7	3.1	5.7	4.4	0.34
	whole body (calculated)[c]	individual and composite	ng/kg	3/3	100	0.43 J	180	82	na
Mixed forage fish	whole body	composite	ng/kg	4/4	100	7.2	93	46	na
Mummichog	whole body	composite	ng/kg	18/18	100	11	100	37	na
Northern pike	fillet (with skin)	individual	ng/kg	1/1	100	7.6	7.6	na	na
	whole body (calculated)[c]	individual	ng/kg	1/1	100	95	95	na	na
Pumpkinseed	whole body	composite	ng/kg	1/1	100	7.5	7.5	na	na
Silver shiner	whole body	composite	ng/kg	1/1	100	16	16	na	na
Smallmouth bass	fillet (with skin)	composite	ng/kg	3/3	100	0.61 EMPC-J	14	6.6	na
	whole body (calculated)[c]	composite	ng/kg	3/3	100	8.0 EMPC-J	76	39	na
Spottail shiner	whole body	composite	ng/kg	1/1	100	2.4	2.4	na	na
White catfish	fillet (skinless)	individual	ng/kg	19/19	100	3.5	170	56	na
	whole body (calculated)[c]	individual	ng/kg	19/19	100	20	410	170	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	ng/kg	19/19	100	3.6	99	41	na
	whole body[d]	individual and composite	ng/kg	22/22	100	18	250	120	na
White sucker	fillet (with skin)	individual	ng/kg	5/5	100	1.0 EMPC-J	29	14	na
	whole body (calculated)[c]	individual	ng/kg	5/5	100	3.1 EMPC-J	130	59	na
Blue Crab									
Blue crab	hepatopancreas only	composite	ng/kg	7/7	100	41	210	140	na
	muscle only	composite	ng/kg	21/21	100	0.82 EMPC-J	20	7.5	na
	muscle/hepatopancreas	composite	ng/kg	41/41	100	4.0 EMPC-J	110	49	na
	whole body (calculated)[c]	composite	ng/kg	24/24	100	24 J	86 J	51	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	ng/kg	5/5	100	1.8 EMPC-J	19	6.1	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	ng/kg	14/14	100	0.50 J	140	27	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	ng/kg	3/3	100	0.25 J	1.2	0.66	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	ng/kg	5/5	100	0.077 EMPC-J	3.6	1.8	na

Notes:

a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

EMPC: estimated maximum possible concentration
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
ng/kg: nanograms per kilogram
RL: reporting limit
TCDD: tetrachlorodibenzo-p-dioxi

Table 1b
2,3,7,8-TCDD in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	ng/kg	7/10	70	0.229 EMPC-J	0.42 J	0.334	0.121 - 0.148
	whole body[a]	individual and composite	ng/kg	13/16	81.2	0.115 EMPC-J	0.389 EMPC-J	0.263	0.073 - 0.198
Banded killifish	whole body	composite	ng/kg	1/1	100	0.143 J	0.143 J	Na	na
Brown bullhead	fillet (skinless)	individual	ng/kg	1/6	16.7	0.0813 EMPC-J	0.0813 EMPC-J	Na	0.0998 - 0.111
	whole body	individual	ng/kg	6/6	100	0.22 EMPC-J	1.19	0.538	na
Carp	fillet (with skin)	individual	ng/kg	10/10	100	0.344 EMPC-J	1.61	0.860	na
	whole body[b]	individual	ng/kg	10/10	100	0.929	2.27	1.45	na
Channel catfish	fillet (skinless)	individual	ng/kg	4/4	100	0.477 EMPC-J	1.95	1.16	na
	whole body (calculated)[c]	individual	ng/kg	4/4	100	0.911 EMPC-J	4.99	3.51	na
Northern pike	fillet (with skin)	composite	ng/kg	1/1	100	0.311 J	0.311 J	Na	na
	whole body (calculated)[c]	composite	ng/kg	1/1	100	1.72 J	1.2 J	Na	na
Pumpkinseed	whole body	composite	ng/kg	1/1	100	0.0814 EMPC-J	0.0814 EMPC-J	Na	na
Silver shiner	whole body	composite	ng/kg	1/1	100	0.91	0.91	Na	na
Smallmouth bass	fillet (with skin)	composite	ng/kg	0/3	0	Na	Na	Na	0.0709 - 0.125
	whole body (calculated)[c]	composite	ng/kg	3/3	100	0.856	0.948	0.907	na
White perch	fillet (with skin)	composite	ng/kg	6/8	75	0.0426 EMPC-J	0.0966 EMPC-J	0.0744	0.0606 - 0.0832
	whole body (calculated)[c]	composite	ng/kg	8/8	100	0.431 J	0.969	0.661	na
White sucker	fillet (with skin)	individual	ng/kg	3/5	60	0.142 EMPC-J	0.188 EMPC-J	0.159	0.052 - 0.0606
	whole body (calculated)[c]	individual	ng/kg	5/5	100	0.189 EMPC-J	0.717 EMPC-J	0.477	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

EMPC: estimated maximum possible concentration
J: estimated concentration
na: not applicable
ng/kg: nanograms per kilogram
RL: reporting limit
TCDD: tetrachlorodibenzo-*p*-dioxin
UPR: Upper Passaic River

Table 2a
Total PCB Congeners in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	32/32	100	270 J	4300 J	1,100	na
	whole body[a]	individual and composite	µg/kg	21/21	100	420 J	5700 J	1,500	na
Brown bullhead	whole body	individual	µg/kg	6/6	100	260 J	1700 J	870	na
Carp	fillet (with skin)	individual	µg/kg	12/12	100	850 J	15000 J	4,800	na
	whole body	individual	µg/kg	12/12	100	1500 J	7900 J	4,100	na
Channel catfish	fillet (skinless)	individual	µg/kg	11/11	100	190 J	1300 J	500	na
	whole body[b]	individual	µg/kg	11/11	100	350 J	2700 J	1,300	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	250 J	450 J	380	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	3/3	100	48 J	480 J	210	na
	whole body (calculated)[c]	individual and composite	µg/kg	3/3	100	1100 J	7900 J	3,700	na
Mixed forage fish	whole body	composite	µg/kg	4/4	100	310 J	870 J	550	na
Mummichog	whole body	composite	µg/kg	18/18	100	240 J	930 J	520	na
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	330 J	330 J	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	2000 J	2000 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	170 J	170 J	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	480 J	480 J	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	57 J	140 J	92	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	630 J	1400 J	1,000	na
Spottail shiner	whole body	composite	µg/kg	1/1	100	400 J	400 J	na	na
White catfish	fillet (skinless)	individual	µg/kg	19/19	100	130 J	3900 J	980	na
	whole body (calculated)[c]	individual	µg/kg	19/19	100	630 J	7300 J	2,700	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	19/19	100	150 J	1500 J	580	na
	whole body[d]	individual and composite	µg/kg	22/22	100	290 J	5100 J	2,000	na
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	160 J	580 J	330	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	540 J	2900 J	1,500	na
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	7/7	100	510 J	1400 J	980	na
	muscle only	composite	µg/kg	21/21	100	11 J	110 J	42	na
	muscle/hepatopancreas	composite	µg/kg	41/41	100	76 J	790 J	330	na
	whole body (calculated)[c]	composite	µg/kg	24/24	100	150 J	580 J	320	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	5/5	100	26 J	130 J	53	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	14/14	100	55 J	530 J	180	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	3/3	100	2.6 J	18 J	9.3	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	5/5	100	17 J	30 J	23	na

Notes:

a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

µg/kg: micrograms per kilogram

J: estimated concentration

LPRSA: Lower Passaic River Study Area

na: not applicable

RL: reporting limit

Table 2b
Total PCB Congeners in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	10/10	100	556 J	2070 J	1,080	na
	whole body[a]	individual and composite	µg/kg	16/16	100	206 J	1,880 J	898	na
Banded killifish	whole body	composite	µg/kg	1/1	100	219 J	219 J	Na	na
Brown bullhead	fillet (skinless)	individual	µg/kg	6/6	100	9 J	123 J	55.9	na
	whole body	individual	µg/kg	6/6	100	183 J	614 J	366	na
Carp	fillet (with skin)	individual	µg/kg	10/10	100	489 J	2030 J	992	na
	whole body[b]	individual	µg/kg	10/10	100	755 J	2560 J	1,720	na
Channel catfish	fillet (skinless)	individual	µg/kg	4/4	100	285 J	791 J	558	na
	whole body (calculated)[c]	individual	µg/kg	4/4	100	948 J	2,130 J	1,610	na
Northern pike	fillet (with skin)	composite	µg/kg	1/1	100	302 J	302 J	Na	na
	whole body (calculated)[c]	composite	µg/kg	1/1	100	1,880 J	1,880 J	Na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	107 J	107 J	Na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	853 J	853 J	Na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	60 J	98.1 J	81.3	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	1,000 J	1,310 J	1,130	na
White perch	fillet (with skin)	composite	µg/kg	8/8	100	29.8 J	190 J	80.8	na
	whole body (calculated)[c]	composite	µg/kg	8/8	100	408 J	1,130 J	670	na
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	69.1 J	221 J	153	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	327 J	872 J	607	na

Notes:
a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
µg/kg: micrograms per kilogram
J: estimated concentration
na: not applicable
RL: reporting limit
UPR: Upper Passaic River

Table 3a
Total HMW PAHs in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	29/32	90.6	2.3 J	24 J	11	1.8 - 5.1
	whole body[a]	individual and composite	µg/kg	21/21	100	3.1 J	49 J	19	na
Brown bullhead	whole body	individual	µg/kg	6/6	100	21 J	110 J	77	na
Carp	fillet (with skin)	individual	µg/kg	12/12	100	24 J	100 J	52	na
	whole body	individual	µg/kg	12/12	100	24 J	120 J	62	na
Channel catfish	fillet (skinless)	individual	µg/kg	11/11	100	2.0 J	59 J	15	na
	whole body[b]	individual	µg/kg	11/11	100	20 J	96 J	41	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	340 J	1000 J	650	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	3/3	100	1.3 J	1.9 J	1.6	na
	whole body (calculated)[c]	individual and composite	µg/kg	3/3	100	5.6 J	9.4 J	7.2	na
Mixed forage fish	whole body	composite	µg/kg	4/4	100	110 J	750 J	420	na
Mummichog	whole body	composite	µg/kg	18/18	100	29 J	540 J	150	na
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	7.1 J	7.1 J	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	42 J	42 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	260 J	260 J	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	860 J	860 J	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	2/3	66.7	1.6 J	2.4 J	2.0	5.1
	whole body (calculated)[c]	composite	µg/kg	3/3	100	7.3 J	390 J	140	na
Spottail shiner	whole body	composite	µg/kg	1/1	100	78 J	78 J	na	na
White catfish	fillet (skinless)	individual	µg/kg	19/19	100	1.6 J	67 J	16	na
	whole body (calculated)[c]	individual	µg/kg	19/19	100	17 J	310 J	66	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	19/19	100	5.2 J	51 J	26	na
	whole body [d]	individual and composite	µg/kg	22/22	100	21 J	340 J	110	na
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	5.1 J	9.8 J	7.3	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	21 J	48 J	30	na
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	7/7	100	15 J	690 J	230	na
	muscle only	composite	µg/kg	20/21	95.2	0.91 J	28 J	7.2	9.9
	muscle/hepatopancreas	composite	µg/kg	41/41	100	2.5 J	150 J	32	na
	whole body (calculated)[c]	composite	µg/kg	24/24	100	14 J	350 J	82	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	5/5	100	58 J	140 J	95	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	5/5	100	1100 J	4900 J	2,200	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	3/3	100	28 J	230 J	120	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	5/5	100	190 J	220	210	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 3b
Total HMW PAHs in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	10/10	100	1.17 J	13.8 J	6.24	na
	whole body[a]	individual and composite	µg/kg	16/16	100	0.950 J	13.0 J	6.62	na
Banded killifish	whole body	composite	µg/kg	1/1	100	29.2 J	29.2 J	na	na
Brown bullhead	fillet (skinless)	individual	µg/kg	6/6	100	3.57 J	29.7 J	13.8	na
	whole body	individual	µg/kg	6/6	100	10.6 J	732 J	187	na
Carp	fillet (with skin)	individual	µg/kg	10/10	100	9.50 J	121 J	35.2	na
	whole body[b]	individual	µg/kg	10/10	100	23.3 J	83.0 J	56.6	na
Channel catfish	fillet (skinless)	individual	µg/kg	4/4	100	2.06 J	12.9 J	6.40	na
	whole body (calculated)[c]	individual	µg/kg	4/4	100	5.08 J	43.4 J	18.0	na
Northern pike	fillet (with skin)	composite	µg/kg	1/1	100	3.18 J	3.18 J	na	na
	whole body (calculated)[c]	composite	µg/kg	1/1	100	20.2 J	20.2 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	82.4 J	82.4 J	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	25.8 J	25.8 J	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	0.660 J	2.51 J	1.56	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	6.52 J	10.8 J	8.73	na
White perch	fillet (with skin)	composite	µg/kg	8/8	100	1.60 J	10.3 J	4.41	na
	whole body (calculated)[c]	composite	µg/kg	8/8	100	25.2 J	218 J	74.4	na
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	2.02 J	5.67 J	3.65	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	7.40 J	230 J	81.1	na

Notes:
a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
µg/kg: micrograms per kilogram
J: estimated concentration
na: not applicable
RL: reporting limit
UPR: Upper Passaic River

Table 4a
Total LMW PAHs in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	32/32	100	4.7 J	260 J	43	na
	whole body[a]	individual and composite	µg/kg	21/21	100	15 J	170 J	62	na
Brown bullhead	whole body	individual	µg/kg	6/6	100	180 J	260 J	220	na
Carp	fillet (with skin)	individual	µg/kg	12/12	100	54 J	310 J	140	na
	whole body	individual	µg/kg	12/12	100	93 J	250 J	140	na
Channel catfish	fillet (skinless)	individual	µg/kg	11/11	100	15 J	83 J	35	na
	whole body[b]	individual	µg/kg	11/11	100	39 J	130 J	78	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	85 J	190 J	150	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	1/3	33.3	94 J	94 J	na	37
	whole body (calculated)[c]	individual and composite	µg/kg	3/3	100	33 J	61 J	42	na
Mixed forage fish	whole body	composite	µg/kg	4/4	100	69 J	180 J	120	na
Mummichog	whole body	composite	µg/kg	18/18	100	18 J	130 J	51	na
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	28 J	28 J	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	260 J	260 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	96 J	96 J	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	190 J	190 J	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	1/3	33.3	2.4 J	2.4 J	na	29 - 41
	whole body (calculated)[c]	composite	µg/kg	3/3	100	38 J	67 J	50	na
Spottail shiner	whole body	composite	µg/kg	1/1	100	370 J	370 J	na	na
White catfish	fillet (skinless)	individual	µg/kg	19/19	100	5.1 J	370 J	53	na
	whole body (calculated)[c]	individual	µg/kg	19/19	100	34 J	470 J	120	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	19/19	100	6.2 J	180 J	63	na
	whole body[d]	individual and composite	µg/kg	22/22	100	36 J	300 J	170	na
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	4.5 J	15 J	10	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	17 J	49 J	36	na
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	7/7	100	7.2 J	620 J	140	na
	muscle only	composite	µg/kg	18/21	85.7	1.8 J	26 J	9.4	5.9 - 10
	muscle/hepatopancreas	composite	µg/kg	40/41	97.6	1.8 J	350 J	27	4.1
	whole body (calculated)[c]	composite	µg/kg	24/24	100	5.8 J	270 J	59	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	5/5	100	5.3 J	12 J	9.0	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	5/5	100	71 J	940 J	300	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	3/3	100	44	140	87	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	5/5	100	12 J	17	13	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 4b
Total LMW PAHs in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	10/10	100	9.10 J	123 J	65.5	na
	whole body[a]	individual and composite	µg/kg	16/16	100	0.480 J	130 J	44.9	na
Banded killifish	whole body	composite	µg/kg	1/1	100	31.1 J	31.1 J	na	na
Brown bullhead	fillet (skinless)	individual	µg/kg	6/6	100	4.24 J	87.6	40.7	na
	whole body	individual	µg/kg	6/6	100	27.3 J	354 J	113	na
Carp	fillet (with skin)	individual	µg/kg	10/10	100	79.7 J	1530 J	400	na
	whole body[b]	individual	µg/kg	10/10	100	171 J	995 J	414	na
Channel catfish	fillet (skinless)	individual	µg/kg	4/4	100	9.40 J	64.6 J	28.6	na
	whole body (calculated)[c]	individual	µg/kg	4/4	100	31.2 J	118 J	74.6	na
Northern pike	fillet (with skin)	composite	µg/kg	1/1	100	22.7 J	22.7 J	na	na
	whole body (calculated)[c]	composite	µg/kg	1/1	100	150 J	150 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	25.4 J	25.4 J	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	60.1 J	60.1 J	na	na
Smallmouth bass	fillet (with skin) (calculated)[c]	composite	µg/kg	3/3	100	4.74 J	26.8 J	18.9	na
	whole body	composite	µg/kg	3/3	100	40.6 J	79.3 J	66.1	na
White perch	fillet (with skin)	composite	µg/kg	8/8	100	11.1 J	28.5 J	19.6	na
	whole body (calculated)[c]	composite	µg/kg	8/8	100	40.9 J	105 J	74.0	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	7.96 J	32.8 J	25.4	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	39.0 J	250 J	166	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 5a
Total DDx in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	32/32	100	45 J	360 J	160	na
	whole body[a]	individual and composite	µg/kg	21/21	100	32 J	470 J	220	na
Brown bullhead	whole body	individual	µg/kg	6/6	100	20 J	200 J	93	na
Carp	fillet (with skin)	individual	µg/kg	12/12	100	89 J	1600 J	520	na
	whole body	individual	µg/kg	12/12	100	110 J	1100 J	510	na
Channel catfish	fillet (skinless)	individual	µg/kg	11/11	100	13 J	220 J	84	na
	whole body[b]	individual	µg/kg	11/11	100	48 J	490 J	220	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	29 J	61 J	49	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	3/3	100	2.7 J	13 J	8.4	na
	whole body (calculated)[c]	individual and composite	µg/kg	3/3	100	72 J	160 J	130	na
Mixed forage fish	whole body	composite	µg/kg	4/4	100	35 J	140 J	74	na
Mummichog	whole body	composite	µg/kg	18/18	100	26 J	100 J	57	na
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	48 J	48 J	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	280 J	280 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	22 J	22 J	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	56 J	56 J	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	5.3 J	17 J	11	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	100 J	230 J	150	na
Spottail shiner	whole body	composite	µg/kg	1/1	100	33 J	33 J	na	na
White catfish	fillet (skinless)	individual	µg/kg	19/19	100	20 J	530 J	120	na
	whole body (calculated)[c]	individual	µg/kg	19/19	100	43 J	870 J	250	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	19/19	100	10 J	110 J	55	na
	whole body[d]	individual and composite	µg/kg	22/22	100	38 J	490 J	200	na
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	12 J	43 J	29	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	63 J	150 J	110	na
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	7/7	100	160 J	510 J	310	na
	muscle only	composite	µg/kg	20/21	95.2	5.7 J	29 J	18	23
	muscle/hepatopancreas	composite	µg/kg	41/41	100	26 J	120 J	67	na
	whole body (calculated)[c]	composite	µg/kg	24/24	100	30 J	100 J	62	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	2/5	40	1.8 J	3.6 J	2.7	3.8 - 4.6
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	13/13	100	3.6 J	33 J	15	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	2/3	66.7	2.3 J	6.9 J	4.6	2.7
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	5/5	100	2.6 J	5.9 J	4.2	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 5b
Total DDx in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	10/10	100	95 J	360 J	240	na
	whole body[a]	individual and composite	µg/kg	16/16	100	62 J	490 J	220	na
Banded killifish	whole body	composite	µg/kg	1/1	100	45 J	45 J	Na	na
Brown bullhead	fillet (skinless)	individual	µg/kg	6/6	100	13 J	19 J	17	na
	whole body	individual	µg/kg	6/6	100	27 J	76 J	51	na
Carp	fillet (with skin)	individual	µg/kg	10/10	100	65 J	250 J	150	na
	whole body[b]	individual	µg/kg	10/10	100	87 J	280 J	180	na
Channel catfish	fillet (skinless)	individual	µg/kg	4/4	100	60 J	240 J	150	na
	whole body (calculated)[c]	individual	µg/kg	4/4	100	120 J	340 J	220	na
Northern pike	fillet (with skin)	composite	µg/kg	1/1	100	68 J	68 J	Na	na
	whole body (calculated)[c]	composite	µg/kg	1/1	100	230 J	230 J	Na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	30 J	30 J	Na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	120 J	120 J	Na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	15 J	22 J	19	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	140 J	150 J	150	na
White perch	fillet (with skin)	composite	µg/kg	8/8	100	21 J	190 J	51	na
	whole body (calculated)[c]	composite	µg/kg	8/8	100	85 J	170 J	130	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	8.8 J	49 J	24	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	33 J	170 J	83	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 6a
Total Mercury in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	32/32	100	160	860	400	na
	whole body[a]	individual and composite	µg/kg	21/21	100	74	390	220	na
Brown bullhead	whole body	individual	µg/kg	6/6	100	48	140	77	na
Carp	fillet (with skin)	individual	µg/kg	12/12	100	71	310	140	na
	whole body	individual	µg/kg	12/12	100	42	110	67	na
Channel catfish	fillet (skinless)	individual	µg/kg	11/11	100	41	360	170	na
	whole body[b]	individual	µg/kg	11/11	100	32	230	120	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	43	83	59	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	3/3	100	190	880	430	na
	whole body (calculated)[c]	individual and composite	µg/kg	3/3	100	140	680	330	na
Mixed forage fish	whole body	composite	µg/kg	4/4	100	48	68	58	na
Mummichog	whole body	composite	µg/kg	18/18	100	36	71	58	na
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	300	300	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	220	220	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	150	150	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	44	44	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	250	410	320	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	180	300	230	na
Spottail shiner	whole body	composite	µg/kg	1/1	100	30	30	na	na
White catfish	fillet (skinless)	individual	µg/kg	19/19	100	120	990	340	na
	whole body (calculated)[c]	individual	µg/kg	19/19	100	78	630	220	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	19/19	100	150	740	280	na
	whole body [d]	individual and composite	µg/kg	22/22	100	33	530	160	na
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	110	210	160	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	77	140	110	na
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	7/7	100	32	70	56	na
	muscle only	composite	µg/kg	21/21	100	70	320	180	na
	muscle/hepatopancreas	composite	µg/kg	41/41	100	69	250	140	na
	whole body (calculated)[c]	composite	µg/kg	24/24	100	79	190	130	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	5/5	100	21	25	23	na
Freshwater sp. *(Lumbriculus variegatus)*	whole body	composite	µg/kg	14/14	100	7.6	150	31	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	3/3	100	8.7	19	13	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	5/5	100	24	35	29	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 6b
Total Mercury in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	10/10	100	198	431	330	na
	whole body[a]	individual and composite	µg/kg	16/16	100	150	320	230	na
Banded killifish	whole body	composite	µg/kg	1/1	100	40.4 J	40.4 J	na	na
Brown bullhead	fillet (skinless)	individual	µg/kg	6/6	100	70.3 J	291	160	na
	whole body	individual	µg/kg	6/6	100	29.7 J	254	110	na
Carp	fillet (with skin)	individual	µg/kg	10/10	100	112 J	190	160	na
	whole body[b]	individual	µg/kg	10/10	100	43.4 J	133 J	96	na
Channel catfish	fillet (skinless)	individual	µg/kg	4/4	100	211	926	510	na
	whole body (calculated)[c]	individual	µg/kg	4/4	100	150 J	560	330	na
Northern pike	fillet (with skin)	composite	µg/kg	1/1	100	494	494	na	na
	whole body	composite	µg/kg	1/1	100	360	360	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	125 J	125 J	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	71.9 J	71.9 J	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	266	329	290	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	200	240	210	na
White perch	fillet (with skin)	composite	µg/kg	8/8	100	189	530	340	na
	whole body (calculated)[c]	composite	µg/kg	8/8	100	140 J	390	240	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	77.0 J	355	150	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	61 J	230 J	110	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 7a
Methylmercury in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	32/32	100	170	1100 J	420	na
	whole body[a]	individual and composite	µg/kg	21/21	100	92	470	240	na
Brown bullhead	whole body	individual	µg/kg	6/6	100	39	120	65	na
Carp	fillet (with skin)	individual	µg/kg	12/12	100	69	280	120	na
	whole body	individual	µg/kg	12/12	100	39	90	54	na
Channel catfish	fillet (skinless)	individual	µg/kg	11/11	100	49	370	150	na
	whole body[b]	individual	µg/kg	11/11	100	30	230	110	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	14	17	16	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	3/3	100	140	700	350	na
	whole body (calculated)[c]	individual and composite	µg/kg	3/3	100	110	520	260	na
Mixed forage fish	whole body	composite	µg/kg	4/4	100	25	50	35	na
Mummichog	whole body	composite	µg/kg	18/18	100	19	69	45	na
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	220	220	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	180	180	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	150	150	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	21	21	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	210	320	250	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	140	220	170	na
Spottail shiner	whole body	composite	µg/kg	1/1	100	27	27	na	na
White catfish	fillet (skinless)	individual	µg/kg	19/19	100	100	830	300	na
	whole body (calculated)[c]	individual	µg/kg	19/19	100	63	530	200	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	19/19	100	85	550	170	na
	whole body[d]	individual and composite	µg/kg	22/22	100	25	330	150	na
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	110	200	160	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	71	130	100	na
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	7/7	100	15	60	37	na
	muscle only	composite	µg/kg	21/21	100	67	270	160	na
	muscle/hepatopancreas	composite	µg/kg	41/41	100	66	230	130	na
	whole body (calculated)[c]	composite	µg/kg	24/24	100	55	170	110	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	5/5	100	2.9	3.4	3.1	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	2/14	14.3	1.0	1.4	1.2	2.8 - 3.1
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	3/3	100	3.3	4.7	4.2	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	5/5	100	12	25	18	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 7b
Methylmercury in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	10/10	100	162	345	250	na
	whole body[a]	individual and composite	µg/kg	16/16	100	121	255	180	na
Banded killifish	whole body	composite	µg/kg	1/1	100	34.5 J	34.5 J	na	na
Brown bullhead	fillet (skinless)	individual	µg/kg	6/6	100	56.5	294	155	na
	whole body	individual	µg/kg	6/6	100	29.7 J	276	117	na
Carp	fillet (with skin)	individual	µg/kg	10/10	100	107	198	150	na
	whole body[b]	individual	µg/kg	10/10	100	47.5 J	131	98	na
Channel catfish	fillet (skinless)	individual	µg/kg	4/4	100	203	998	513	na
	whole body (calculated)[c]	individual	µg/kg	4/4	100	140	559	319	na
Northern pike	fillet (with skin)	composite	µg/kg	1/1	100	431	431	na	na
	whole body (calculated)[c]	composite	µg/kg	1/1	100	316	316	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	110	110	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	61.7	61.7	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	175	202	190	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	139	162	150	na
White perch	fillet (with skin)	composite	µg/kg	8/8	100	170	563	320	na
	whole body (calculated)[c]	composite	µg/kg	8/8	100	120	373	220	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	69.9	321	136	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	51.3 J	196	90.4	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 8a
Arsenic in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	mg/kg	32/32	100	0.030 J	0.49	0.14	na
	whole body[a]	individual and composite	mg/kg	19/21	90.5	0.054 J	0.61	0.16	0.16 - 0.17
Brown bullhead	whole body	individual	mg/kg	6/6	100	0.031 J	0.19 J	0.080	na
Carp	fillet (with skin)	individual	mg/kg	3/12	25	0.095 J	0.16	0.14	0.11 - 0.19
	whole body	individual	mg/kg	11/12	91.7	0.064 J	0.21	0.12	0.18
Channel catfish	fillet (skinless)	individual	mg/kg	11/11	100	0.022 J	0.050 J	0.034	na
	whole body[b]	individual	mg/kg	11/11	100	0.028 J	0.076 J	0.046	na
Gizzard shad	whole body	composite	mg/kg	3/3	100	0.19	0.39	0.29	na
Largemouth bass	fillet (with skin)	individual and composite	mg/kg	0/3	0	na	na	na	0.11
	whole body (calculated)[c]	individual and composite	mg/kg	0/3	0	na	na	na	0.064 - 0.068
Mixed forage fish	whole body	composite	mg/kg	4/4	100	0.17	0.52	0.32	na
Mummichog	whole body	composite	mg/kg	18/18	100	0.19	0.51	0.35	na
Northern pike	fillet (with skin)	individual	mg/kg	1/1	100	0.17	0.17	na	na
	whole body (calculated)[c]	individual	mg/kg	1/1	100	0.12	0.12	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	0.19	0.19	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	0.21	0.21	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	3/3	100	0.17	0.32	0.25	na
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.16	0.25	0.21	na
Spottail shiner	whole body	composite	mg/kg	1/1	100	0.044 J	0.044 J	na	na
White catfish	fillet (skinless)	individual	mg/kg	19/19	100	0.011 J	0.25	0.061	na
	whole body (calculated)[c]	individual	mg/kg	19/19	100	0.017 J	0.19	0.063	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	mg/kg	19/19	100	0.057 J	0.24	0.12	na
	whole body[d]	individual and composite	mg/kg	21/22	95.5	0.11 J	0.35	0.20	0.15
White sucker	fillet (with skin)	individual	mg/kg	5/5	100	0.040 J	0.080 J	0.062	na
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.064 J	0.11 J	0.079	na
Blue Crab									
Blue crab	hepatopancreas only	composite	mg/kg	7/7	100	0.37 J	2.0 J	1.4	na
	muscle only	composite	mg/kg	21/21	100	0.13	2.0	0.67	na
	muscle/hepatopancreas	composite	mg/kg	41/41	100	0.16 J	2.1 J	0.70	na
	whole body (calculated)[c]	composite	mg/kg	24/24	100	0.29 J	1.9 J	1.0	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	mg/kg	5/5	100	1.6	1.8	1.7	na
Freshwater sp. *(Lumbriculus variegatus)*	whole body	composite	mg/kg	9/9	100	0.58	1.2	0.85	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	mg/kg	3/3	100	0.82	1.1	0.93	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	mg/kg	5/5	100	0.28	0.37	0.34	na

Notes:

a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPR: Lower Passaic River
na: not applicable
RL: reporting limit

Table 8b
Arsenic in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	mg/kg	10/10	100	0.022 J	0.041 J	0.029	na
	whole body[a]	individual and composite	mg/kg	13/16	81.2	0.021 J	2.78	0.27	0.139 - 0.201
Banded killifish	whole body	composite	mg/kg	1/1	100	0.067 J	0.067 J	na	na
Brown bullhead	fillet (skinless)	individual	mg/kg	6/6	100	0.010 J	0.020 J	0.014	na
	whole body	individual	mg/kg	6/6	100	0.013 J	0.091 J	0.045	na
Carp	fillet (with skin)	individual	mg/kg	10/10	100	0.053 J	0.203	0.090	na
	whole body[b]	individual	mg/kg	10/10	100	0.046 J	0.13 J	0.074	na
Channel catfish	fillet (skinless)	individual	mg/kg	4/4	100	0.012 J	0.025 J	0.016	na
	whole body (calculated)[c]	individual	mg/kg	4/4	100	0.014 J	0.041 J	0.022	na
Northern pike	fillet (with skin)	composite	mg/kg	1/1	100	0.060 J	0.060 J	na	na
	whole body (calculated)[c]	composite	mg/kg	1/1	100	0.053 J	0.053 J	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	0.065 J	0.065 J	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	0.054 J	0.054 J	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	2/3	66.7	0.151	0.296	0.224	0.109
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.107	0.161	0.129	na
White perch	fillet (with skin)	composite	mg/kg	8/8	100	0.015 J	0.031 J	0.022	na
	whole body (calculated)[c]	composite	mg/kg	8/8	100	0.026 J	0.11 J	0.055	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	mg/kg	5/5	100	0.031 J	0.041 J	0.036	na
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.040 J	0.075 J	0.052	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 9a
Inorganic Arsenic in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	mg/kg	0/32	0	na	na	na	0.008 - 0.01
	whole body[a]	individual and composite	mg/kg	5/21	23.8	0.005	0.011	0.0066	0.0043 - 0.01
Brown bullhead	whole body	individual	mg/kg	3/6	50	0.007	0.012	0.010	0.01
Carp	fillet (with skin)	individual	mg/kg	0/12	0	na	na	na	0.01
	whole body	individual	mg/kg	2/12	16.7	0.011	0.011	0.011	0.01
Channel catfish	fillet (skinless)	individual	mg/kg	0/11	0	na	na	na	0.008 - 0.01
	whole body[b]	individual	mg/kg	0/11	0	na	na	na	0.0041 - 0.0049
Gizzard shad	whole body	composite	mg/kg	3/3	100	0.075	0.17	0.11	na
Largemouth bass	fillet (with skin)	individual and composite	mg/kg	0/3	0	na	na	na	0.009 - 0.01
	whole body (calculated)[c]	individual and composite	mg/kg	1/3	33.3	0.0093	0.0093	na	0.0047 - 0.005
Mixed forage fish	whole body	composite	mg/kg	4/4	100	0.022	0.11	0.074	na
Mummichog	whole body	composite	mg/kg	18/18	100	0.012	0.17	0.065	na
Northern pike	fillet (with skin)	individual	mg/kg	0/1	0	na	na	na	0.01
	whole body (calculated)[c]	individual	mg/kg	0/1	0	na	na	na	0.0047
Pumpkinseed	whole body	composite	mg/kg	1/1	100	0.069	0.069	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	0.092	0.092	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	0/3	0	na	na	na	0.009 - 0.01
	whole body (calculated)[c]	composite	mg/kg	0/3	0	na	na	na	0.0045 - 0.0047
Spottail shiner	whole body	composite	mg/kg	0/1	0	na	na	na	0.009

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White catfish	fillet (skinless)	individual	mg/kg	0/19	0	na	na	na	0.009 - 0.01
	whole body (calculated)[c]	individual	mg/kg	2/19	10.5	0.014	0.030	0.022	0.0041 - 0.005
White perch	fillet (with skin)	individual and composite	mg/kg	0/19	0	na	na	na	0.008 - 0.01
	whole body[d]	individual and composite	mg/kg	12/22	54.5	0.010	0.037	0.017	0.005 - 0.01
White sucker	fillet (with skin)	individual	mg/kg	0/5	0	na	na	na	0.008 - 0.01
	whole body (calculated)[c]	individual	mg/kg	1/5	20	0.015	0.015	na	0.0045 - 0.0047
Blue Crab									
Blue crab	hepatopancreas only	composite	mg/kg	7/7	100	0.017 J	0.062	0.042	na
	muscle only	composite	mg/kg	7/21	33.3	0.012 J	0.028	0.019	0.009 - 0.01
	muscle/hepatopancreas	composite	mg/kg	36/41	87.8	0.007 J	0.040	0.013	0.009 - 0.01
	whole body (calculated)[c]	composite	mg/kg	24/24	100	0.016	0.065	0.039	na

Notes:

a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

J: estimated concentration

LPRSA: Lower Passaic River Study Area

mg/kg: milligrams per kilogram

na: not applicable

RL: reporting limit

Table 9b
Inorganic Arsenic in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	mg/kg	0/10	0	na	na	na	0.009 - 0.01
	whole body[a]	individual and composite	mg/kg	0/16	0	na	na	na	0.005 - 0.01
Banded killifish	whole body	composite	mg/kg	1/1	100	0.004 J	0.004 J	na	na
Brown bullhead	fillet (skinless)	individual	mg/kg	0/6	0	na	na	na	0.009 - 0.01
	whole body	individual	mg/kg	5/6	83.3	0.005 J	0.046	0.02	0.01
Carp	fillet (with skin)	individual	mg/kg	0/10	0	na	na	na	0.009 - 0.01
	whole body[b]	individual	mg/kg	3/10	30	0.01	0.01	0.01	0.005 - 0.01
Channel catfish	fillet (skinless)	individual	mg/kg	0/4	0	na	na	na	0.009
	whole body	individual	mg/kg	1/4	25	0.008 J	0.008 J	na	0.005
Northern pike	fillet (with skin)	composite	mg/kg	0/1	0	na	na	na	0.009
	whole body (calculated)[c]	composite	mg/kg	0/1	0	na	na	na	0.005
Pumpkinseed	whole body	composite	mg/kg	1/1	100	0.013	0.013	na	Na
Silver shiner	whole body	composite	mg/kg	0/1	0	na	na	na	0.01
Smallmouth bass	fillet (with skin)	composite	mg/kg	0/3	0	na	na	na	0.01
	whole body (calculated)[c]	composite	mg/kg	0/3	0	na	na	na	0.005
White perch	fillet (with skin)	composite	mg/kg	0/8	0	na	na	na	0.008 - 0.01
	whole body (calculated)[c]	composite	mg/kg	7/8	87.5	0.005 J	0.02	0.01	0.005

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	mg/kg	0/5	0	na	na	na	0.009 - 0.01
	whole body (calculated)[c]	individual	mg/kg	4/5	80	0.006 J	0.020	0.01	0.005

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

J: estimated concentration

mg/kg: milligrams per kilogram

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 10a
Cadmium in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	mg/kg	12/32	37.5	0.001 J	0.006 J	0.0032	0.001
	whole body[a]	individual and composite	mg/kg	21/21	100	0.004 J	0.27 J	0.054	na
Brown bullhead	whole body	individual	mg/kg	6/6	100	0.005 J	0.031 J	0.018	na
Carp	fillet (with skin)	individual	mg/kg	5/12	41.7	0.001 J	0.010 J	0.0034	0.001 - 0.002
	whole body	individual	mg/kg	12/12	100	0.005 J	0.054 J	0.024	na
Channel catfish	fillet (skinless)	individual	mg/kg	1/11	9.1	0.002 J	0.002 J	na	0.001
	whole body[b]	individual	mg/kg	11/11	100	0.0058 J	0.017 J	0.012	na
Gizzard shad	whole body	composite	mg/kg	3/3	100	0.048 J	0.099 J	0.066	na
Largemouth bass	fillet (with skin)	individual and composite	mg/kg	1/3	33.3	0.004 J	0.004 J	na	0.001
	whole body (calculated)[c]	individual and composite	mg/kg	3/3	100	0.0034 J	0.037 J	0.020	na
Mixed forage fish	whole body	composite	mg/kg	4/4	100	0.013 J	0.051 J	0.035	na
Mummichog	whole body	composite	mg/kg	18/18	100	0.010 J	0.073 J	0.026	na
Northern pike	fillet (with skin)	individual	mg/kg	0/1	0	na	na	na	0.001
	whole body (calculated)[c]	individual	mg/kg	1/1	100	0.0035 J	0.0035 J	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	0.054 J	0.054 J	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	0.037 J	0.037 J	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	0/3	0	na	na	na	0.001
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.0043 J	0.0089 J	0.0069	na
Spottail shiner	whole body	composite	mg/kg	1/1	100	0.0091 J	0.0091 J	na	na
White catfish	fillet (skinless)	individual	mg/kg	6/19	31.6	0.001 J	0.003 J	0.0018	0.001
	whole body (calculated)[c]	individual	mg/kg	19/19	100	0.0039 J	0.027 J	0.011	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	mg/kg	14/19	73.7	0.001 J	0.012 J	0.0034	0.001
	whole body[d]	individual and composite	mg/kg	22/22	100	0.003 J	0.031 J	0.012	na
White sucker	fillet (with skin)	individual	mg/kg	0/5	0	na	na	na	0.001
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.0035 J	0.013 J	0.0078	na
Blue crab									
Blue crab	hepatopancreas only	composite	mg/kg	7/7	100	0.32	0.78	0.56	na
	muscle only	composite	mg/kg	21/21	100	0.012	0.052	0.028	na
	muscle/hepatopancreas	composite	mg/kg	41/41	100	0.044	0.21	0.10	na
	whole body (calculated)[c]	composite	mg/kg	24/24	100	0.047 J	0.18 J	0.095	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	mg/kg	5/5	100	0.023 J	0.026 J	0.024	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	mg/kg	9/9	100	0.042 J	0.20 J	0.11	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	mg/kg	3/3	100	0.021 J	0.025 J	0.022	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	mg/kg	5/5	100	0.057 J	0.068 J	0.065	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 10b
Cadmium in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	mg/kg	6/10	60	0.0007 J	0.0035 J	0.002	0.0052 - 0.0085
	whole body[a]	individual and composite	mg/kg	16/16	100	0.012 J	0.0689	0.04	na
Banded killifish	whole body	composite	mg/kg	1/1	100	0.0088	0.0088	na	na
Brown bullhead	fillet (skinless)	individual	mg/kg	3/6	50	0.0005 J	0.0015 J	0.0008	0.0035 - 0.0041
	whole body	individual	mg/kg	6/6	100	0.0077 J	0.0387 J	0.023	na
Carp	fillet (with skin)	individual	mg/kg	9/10	90	0.0005 J	0.0039 J	0.002	0.0055
	whole body[b]	individual	mg/kg	10/10	100	0.0092 J	0.066 J	0.03	na
Channel catfish	fillet (skinless)	individual	mg/kg	4/4	100	0.0009 J	0.0034 J	0.002	na
	whole body (calculated)[c]	individual	mg/kg	4/4	100	0.0074 J	0.023 J	0.01	na
Northern pike	fillet (with skin)	composite	mg/kg	1/1	100	0.0020 J	0.0020 J	na	na
	whole body (calculated)[c]	composite	mg/kg	1/1	100	0.0057 J	0.0057 J	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	0.0228	0.0228	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	0.0061	0.0061	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	2/3	66.7	0.0005 J	0.0028 J	0.002	0.0047
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.003 J	0.0045 J	0.004	na
White perch	fillet (with skin)	composite	mg/kg	8/8	100	0.0014 J	0.0022 J	0.0019	na
	whole body (calculated)[c]	composite	mg/kg	8/8	100	0.015 J	0.031 J	0.025	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	mg/kg	5/5	100	0.0005 J	0.0011 J	0.0008	na
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.009 J	0.015 J	0.01	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 11a
Chromium in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	mg/kg	11/32	34.4	0.05 J	0.15	0.085	0.02 - 0.06
	whole body[a]	individual and composite	mg/kg	19/21	90.5	0.04 J	4.5 J	1.2	0.013 - 0.02
Brown bullhead	whole body	individual	mg/kg	6/6	100	0.12	0.94	0.50	na
Carp	fillet (with skin)	individual	mg/kg	12/12	100	0.06	0.22	0.11	na
	whole body	individual	mg/kg	12/12	100	0.14	6.6	1.3	na
Channel catfish	fillet (skinless)	individual	mg/kg	10/11	90.9	0.02 J	0.11	0.058	0.02
	whole body[b]	individual	mg/kg	11/11	100	0.043 J	0.76 J	0.33	na
Gizzard shad	whole body	composite	mg/kg	3/3	100	4.3 J	10.2 J	7.5	na
Largemouth bass	fillet (with skin)	individual and composite	mg/kg	3/3	100	0.18 J	0.22 J	0.19	na
	whole body (calculated)[c]	individual and composite	mg/kg	3/3	100	0.15 J	0.23 J	0.20	na
Mixed forage fish	whole body	composite	mg/kg	4/4	100	9.0 J	31.7 J	17	na
Mummichog	whole body	composite	mg/kg	18/18	100	0.91 J	23.2 J	5.5	na
Northern pike	fillet (with skin)	individual	mg/kg	1/1	100	0.11 J	0.11 J	na	na
	whole body (calculated)[c]	individual	mg/kg	1/1	100	1.1 J	1.1 J	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	125 J	125 J	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	20.9 J	20.9 J	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	3/3	100	0.10 J	0.32 J	0.22	na
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.24 J	0.51 J	0.34	na
Spottail shiner	whole body	composite	mg/kg	1/1	100	0.89 J	0.89 J	na	na
White catfish	fillet (skinless)	individual	mg/kg	17/19	89.5	0.02 J	0.40	0.084	0.02
	whole body (calculated)[c]	individual	mg/kg	19/19	100	0.13 J	1.6 J	0.51	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	mg/kg	19/19	100	0.06 J	0.74 J	0.24	na
	whole body[d]	individual and composite	mg/kg	22/22	100	0.61 J	9.8 J	3.2	na
White sucker	fillet (with skin)	individual	mg/kg	5/5	100	0.03 J	0.33	0.13	na
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.090 J	2.0 J	0.81	na
Blue crab									
Blue crab	hepatopancreas only	composite	mg/kg	6/7	85.7	0.26 J	2.8 J	1.3	0.37
	muscle only	composite	mg/kg	12/21	57.1	0.53	3.3	1.8	0.016 - 0.078
	muscle/hepatopancreas	composite	mg/kg	29/41	70.7	0.090 J	4.2	1.0	0.016 - 0.065
	whole body (calculated)[c]	composite	mg/kg	24/24	100	0.45	3.1	1.2	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	mg/kg	5/5	100	1.4	7.7	4.3	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	mg/kg	9/9	100	3.1	61.0	16	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	mg/kg	3/3	100	0.16 J	15.9	5.4	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	mg/kg	5/5	100	0.35 J	10.8	2.6	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 11b
Chromium in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	mg/kg	10/10	100	0.098 J	0.464 J	0.26	na
	whole body[a]	individual and composite	mg/kg	16/16	100	0.30 J	2.19	0.69	na
Banded killifish	whole body	composite	mg/kg	1/1	100	2.59	2.59	na	na
Brown bullhead	fillet (skinless)	individual	mg/kg	6/6	100	0.142	0.567	0.236	na
	whole body	individual	mg/kg	6/6	100	1.40	11.2	6.75	na
Carp	fillet (with skin)	individual	mg/kg	10/10	100	0.155	0.485	0.346	na
	whole body[b]	individual	mg/kg	10/10	100	0.265	3.80	1.36	na
Channel catfish	fillet (skinless)	individual	mg/kg	4/4	100	0.172	0.462	0.341	na
	whole body (calculated)[c]	individual	mg/kg	4/4	100	0.825	13.0	4.56	na
Northern pike	fillet (with skin)	composite	mg/kg	1/1	100	0.204	0.204	na	na
	whole body (calculated)[c]	composite	mg/kg	1/1	100	0.545	0.545	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	15.4	15.4	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	1.00	1.00	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	3/3	100	0.175	0.327	0.264	na
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.751	0.847	0.814	na
White perch	fillet (with skin)	composite	mg/kg	8/8	100	0.063 J	0.934	0.23	na
	whole body (calculated)[c]	composite	mg/kg	8/8	100	1.94	17.7	8.2	na
White sucker	fillet (with skin)	individual	mg/kg	5/5	100	0.126	0.318	0.215	na
	whole body (calculated)[c]	individual	mg/kg	5/5	100	1.88	37.9	11.2	na

Notes:
a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
µg/kg: micrograms per kilogram
J: estimated concentration
na: not applicable
RL: reporting limit
UPR: Upper Passaic River

Table 12a
Copper in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	mg/kg	32/32	100	0.15 J	0.40 J	0.24	na
	whole body[a]	individual and composite	mg/kg	21/21	100	0.52 J	7.8 J	1.2	na
Brown bullhead	whole body	individual	mg/kg	6/6	100	0.55 J	0.94 J	0.74	na
Carp	fillet (with skin)	individual	mg/kg	12/12	100	0.33 J	0.95 J	0.51	na
	whole body	individual	mg/kg	12/12	100	0.60 J	1.6 J	0.93	na
Channel catfish	fillet (skinless)	individual	mg/kg	11/11	100	0.24 J	0.34 J	0.26	na
	whole body[b]	individual	mg/kg	11/11	100	0.31 J	2.3 J	0.59	na
Gizzard shad	whole body	composite	mg/kg	3/3	100	3.6 J	5.4 J	4.4	na
Largemouth bass	fillet (with skin)	individual and composite	mg/kg	3/3	100	0.30 J	0.31 J	0.30	na
	whole body (calculated)[c]	individual and composite	mg/kg	3/3	100	0.40 J	0.58 J	0.47	na
Mixed forage fish	whole body	composite	mg/kg	4/4	100	1.2 J	4.0 J	3.1	na
Mummichog	whole body	composite	mg/kg	18/18	100	2.0 J	4.3 J	2.8	na
Northern pike	fillet (with skin)	individual	mg/kg	1/1	100	0.22 J	0.22 J	na	na
	whole body (calculated)[c]	individual	mg/kg	1/1	100	0.57 J	0.57 J	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	3.8 J	3.8 J	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	2.8 J	2.8 J	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	3/3	100	0.25 J	0.47 J	0.33	na
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.40 J	0.80 J	0.53	na
Spottail shiner	whole body	composite	mg/kg	1/1	100	0.87 J	0.87 J	na	na
White catfish	fillet (skinless)	individual	mg/kg	19/19	100	0.25 J	0.59 J	0.35	na
	whole body (calculated)[c]	individual	mg/kg	19/19	100	0.33 J	0.83 J	0.63	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	mg/kg	19/19	100	0.26 J	0.50 J	0.39	na
	whole body[d]	individual and composite	mg/kg	22/22	100	1.6 J	50.9 J	10	na
White sucker	fillet (with skin)	individual	mg/kg	5/5	100	0.25 J	0.43 J	0.34	na
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.77 J	1.1 J	0.97	na
Blue Crab									
Blue crab	hepatopancreas only	composite	mg/kg	7/7	100	42.2	104	64.3	na
	muscle only	composite	mg/kg	21/21	100	10.0	20.3	16	na
	muscle/hepatopancreas	composite	mg/kg	41/41	100	13.1	37.4	22.8	na
	whole body (calculated)[c]	composite	mg/kg	24/24	100	16.2	30.6	23.0	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	mg/kg	5/5	100	1.2 J	1.6 J	1.4	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	mg/kg	9/9	100	2.1 J	11.9 J	5.6	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	mg/kg	3/3	100	0.63 J	0.98 J	0.76	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	mg/kg	5/5	100	0.50 J	1.2 J	0.79	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 12b
Copper in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	mg/kg	10/10	100	0.168 J	0.371 J	0.273	na
	whole body[a]	individual and composite	mg/kg	16/16	100	0.415 J	1.15	0.648	na
Banded killifish	whole body	composite	mg/kg	1/1	100	1.49	1.49	na	na
Brown bullhead	fillet (skinless)	individual	mg/kg	6/6	100	0.296	0.400	0.326	na
	whole body	individual	mg/kg	6/6	100	0.487	2.17	1.25	na
Carp	fillet (with skin)	individual	mg/kg	10/10	100	0.408	1.15	0.808	na
	whole body[b]	individual	mg/kg	10/10	100	0.926	1.65	1.19	na
Channel catfish	fillet (skinless)	individual	mg/kg	4/4	100	0.257	0.583	0.358	na
	whole body (calculated)[c]	individual	mg/kg	4/4	100	0.390	0.745	0.565	na
Northern pike	fillet (with skin)	composite	mg/kg	1/1	100	0.289	0.289	na	na
	whole body (calculated)[c]	composite	mg/kg	1/1	100	0.481	0.481	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	0.916	0.916	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	0.655	0.655	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	3/3	100	0.251 J	0.292 J	0.276	na
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.315 J	0.396 J	0.358	na
White perch	fillet (with skin)	composite	mg/kg	8/8	100	0.367	0.509	0.436	na
	whole body (calculated)[c]	composite	mg/kg	8/8	100	4.94	16.2	12.0	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	mg/kg	5/5	100	0.293	0.410	0.342	na
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.736	1.50	1.01	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 13a
Lead in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	mg/kg	19/19	100	0.007 J	0.046 J	0.027	na
	whole bodya	individual and composite	mg/kg	14/14	100	0.18 J	1.4 J	0.65	na
Brown bullhead	whole body	individual	mg/kg	6/6	100	0.15 J	0.83 J	0.59	na
Carp	fillet (with skin)	individual	mg/kg	12/12	100	0.019 J	0.12 J	0.037	na
	whole body	individual	mg/kg	12/12	100	0.21 J	0.96 J	0.66	na
Channel catfish	fillet (skinless)	individual	mg/kg	11/11	100	0.007 J	0.025 J	0.010	na
	whole bodyb	individual	mg/kg	11/11	100	0.056 J	0.37 J	0.24	na
Gizzard shad	whole body	composite	mg/kg	3/3	100	2.5 J	4.9 J	3.5	na
Largemouth bass	fillet (with skin)	individual and composite	mg/kg	3/3	100	0.009 J	0.014 J	0.012	na
	whole body (calculated)c	individual and composite	mg/kg	3/3	100	0.020 J	0.12 J	0.079	na
Mixed forage fish	whole body	composite	mg/kg	4/4	100	0.71 J	2.6 J	1.9	na
Mummichog	whole body	composite	mg/kg	18/18	100	0.38 J	3.9 J	1.3	na
Northern pike	fillet (with skin)	individual	mg/kg	1/1	100	0.005 J	0.005 J	na	na
	whole body (calculated)c	individual	mg/kg	1/1	100	0.033 J	0.033 J	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	1.1 J	1.1 J	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	3.1 J	3.1 J	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	3/3	100	0.005 J	0.012 J	0.0083	na
	whole body (calculated)c	composite	mg/kg	3/3	100	0.052 J	0.098 J	0.081	na
Spottail shiner	whole body	composite	mg/kg	1/1	100	0.15 J	0.15 J	na	na
White catfish	fillet (skinless)	individual	mg/kg	18/19	94.7	0.003 J	0.019 J	0.0078	0.004
	whole body (calculated)c	individual	mg/kg	19/19	100	0.29 J	2.2 J	0.58	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	mg/kg	19/19	100	0.005 J	0.018 J	0.0097	na
	whole body[d]	individual and composite	mg/kg	22/22	100	0.17 J	0.96 J	0.38	na
White sucker	fillet (with skin)	individual	mg/kg	5/5	100	0.009 J	0.028 J	0.017	na
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.15 J	0.30 J	0.23	na
Blue Crab									
Blue crab	hepatopancreas only	composite	mg/kg	7/7	100	0.15	1.5	0.51	na
	muscle only	composite	mg/kg	21/21	100	0.019	0.191	0.046	na
	muscle/hepatopancreas	composite	mg/kg	41/41	100	0.027	2.5	0.14	na
	whole body (calculated)[c]	composite	mg/kg	24/24	100	0.20 J	0.66 J	0.32	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	mg/kg	5/5	100	0.11 J	0.22 J	0.16	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	mg/kg	9/9	100	0.54 J	12.4 J	4.2	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	mg/kg	3/3	100	0.12 J	0.17 J	0.15	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	mg/kg	5/5	100	0.14 J	0.28 J	0.22	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 13b
Lead in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	mg/kg	9/10	90	0.0124	0.0478	0.021	0.0085
	whole body[a]	individual and composite	mg/kg	16/16	100	0.073	0.702	0.29	na
Banded killifish	whole body	composite	mg/kg	1/1	100	0.350	0.350	na	na
Brown bullhead	fillet (skinless)	individual	mg/kg	5/6	83.3	0.0048 J	0.0168 J	0.010	0.0035
	whole body	individual	mg/kg	6/6	100	0.288 J	2.63 J	1.27	na
Carp	fillet (with skin)	individual	mg/kg	10/10	100	0.0275	0.0736	0.0437	na
	whole body[b]	individual	mg/kg	10/10	100	0.256	0.859	0.577	na
Channel catfish	fillet (skinless)	individual	mg/kg	2/4	50	0.0047 J	0.0225 J	0.014	0.0042 - 0.0046
	whole body (calculated)[c]	individual	mg/kg	4/4	100	0.11 J	0.32 J	0.24	na
Northern pike	fillet (with skin)	composite	mg/kg	0/1	0	na	na	na	0.0045
	whole body (calculated)[c]	composite	mg/kg	1/1	100	0.052	0.052	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	0.476	0.476	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	0.209	0.209	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	0/3	0	na	na	na	0.0044 - 0.0047
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.045	0.053	0.048	na
White perch	fillet (with skin)	composite	mg/kg	8/8	100	0.0065	0.0149	0.0092	na
	whole body (calculated)[c]	composite	mg/kg	8/8	100	0.26	1.22	0.55	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	mg/kg	4/5	80	0.0089	0.0158	0.012	0.0043
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.10	1.1	0.56	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

UPR: Upper Passaic River

na: not applicable

RL: reporting limit

Table 14a
Nickel in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	mg/kg	29/32	90.6	0.050 J	0.14 J	0.085	0.049 - 0.059
	whole body[a]	individual and composite	mg/kg	21/21	100	0.11 J	2.8 J	0.76	na
Brown bullhead	whole body	individual	mg/kg	6/6	100	0.18 J	0.84 J	0.51	na
Carp	fillet (with skin)	individual	mg/kg	8/12	66.7	0.072 J	0.20 J	0.12	0.056 - 0.085
	whole body	individual	mg/kg	12/12	100	0.23 J	4.2 J	1.0	na
Channel catfish	fillet (skinless)	individual	mg/kg	5/11	45.5	0.038 J	0.080 J	0.056	0.039 - 0.045
	whole body[b]	individual	mg/kg	11/11	100	0.15 J	0.50 J	0.30	na
Gizzard shad	whole body	composite	mg/kg	3/3	100	3.0 J	6.9 J	4.8	na
Largemouth bass	fillet (with skin)	individual and composite	mg/kg	3/3	100	0.12 J	0.20 J	0.15	na
	whole body (calculated)[c]	individual and composite	mg/kg	3/3	100	0.32 J	0.37 J	0.34	na
Mixed forage fish	whole body	composite	mg/kg	4/4	100	5.7 J	22.1 J	12	na
Mummichog	whole body	composite	mg/kg	18/18	100	0.81 J	15.8 J	3.6	na
Northern pike	fillet (with skin)	individual	mg/kg	1/1	100	0.092 J	0.092 J	na	na
	whole body (calculated)[c]	individual	mg/kg	1/1	100	0.51 J	0.51 J	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	89.1 J	89.1 J	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	15.2 J	15.2 J	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	3/3	100	0.094 J	0.29 J	0.17	na
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.35 J	0.56 J	0.43	na
Spottail shiner	whole body	composite	mg/kg	1/1	100	0.62 J	0.62 J	na	na
White catfish	fillet (skinless)	individual	mg/kg	15/19	78.9	0.012 J	0.14 J	0.043	0.038 - 0.043
	whole body (calculated)[c]	individual	mg/kg	19/19	100	0.17 J	0.96 J	0.39	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	mg/kg	19/19	100	0.062 J	0.53 J	0.16	na
	whole body[d]	individual and composite	mg/kg	22/22	100	0.62 J	6.3 J	2.1	na
White sucker	fillet (with skin)	individual	mg/kg	3/5	60	0.050 J	0.19 J	0.13	0.042 - 0.043
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.14 J	0.94 J	0.47	na
Blue crab									
Blue crab	hepatopancreas only	composite	mg/kg	7/7	100	0.30 J	1.9 J	0.92	na
	muscle only	composite	mg/kg	13/21	61.9	0.11 J	1.4	0.73	0.034 - 0.099
	muscle/hepatopancreas	composite	mg/kg	33/41	80.5	0.092	2.3	0.62	0.049 - 0.092
	whole body (calculated)[c]	composite	mg/kg	24/24	100	0.52	1.9	0.89	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	mg/kg	5/5	100	1.2 J	4.9 J	3.0	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	mg/kg	9/9	100	2.4 J	36.2 J	9.8	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	mg/kg	3/3	100	0.11 J	6.1 J	2.1	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	mg/kg	5/5	100	0.15 J	7.8 J	1.8	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 14b
Nickel in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	mg/kg	8/10	80	0.059 J	0.426 J	0.29	0.071 - 0.085
	whole body[a]	individual and composite	mg/kg	16/16	100	0.18 J	1.09 J	0.41	na
Banded killifish	whole body	composite	mg/kg	1/1	100	1.45 J	1.45 J	na	na
Brown bullhead	fillet (skinless)	individual	mg/kg	6/6	100	0.085 J	0.351 J	0.14	na
	whole body	individual	mg/kg	6/6	100	0.887 J	6.78 J	4.26	na
Carp	fillet (with skin)	individual	mg/kg	10/10	100	0.089 J	0.322 J	0.21	na
	whole body[b]	individual	mg/kg	10/10	100	0.157 J	2.49 J	0.873	na
Channel catfish	fillet (skinless)	individual	mg/kg	4/4	100	0.101 J	0.173 J	0.133	na
	whole body (calculated)[c]	individual	mg/kg	4/4	100	0.444 J	7.72 J	2.65	na
Northern pike	fillet (with skin)	composite	mg/kg	1/1	100	0.112 J	0.112 J	na	na
	whole body (calculated)[c]	composite	mg/kg	1/1	100	0.264 J	0.264 J	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	8.60 J	8.60 J	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	0.623 J	0.623 J	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	3/3	100	0.074 J	0.182 J	0.14	na
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.354 J	0.37 J	0.36	na
White perch	fillet (with skin)	composite	mg/kg	8/8	100	0.043 J	0.597 J	0.15	na
	whole body (calculated)[c]	composite	mg/kg	8/8	100	1.13 J	9.85 J	4.7	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	mg/kg	5/5	100	0.094 J	0.204 J	0.14	na
	whole body (calculated)[c]	individual	mg/kg	5/5	100	1.21 J	21.8 J	6.5	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

UPR: Upper Passaic River

Table 15a
Selenium in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	mg/kg	32/32	100	0.26	2.8	0.51	na
	whole body[a]	individual and composite	mg/kg	21/21	100	0.33	1.2	0.67	na
Brown bullhead	whole body	individual	mg/kg	6/6	100	0.40	0.90	0.61	na
Carp	fillet (with skin)	individual	mg/kg	12/12	100	0.41	0.95	0.58	na
	whole body	individual	mg/kg	12/12	100	0.35	0.98	0.73	na
Channel catfish	fillet (skinless)	individual	mg/kg	11/11	100	0.12	0.21	0.16	na
	whole body[b]	individual	mg/kg	11/11	100	0.24	0.34	0.29	na
Gizzard shad	whole body	composite	mg/kg	3/3	100	0.30	0.58	0.44	na
Largemouth bass	fillet (with skin)	individual and composite	mg/kg	3/3	100	0.28	0.50	0.36	na
	whole body (calculated)[c]	individual and composite	mg/kg	3/3	100	0.36	0.59	0.49	na
Mixed forage fish	whole body	composite	mg/kg	4/4	100	0.22	0.93	0.51	na
Mummichog	whole body	composite	mg/kg	18/18	100	0.38	0.89	0.66	na
Northern pike	fillet (with skin)	individual	mg/kg	1/1	100	0.55	0.55	na	na
	whole body (calculated)[c]	individual	mg/kg	1/1	100	0.55	0.55	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	0.89	0.89	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	0.76	0.76	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	3/3	100	0.46	0.65	0.57	na
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.51	0.69	0.62	na
Spottail shiner	whole body	composite	mg/kg	1/1	100	0.52	0.52	na	na
White catfish	fillet (skinless)	individual	mg/kg	19/19	100	0.10	0.25	0.16	na
	whole body (calculated)[c]	individual	mg/kg	19/19	100	0.16	0.68	0.33	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	mg/kg	19/19	100	0.37	1.7	0.97	na
	whole body[d]	individual and composite	mg/kg	22/22	100	0.37	3.0	1.2	na
White sucker	fillet (with skin)	individual	mg/kg	5/5	100	0.27	0.43	0.36	na
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.30	0.46	0.38	na
Blue Crab									
Blue crab	hepatopancreas only	composite	mg/kg	7/7	100	0.46 J	1.1 J	0.74	na
	muscle only	composite	mg/kg	21/21	100	0.21	1.3 J	0.64	na
	muscle/hepatopancreas	composite	mg/kg	41/41	100	0.32	1.5 J	0.70	na
	whole body (calculated)[c]	composite	mg/kg	24/24	100	0.43 J	1.1 J	0.73	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	mg/kg	5/5	100	0.28	0.35	0.30	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	mg/kg	9/9	100	0.29	0.77	0.54	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	mg/kg	3/3	100	0.14	0.19	0.17	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	mg/kg	5/5	100	0.12	0.22	0.17	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 15b
Selenium in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	mg/kg	10/10	100	0.308	0.598	0.489	na
	whole body[a]	individual and composite	mg/kg	16/16	100	0.464	0.794	0.636	na
Banded killifish	whole body	composite	mg/kg	1/1	100	0.488	0.488	na	na
Brown bullhead	fillet (skinless)	individual	mg/kg	6/6	100	0.092	0.135	0.12	na
	whole body	individual	mg/kg	6/6	100	0.294	0.401	0.339	na
Carp	fillet (with skin)	individual	mg/kg	10/10	100	0.410	0.731	0.614	na
	whole body[b]	individual	mg/kg	10/10	100	0.542	0.758	0.632	na
Channel catfish	fillet (skinless)	individual	mg/kg	4/4	100	0.129	0.195	0.166	na
	whole body (calculated)[c]	individual	mg/kg	4/4	100	0.238	0.332	0.274	na
Northern pike	fillet (with skin)	composite	mg/kg	1/1	100	0.381	0.381	na	na
	whole body (calculated)[c]	composite	mg/kg	1/1	100	0.417	0.417	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	0.697	0.697	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	0.653	0.653	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	3/3	100	0.352	0.541	0.470	na
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.494	0.685	0.594	na
White perch	fillet (with skin)	composite	mg/kg	8/8	100	0.478	1.22	0.851	na
	whole body (calculated)[c]	composite	mg/kg	8/8	100	1.01	1.70	1.29	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	mg/kg	5/5	100	0.463	0.700	0.563	na
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.508	0.645	0.562	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
µg/kg: micrograms per kilogram
J: estimated concentration
UPR: Upper Passaic River

Table 16a
Silver in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	mg/kg	3/32	9.4	0.005 J	0.18 J	0.065	0.004 - 0.006
	whole body[a]	individual and composite	mg/kg	18/21	85.7	0.007 J	0.062 J	0.021	0.005 - 0.008
Brown bullhead	whole body	individual	mg/kg	0/6	0	na	na	na	0.005 - 0.008
Carp	fillet (with skin)	individual	mg/kg	1/12	8.3	0.014 J	0.014 J	na	0.004 - 0.009
	whole body	individual	mg/kg	3/12	25	0.007 J	0.015 J	0.011	0.006 - 0.008
Channel catfish	fillet (skinless)	individual	mg/kg	0/11	0	na	na	na	0.004 - 0.005
	whole body[b]	individual	mg/kg	1/11	9.1	0.014 J	0.014 J	na	0.0014 - 0.0019
Gizzard shad	whole body	composite	mg/kg	3/3	100	0.040 J	0.074 J	0.053	na
Largemouth bass	fillet (with skin)	individual and composite	mg/kg	0/3	0	na	na	na	0.004
	whole body (calculated)[c]	individual and composite	mg/kg	0/3	0	na	na	na	0.0026
Mixed forage fish	whole body	composite	mg/kg	4/4	100	0.0067 J	0.047 J	0.032	na
Mummichog	whole body	composite	mg/kg	18/18	100	0.023 J	0.060 J	0.039	na
Northern pike	fillet (with skin)	individual	mg/kg	0/1	0	na	na	na	0.005
	whole body (calculated)[c]	individual	mg/kg	0/1	0	na	na	na	0.0028
Pumpkinseed	whole body	composite	mg/kg	1/1	100	0.0074 J	0.0074 J	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	0.024 J	0.024 J	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	0/3	0	na	na	na	0.004 - 0.005
	whole body (calculated)[c]	composite	mg/kg	0/3	0	na	na	na	0.0026 - 0.0028
Spottail shiner	whole body	composite	mg/kg	0/1	0	na	na	na	0.0051
White catfish	fillet (skinless)	individual	mg/kg	0/19	0	na	na	na	0.0014 - 0.004
	whole body (calculated)[c]	individual	mg/kg	7/19	36.8	0.0026 J	0.0066 J	0.0047	0.0012 - 0.0027

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	mg/kg	1/19	5.3	0.0062 J	0.0062 J	na	0.0019 - 0.0055
	whole body[d]	individual and composite	mg/kg	22/22	100	0.013 J	0.64 J	0.14	na
White sucker	fillet (with skin)	individual	mg/kg	0/5	0	na	na	na	0.004
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.0030 J	0.0050 J	0.0041	na
Blue Crab									
Blue crab	hepatopancreas only	composite	mg/kg	7/7	100	0.97	2.0	1.5	na
	muscle only	composite	mg/kg	21/21	100	0.10	0.52	0.24	na
	muscle/hepatopancreas	composite	mg/kg	41/41	100	0.16 J	0.67 J	0.37	na
	whole body (calculated)[c]	composite	mg/kg	24/24	100	0.25 J	0.78 J	0.54	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	mg/kg	5/5	100	0.021 J	0.027 J	0.023	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	mg/kg	9/9	100	0.006 J	0.042 J	0.023	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	mg/kg	3/3	100	0.022 J	0.025 J	0.024	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	mg/kg	5/5	100	0.005 J	0.006 J	0.0054	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 16b
Silver in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	mg/kg	0/10	0	na	na	na	0.0049 - 0.0085
	whole body[a]	individual and composite	mg/kg	12/16	75	0.0018 J	0.0159	0.005	0.003 - 0.0056
Banded killifish	whole body	composite	mg/kg	1/1	100	0.0065	0.0065	na	na
Brown bullhead	fillet (skinless)	individual	mg/kg	0/6	0	na	na	na	0.0033 - 0.0041
	whole body	individual	mg/kg	5/6	83.3	0.0017 J	0.0202	0.0088	0.0055
Carp	fillet (with skin)	individual	mg/kg	0/10	0	na	na	na	0.0044 - 0.0063
	whole body[b]	individual	mg/kg	10/10	100	0.0044 J	0.013	0.0077	na
Channel catfish	fillet (skinless)	individual	mg/kg	1/4	25	0.0023 J	0.0023 J	na	0.0039 - 0.0046
	whole body	individual	mg/kg	2/4	50	0.0020 J	0.0027 J	0.0024	0.0027 - 0.003
Northern pike	fillet (with skin)	composite	mg/kg	0/1	0	na	na	na	0.0045
	whole body (calculated)[c]	composite	mg/kg	0/1	0	na	na	na	0.0027
Pumpkinseed	whole body	composite	mg/kg	1/1	100	0.0025 J	0.0025 J	na	na
Silver shiner	whole body	composite	mg/kg	0/1	0	na	na	na	0.0061
Smallmouth bass	fillet (with skin)	composite	mg/kg	0/3	0	na	na	na	0.0044 - 0.0047
	whole body (calculated)[c]	composite	mg/kg	0/3	0	na	na	na	0.0026 - 0.0028
White perch	fillet (with skin)	composite	mg/kg	0/8	0	na	na	na	0.0042 - 0.0048
	whole body (calculated)[c]	composite	mg/kg	8/8	100	0.029	0.10	0.066	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	mg/kg	0/5	0	na	na	na	0.0039 - 0.0046
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.0026 J	0.012	0.0069	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 17a
Vanadium in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	mg/kg	13/32	40.6	0.02 J	0.04 J	0.029	0.02
	whole body[a]	individual and composite	mg/kg	12/21	57.1	0.030 J	0.12	0.080	0.02 - 0.07
Brown bullhead	whole body	individual	mg/kg	5/6	83.3	0.12	0.20	0.17	0.03
Carp	fillet (with skin)	individual	mg/kg	0/12	0	na	na	na	0.02 - 0.03
	whole body	individual	mg/kg	12/12	100	0.03 J	0.21	0.094	na
Channel catfish	fillet (skinless)	individual	mg/kg	0/11	0	na	na	na	0.01 - 0.02
	whole body[b]	individual	mg/kg	11/11	100	0.032 J	0.063	0.050	na
Gizzard shad	whole body	composite	mg/kg	3/3	100	0.68	1.3	0.96	na
Largemouth bass	fillet (with skin)	individual and composite	mg/kg	0/3	0	na	na	na	0.02
	whole body (calculated)[c]	individual and composite	mg/kg	0/3	0	na	na	na	0.01
Mixed forage fish	whole body	composite	mg/kg	4/4	100	0.28	1.0	0.68	na
Mummichog	whole body	composite	mg/kg	18/18	100	0.15	1.3	0.51	na
Northern pike	fillet (with skin)	individual	mg/kg	0/1	0	na	na	na	0.02
	whole body (calculated)[c]	individual	mg/kg	0/1	0	na	na	na	0.01
Pumpkinseed	whole body	composite	mg/kg	1/1	100	1.2	1.2	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	1.1	1.1	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	0/3	0	na	na	na	0.02
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.016 J	0.028 J	0.020	na
Spottail shiner	whole body	composite	mg/kg	1/1	100	0.05	0.05	na	na
White catfish	fillet (skinless)	individual	mg/kg	9/19	47.4	0.01 J	0.02 J	0.016	0.01 - 0.02
	whole body (calculated)[c]	individual	mg/kg	19/19	100	0.043 J	0.21 J	0.13	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	mg/kg	0/19	0	na	na	na	0.01 - 0.02
	whole body[d]	individual and composite	mg/kg	22/22	100	0.04 J	0.39	0.12	na
White sucker	fillet (with skin)	individual	mg/kg	2/5	40	0.01 J	0.02 J	0.015	0.01 - 0.02
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.073 J	0.17	0.11	na
Blue Crab									
Blue crab	hepatopancreas only	composite	mg/kg	7/7	100	0.054	0.10	0.077	na
	muscle only	composite	mg/kg	16/21	76.2	0.014 J	0.033 J	0.020	0.013 - 0.015
	muscle/hepatopancreas	composite	mg/kg	21/41	51.2	0.014 J	0.048	0.030	0.033 - 0.055
	whole body (calculated)[c]	composite	mg/kg	24/24	100	0.078	0.14	0.11	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	mg/kg	5/5	100	0.07	0.08	0.076	na
Freshwater sp. (Lumbriculus variegatus)	whole body	composite	mg/kg	9/9	100	0.11	1.3	0.57	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	mg/kg	3/3	100	0.08	0.25	0.14	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	mg/kg	5/5	100	4.9	5.8	5.3	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 17b
Vanadium in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	mg/kg	0/10	0	na	na	na	0.099 - 0.17
	whole body[a]	individual and composite	mg/kg	16/16	100	0.022 J	0.0916 J	0.055	na
Banded killifish	whole body	composite	mg/kg	1/1	100	0.132	0.132	na	na
Brown bullhead	fillet (skinless)	individual	mg/kg	3/6	50	0.015 J	0.020 J	0.018	0.07 - 0.08
	whole body	individual	mg/kg	6/6	100	0.140	0.689	0.352	na
Carp	fillet (with skin)	individual	mg/kg	3/10	30	0.021 J	0.028 J	0.025	0.089 - 0.126
	whole body[b]	individual	mg/kg	10/10	100	0.047 J	0.23 J	0.11	na
Channel catfish	fillet (skinless)	individual	mg/kg	2/4	50	0.017 J	0.018 J	0.018	0.084
	whole body	individual	mg/kg	4/4	100	0.067 J	0.18	0.13	na
Northern pike	fillet (with skin)	composite	mg/kg	0/1	0	na	na	na	0.091
	whole body (calculated)[c]	composite	mg/kg	1/1	100	0.044 J	0.044 J	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	0.295	0.295	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	0.119 J	0.119 J	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	0/3	0	na	na	na	0.087 - 0.093
	whole body (calculated)[c]	composite	mg/kg	3/3	100	0.030 J	0.046 J	0.038	na
White perch	fillet (with skin)	composite	mg/kg	0/8	0	na	na	na	0.083 - 0.095
	whole body (calculated)[c]	composite	mg/kg	8/8	100	0.11	0.46	0.25	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	mg/kg	0/5	0	na	na	na	0.078 - 0.093
	whole body (calculated)[c]	individual	mg/kg	5/5	100	0.13	0.54	0.28	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 18a
Zinc in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	mg/kg	32/32	100	11.7 J	24.4 J	17.9	na
	whole body[a]	individual and composite	mg/kg	21/21	100	23.1 J	42.2 J	29.4	na
Brown bullhead	whole body	individual	mg/kg	6/6	100	15.0 J	41.4 J	20.2	na
Carp	fillet (with skin)	individual	mg/kg	12/12	100	10.4 J	22.1 J	17.0	na
	whole body	individual	mg/kg	12/12	100	47.6 J	104 J	67.0	na
Channel catfish	fillet (skinless)	individual	mg/kg	11/11	100	5.3 J	8.5 J	6.3	na
	whole body[b]	individual	mg/kg	11/11	100	17 J	22 J	19	na
Gizzard shad	whole body	composite	mg/kg	3/3	100	25.0 J	30.1 J	27.1	na
Largemouth bass	fillet (with skin)	individual and composite	mg/kg	3/3	100	8.5 J	12.6 J	11	na
	whole body (calculated)[c]	individual and composite	mg/kg	3/3	100	15.4 J	16 J	16	na
Mixed forage fish	whole body	composite	mg/kg	4/4	100	28.7 J	30.9 J	29.6	na
Mummichog	whole body	composite	mg/kg	18/18	100	38.6 J	51.6 J	43.4	na
Northern pike	fillet (with skin)	individual	mg/kg	1/1	100	8.2 J	8.2 J	na	na
	whole body (calculated)[c]	individual	mg/kg	1/1	100	34 J	34 J	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	32.7 J	32.7 J	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	41.2 J	41.2 J	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	3/3	100	9.8 J	12.5 J	11	na
	whole body (calculated)[c]	composite	mg/kg	3/3	100	15 J	18.4 J	17	na
Spottail shiner	whole body	composite	mg/kg	1/1	100	48.0 J	48.0 J	na	na
White catfish	fillet (skinless)	individual	mg/kg	19/19	100	4.5 J	7.1 J	5.8	na
	whole body (calculated)[c]	individual	mg/kg	19/19	100	12 J	19 J	16	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	mg/kg	19/19	100	9.0 J	14.3	11	na
	whole body[d]	individual and composite	mg/kg	22/22	100	19.9	30.8 J	25	na
White sucker	fillet (with skin)	individual	mg/kg	5/5	100	10 J	14.3 J	11	na
	whole body (calculated)[c]	individual	mg/kg	5/5	100	14 J	21.0 J	17	na
Blue crab									
Blue crab	hepatopancreas only	composite	mg/kg	7/7	100	30.7	39.9	35.0	na
	muscle only	composite	mg/kg	21/21	100	28.6	47.3	38.0	na
	muscle/hepatopancreas	composite	mg/kg	41/41	100	31.0	50.4	39.9	na
	whole body (calculated)[c]	composite	mg/kg	24/24	100	28.3	41.1	35.3	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	mg/kg	5/5	100	18.1 J	19.5 J	18.7	na
Freshwater sp. *(Lumbriculus variegatus)*	whole body	composite	mg/kg	9/9	100	26.4	45.2	35.5	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	mg/kg	3/3	100	3.4	6.4	4.5	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	mg/kg	5/5	100	13.5	17.3	15.6	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 18b
Zinc in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	mg/kg	10/10	100	17.1	39.6	28.7	na
	whole body[a]	individual and composite	mg/kg	16/16	100	22.6	48.2	30.4	na
Banded killifish	whole body	composite	mg/kg	1/1	100	37.0	37.0	na	na
Brown bullhead	fillet (skinless)	individual	mg/kg	6/6	100	3.74	4.90	4.22	na
	whole body	individual	mg/kg	6/6	100	15.6	21.3	18.3	na
Carp	fillet (with skin)	individual	mg/kg	10/10	100	10.2	23.1	15.9	na
	whole body[b]	individual	mg/kg	10/10	100	51.8	90.9	69.8	na
Channel catfish	fillet (skinless)	individual	mg/kg	4/4	100	6.28	7.68	6.87	na
	whole body	individual	mg/kg	4/4	100	14.3	19.9	18.1	na
Northern pike	fillet (with skin)	composite	mg/kg	1/1	100	9.56	9.56	na	na
	whole body (calculated)[c]	composite	mg/kg	1/1	100	40.7	40.7	na	na
Pumpkinseed	whole body	composite	mg/kg	1/1	100	33.6	33.6	na	na
Silver shiner	whole body	composite	mg/kg	1/1	100	53.6	53.6	na	na
Smallmouth bass	fillet (with skin)	composite	mg/kg	3/3	100	7.32	8.46	7.93	na
	whole body (calculated)[c]	composite	mg/kg	3/3	100	14.8	16.0	15.2	na
White perch	fillet (with skin)	composite	mg/kg	8/8	100	10.9	13.3	11.9	na
	whole body (calculated)[c]	composite	mg/kg	8/8	100	21.4	28.0	25.7	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	mg/kg	5/5	100	8.01	14.7	10.2	na
	whole body (calculated)[c]	individual	mg/kg	5/5	100	16.2	20.7	17.6	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 19a
Tributyltin in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	19/32	59.4	0.14 J	1.6	0.63	0.98 - 2
	whole body[a]	individual and composite	µg/kg	17/21	81	0.23 J	4.5 J	1.2	0.99 - 2
Brown bullhead	whole body	individual	µg/kg	5/6	83.3	0.54 J	2.7 J	1.4	20
Carp	fillet (with skin)	individual	µg/kg	10/12	83.3	0.29 NJ	1.9 J	1.2	0.97 - 20
	whole body	individual	µg/kg	9/12	75	0.81 J	3.1	2.0	20 - 25
Channel catfish	fillet (skinless)	individual	µg/kg	11/11	100	0.14 NJ	1.8 J	0.84	na
	whole body[b]	individual	µg/kg	11/11	100	0.45 J	1.1 J	0.70	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	0.23 J	1.5 J	0.73	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	2/3	66.7	0.56 J	0.75 J	0.66	0.99
	whole body (calculated)[c]	individual and composite	µg/kg	2/3	66.7	0.98 J	2.1 J	1.5	0.5
Mixed forage fish	whole body	composite	µg/kg	4/4	100	0.18 J	3.6 J	2.2	na
Mummichog	whole body	composite	µg/kg	18/18	100	1.3 J	63 J	7.7	na
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	1.5	1.5	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	1.4	1.4	na	na
Pumpkinseed	whole body	composite	µg/kg	0/1	0	na	na	na	1
Silver shiner	whole body	composite	µg/kg	1/1	100	0.72 J	0.72 J	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	0.19 J	0.61 J	0.42	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	0.37 J	1.3 J	0.96	na
Spottail shiner	whole body	composite	µg/kg	0/1	0	na	na	na	0.99
White catfish	fillet (skinless)	individual	µg/kg	16/19	84.2	0.27 J	10 J	1.5	0.97 - 0.98
	whole body (calculated)[c]	individual	µg/kg	19/19	100	0.42 J	4.2 J	1.5	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	19/19	100	0.36 J	2.7 J	1.4	na
	whole body[d]	individual and composite	µg/kg	22/22	100	0.80 J	16 J	6.6	na
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	0.32 J	2.4 J	1.3	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	0.78 J	2.6 J	1.7	na
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	5/7	71.4	3.5 J	8.2	6.0	4.9 - 5
	muscle only	composite	µg/kg	12/21	57.1	0.17 J	1.8 J	0.91	0.96 - 1
	muscle/hepatopancreas	composite	µg/kg	30/41	73.2	0.23 J	5.1	1.5	0.96 - 1
	whole body (calculated)[c]	composite	µg/kg	24/24	100	0.37 J	3.8	1.7	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	1/5	20	0.71 J	0.71 J	na	1 - 3.4
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	5/9	55.6	0.24 J	1.4 J	0.79	1
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	3/3	100	0.50 J	0.90 J	0.66	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	4/5	80	0.16 J	0.45 J	0.29	1

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 19b
Tributyltin in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	0/10	0	na	na	na	9.6 - 10
	whole body[a]	individual and composite	µg/kg	1/16	6.2	3.0 J	3.0 J	na	4.8 - 20
Banded killifish	whole body	composite	µg/kg	0/1	0	na	na	na	5
Brown bullhead	fillet (skinless)	individual	µg/kg	3/6	50	0.97 J	2.3 J	1.5	4.8 - 7.1
	whole body	individual	µg/kg	3/6	50	0.66 J	1.9 J	1.3	5 - 6.7
Carp	fillet (with skin)	individual	µg/kg	10/10	100	0.64 J	2.7 J	1.2	na
	whole body[b]	individual	µg/kg	10/10	100	0.62 J	2.1 J	1.2	na
Channel catfish	fillet (skinless)	individual	µg/kg	1/4	25	0.58 J	0.58 J	na	4.8 - 5
	whole body	individual	µg/kg	2/4	50	1.0 J	1.9 J	1.5	2.4
Northern pike	fillet (with skin)	composite	µg/kg	0/1	0	na	na	na	4.9
	whole body (calculated)[c]	composite	µg/kg	0/1	0	na	na	na	2.5
Pumpkinseed	whole body	composite	µg/kg	0/1	0	na	na	na	6.4
Silver shiner	whole body	composite	µg/kg	1/1	100	1.1 J	1.1 J	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	0/3	0	na	na	na	9.9 - 10
	whole body (calculated)[c]	composite	µg/kg	0/3	0	na	na	na	5
White perch	fillet (with skin)	composite	µg/kg	1/8	12.5	0.61 J	0.61 J	na	4.8 - 6.2
	whole body (calculated)[c]	composite	µg/kg	8/8	100	2.3 J	3.3 J	2.7	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	µg/kg	2/5	40	0.89 J	1.3 J	1.1	4.7 - 5
	whole body (calculated)[c]	individual	µg/kg	4/5	80	1.4 J	2.8 J	2.0	2.5

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 20a
Dieldrin in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	32/32	100	9.4 J	100 J	30	na
	whole body[a]	individual and composite	µg/kg	21/21	100	7.6	110 J	45	na
Brown bullhead	whole body	individual	µg/kg	6/6	100	9.7 J	34 J	22	na
Carp	fillet (with skin)	individual	µg/kg	12/12	100	12 J	97	40	na
	whole body	individual	µg/kg	12/12	100	29	72	48	na
Channel catfish	fillet (skinless)	individual	µg/kg	11/11	100	4.9 J	35 J	15	na
	whole body[b]	individual	µg/kg	11/11	100	18 J	70 J	38	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	9.2	17	12	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	3/3	100	0.91 J	3.9 J	2.3	na
	whole body (calculated)[c]	individual and composite	µg/kg	3/3	100	16 J	40 J	25	na
Mixed forage fish	whole body	composite	µg/kg	4/4	100	8.4	22	13	na
Mummichog	whole body	composite	µg/kg	18/18	100	3.5	28	8.6	na
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	6.9 J	6.9 J	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	43 J	43 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	8.6	8.6	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	17	17	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	1.3 J	2.1 J	1.7	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	16 J	20 J	18	na
Spottail shiner	whole body	composite	µg/kg	1/1	100	15	15	na	na
White catfish	fillet (skinless)	individual	µg/kg	19/19	100	1.7 J	32 J	8.8	na
	whole body (calculated)[c]	individual	µg/kg	19/19	100	7.2 J	48 J	22	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	17/19	89.5	4.0 J	17	9.5	3.2 - 5.6
	whole body[d]	individual and composite	µg/kg	22/22	100	7.8 J	47	26	na
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	4.5	6.7	5.4	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	16	25	20	na
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	7/7	100	29	50	36	na
	muscle only	composite	µg/kg	20/21	95.2	0.70 J	3.6	1.9	4.1
	muscle/hepatopancreas	composite	µg/kg	40/41	97.6	2.0	17	8.6	20
	whole body (calculated)[c]	composite	µg/kg	24/24	100	2.4	9.1	6.2	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	5/5	100	0.57 J	2.0 J	1.1	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	13/13	100	0.79 J	2.6 J	1.5	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	3/3	100	0.64 J	1.8	1.2	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	5/5	100	2.3	3.0	2.7	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 20b
Dieldrin in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	10/10	100	37.0	102	73.7	na
	whole body[a]	individual and composite	µg/kg	16/16	100	3.1	127	61	na
Banded killifish	whole body	composite	µg/kg	1/1	100	18.9	18.9	na	na
Brown bullhead	fillet (skinless)	individual	µg/kg	6/6	100	1.23	4.2	2.5	na
	whole body	individual	µg/kg	6/6	100	2.54	25.8	11	na
Carp	fillet (with skin)	individual	µg/kg	10/10	100	8.61	42.8	22	na
	whole body[b]	individual	µg/kg	10/10	100	12.7	34	27.9	na
Channel catfish	fillet (skinless)	individual	µg/kg	4/4	100	3.10	15.1	9.4	na
	whole body	individual	µg/kg	4/4	100	12.4	27.7	20	na
Northern pike	fillet (with skin)	composite	µg/kg	1/1	100	8.6	8.6	na	na
	whole body (calculated)[c]	composite	µg/kg	1/1	100	38	38	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	9.4	9.4	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	22.0	22.0	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	2.9	3.4	3.1	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	18	21	20	na
White perch	fillet (with skin)	composite	µg/kg	8/8	100	4.5	32.3	8.9	na
	whole body (calculated)[c]	composite	µg/kg	8/8	100	16	25	20	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	1.8	13.6	7.2	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	4.7	43.9	21	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 21a
Total Chlordane in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	32/32	100	33 J	300 J	110	na
	whole body[a]	individual and composite	µg/kg	21/21	100	43 J	290 J	150	na
Brown bullhead	whole body	individual	µg/kg	6/6	100	65 J	220 J	140	na
Carp	fillet (with skin)	individual	µg/kg	12/12	100	81 J	630 J	300	na
	whole body	individual	µg/kg	12/12	100	200 J	560 J	360	na
Channel catfish	fillet (skinless)	individual	µg/kg	11/11	100	20 J	200 J	76	na
	whole body[b]	individual	µg/kg	11/11	100	84 J	350 J	200	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	47 J	78 J	62	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	3/3	100	0.60 J	16 J	8.9	na
	whole body (calculated)[c]	individual and composite	µg/kg	3/3	100	35 J	220 J	120	na
Mixed forage fish	whole body	composite	µg/kg	4/4	100	45 J	120 J	72	na
Mummichog	whole body	composite	µg/kg	18/18	100	15 J	87 J	36	na
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	36 J	36 J	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	180 J	180 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	23 J	23 J	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	80 J	80 J	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	4.3 J	8.9 J	7.3	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	67 J	120 J	96	na
Spottail shiner	whole body	composite	µg/kg	1/1	100	39 J	39 J	na	na
White catfish	fillet (skinless)	individual	µg/kg	19/19	100	12 J	270 J	75	na
	whole body (calculated)[c]	individual	µg/kg	19/19	100	48 J	470 J	190	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	19/19	100	24 J	780 J	95	na
	whole body[d]	individual and composite	µg/kg	22/22	100	36 J	480 J	140	na
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	18 J	43 J	27	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	69 J	150 J	110	na
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	7/7	100	170 J	320 J	240	na
	muscle only	composite	µg/kg	21/21	100	1.9 J	10 J	5.9	na
	muscle/hepatopancreas	composite	µg/kg	41/41	100	15 J	83 J	46	na
	whole body (calculated)[c]	composite	µg/kg	24/24	100	14 J	61 J	32	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	5/5	100	0.87 J	6.6 J	4.2	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	13/13	100	7.3 J	40 J	15	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	3/3	100	1.6 J	8.3 J	4.6	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	5/5	100	11 J	14 J	12	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 21b
Total chlordane in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	10/10	100	83.6 J	339 J	233	na
	whole body[a]	individual and composite	µg/kg	16/16	100	23.9 J	454 J	210	na
Banded killifish	whole body	composite	µg/kg	1/1	100	90.1 J	90.1 J	na	na
Brown bullhead	fillet (skinless)	individual	µg/kg	6/6	100	11.0 J	30.4 J	17.8	na
	whole body	individual	µg/kg	6/6	100	33.6 J	108 J	79.6	na
Carp	fillet (with skin)	individual	µg/kg	10/10	100	78.6	373	184	na
	whole body[b]	individual	µg/kg	10/10	100	124	303	234	na
Channel catfish	fillet (skinless)	individual	µg/kg	4/4	100	33.6 J	199 J	112	na
	whole body	individual	µg/kg	4/4	100	145 J	325 J	242	na
Northern pike	fillet (with skin)	composite	µg/kg	1/1	100	50.8 J	50.8 J	na	na
	whole body (calculated)[c]	composite	µg/kg	1/1	100	236 J	236 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	33.2 J	33.2 J	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	126 J	126 J	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	2/2	100	90.1 J	126 J	108	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	112 J	123 J	118	na
White perch	fillet (with skin)	composite	µg/kg	8/8	100	25.2 J	206 J	54.8	na
	whole body	composite	µg/kg	8/8	100	97.3 J	155 J	128	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	14.7 J	69.4 J	40.6	na
	whole body	individual	µg/kg	5/5	100	46.8 J	234 J	120	na

Notes:
a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
µg/kg: micrograms per kilogram
J: estimated concentration
na: not applicable
RL: reporting limit
UPR: Upper Passaic River

Table 22a
Alpha Chlordane in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	32/32	100	11	260 J	40	na
	whole body[a]	individual and composite	µg/kg	21/21	100	16	87 J	49	na
Brown bullhead	whole body	individual	µg/kg	6/6	100	27 J	83 J	56	na
Carp	fillet (with skin)	individual	µg/kg	11/12	91.7	49 J	270	130	39
	whole body	individual	µg/kg	12/12	100	85	220 J	140	na
Channel catfish	fillet (skinless)	individual	µg/kg	11/11	100	8.0 J	77 J	30	na
	whole body[b]	individual	µg/kg	11/11	100	33 J	120 J	77	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	20	34	26	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	2/3	66.7	3.8 J	6.7 J	5.3	0.56
	whole body (calculated)[c]	individual and composite	µg/kg	3/3	100	12 J	88 J	46	na
Mixed forage fish	whole body	composite	µg/kg	4/4	100	21	50	31	na
Mummichog	whole body	composite	µg/kg	18/18	100	6.1	41	16	na
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	16 J	16 J	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	72 J	72 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	7.8	7.8	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	33	33	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	1.5 J	3.7 J	2.7	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	22 J	47 J	35	na
Spottail shiner	whole body	composite	µg/kg	1/1	100	16	16	na	na
White catfish	fillet (skinless)	individual	µg/kg	19/19	100	4.4 J	100	30	na
	whole body (calculated)[c]	individual	µg/kg	19/19	100	21 J	190	76	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	19/19	100	8.1 J	770	72	na
	whole body[d]	individual and composite	µg/kg	22/22	100	15 J	320	70	na
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	10	17	13	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	37	57	47	na
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	7/7	100	18	50	29	na
	muscle only	composite	µg/kg	19/21	90.5	0.17 J	1.1 J	0.58	0.29 - 0.58
	muscle/hepatopancreas	composite	µg/kg	40/41	97.6	1.5	10	4.9	4.1
	whole body (calculated)[c]	composite	µg/kg	24/24	100	1.4	7.2 J	3.6	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	5/5	100	0.40 J	2.7 J	1.8	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	12/13	92.3	3.0 J	14 J	5.6	4.2
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	3/3	100	0.80 J	2.9	1.7	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	5/5	100	3.8	5.3	4.4	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 22b
Alpha Chlordane in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	10/10	100	26.5	122	90.6	na
	whole body[a]	individual and composite	µg/kg	16/16	100	7.7	187	81	na
Banded killifish	whole body	composite	µg/kg	1/1	100	43.2	43.2	na	na
Brown bullhead	fillet (skinless)	individual	µg/kg	5/6	83.3	4.84	12.8	8.1	6.8
	whole body	individual	µg/kg	6/6	100	13.1	48.5	33.4	na
Carp	fillet (with skin)	individual	µg/kg	10/10	100	33.9	151	75.7	na
	whole body[b]	individual	µg/kg	10/10	100	50.7	128	95.2	na
Channel catfish	fillet (skinless)	individual	µg/kg	4/4	100	14.0	81.7	46.0	na
	whole body	individual	µg/kg	4/4	100	61.9	127	97.7	na
Northern pike	fillet (with skin)	composite	µg/kg	1/1	100	22.9 J	22.9 J	na	na
	whole body (calculated)[c]	composite	µg/kg	1/1	100	105 J	105 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	9.8	9.8	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	57.1	57.1	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	4.9	6.4	5.6	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	42	47	45	na
White perch	fillet (with skin)	composite	µg/kg	8/8	100	12.7	98.3	27.1	na
	whole body (calculated)[c]	composite	µg/kg	8/8	100	49.3	77.8	63.7	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	5.6 J	32.1 J	18	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	20 J	106 J	54	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 23a
Gamma chlordane in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	28/32	87.5	3.4 J	20 J	9.6	5.6 - 18
	whole body[a]	individual and composite	µg/kg	21/21	100	6.0 J	26	16	na
Brown bullhead	whole body	individual	µg/kg	6/6	100	10	49 J	31	na
Carp	fillet (with skin)	individual	µg/kg	12/12	100	25 J	150	67	na
	whole body	individual	µg/kg	12/12	100	41	130	80	na
Channel catfish	fillet (skinless)	individual	µg/kg	11/11	100	4.7 J	41 J	14	na
	whole body[b]	individual	µg/kg	11/11	100	17 J	64 J	37	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	9.7	19	14	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	3/3	100	0.22 J	1.5 J	0.90	na
	whole body (calculated)[c]	individual and composite	µg/kg	3/3	100	4.2 J	20 J	12	na
Mixed forage fish	whole body	composite	µg/kg	4/4	100	5.5	27	14	na
Mummichog	whole body	composite	µg/kg	18/18	100	2.3	12	5.6	na
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	5.9 J	5.9 J	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	31 J	31 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	1.7	1.7	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	16	16	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	0.45 J	1.1 J	0.83	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	7.3 J	15 J	11	na
Spottail shiner	whole body	composite	µg/kg	1/1	100	5.6	5.6	na	na
White catfish	fillet (skinless)	individual	µg/kg	17/19	89.5	2.4 J	42 J	13	7.3 - 14
	whole body (calculated)[c]	individual	µg/kg	19/19	100	9.8 J	69	35	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	16/19	84.2	2.7 J	14 J	6.9	2.9 - 13
	whole body[d]	individual and composite	µg/kg	22/22	100	4.2 J	69	22	na
White sucker	fillet (with skin)	individual	µg/kg	4/5	80	4.9	9.0	6.3	6.3
	whole body (calculated)[c]	individual	µg/kg	5/5	100	14	36	23	na
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	7/7	100	1.9	4.7	3.3	na
	muscle only	composite	µg/kg	13/21	61.9	0.031 J	0.13 J	0.076	0.03 - 0.3
	muscle/hepatopancreas	composite	µg/kg	34/41	82.9	0.18 J	1.4	0.59	0.15 - 1.3
	whole body (calculated)[c]	composite	µg/kg	24/24	100	0.18 J	1.5 J	0.52	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	4/5	80	0.39 J	2.2 J	1.3	0.68
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	12/13	92.3	2.7 J	12 J	4.7	3.3
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	3/3	100	0.29 J	2.3	1.3	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	5/5	100	2.7	3.6	3.0	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 23b
Gamma Chlordane in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	10/10	100	11.0	37.3	22.4	na
	whole body[a]	individual and composite	µg/kg	16/16	100	1.2	46.9	19	na
Banded killifish	whole body	composite	µg/kg	1/1	100	11.6	11.6	na	na
Brown bullhead	fillet (skinless)	individual	µg/kg	6/6	100	1.69 J	6.3 J	3.7	na
	whole body	individual	µg/kg	6/6	100	6.93 J	21.2 J	15.4	na
Carp	fillet (with skin)	individual	µg/kg	10/10	100	16.0	82.2	37.2	na
	whole body[b]	individual	µg/kg	10/10	100	28.3	62.2	48.3	na
Channel catfish	fillet (skinless)	individual	µg/kg	4/4	100	5.39 J	41.3 J	18.9	na
	whole body	individual	µg/kg	4/4	100	22.9 J	66.5 J	39.3	na
Northern pike	fillet (with skin)	composite	µg/kg	1/1	100	6.3	6.3	na	na
	whole body (calculated)[c]	composite	µg/kg	1/1	100	31	31	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	1.3	1.3	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	22.8	22.8	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	1.5	2.0	1.7	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	12	14	13	na
White perch	fillet (with skin)	composite	µg/kg	8/8	100	3.0	26.6	6.7	na
	whole body (calculated)[c]	composite	µg/kg	8/8	100	11	20	15	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	3.3	12.2	8.1	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	10	41.3	24	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 24a
4,4′-DDD in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	28/32	87.5	13 J	110 J	50	19 - 87
	whole body[a]	individual and composite	µg/kg	20/21	95.2	7.7 J	130 J	64	140
Brown bullhead	whole body	individual	µg/kg	2/6	33.3	76	87 J	82	9.5 - 30
Carp	fillet (with skin)	individual	µg/kg	11/12	91.7	38 J	500	180	120
	whole body	individual	µg/kg	9/12	75	78	350	200	36 - 240
Channel catfish	fillet (skinless)	individual	µg/kg	10/11	90.9	4.0 J	77 J	27	13
	whole body[b]	individual	µg/kg	11/11	100	19 J	160 J	65	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	11	25	20	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	2/3	66.7	2.2 J	3.1 J	2.7	1.8
	whole body (calculated)[c]	individual and composite	µg/kg	3/3	100	7.4 J	41 J	27	na
Mixed forage fish	whole body	composite	µg/kg	4/4	100	12	40	22	na
Mummichog	whole body	composite	µg/kg	18/18	100	7.7	35	20	na
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	12 J	12 J	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	87 J	87 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	4.6	4.6	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	19	19	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	2/3	66.7	2.8 J	5.0 J	3.9	1.2
	whole body (calculated)[c]	composite	µg/kg	3/3	100	17 J	61 J	32	na
Spottail shiner	whole body	composite	µg/kg	1/1	100	10	10	na	na
White catfish	fillet (skinless)	individual	µg/kg	16/19	84.2	4.8 J	140	37	14 - 16
	whole body (calculated)[c]	individual	µg/kg	19/19	100	19 J	240	75	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	14/19	73.7	7.6	36	19	2.2 - 40
	whole body[d]	individual and composite	µg/kg	19/22	86.4	8.1 J	210 J	68	20 - 70
White sucker	fillet (with skin)	individual	µg/kg	2/5	40	10	16	13	5.3 - 14
	whole body (calculated)[c]	individual	µg/kg	3/5	60	19	46	36	11 - 32
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	7/7	100	42	140	87	na
	muscle only	composite	µg/kg	19/21	90.5	3.0	8.8	5.4	2.6 - 18
	muscle/hepatopancreas	composite	µg/kg	39/41	95.1	8	36	20	11 - 15
	whole body (calculated)[c]	composite	µg/kg	24/24	100	9.1	28 J	17	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	2/5	40	1.8 J	3.6 J	2.7	2.3 - 2.6
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	11/13	84.6	2.4 J	17 J	6.9	2.3 - 2.9
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	1/3	33.3	3.0	3.0	na	1.7 - 2.7
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	2/5	40	1.7	2.1	1.9	1.4 - 2.8

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 24b
4,4′-DDD in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	10/10	100	20.6	92.2	66.1	na
	whole body[a]	individual and composite	µg/kg	16/16	100	6.9 J	168 J	61	na
Banded killifish	whole body	composite	µg/kg	1/1	100	14.4	14.4	Na	na
Brown bullhead	fillet (skinless)	individual	µg/kg	6/6	100	2.11 J	5.2 J	3.8	na
	whole body	individual	µg/kg	6/6	100	7.10 J	20.4 J	14.3	na
Carp	fillet (with skin)	individual	µg/kg	10/10	100	19.4 J	104 J	51.4	na
	whole body[b]	individual	µg/kg	10/10	100	31.1 J	91.9 J	66.0	na
Channel catfish	fillet (skinless)	individual	µg/kg	4/4	100	9.71 J	25.4 J	18.5	na
	whole body	individual	µg/kg	4/4	100	38.5 J	49.4 J	42.4	na
Northern pike	fillet (with skin)	composite	µg/kg	1/1	100	12.4	12.4	Na	na
	whole body (calculated)[c]	composite	µg/kg	1/1	100	59.7	59.7	Na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	8.9	8.9	Na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	39.6	39.6	Na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	3.8 J	4.9 J	4.3	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	35 J	41 J	38	na
White perch	fillet (with skin)	composite	µg/kg	7/8	87.5	5.0	39.9	11	4.9
	whole body (calculated)[c]	composite	µg/kg	8/8	100	21	33	26	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	µg/kg	4/5	80	2.6	11.4	7.4	6.8
	whole body (calculated)[c]	individual	µg/kg	5/5	100	10	42.6	24	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

UPR: Upper Passaic River

Table 25a
4,4′-DDE in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	32/32	100	35 J	230 J	110	na
	whole body[a]	individual and composite	µg/kg	21/21	100	20 J	340	140	na
Brown bullhead	whole body	individual	µg/kg	6/6	100	18	88	54	na
Carp	fillet (with skin)	individual	µg/kg	12/12	100	51 J	760	280	na
	whole body	individual	µg/kg	12/12	100	100	570	270	na
Channel catfish	fillet (skinless)	individual	µg/kg	11/11	100	7.0 J	130 J	51	na
	whole body[b]	individual	µg/kg	11/11	100	20 J	280 J	130	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	15	29	24	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	3/3	100	2.7 J	10 J	6.0	na
	whole body (calculated)[c]	individual and composite	µg/kg	3/3	100	59 J	96 J	79	na
Mixed forage fish	whole body	composite	µg/kg	4/4	100	18	74	39	na
Mummichog	whole body	composite	µg/kg	18/18	100	17	59	33	na
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	27 J	27 J	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	130 J	130 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	15	15	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	27	27	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	5.3 J	12 J	8.7	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	74 J	150 J	110	na
Spottail shiner	whole body	composite	µg/kg	1/1	100	20	20	na	na
White catfish	fillet (skinless)	individual	µg/kg	19/19	100	14 J	350	76	na
	whole body (calculated)[c]	individual	µg/kg	19/19	100	56 J	580	180	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	19/19	100	10	55	30	na
	whole body[d]	individual and composite	µg/kg	22/22	100	23 J	190 J	95	na
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	12	30	20	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	37	130	73	na
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	7/7	100	110	360 J	220	na
	muscle only	composite	µg/kg	20/21	95.2	5.7	21	13	23
	muscle/hepatopancreas	composite	µg/kg	41/41	100	16	77	46	na
	whole body (calculated)[c]	composite	µg/kg	24/24	100	20	70	44	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	0/5	0	na	na	na	1.7 - 3.2
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	12/13	92.3	3.1 J	20 J	7.1	4.3
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	2/3	66.7	2.3	3.9	3.1	2.5
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	5/5	100	2.6	4.0	3.4	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 25b
4,4′-DDE in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	10/10	100	66.5	249	160	na
	whole body[a]	individual and composite	µg/kg	16/16	100	50.9 J	282 J	140	na
Banded killifish	whole body	composite	µg/kg	1/1	100	22.4	22.4	na	na
Brown bullhead	fillet (skinless)	individual	µg/kg	6/6	100	7.49 J	16.4 J	11.4	na
	whole body	individual	µg/kg	6/6	100	18.7 J	50.8 J	32.9	na
Carp	fillet (with skin)	individual	µg/kg	10/10	100	40.1	134	82.6	na
	whole body[b]	individual	µg/kg	10/10	100	40.5	170	99	na
Channel catfish	fillet (skinless)	individual	µg/kg	4/4	100	48.8 J	211 J	124	na
	whole body	individual	µg/kg	4/4	100	112 J	254 J	170	na
Northern pike	fillet (with skin)	composite	µg/kg	1/1	100	46.2	46.2	na	na
	whole body (calculated)[c]	composite	µg/kg	1/1	100	130 J	130 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	17.9	17.9	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	68.2	68.2	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	10.1 J	14.4 J	12.3	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	89 J	91.5 J	90.4	na
White perch	fillet (with skin)	composite	µg/kg	8/8	100	13.3	116	32.4	na
	whole body (calculated)[c]	composite	µg/kg	8/8	100	48.8	108	79.7	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	6.2	27.1	14	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	19	97.4	46	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 26a
Heptachlor Epoxide in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	32/32	100	4.3 J	27 J	11	na
	whole body[a]	individual and composite	µg/kg	21/21	100	3.1	31 J	18	na
Brown bullhead	whole body	individual	µg/kg	6/6	100	4.5	13	9.1	na
Carp	fillet (with skin)	individual	µg/kg	11/12	91.7	5.3 J	38	17	17
	whole body	individual	µg/kg	12/12	100	13	27	19	na
Channel catfish	fillet (skinless)	individual	µg/kg	11/11	100	2.7 J	15 J	6.9	na
	whole body[b]	individual	µg/kg	11/11	100	8.0 J	30 J	18	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	2.8	5.7	4.2	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	3/3	100	0.50 J	1.1 J	0.77	na
	whole body (calculated)[c]	individual and composite	µg/kg	3/3	100	7.2 J	16 J	11	na
Mixed forage fish	whole body	composite	µg/kg	4/4	100	2.7	6.8	4.4	na
Mummichog	whole body	composite	µg/kg	18/18	100	0.84 J	8.7	2.5	na
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	2.7 J	2.7 J	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	14 J	14 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	3.5	3.5	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	6.6	6.6	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	0.40 J	0.66 J	0.57	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	5.0 J	7.6 J	6.6	na
Spottail shiner	whole body	composite	µg/kg	1/1	100	5.6	5.6	na	na
White catfish	fillet (skinless)	individual	µg/kg	18/19	94.7	0.60 J	12 J	3.6	3.5
	whole body (calculated)[c]	individual	µg/kg	19/19	100	2.7 J	19	9.1	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	17/19	89.5	1.2 J	5.9	3.6	1.1 - 3.2
	whole body[d]	individual and composite	µg/kg	22/22	100	2.8	18 J	10	na
White sucker	fillet (with skin)	individual	µg/kg	4/5	80	1.8 J	2.4	2.0	1.1
	whole body (calculated)[c]	individual	µg/kg	5/5	100	5.4	10	7.3	na
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	7/7	100	24	59	40	na
	muscle only	composite	µg/kg	21/21	100	0.27 J	1.4	0.87	na
	muscle/hepatopancreas	composite	µg/kg	41/41	100	1.7	20	8.9	na
	whole body (calculated)[c]	composite	µg/kg	24/24	100	1.8	14	5.3	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	4/5	80	0.082 J	0.23 J	0.16	0.15
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	11/13	84.6	0.15 J	0.64 J	0.38	0.17 - 0.25
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	3/3	100	0.15 J	0.43 J	0.34	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	5/5	100	0.96 J	1.3	1.1	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
LPRSA: Lower Passaic River Study Area
na: not applicable
RL: reporting limit

Table 26b
Heptachlor Epoxide in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	10/10	100	18.6	45.4	31.6	na
	whole body[a]	individual and composite	µg/kg	16/16	100	1.5	53.8	26	na
Banded killifish	whole body	composite	µg/kg	1/1	100	8.1	8.1	na	na
Brown bullhead	fillet (skinless)	individual	µg/kg	6/6	100	0.530 J	2.0	1.2	na
	whole body	individual	µg/kg	6/6	100	1.01	9.8	5.4	na
Carp	fillet (with skin)	individual	µg/kg	10/10	100	3.56	17.1	9.4	na
	whole body[b]	individual	µg/kg	10/10	100	5.26	15	12	na
Channel catfish	fillet (skinless)	individual	µg/kg	4/4	100	1.36	8.01	4.6	na
	whole body	individual	µg/kg	4/4	100	5.1	13.2	9.7	na
Northern pike	fillet (with skin)	composite	µg/kg	1/1	100	3.6	3.6	na	na
	whole body (calculated)[c]	composite	µg/kg	1/1	100	16	16	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	4.3	4.3	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	10.0	10.0	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	1.2	1.2	1.2	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	7.3	8.6	8.1	na
White perch	fillet (with skin)	composite	µg/kg	8/8	100	1.7	13.5	3.6	na
	whole body (calculated)[c]	composite	µg/kg	8/8	100	6.2	11	8.0	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	0.560 J	5.2	2.6	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	1.8 J	18	8.1	na

Notes:

a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 27a
Hexachlorobenzene in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	30/32	93.8	0.95 J	11 J	4.7	3.3 - 11
	whole body[a]	individual and composite	µg/kg	21/21	100	1.4 J	16	6.5	na
Brown bullhead	whole body	individual	µg/kg	5/6	83.3	0.98 J	7.2 J	2.9	5.7
Carp	fillet (with skin)	individual	µg/kg	11/12	91.7	2.1 J	28	10	7.5
	whole body	individual	µg/kg	11/12	91.7	2.6	20 J	12	2.9
Channel catfish	fillet (skinless)	individual	µg/kg	11/11	100	0.50 J	12 J	2.4	na
	whole body[b]	individual	µg/kg	11/11	100	1.5 J	29 J	5.8	na
Gizzard shad	whole body	composite	µg/kg	3/3	100	0.60 J	1.9	1.4	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	2/3	66.7	0.15 J	0.38 J	0.27	0.063
	whole body (calculated)[c]	individual and composite	µg/kg	3/3	100	0.72 J	2.3 J	1.4	na
Mixed forage fish	whole body	composite	µg/kg	4/4	100	0.68 J	8.3	2.9	na
Mummichog	whole body	composite	µg/kg	17/18	94.4	0.13 J	0.36 J	0.22	0.094
Northern pike	fillet (with skin)	individual	µg/kg	1/1	100	0.66 J	0.66 J	na	na
	whole body (calculated)[c]	individual	µg/kg	1/1	100	3.1 J	3.1 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	0.50 J	0.50 J	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	1.4 J	1.4 J	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	2/3	66.7	0.24 J	0.36 J	0.30	0.072
	whole body (calculated)[c]	composite	µg/kg	3/3	100	0.67 J	2.6 J	1.7	na
Spottail shiner	whole body	composite	µg/kg	1/1	100	0.86 J	0.86 J	na	na
White catfish	fillet (skinless)	individual	µg/kg	17/19	89.5	0.37 J	6.5	2.2	0.38 - 0.71
	whole body (calculated)[c]	individual	µg/kg	19/19	100	1.5 J	15	5.3	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	18/19	94.7	0.18 J	3.3	1.8	0.6
	whole body[d]	individual and composite	µg/kg	21/22	95.5	0.90 J	11 J	5.7	0.48
White sucker	fillet (with skin)	individual	µg/kg	4/5	80	0.39 J	1.4 J	0.79	0.66
	whole body (calculated)[c]	individual	µg/kg	5/5	100	0.60 J	4.6 J	2.3	na
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	7/7	100	3.7	20	14	na
	muscle only	composite	µg/kg	17/21	81	0.11 J	1.2	0.61	0.13 - 0.15
	muscle/hepatopancreas	composite	µg/kg	41/41	100	0.4 J	4	2.2	na
	whole body (calculated)[c]	composite	µg/kg	24/24	100	1.0 J	3.2	2.4	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	5/5	100	0.31 J	0.84 J	0.46	na
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	12/13	92.3	0.17 J	2.1 J	0.46	0.14
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	0/3	0	na	na	na	0.019 - 0.032
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	5/5	100	0.13 J	0.24 J	0.18	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
na: not applicable
RL: reporting limit
UPR: Upper Passaic River

Table 27b
Hexachlorobenzene in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	10/10	100	2.22 J	4.5	3.2	na
	whole body[a]	individual and composite	µg/kg	16/16	100	0.156 J	5.1	2.6	na
Banded killifish	whole body	composite	µg/kg	0/1	0	na	na	na	0.0692
Brown bullhead	fillet (skinless)	individual	µg/kg	6/6	100	0.0772 J	0.237 J	0.187	na
	whole body	individual	µg/kg	6/6	100	0.215 J	1.1	0.61	na
Carp	fillet (with skin)	individual	µg/kg	10/10	100	0.757 J	4.01	2.0	na
	whole body[b]	individual	µg/kg	10/10	100	1.74	4.10	3.1	na
Channel catfish	fillet (skinless)	individual	µg/kg	4/4	100	0.300 J	1.03	0.748	na
	whole body	individual	µg/kg	4/4	100	1.1 J	1.96 J	1.5	na
Northern pike	fillet (with skin)	composite	µg/kg	1/1	100	0.339 J	0.339 J	na	na
	whole body (calculated)[c]	composite	µg/kg	1/1	100	1.3 J	1.3 J	na	na
Pumpkinseed	whole body	composite	µg/kg	1/1	100	0.363 J	0.363 J	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	1.9	1.9	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	3/3	100	0.210 J	0.425 J	0.341	na
	whole body (calculated)[c]	composite	µg/kg	3/3	100	1.2 J	1.5 J	1.3	na
White perch	fillet (with skin)	composite	µg/kg	8/8	100	0.235 J	1.6	0.45	na
	whole body (calculated)[c]	composite	µg/kg	8/8	100	0.77 J	1.2 J	0.93	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	µg/kg	5/5	100	0.219 J	0.670 J	0.478	na
	whole body (calculated)[c]	individual	µg/kg	5/5	100	0.72 J	2.3 J	1.5	na

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

J: estimated concentration

na: not applicable

RL: reporting limit

UPR: Upper Passaic River

Table 28a
Benzo(a)pyrene in LPRSA Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
Fish									
American eel	fillet (skinless)	individual and composite	µg/kg	2/32	6.2	0.69 J	0.88 J	0.79	0.45 - 2.5
	whole body[a]	individual and composite	µg/kg	10/21	47.6	0.55 J	4.5 J	1.9	0.8 - 2.6
Brown bullhead	whole body	individual	µg/kg	2/6	33.3	2.6 J	8.6 J	5.6	0.68 - 1.8
Carp	fillet (with skin)	individual	µg/kg	0/12	0	na	na	na	2 - 8.1
	whole body	individual	µg/kg	6/12	50	0.80 J	4.9 J	2.0	0.68 - 2.5
Channel catfish	fillet (skinless)	individual	µg/kg	0/11	0	na	na	na	0.41 - 2.1
	whole body[b]	individual	µg/kg	1/11	9.1	1.2 J	1.2 J	na	0.32 - 1.2
Gizzard shad	whole body	composite	µg/kg	3/3	100	28 J	98 J	58	na
Largemouth bass	fillet (with skin)	individual and composite	µg/kg	0/3	0	na	na	na	0.72 - 4
	whole body (calculated)[c]	individual and composite	µg/kg	0/3	0	na	na	na	1.2 - 2.8
Mixed forage fish	whole body	composite	µg/kg	4/4	100	8.4 J	64 J	38	na
Mummichog	whole body	composite	µg/kg	18/18	100	3.3 J	56	15	na
Northern pike	fillet (with skin)	individual	µg/kg	0/1	0	na	na	na	2.7
	whole body (calculated)[c]	individual	µg/kg	0/1	0	na	na	na	2.3
Pumpkinseed	whole body	composite	µg/kg	1/1	100	27 J	27 J	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	63 J	63 J	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	0/3	0	na	na	na	0.88 - 2.7
	whole body (calculated)[c]	composite	µg/kg	1/3	33.3	28 J	28 J	na	1.2 - 2.6
Spottail shiner	whole body	composite	µg/kg	1/1	100	2.1 J	2.1 J	na	na
White catfish	fillet (skinless)	individual	µg/kg	0/19	0	na	na	na	0.29 - 2
	whole body (calculated)[c]	individual	µg/kg	9/19	47.4	0.65 J	24 J	4.5	0.22 - 0.95

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White perch	fillet (with skin)	individual and composite	µg/kg	2/19	10.5	0.40 J	0.60 J	0.50	0.4 - 1.7
	whole body[d]	individual and composite	µg/kg	11/22	50	1.5 J	24 J	5.6	0.5 - 2.2
White sucker	fillet (with skin)	individual	µg/kg	0/5	0	na	na	na	1.1 - 2.1
	whole body (calculated)[c]	individual	µg/kg	2/5	40	1.7 J	2.9 J	2.3	0.58 - 1.1
Blue Crab									
Blue crab	hepatopancreas only	composite	µg/kg	4/7	57.1	4.8 J	10 J	6.9	2 - 7.1
	muscle only	composite	µg/kg	6/21	28.6	0.83 J	2.3 J	1.6	0.64 - 1.6
	muscle/hepatopancreas	composite	µg/kg	16/41	39	0.49 J	12	2.2	0.31 - 2.1
	whole body (calculated)[c]	composite	µg/kg	24/24	100	1.9 J	40 J	7.4	na
Bioaccumulation Tissue									
Estuarine sp. (*Nereis virens*)	whole body	composite	µg/kg	0/5	0	na	na	na	1.8 - 3.2
Freshwater sp. (*Lumbriculus variegatus*)	whole body	composite	µg/kg	5/5	100	87	440	190	na
Caged Bivalves									
Estuarine sp. (ribbed mussel)	soft tissue	composite	µg/kg	3/3	100	1	9	4.3	na
Freshwater sp. (Eastern elliptio mussel)	soft tissue	composite	µg/kg	5/5	100	5	8	7.0	na

Notes:
a. Two samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
b. Eleven samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.
d. One sample has a calculated whole-body concentration (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).
µg/kg: micrograms per kilogram
J: estimated concentration
na: not applicable
RL: reporting limit
UPR: Upper Passaic River

Table 28b
Benzo(a)pyrene in UPR Tissue Samples

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
American eel	fillet (skinless)	individual and composite	µg/kg	0/10	0	na	na	na	0.069 - 0.38
	whole body[a]	individual and composite	µg/kg	4/16	25	0.25 J	0.43 J	0.34	0.034 - 0.53
Banded killifish	whole body	composite	µg/kg	1/1	100	2.6	2.6	na	na
Brown bullhead	fillet (skinless)	individual	µg/kg	0/6	0	na	na	na	0.38 - 2
	whole body	individual	µg/kg	5/6	83.3	1.46 J	67.8	19	0.51
Carp	fillet (with skin)	individual	µg/kg	1/10	10	4.8	4.8	na	0.28 - 1.2
	whole body[b]	individual	µg/kg	9/10	90	0.91 J	6.3	2.7	3.3
Channel catfish	fillet (skinless)	individual	µg/kg	0/4	0	na	na	na	0.3 - 1.9
	whole body	individual	µg/kg	0/4	0	na	na	na	0.19 - 1.1
Northern pike	fillet (with skin)	composite	µg/kg	0/1	0	na	na	na	0.9
	whole body (calculated)[c]	composite	µg/kg	0/1	0	na	na	na	0.61
Pumpkinseed	whole body	composite	µg/kg	1/1	100	5.7	5.7	na	na
Silver shiner	whole body	composite	µg/kg	1/1	100	1.00 J	1.00 J	na	na
Smallmouth bass	fillet (with skin)	composite	µg/kg	0/3	0	na	na	na	0.22 - 0.44
	whole body (calculated)[c]	composite	µg/kg	0/3	0	na	na	na	0.16 - 0.27
White perch	fillet (with skin)	composite	µg/kg	0/8	0	na	na	na	0.25 - 0.69
	whole body (calculated)[c]	composite	µg/kg	8/8	100	1.3 J	20	6.1	na

Species	Tissue Type	Individual or Composite	Unit	Detection Frequency		Detected Results			RL or Range of RLs
				Ratio	%	Minimum	Maximum	Mean	
White sucker	fillet (with skin)	individual	µg/kg	0/5	0	na	na	na	0.63 - 1.8
	whole body (calculated)[c]	individual	µg/kg	3/5	60	8.1 J	25 J	14	0.78 - 0.8

Notes:

a. Ten samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

b. Five samples have calculated whole-body concentrations (see Section 4.3.4 and Appendix K2 of the BERA [Appendix D] for additional details on whole-body calculations).

c. See Section 4.3.4 and Appendix K2 of the BERA (Appendix D) for additional details on whole-body calculations.

µg/kg: micrograms per kilogram

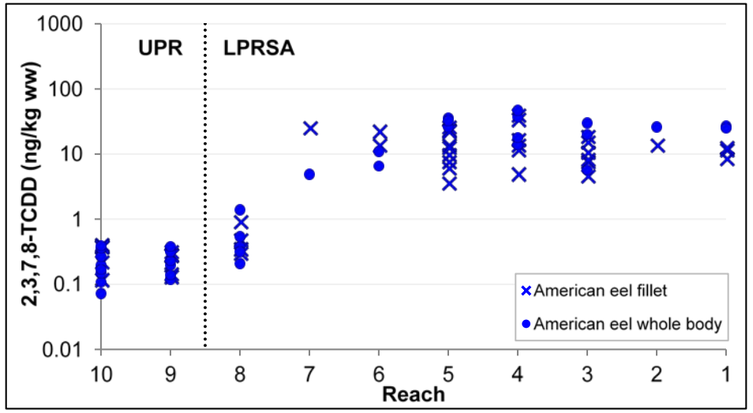
J: estimated concentration

na: not applicable

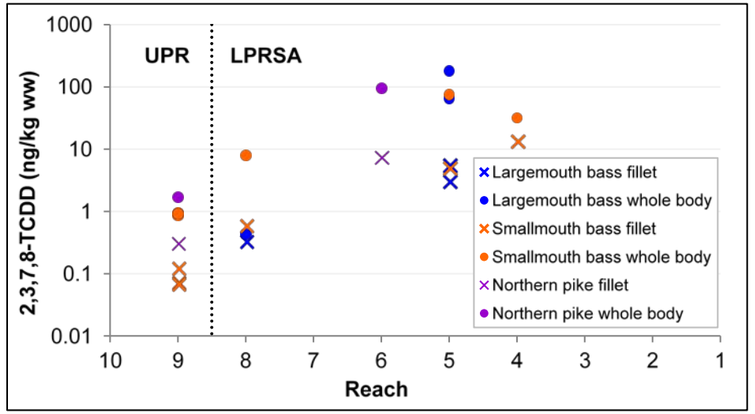
RL: reporting limit

UPR: Upper Passaic River

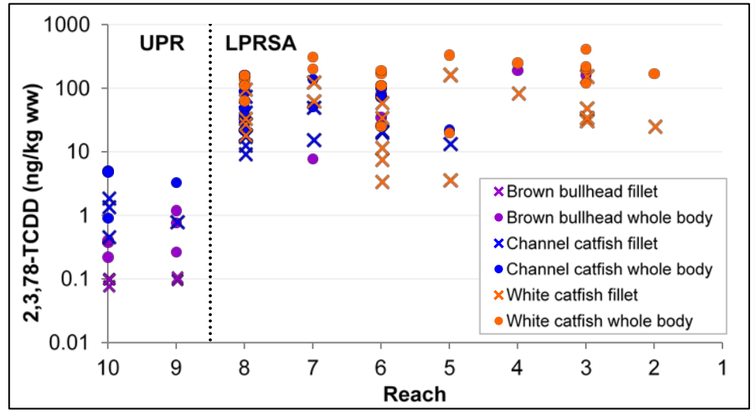
Figures



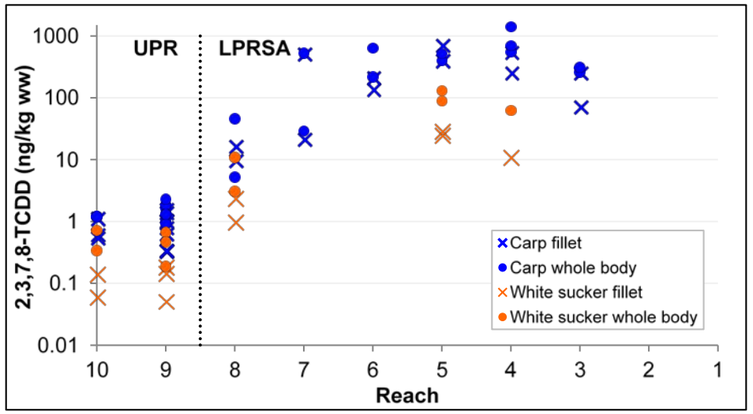
a. American eel



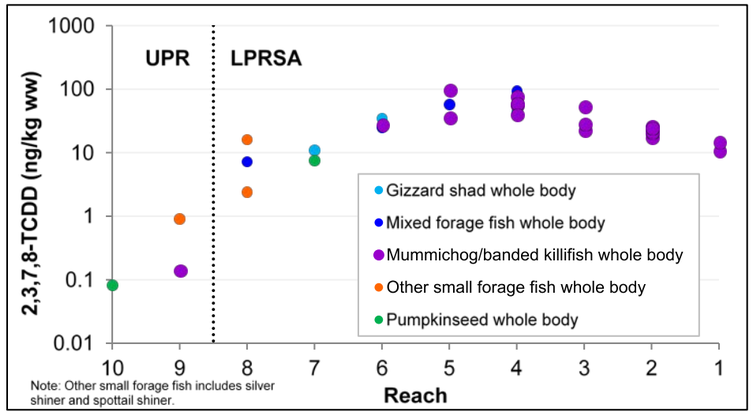
b. Bass and pike



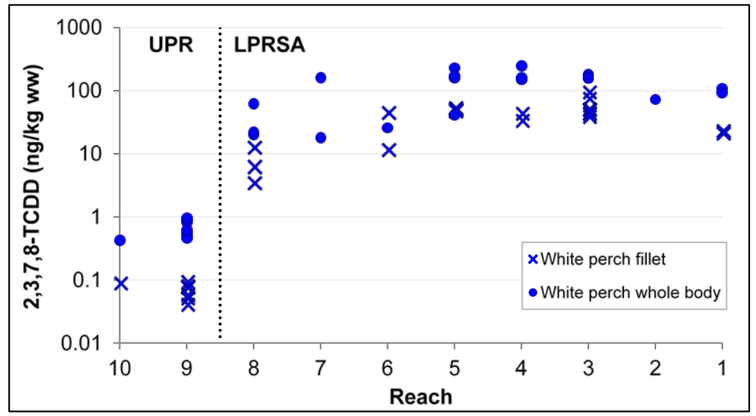
c. Bullhead and catfish



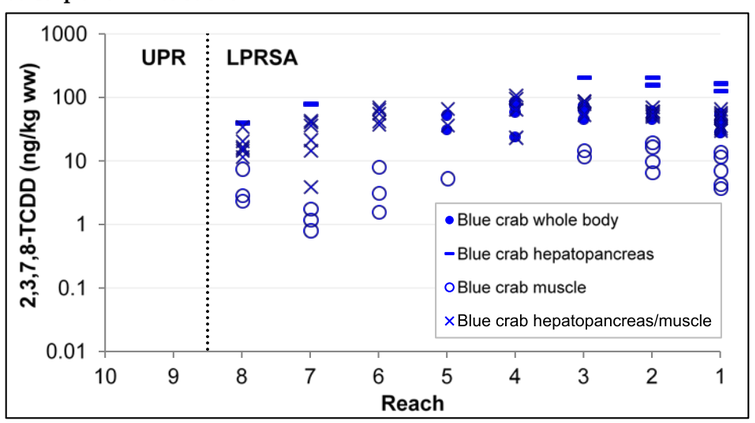
d. Carp and white sucker



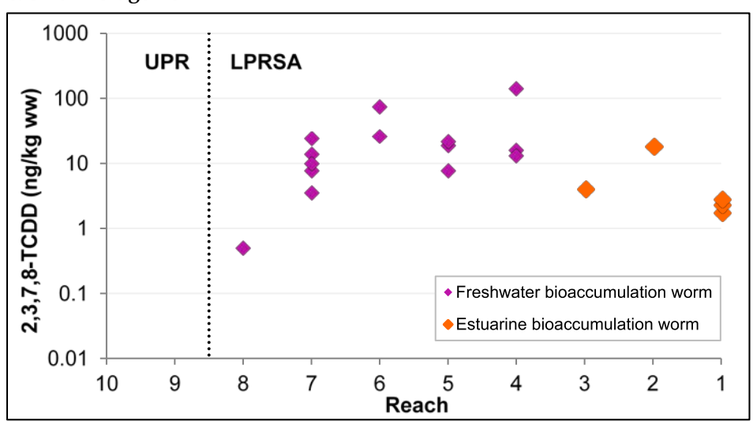
e. Small forage fish



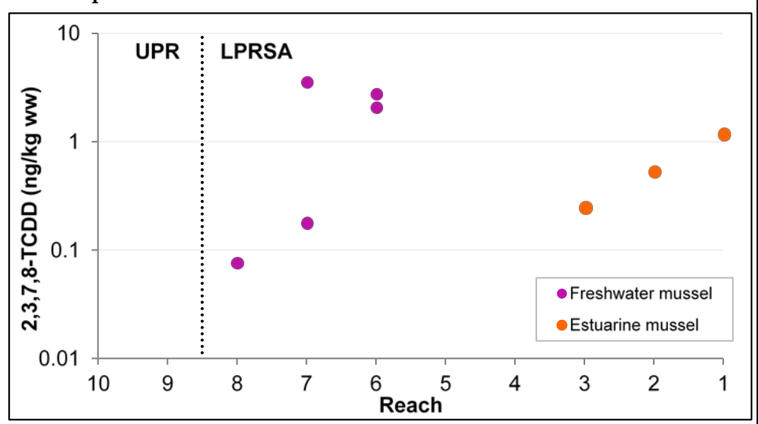
f. White perch



g. Blue crab

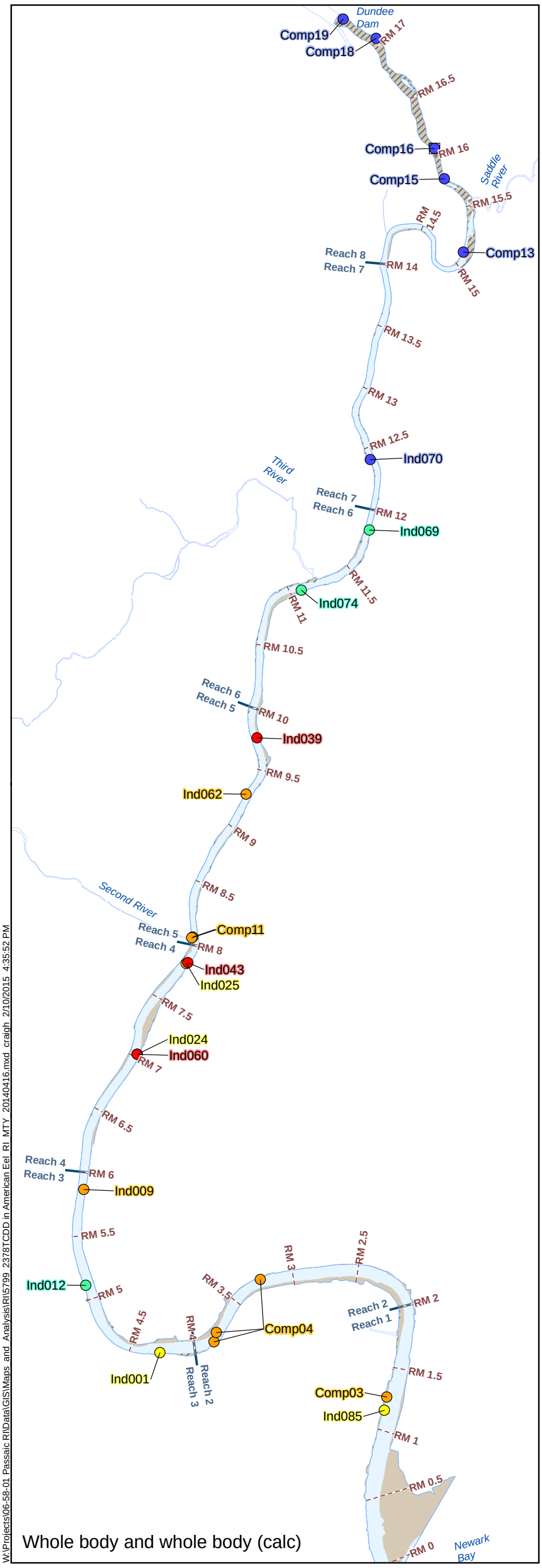


h. Bioaccumulation tissue



i. Caged bivalves

Figure 1
Concentrations of 2,3,7,8-TCDD in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5799_2378TCDD in American Eel RI_MTY_20140416.mxd craigh 2/10/2015 4:35:52 PM

2,3,7,8-TCDD (ng/kg) (Percentile)

- > 34 (> 90th)
- > 25 and ≤ 34 (> 75th and ≤ 90th)
- > 13 and ≤ 25 (> 50th and ≤ 75th)
- > 5.4 and ≤ 13 (> 25th and ≤ 50th)
- ≤ 5.4 (≤ 25th)
- Non-detected

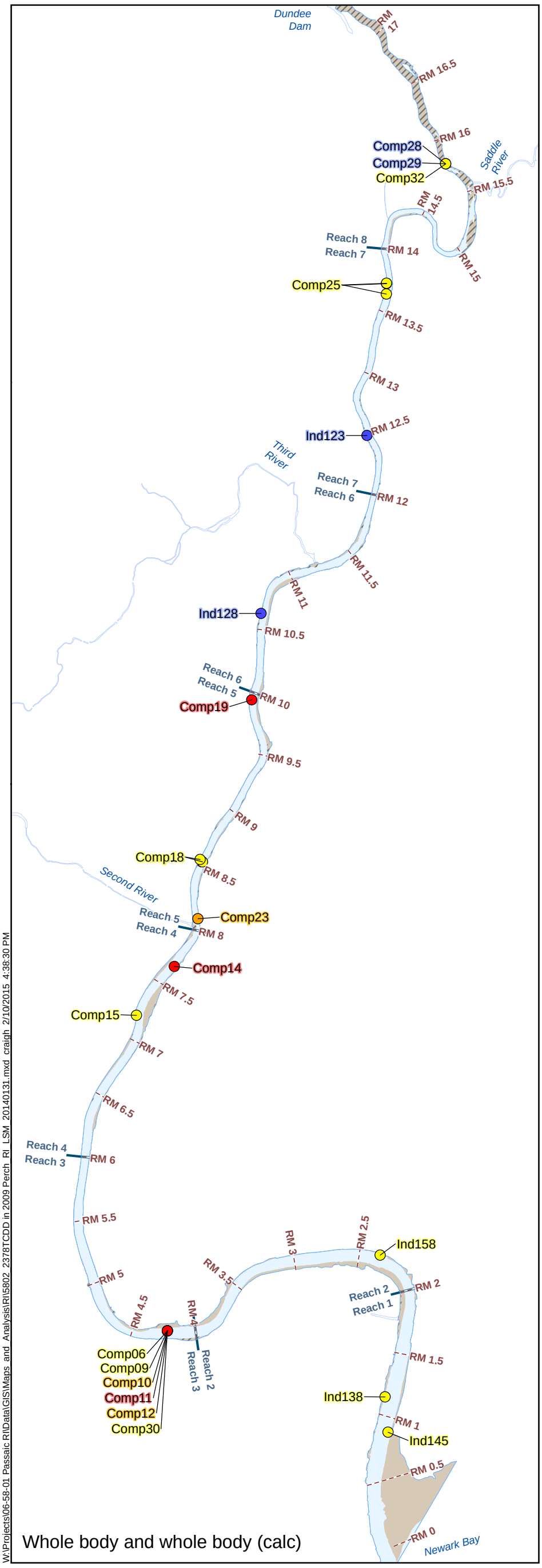
Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Figure 2
Concentrations of 2,3,7,8-TCDD in American Eel Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



W:\Projects\06-58-01 Passaic RIData\GIS\Maps and Analysis\RI5802_2378TCDD in 2009 Perch_RI_LSM_20140131.mxd craigh 2/10/2015 4:38:30 PM

2,3,7,8-TCDD (ng/kg) (Percentile)

- > 170 (> 90th)
- > 160 and ≤ 170 (> 75th and ≤ 90th)
- > 53 and ≤ 160 (> 50th and ≤ 75th)
- > 31 and ≤ 53 (> 25th and ≤ 50th)
- ≤ 31 (≤ 25th)

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

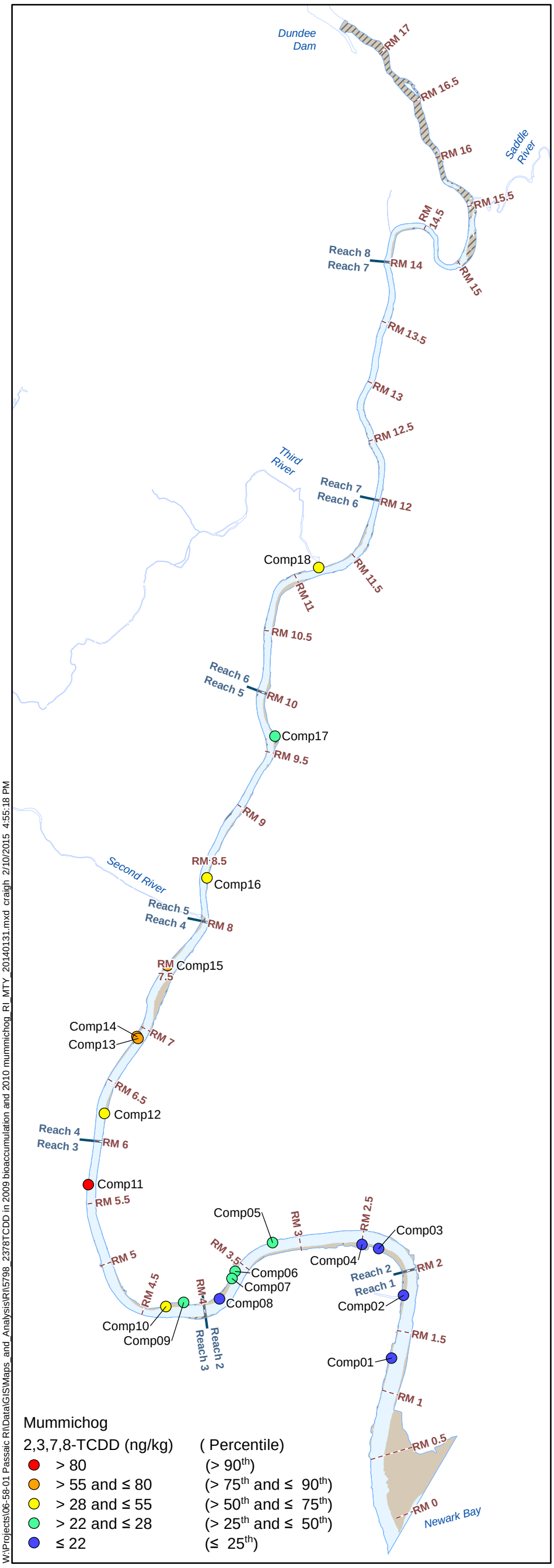
0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite. All samples were detected.

Figure 3

Concentrations of 2,3,7,8-TCDD in White Perch Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5798_2378TCDD in 2009 bioaccumulation and 2010 mummichog_RI_MTY_20140131.mxd craigh 2/10/2015 4:55:18 PM

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

0 5,000 10,000 Feet

All samples were detected.

Figure 4

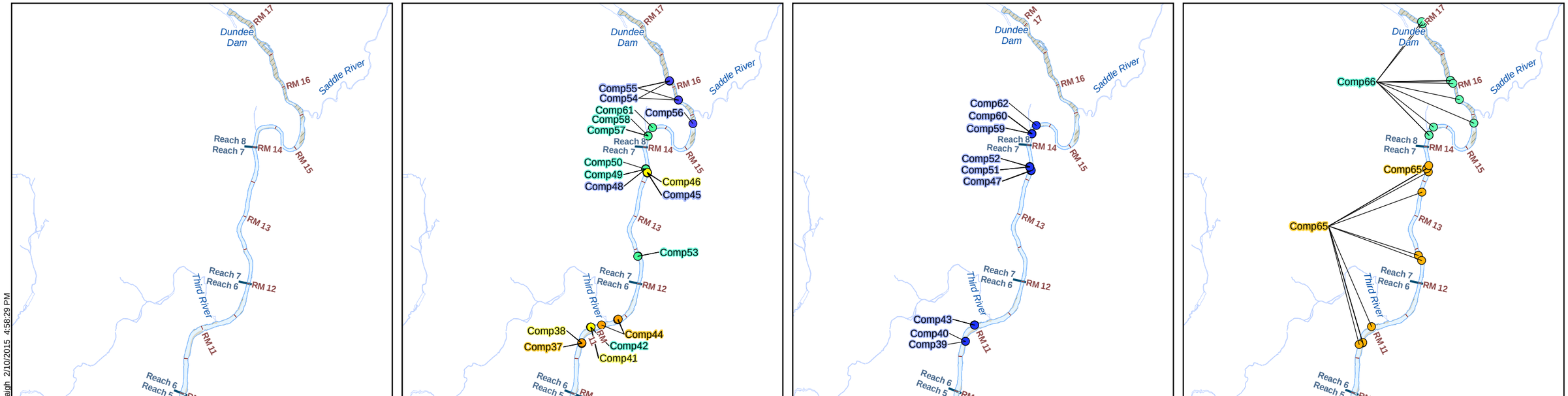
Concentrations of 2,3,7,8-TCDD in Mummichog and Bioaccumulation Worm Tissue by LPRSA Location

Remedial Investigation Report

Lower Passaic River Study Area Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\S800_2378TCDD in blue crab tissue_RI_LSM_20140131.mxd craigh 2/10/2015 4:58:29 PM



Sampling reach boundary
River mile
Mudflat
LPRSA
Gravel with fines

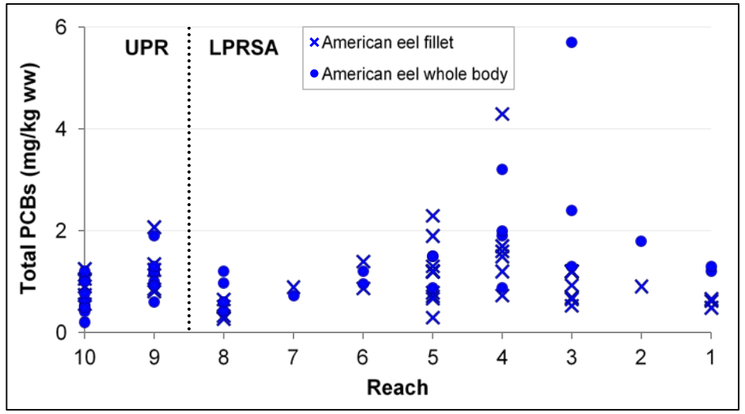
0 4,000 8,000
Feet

All samples were detected.
The percentile is based on the combined data from all four tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

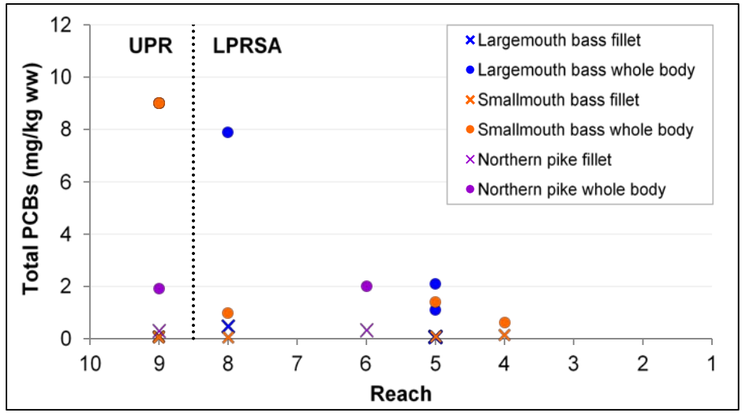
2,3,7,8-TCDD (ng/kg)	(Percentile)
> 88	(> 90th)
> 62 and ≤ 88	(> 75th and ≤ 90th)
> 42 and ≤ 62	(> 50th and ≤ 75th)
> 16 and ≤ 42	(> 25th and ≤ 50th)
≤ 16	(≤ 25th)

Figure 5
Concentrations of 2,3,7,8-TCDD in Blue Crab Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

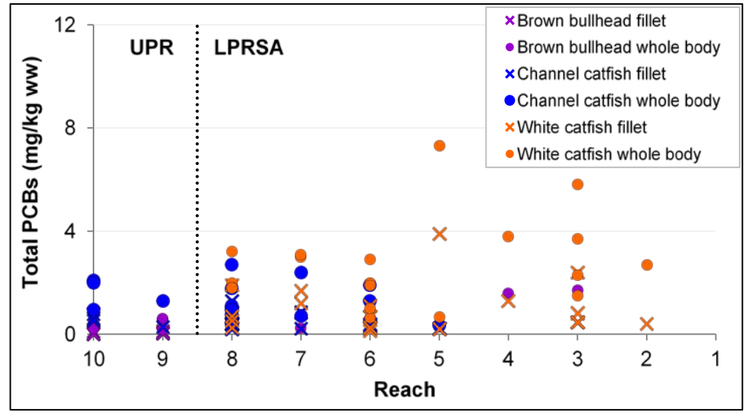
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



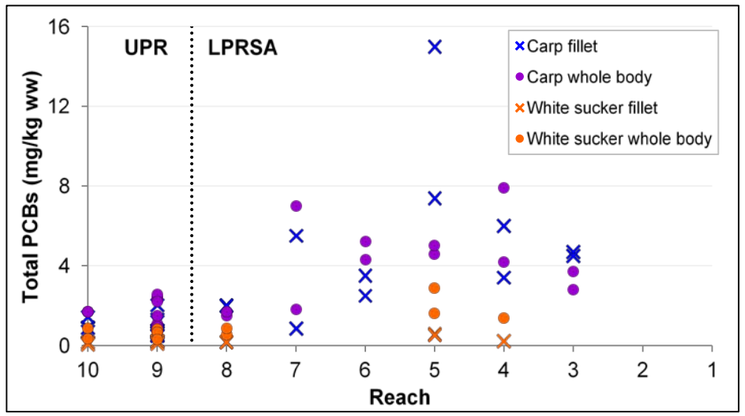
a. American eel



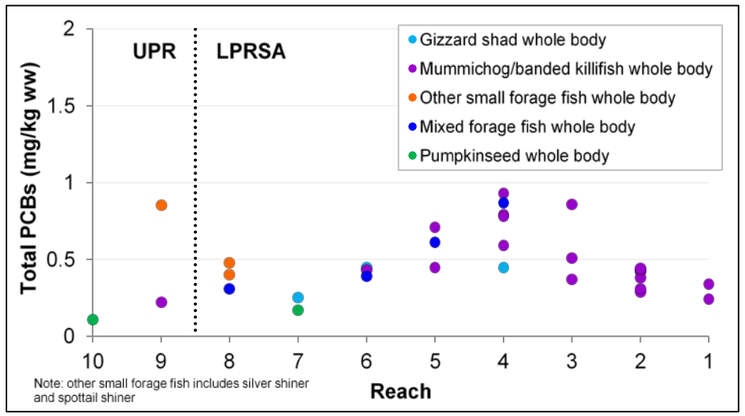
b. Bass and pike



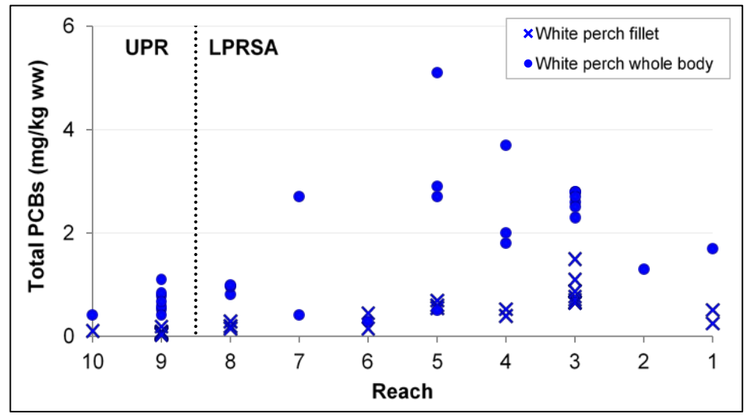
c. Bullhead and catfish



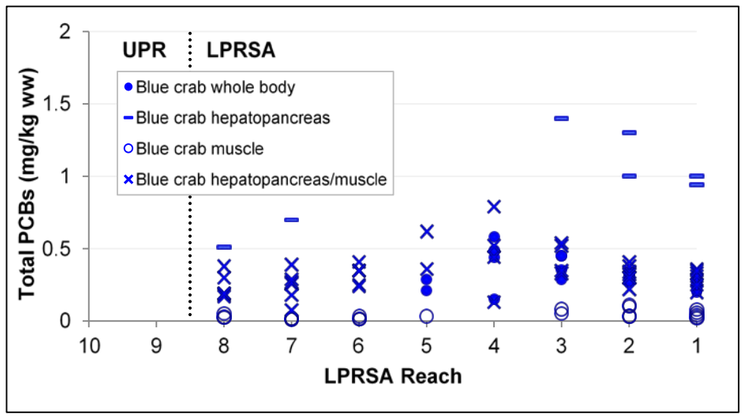
d. Carp and white sucker



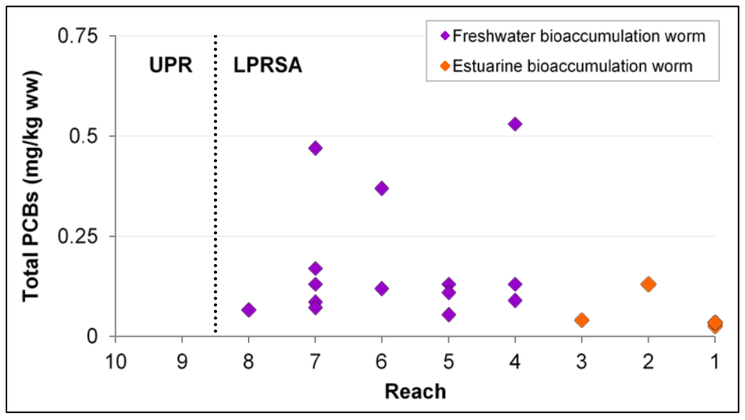
e. Small forage fish



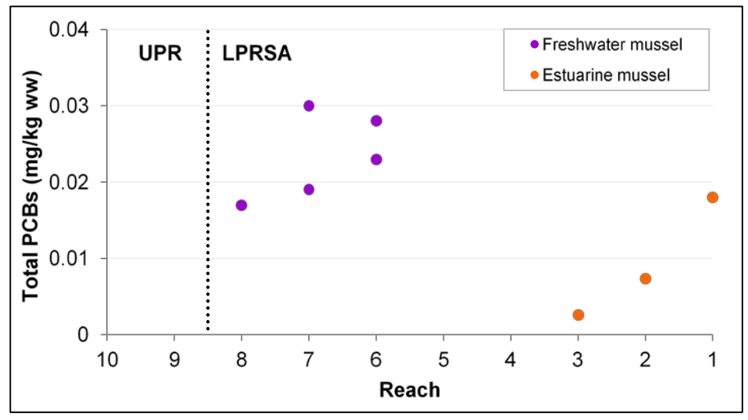
f. White perch



g. Blue crab

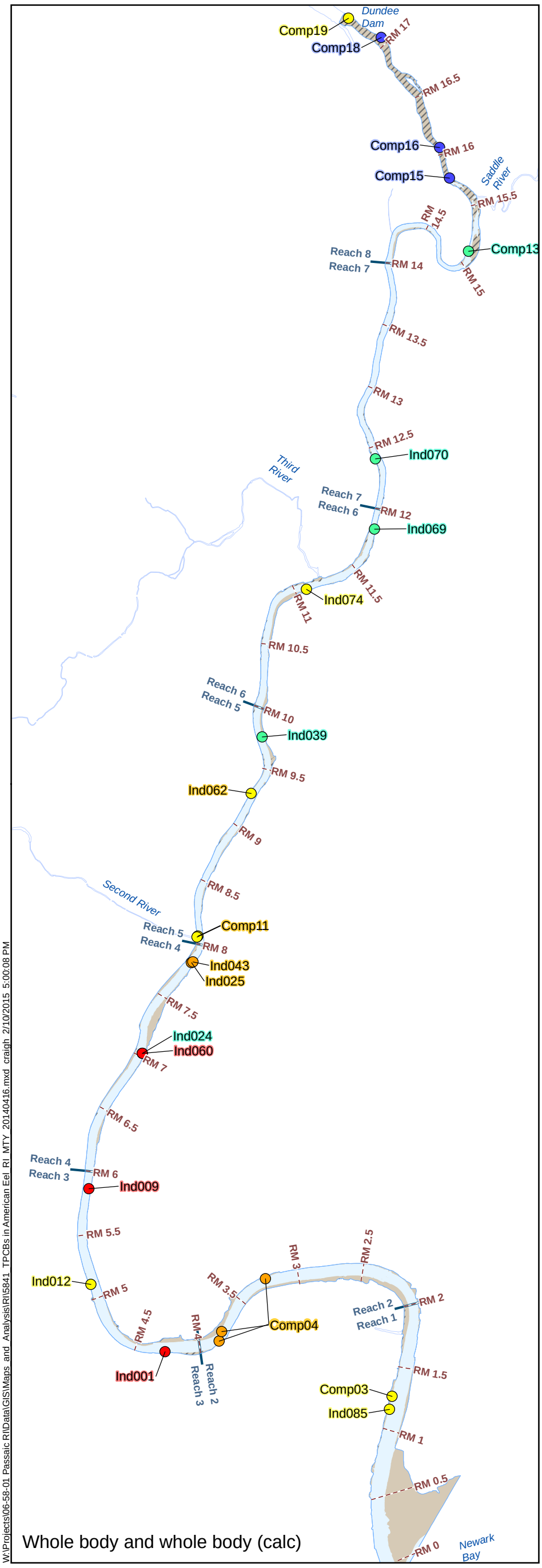


h. Bioaccumulation tissue



i. Caged bivalves

Figure 6
Concentrations of Total PCBs in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5841 TPCBs in American Eel RI MTY 20140416.mxd craigh 2/10/2015 5:00:08 PM

Total PCB Congeners (µg/kg) (Percentile)

- > 2,200 (> 90th)
- > 1,500 and ≤ 2,200 (> 75th and ≤ 90th)
- > 980 and ≤ 1,500 (> 50th and ≤ 75th)
- > 670 and ≤ 980 (> 25th and ≤ 50th)
- ≤ 670 (≤ 25th)

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

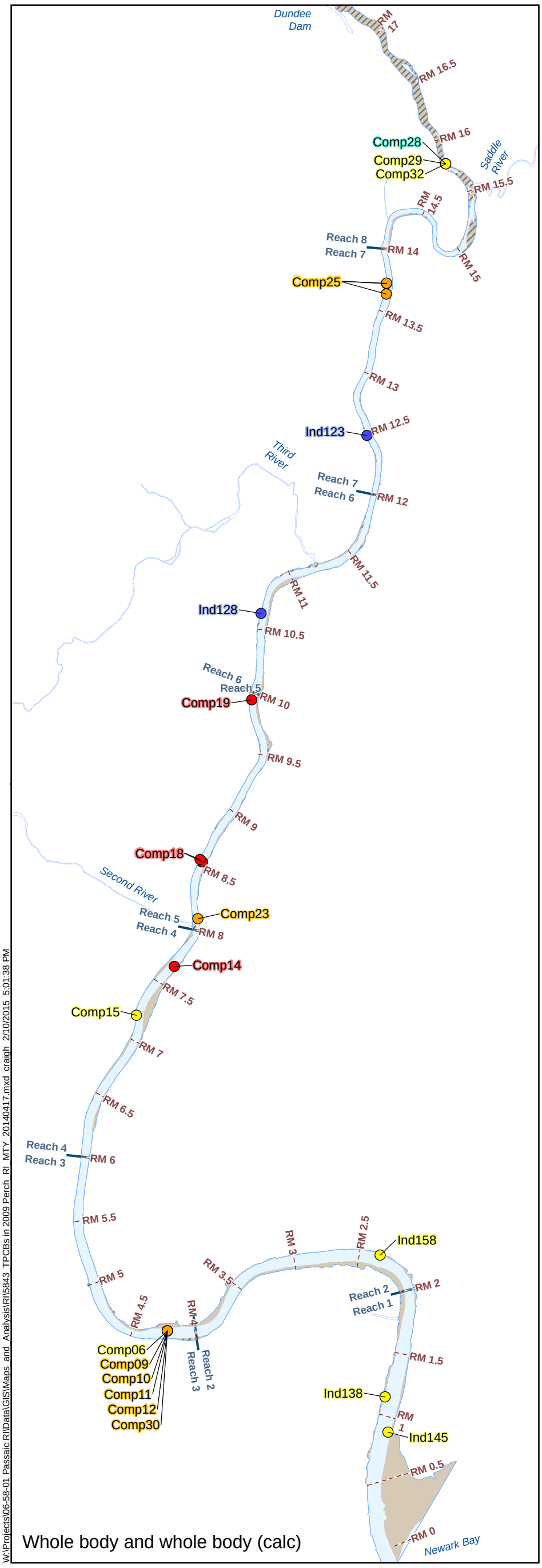
0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite. All samples were detected.

Figure 7

Concentrations of Total PCBs in American Eel Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



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Total PCB Congeners (µg/kg) (Percentile)

- > 2,800 (> 90th)
- > 2,400 and ≤ 2,800 (> 75th and ≤ 90th)
- > 870 and ≤ 2,400 (> 50th and ≤ 75th)
- > 510 and ≤ 870 (> 25th and ≤ 50th)
- ≤ 510 (≤ 25th)

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite. All samples were detected.

Figure 8

Concentrations of Total PCBs in White Perch Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

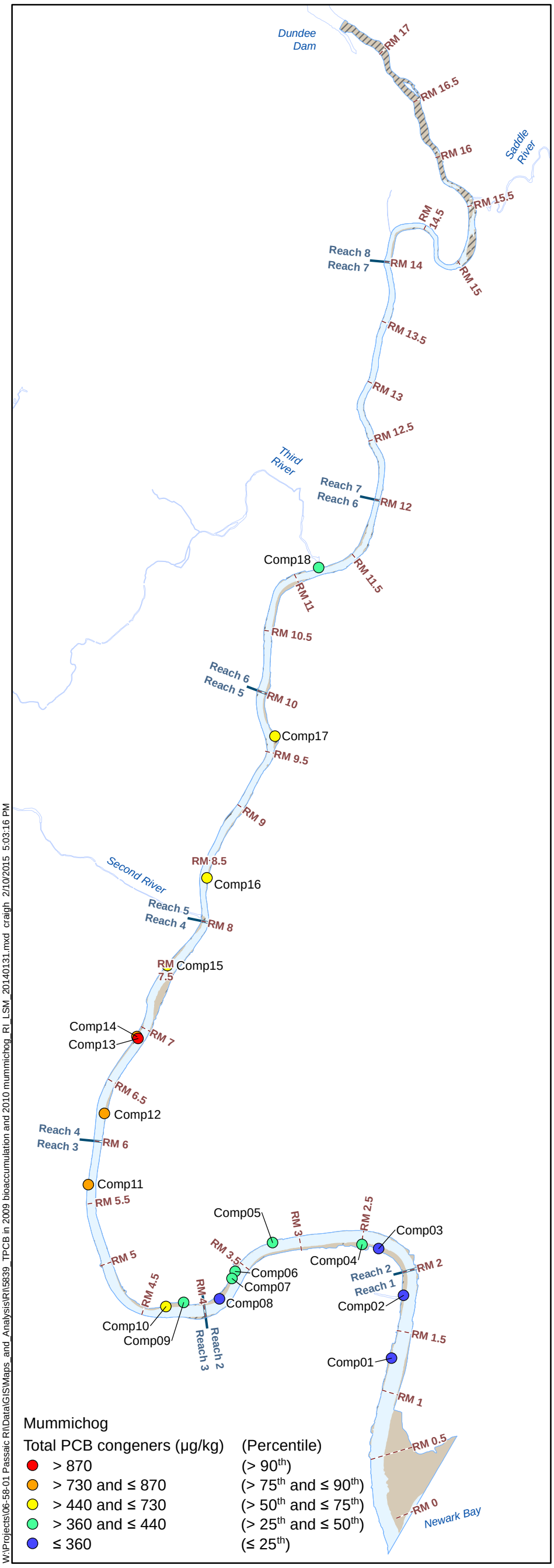


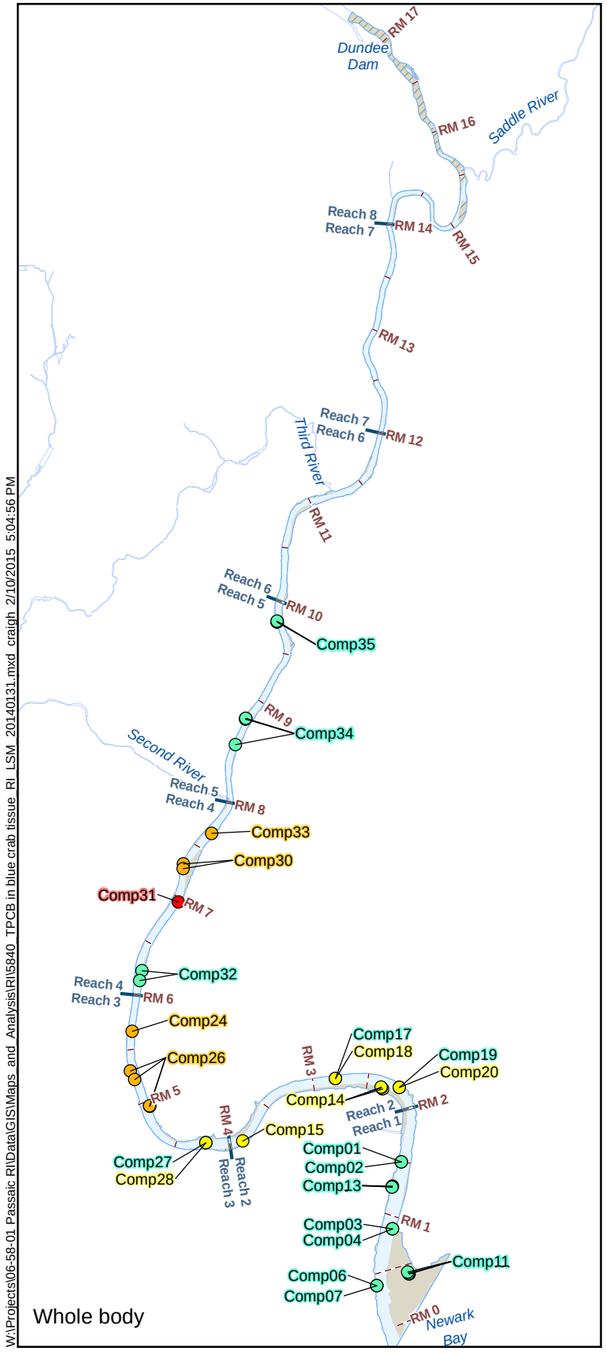
Figure 9

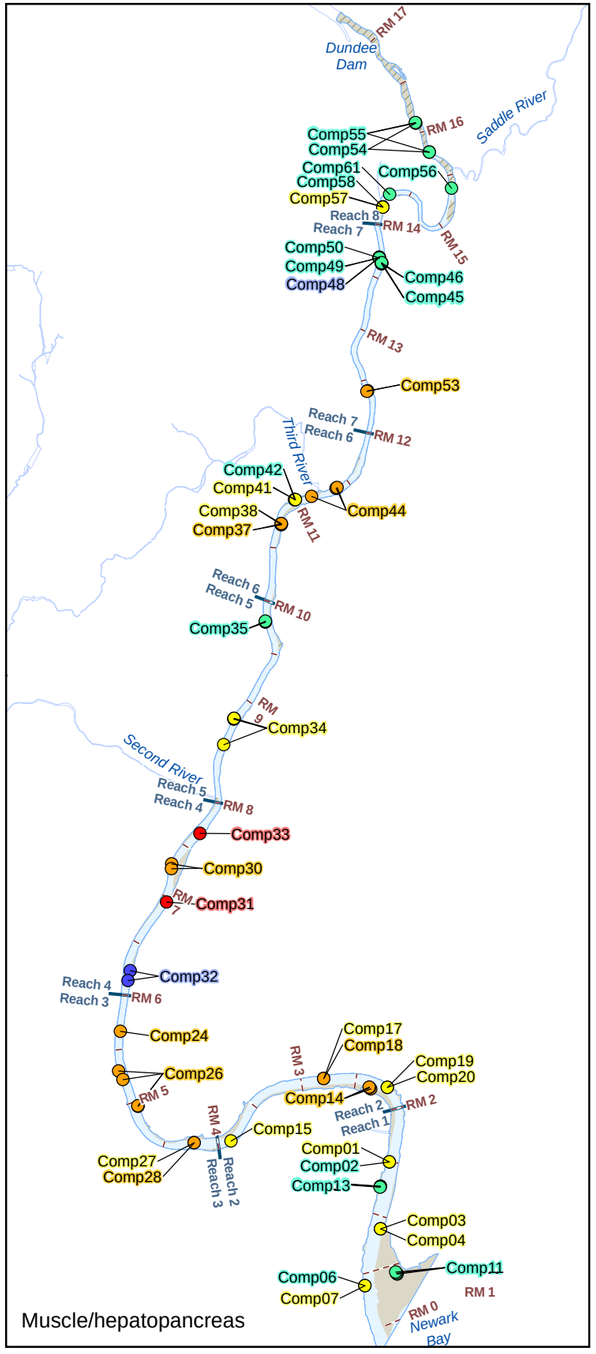
Concentrations of Total PCBs in Mummichog and Bioaccumulation Worm Tissue from the LPRSA Remedial Investigation Report

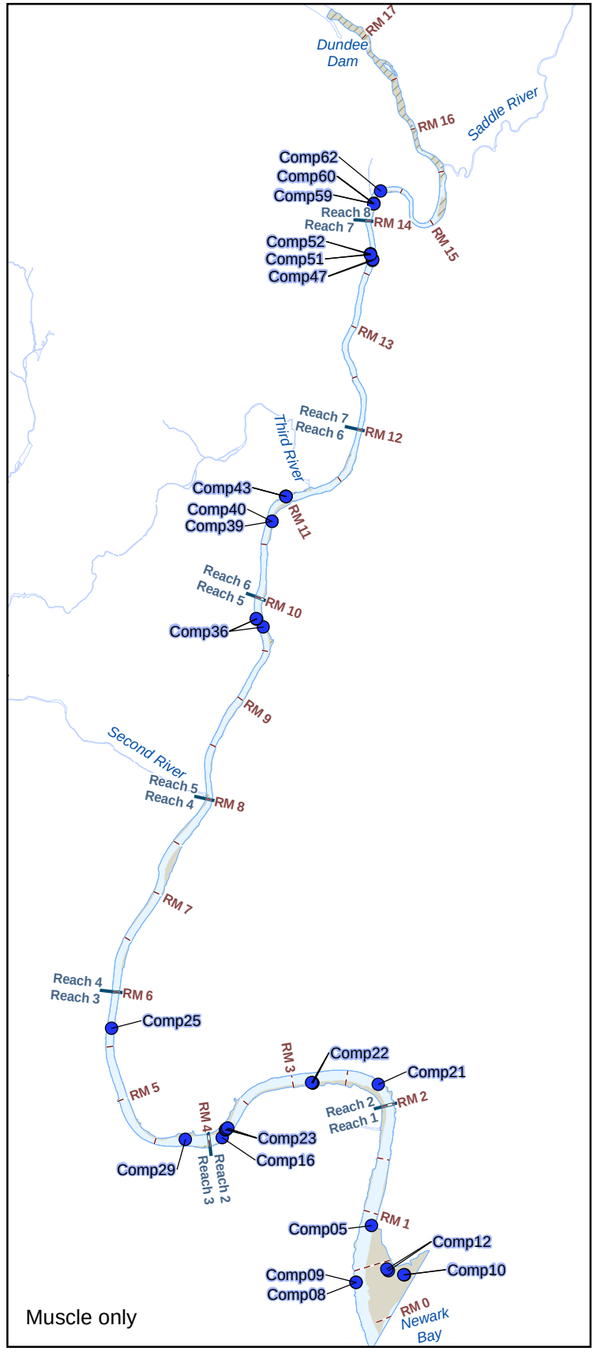
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

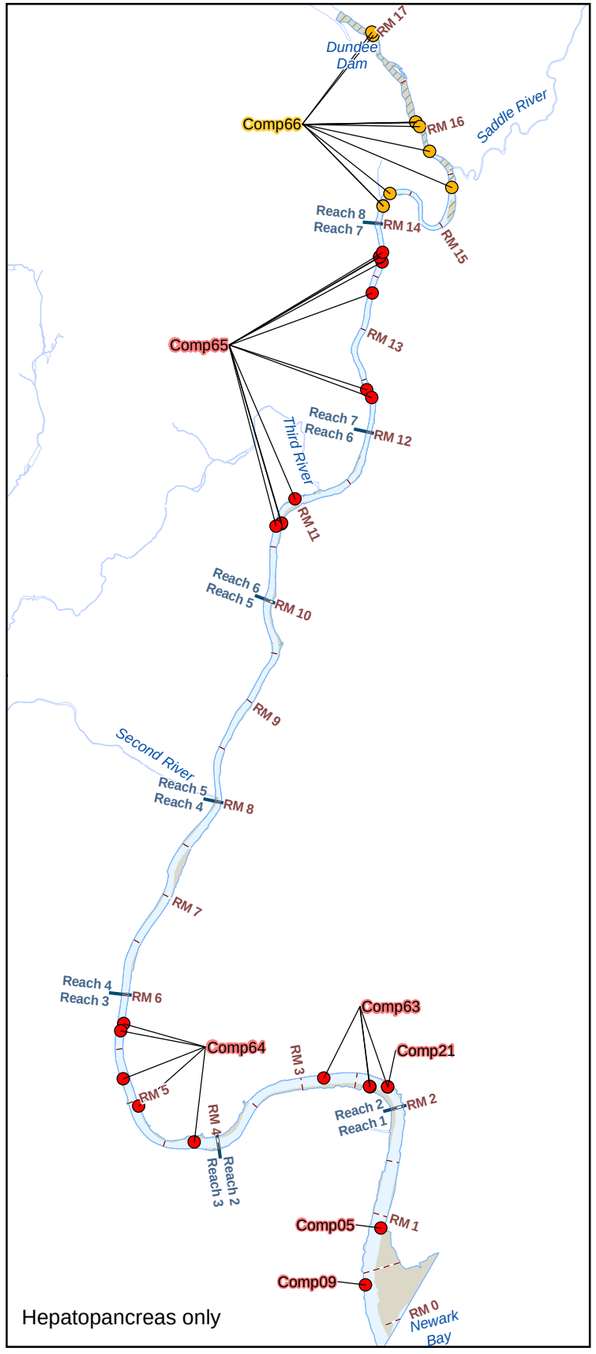
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

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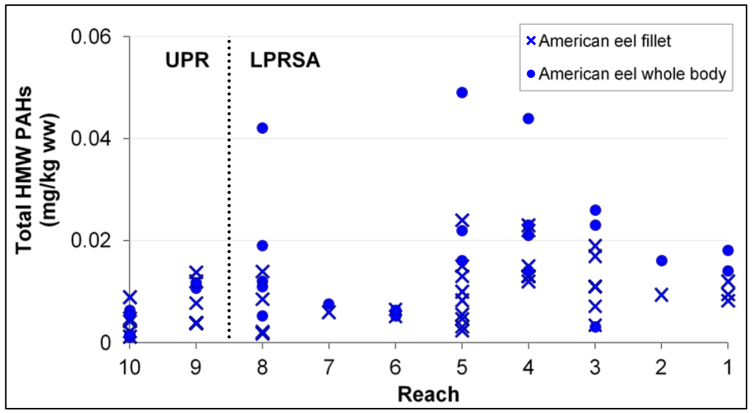
Sampling reach boundary
River mile
Mudflat
LPRSA
Gravel with fines
0 4,000 8,000
Feet

All samples were detected.
The percentile is based on the combined data from all four tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

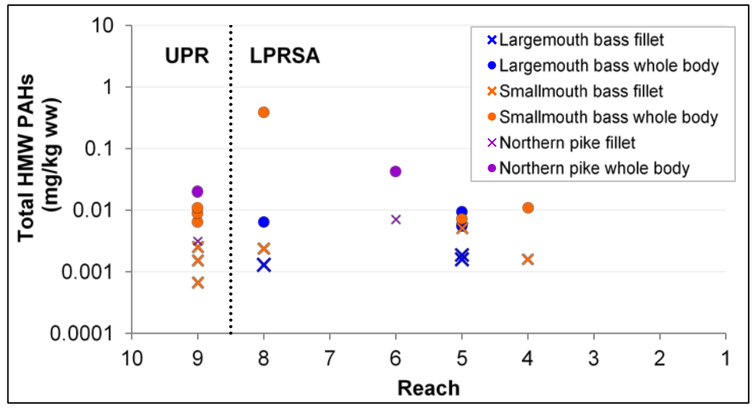
Total PCBs (µg/kg)	(Percentile)
> 560	(> 90th)
> 370 and ≤ 560	(> 75th and ≤ 90th)
> 290 and ≤ 370	(> 50th and ≤ 75th)
> 140 and ≤ 290	(> 25th and ≤ 50th)
≤ 140	(≤ 25th)

Figure 10
Concentrations of Total PCBs in Blue Crab Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

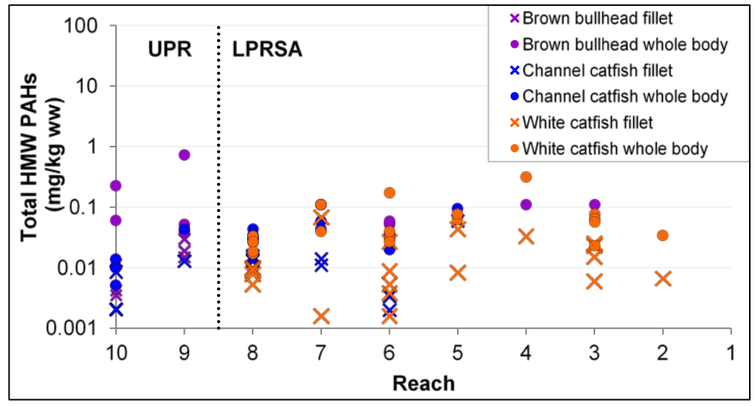
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



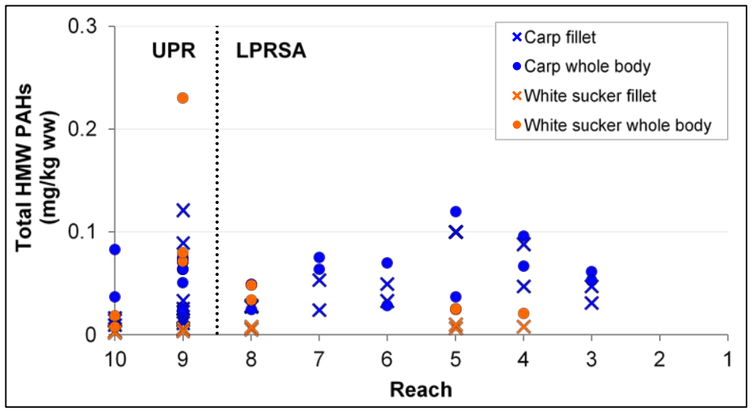
a. American eel



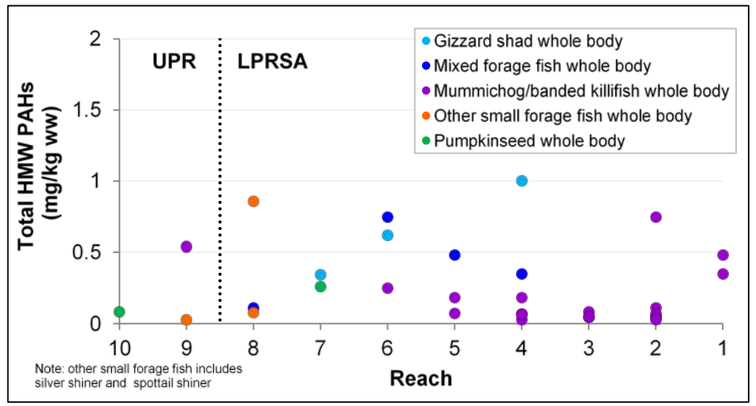
b. Bass and pike



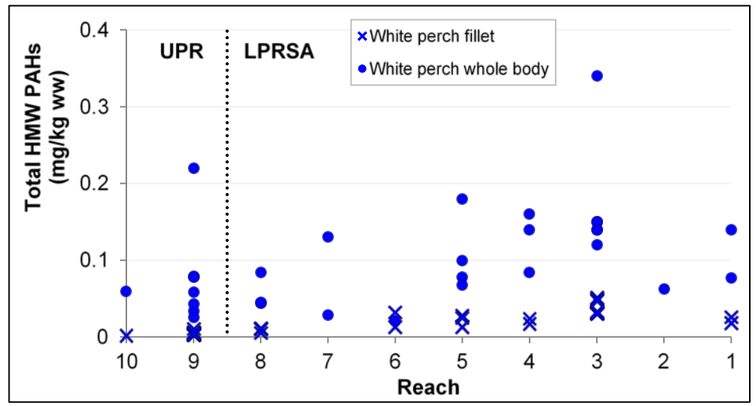
c. Bullhead and catfish



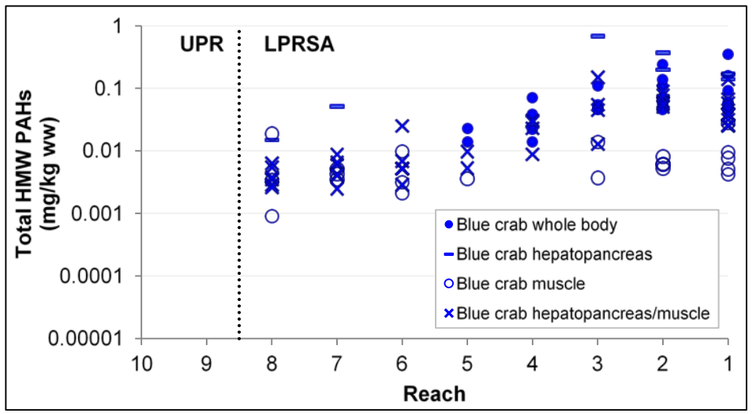
d. Carp and white sucker



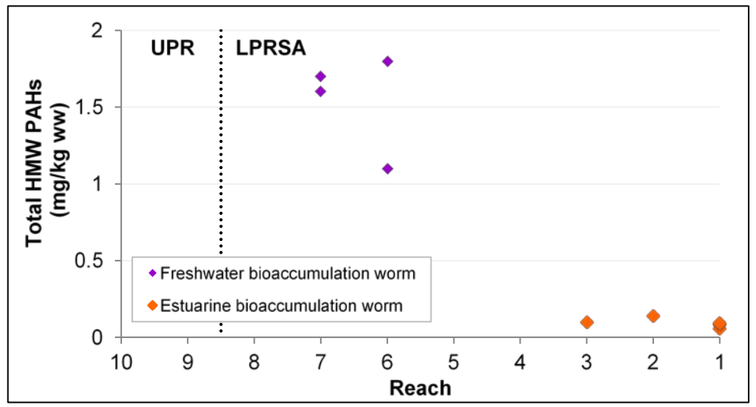
e. Small forage fish



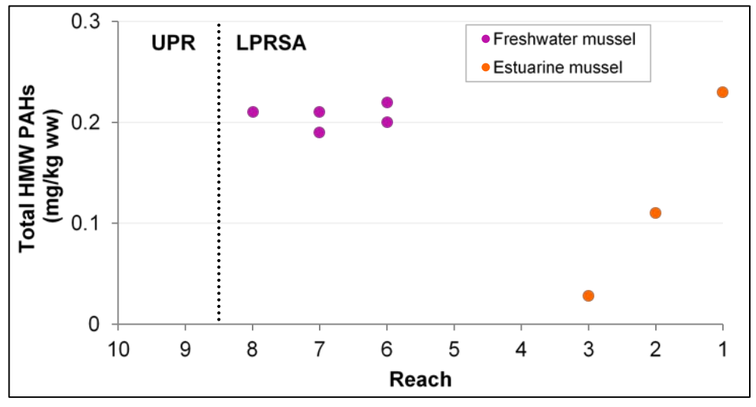
f. White perch



g. Blue crab

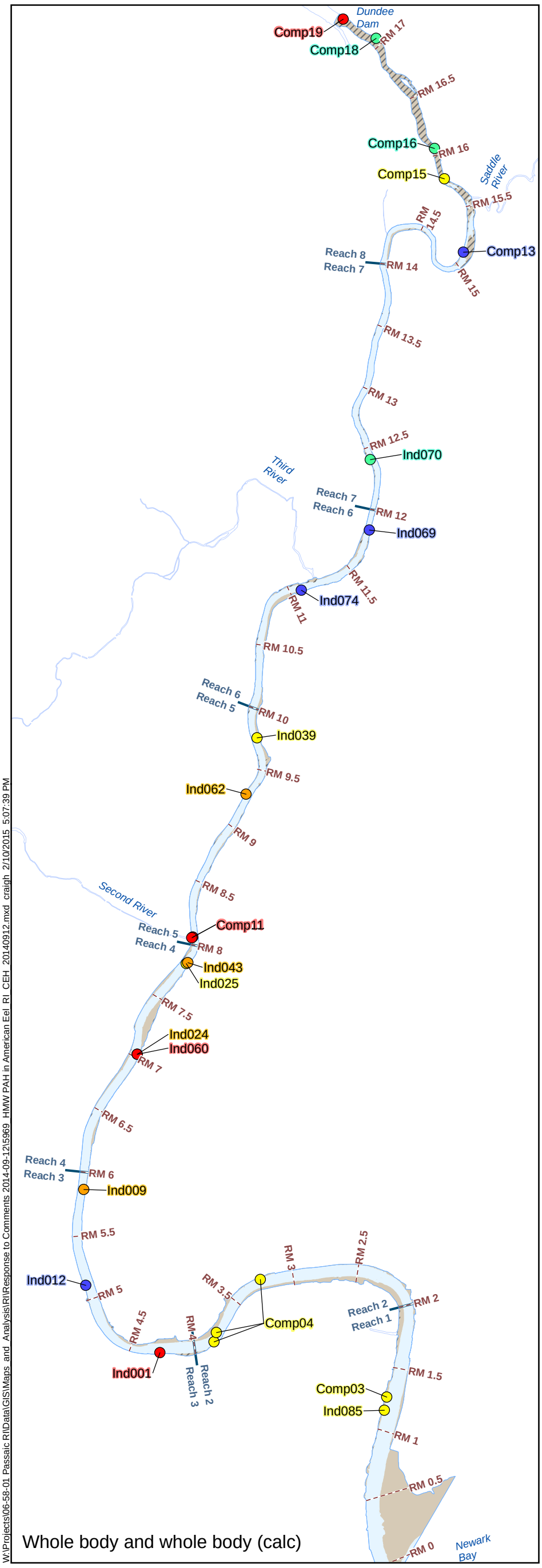


h. Bioaccumulation tissue



i. Caged bivalves

Figure 11
Concentrations of Total High Molecular Weight PAHs in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\Response to Comments 2014-09-12\5969_HMW PAH in American Eel_RI_CEH_20140912.mxd craigh 2/10/2015 5:07:39 PM

Total HMW PAHs (µg/kg) (Percentile)

- > 24 (> 90th)
- > 19 and ≤ 24 (> 75th and ≤ 90th)
- > 12 and ≤ 19 (> 50th and ≤ 75th)
- > 6.4 and ≤ 12 (> 25th and ≤ 50th)
- ≤ 6.4 (≤ 25th)
- Non-detected

River mile
Sampling reach boundary
Mudflat
Gravel with fines
LPRSA

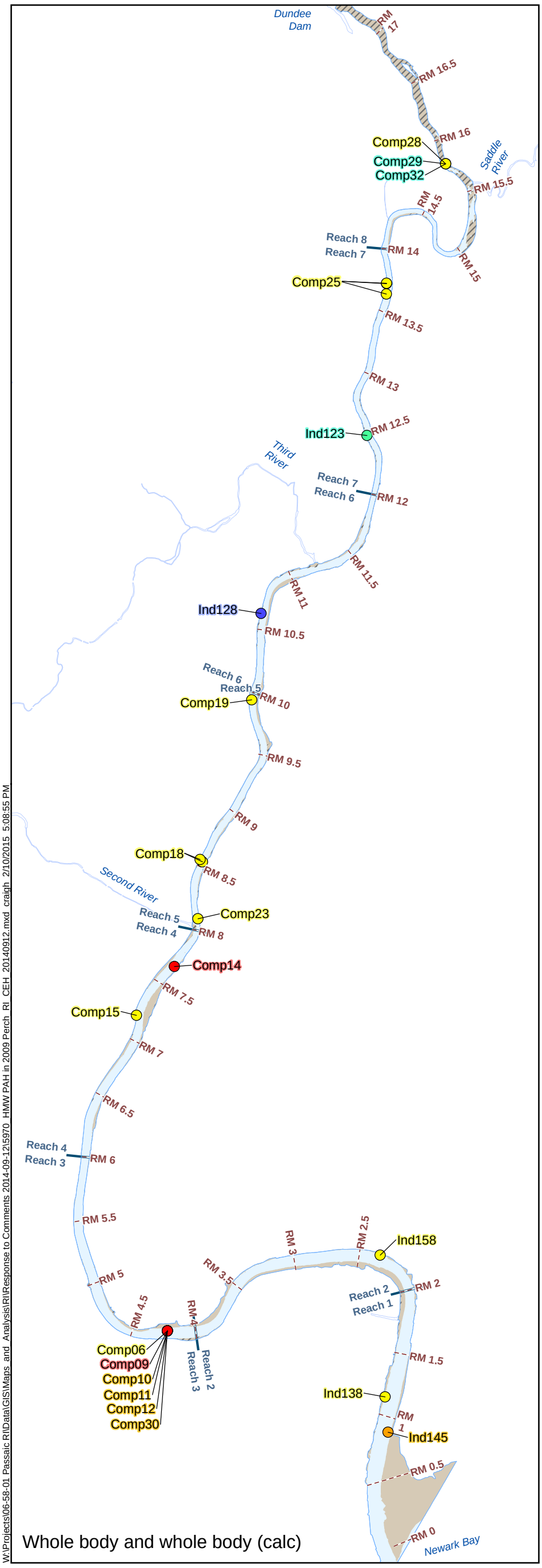
0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Figure 12

Concentrations of Total HMW PAHs in American Eel Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



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Total HMW PAHs (µg/kg) (Percentile)

- > 150 (> 90th)
- > 130 and ≤ 150 (> 75th and ≤ 90th)
- > 47 and ≤ 130 (> 50th and ≤ 75th)
- > 26 and ≤ 47 (> 25th and ≤ 50th)
- ≤ 26 (≤ 25th)

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

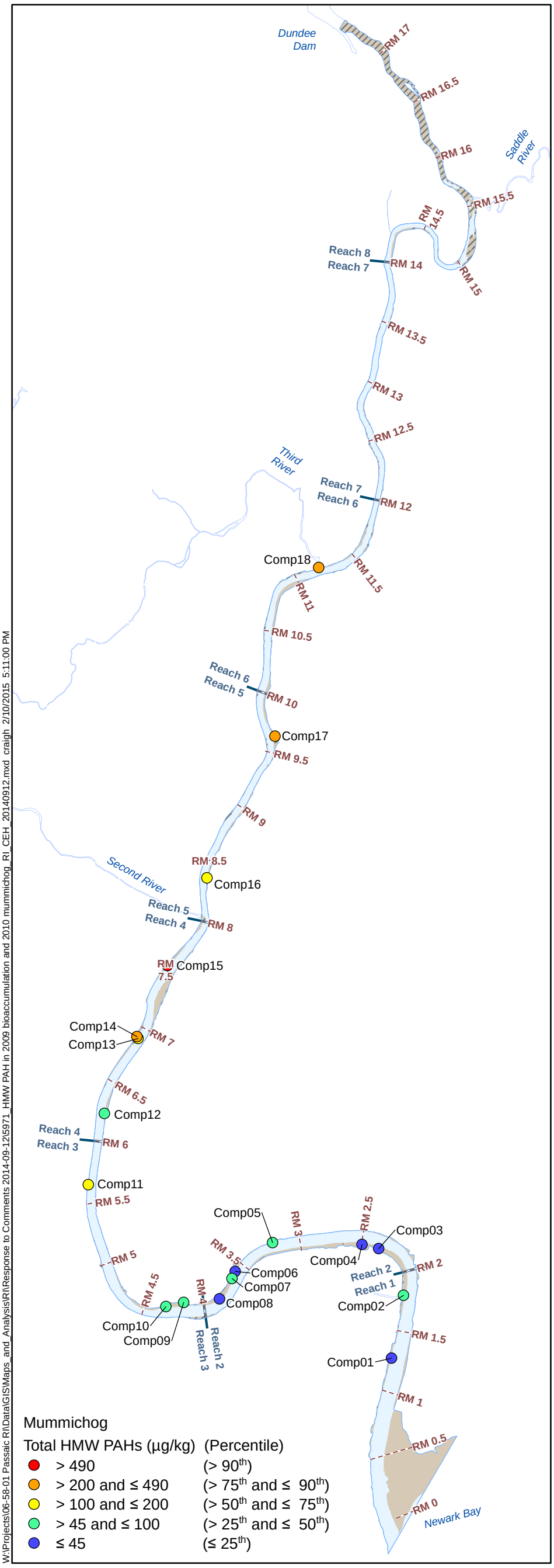
0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite. All samples were detected.

Figure 13

Concentrations of Total HMW PAHs in White Perch Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



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Figure 14

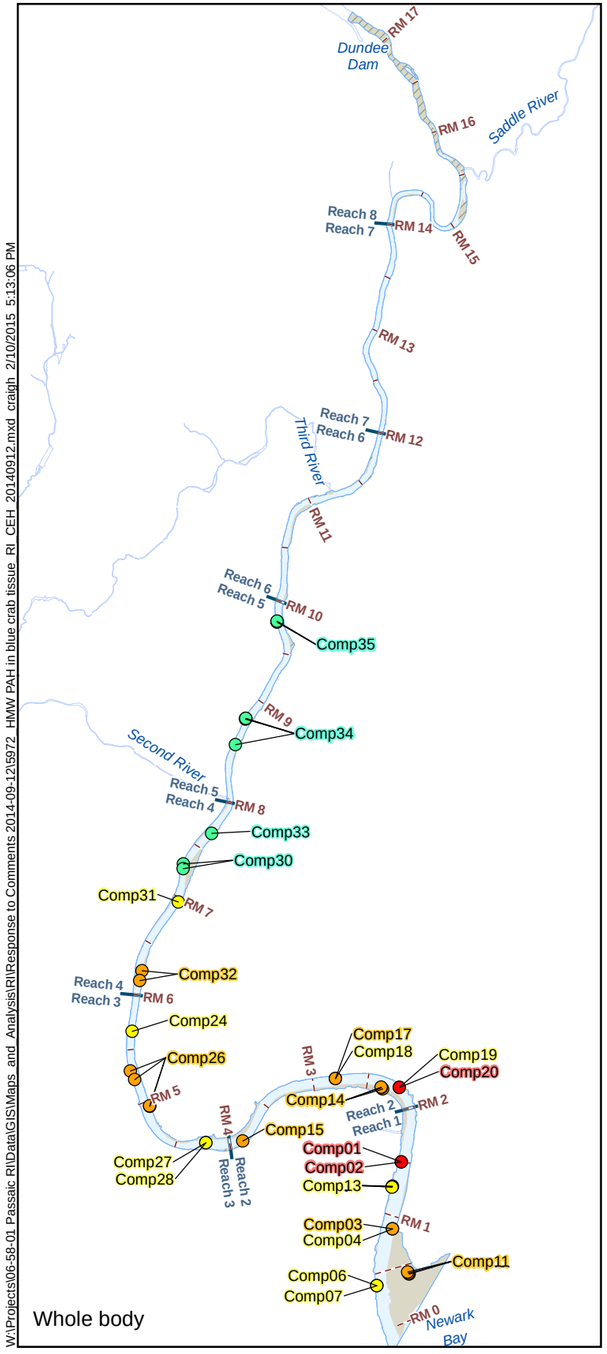
Concentrations of Total HMW PAHs in Mummichog and Bioaccumulation Worm Tissue by LPRSA Location

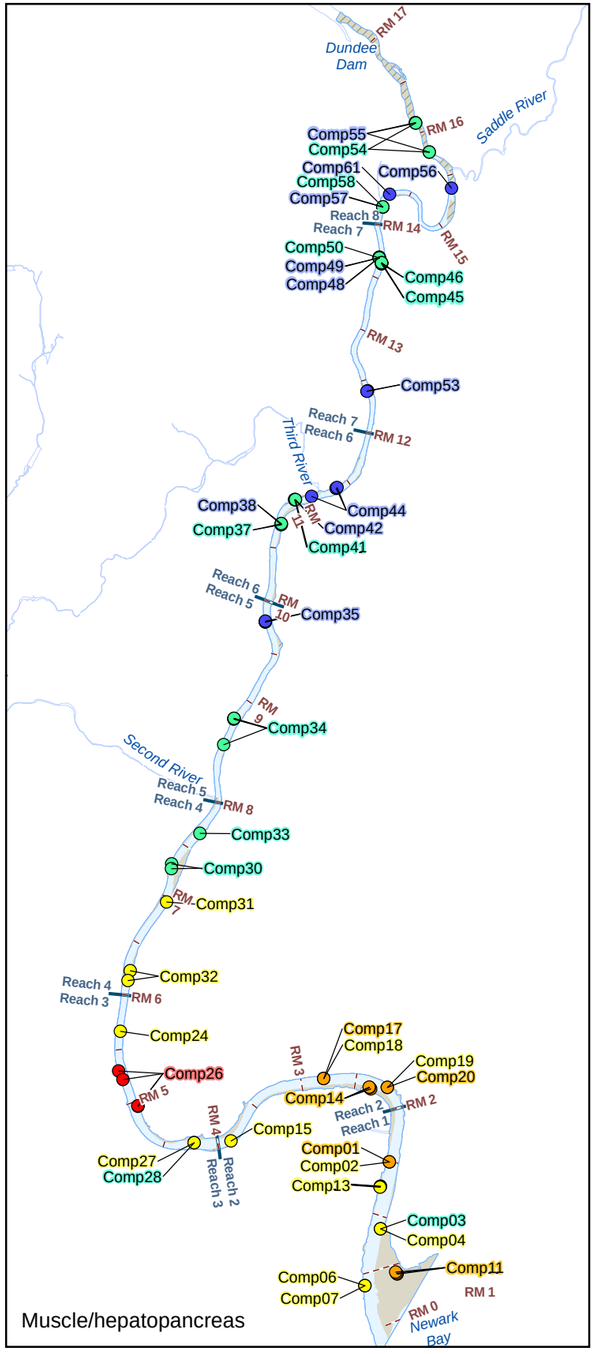
Remedial Investigation Report

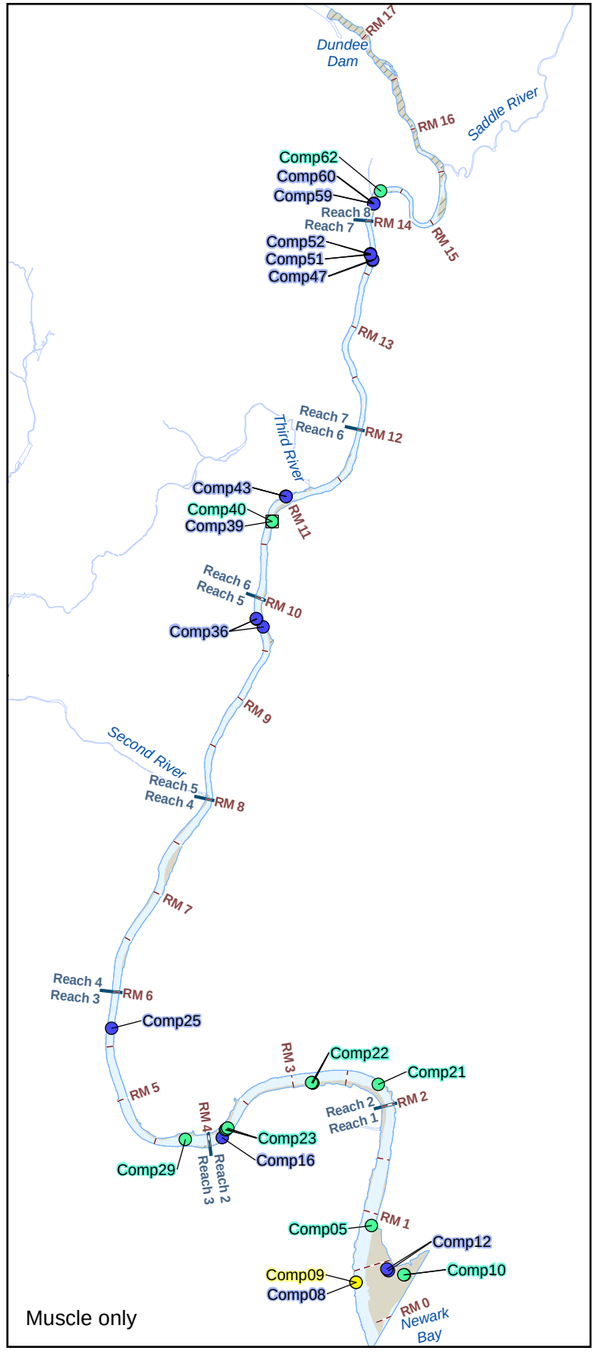
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

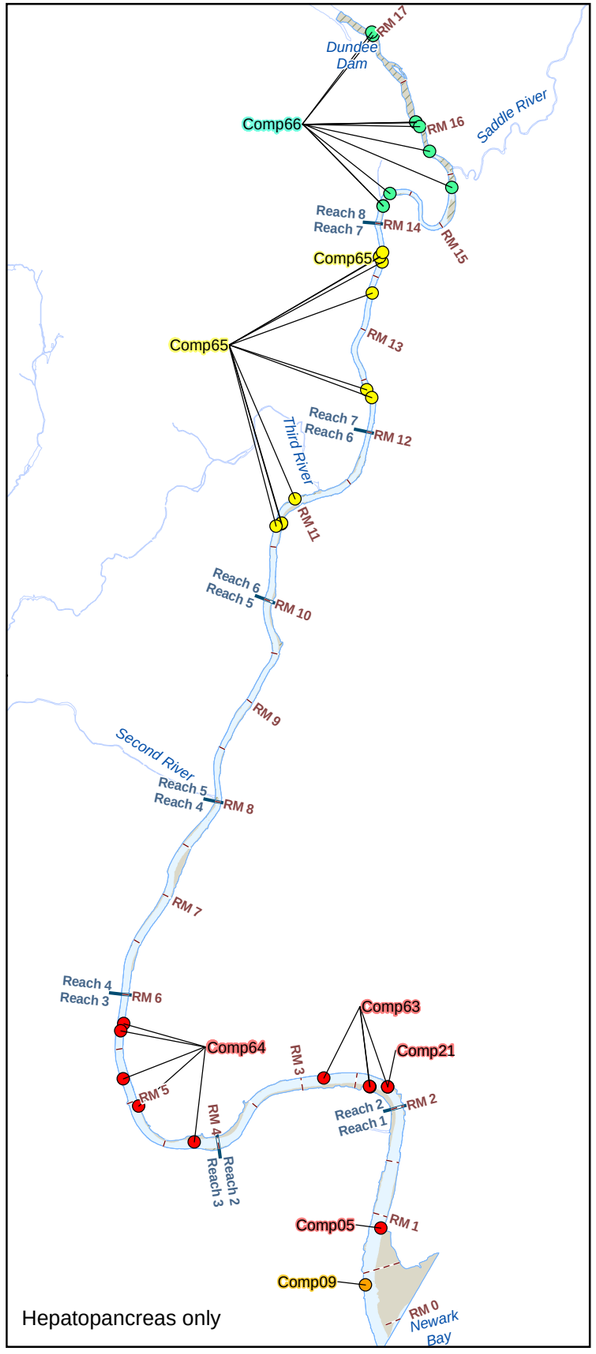
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

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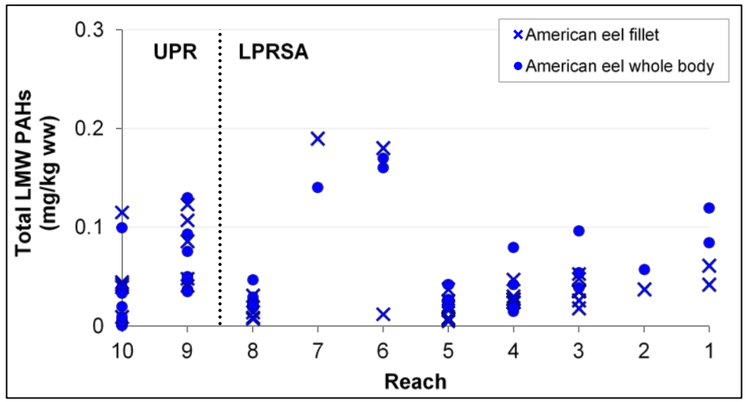
Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA
0 4,000 8,000
Feet

The percentile is based on the combined data from all four tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

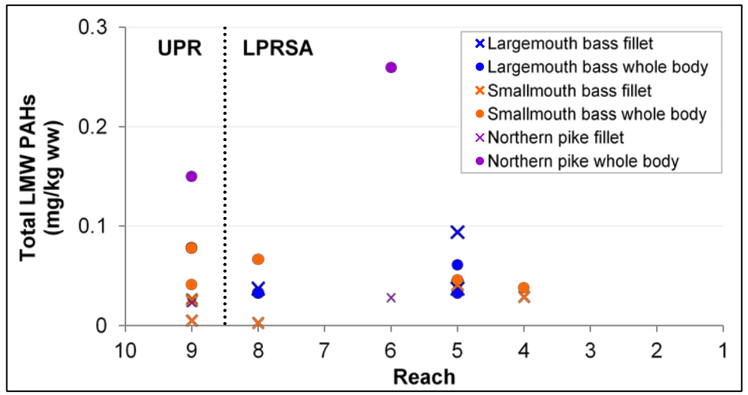
Total HMW PAHs (µg/kg)	(Percentile)
> 140	(> 90th)
> 58 and ≤ 140	(> 75th and ≤ 90th)
> 25 and ≤ 58	(> 50th and ≤ 75th)
> 5.4 and ≤ 25	(> 25th and ≤ 50th)
≤ 5.4	(≤ 25th)
Non-detected	

Figure 15
Concentrations of Total HMW PAHs in Blue Crab Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

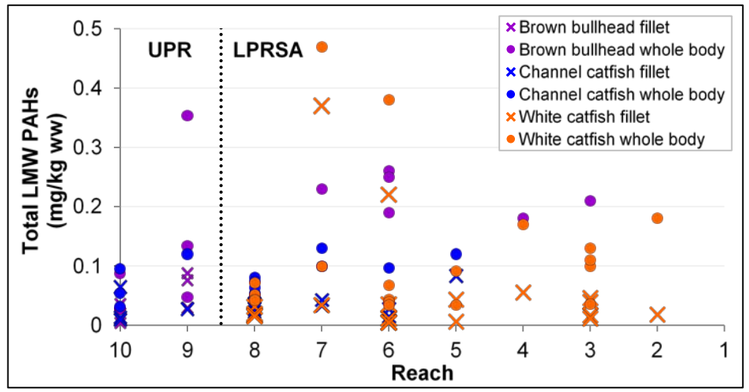
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



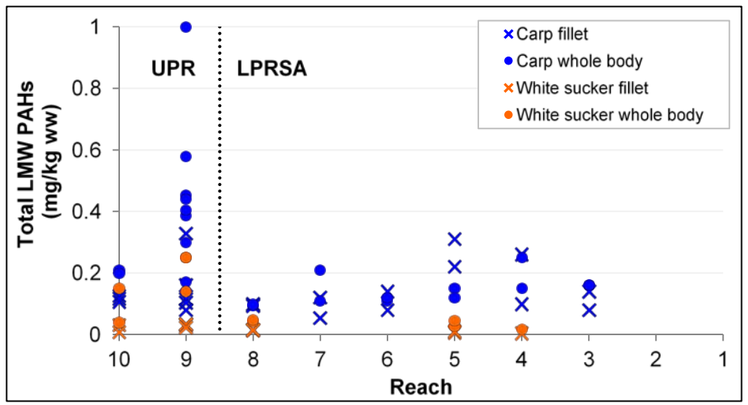
a. American eel



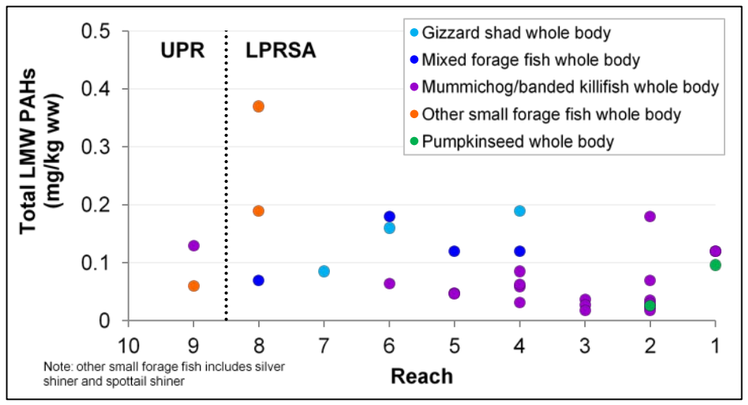
b. Bass and pike



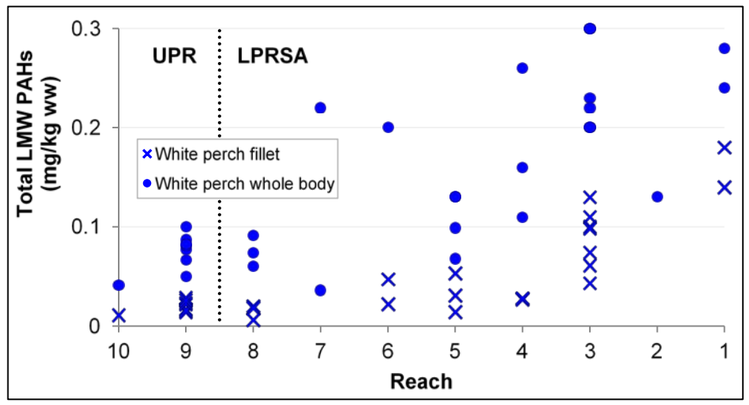
c. Bullhead and catfish



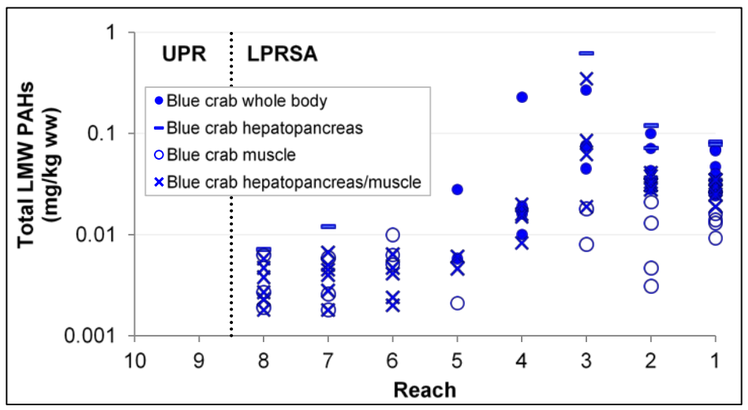
d. Carp and white sucker



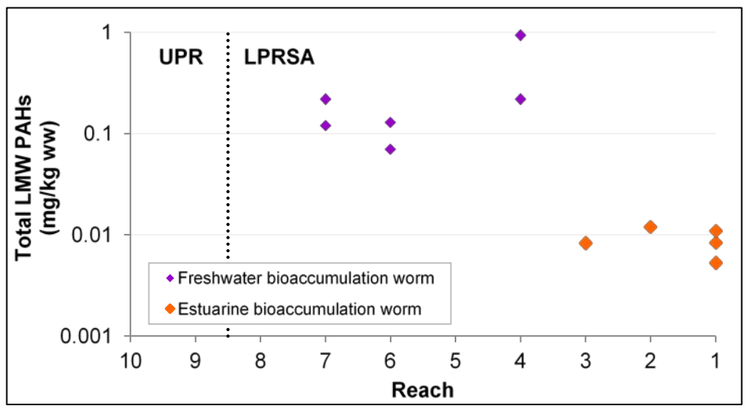
e. Small forage fish



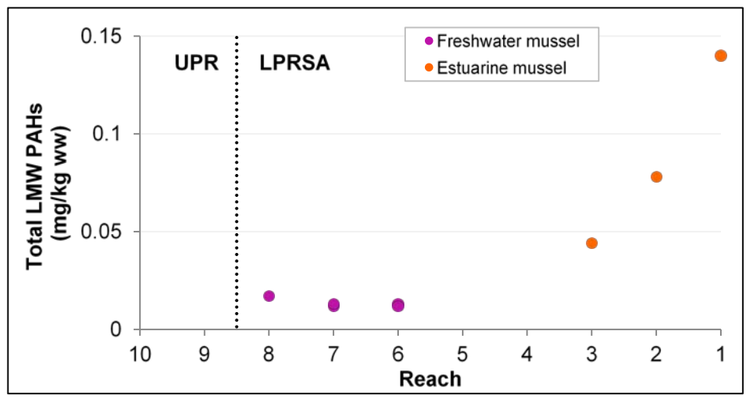
f. White perch



g. Blue crab

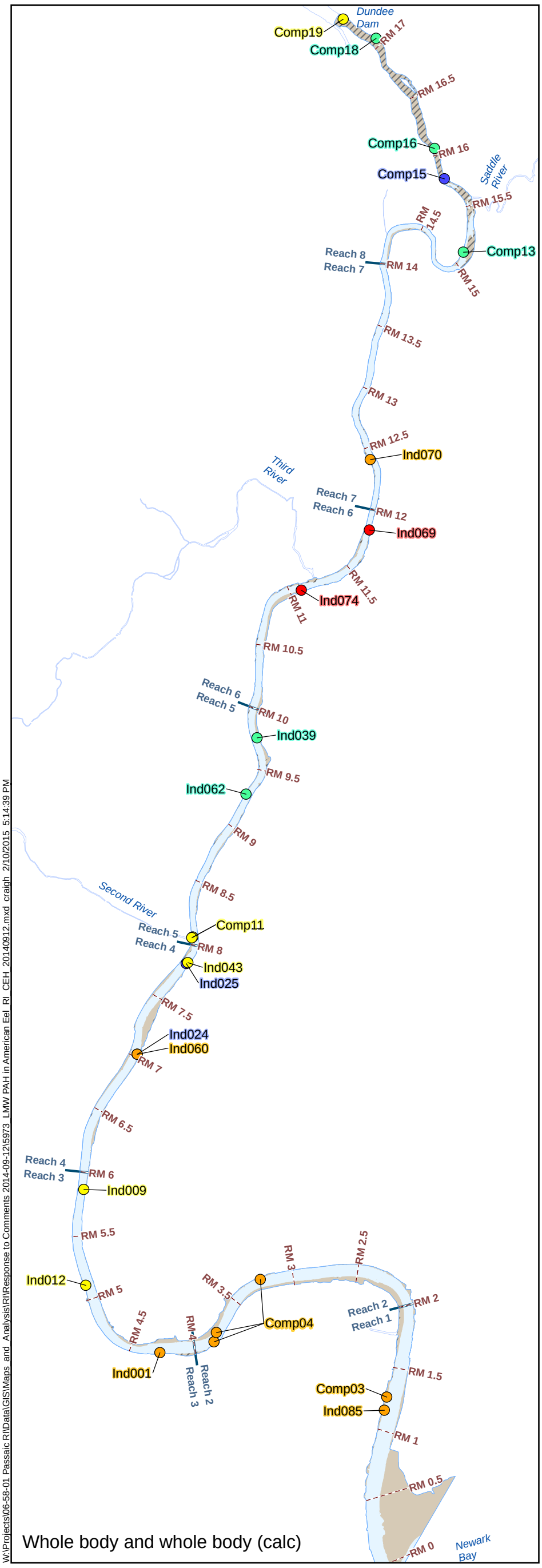


h. Bioaccumulation tissue



i. Caged bivalves

Figure 16
Concentrations of Total Low Molecular Weight PAHs in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



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Total LMW PAHs (µg/kg) (Percentile)

- > 150 (> 90th)
- > 54 and ≤ 150 (> 75th and ≤ 90th)
- > 30 and ≤ 54 (> 50th and ≤ 75th)
- > 19 and ≤ 30 (> 25th and ≤ 50th)
- ≤ 19 (≤ 25th)

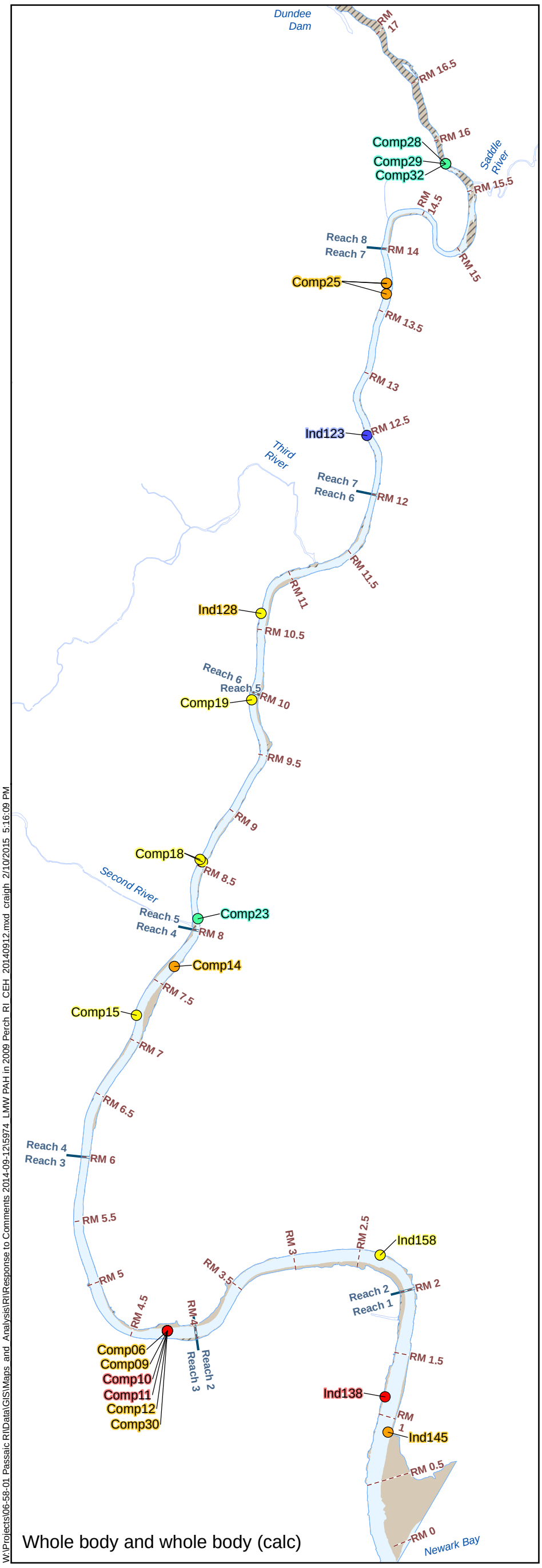
River mile
Sampling reach boundary
Mudflat
Gravel with fines
LPRSA

0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Figure 17
Concentrations of Total LMW PAHs in American Eel Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



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Total LMW PAHs (µg/kg) | (Percentile)

- > 260 (> 90th)
- > 200 and ≤ 260 (> 75th and ≤ 90th)
- > 100 and ≤ 200 (> 50th and ≤ 75th)
- > 45 and ≤ 100 (> 25th and ≤ 50th)
- ≤ 45 (≤ 25th)

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite. All samples were detected.

Figure 18

Concentrations of Total LMW PAHs in White Perch Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

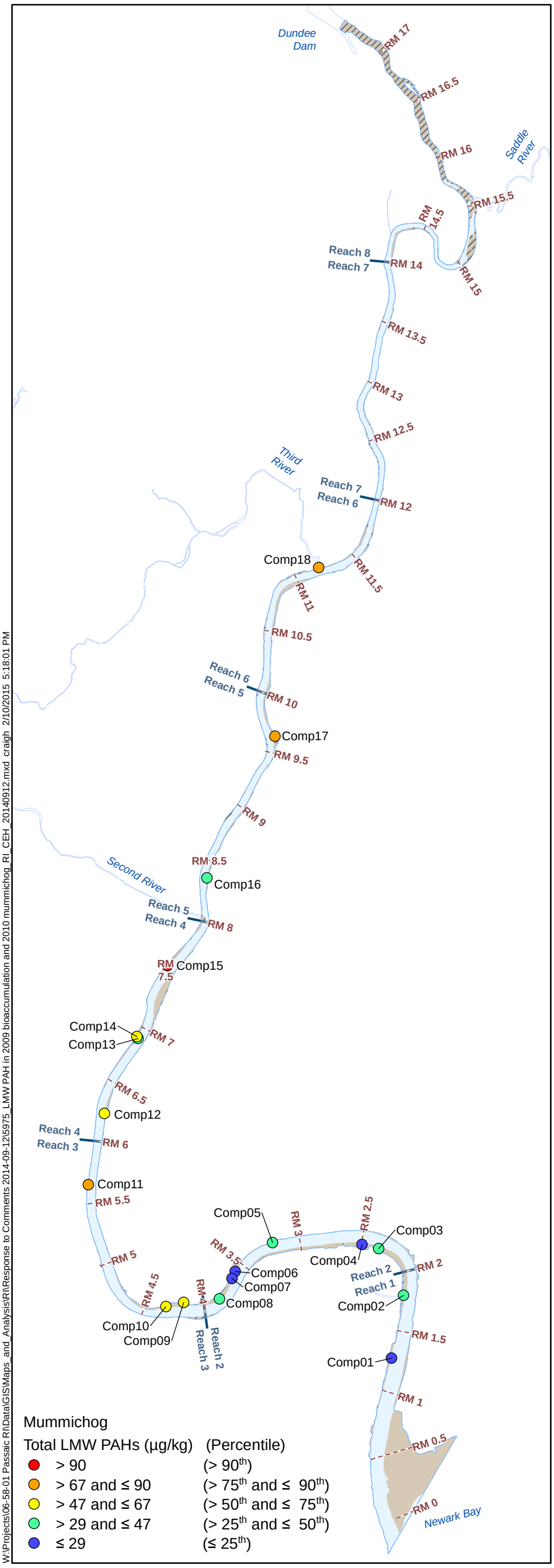


Figure 19

Concentrations of Total LMW PAHs in Mummichog and Bioaccumulation Worm Tissue by LPRSA Location

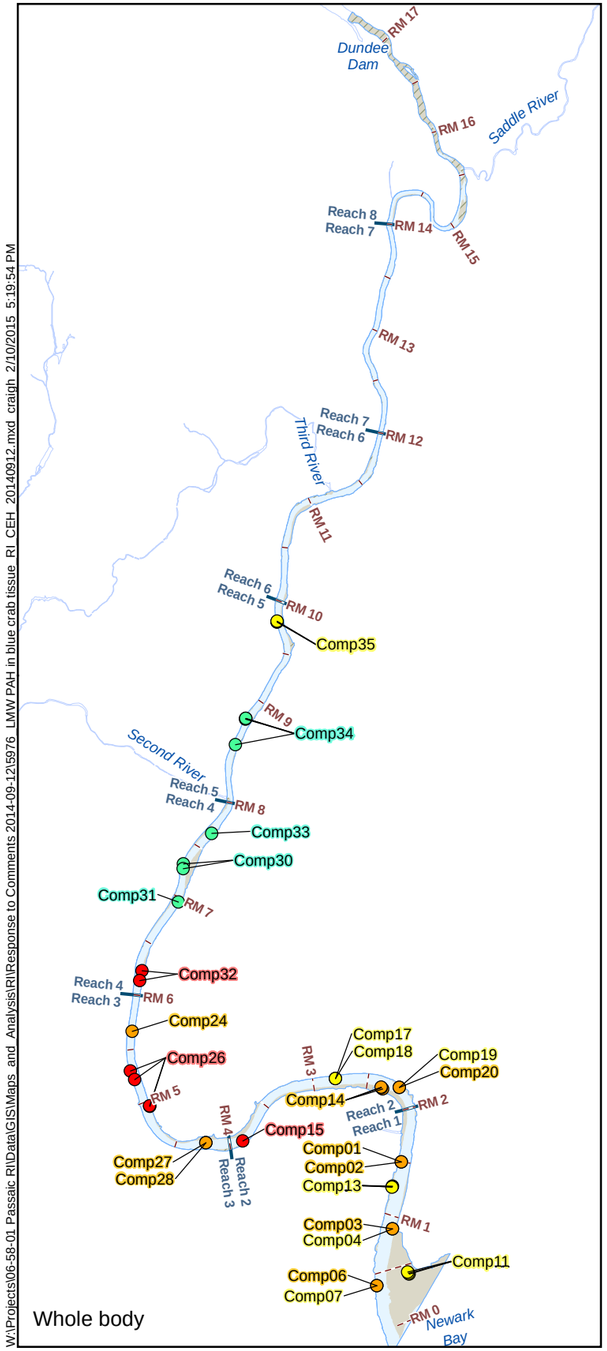
Remedial Investigation Report

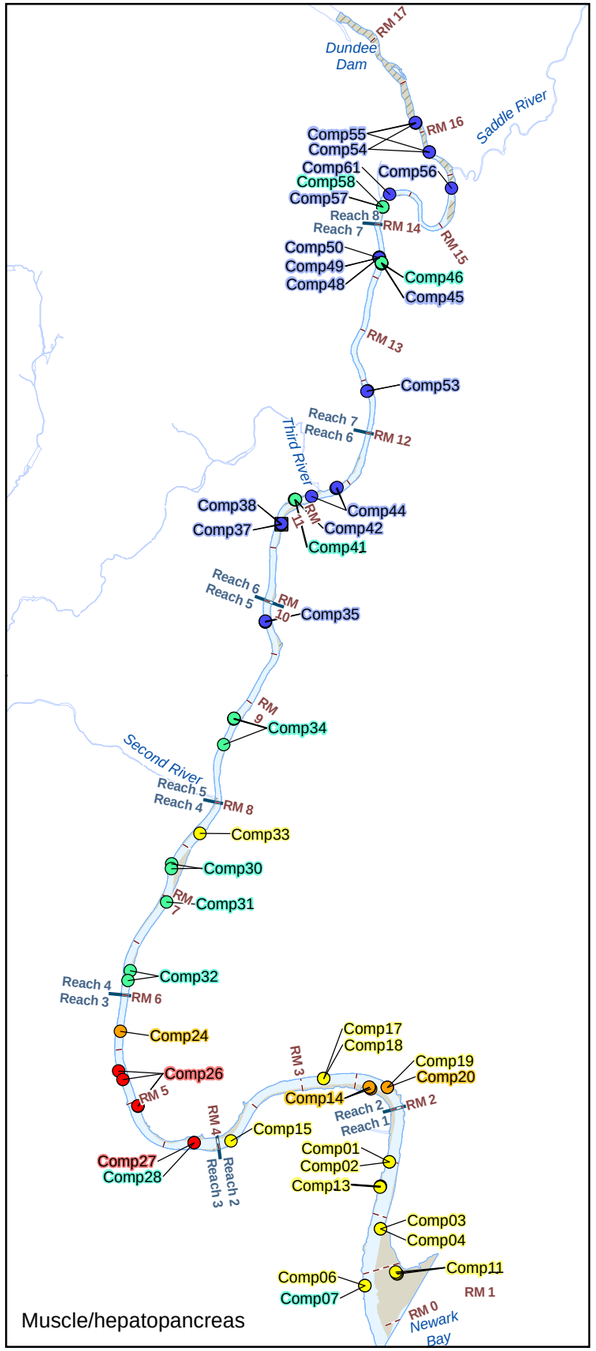
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

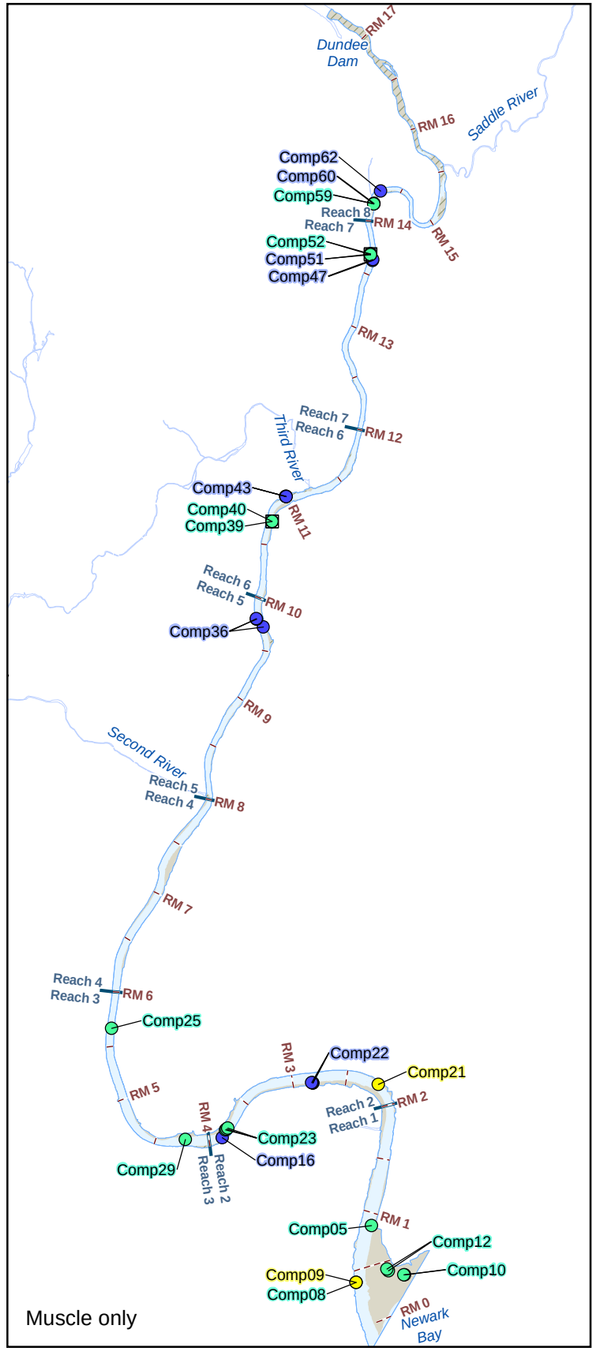
All samples were detected.

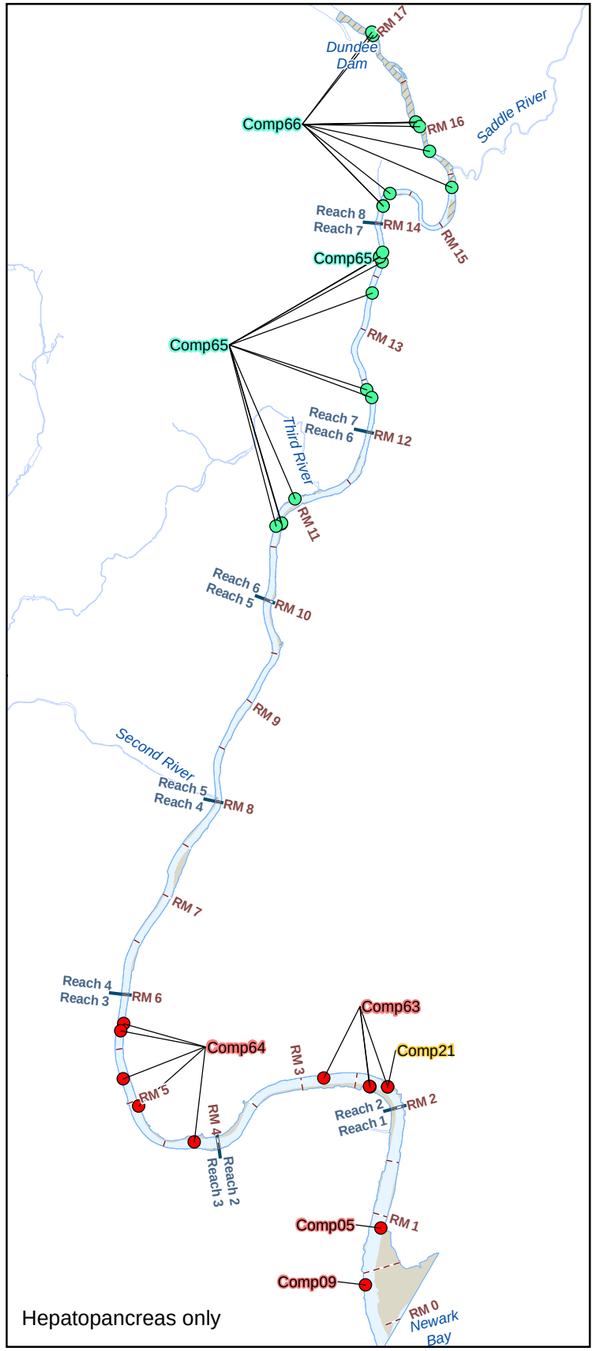
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

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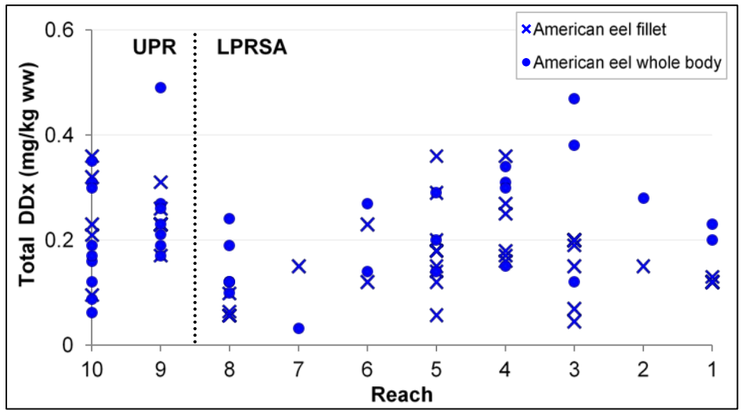
Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA
0 4,000 8,000
Feet

The percentile is based on the combined data from all four tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

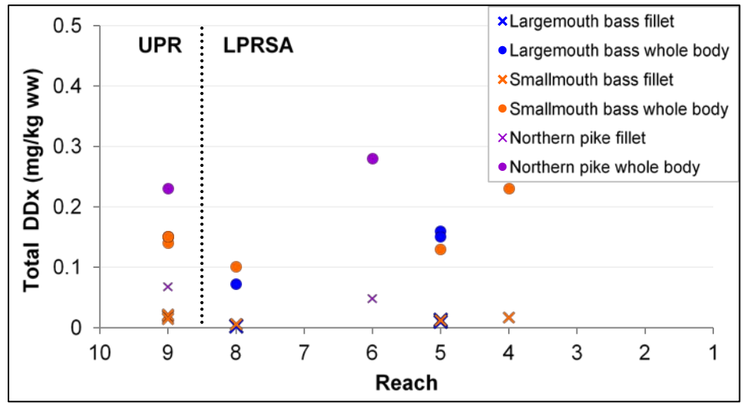
Total LMW PAHs (µg/kg)	(Percentile)
> 77	(> 90th)
> 35 and ≤ 77	(> 75th and ≤ 90th)
> 19 and ≤ 35	(> 50th and ≤ 75th)
> 5.5 and ≤ 19	(> 25th and ≤ 50th)
≤ 5.5	(≤ 25th)
Non-detected	

Figure 20
Concentrations of Total LMW PAHs in Blue Crab Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

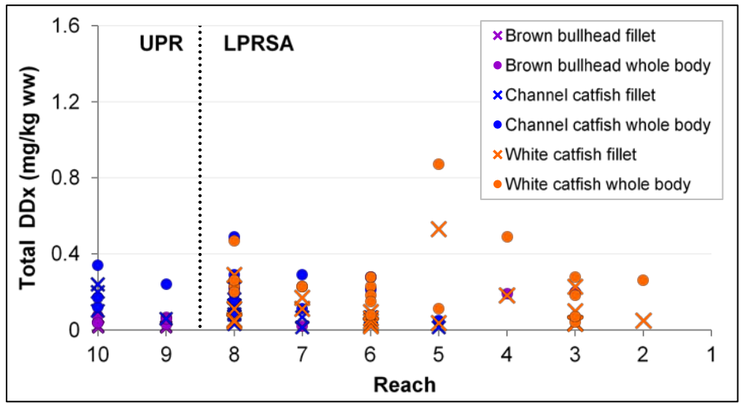
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



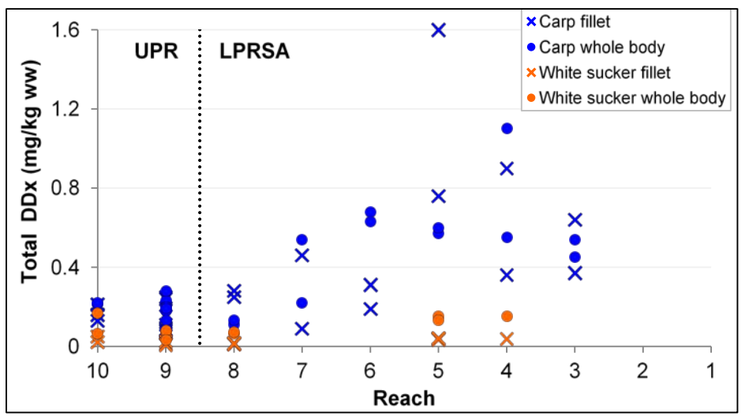
a. American eel



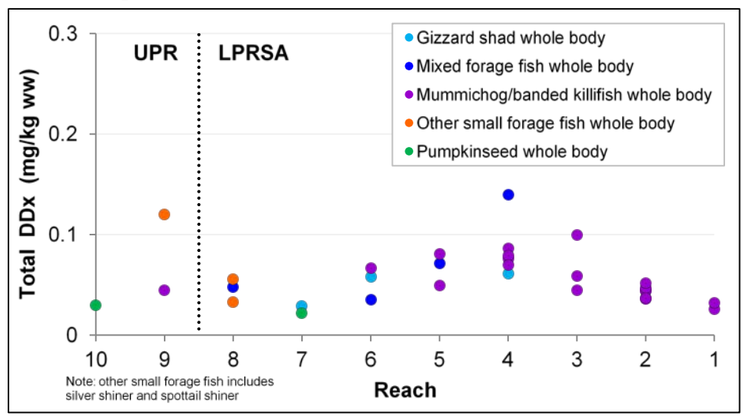
b. Bass and pike



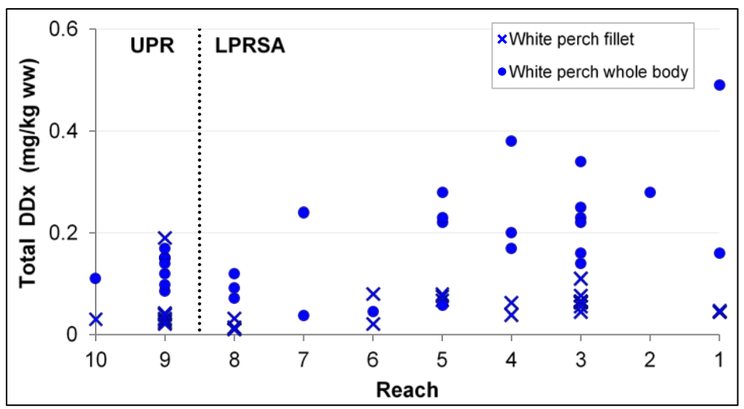
c. Bullhead and catfish



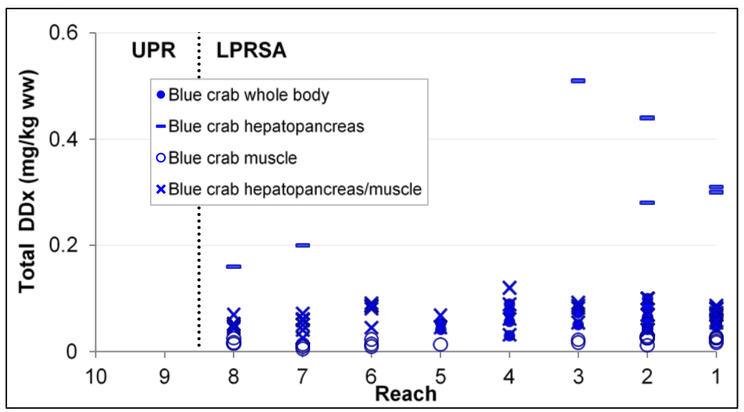
d. Carp and white sucker



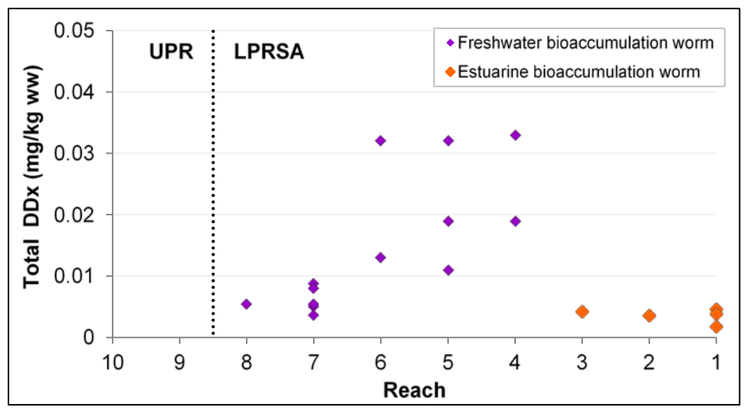
e. Small forage fish



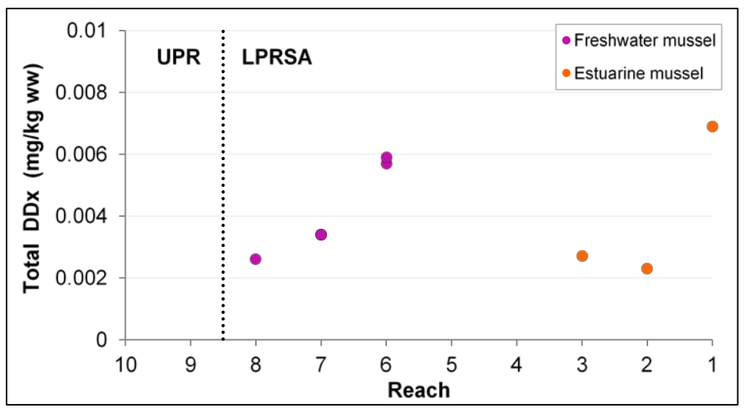
f. White perch



g. Blue crab



h. Bioaccumulation tissue



i. Caged bivalves

Figure 21
Concentrations of Total DDx in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

Whole body and whole body (calc)

Fillet (with skin)

Total DDx (µg/kg)
- > 330
- > 250 and ≤ 330
- > 170 and ≤ 250
- > 120 and ≤ 170
- ≤ 120

(Percentile)
- (> 90th)
- (> 75th and ≤ 90th)
- (> 50th and ≤ 75th)
- (> 25th and ≤ 50th)
- (≤ 25th)

River mile
Sampling reach boundary
Mudflat
Gravel with fines
LPRSA

0 2,000 4,000 6,000 Feet

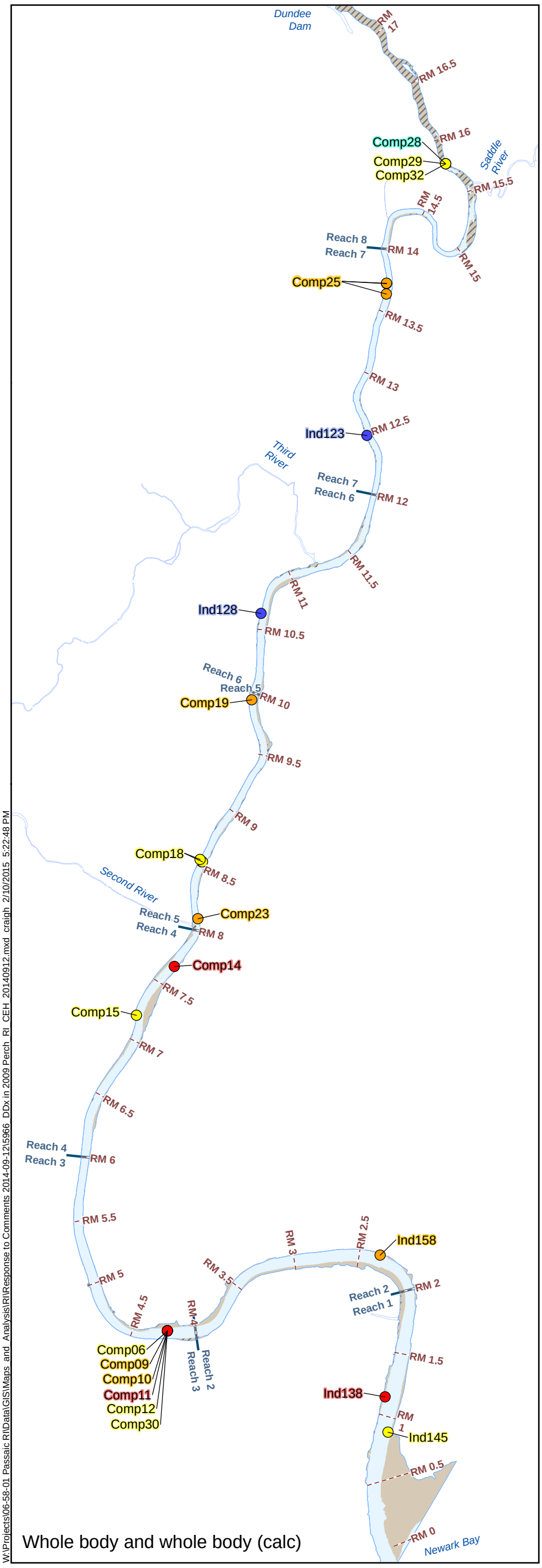
All samples were detected.

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Figure 22
Concentrations of Total DDx in American Eel Tissue by LPRSA
Location Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

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Total DDx (µg/kg) (Percentile)

- > 280 (> 90th)
- > 220 and ≤ 280 (> 75th and ≤ 90th)
- > 79 and ≤ 220 (> 50th and ≤ 75th)
- > 51 and ≤ 79 (> 25th and ≤ 50th)
- ≤ 51 (≤ 25th)

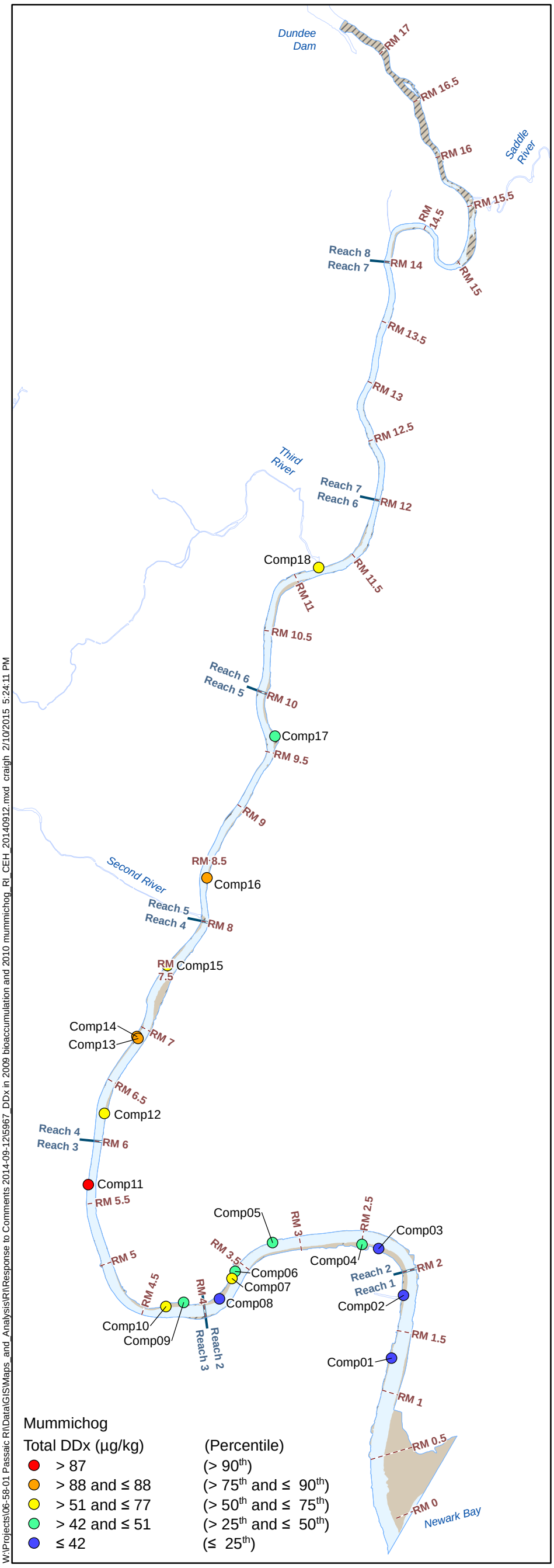
Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite. All samples were detected.

Figure 23
Concentrations of Total DDx in White Perch Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



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Sampling reach boundary
River mile
Mudflat
LPRSA
Gravel with fines

0 5,000 10,000 Feet

Figure 24

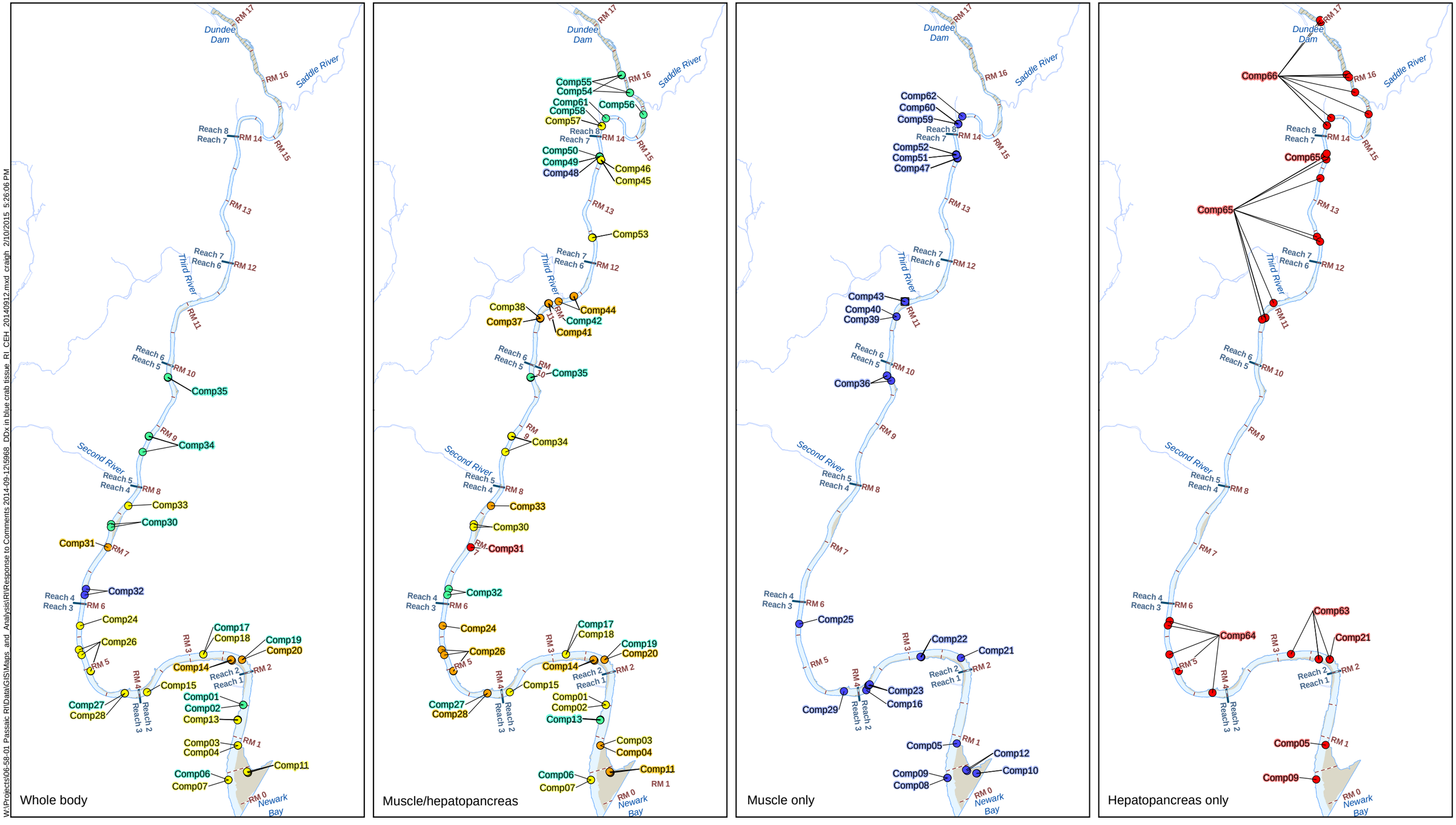
Concentrations of Total DDx in Mummichog and Bioaccumulation Worm Tissue by LPRSA Location

Remedial Investigation Report

Lower Passaic River Study Area Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\Response to Comments 2014-09-12\5968 DDx in blue crab tissue_RI_CEH_20140912.mxd craigh 2/10/2015 5:26:06 PM



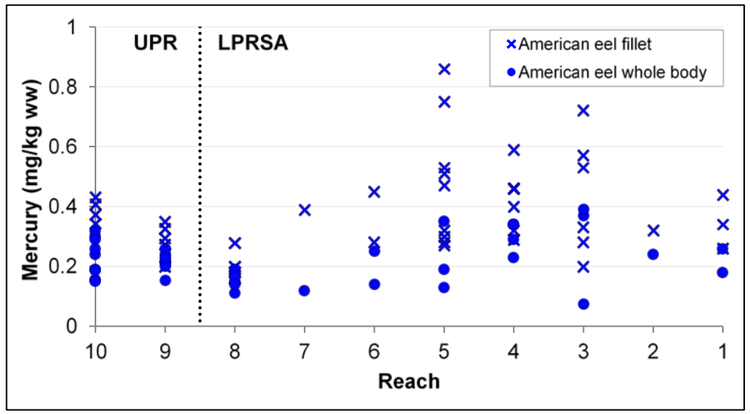
Sampling reach boundary
Mudflat
Gravel with fines
0 4,000 8,000 Feet
River mile
LPRSA

All samples were detected.
The percentile is based on the combined data from all four tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

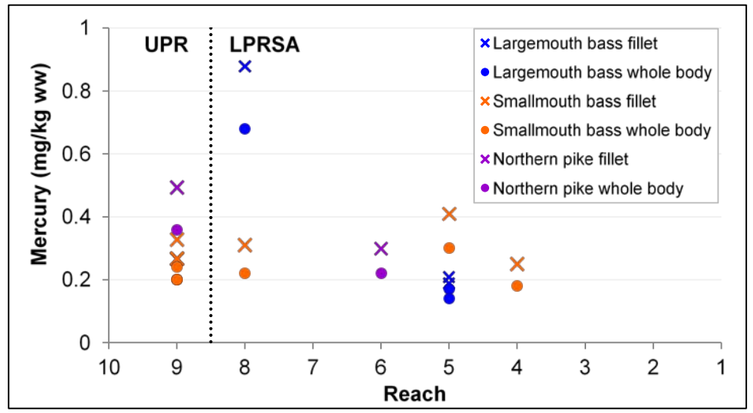
Total DDx (µg/kg)	(Percentile)
> 100	(> 90th)
> 81 and ≤ 100	(> 75th and ≤ 90th)
> 58 and ≤ 81	(> 50th and ≤ 75th)
> 31 and ≤ 58	(> 25th and ≤ 50th)
≤ 31	(≤ 25th)
Non-detected	

Figure 25
Concentrations of Total DDx in Blue Crab Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

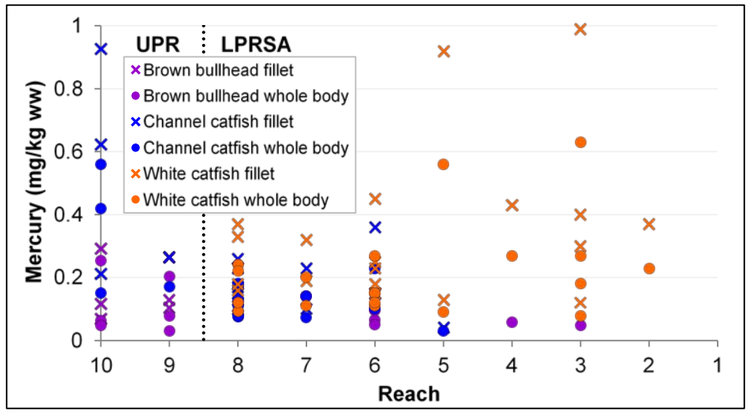
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



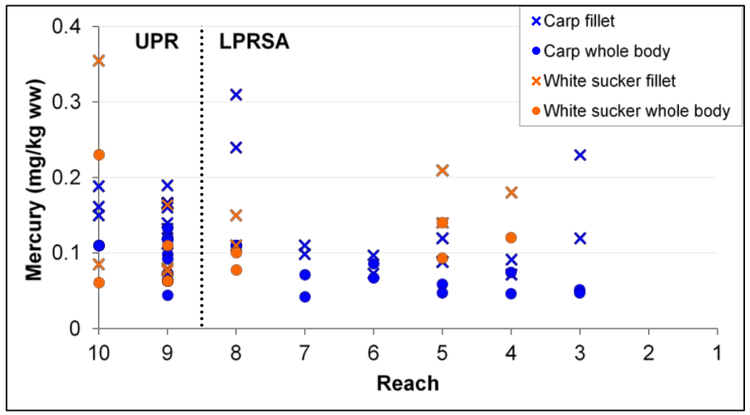
a. American eel



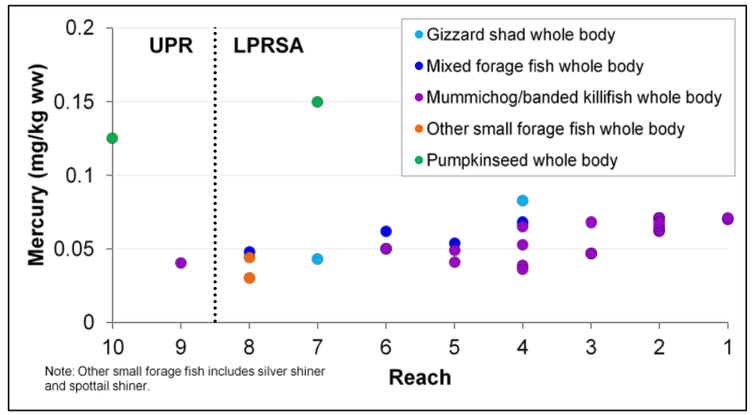
b. Bass and pike



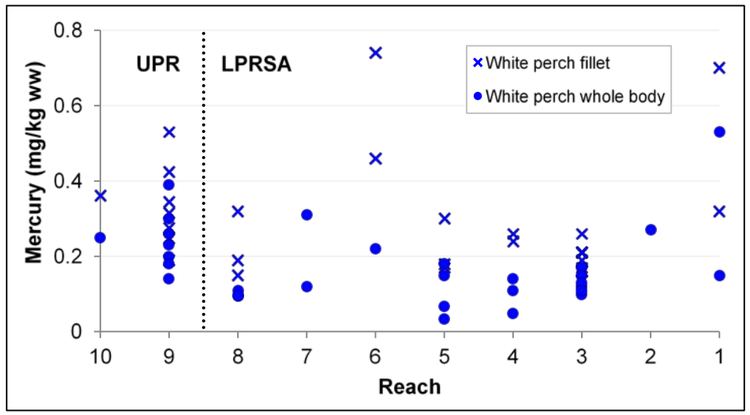
c. Bullhead and catfish



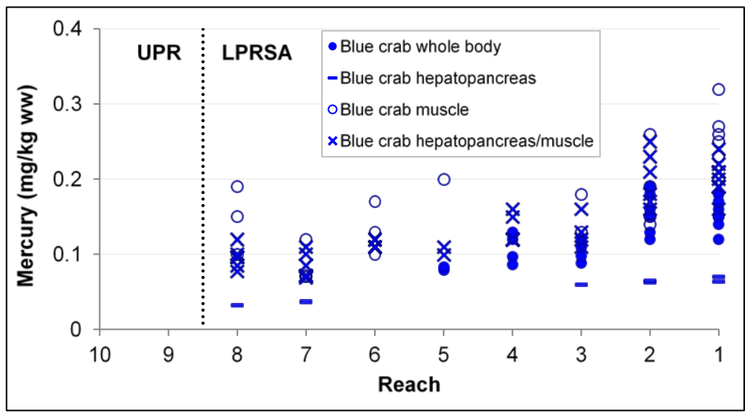
d. Carp and white sucker



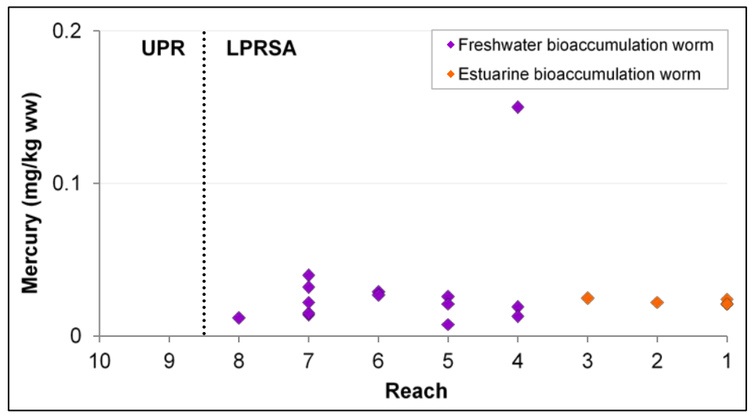
e. Small forage fish



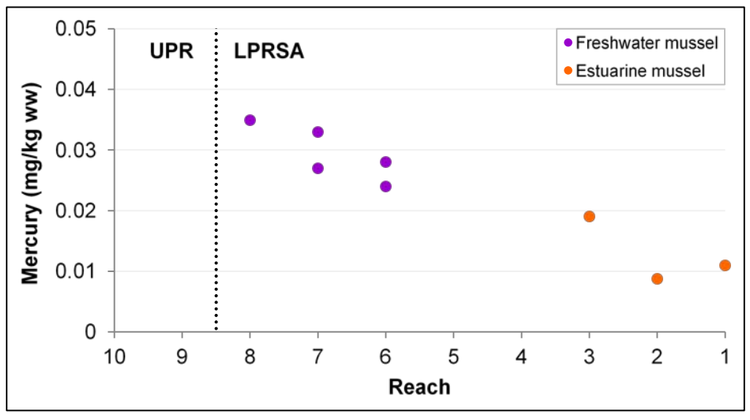
f. White perch



g. Blue crab

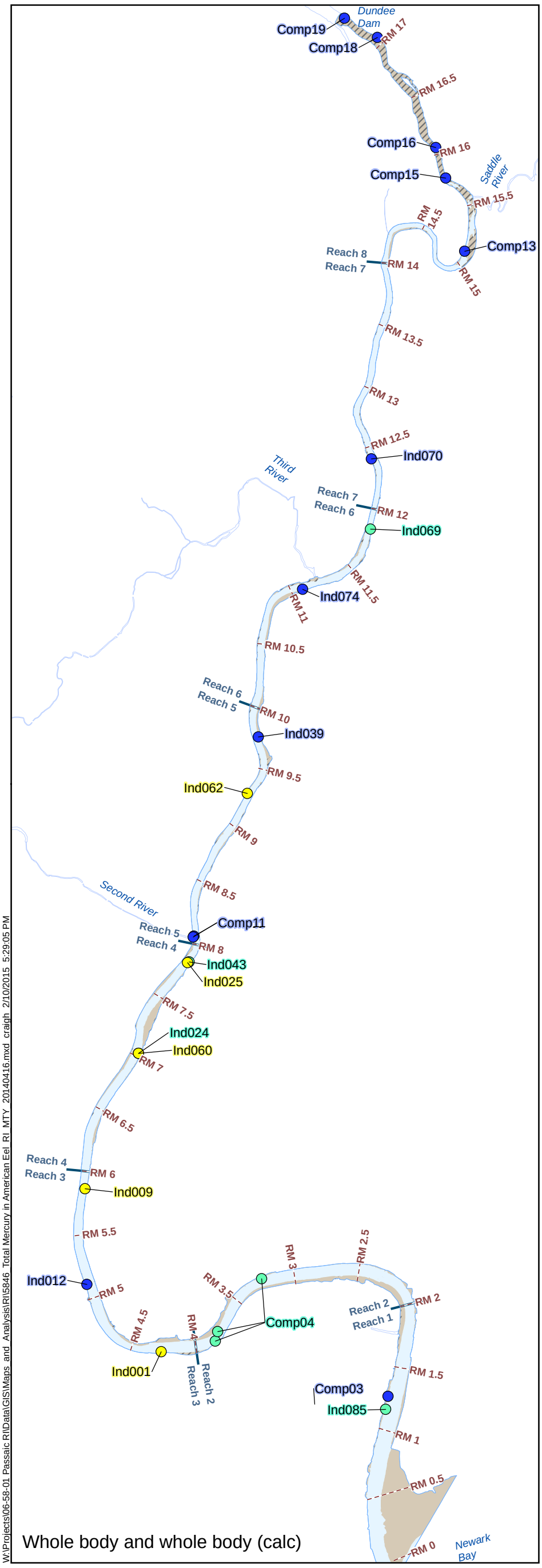


h. Bioaccumulation tissue



i. Caged bivalves

Figure 26
Concentrations of Mercury in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5846 Total Mercury in American Eel RI MTY 20140416.mxd craigh 2/10/2015 5:29:05 PM

Mercury (µg/kg) / (Percentile)

- > 554 (> 90th)
- > 420 and ≤ 554 (> 75th and ≤ 90th)
- > 290 and ≤ 420 (> 50th and ≤ 75th)
- > 190 and ≤ 290 (> 25th and ≤ 50th)
- ≤ 190 (≤ 25th)

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

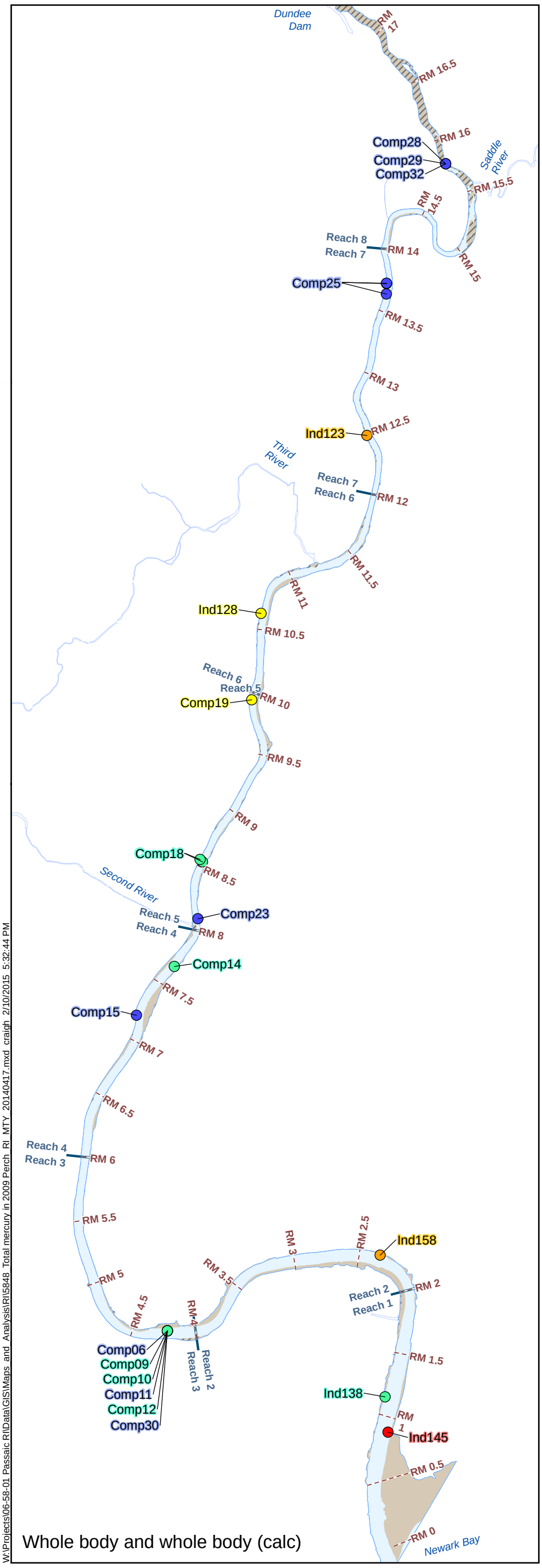
0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite. All samples were detected.

Figure 27

Concentrations of Total Mercury in American Eel Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5848 Total mercury in 2009 Perch RI MTY 20140417.mxd craigh 2/10/2015 5:32:44 PM

Mercury (µg/kg)	(Percentile)
> 432	(> 90th)
> 260 and ≤ 432	(> 75th and ≤ 90th)
> 170 and ≤ 260	(> 50th and ≤ 75th)
> 120 and ≤ 170	(> 25th and ≤ 50th)
≤ 120	(≤ 25th)

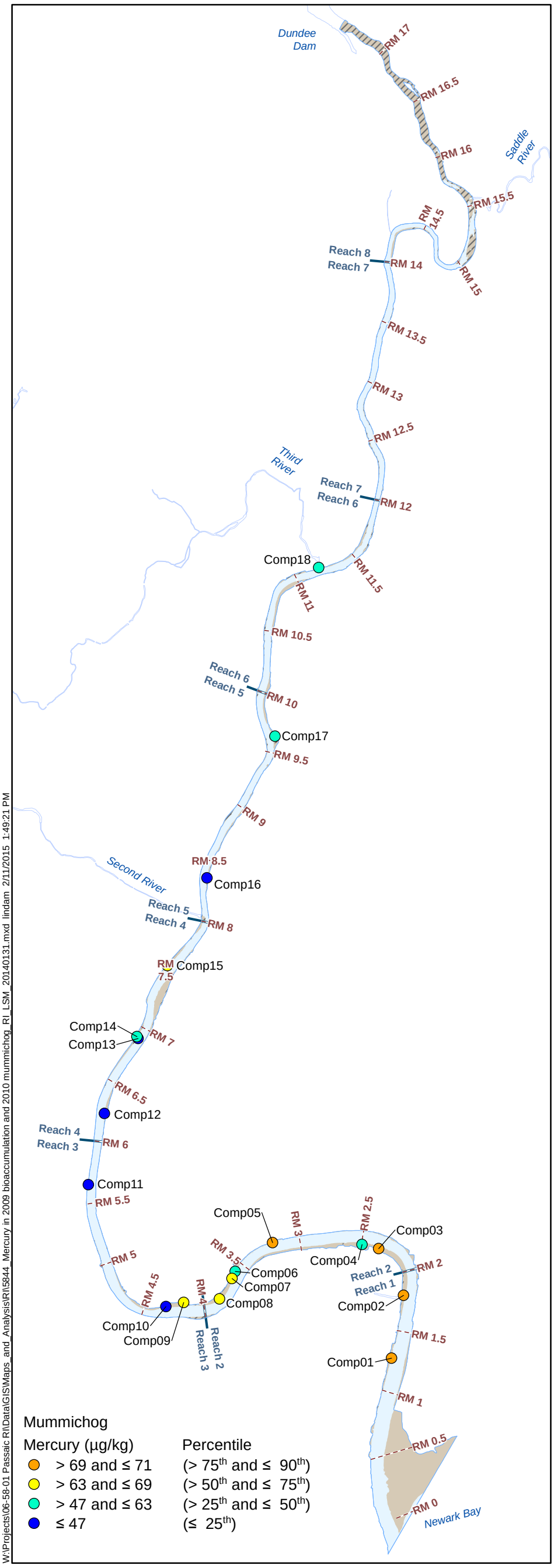
Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite. All samples were detected.

Figure 28
Concentrations of Total Mercury in White Perch tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

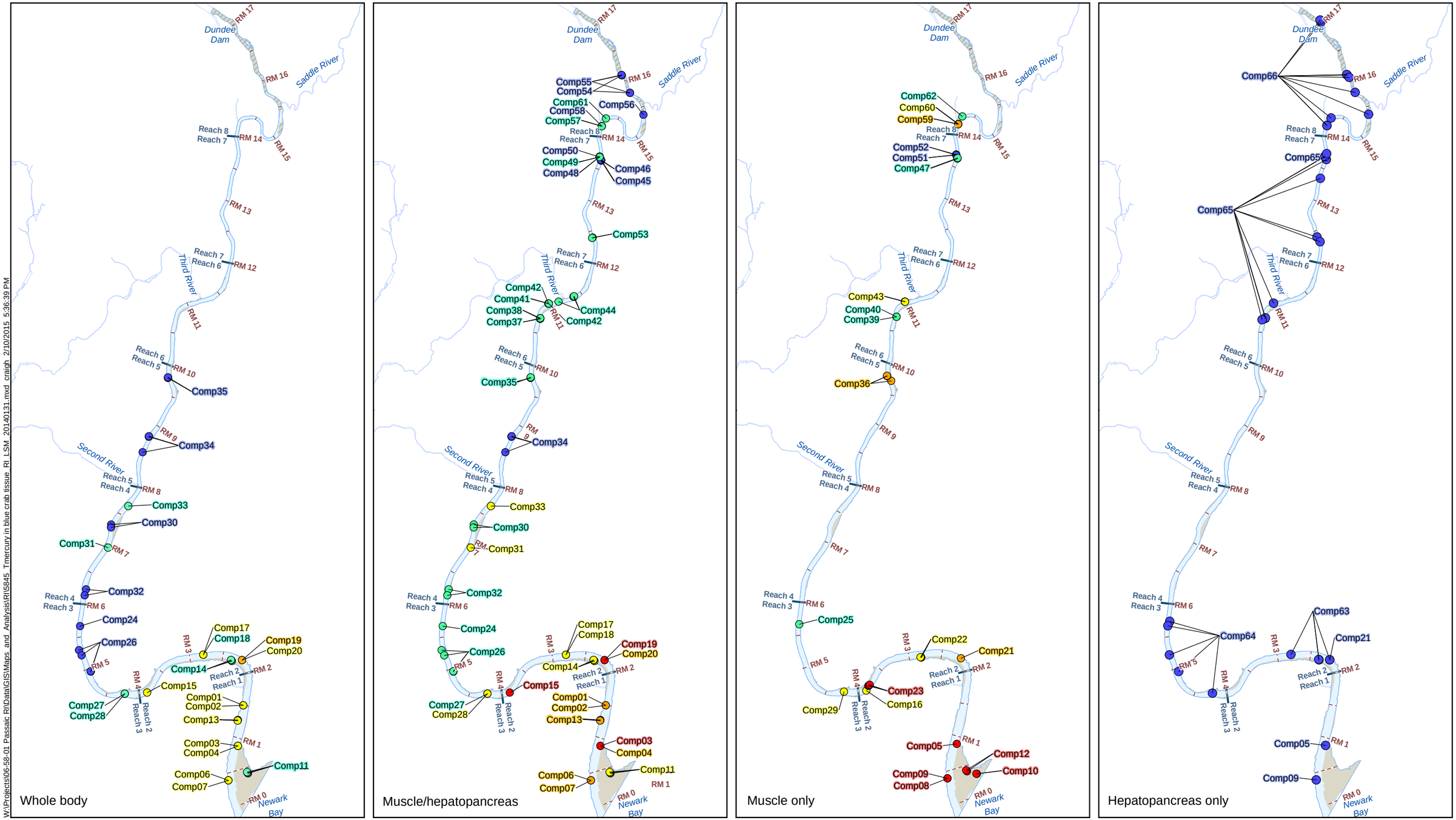


W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5844 Mercury in 2009 bioaccumulation and 2010 mummichog_RI_LSM_20140131.mxd lindam 2/11/2015 1:49:21 PM

Figure 29

Concentrations of Total Mercury in Mummichog and Bioaccumulation Worm Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

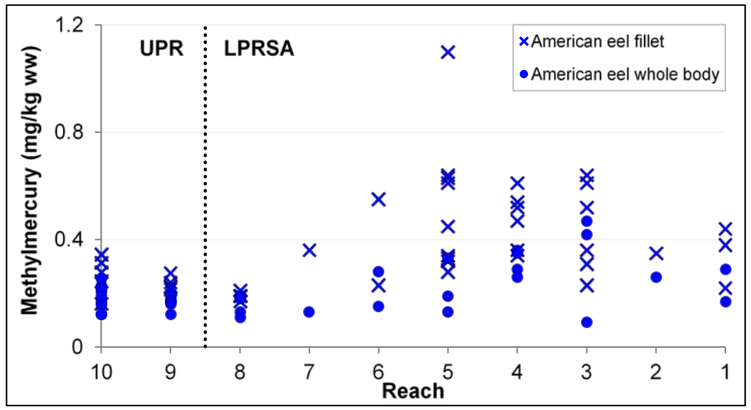


W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5845_Tmercury in blue crab tissue_RI_LSM_20140131.mxd craigh 2/10/2015 5:36:39 PM

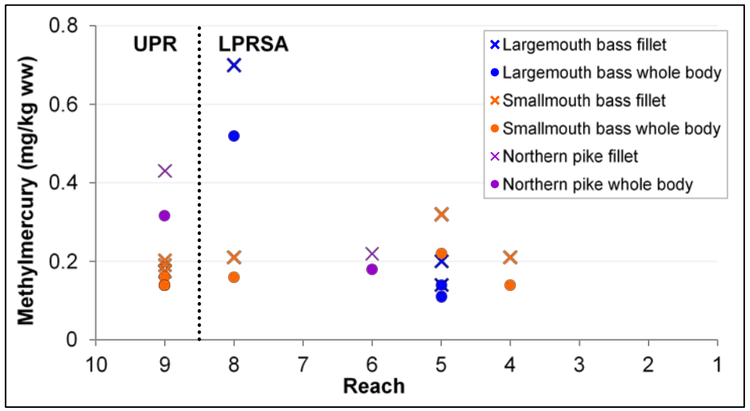
All samples were detected.
The percentile is based on the combined data from all four tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Figure 30
Concentrations of Total Mercury in Blue Crab Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

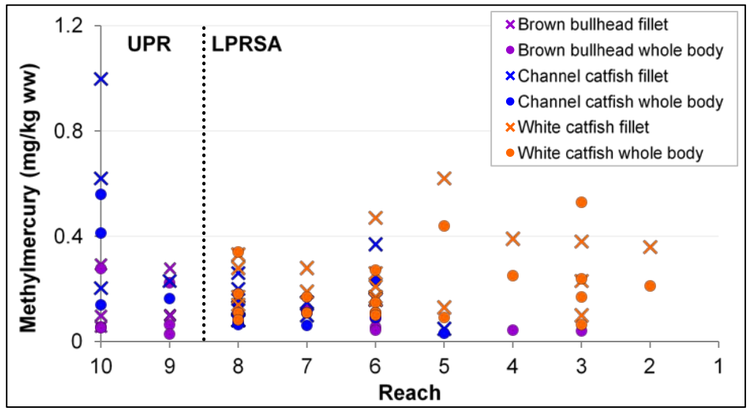
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



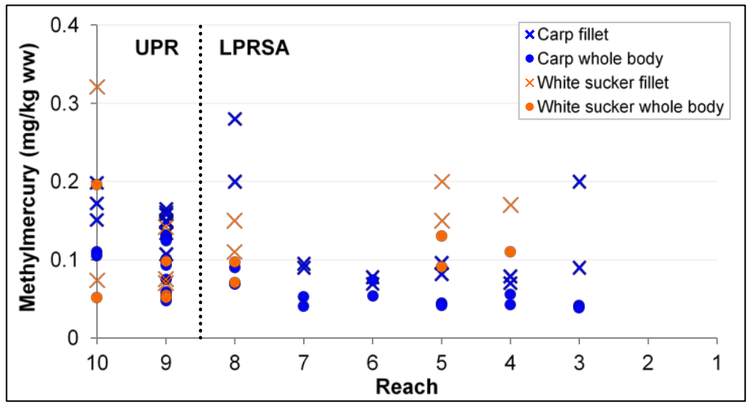
a. American eel



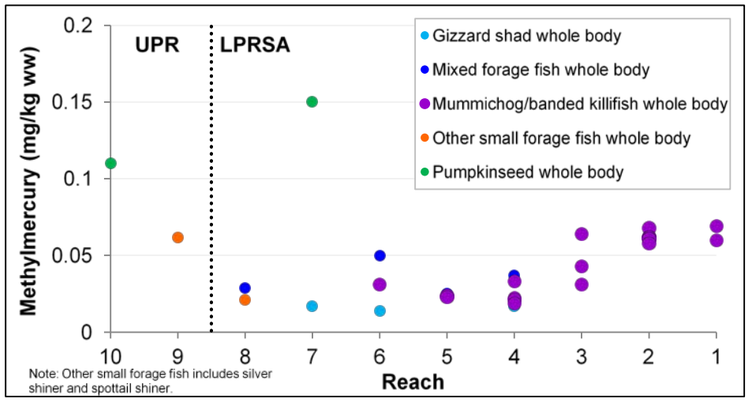
b. Bass and pike



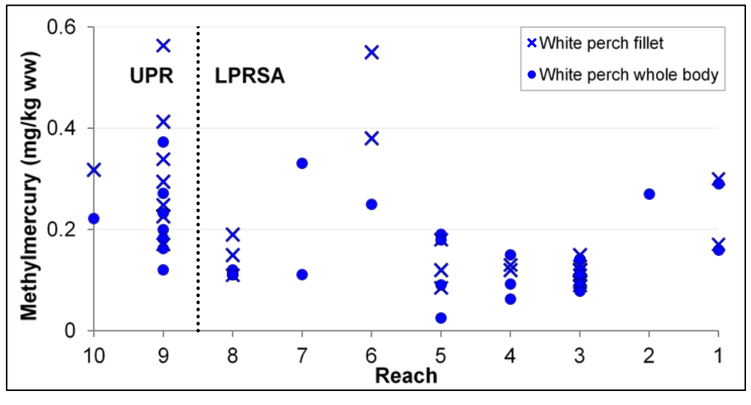
c. Bullhead and catfish



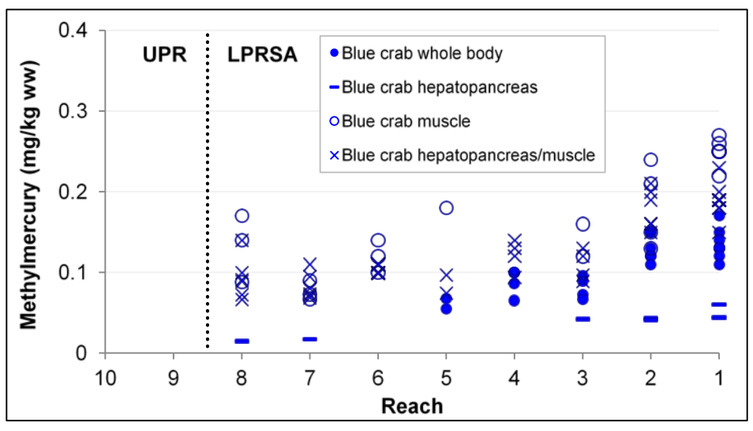
d. Carp and white sucker



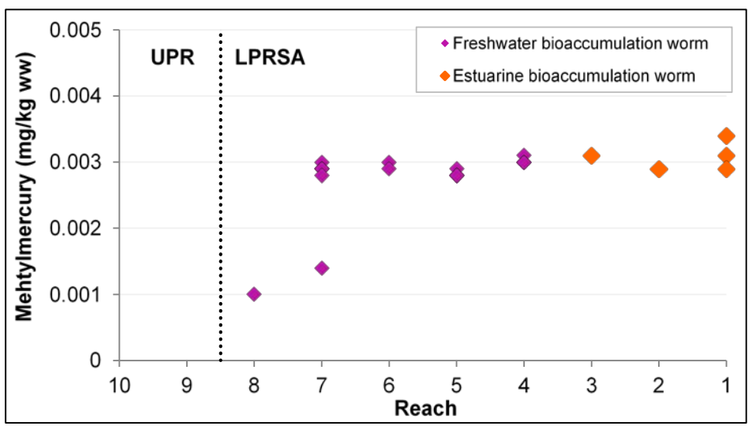
e. Small forage fish



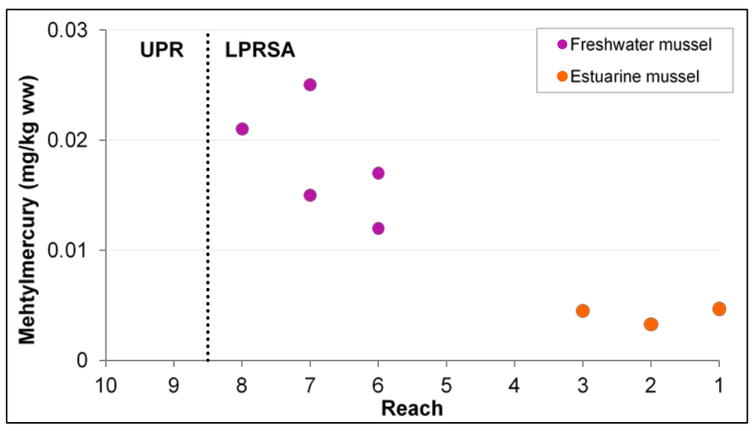
f. White perch



g. Blue crab

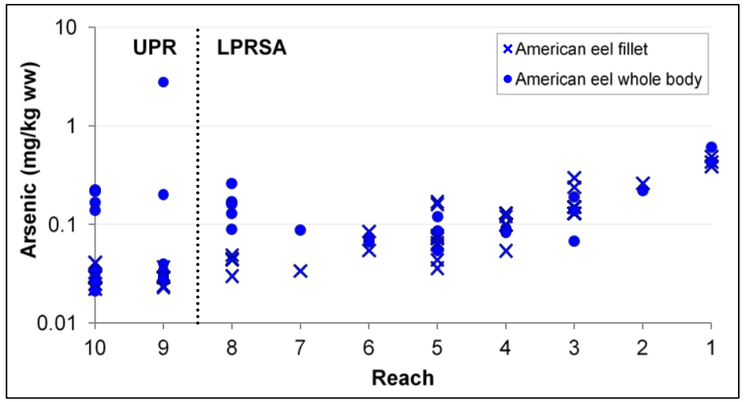


h. Bioaccumulation tissue

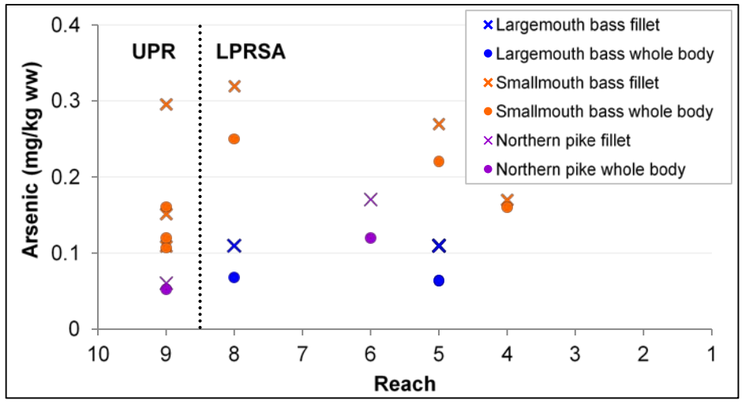


i. Caged bivalves

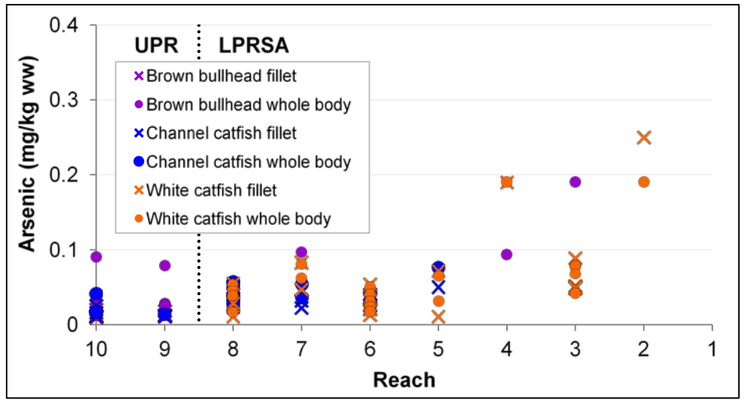
Figure 31
Concentrations of Methylmercury in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



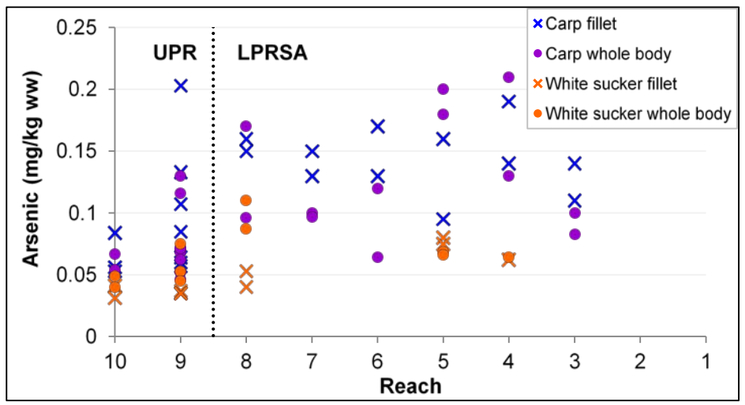
a. American eel



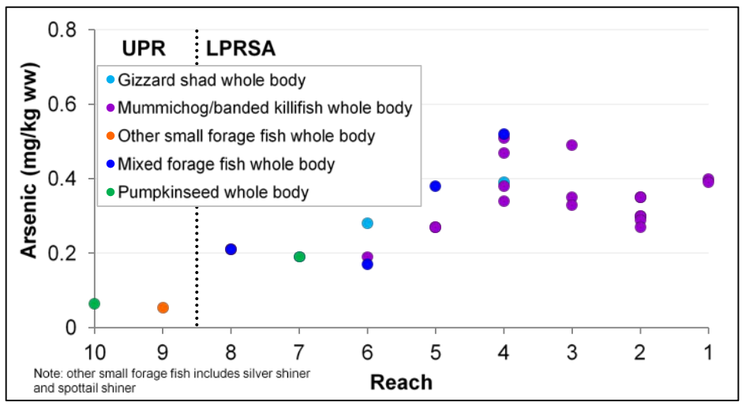
b. Bass and pike



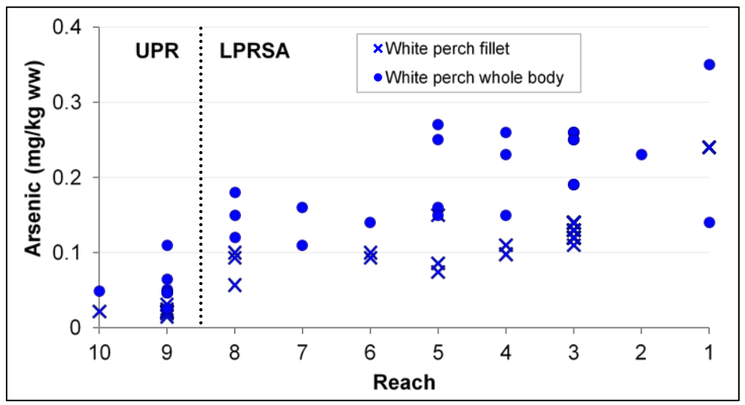
c. Bullhead and catfish



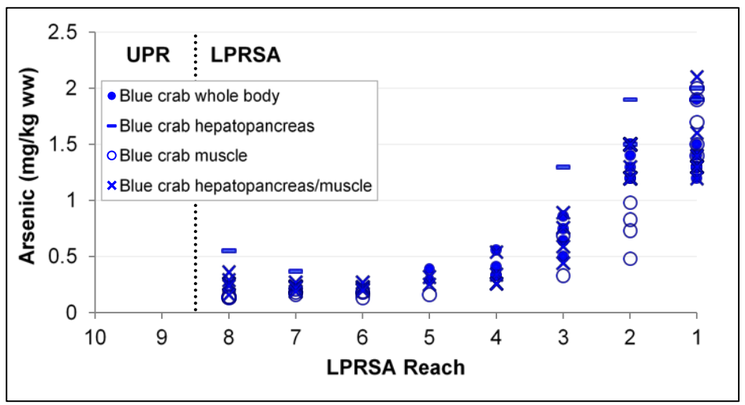
d. Carp and white sucker



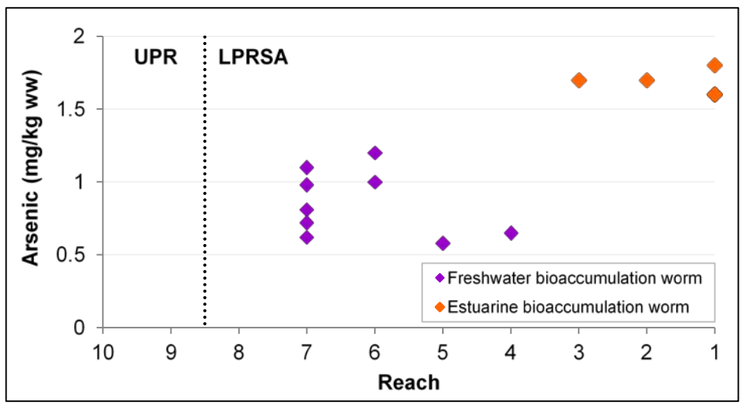
e. Small forage fish



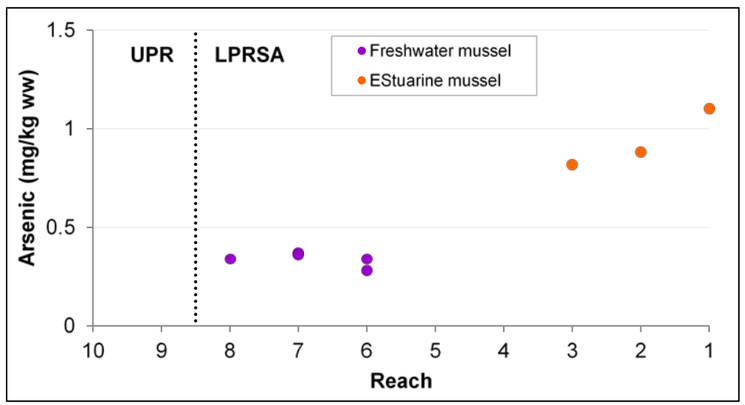
f. White perch



g. Blue crab

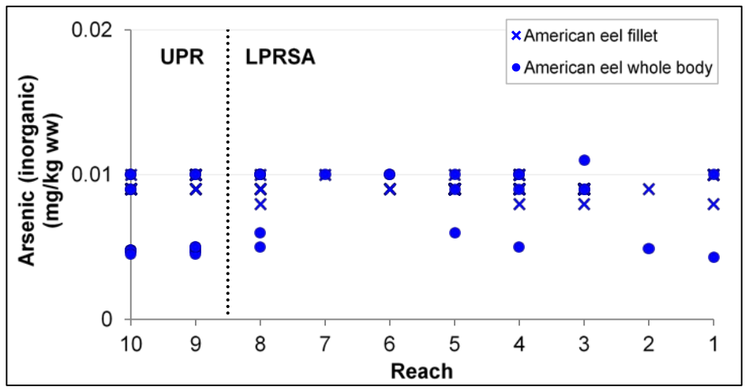


h. Bioaccumulation tissue

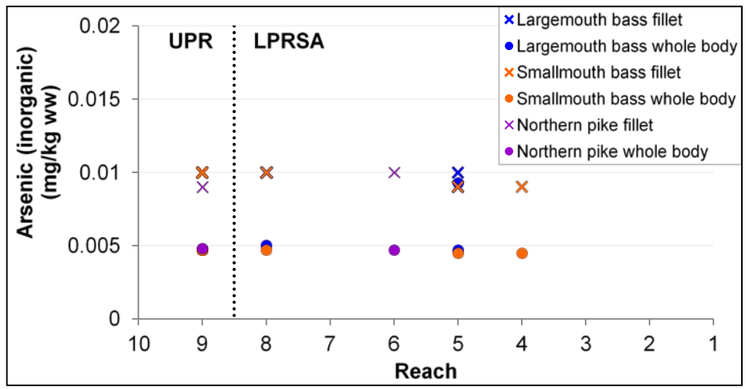


i. Caged bivalves

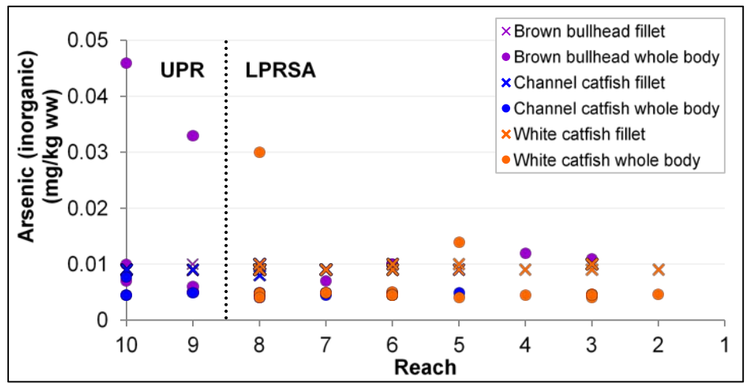
Figure 32
Concentrations of Arsenic in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



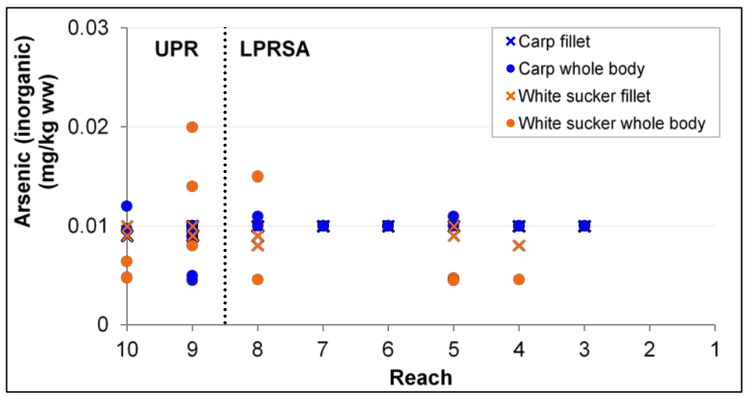
a. American eel



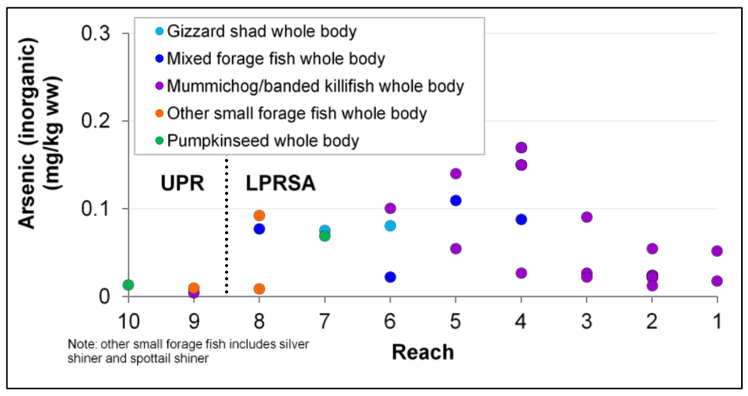
b. Bass and pike



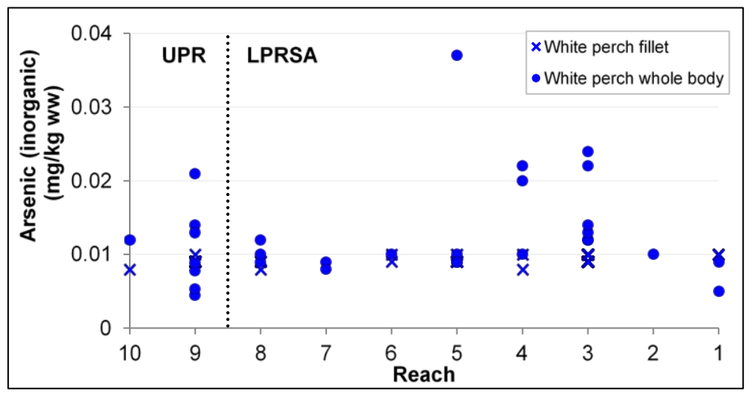
c. Bullhead and catfish



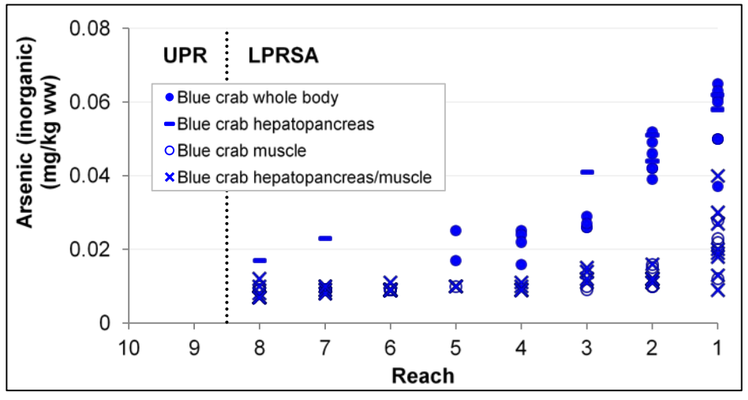
d. Carp and white sucker



e. Small forage fish

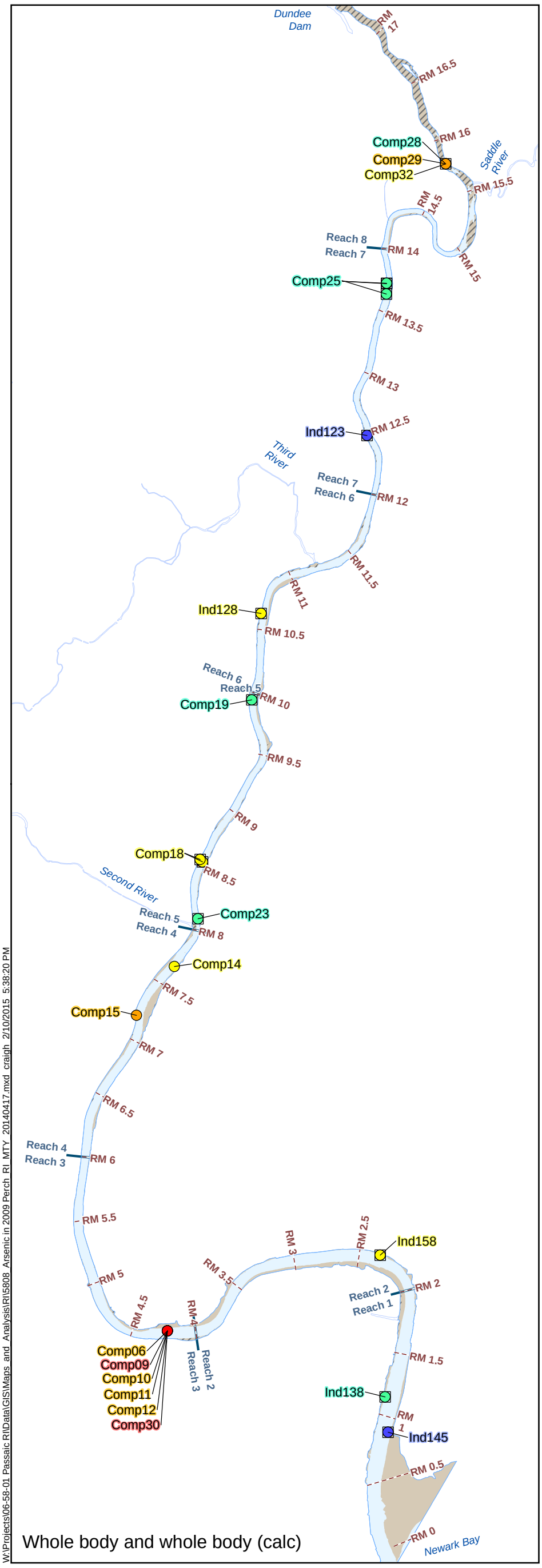


f. White perch



g. Blue crab

Figure 33
Concentrations of Inorganic Arsenic in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5808 Arsenic in 2009 Perch RI MTY 20140417.mxd craigh 2/10/2015 5:38:20 PM

Arsenic (inorganic) (mg/kg) (Percentile)

- > 0.022 (> 90th)
- > 0.011 and ≤ 0.022 (> 75th and ≤ 90th)
- > 0.010 and ≤ 0.011 (> 50th and ≤ 75th)
- > 0.0090 and ≤ 0.010 (> 25th and ≤ 50th)
- ≤ 0.0090 (≤ 25th)
- Non-detected

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

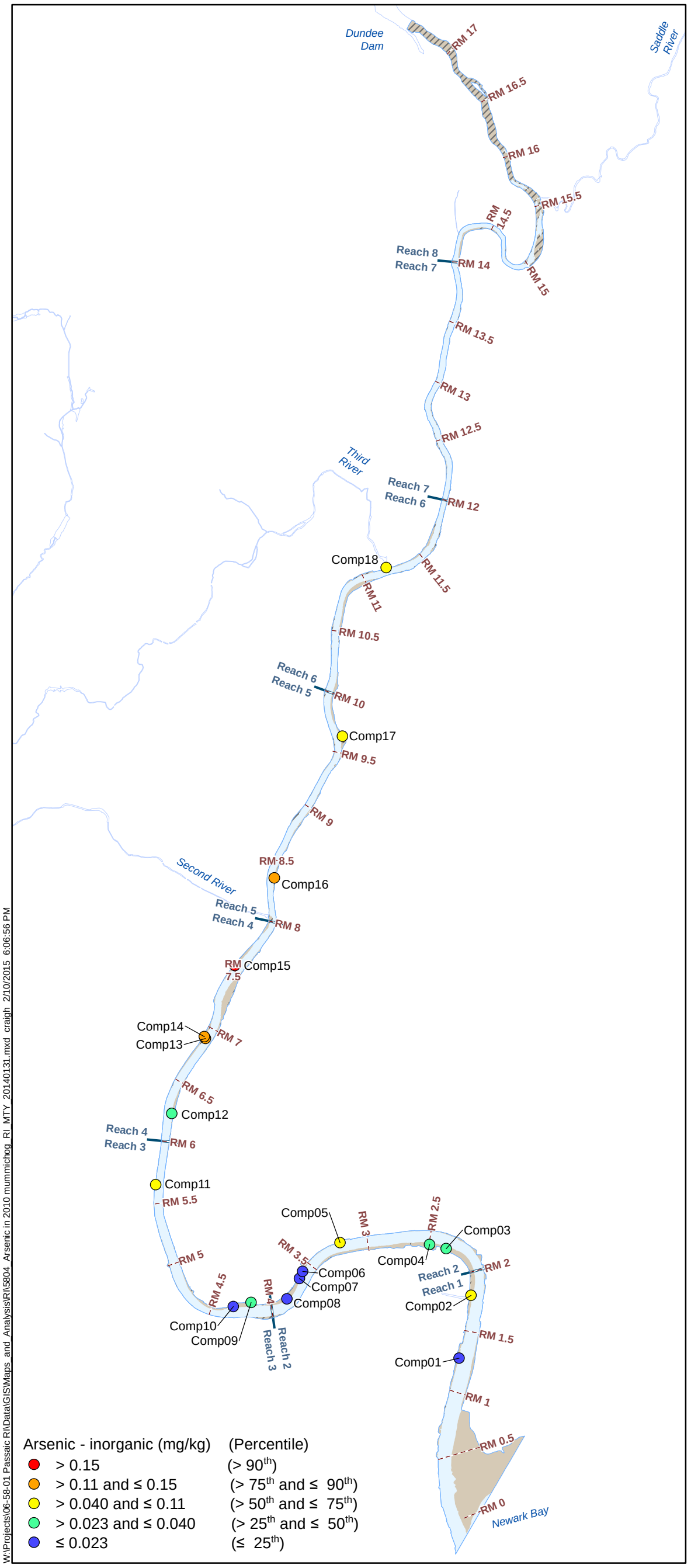
0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Figure 34

Concentrations of Inorganic Arsenic in White Perch Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



River mile
Sampling reach boundary
Mudflat
Gravel with fines
LPRSA

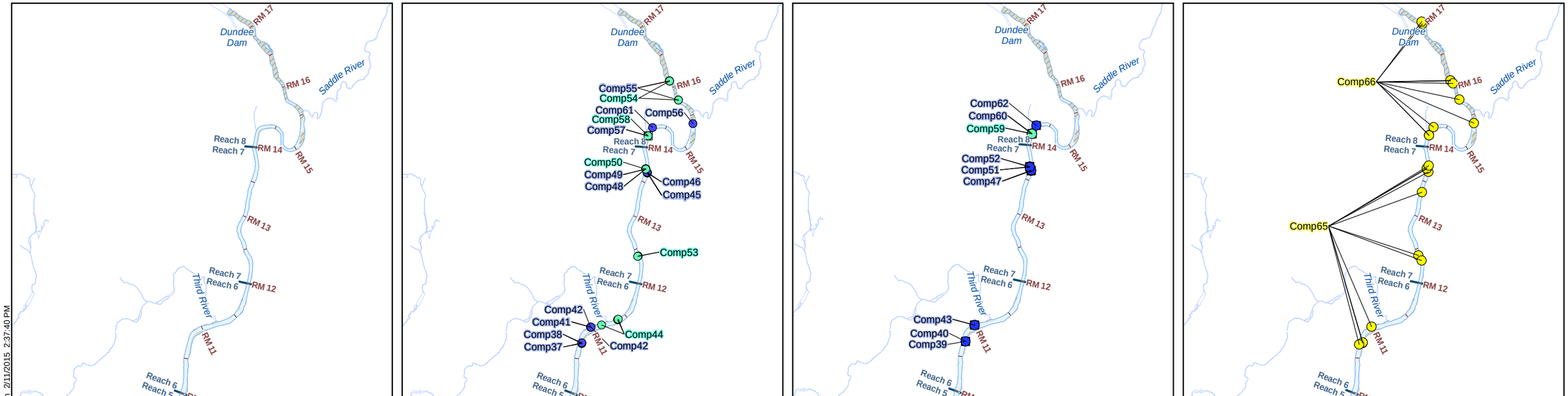
0 5,000 10,000 Feet

Figure 35

Concentrations of Inorganic Arsenic in Mummichog Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5805_Arsenic in blue crab tissue_RI_LSM_20140131.mxd lindam 2/11/2015 2:37:40 PM



Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA
0 4,000 8,000
Feet

The percentile is based on the combined data from all four tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Arsenic (inorganic) (mg/kg) (Percentile)

- > 0.05 (> 90th)
- > 0.028 and ≤ 0.05 (> 75th and ≤ 90th)
- > 0.013 and ≤ 0.028 (> 50th and ≤ 75th)
- > 0.0090 and ≤ 0.013 (> 25th and ≤ 50th)
- ≤ 0.0090 (≤ 25th)

Non-detected

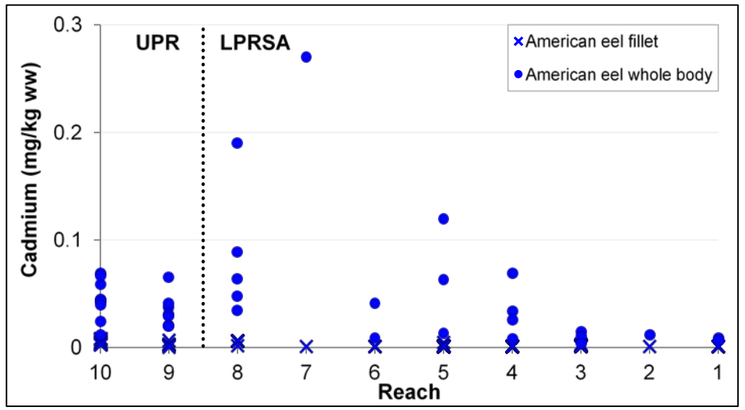
Figure 36

Concentrations of Inorganic Arsenic in Blue Crab Tissue by LPRSA Location

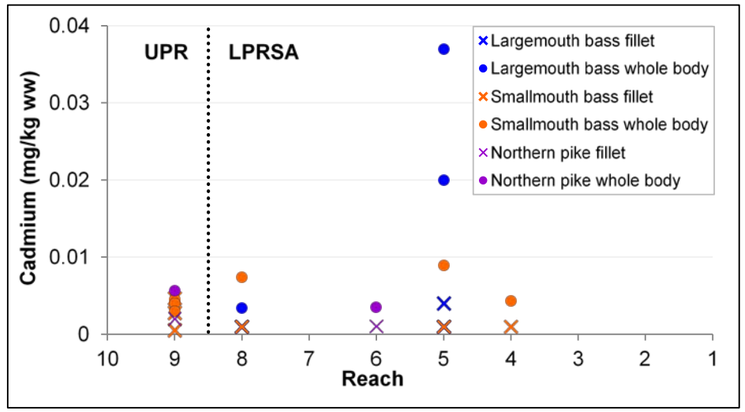
Remedial Investigation Report

Lower Passaic River Study Area Remedial Investigation/Feasibility Study

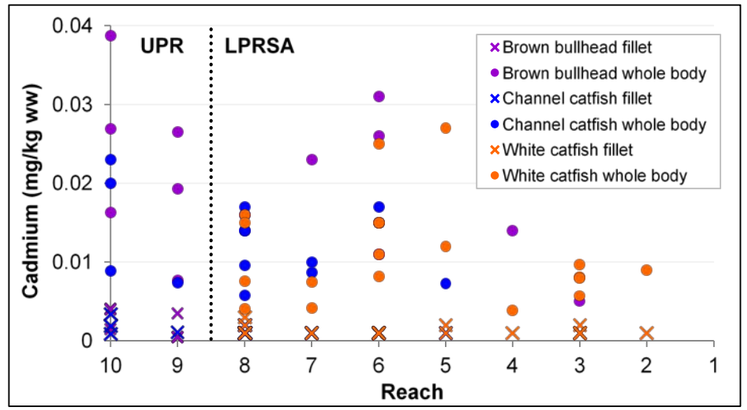
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



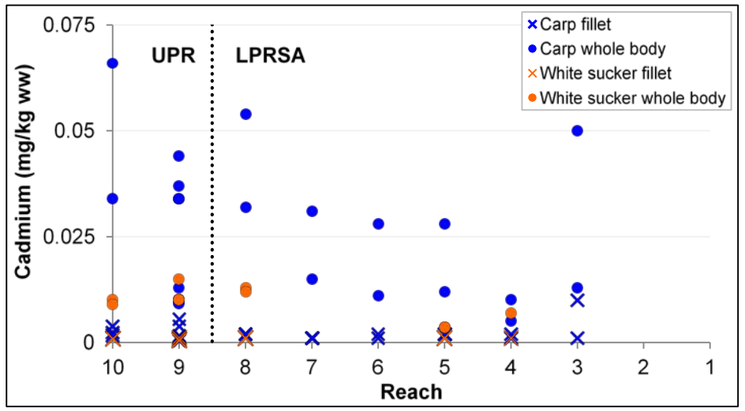
a. American eel



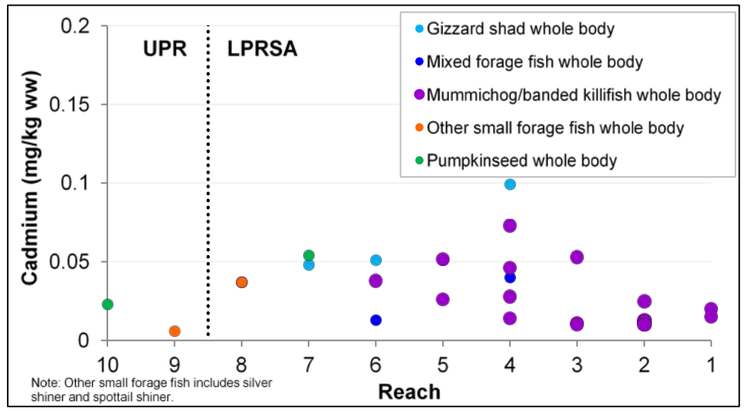
b. Bass and pike



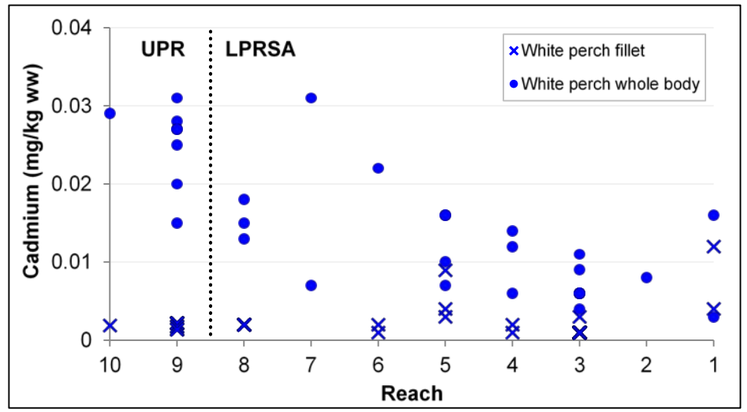
c. Bullhead and catfish



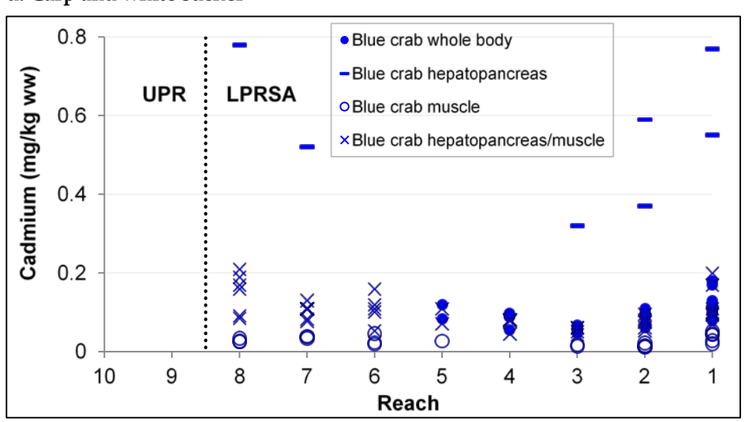
d. Carp and white sucker



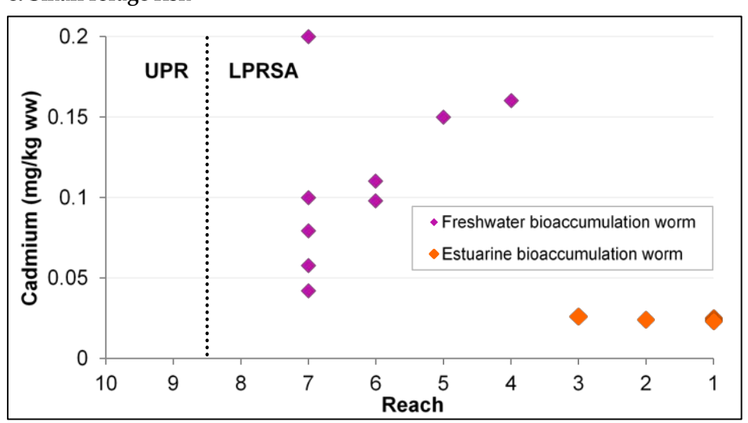
e. Small forage fish



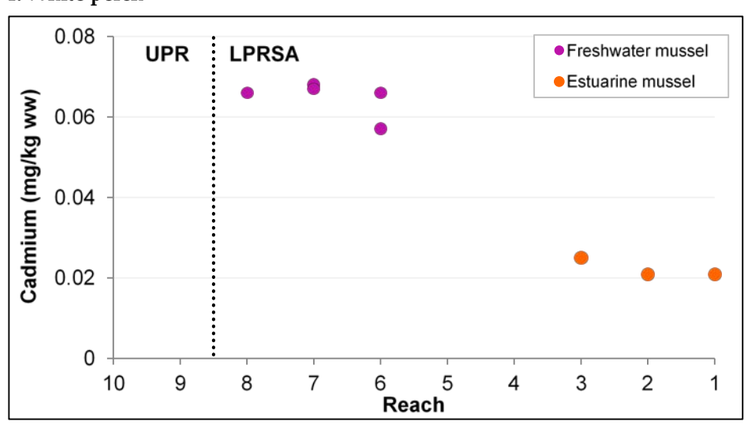
f. White perch



g. Blue crab

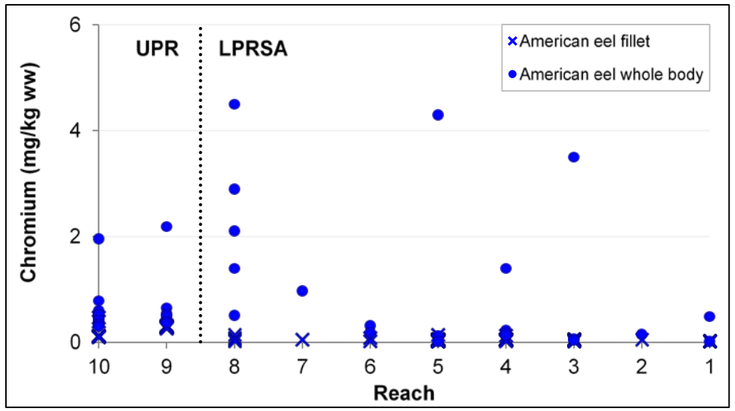


h. Bioaccumulation tissue

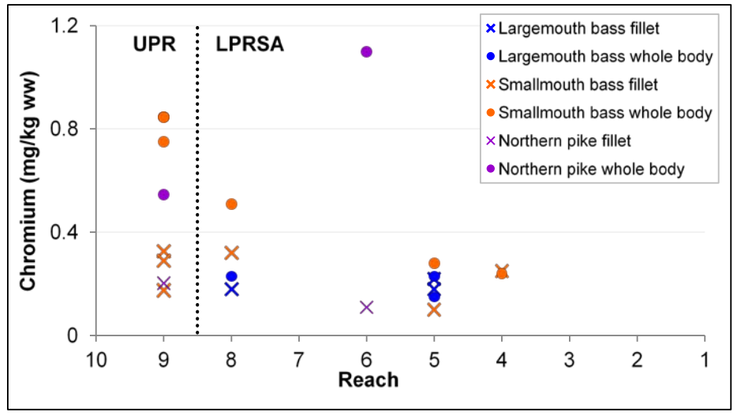


i. Caged bivalves

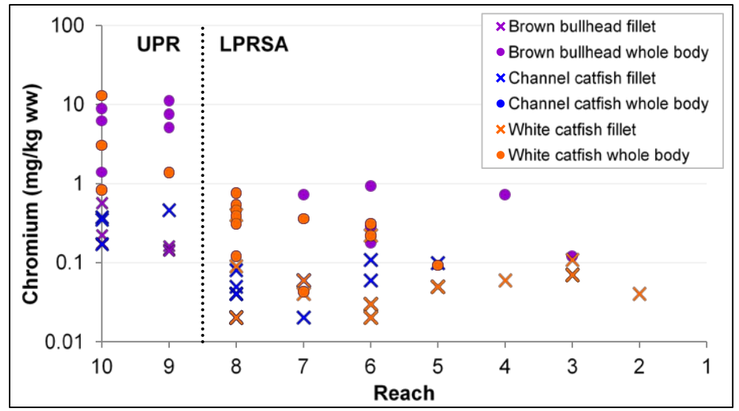
Figure 37
Concentrations of Cadmium in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



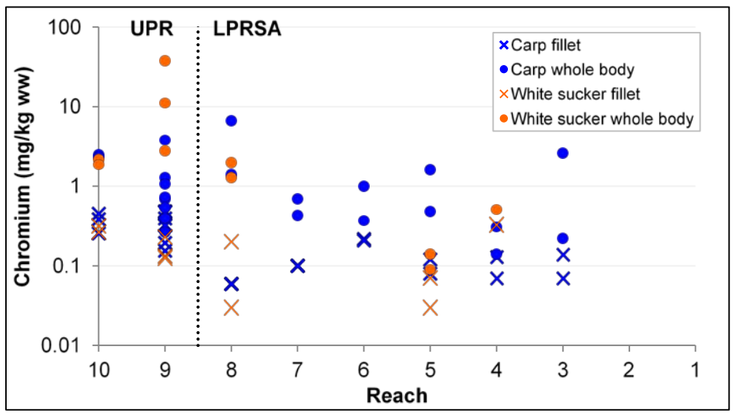
a. American eel



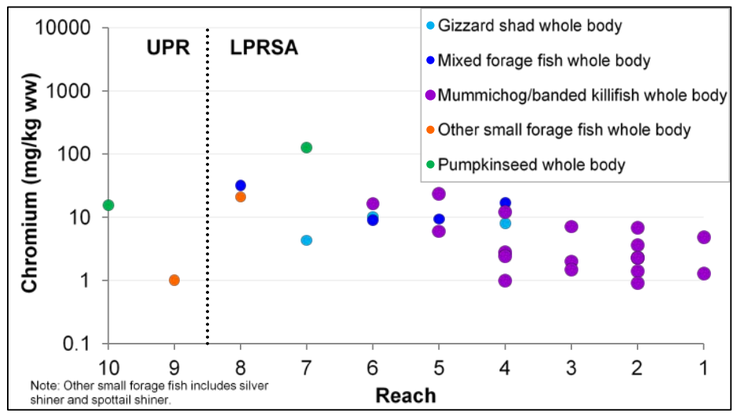
b. Bass and pike



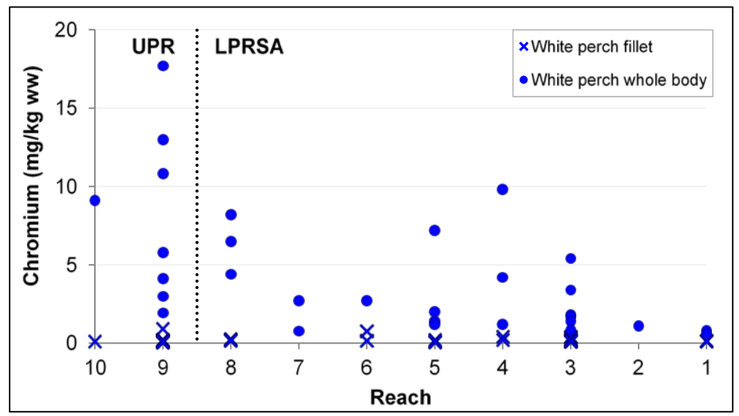
c. Bullhead and catfish



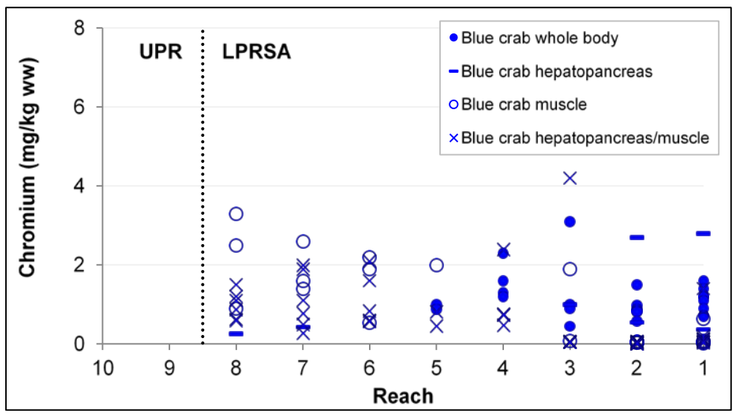
d. Carp and white sucker



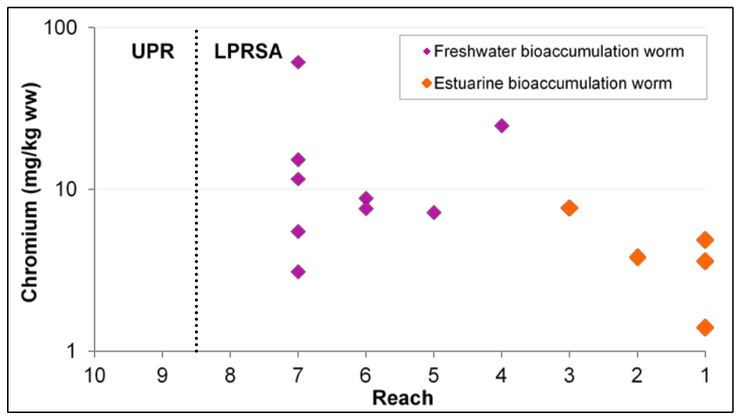
e. Small forage fish



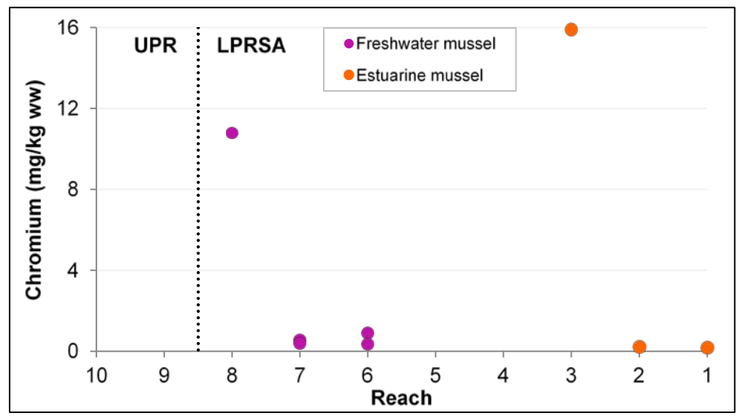
f. White perch



g. Blue crab

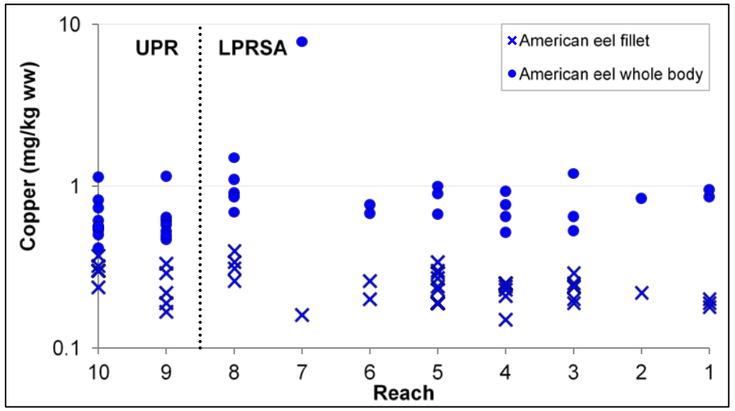


h. Bioaccumulation tissue

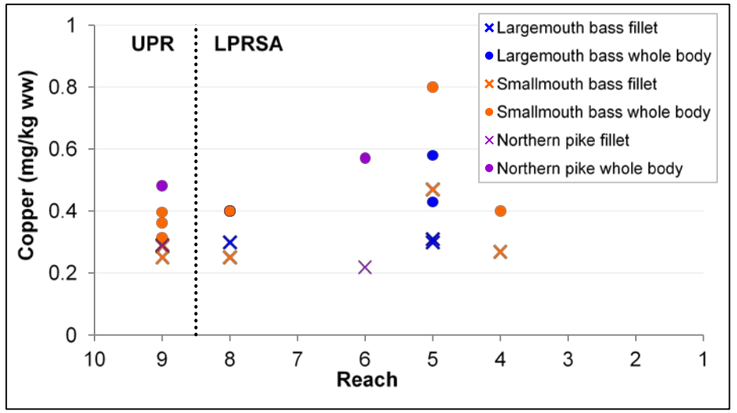


i. Caged bivalves

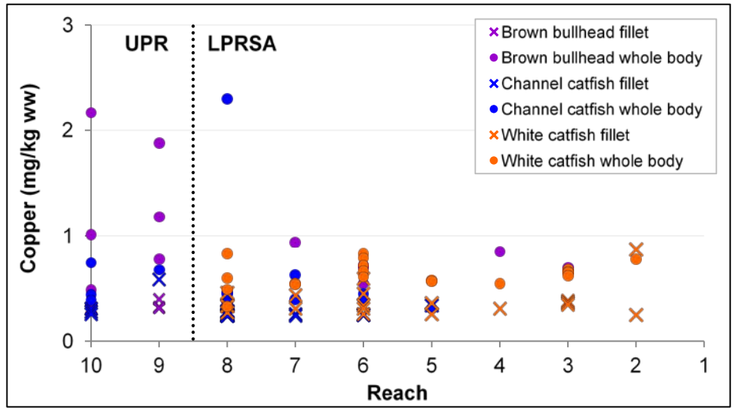
Figure 38
Concentrations of Chromium in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



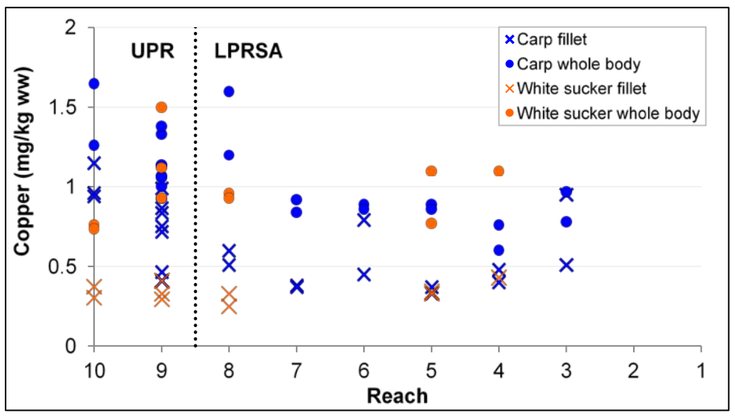
a. American eel



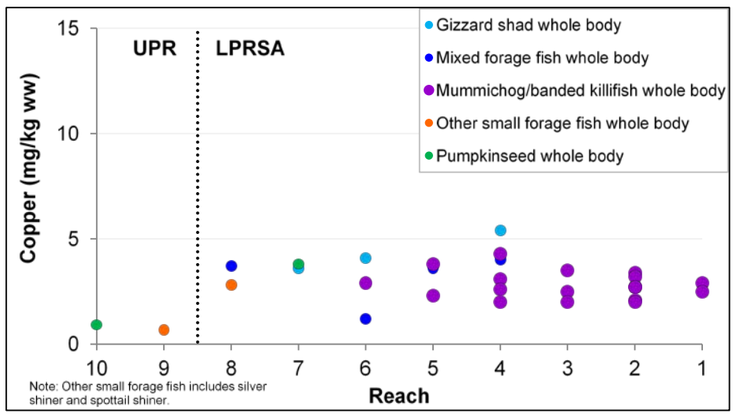
b. Bass and pike



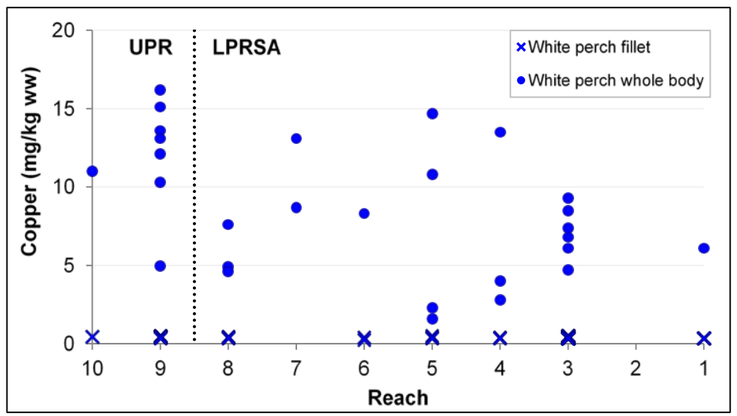
c. Bullhead and catfish



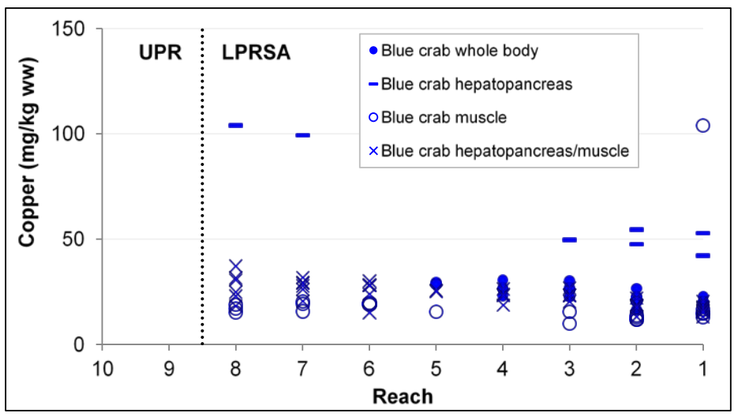
d. Carp and white sucker



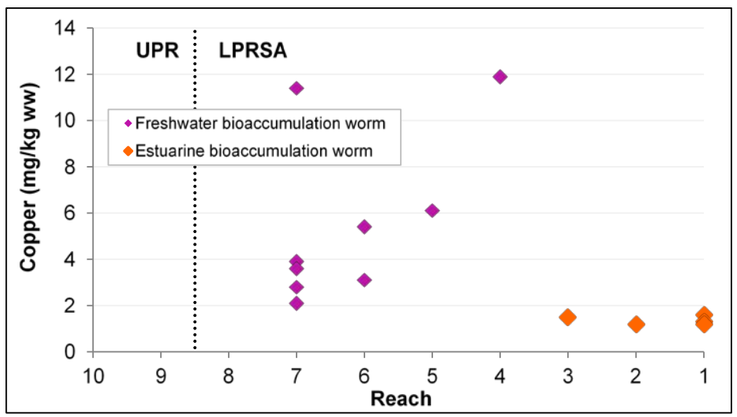
e. Small forage fish



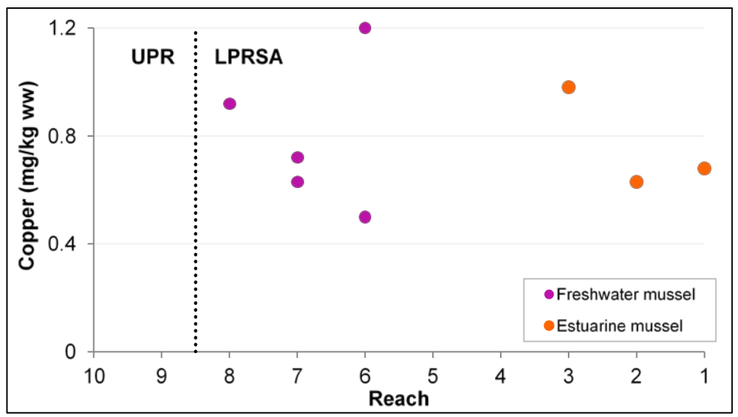
f. White perch



g. Blue crab

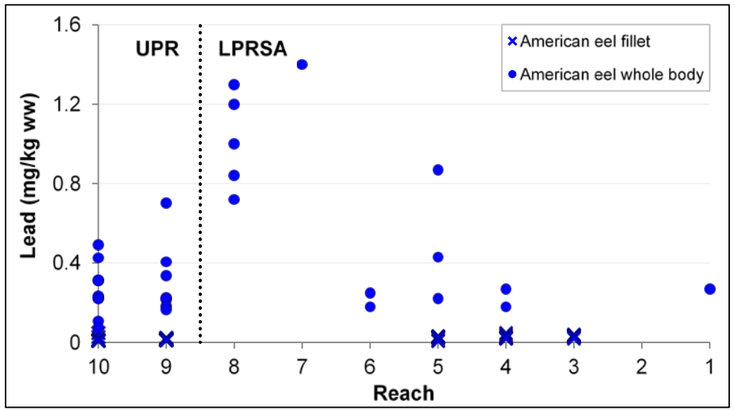


h. Bioaccumulation tissue

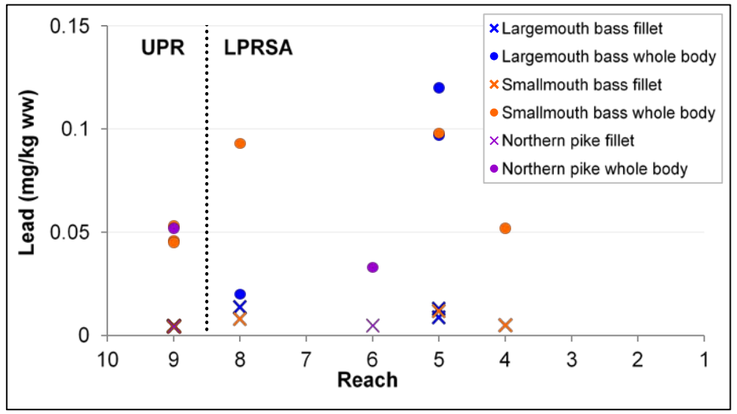


i. Caged bivalves

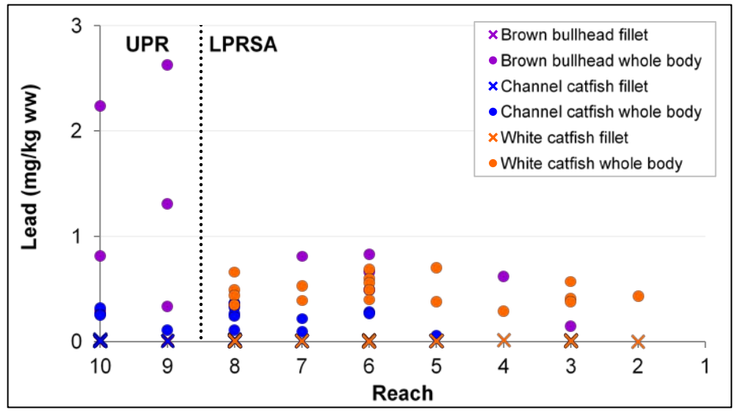
Figure 39
Concentrations of Copper in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



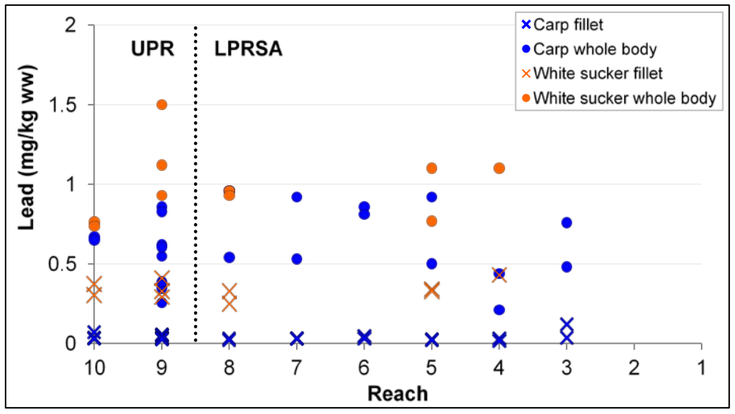
a. American eel



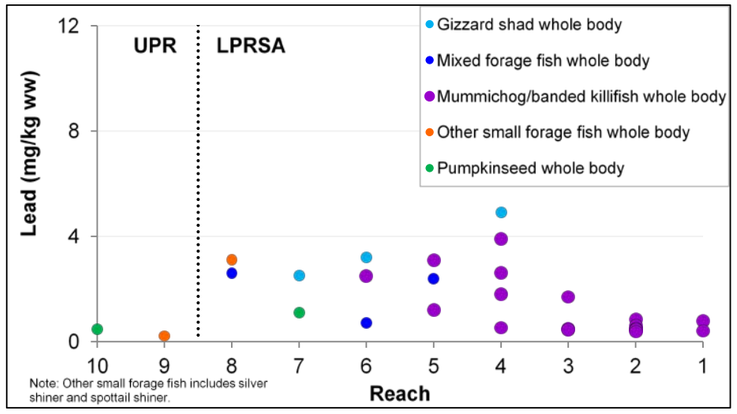
b. Bass and pike



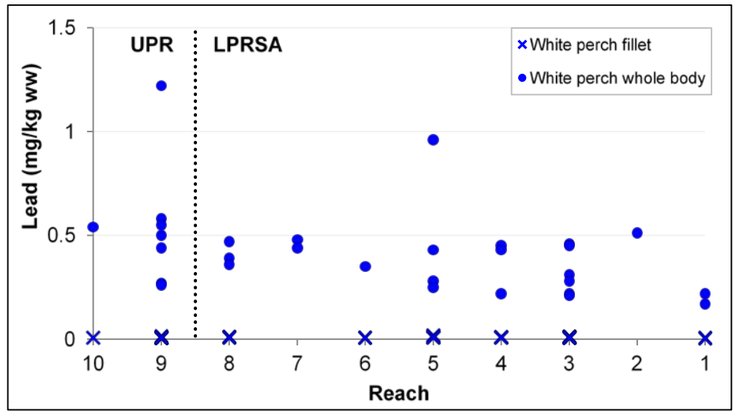
c. Bullhead and catfish



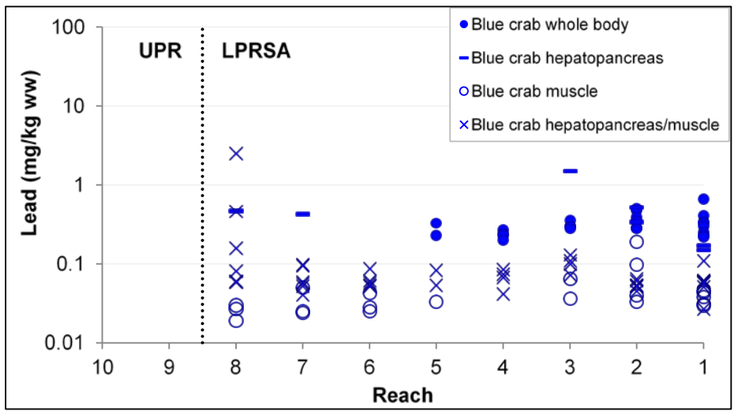
d. Carp and white sucker



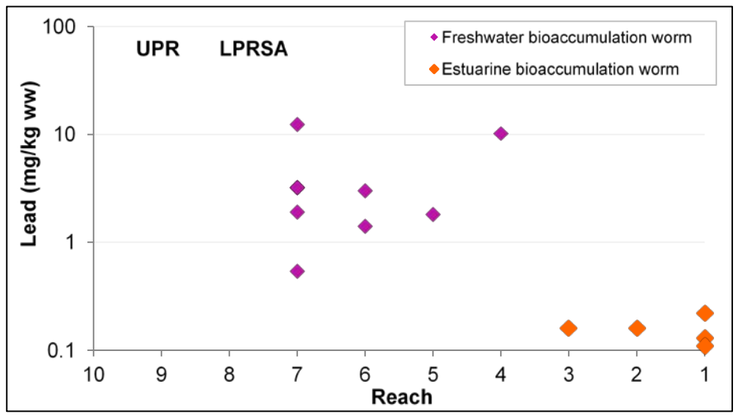
e. Small forage fish



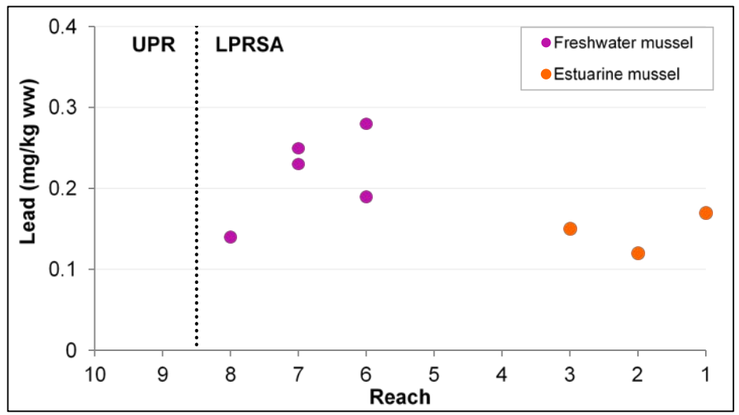
f. White perch



g. Blue crab

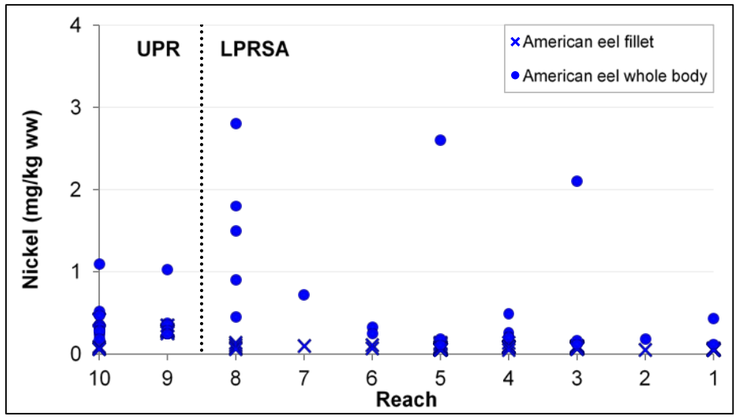


h. Bioaccumulation tissue

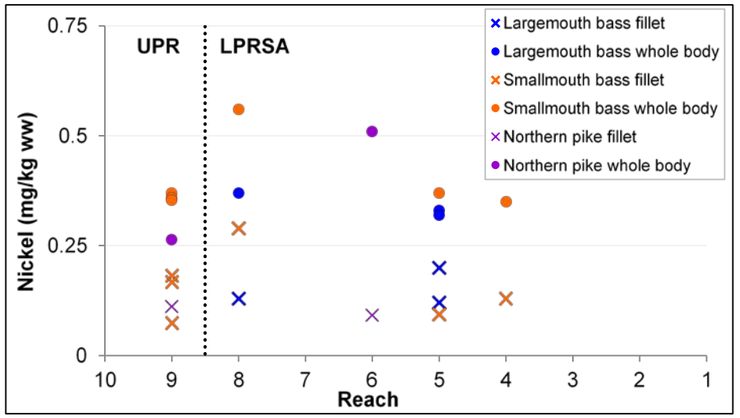


i. Caged bivalves

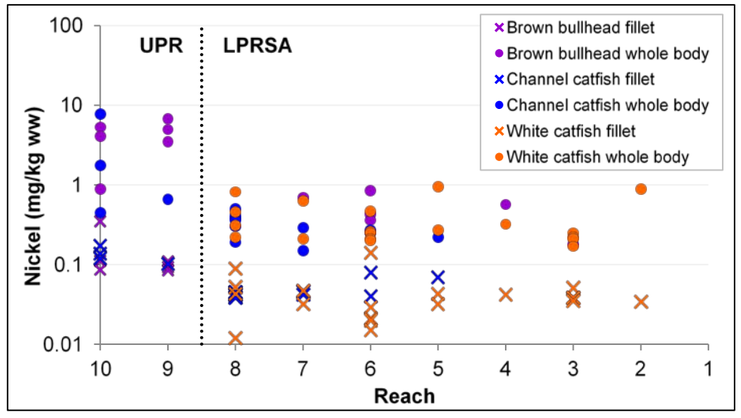
Figure 40
Concentrations of Lead in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
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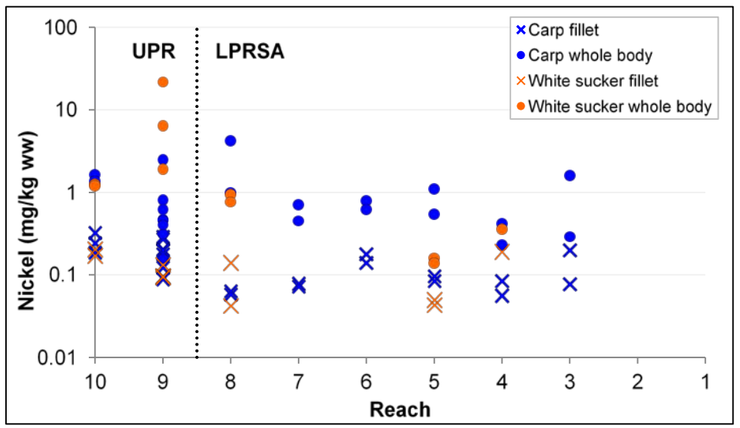
a. American eel



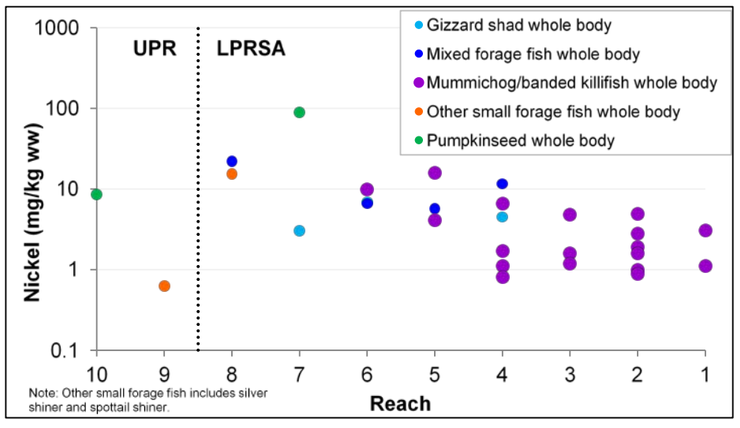
b. Bass and pike



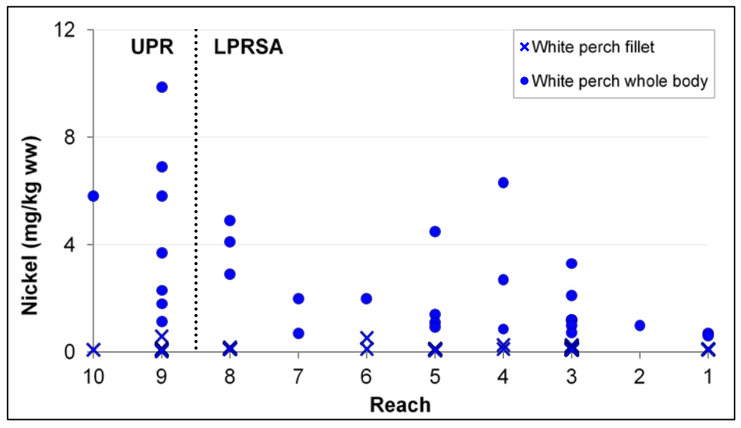
c. Bullhead and catfish



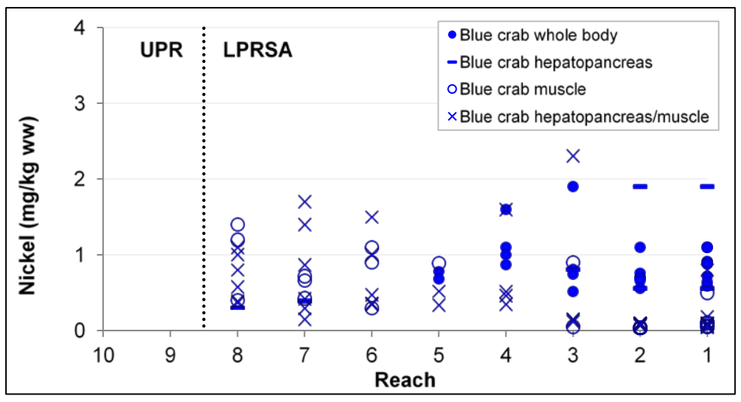
d. Carp and white sucker



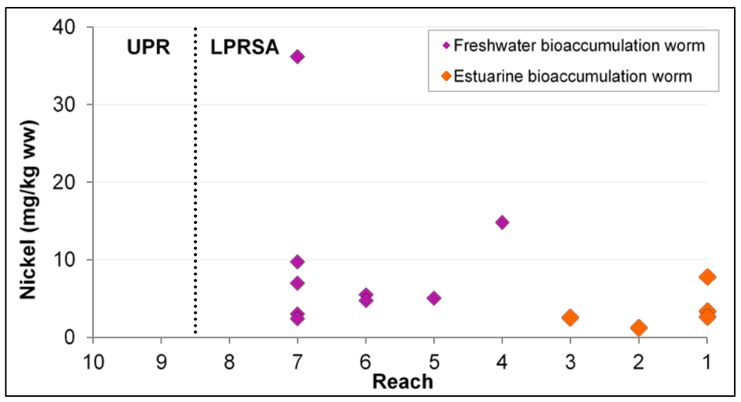
e. Small forage fish



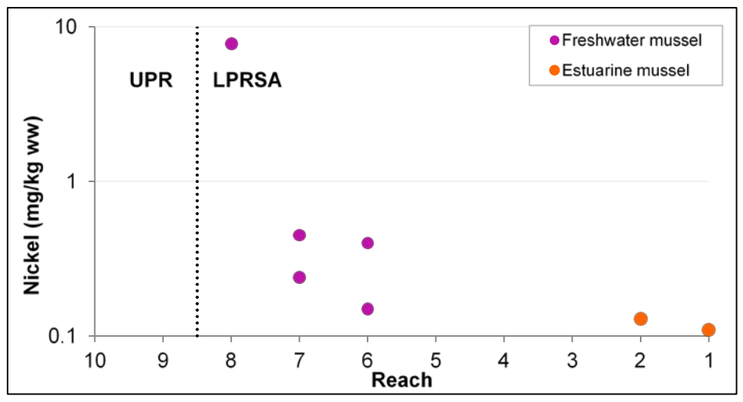
f. White perch



g. Blue crab

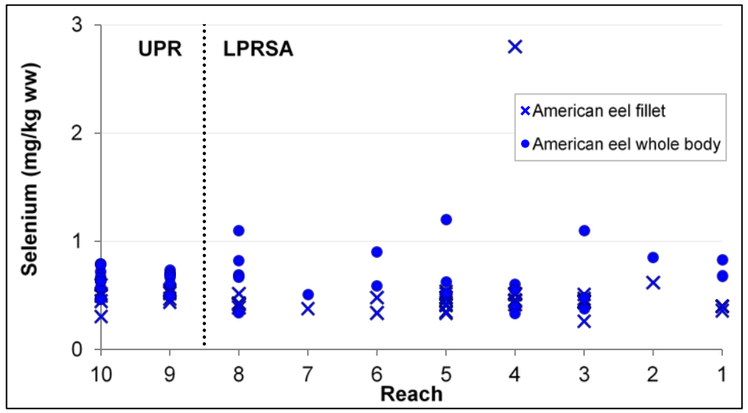


h. Bioaccumulation tissue

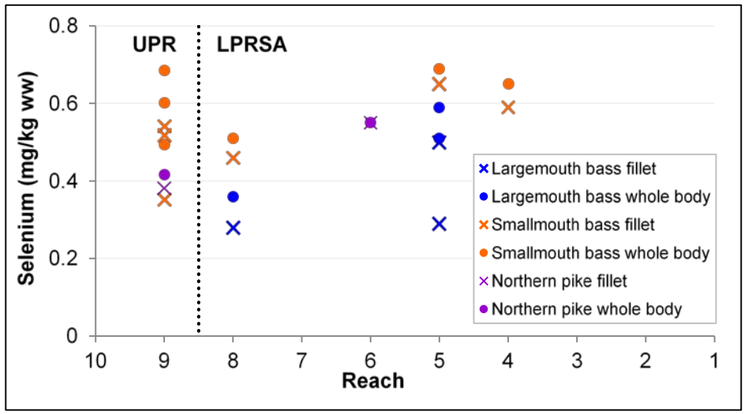


i. Caged bivalves

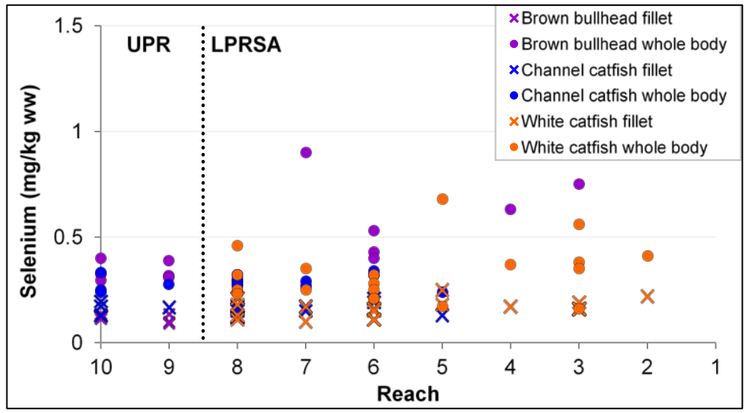
Figure 41
Concentrations of Nickel in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
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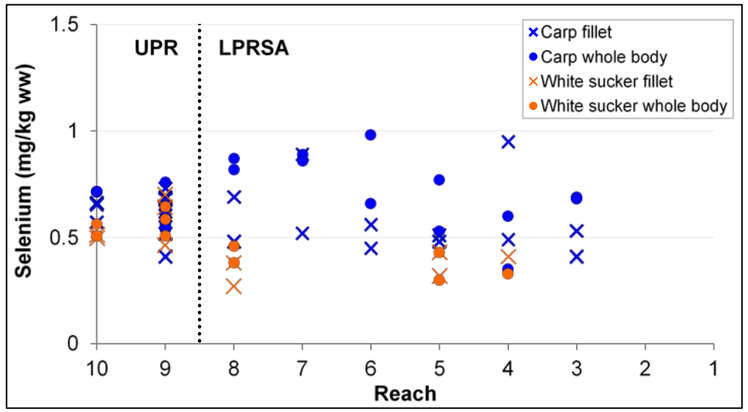
a. American eel



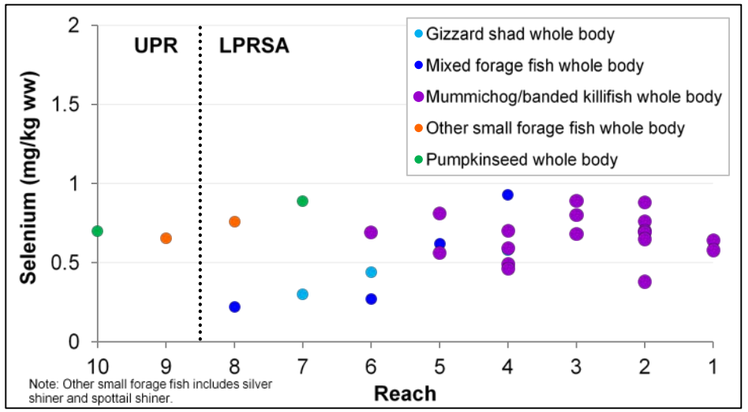
b. Bass and pike



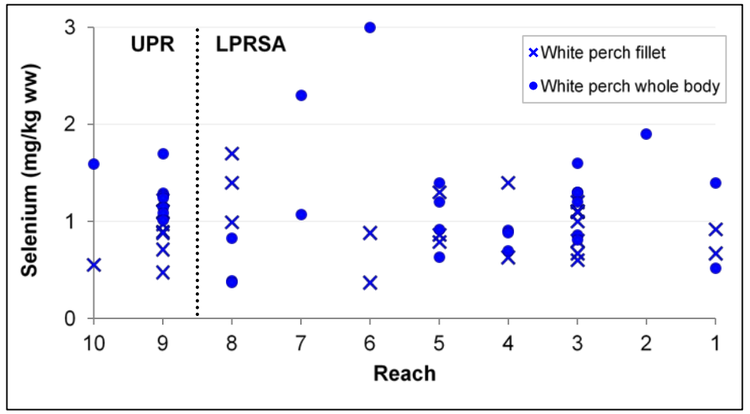
c. Bullhead and catfish



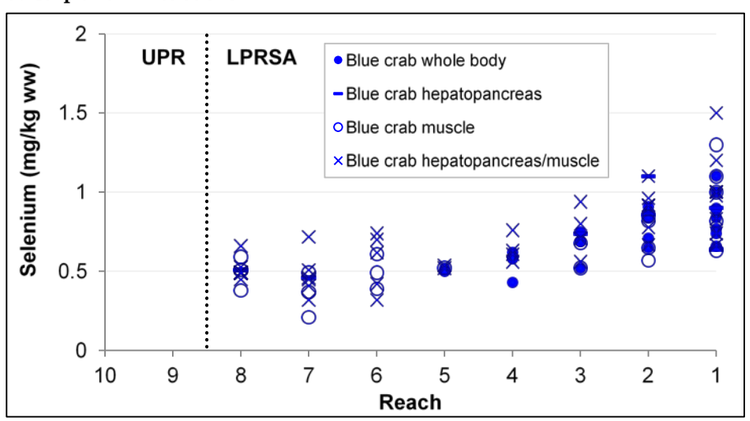
d. Carp and white sucker



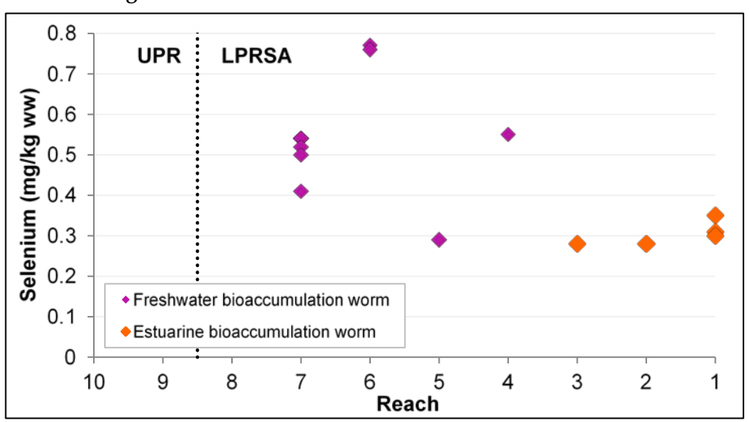
e. Small forage fish



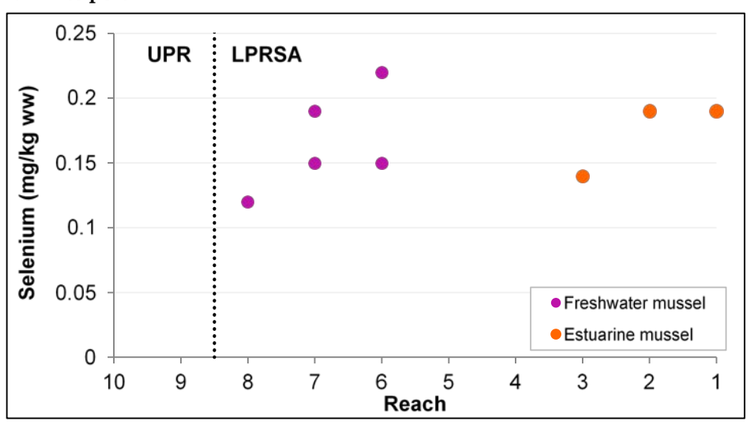
f. White perch



g. Blue crab

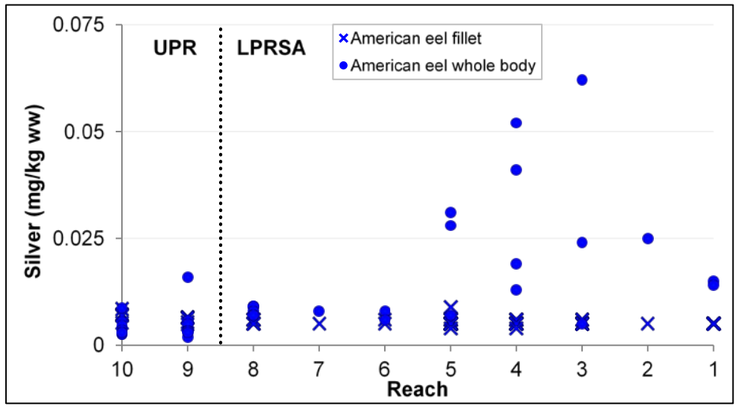


h. Bioaccumulation tissue

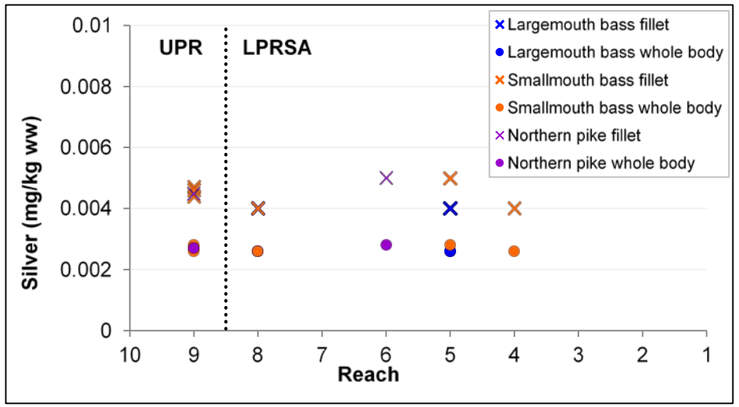


i. Caged bivalves

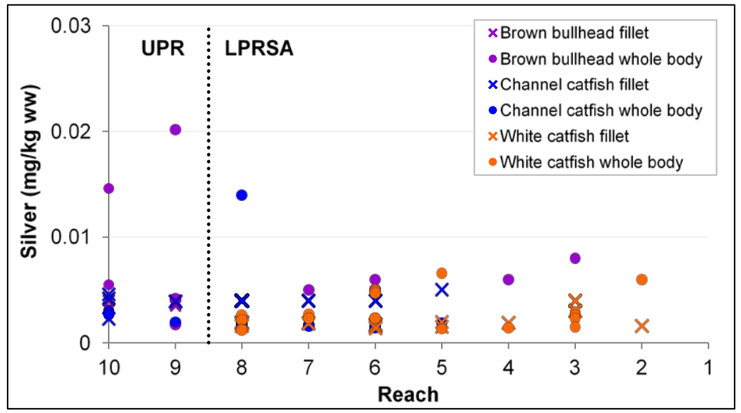
Figure 42
Concentrations of Selenium in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



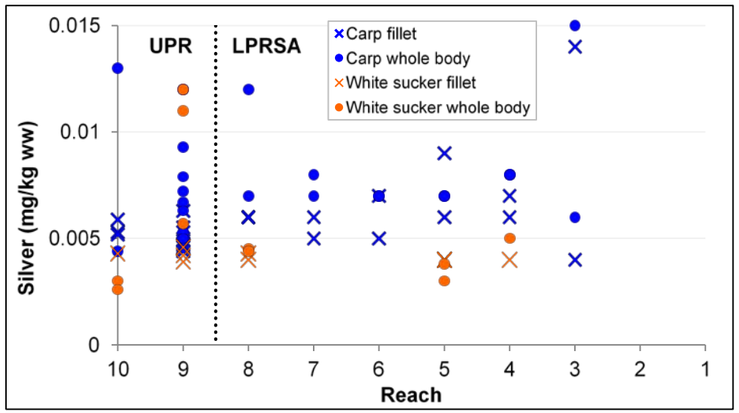
a. American eel



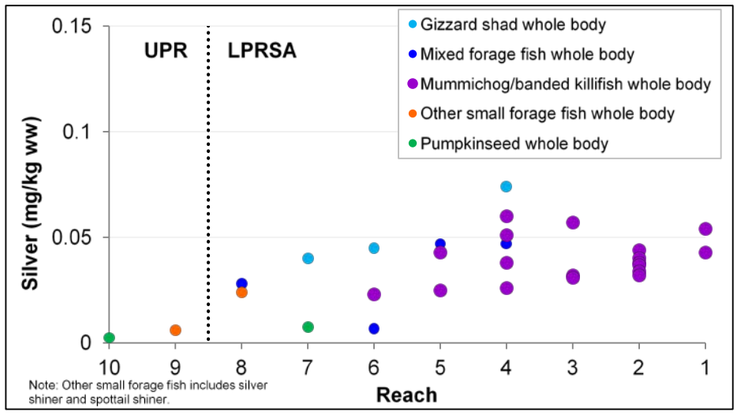
b. Bass and pike



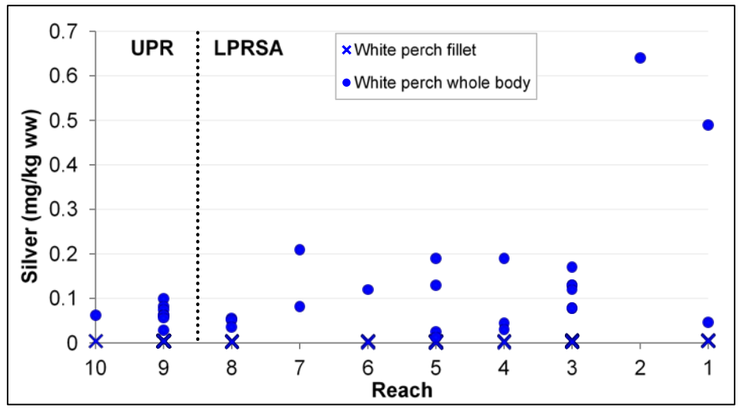
c. Bullhead and catfish



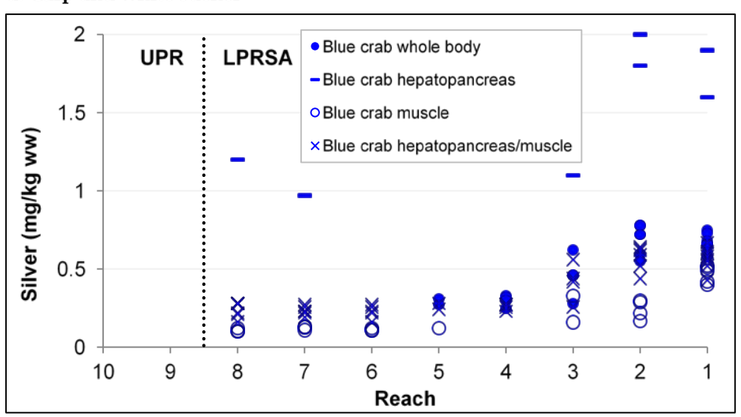
d. Carp and white sucker



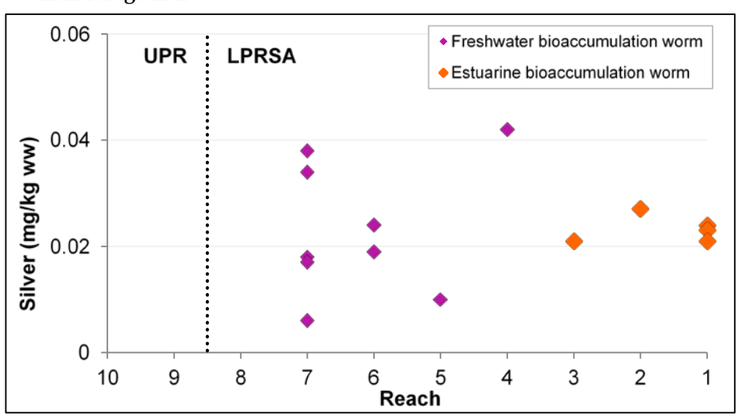
e. Small forage fish



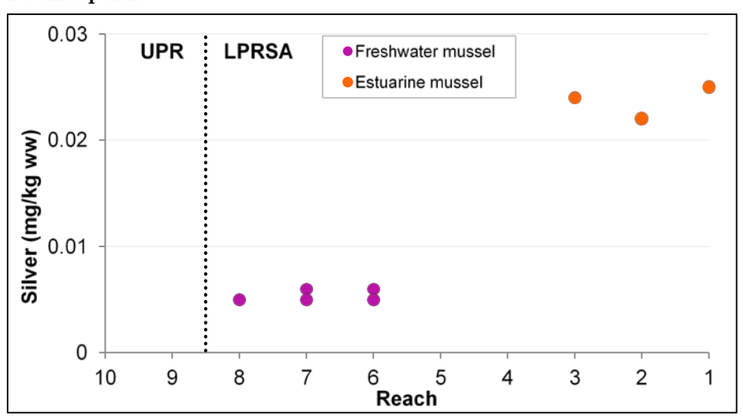
f. White perch



g. Blue crab

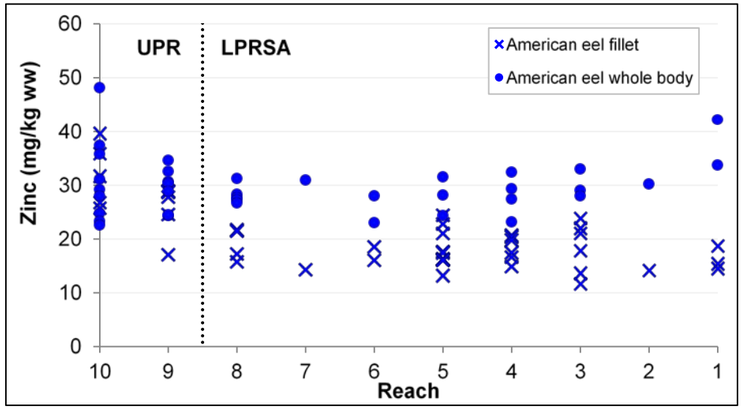


h. Bioaccumulation tissue

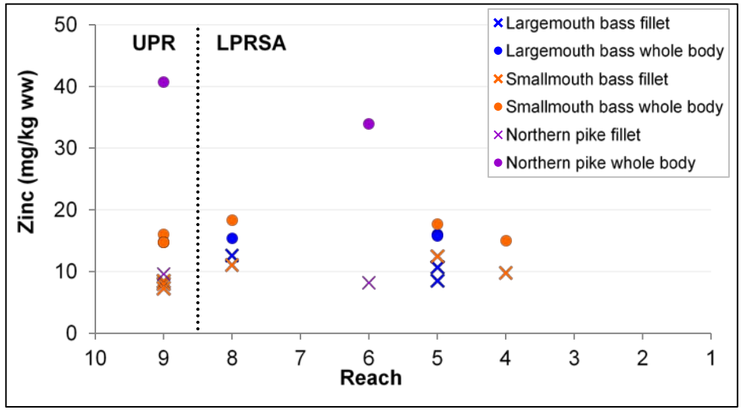


i. Caged bivalves

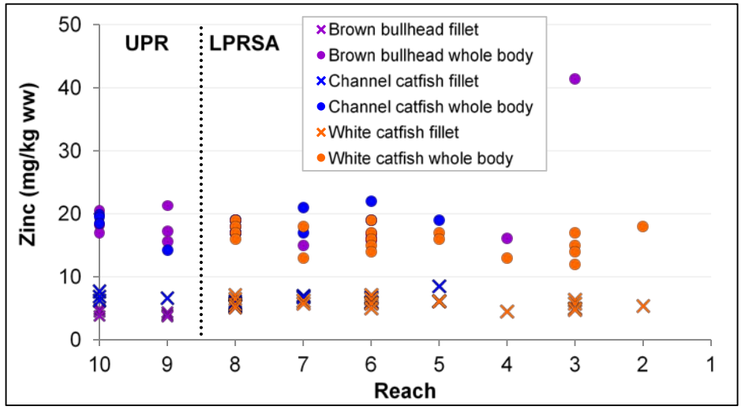
Figure 43
Concentrations of Silver in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



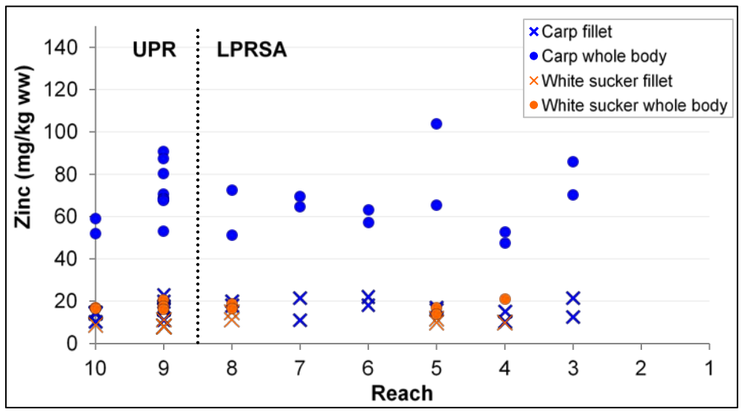
a. American eel



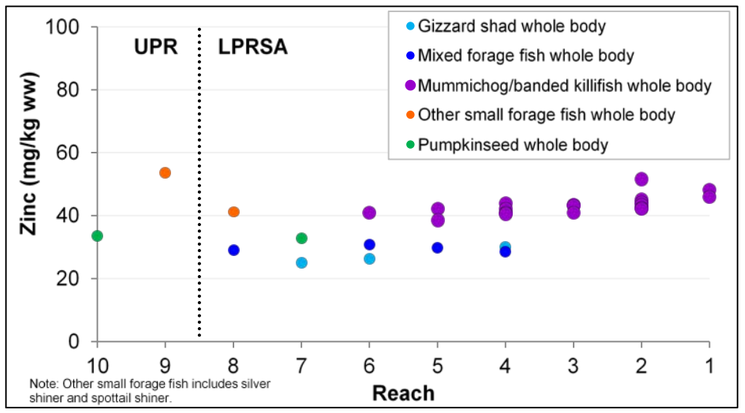
b. Bass and pike



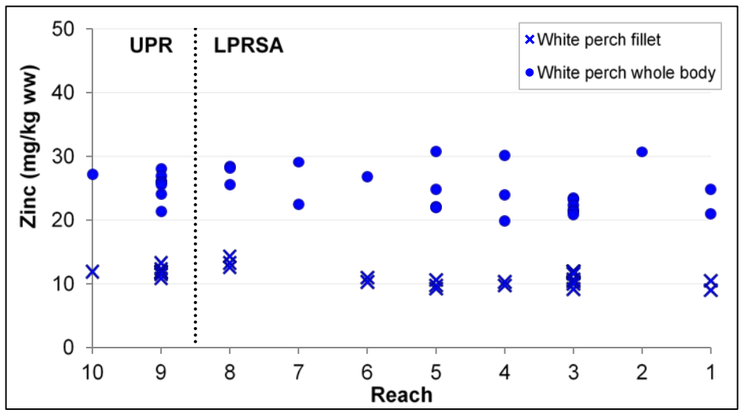
c. Bullhead and catfish



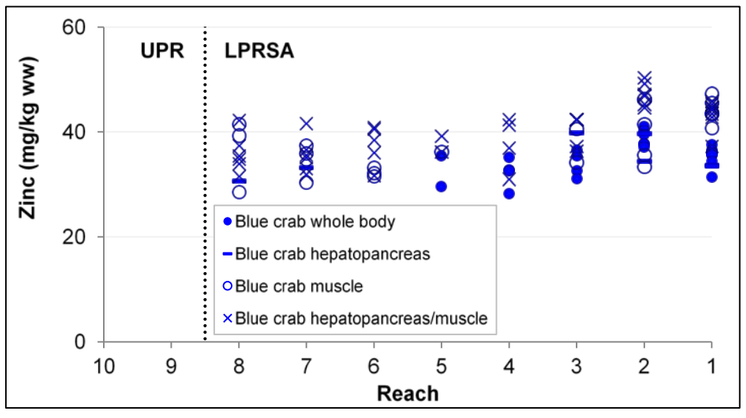
d. Carp and white sucker



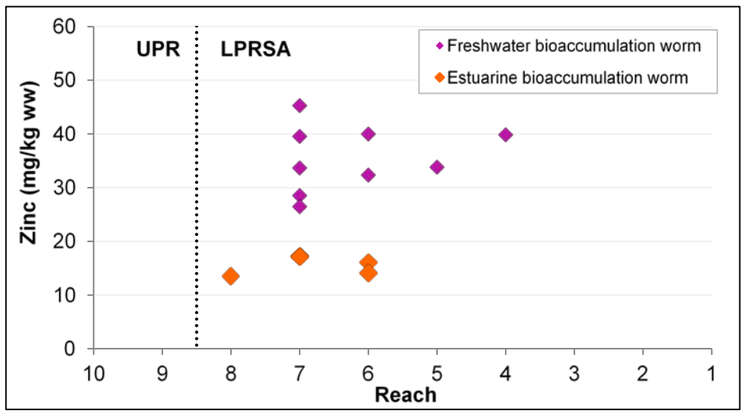
e. Small forage fish



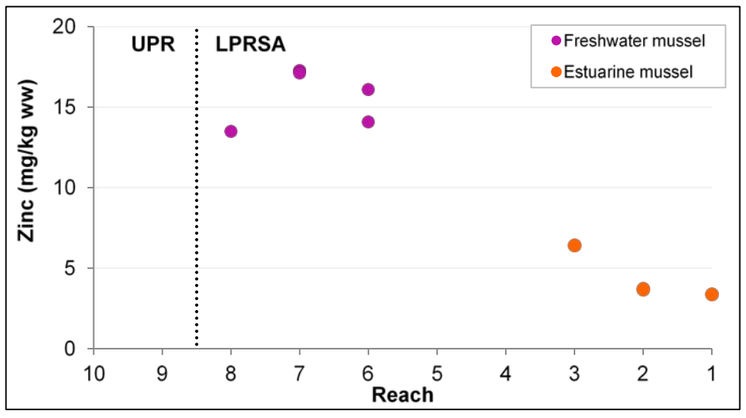
f. White perch



g. Blue crab

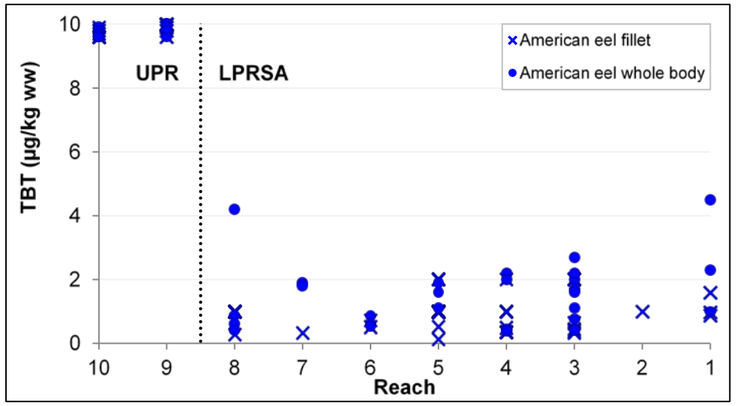


h. Bioaccumulation tissue

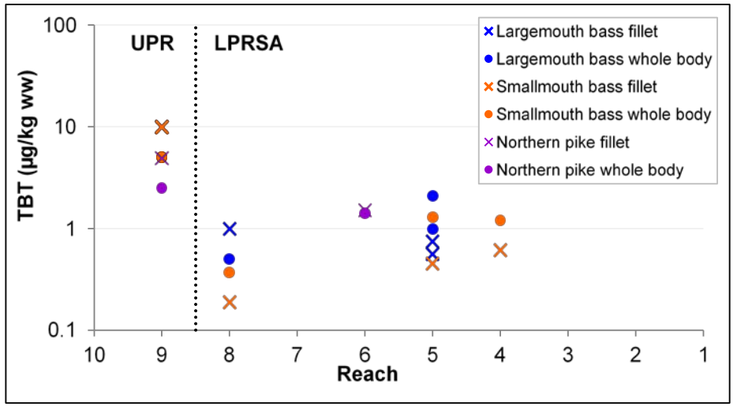


i. Caged bivalves

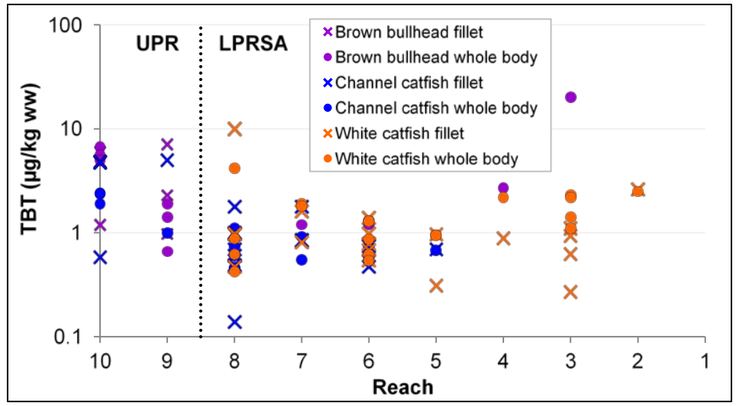
Figure 44
Concentrations of Zinc in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



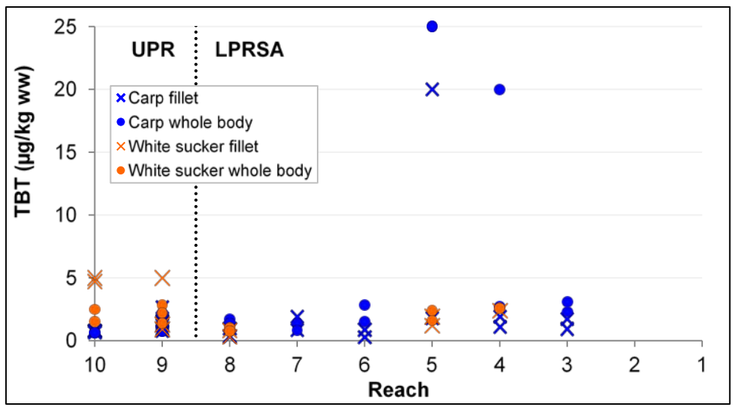
a. American eel



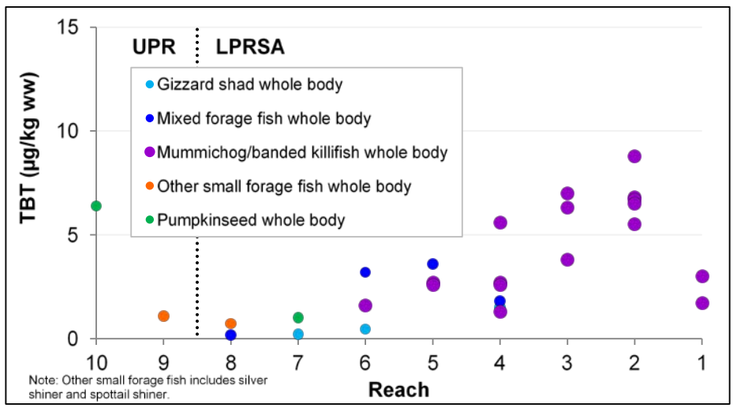
b. Bass and pike



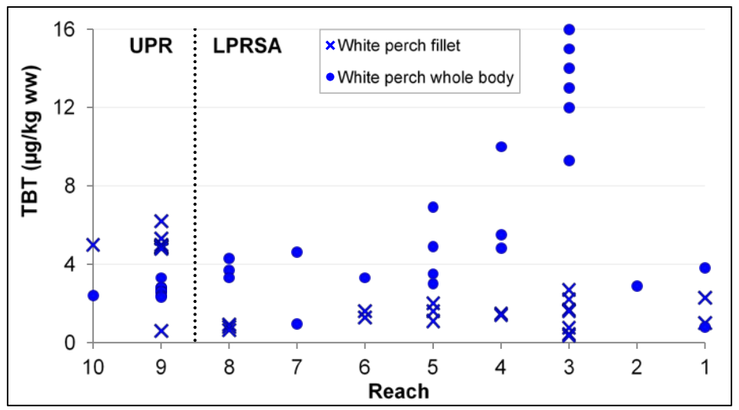
c. Bullhead and catfish



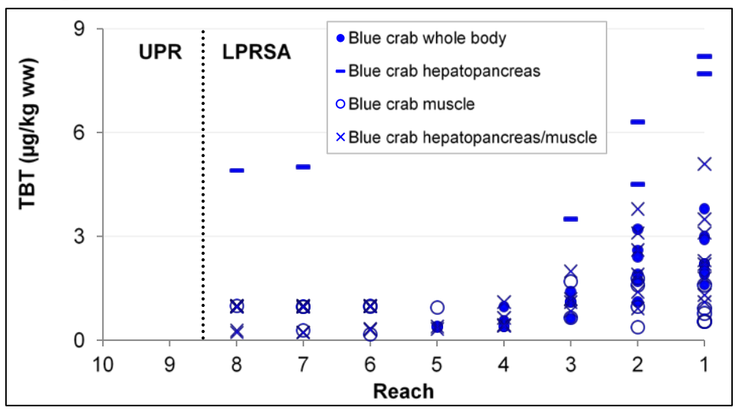
d. Carp and white sucker



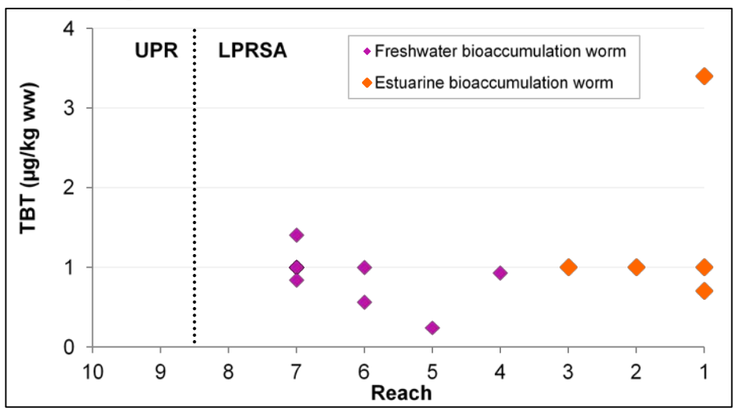
e. Small forage fish



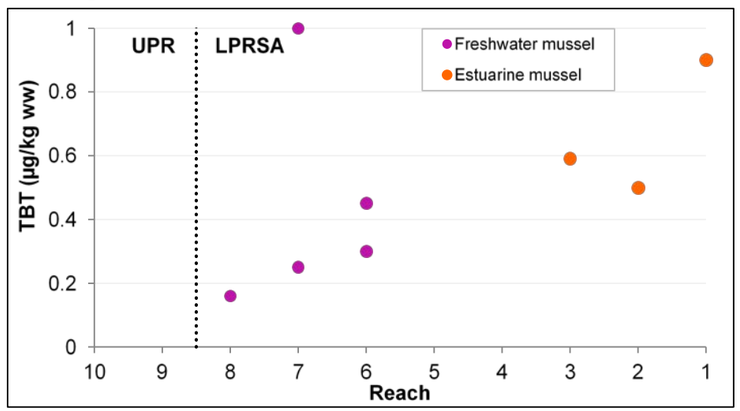
f. White perch



g. Blue crab

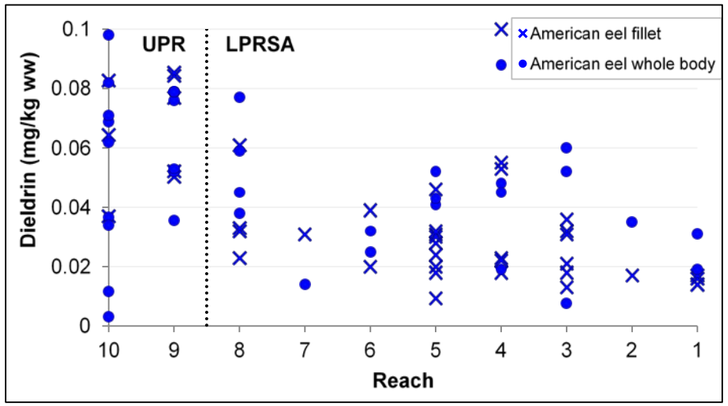


h. Bioaccumulation tissue

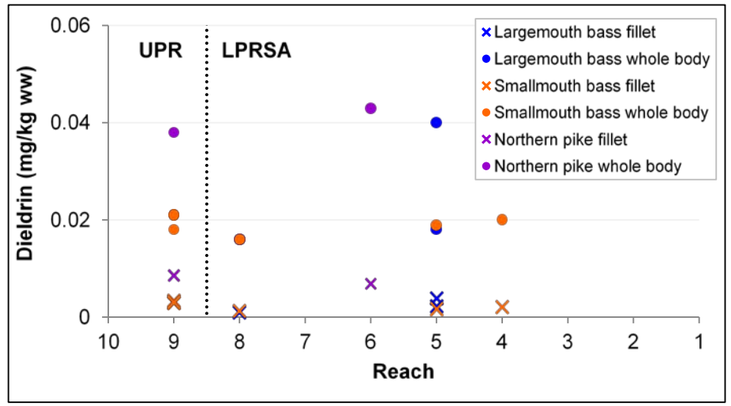


i. Caged bivalves

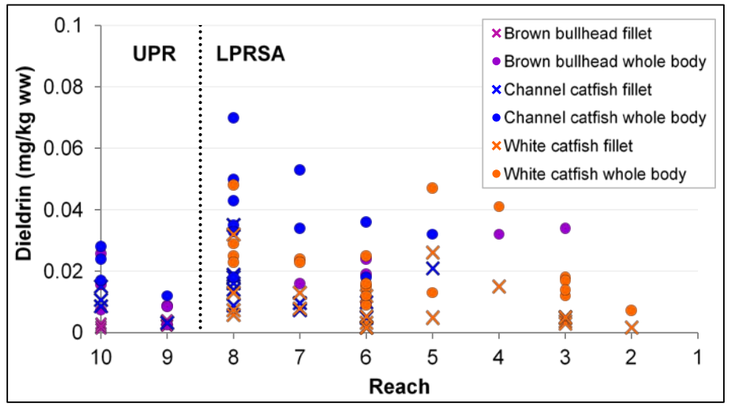
Figure 45
Concentrations of Tributyltin in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



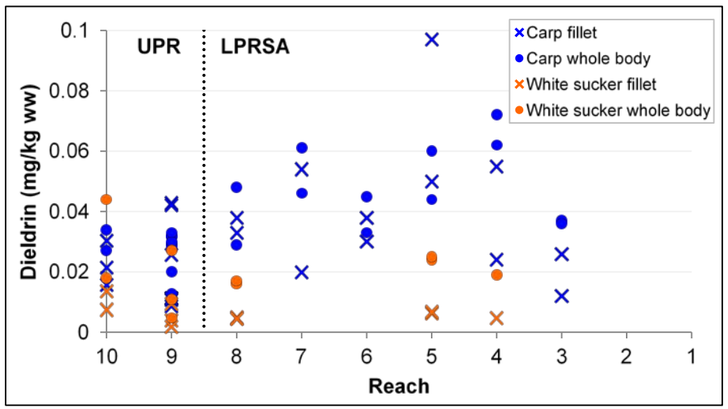
a. American eel



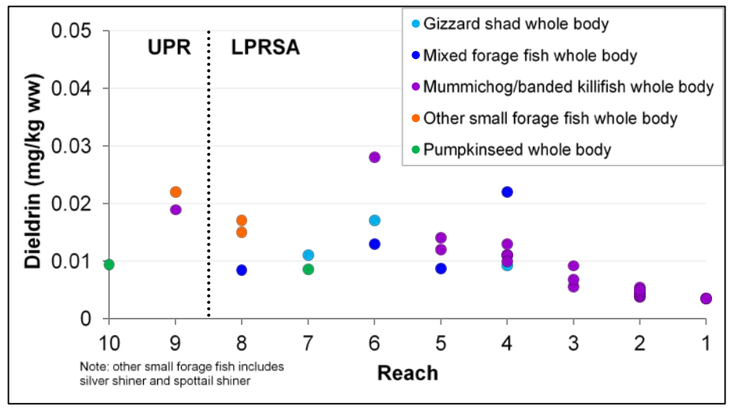
b. Bass and pike



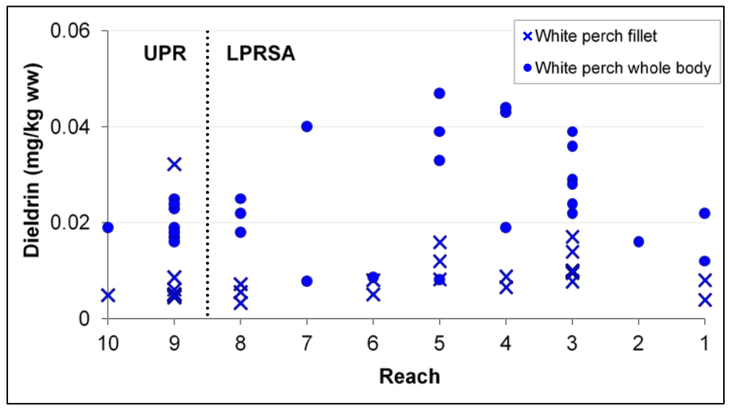
c. Bullhead and catfish



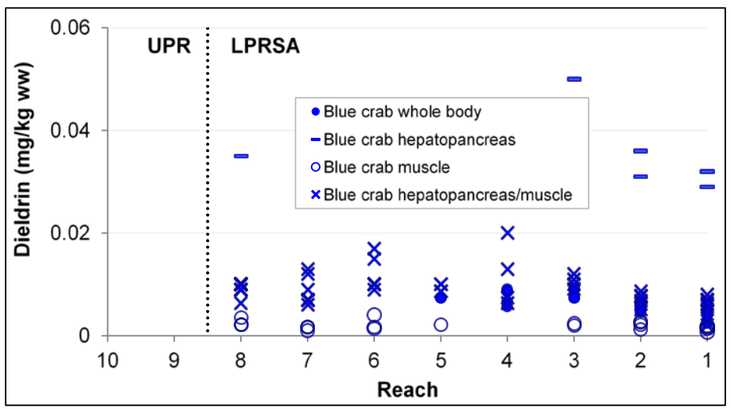
d. Carp and white sucker



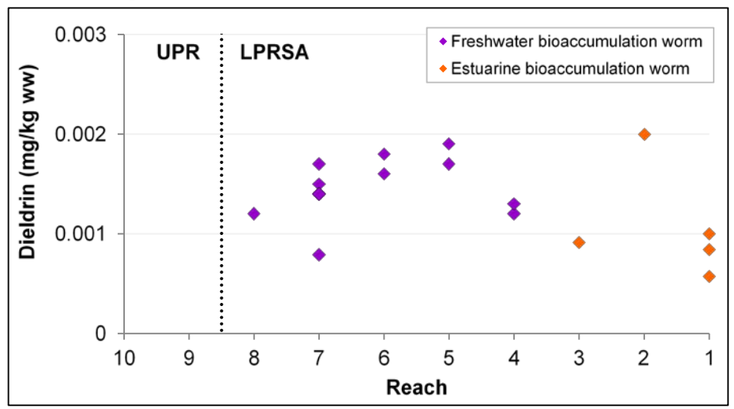
e. Small forage fish



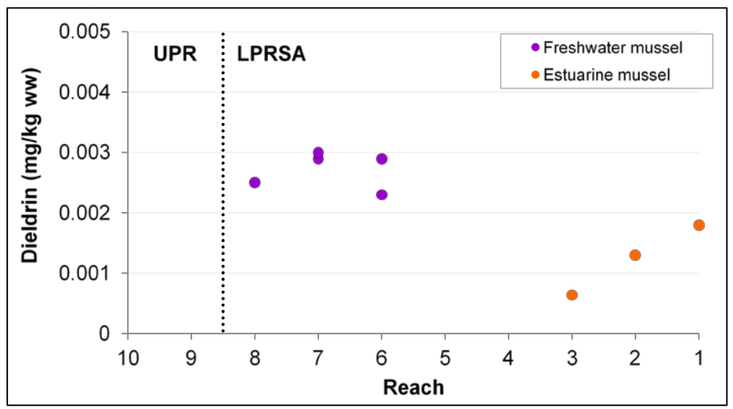
f. White perch



g. Blue crab

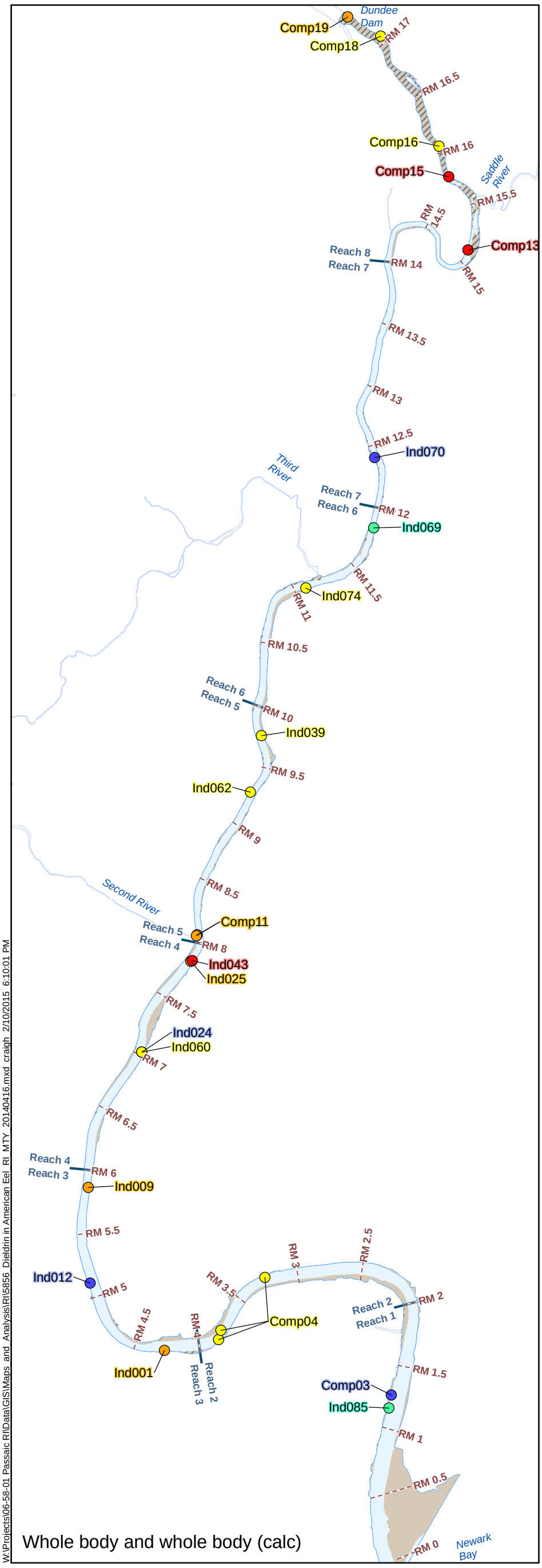


h. Bioaccumulation tissue



i. Caged bivalves

Figure 46
Concentrations of Dieldrin in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5856 Dieldrin in American Eel RI MTY 20140416.mxd craigh 2/10/2015 6:10:01 PM

Dieldrin (µg/kg) (Percentile)

- > 61 (> 90th)
- > 46 and ≤ 61 (> 75th and ≤ 90th)
- > 31 and ≤ 46 (> 50th and ≤ 75th)
- > 20 and ≤ 31 (> 25th and ≤ 50th)
- ≤ 20 (≤ 25th)

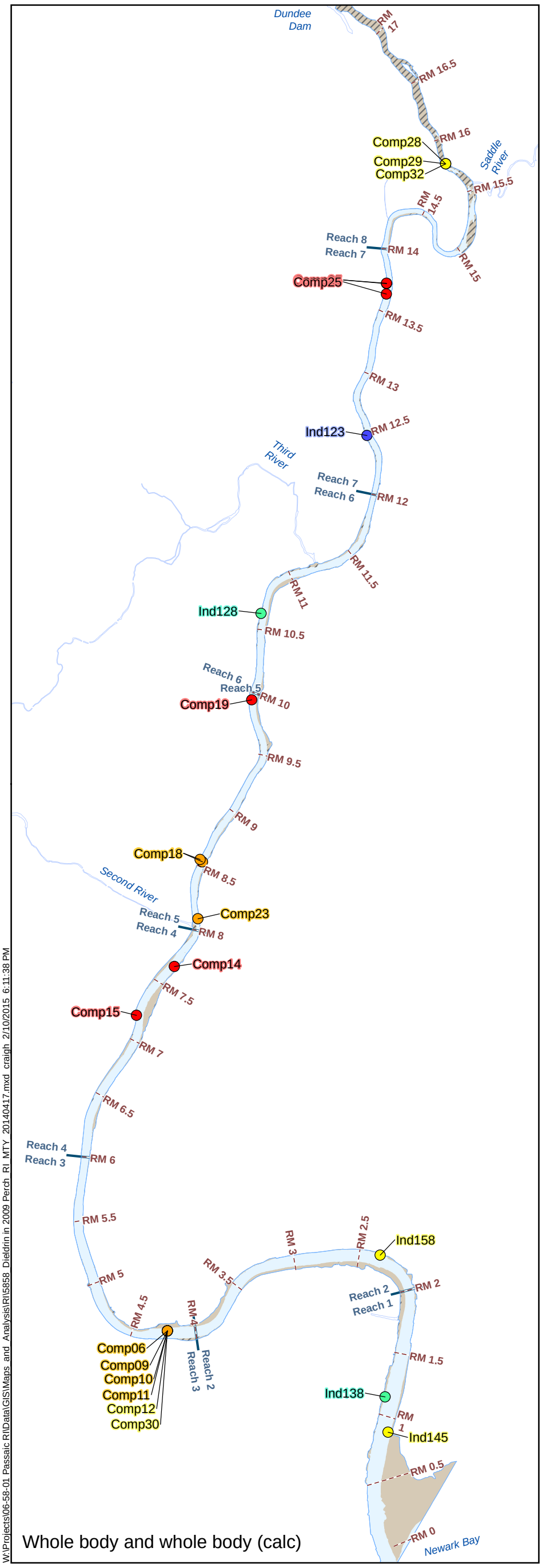
Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite. All samples were detected.

Figure 47
Concentrations of Dieldrin in American Eel Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



W:\Projects\06-58-01 Passaic RIData\GIS\Maps and Analysis\RI5858 Dieldrin in 2009 Perch RI MTY 20140417.mxd craigh 2/10/2015 6:11:38 PM

Dieldrin (µg/kg) (Percentile)

- > 40 (> 90th)
- > 27 and ≤ 40 (> 75th and ≤ 90th)
- > 14 and ≤ 27 (> 50th and ≤ 75th)
- > 8.1 and ≤ 14 (> 25th and ≤ 50th)
- ≤ 8.1 (≤ 25th)
- Non-detected

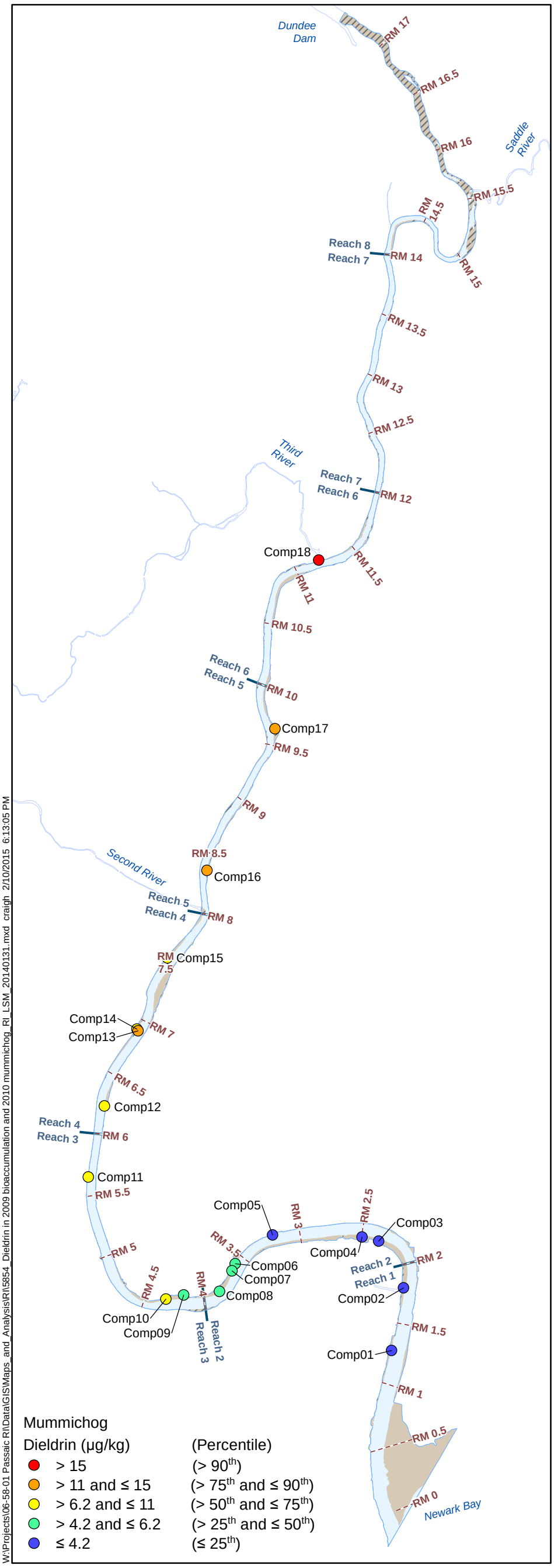
Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Figure 48
Concentrations of Dieldrin in White Perch Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5854_Dieldrin in 2009 bioaccumulation and 2010 mummichog_RI_LSM_20140131.mxd craigh 2/10/2015 6:13:05 PM

Sampling reach boundary
River mile
Mudflat
LPRSA
Gravel with fines

0 5,000 10,000 Feet

Figure 49

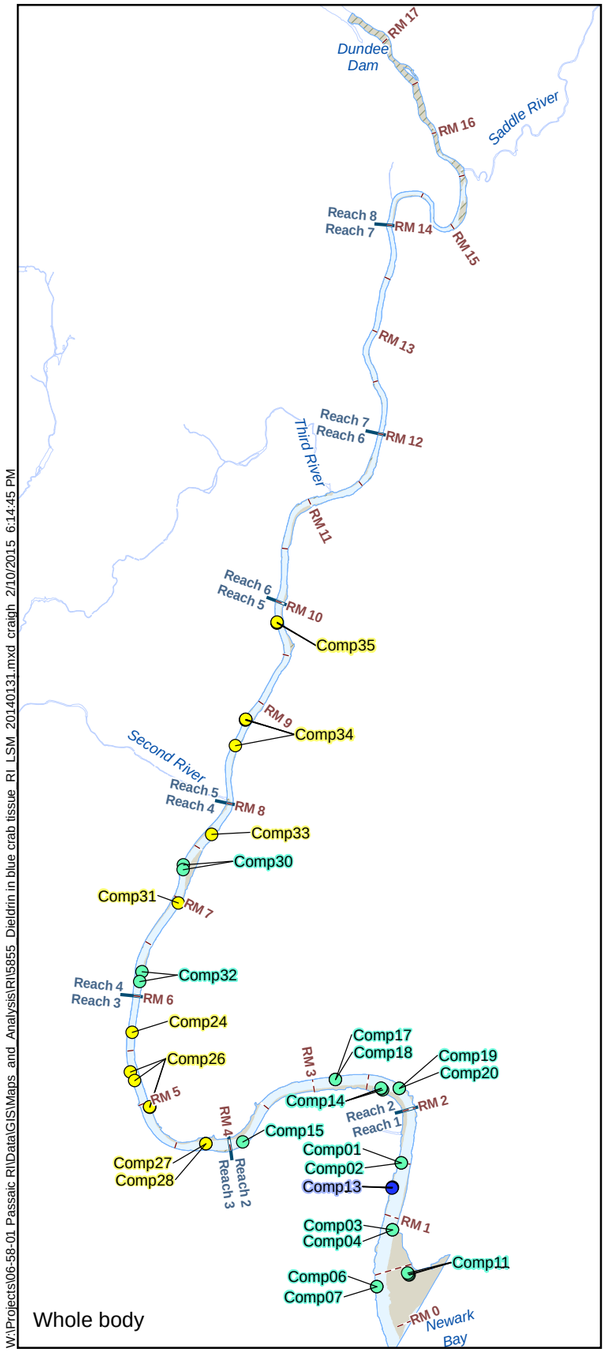
Concentrations of Dieldrin in Mummichog and Bioaccumulation Worm Tissue by LPRSA Location

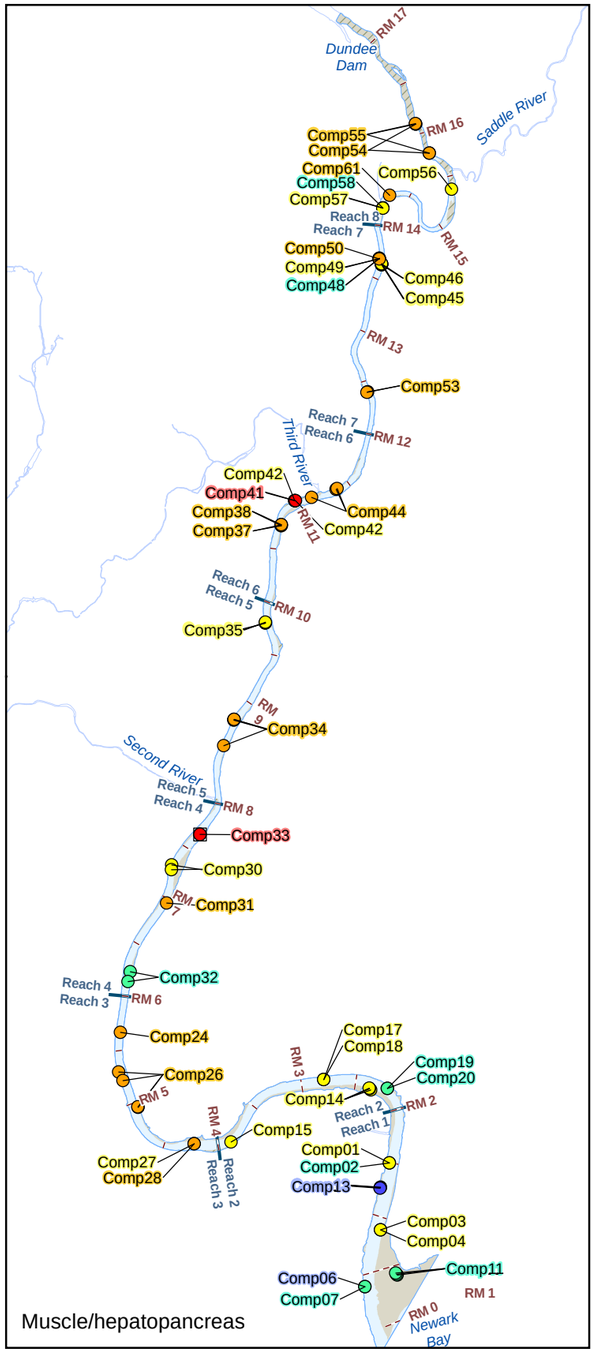
Remedial Investigation Report

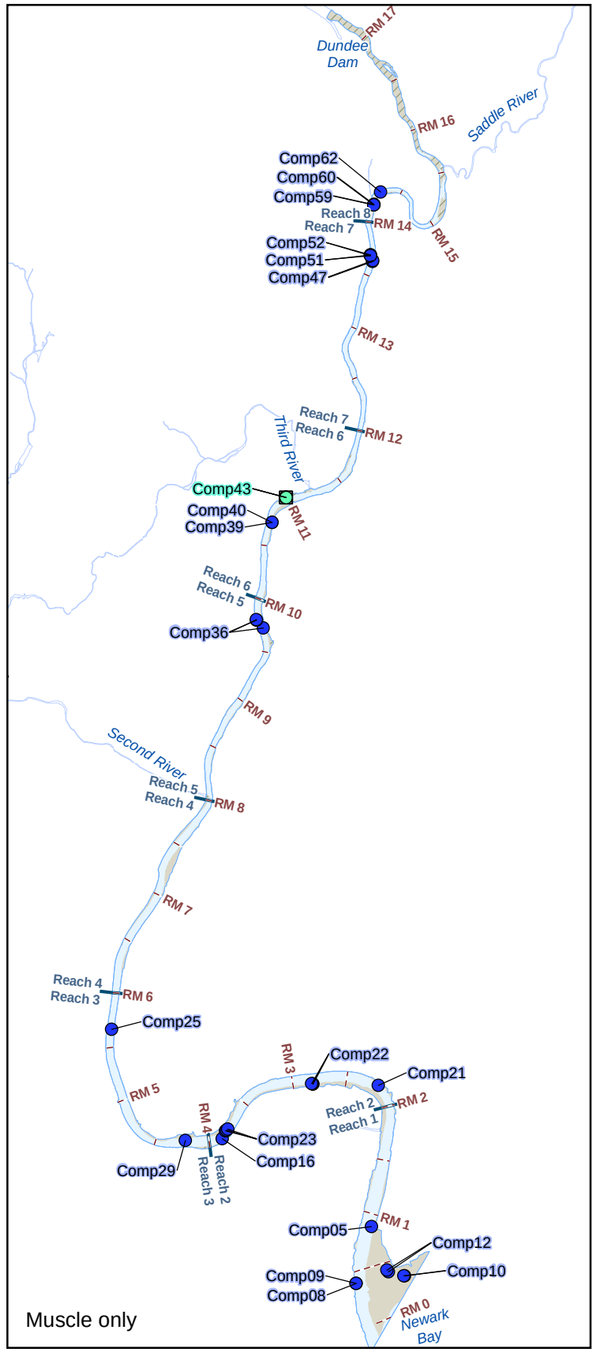
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

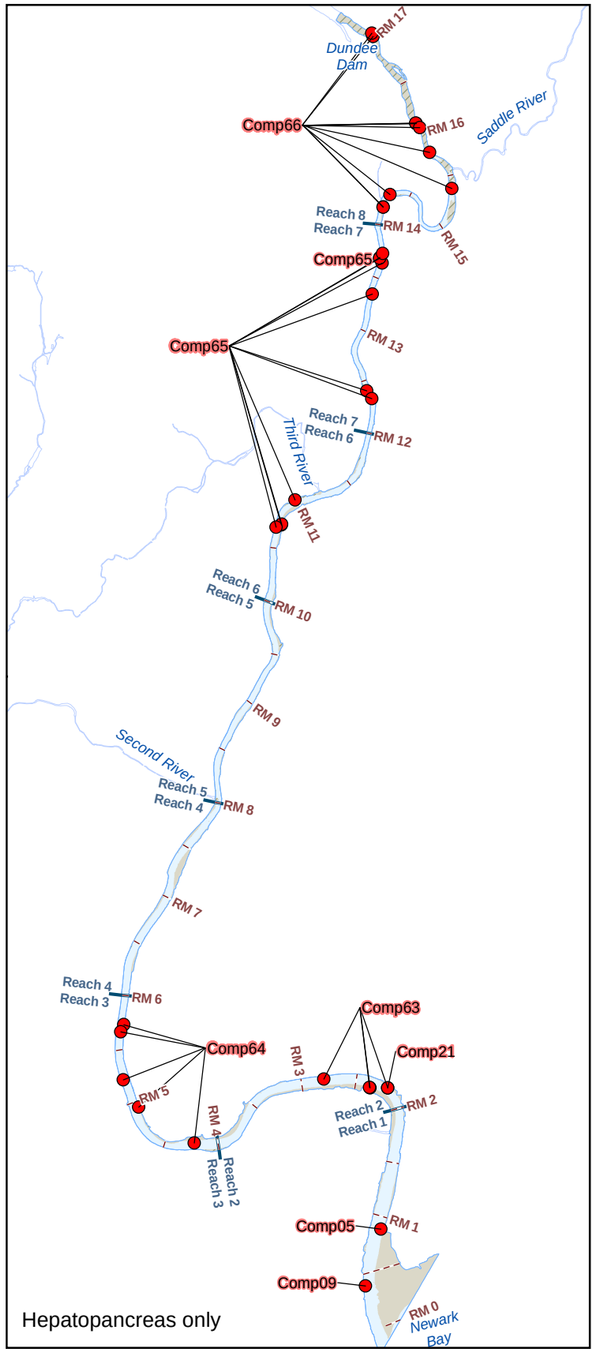
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

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Sampling reach boundary
River mile
Mudflat
LPRSA
Gravel with fines
0 4,000 8,000 Feet

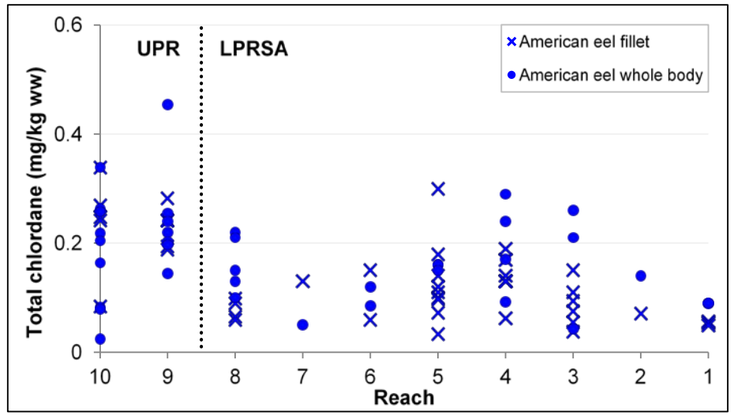
The percentile is based on the combined data from all four tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Dieldrin (µg/kg)	(Percentile)
> 16	(> 90th)
> 9.2 and ≤ 16	(> 75th and ≤ 90th)
> 6.7 and ≤ 9.2	(> 50th and ≤ 75th)
> 3.6 and ≤ 6.7	(> 25th and ≤ 50th)
≤ 3.6	(≤ 25th)

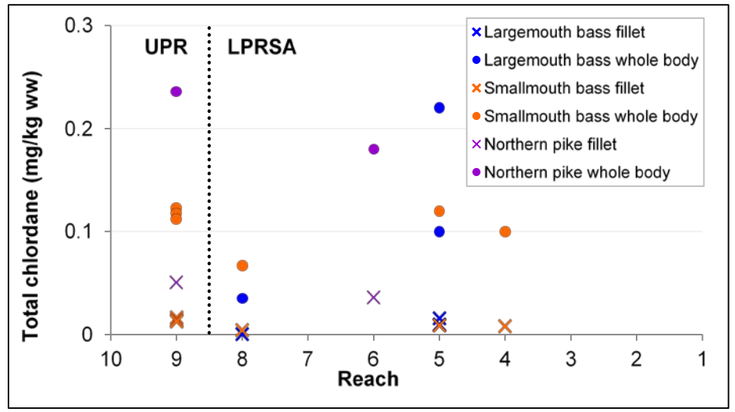
Non-detected

Figure 50
Concentrations of Dieldrin in Blue Crab Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

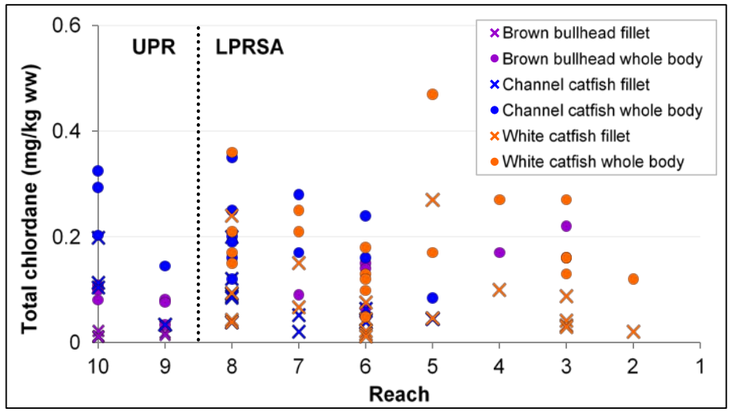
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



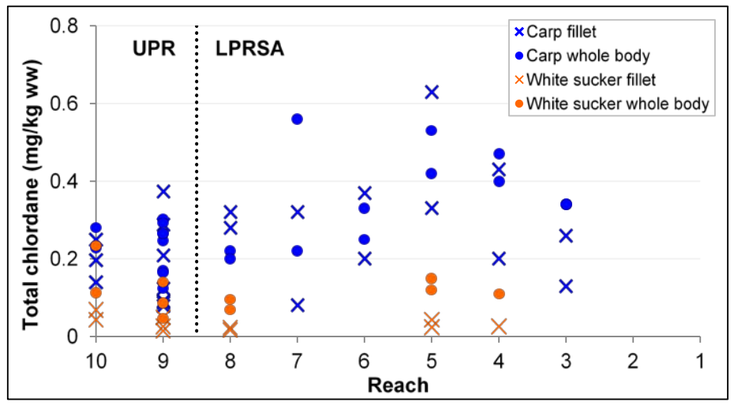
a. American eel



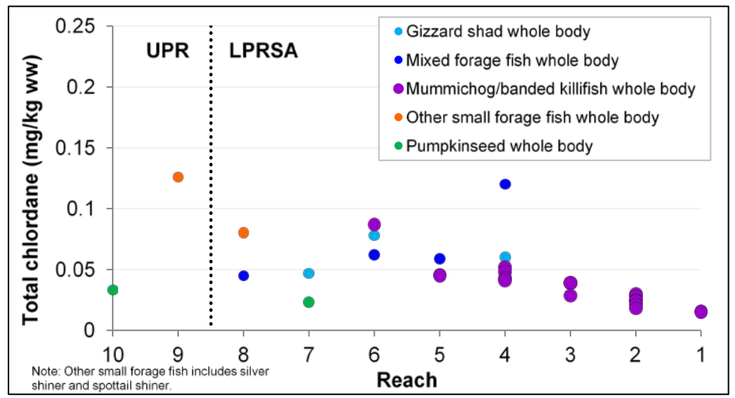
b. Bass and pike



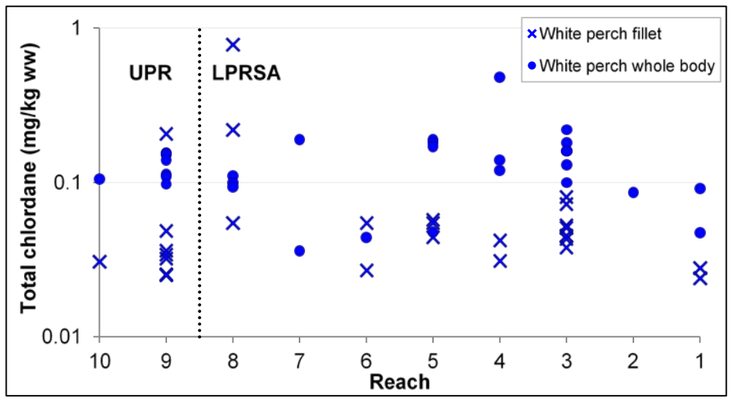
c. Bullhead and catfish



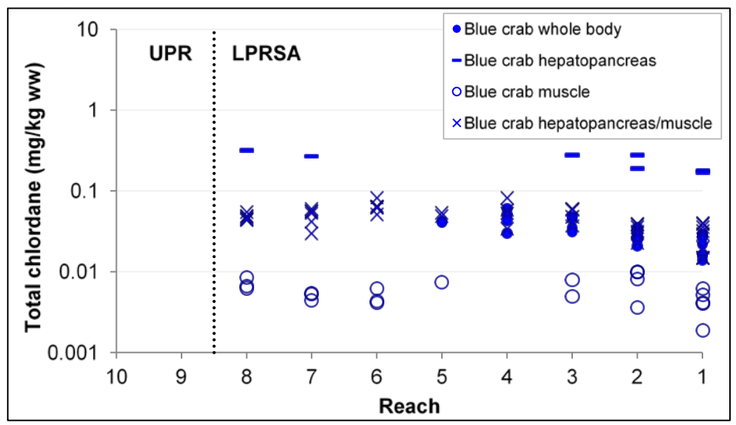
d. Carp and white sucker



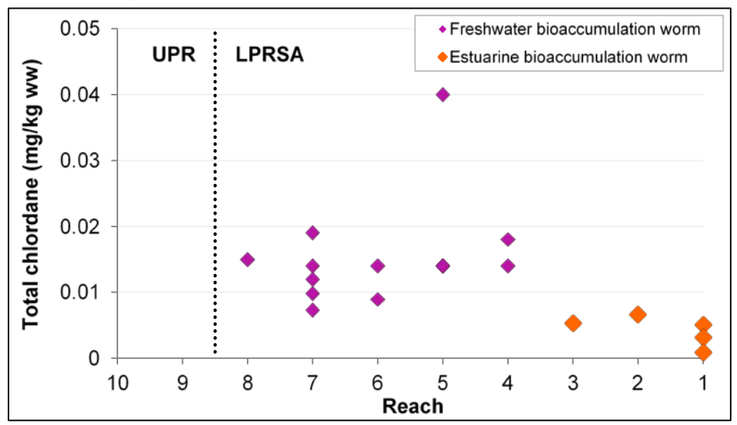
e. Small forage fish



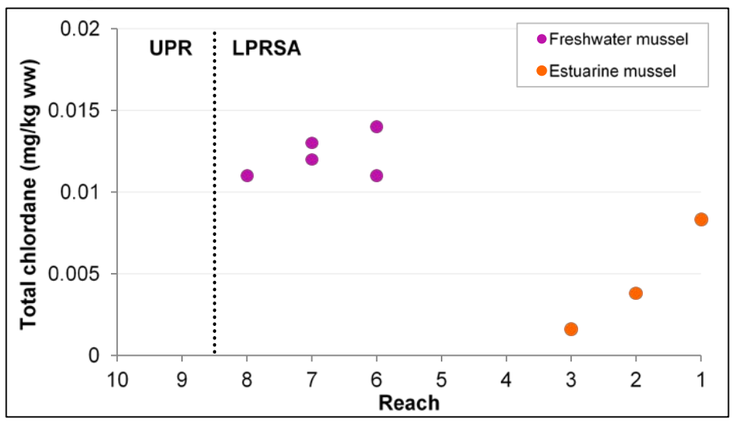
f. White perch



g. Blue crab

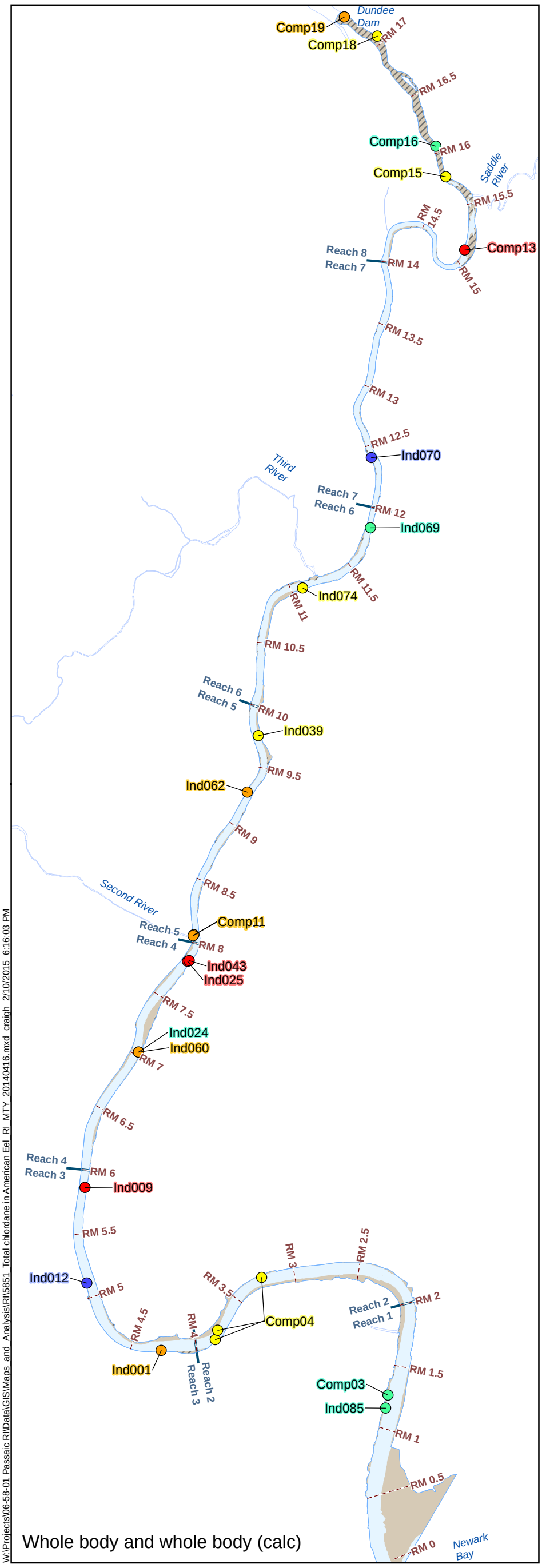


h. Bioaccumulation tissue



i. Caged bivalves

Figure 51
Concentrations of Total Chlordane in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5851 Total chlordane in American Eel RI MTY 20140416.mxd craigh 2/10/2015 6:16:03 PM

Total chlordane (µg/kg) (Percentile)

- > 216 (> 90th)
- > 155 and ≤ 216 (> 75th and ≤ 90th)
- > 110 and ≤ 155 (> 50th and ≤ 75th)
- > 72 and ≤ 110 (> 25th and ≤ 50th)
- ≤ 72 (≤ 25th)

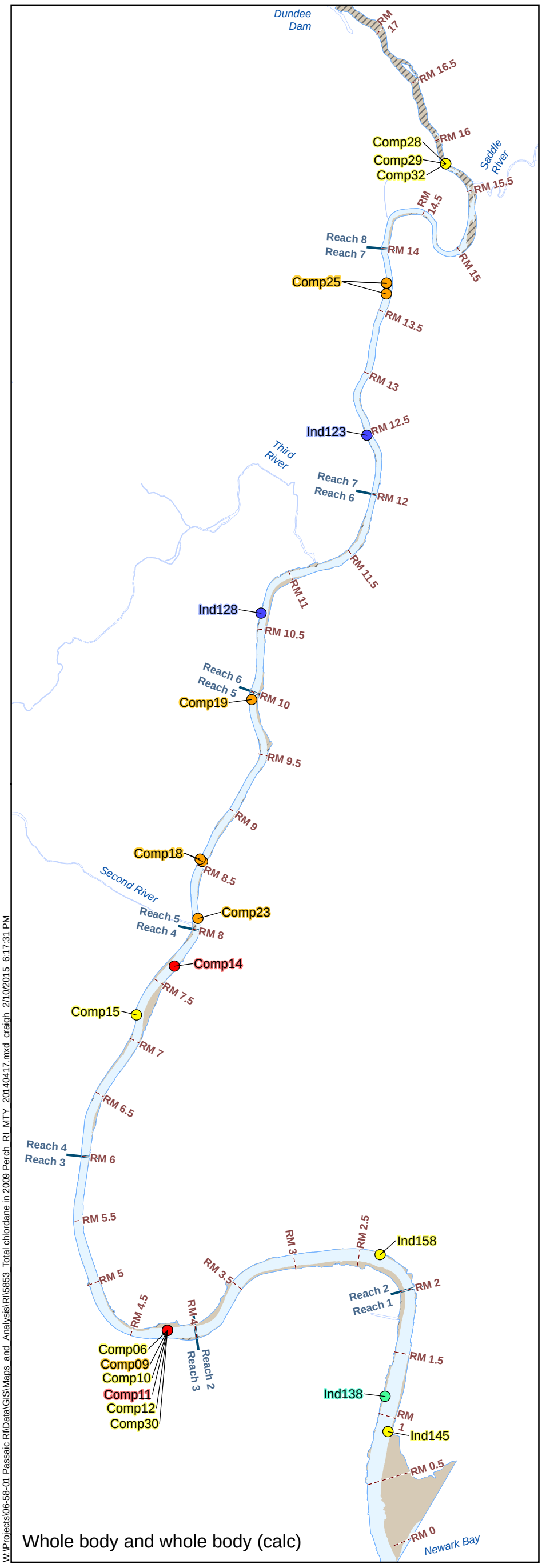
Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite. All samples were detected.

Figure 52
Concentrations of Total Chlordane in American Eel Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5853 Total chlordane in 2009 Perch RI MTY 20140417.mxd craigh 2/10/2015 6:17:31 PM

Total Chlordane (µg/kg) (Percentile)

- > 214 (> 90th)
- > 160 and ≤ 214 (> 75th and ≤ 90th)
- > 80 and ≤ 160 (> 50th and ≤ 75th)
- > 45 and ≤ 80 (> 25th and ≤ 50th)
- ≤ 45 (≤ 25th)

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

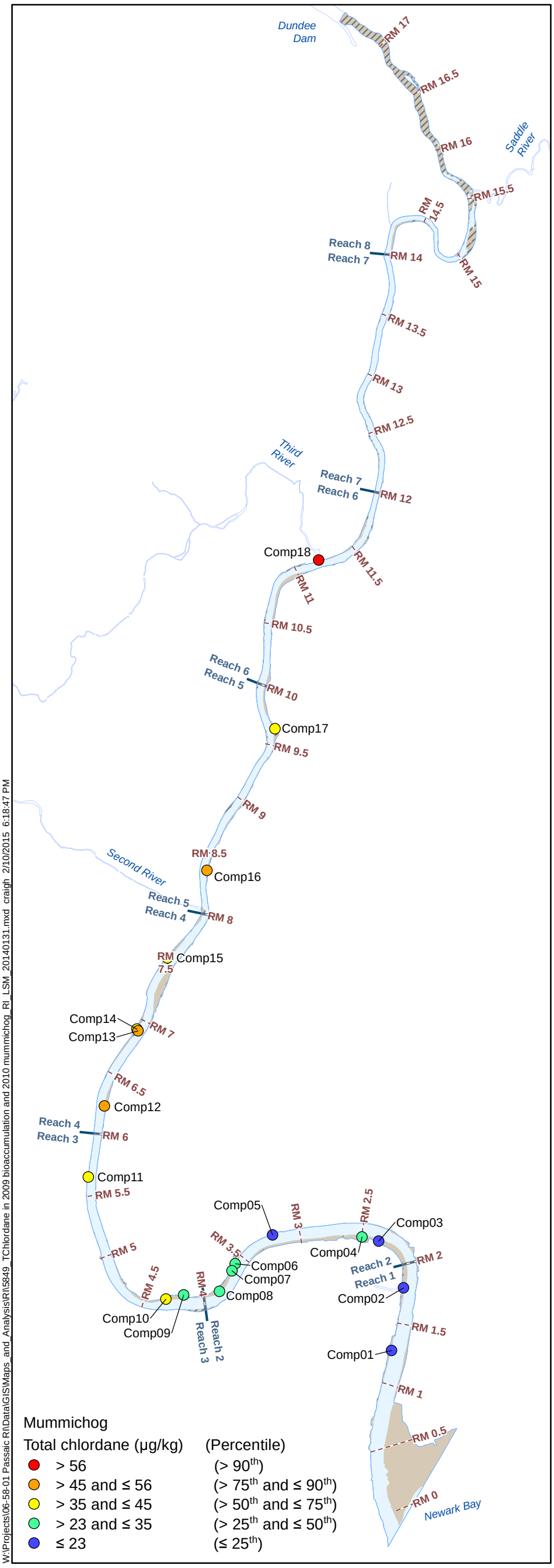
0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite. All samples were detected.

Figure 53

Concentrations of Total Chlordane in White Perch Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



W:\Projects\06-58-01 Passaic R\Data\GIS\Maps and Analysis\R\IS849 TChlordane in 2009 bioaccumulation and 2010 mummichog RI LSM 20140131.mxd craigh 2/10/2015 6:18:47 PM

Sampling reach boundary
River mile
Mudflat
LPRSA
Gravel with fines

0 5,000 10,000 Feet

Figure 54

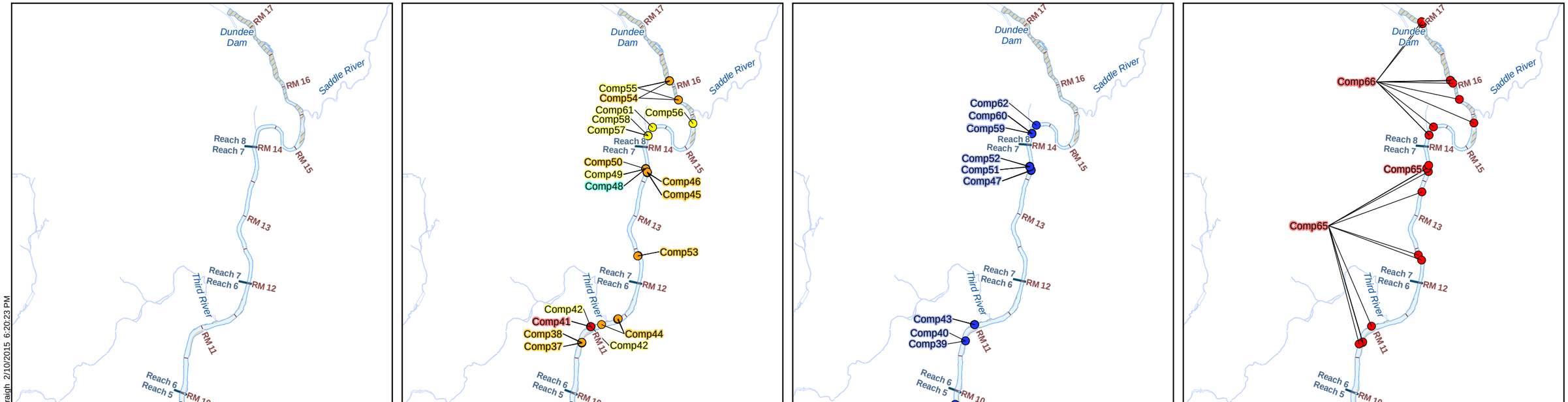
Concentrations of Total Chlordane in Mummichog and Bioaccumulation Worm Tissue by LPRSA Location

Remedial Investigation Report

Lower Passaic River Study Area Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\9850_Chlordane in blue crab tissue_RI_LSM_20140131.mxd craigh 2/10/2015 6:20:23 PM



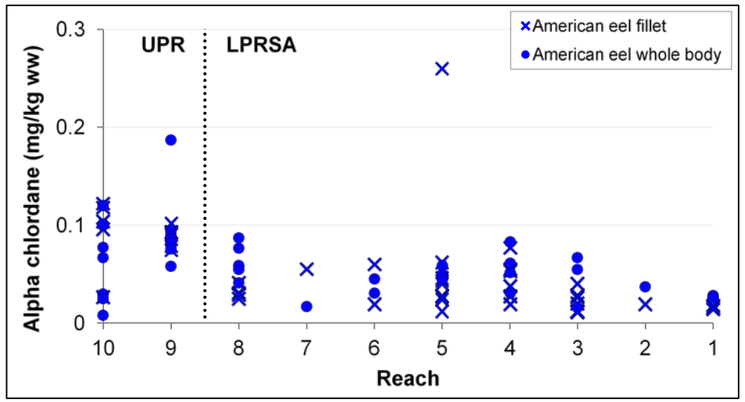
Sampling reach boundary
Mudflat
Gravel with fines
0 4,000 8,000 Feet
River mile
LPRSA

All samples were detected.
The percentile is based on the combined data from all four tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

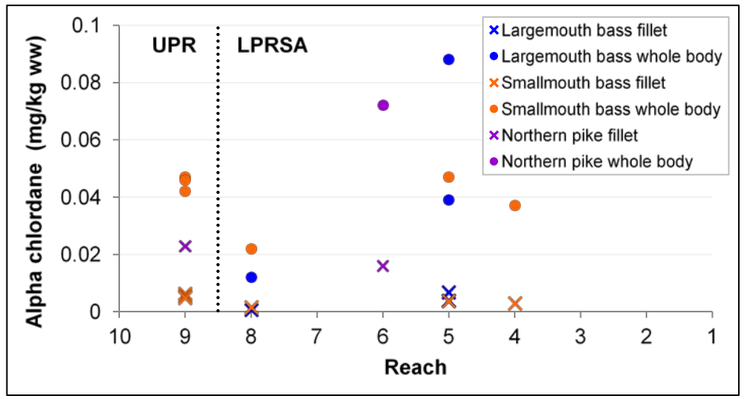
Total chlordane (µg/kg)	(Percentile)
> 75	(> 90th)
> 52 and ≤ 75	(> 75th and ≤ 90th)
> 35 and ≤ 52	(> 50th and ≤ 75th)
> 15 and ≤ 35	(> 25th and ≤ 50th)
≤ 15	(≤ 25th)

Figure 55
Concentrations of Total Chlordane in Blue Crab Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

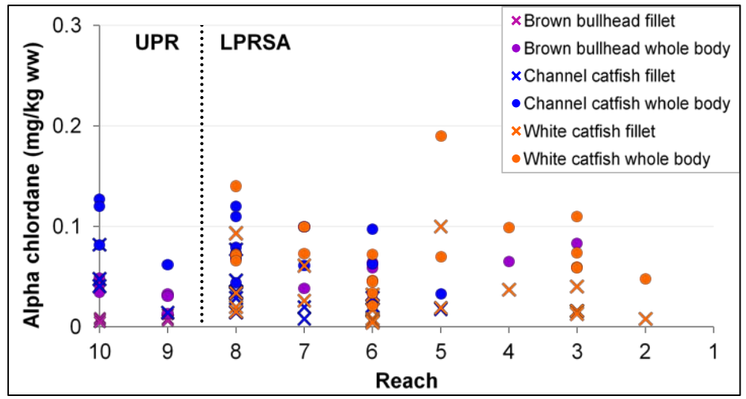
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



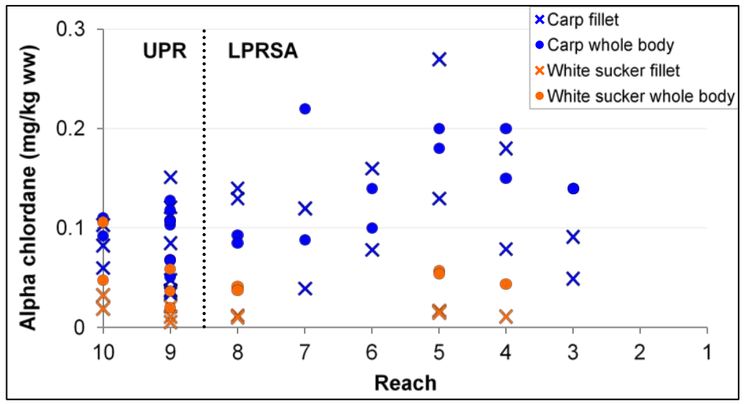
a. American eel



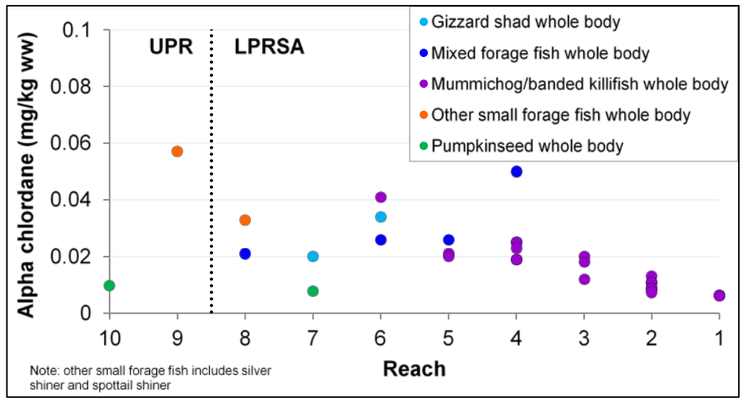
b. Bass and pike



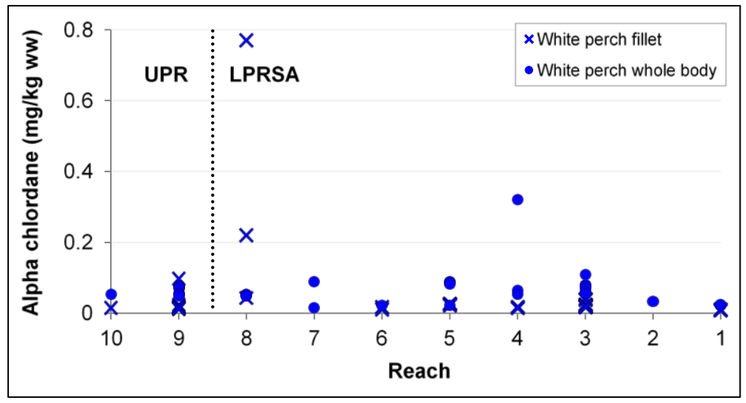
c. Bullhead and catfish



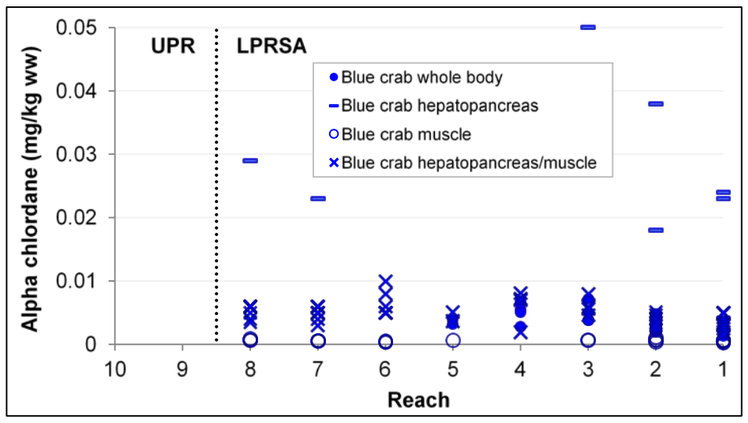
d. Carp and white sucker



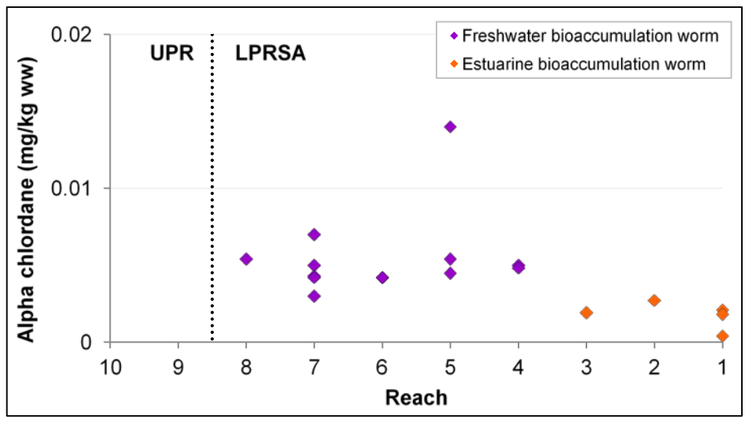
e. Small forage fish



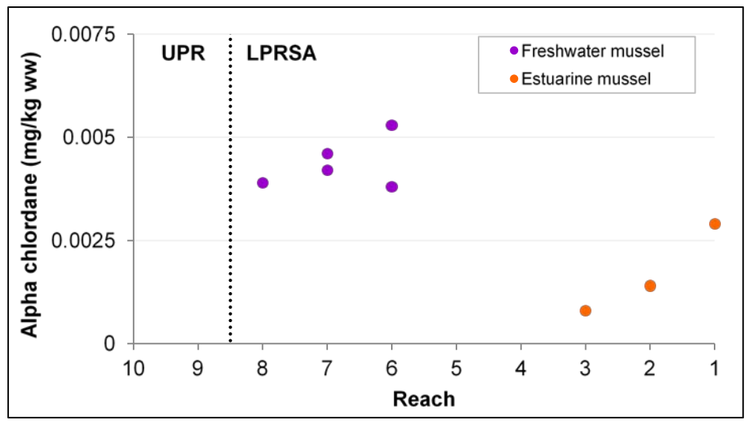
f. White perch



g. Blue crab

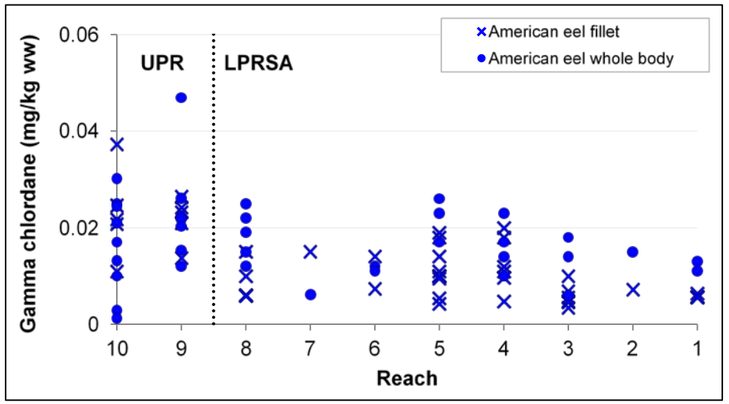


h. Bioaccumulation tissue

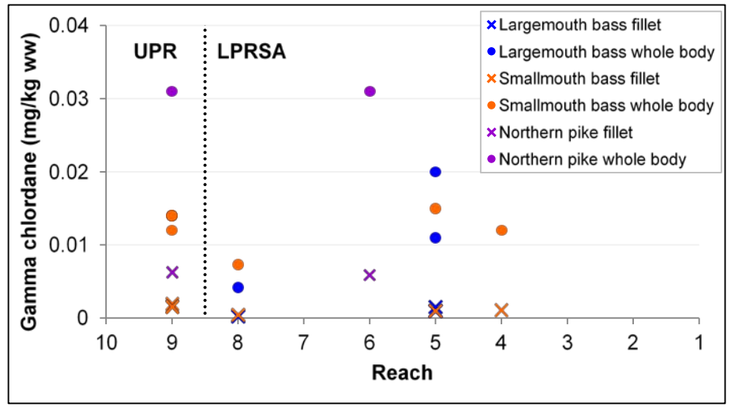


i. Caged bivalves

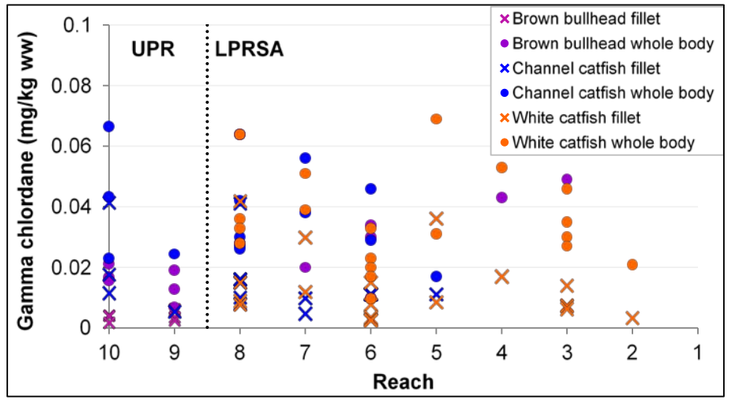
Figure 56
Concentrations of Alpha Chlordane in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



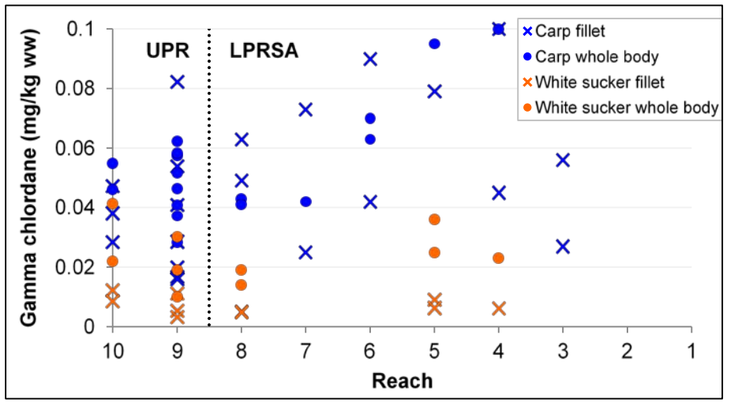
a. American eel



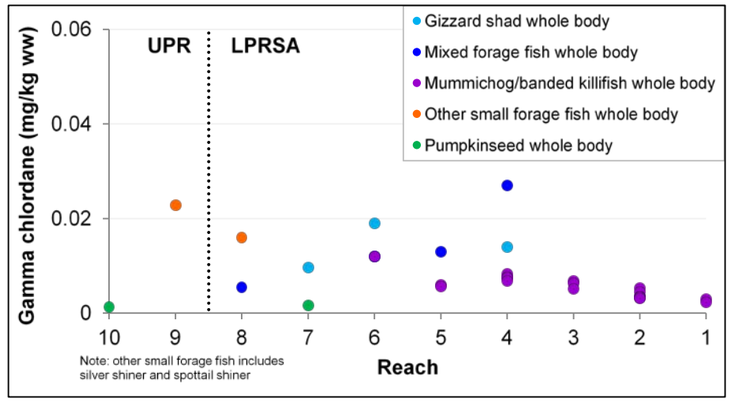
b. Bass and pike



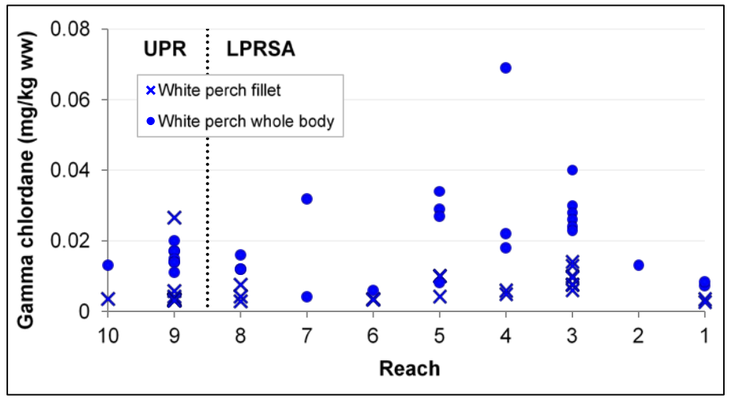
c. Bullhead and catfish



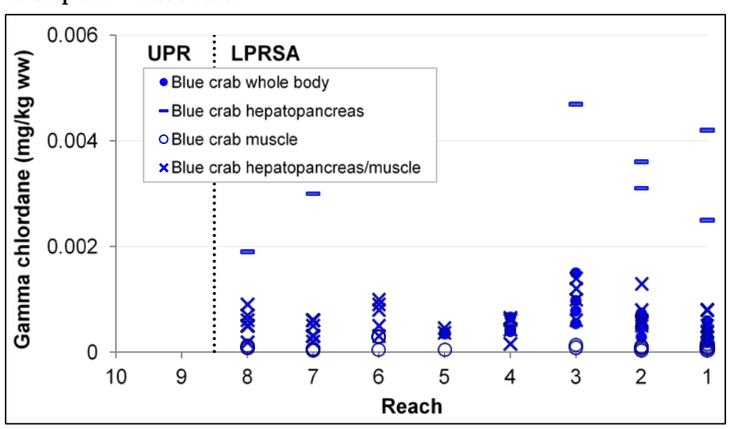
d. Carp and white sucker



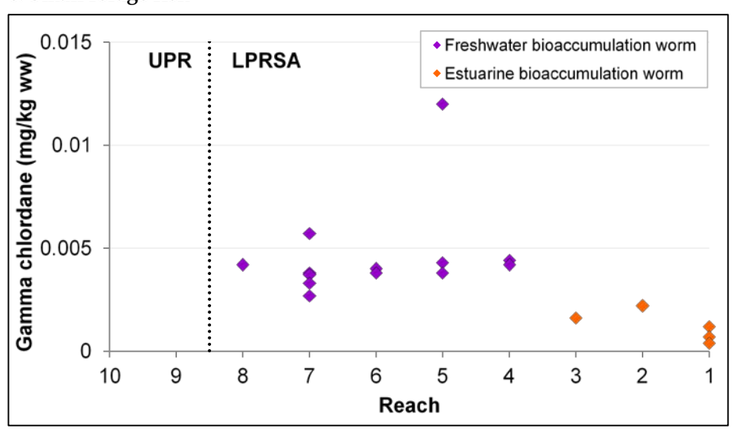
e. Small forage fish



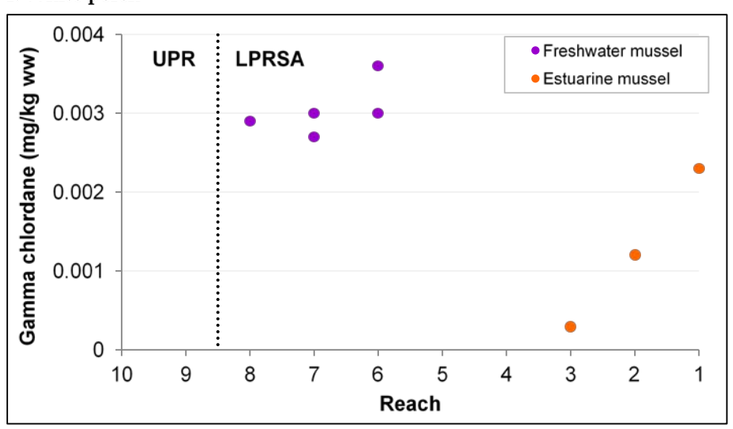
f. White perch



g. Blue crab

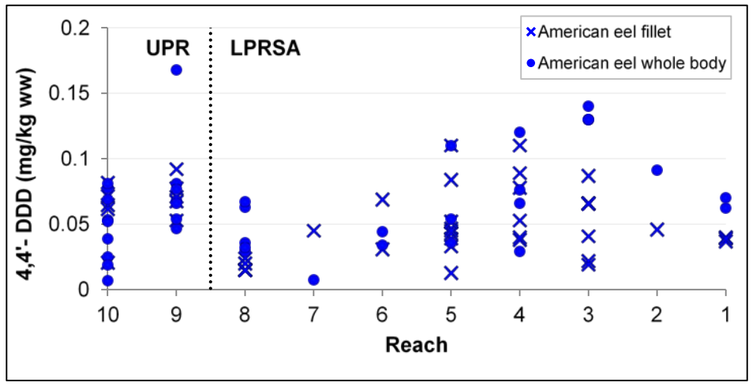


h. Bioaccumulation tissue

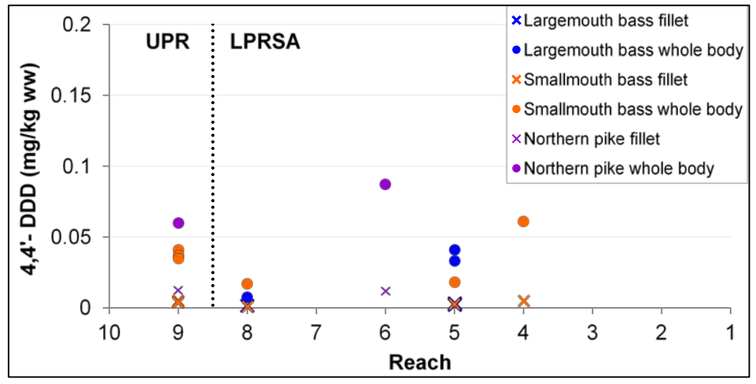


i. Caged bivalves

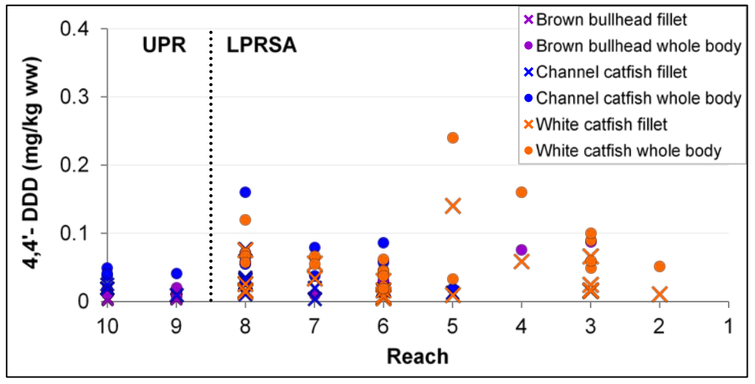
Figure 57
Concentrations of Gamma Chlordane in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



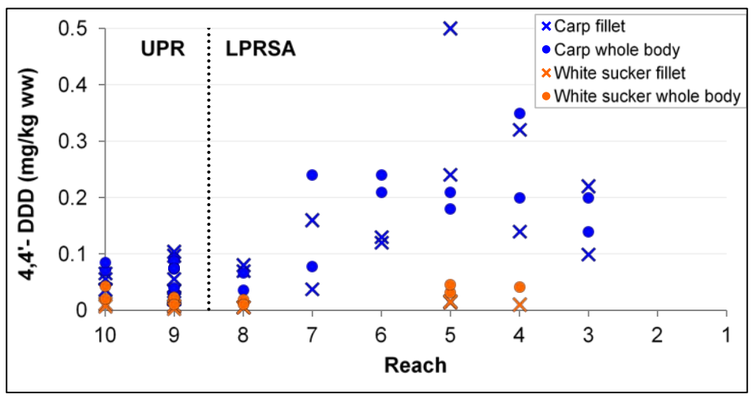
a. American eel



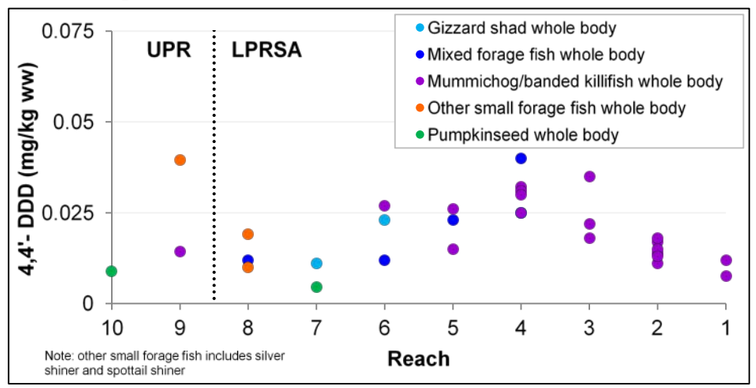
b. Bass and pike



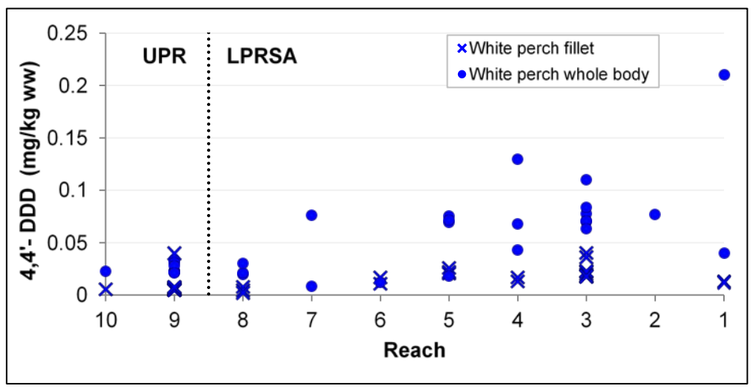
c. Bullhead and catfish



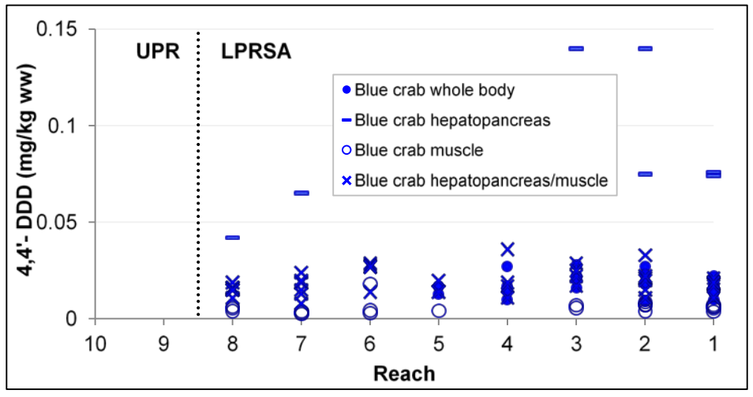
d. Carp and white sucker



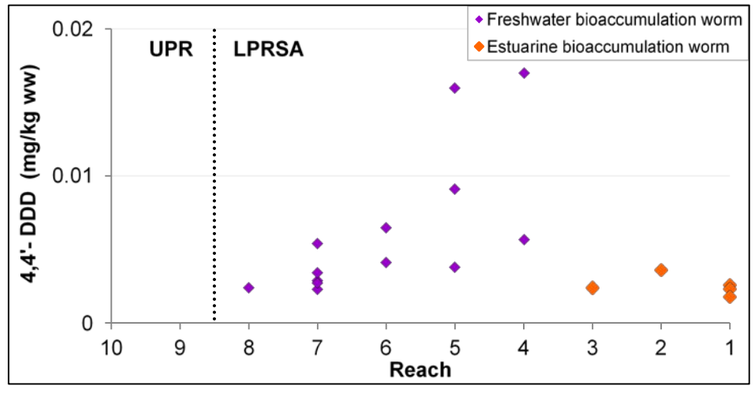
e. Small forage fish



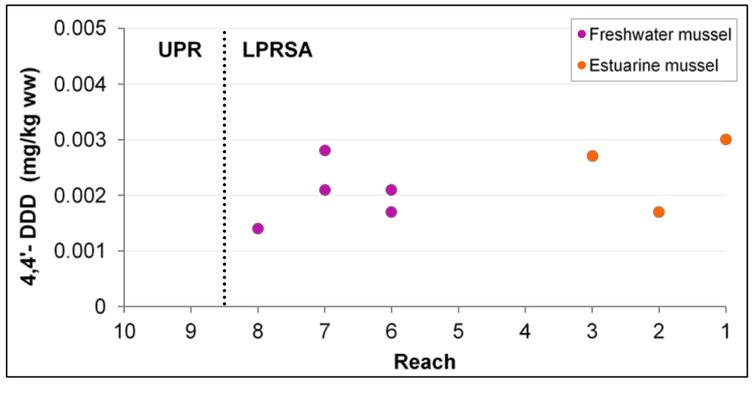
f. White perch



g. Blue crab

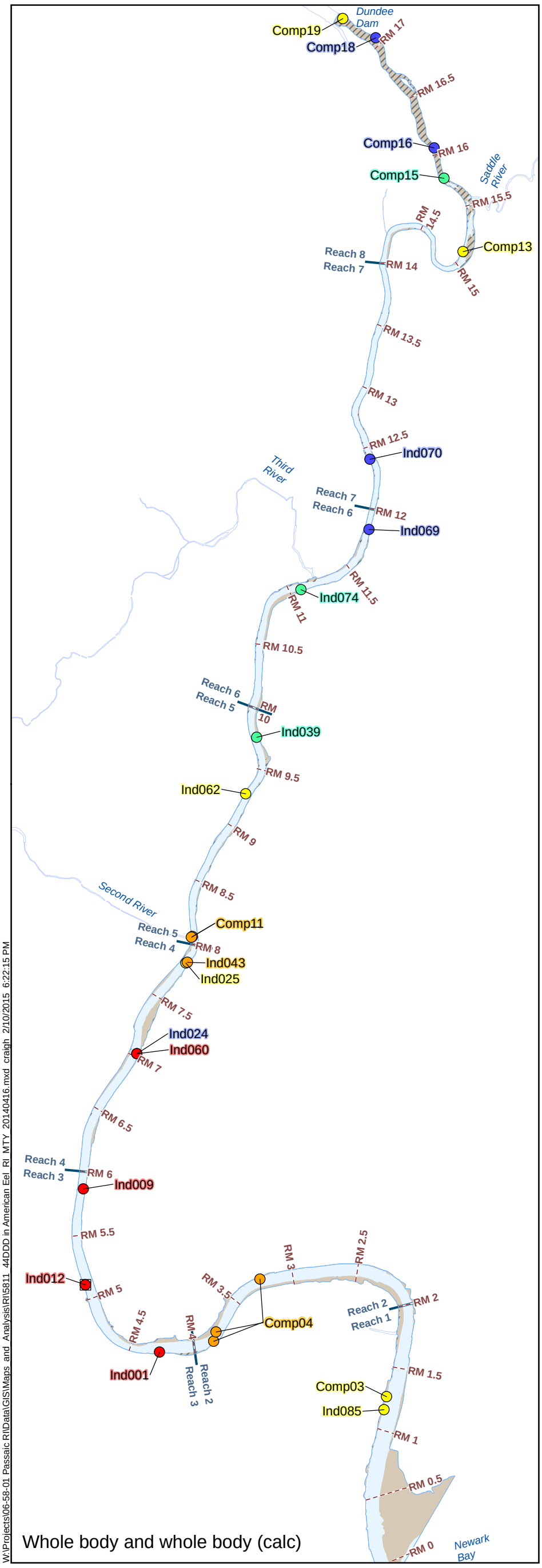


h. Bioaccumulation tissue



i. Caged bivalves

Figure 58
Concentrations of 4,4'-DDD in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5811_44DDD in American Eel_RI_MTY_20140416.mxd craigh 2/10/2015 6:22:15 PM

4,4'-DDD (µg/kg) (Percentile)

- > 110 (> 90th)
- > 73 and ≤ 110 (> 75th and ≤ 90th)
- > 45 and ≤ 73 (> 50th and ≤ 75th)
- > 34 and ≤ 45 (> 25th and ≤ 50th)
- ≤ 34 (≤ 25th)
- Non-detected

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

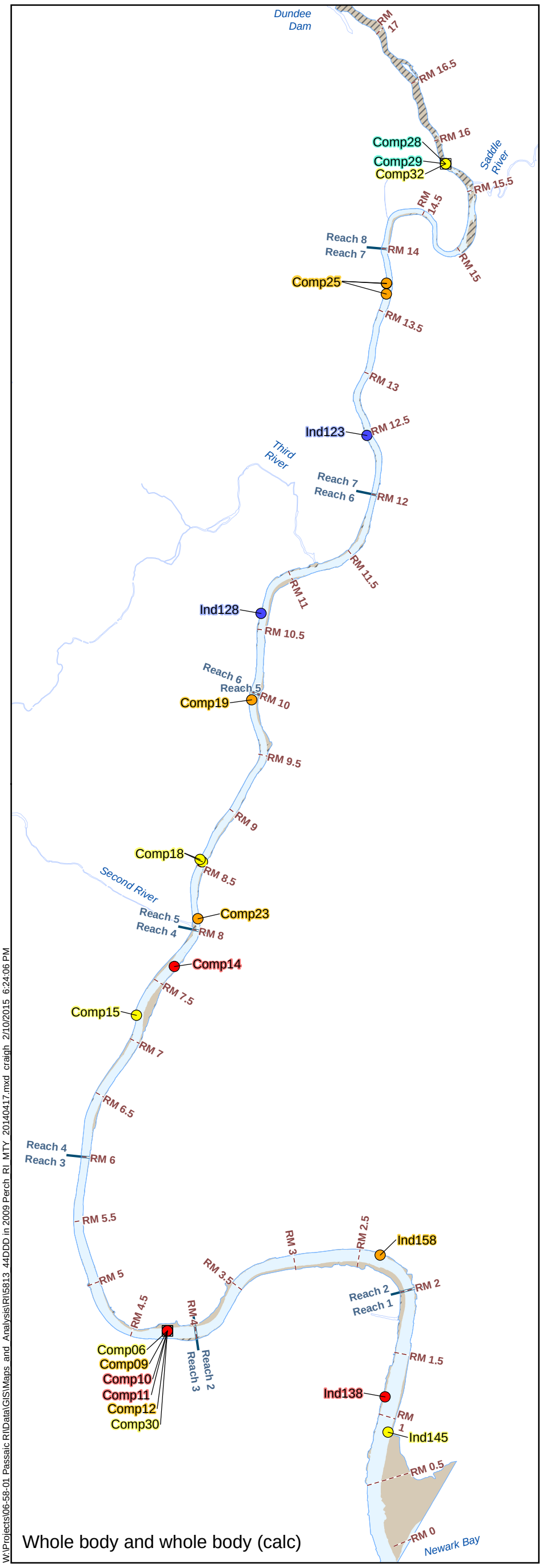
0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Figure 59

Concentrations of 4,4'-DDD in American Eel Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



4,4'-DDD (µg/kg)	(Percentile)
> 83	(> 90th)
> 71 and ≤ 83	(> 75th and ≤ 90th)
> 23 and ≤ 71	(> 50th and ≤ 75th)
> 17 and ≤ 23	(> 25th and ≤ 50th)
≤ 17	(≤ 25th)
Non-detected	

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Figure 60
Concentrations of 4,4'-DDD in White Perch Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

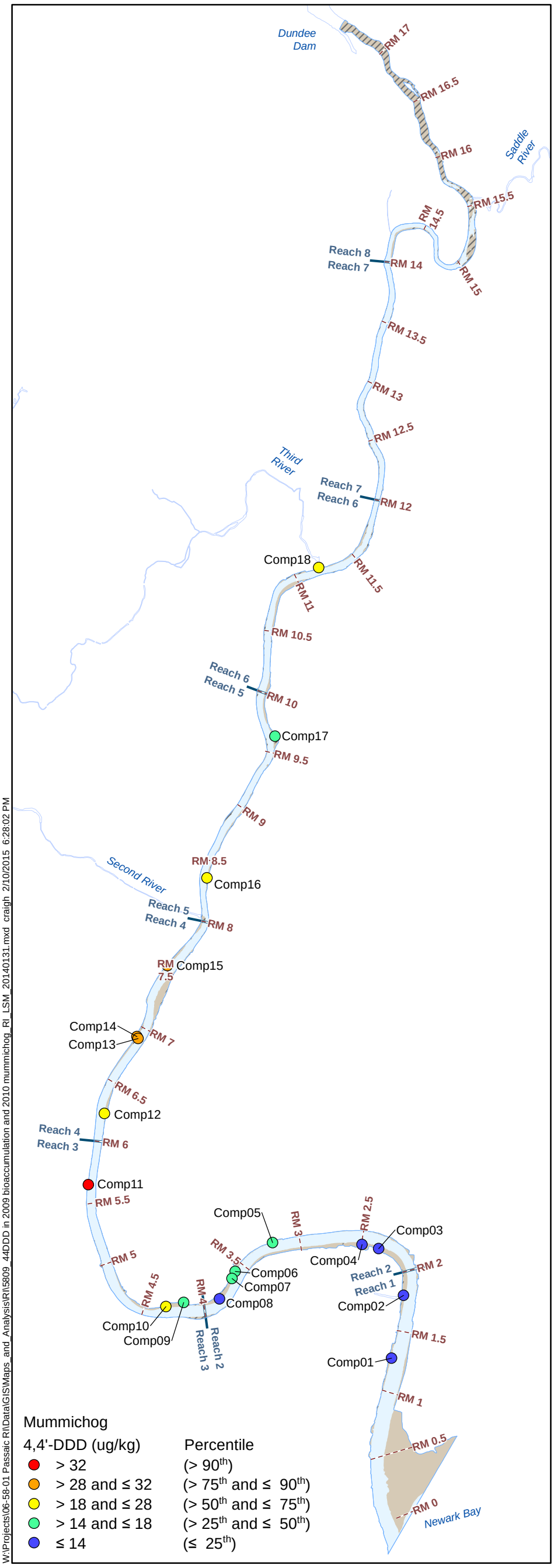


Figure 61

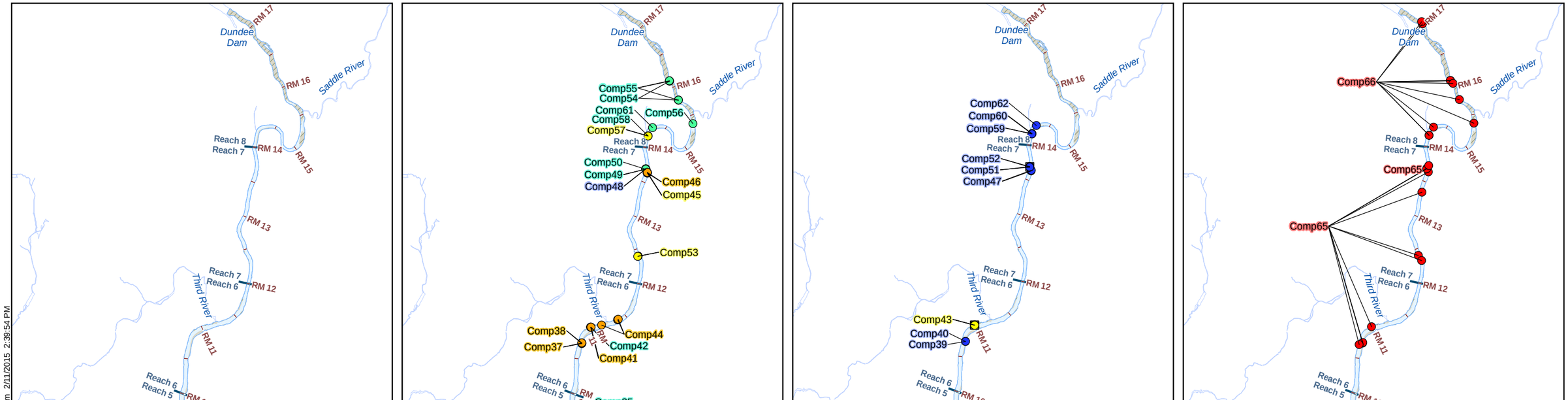
Concentrations of 4,4'-DDD in Mummichog and Bioaccumulation Worm Tissue by LPRSA Location

Remedial Investigation Report

Lower Passaic River Study Area Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5810_44DDD in blue crab tissue RI_LSM_20140131.mxd lindam 2/11/2015 2:39:54 PM



Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA
0 4,000 8,000 Feet

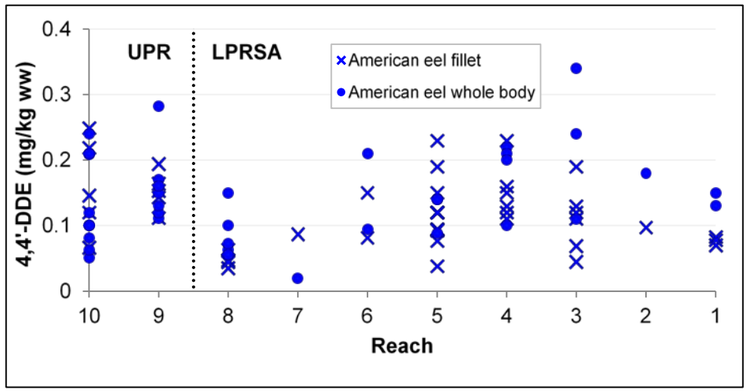
The percentile is based on the combined data from all four tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

4,4'-DDD (µg/kg)	(Percentile)
> 31	(> 90th)
> 22 and ≤ 31	(> 75th and ≤ 90th)
> 17 and ≤ 22	(> 50th and ≤ 75th)
> 9.6 and ≤ 17	(> 25th and ≤ 50th)
≤ 9.6	(≤ 25th)

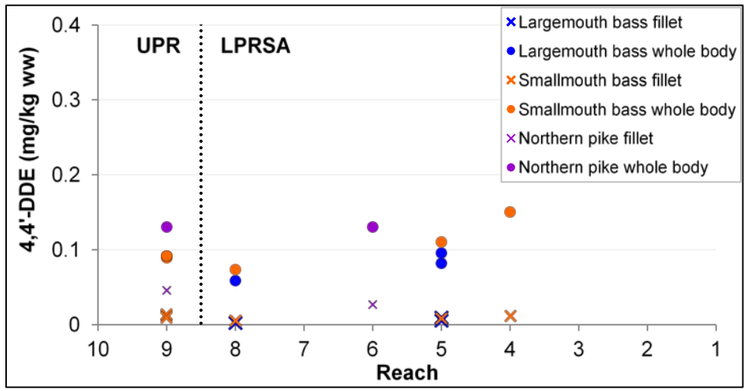
Non-detected

Figure 62
Concentrations of 4,4'-DDD in Blue Crab Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

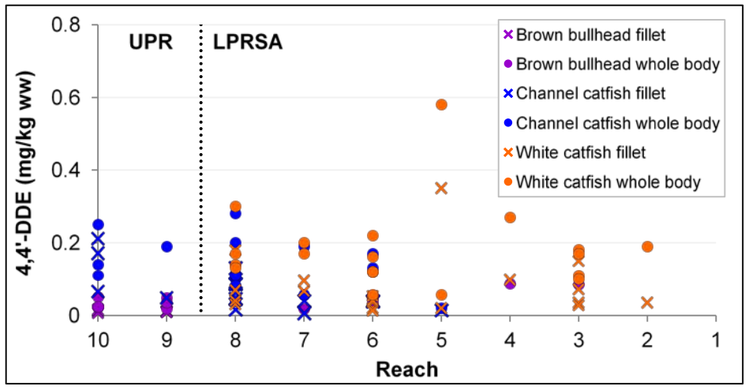
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



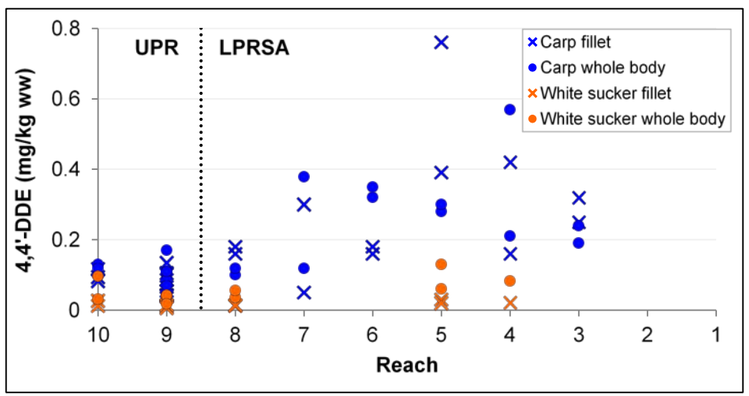
a. American eel



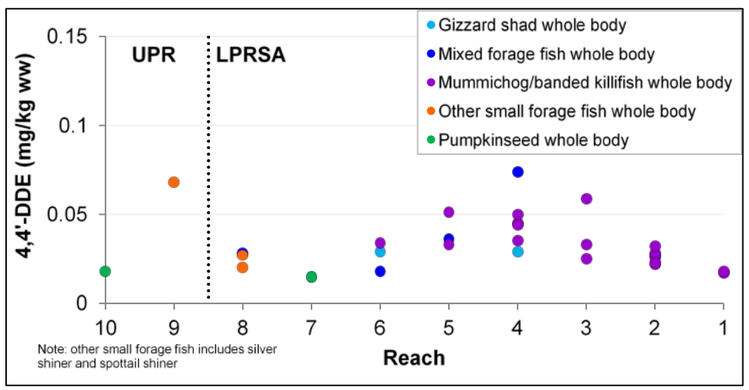
b. Bass and pike



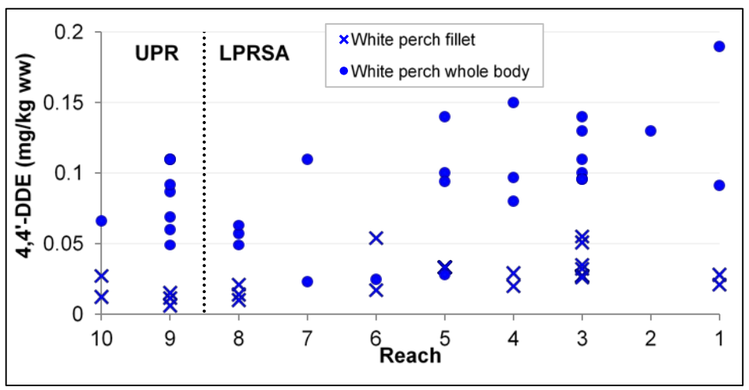
c. Bullhead and catfish



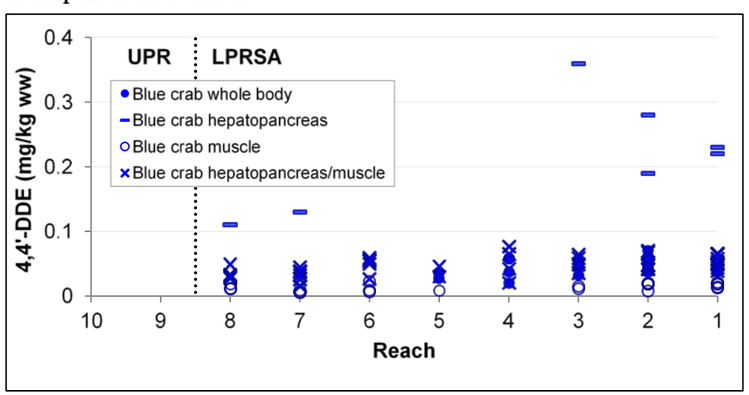
d. Carp and white sucker



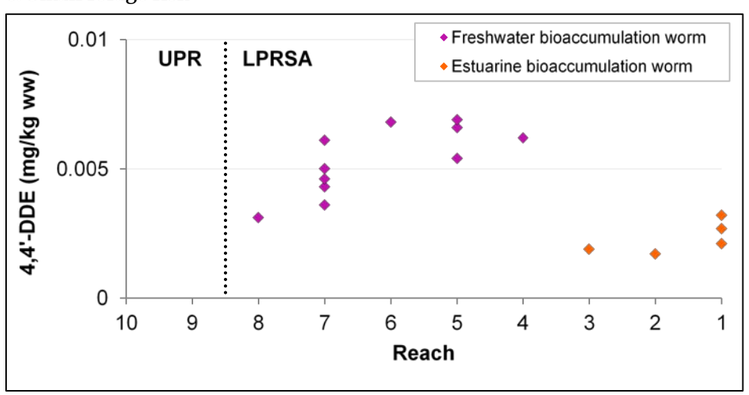
e. Small forage fish



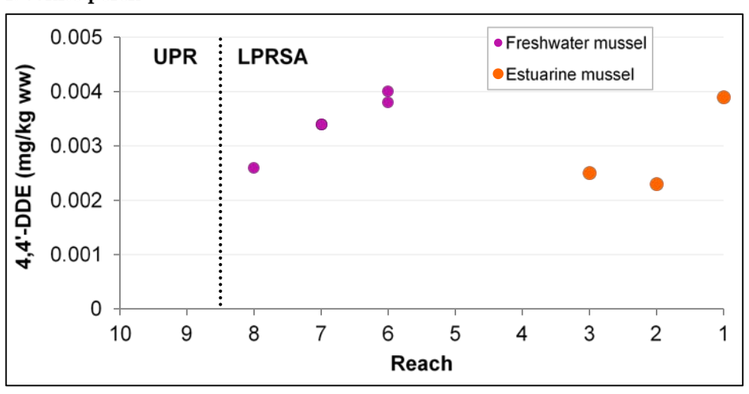
f. White perch



g. Blue crab

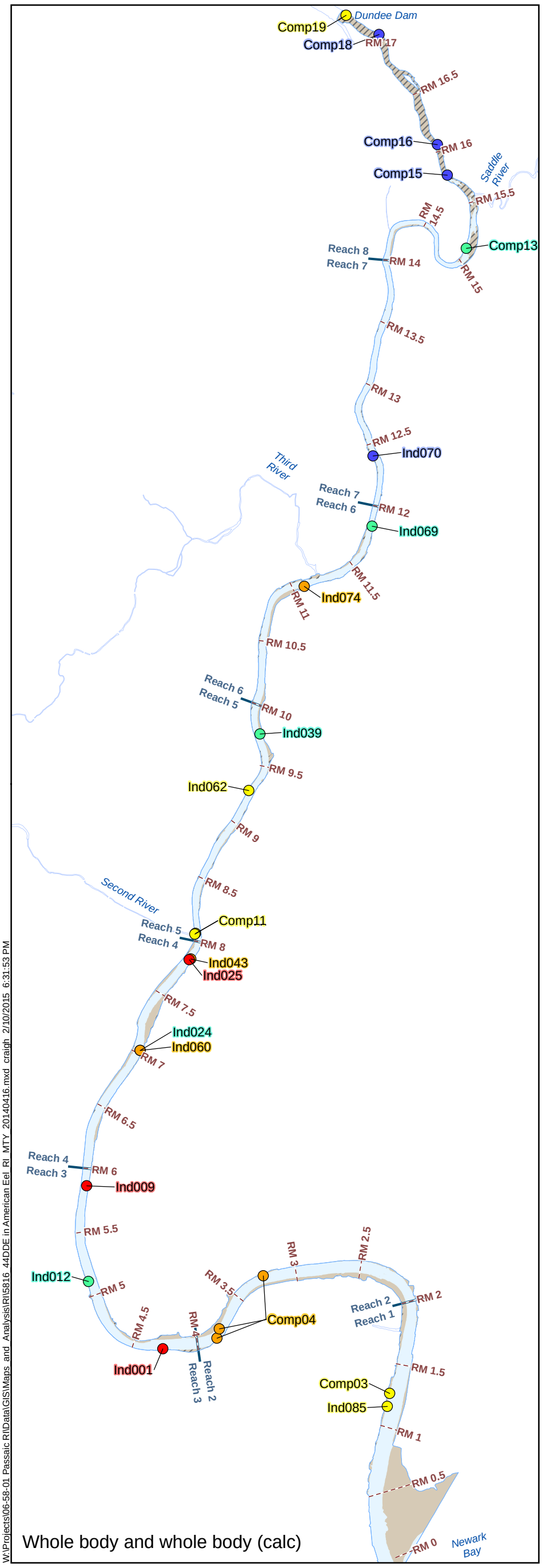


h. Bioaccumulation tissue



i. Caged bivalves

Figure 63
Concentrations of 4,4'-DDE in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



4,4'-DDE (µg/kg) | (Percentile)

- > 216 (> 90th)
- > 150 and ≤ 216 (> 75th and ≤ 90th)
- > 110 and ≤ 150 (> 50th and ≤ 75th)
- > 78 and ≤ 110 (> 25th and ≤ 50th)
- ≤ 78 (≤ 25th)

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

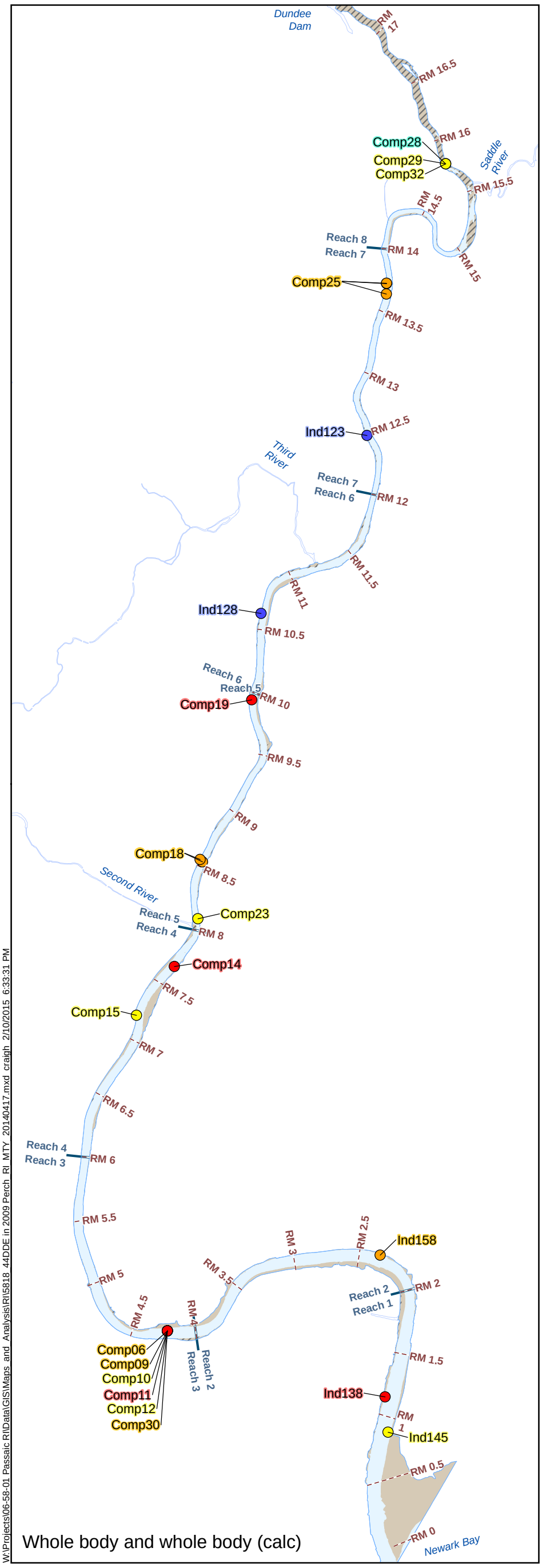
0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite. All samples were detected.

Figure 64

Concentrations of 4,4'-DDE in American Eel Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



W:\Projects\06-58-01 Passaic RIData\GIS\Maps and Analysis\RI5818 44DDE in 2009 Perch RI MTY 20140417.mxd craigh 2/10/2015 6:33:31 PM

4,4'-DDE (µg/kg)	(Percentile)
> 138	(> 90th)
> 99 and ≤ 138	(> 75th and ≤ 90th)
> 51 and ≤ 99	(> 50th and ≤ 75th)
> 27 and ≤ 51	(> 25th and ≤ 50th)
≤ 27	(≤ 25th)

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite. All samples were detected.

Figure 65
Concentrations of 4,4'-DDE in White Perch Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

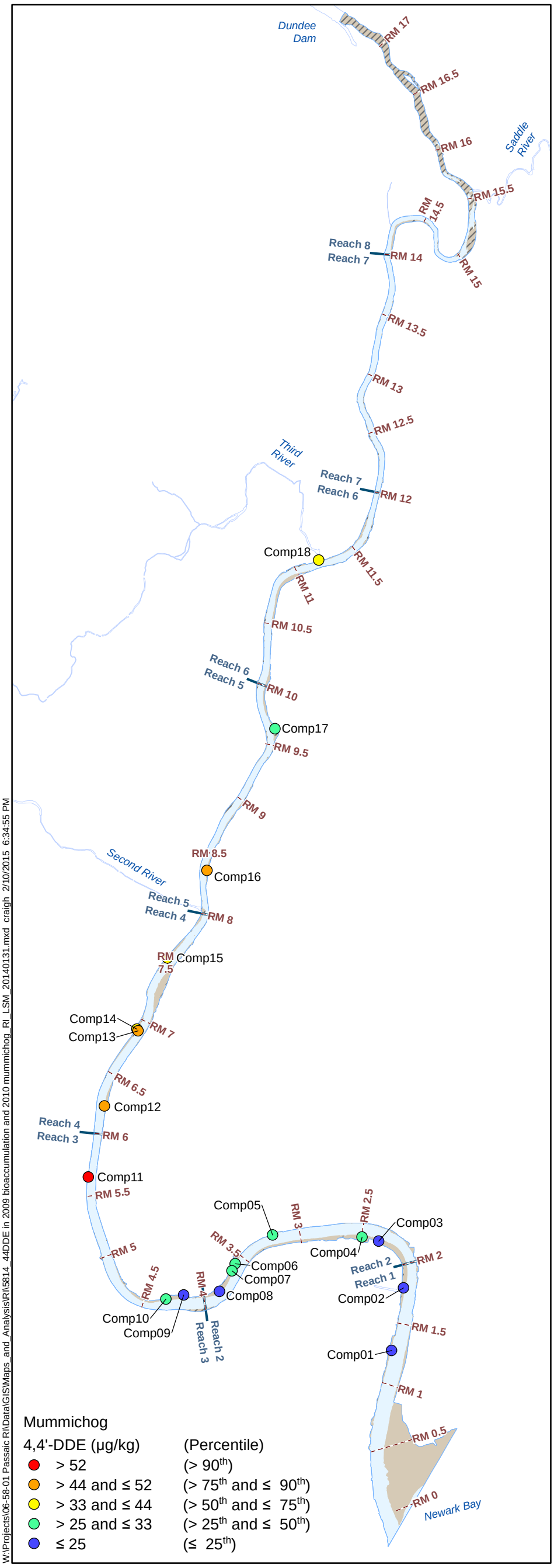


Figure 66

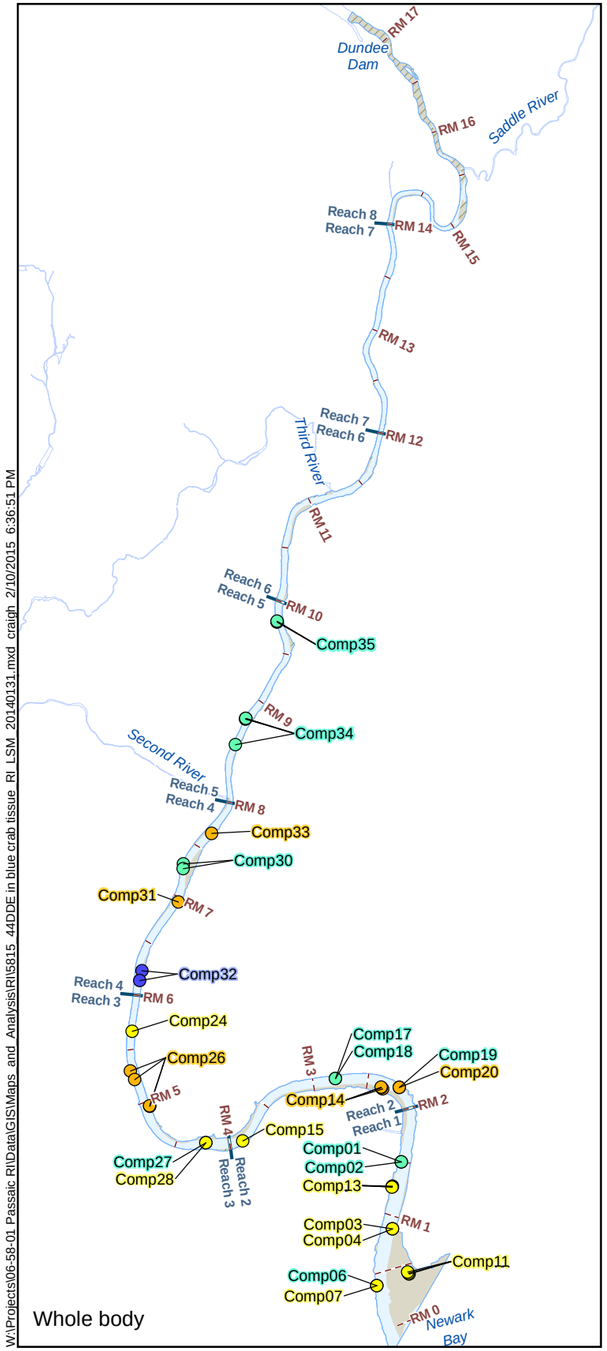
Concentrations of 4,4'-DDE in Mummichog and Bioaccumulation Worm Tissue by LPRSA Location

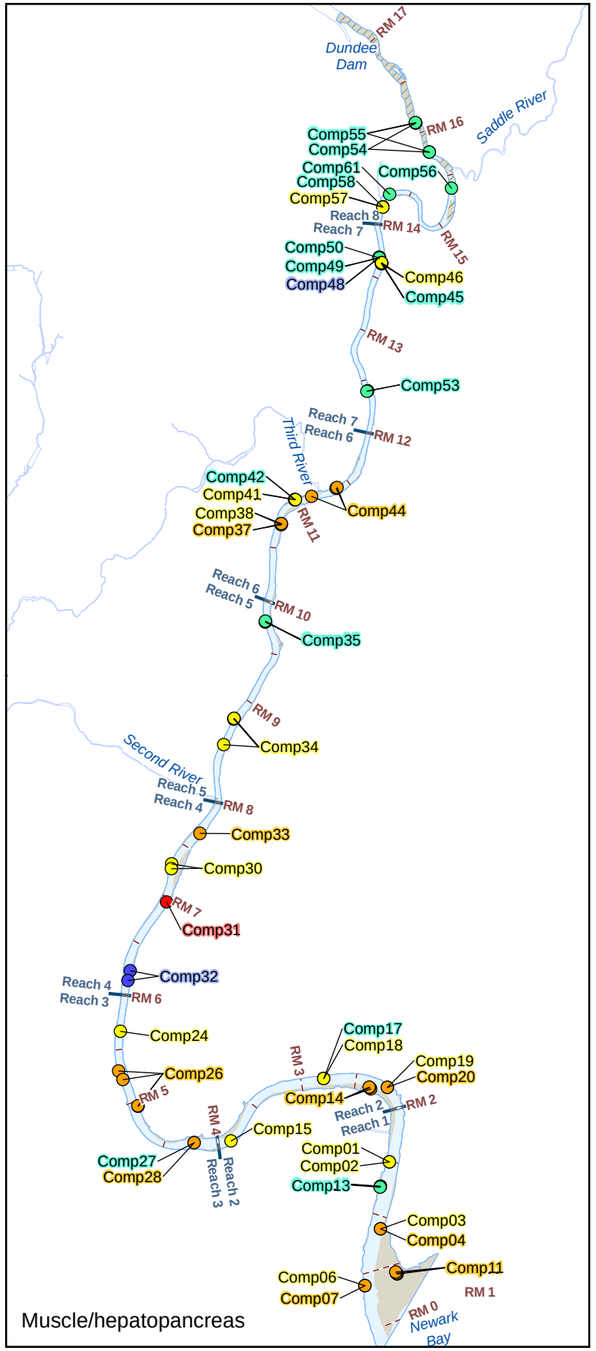
Remedial Investigation Report

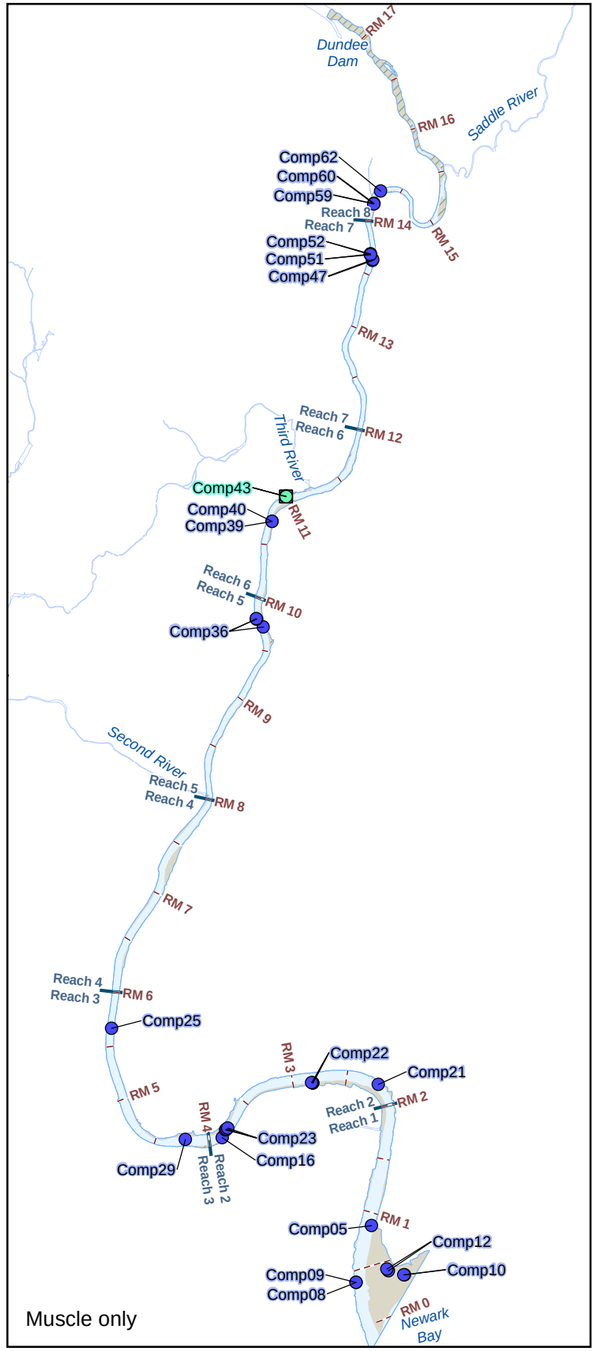
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

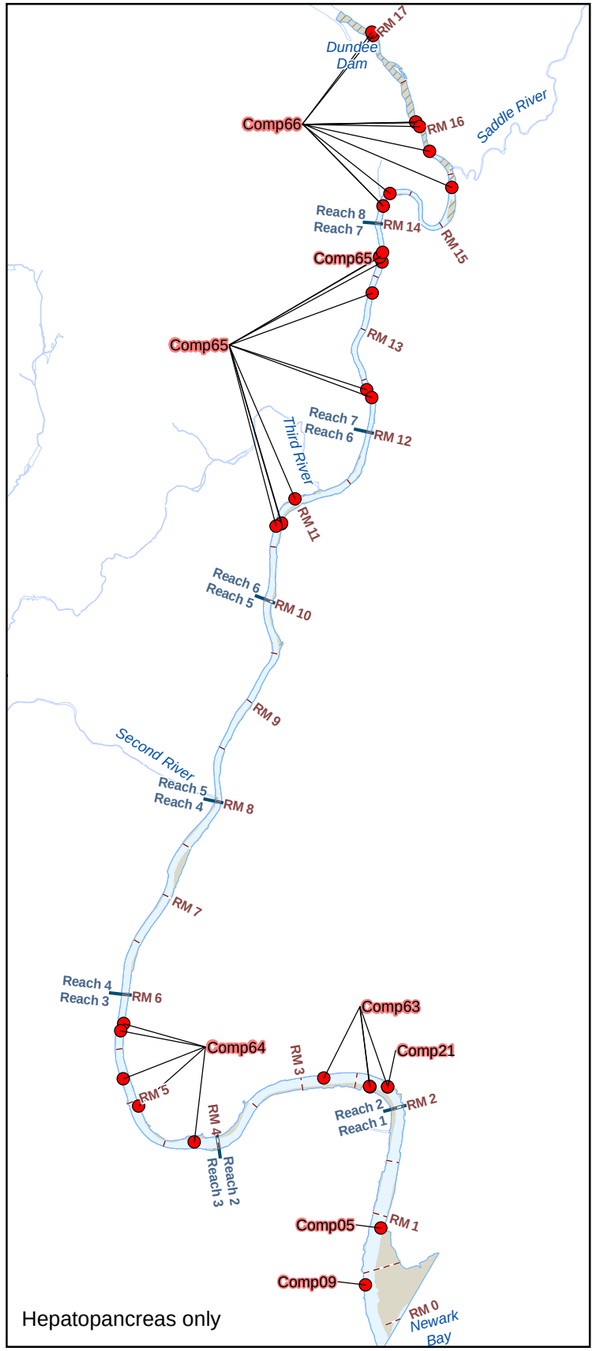
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

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Sampling reach boundary
River mile
Mudflat
LPRSA
Gravel with fines
0 4,000 8,000
Feet

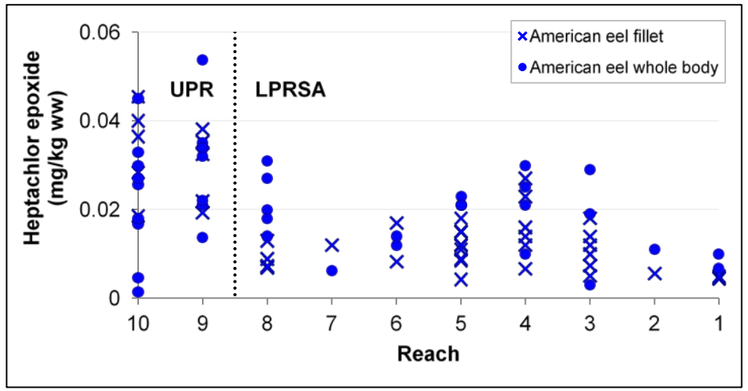
The percentile is based on the combined data from all four tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

4,4'DDE (µg/kg)	(Percentile)
> 70	(> 90th)
> 55 and ≤70	(> 75th and ≤ 90th)
> 41 and ≤ 55	(> 50th and ≤ 75th)
> 22 and ≤ 41	(> 25th and ≤ 50th)
≤ 22	(≤ 25th)

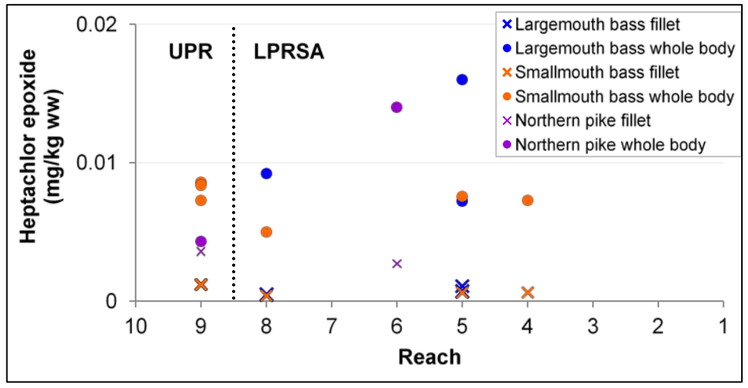
Non-detected

Figure 67
Concentrations of 4,4'-DDE in Blue Crab Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

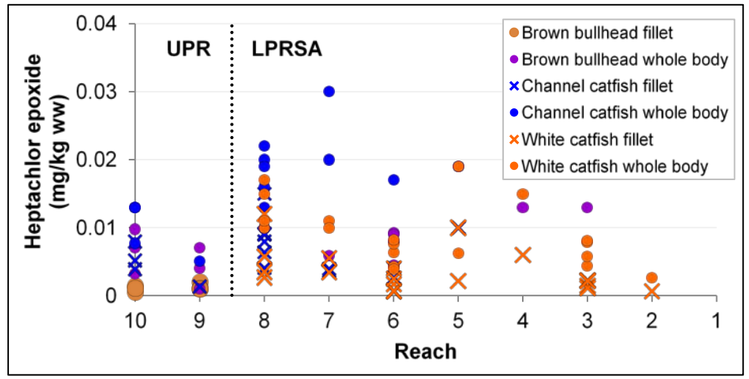
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



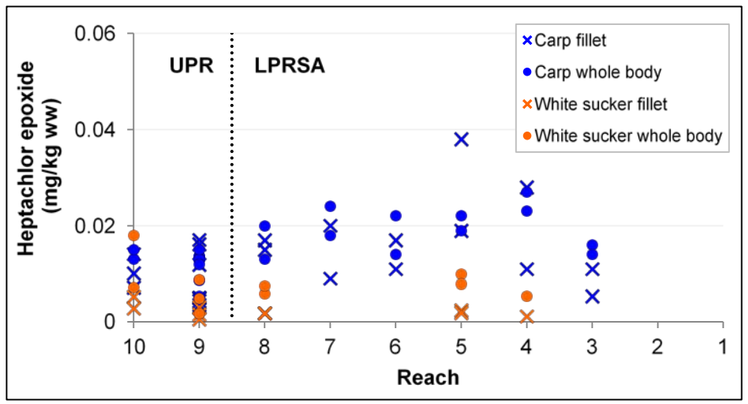
a. American eel



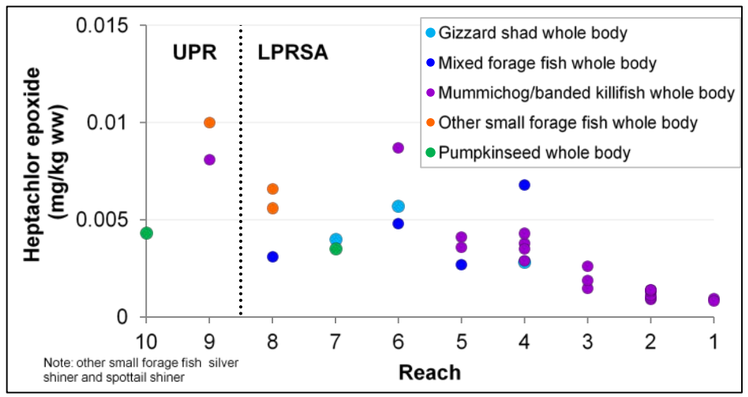
b. Bass and pike



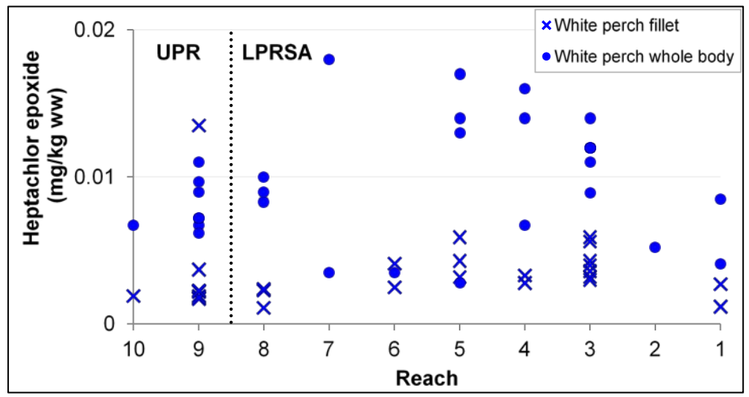
c. Bullhead and catfish



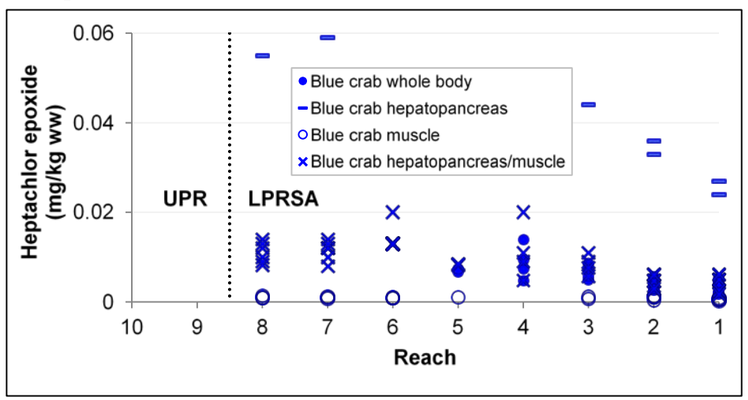
d. Carp and white sucker



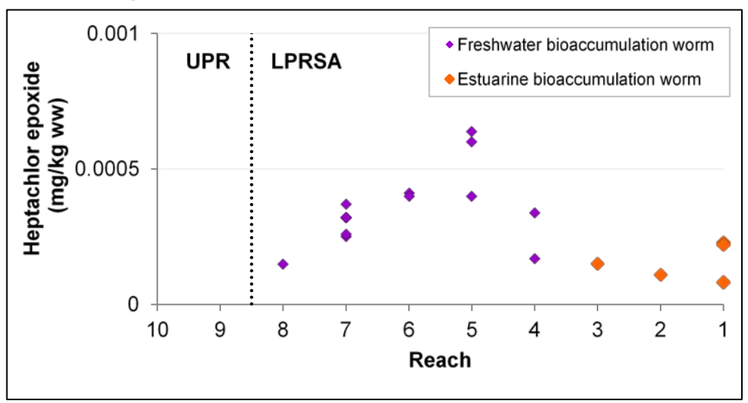
e. Small forage fish



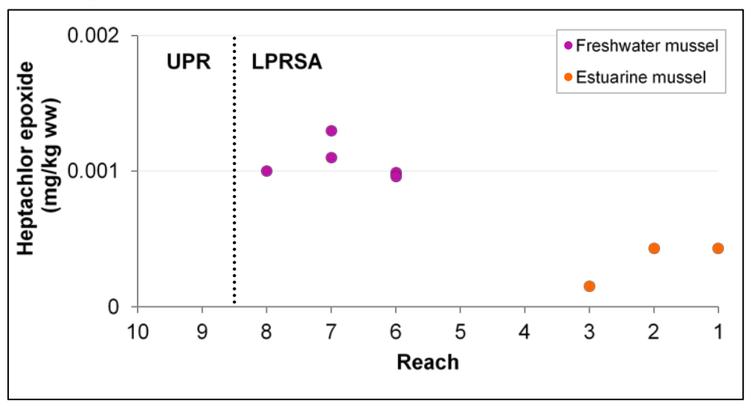
f. White perch



g. Blue crab

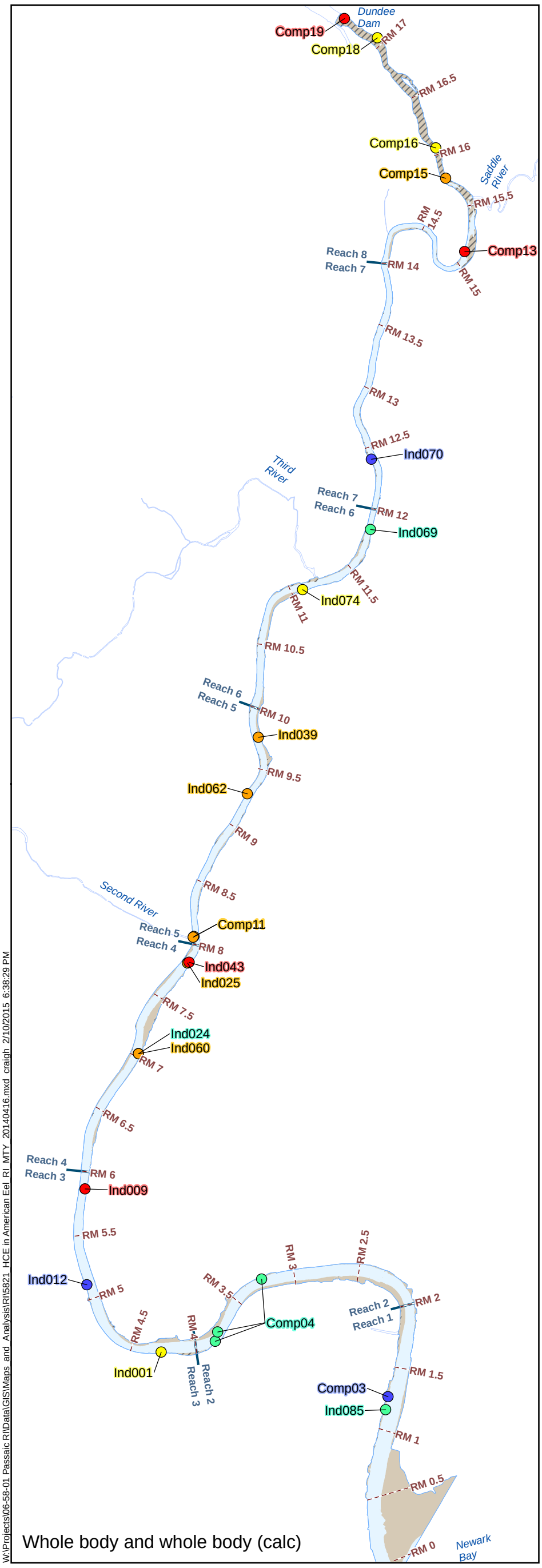


h. Bioaccumulation tissue



i. Caged bivalves

Figure 68
Concentrations of Heptachlor Epoxide in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study



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Heptachlor epoxide (µg/kg) (Percentile)

- > 26 (> 90th)
- > 19 and ≤ 26 (> 75th and ≤ 90th)
- > 12 and ≤ 19 (> 50th and ≤ 75th)
- > 7.9 and ≤ 12 (> 25th and ≤ 50th)
- ≤ 7.9 (≤ 25th)

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

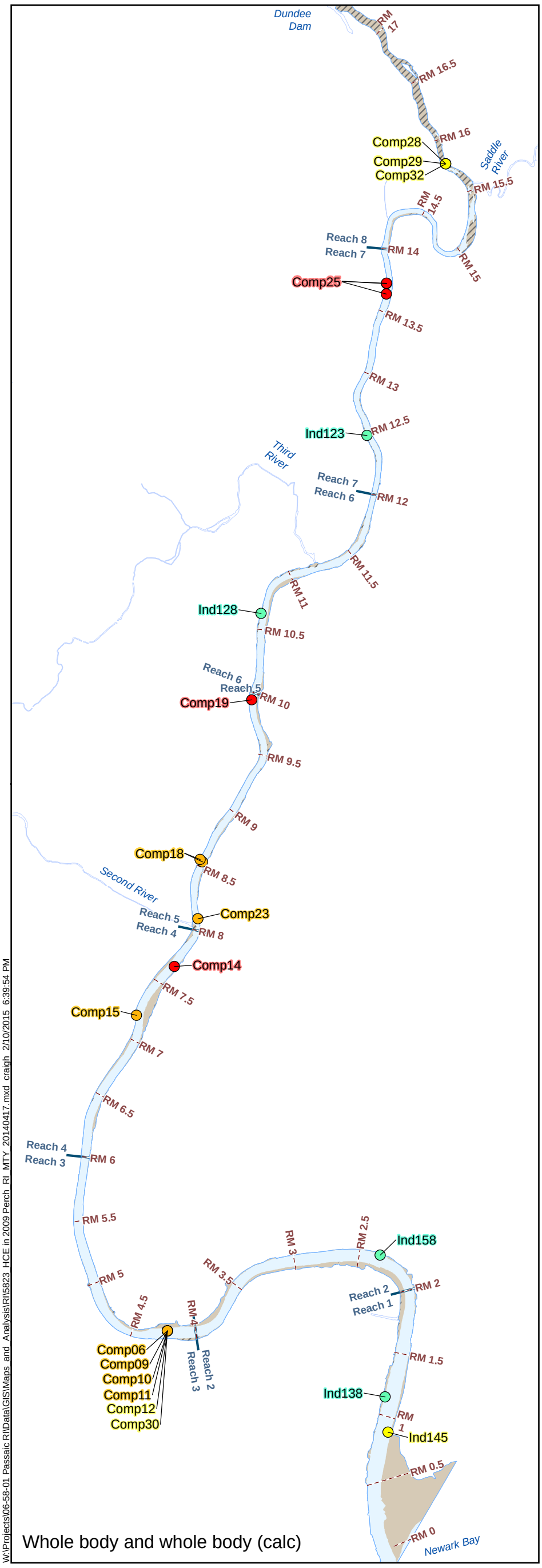
0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite. All samples were detected.

Figure 69

Concentrations of Heptachlor Epoxide in American Eel Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



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Heptachlor epoxide (µg/kg) (Percentile)

- > 14 (> 90th)
- > 12 and ≤ 14 (> 75th and ≤ 90th)
- > 5.2 and ≤ 12 (> 50th and ≤ 75th)
- > 3.2 and ≤ 5.2 (> 25th and ≤ 50th)
- ≤ 3.2 (≤ 25th)
- Non-detected

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

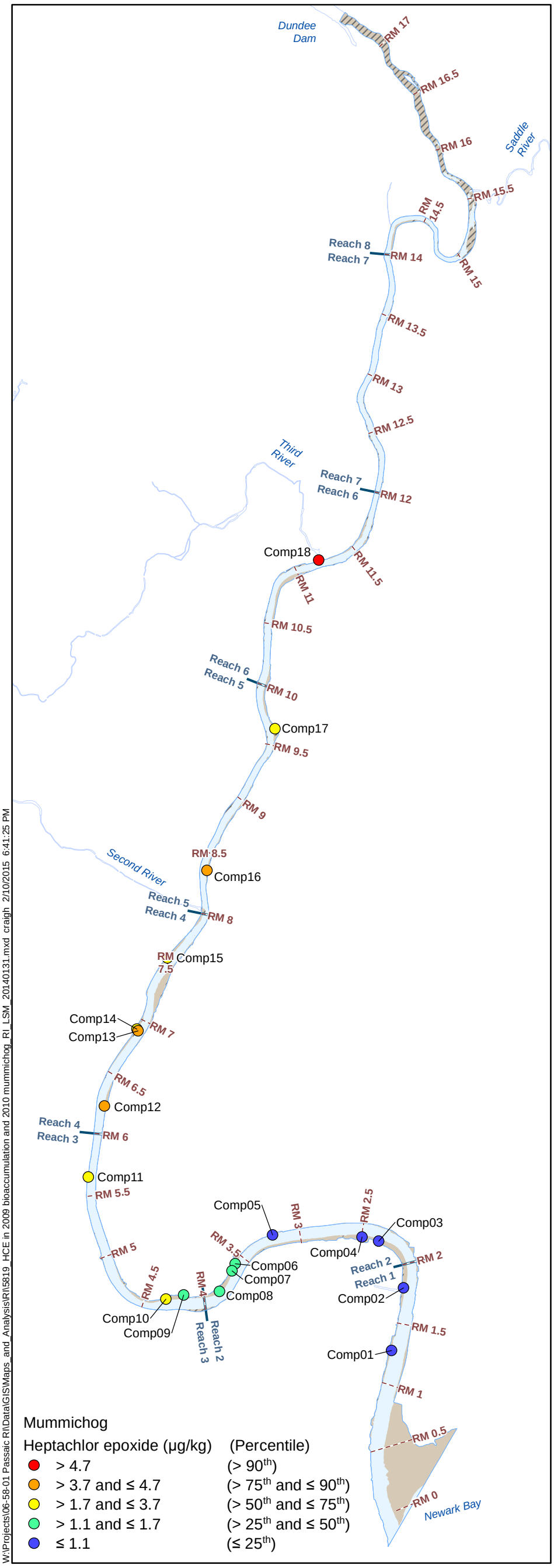
0 2,000 4,000 6,000 Feet

The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Figure 70

Concentrations of Heptachlor Epoxide in White Perch Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



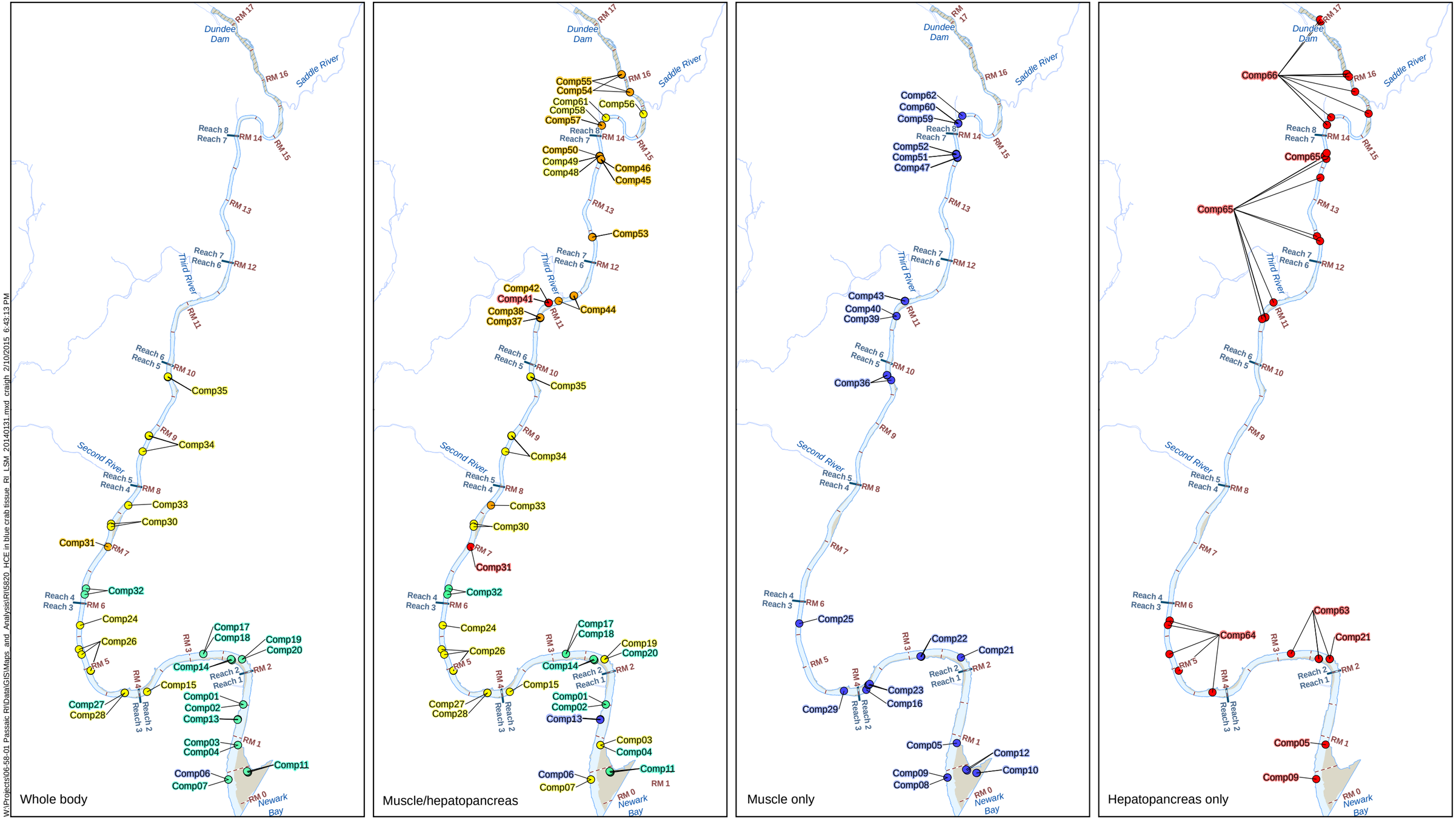
W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5819 HCE in 2009 bioaccumulation and 2010 mummichog RI LSM 20140131.mxd craigh 2/10/2015 6:41:25 PM

Figure 71

Concentrations of Heptachlor Epoxide in Mummichog and Bioaccumulation Worm Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

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Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA
0 4,000 8,000 Feet

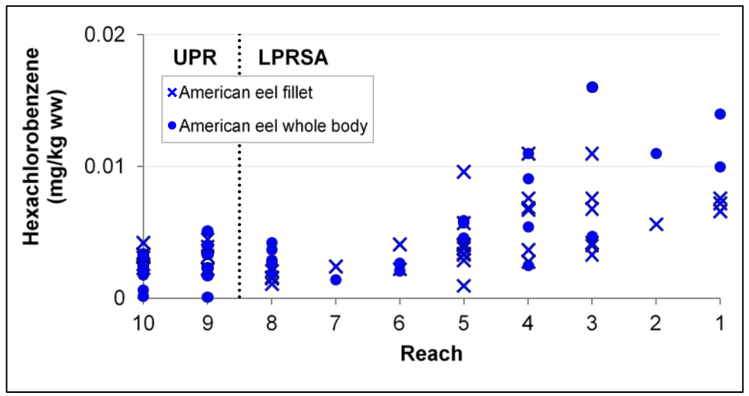
All samples were detected.
The percentile is based on the combined data from all four tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Hexachlor epoxide (µg/kg) (Percentile)

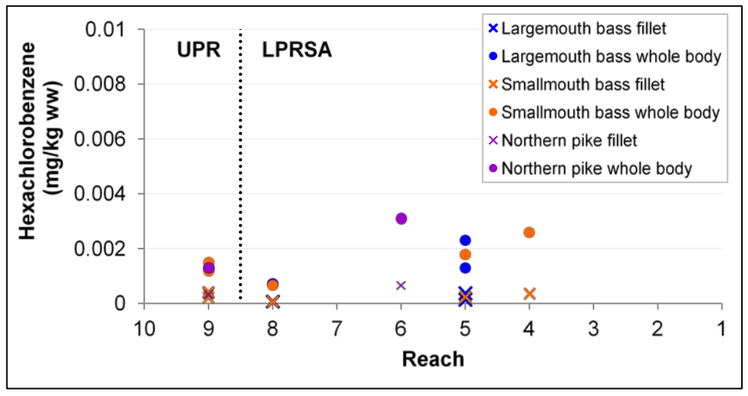
> 18	(> 90th)
> 11 and ≤ 18	(> 75th and ≤ 90th)
> 5.2 and ≤ 11	(> 50th and ≤ 75th)
> 1.9 and ≤ 5.2	(> 25th and ≤ 50th)
≤ 1.9	(≤ 25th)

Figure 72
Concentrations of Heptachlor Epoxide in Blue Crab Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

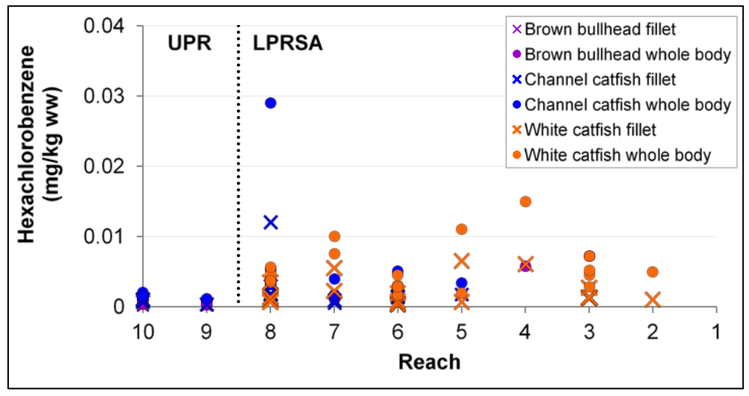
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



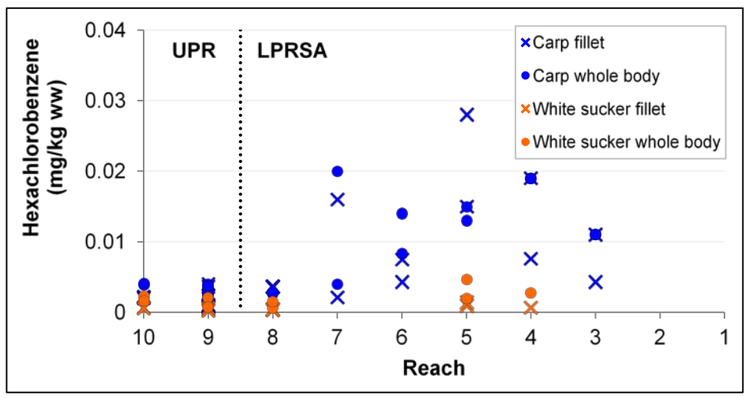
a. American eel



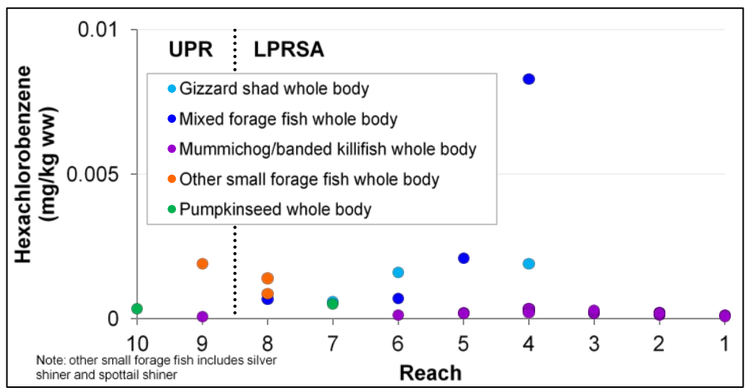
b. Bass and pike



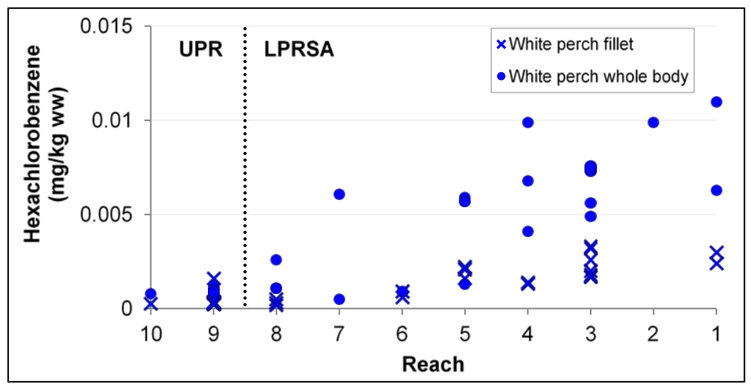
c. Bullhead and catfish



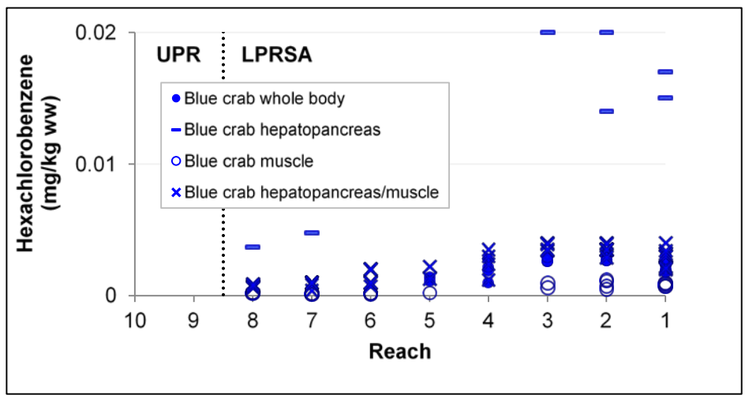
d. Carp and white sucker



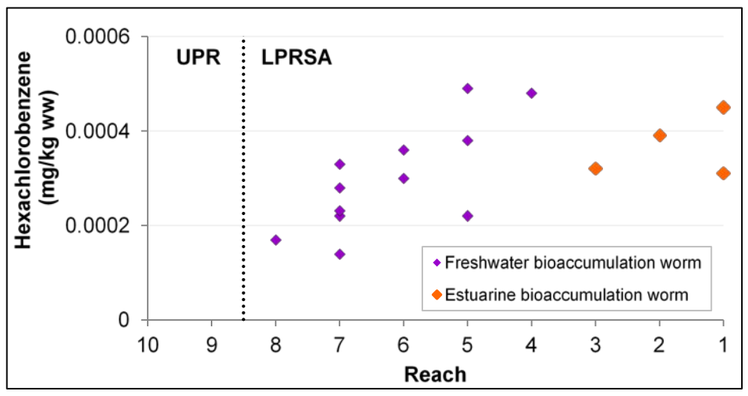
e. Small forage fish



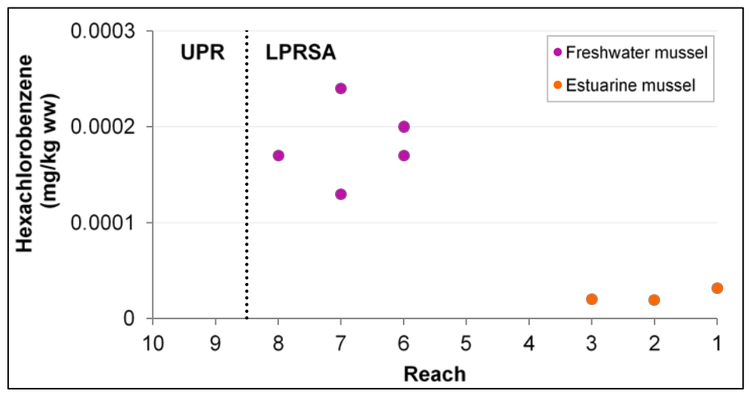
f. White perch



g. Blue crab

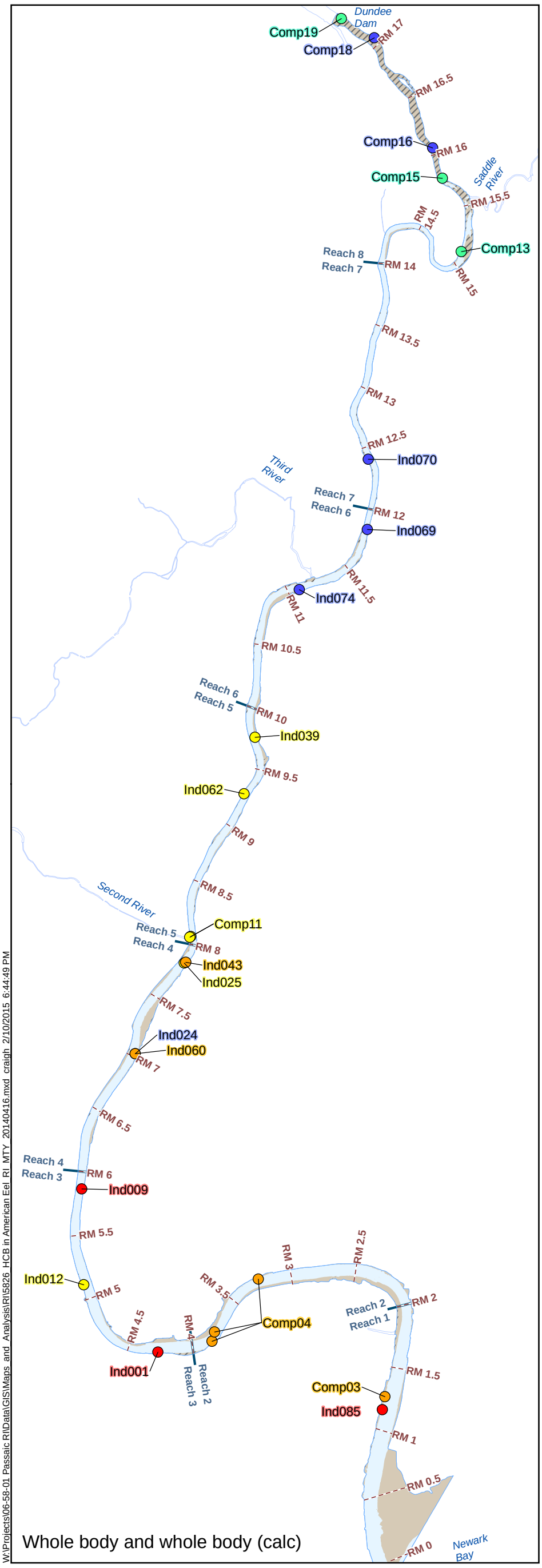


h. Bioaccumulation tissue



i. Caged bivalves

Figure 73
Concentrations of Hexachlorobenzene in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

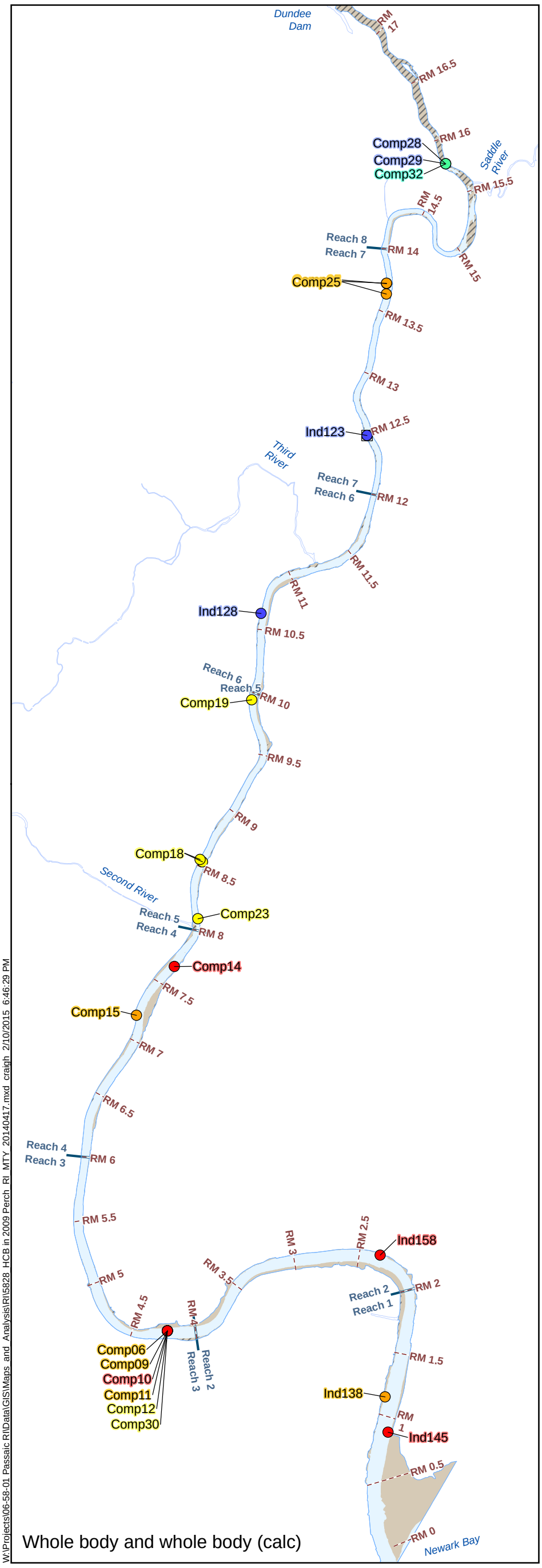


The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Figure 74

Concentrations of Hexachlorobenzene in American Eel Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



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Hexachlorobenzene (µg/kg) (Percentile)

- > 7.6 (> 90th)
- > 6.0 and ≤ 7.6 (> 75th and ≤ 90th)
- > 2.6 and ≤ 6.0 (> 50th and ≤ 75th)
- > 1.3 and ≤ 2.6 (> 25th and ≤ 50th)
- ≤ 1.3 (≤ 25th)
- Non-detected

Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

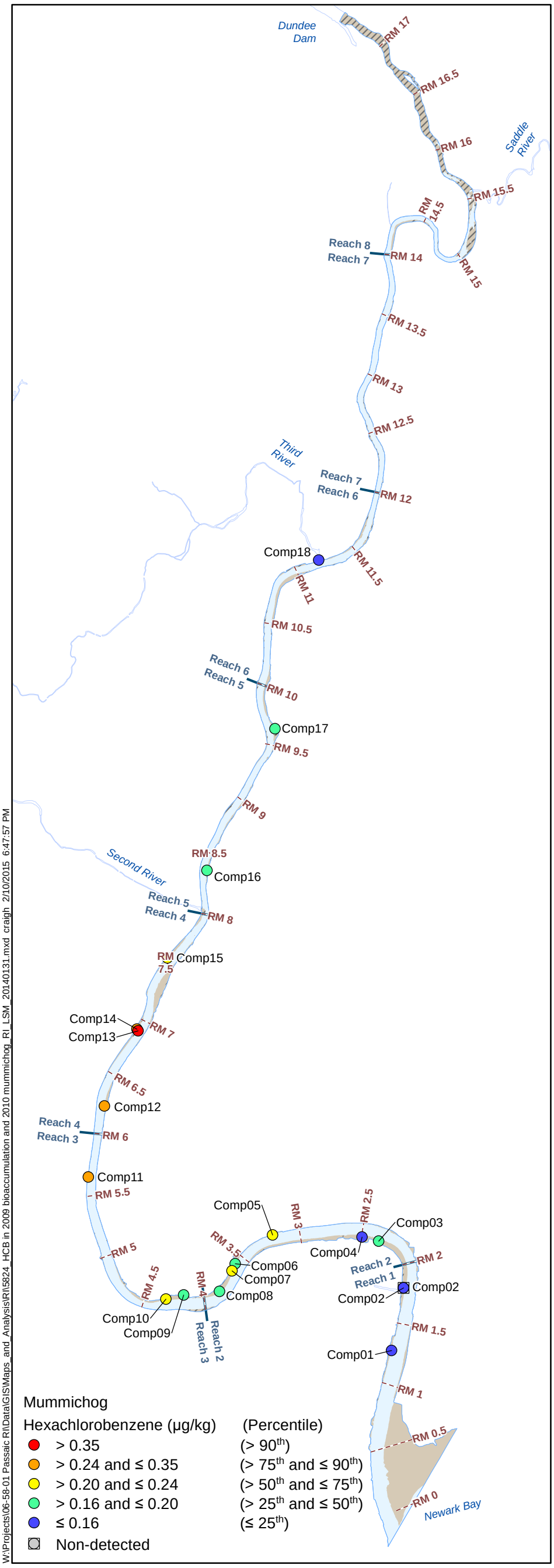
0 2,000 4,000 6,000 Feet

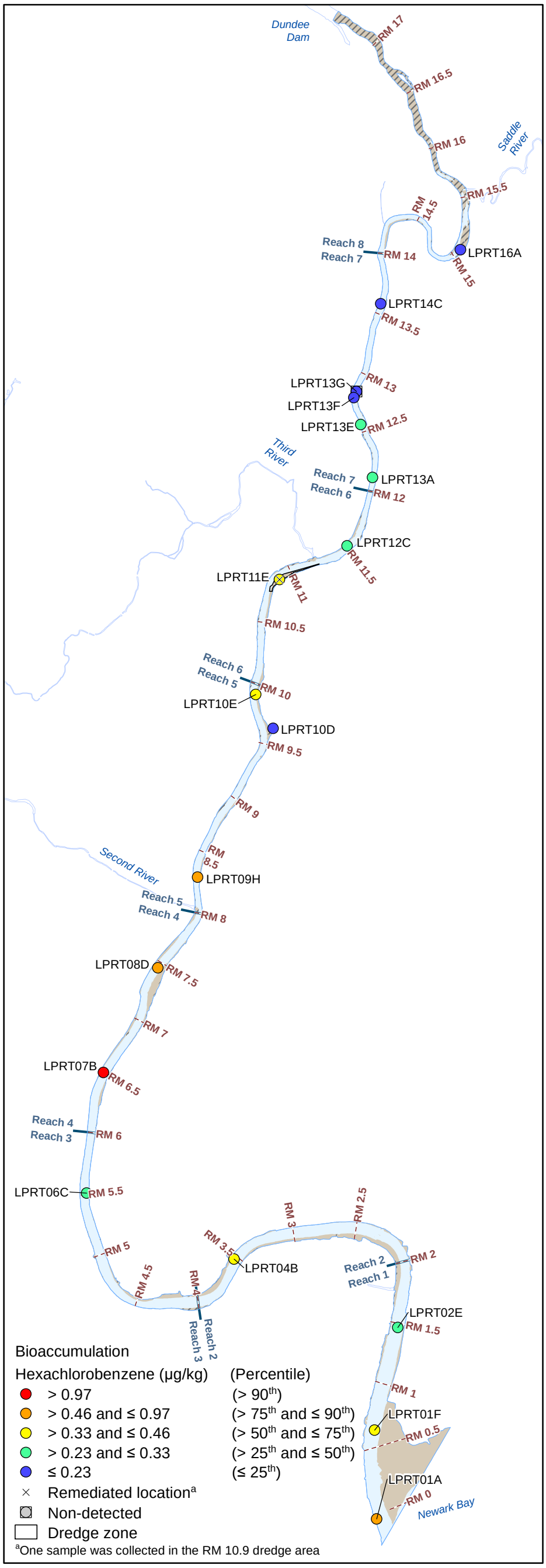
The percentile is based on the combined data from both tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

Figure 75

Concentrations of Hexachlorobenzene in White Perch Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area
Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.





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Sampling reach boundary
Mudflat
Gravel with fines
River mile
LPRSA

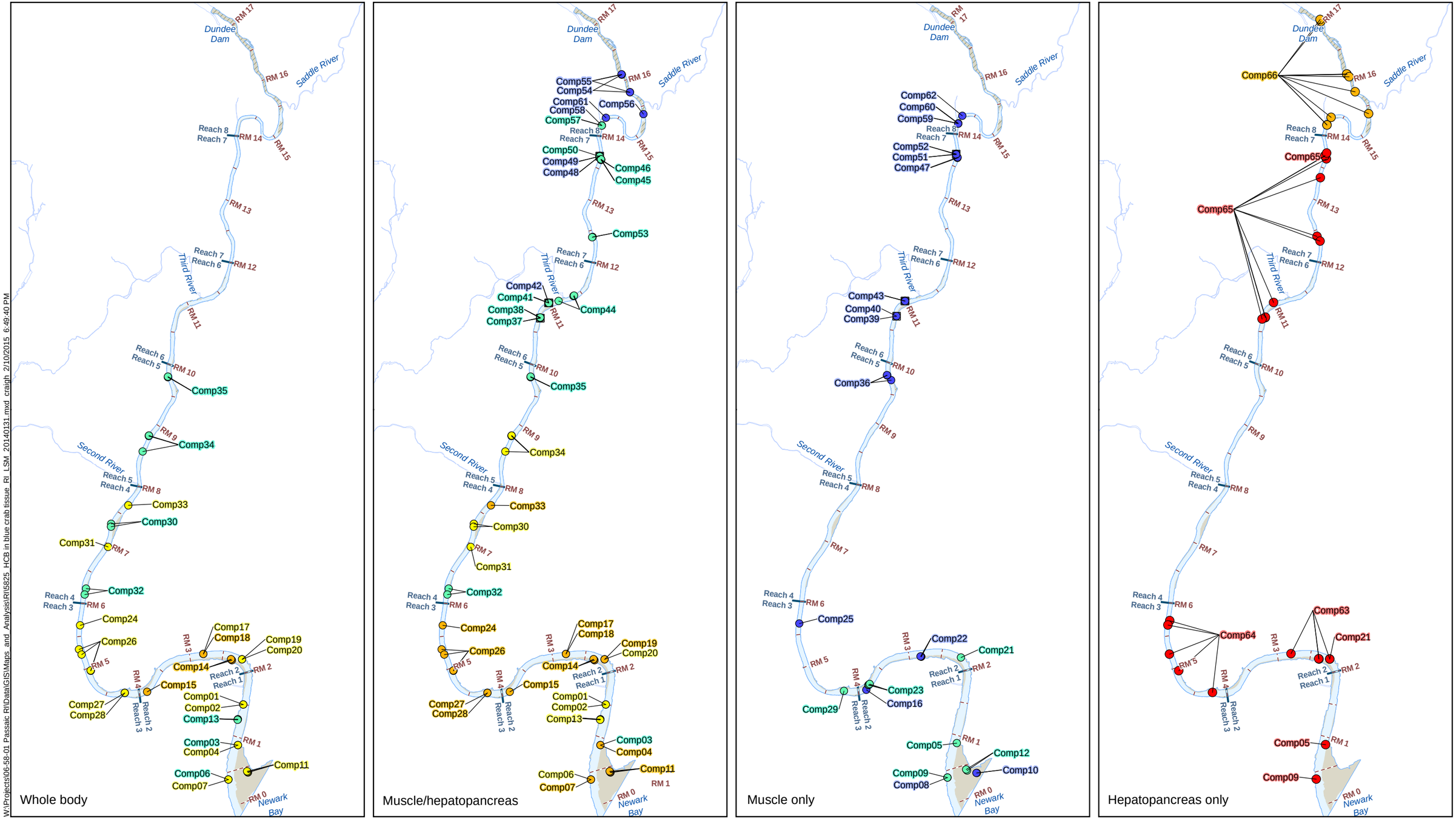
0 5,000 10,000 Feet

Figure 76

Concentrations of Hexachlorobenzene in Mummichog and Bioaccumulation Worm Tissue by LPRSA Location
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study

Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.

W:\Projects\06-58-01 Passaic RI\Data\GIS\Maps and Analysis\RI\5825_HCB in blue crab tissue_RI_LSM_20140131.mxd craigh 2/10/2015 6:49:40 PM



The percentile is based on the combined data from all four tissue types shown. At locations with multiple samples, the symbol indicates the highest concentration at the location, and the color of the label indicates the concentration of each composite.

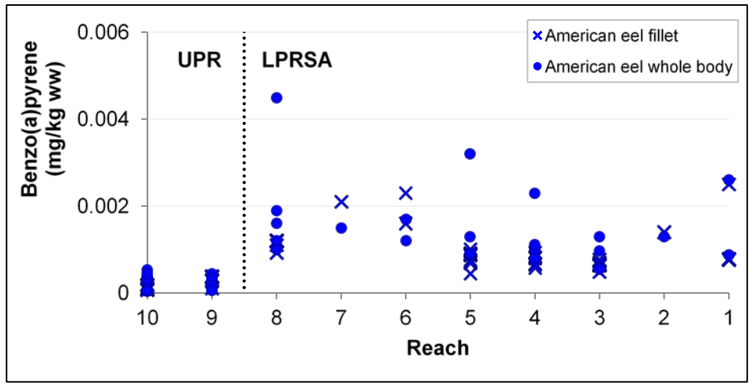
Figure 77

Concentrations of Hexachlorobenzene in Blue Crab Tissue by LPRSA Location

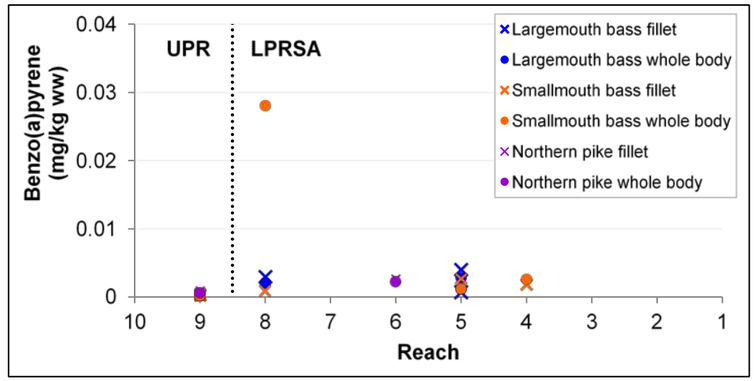
Remedial Investigation Report

Lower Passaic River Study Area Remedial Investigation/Feasibility Study

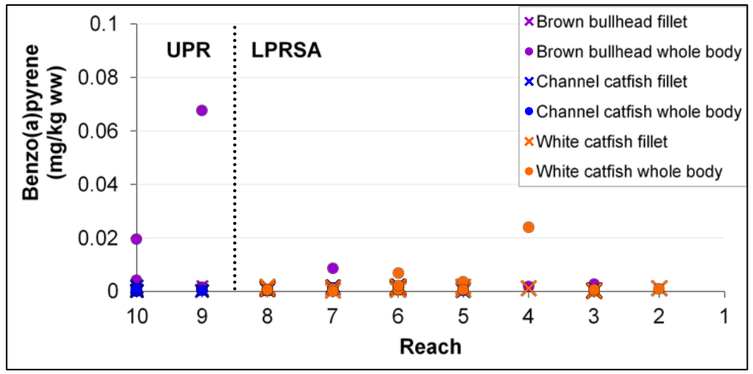
Mudflat areas for ecological receptors are those areas where the river bottom slope is ≤ 6° and the depth is ≥ -2 ft MLLW, based on the 2007 CPG bathymetric survey.



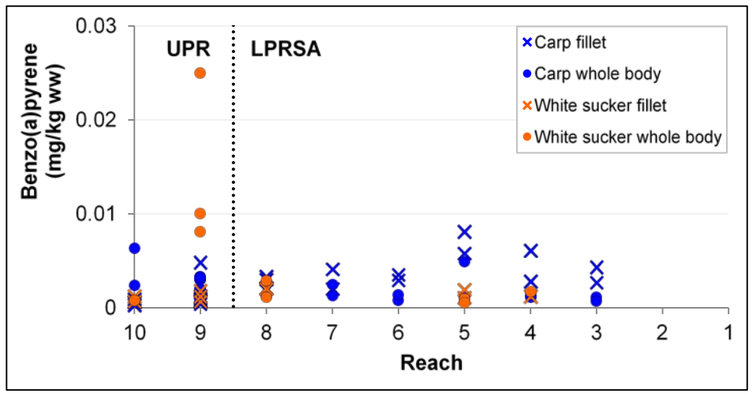
a. American eel



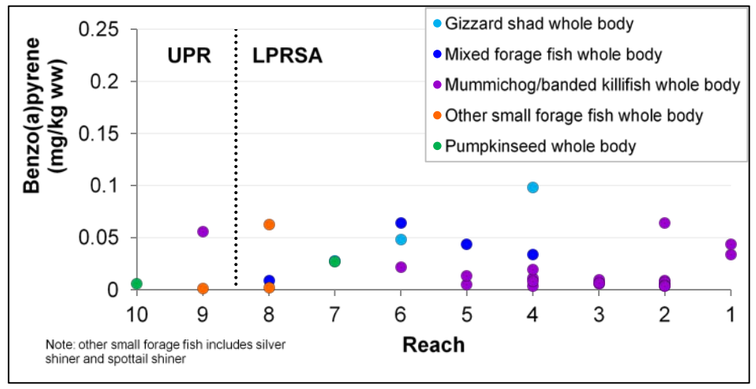
b. Bass and pike



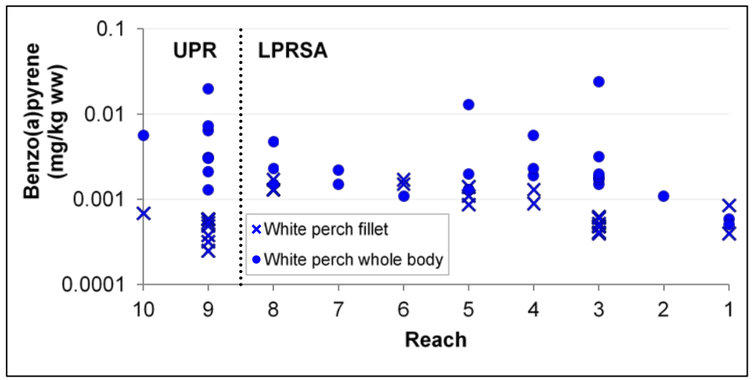
c. Bullhead and catfish



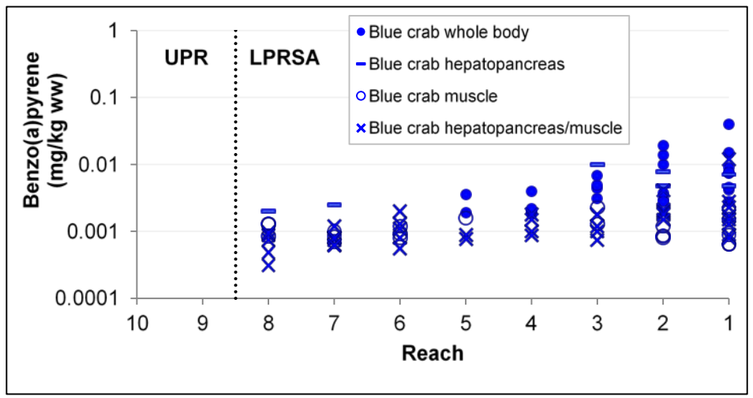
d. Carp and white sucker



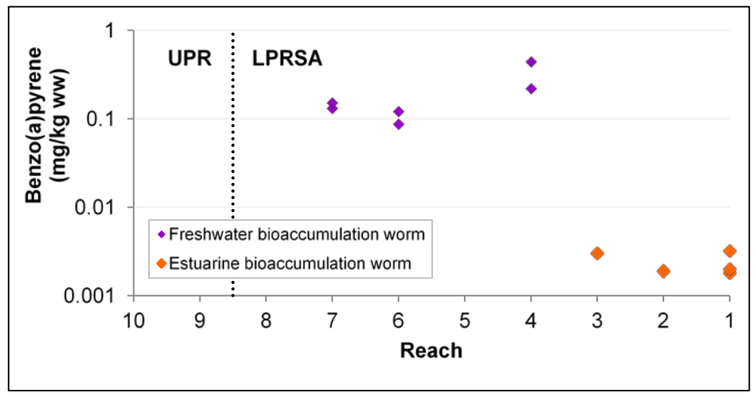
e. Small forage fish



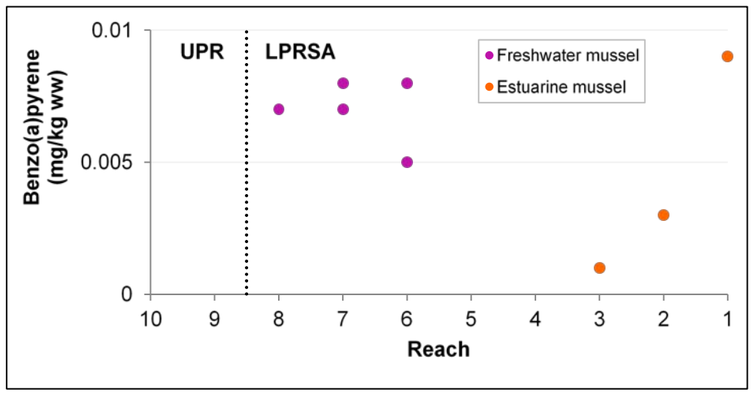
f. White perch



g. Blue crab



h. Bioaccumulation tissue



i. Caged bivalves

Figure 78
Concentrations of Benzo(a)pyrene in UPR and LPRSA Tissue Samples by Reach
Remedial Investigation Report
Lower Passaic River Study Area Remedial Investigation/Feasibility Study