Appendix G
Water Quality Data

Table G-1
Average Allegheny River DO Levels in Various Depth Ranges Based on STORET Monitoring Sites (See map, Appendix J)

Map Designation and Station Pool Identification	Depth Ranges (feet)						
	0-5	6-10	11-15	16-20	21-25	26-30	>30
Emsworth							
A3.2	8.26	7.98	7.91	8.05	7.80		
L&D2							
A6.5	8.74	8.70					
A6.9	8.16	7.98	7.47				
A9.5	7.61	7.45	7.48	7.40			
A12.8	7.78	7.66	7.70	7.53	7.70		
A14.3	7.87	7.63	7.50				
L&D3							
A14.7	7.49	7.35	6.84	6.50	6.30		
A19.0	13.53						
A24.0	9.60						
L&D5							
A30.6	7.16	6.97	6.90	6.84	6.75		
A33.6	7.20	7.00	6.95	6.89	6.78		
A36.1	7.39	7.26	7.18	7.10	7.05		
L&D6							
A36.5	7.36	7.06	6.99	6.84	5.88	6.80	
A38.3	7.25	7.18	7.22	7.30			
A41.0	7.45	7.31	7.32				
A45.5	7.67	7.57	7.55	7.63	7.80		
L&D7							
A45.9	7.81	7.71	8.80	8.80	8.80		
A49.8	8.19	8.04	7.98	7.84	7.73		4.65
A52.4	8.17	8.11	8.11	7.94	8.03		

Table G-1
Average Allegheny River DO Levels in Various Depth Ranges Based on STORET Monitoring Sites (See map, Appendix J) (continued)

Map Designation and Station Pool Identification	Depth Ranges (feet)						
	0-5	6-10	11-15	16-20	21-25	26-30	>30
L&D8							
A53.7	7.88	7.38	6.97	6.27	5.10		0.90
A54.1	7.46	7.23	7.00	6.63	7.20		
A54.1	7.51	7.31	7.27	7.23	7.43		
A54.1	7.59	7.34	7.21	7.20			
A55.2	7.35	7.30	7.13	7.02	6.03	7.70	5.17
A55.2	6.90	7.10	7.10				
A55.2	7.47	7.30	7.30				
A57.2	7.45	7.24	7.24	7.72	7.90	7.90	
A62.0	7.59	7.45	7.80				
L&D9							
A62.4	7.46	7.04	6.84	6.94	7.05		

Table G-2
Minimum Allegheny River DO Levels in Various Depth Ranges Based on STORET Monitoring Sites

Map Designation and Station Pool Identification	Depth Ranges (feet)						
	0-5	6-10	11-15	16-20	21-25	26-30	>30
Emsworth							
A3.2	7.50	6.80	6.70	7.70	7.70		
L&D2							
A6.5	7.70	7.50	7.40				
A6.9	7.10	7.00	7.00				

Table G-2
Minimum Allegheny River DO Levels in Various Depth Ranges Based on STORET Monitoring Sites (continued)

Map Designation and Station Pool Identification	Depth Ranges (feet)						
	0-5	6-10	11-15	16-20	21-25	26-30	>30
L&D2 (continued)							
A9.5	6.90	6.90	6.70	6.00			
A12.8	7.20	7.20	6.80	7.10	7.40	7.90	
A14.3	7.00	6.90	6.90				
L&D3							
A14.7	6.50	6.60	6.50	6.00	6.30		
A19.0	13.20						
A24.0	9.60						
L&D5							
A30.6	6.50	6.50	6.30	6.10	5.30	4.90	6.50
A33.6	6.70	6.60	6.50	6.30	5.70	6.60	6.40
A36.1	6.80	6.80	6.80	6.70	6.40	6.70	7.50
L&D6							
A36.5	6.30	6.30	5.80	4.30	0.50	0.40	8.00
A38.3	6.60	6.40	6.50	5.30	7.00		
A41.0	6.50	6.50	6.40	6.30			
A45.5	6.70	6.70	6.70	6.60	7.80		
L&D7							
A45.9	6.60	6.50	8.00	8.80	8.80		
A49.8	6.90	6.70	6.00	5.20	4.70	2.80	0.60
A52.4	7.10	7.00	7.00	6.40	6.30	7.60	
L&D8							
A53.7	6.60	6.50	5.70	2.80	0.30	5.50	0.90
A54.1	6.50	6.30	5.10	1.70	7.20		

Table G-2
Minimum Allegheny River DO Levels in Various Depth Ranges Based on STORET Monitoring Sites (continued)

Map Designation and Station Pool Identification	Depth Ranges (feet)						
	0-5	6-10	11-15	16-20	21-25	26-30	>30
L&D8 (continued)							
A54.1	6.50	6.50	6.50	6.40	7.20	7.20	
A54.1	6.60	6.50	6.30	7.20			
A55.2	6.40	6.00	5.40	4.10	0.90	0.50	0.30
A55.2	6.70	7.10	7.10	7.10			
A55.2	7.40	7.30	7.30	7.30			
A57.2	6.50	6.20	6.20	6.60	7.60	7.90	
A62.0	6.70	6.70	7.00				
L&D9							
A62.4	6.00	5.90	5.50	6.60	6.50		

Table G-3
Average Ohio River DO Levels in Various Depth Ranges Based on STORET Monitoring Sites

Map Designation and Station Pool Identification	Depth Ranges (feet)						
	0-5	6-10	11-15	16-20	21-25	26-30	>30
New Cumberland							
060.2	8.08	7.82	7.85	8.45	8.60		
055.2	7.88	7.75	7.74	7.36			
054.6	8.40	8.39	8.35	8.30	8.10		
054.0	7.59	7.69	7.73	7.62	7.46	7.70	
054.0	8.01	8.05	8.13	8.04	7.94	6.93	
054.0	7.87	7.84	7.84	7.72	7.46	7.58	
049.2	8.15	7.86	7.77	7.54	7.51	7.36	6.93

Table G-3
Average Ohio River DO Levels in Various Depth Ranges Based on STORET Monitoring Sites (continued)

Map Designation and Station Pool Identification	Depth Ranges (feet)						
	0-5	6-10	11-15	16-20	21-25	26-30	>30
New Cumberland (continued)							
044.4	8.14	7.83	7.73	7.63	7.48	7.30	4.60
040.3	8.49	8.03	7.85	7.75	7.59	7.27	
038.0	8.51	8.06	7.92	7.78	7.90	7.60	
Montgomery							
033.1	8.52	8.36	8.15	7.77	6.00		
032.0	8.47	8.36	8.26	8.11	7.96	9.00	
031.3	8.23	7.59	7.38	7.26	7.15	6.45	
028.1	8.05	7.37	7.31	7.05	7.10	6.89	7.90
023.5	8.77	8.27	7.86	7.80	7.75	7.43	6.90
017.0	8.36	8.03	7.93	7.84	7.40		
013.5	8.25	8.12	8.75				
013.0	7.90	7.40	7.24	7.13	6.95		
Emsworth							
09.6	7.65	7.36	7.28	7.00			
07.0	7.79	7.53	7.48	8.05			
06.0	7.29	7.04	7.04	7.06	6.80	6.04	
05.0	7.25	6.96	6.91	6.88	6.40	5.80	
04.0	7.29	7.00	6.97	6.93	6.81	6.58	
03.0	7.38	7.17	7.07	7.04	7.53	7.80	
02.0	7.54	7.27	7.20	7.19	6.67		
01.0	7.55	7.42	7.35	7.26	7.32	7.40	
01.0	7.60	7.32	7.21	7.19	7.03	7.12	
01.0	7.47	7.25	7.12	6.99	7.11	6.97	

Table G-4
Minimum Ohio River DO Levels in Various Depth Ranges Based on STORET Monitoring Sites

Map Designation and Station Pool Identification	Depth Ranges (feet)						
	0-5	6-10	11-15	16-20	21-25	26-30	>30
New Cumberland							
060.2	8.08	7.82	7.85	8.45	8.60		
055.2	7.88	7.75	7.74	7.36			
054.6	8.40	8.39	8.35	8.30	8.10		
054.0	7.59	7.69	7.73	7.62	7.46	6.30	7.78
054.0	8.01	8.05	8.13	8.04	7.94	6.80	6.80
054.0	7.87	7.84	7.84	7.72	7.46	6.20	7.97
049.2	8.15	7.86	7.77	7.54	7.51	5.50	7.10
044.4	8.14	7.83	7.73	7.63	7.48	5.40	6.88
040.3	8.49	8.03	7.85	7.75	7.59	5.20	6.94
038.0	8.51	8.06	7.92	7.78	7.90	8.70	8.70
Montgomery							
033.1	8.52	8.36	8.15	7.77	6.00		
032.0	8.47	8.36	8.26	8.11	7.96		
031.3	8.23	7.59	7.38	7.26	7.15	3.70	6.30
028.1	8.05	7.37	7.31	7.05	7.10	2.00	7.19
023.5	8.77	8.27	7.86	7.80	7.75	7.20	7.55
017.0	8.36	8.03	7.93	7.84	7.40		
013.5	8.25	8.12	8.75				
013.0	7.90	7.40	7124	7.13	6.95		
Emsworth							
09.6	7.65	7.36	7.28	7.00			
07.0	7.79	7.53	7.48	8.05			
06.0	7.29	7.04	7.04	7.06	6.80	1.70	5.13
05.0	7.25	6.96	6.91	6.88	6.40	5.80	5.80

Table G-4
Minimum Ohio River DO Levels in Various Depth Ranges Based on STORET Monitoring Sites (continued)

Map Designation and Station Pool Identification	Depth Ranges (feet)						
	0-5	6-10	11-15	16-20	21-25	26-30	>30
Emsworth (continued)							
04.0	7.29	7.00	6.97	6.93	6.81	5.10	6.33
03.0	7.38	7.17	7.07	7.04	7.53	8.10	8.10
02.0	7.54	7.27	7.20	7.19	6.67		
01.0	7.55	7.42	7.35	7.26	7.32		
01.0	7.60	7.32	7.21	7.19	7.03	5.90	6.77
01.0	7.47	7.25	7.12	6.99	7.11	6.70	6.70

Table G-5
Allegheny and Ohio River Sites Evaluated as Part of the USEPA National Sediment Inventory (NSI)

NSI Station No.	Site Location	Data Source	NSI Assessment (Tier)	Contributing Contaminants
		MAINSTEM		
10691	ALLEGHENY R AT NEW KENSINGTON, PA.	NSI/USGS-WRD	1	DDT, chlordane, dieldrin, DDD, PCB
7812	OHIO RIVER NEAR OHIOVIEW, PA. - MILE 32.0	NSI/USACOE Huntington, WV District Water Column Data	2	Zinc
		TRIBUTARY A		
10682	N BR BEAR C AT PARKER, PA	NSI/US Geological Survey Data	3	na
		TRIBUTARY B		
10683	COWANSHANNOCK C NR SUNNYSIDE, PA	NSI/US Geological Survey Data	3	na
		TRIBUTARY C		
12499	041 WILLIARD RN NR LISBON OH	US Geological Survey Data	3	na
12502	041 COLD RN NR LISBON OH (Tributary C)	US Geological Survey Data	3	na
12505	041 ELK RN AT ELKTON OH (Tributary C)	US Geological Survey Data	3	na
12507	041 LESLIE RN NR NEGLEY OH (Tributary C)	US Geological Survey Data	2	Lead, Zinc
17764	L. BEAVER CREEK NR FREDERICKTOWN - S.R. 170 (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel

Table G-5
Allegheny and Ohio River Sites Evaluated as Part of the USEPA National Sediment Inventory (NSI) (continued)

NSI Station No.	Site Location	Data Source	NSI Assessment (Tier)	Contributing Contaminants
		TRIBUTARY C (continued)		
17765	L. BEAVER CR AT STATE PARK PICNIC AREA (RM 15.0) (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel
17766	N FK L BEAVER CR UPST FREDERICKTOWN CANOE LIVERY (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel, Zinc
17767	N. FK. L. BEAVER CREEK AT ACHOR - TWP. RD. 1026 (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Zinc
17768	N FK L BEAVER CRK DST STATELINE CREEK (RM 7.26) (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel
17769	N FK L BEAVER CRK JUST UPST CONFL STATELINE CRK (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel
17770	BULL CREEK AT NEGLEY - S.R. 170 (RM 0.61) (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Lead, Zinc
17771	W FK STATELINE CRK UPST BFI LANDFILL (RM 1.5) (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel
17772	W FK L BEAVER CREEK NR MOUTH - ADJ TWP. RD. 912 (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel
17773	W FK L BEAVER CRK UPST CHEMLIME TRIB (RM 12.90) (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel

Table G-5
Allegheny and Ohio River Sites Evaluated as Part of the USEPA National Sediment Inventory (NSI) (continued)

NSI Station No.	Site Location	Data Source	NSI Assessment (Tier)	Contributing Contaminants
		TRIBUTARY C (continued)		
17774	CHEMLIME TRIB UPST WILSONS POND (RM 0.28) (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel, Cadmium, Copper, Zinc
17775	M FK L BEAVER CR AT LISBON- U.S. RT 30 RM=10.99 (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Lead, Nickel, Copper
17776	M FK L BEAVER CR UPST LISBON - COLEMAN RD. (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel, Copper
17777	M FK L BEAVER CRK NNE OF SALEM - PINE LAKE RD. (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel
17778	M FK L BEAVER CREEK AT PINE LAKE RD. (RM 36.70) (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel
17779	LESLIE RUN W OF NEGLEY - AT MOUTH (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Lead, Nickel, Zinc
17780	M. FK. L. BEAVER CRK AT BEAR HOLLOW RD (RM 1.85) (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel
17781	BULL CREEK W OF NEGLEY - JUST DST S.R. 154 (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	3	na

Table G-5
Allegheny and Ohio River Sites Evaluated as Part of the USEPA National Sediment Inventory (NSI) (continued)

NSI Station No.	Site Location	Data Source	NSI Assessment (Tier)	Contributing Contaminants
		TRIBUTARY C (continued)		
18201	L. BEAVER CRK NR E. LIVERPOOL - GRIMMS BRIDGE RD (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel
18202	W. FK. L. BEAVER CRK NR GAVERS - STEUBENVILLE RD (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel
18203	CHEMLIME TRIB. NR LISBON - S.R. 518 (RM 0.03) (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Nickel, Cadmium, Copper, Zinc
18204	M FK L BEAVER CREEK DST LISBON - HUTTON RD. (Tributary C)	Ohio EPA Water, Sediment, Tissue And Drinking Water Data	2	Lead, Nickel, Copper

Table G-6
Results of Contaminant Analysis of Sediment Samples Taken from Pool 5, Allegheny River and New Cumberland Pool, Ohio River in August 1998, and Comparison with Published Sediment Toxicity Benchmarks (mg/kg)

Contaminant	Concentration New Cumberland	Pool 5	ER-L[1]	OME[2]
Lead	32.00	13.00	46.70	250.00
Zinc	180.00	74.00	150.00	820.00
Copper	27.00	15.00	34.00	110.00
PCBs	<0.50	<0.50	22.70	41.00
PAHs	4.34	0.13	4.00	---

[1] Source: Long and Morgan, 1991.
[2] Source: Ontario Ministry of Environment SEL, (Persaud et al., 1993).

Table G-7
Copper water effect ratio data

Water Type	Cd Cu LC_{50}	Adjusted Cd Cu LC_{50}	Site LC_{50}/Lab LC_{50}	Copper WER
Laboratory	19.6	28.40	---	---
Ohio River	82.82	---	82.82/28.40	2.92
Allegheny River	25.0	no lab hardness adjustment needed	25.0/19.6	1.28

Table G-8
Zinc water effect ratio data

Water Type	Cd Zn LC_{50}	Adjusted Cd Zn LC_{50}	Site LC_{50}/Lab LC_{50}	Zinc WER
Laboratory	>200	>281.69	---	---
Ohio River	354.67	---	354.67/281.69	1.26
Allegheny River	171.95	no lab hardness adjustment needed	171.95/200	0.86

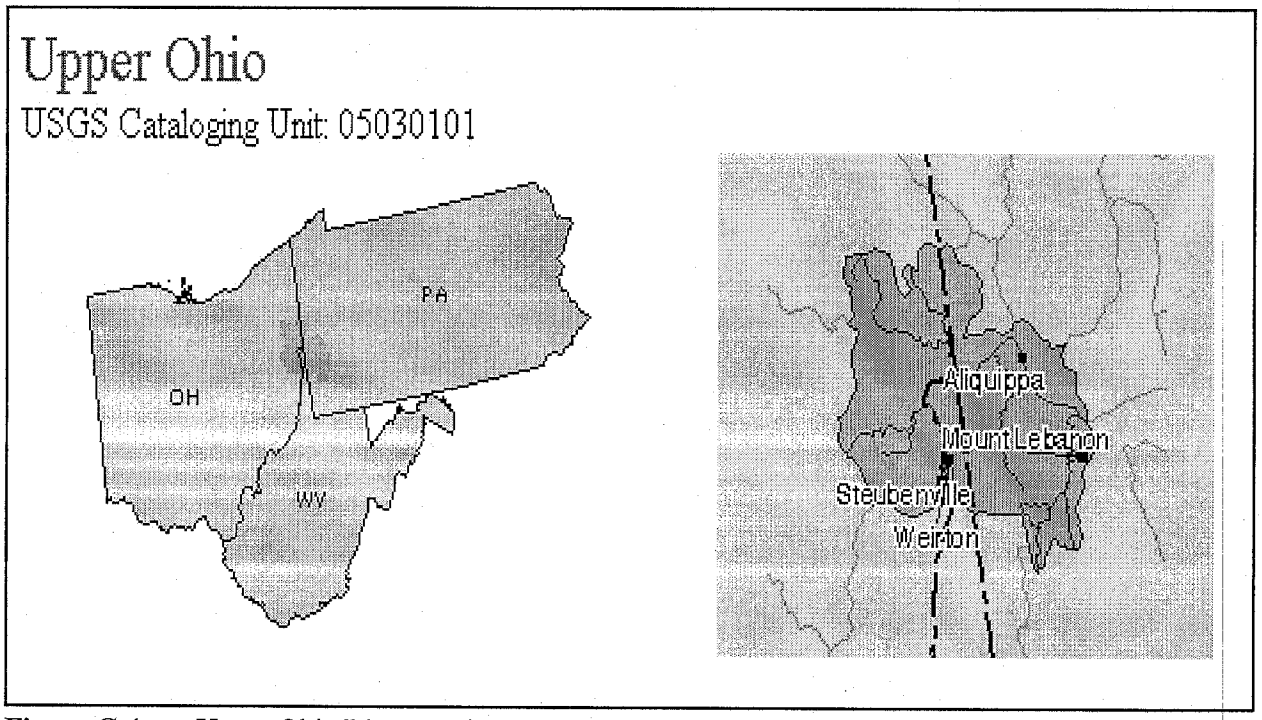


Figure G-1a. Upper Ohio River cataloging unit location map.

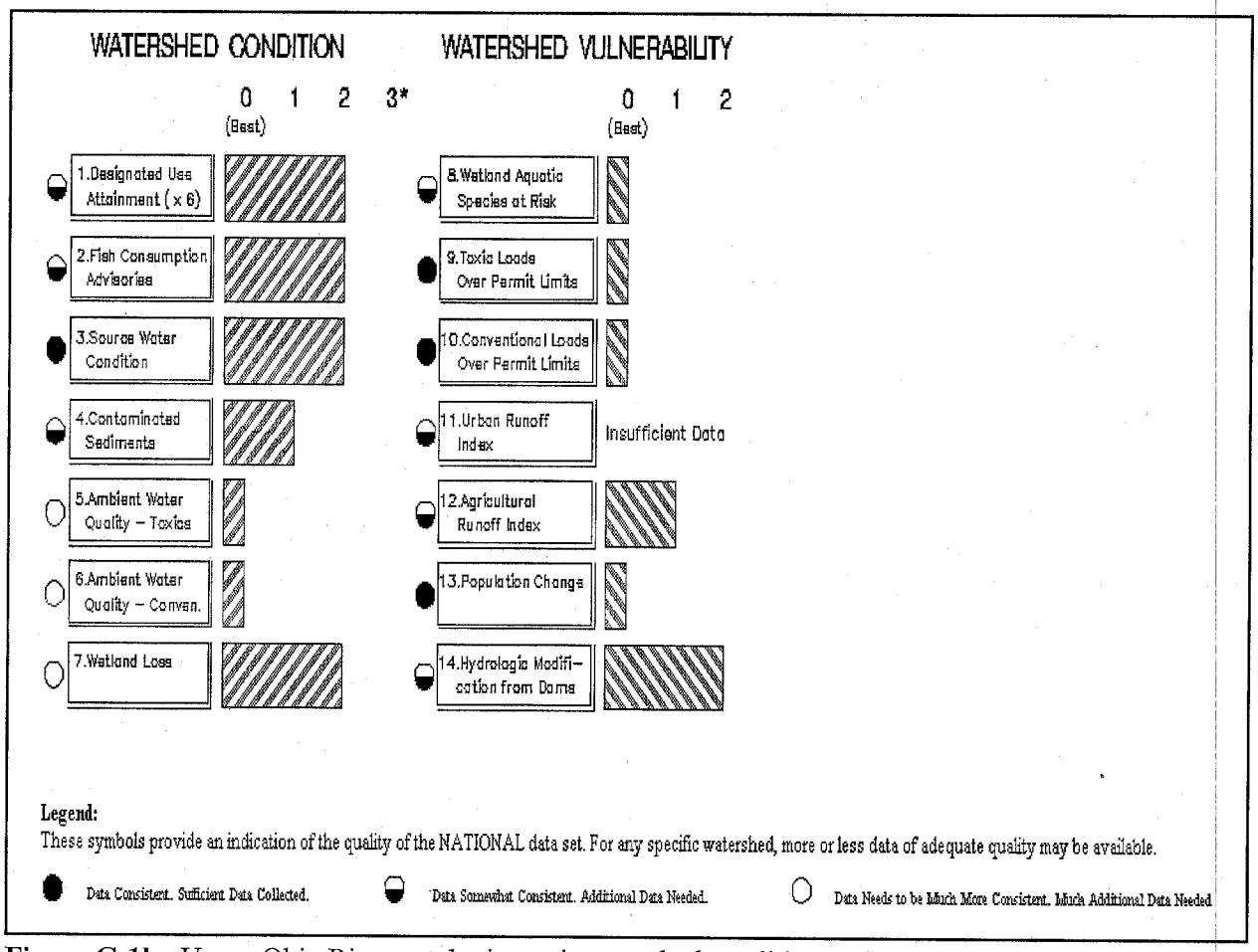


Figure G-1b. Upper Ohio River cataloging unit watershed condition and vulnerability.

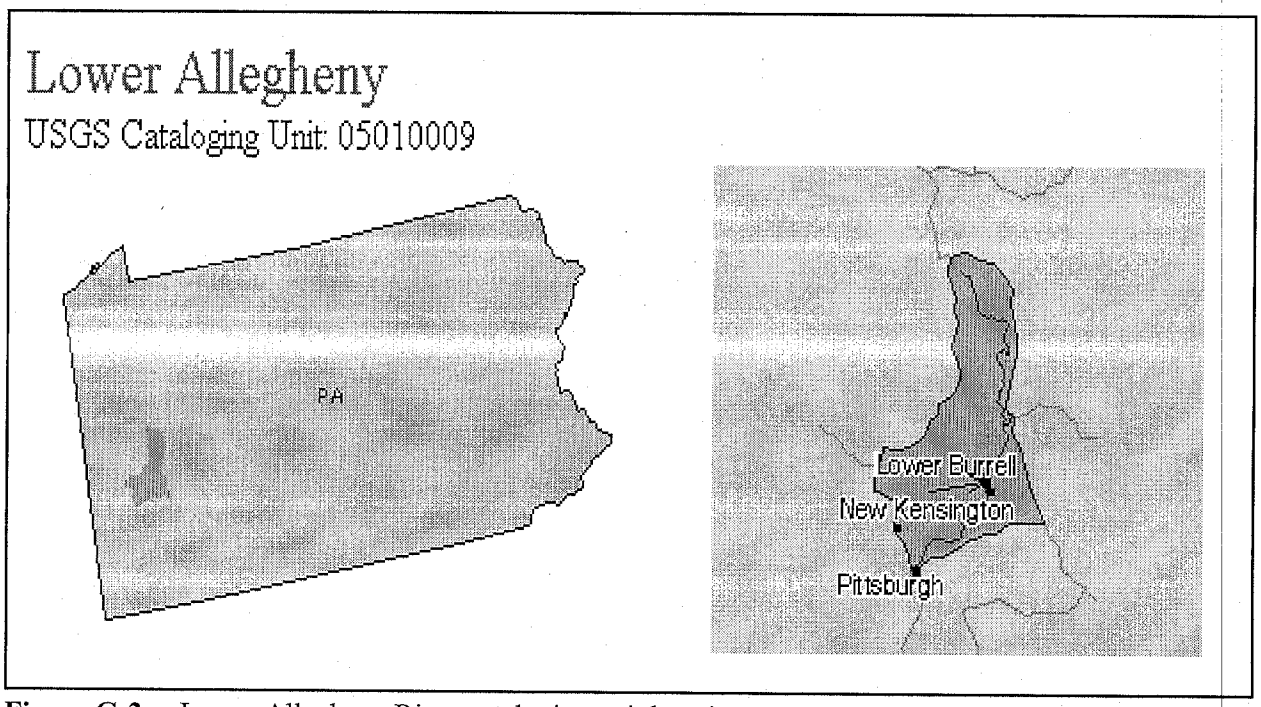


Figure G-2a. Lower Allegheny River cataloging unit location map.

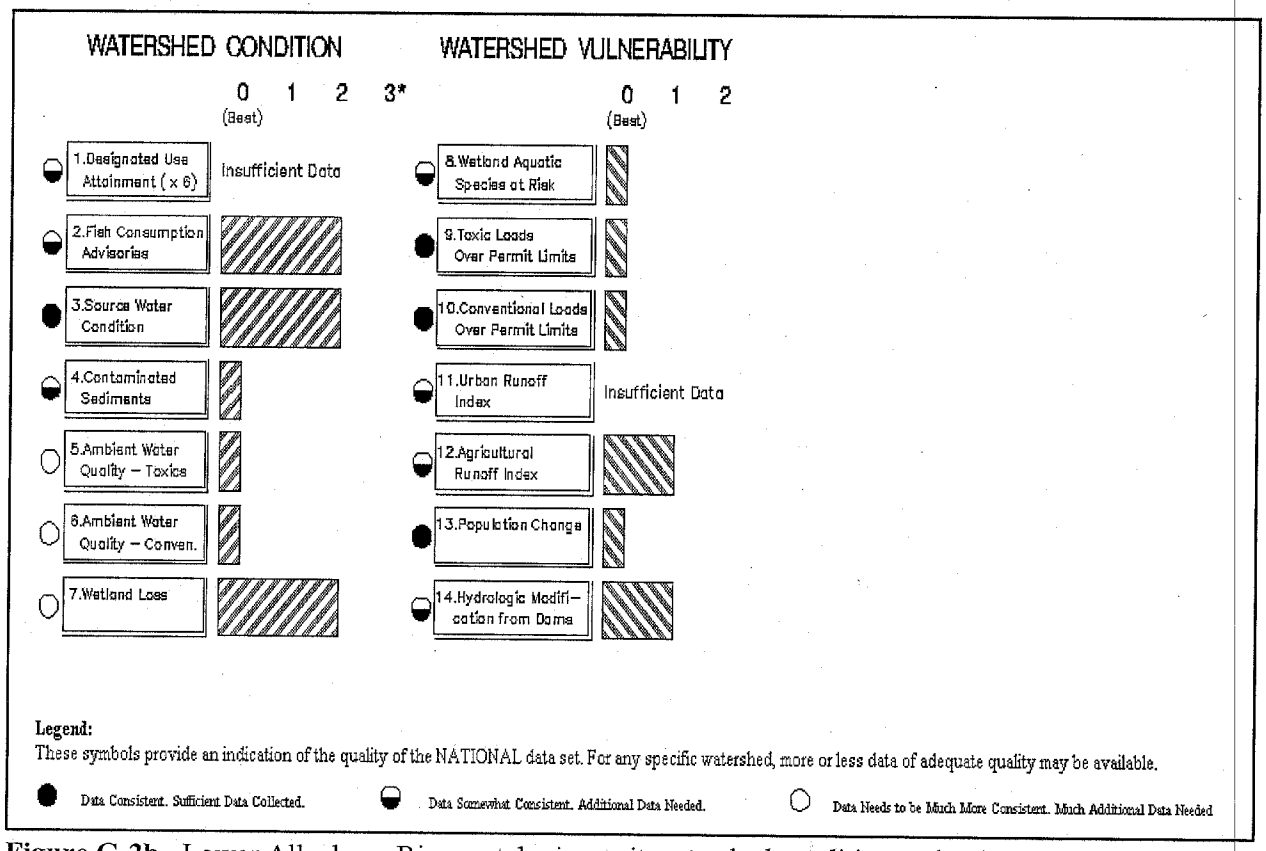


Figure G-2b. Lower Allegheny River cataloging unit watershed condition and vulnerability.

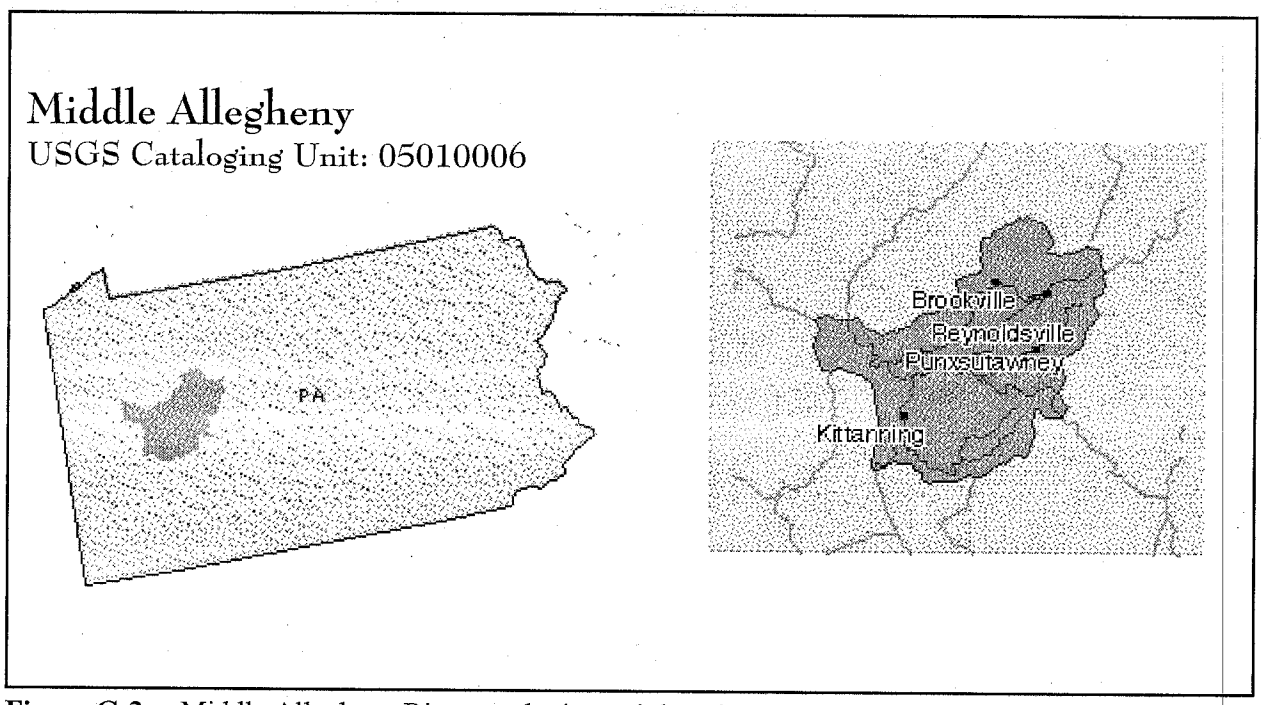


Figure G-3a. Middle Allegheny River cataloging unit location map.

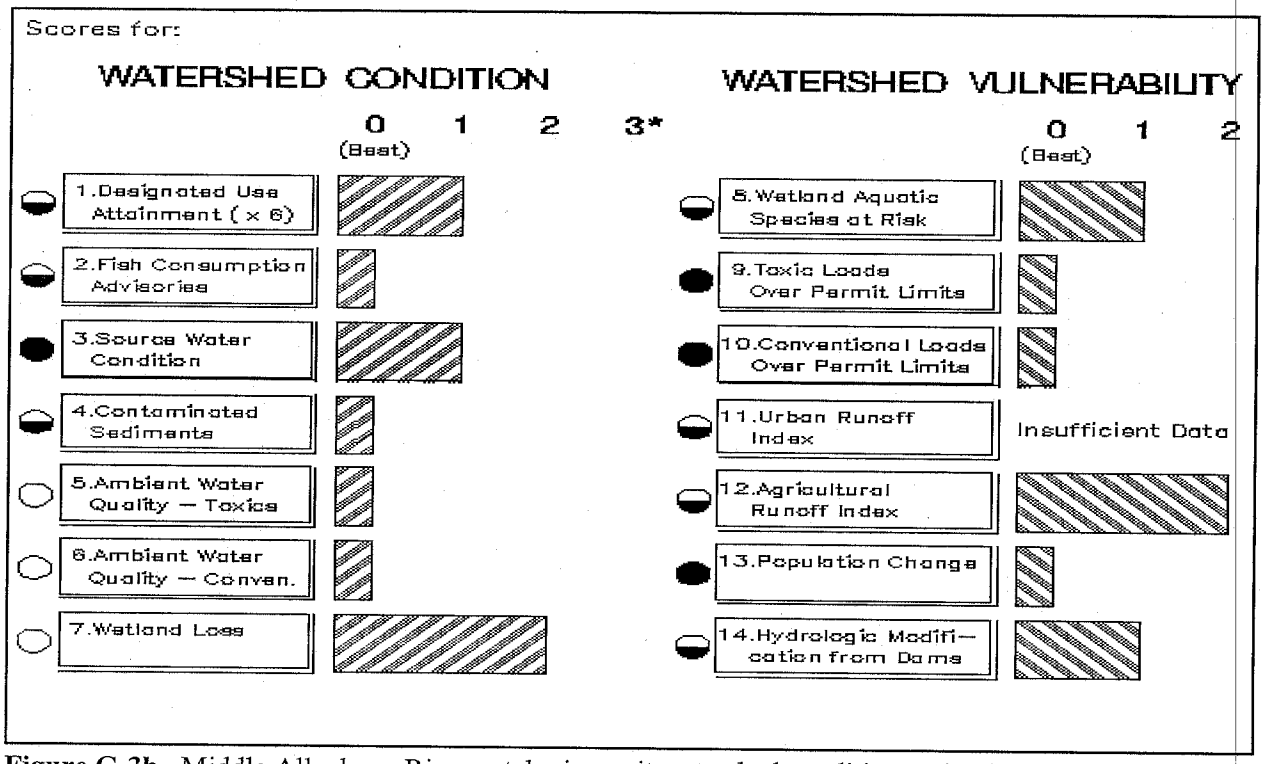


Figure G-3b. Middle Allegheny River cataloging unit watershed condition and vulnerability.

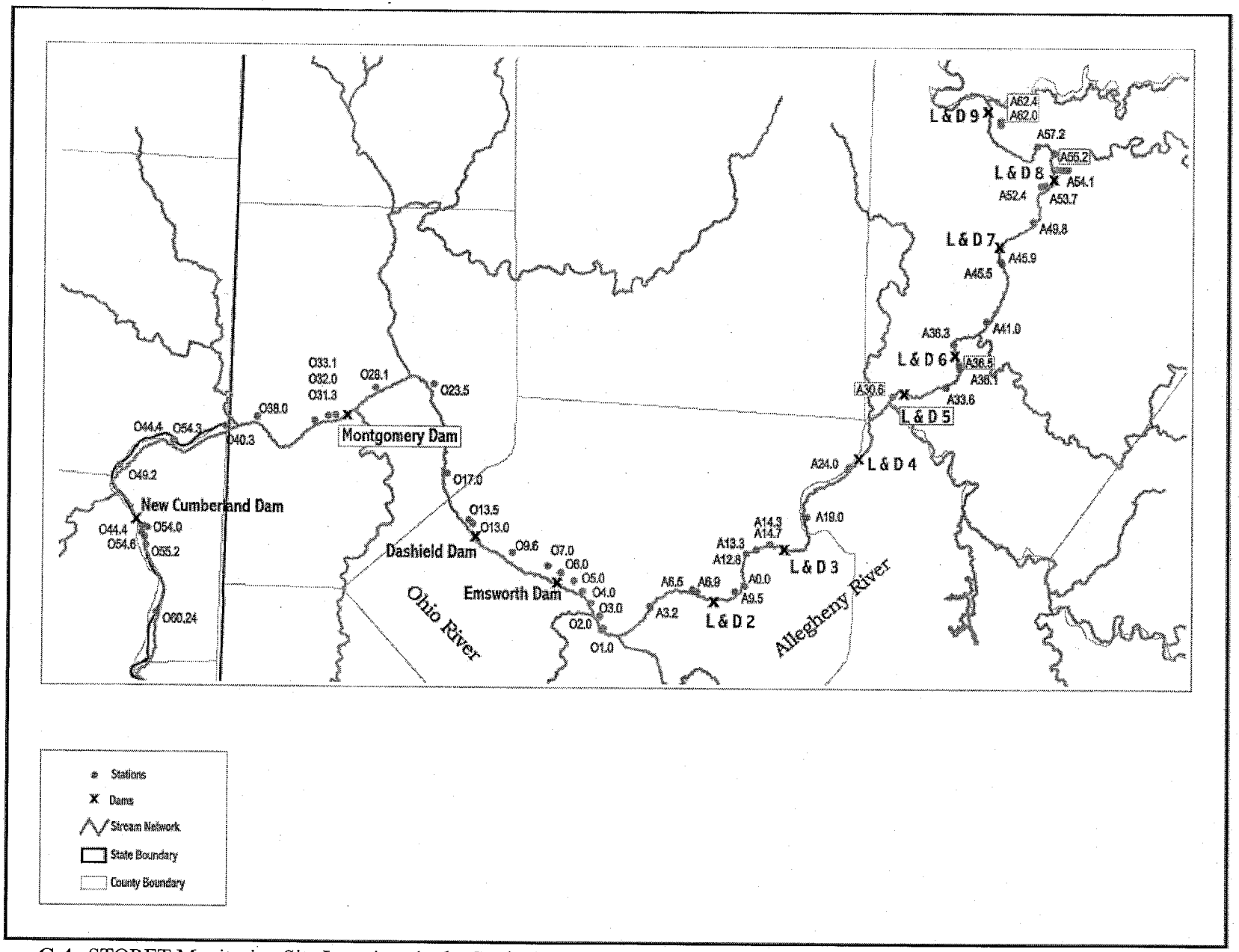


Figure G-4. STORET Monitoring Site Locations in the Study Area. The river is indicated by letter ("A" = Allegheny; "O" = Ohio) and the river mile of the site is indicated by the numerical value in the site designator.

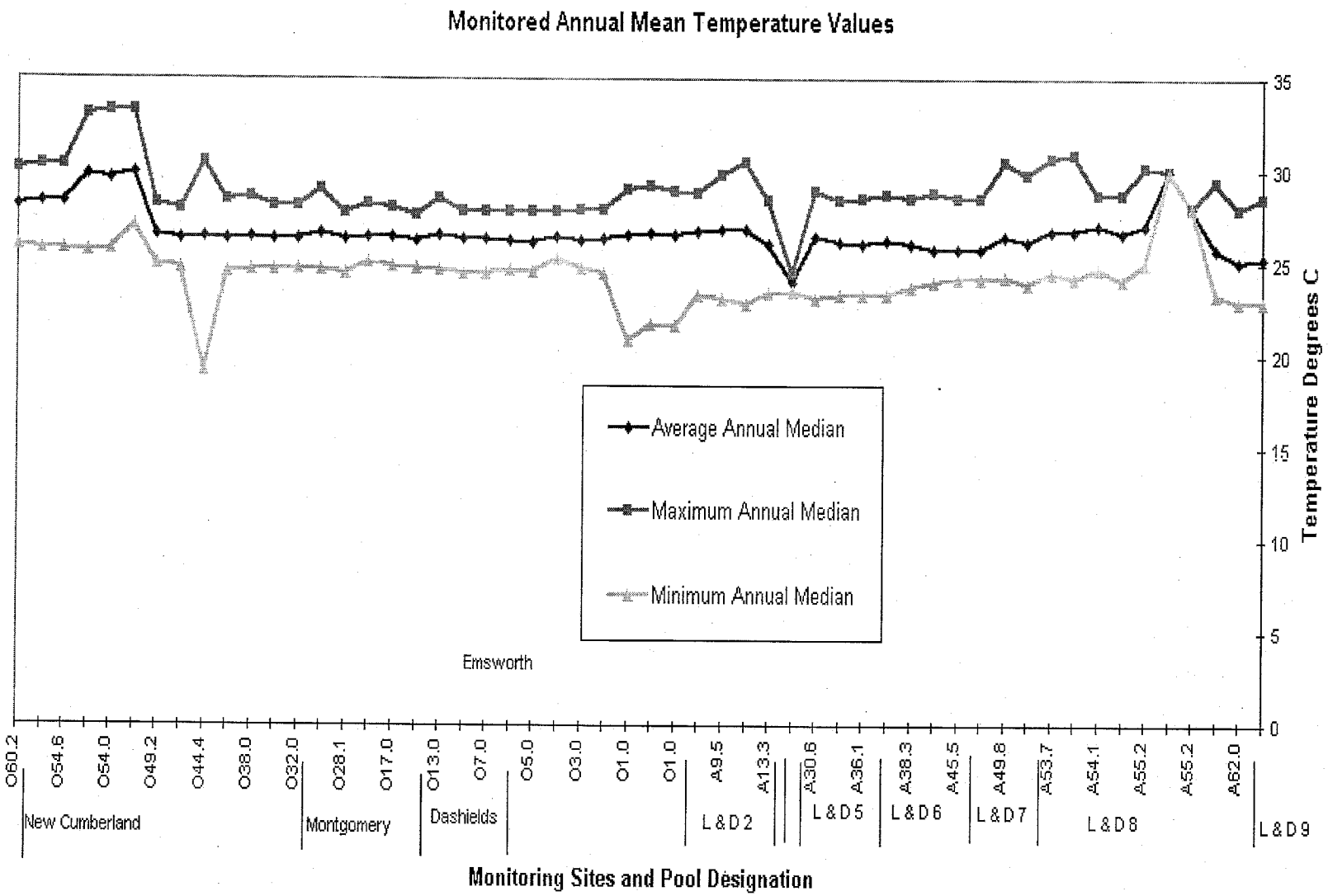


Figure G-5. Water temperature within the study area. Data for Allegheny River miles 62.2 - 69.5 are being obtained.

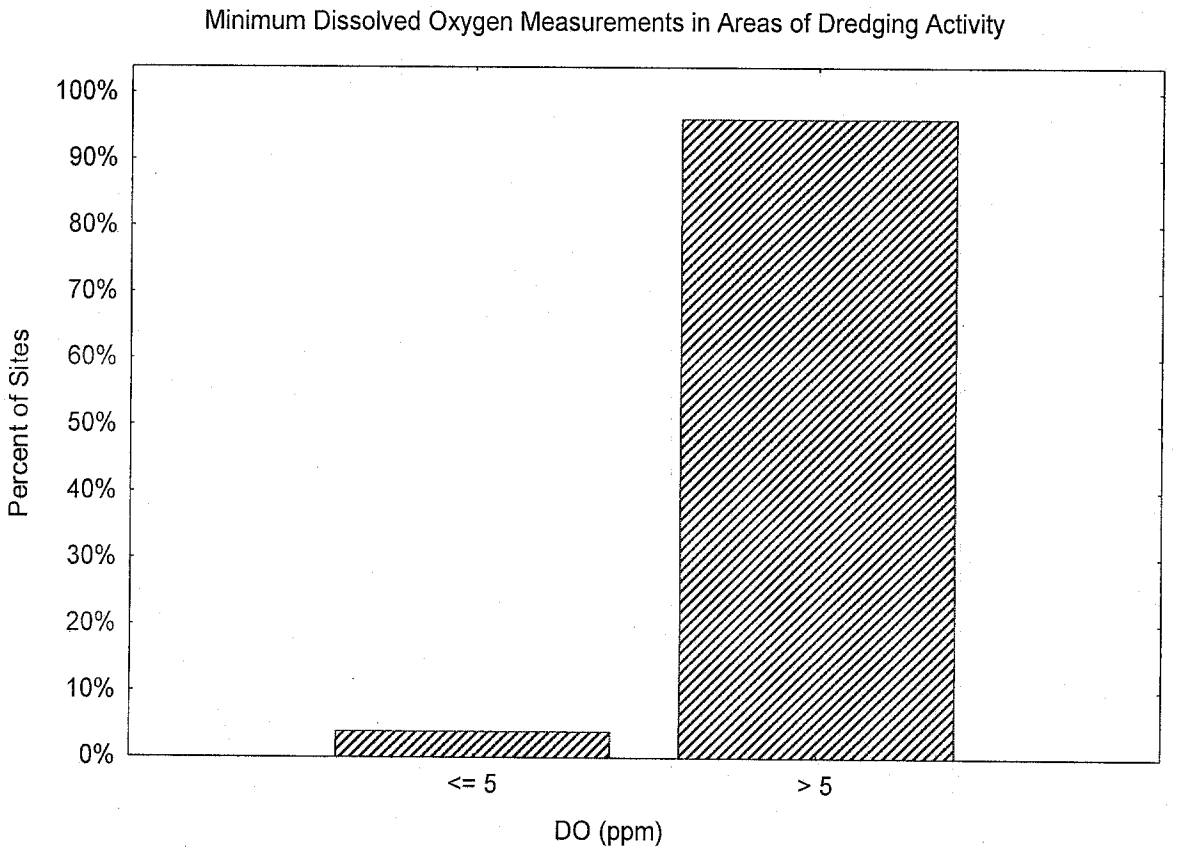


Figure G-6. Minimum Dissolved Oxygen Measurements in Areas of Dredging Activity.

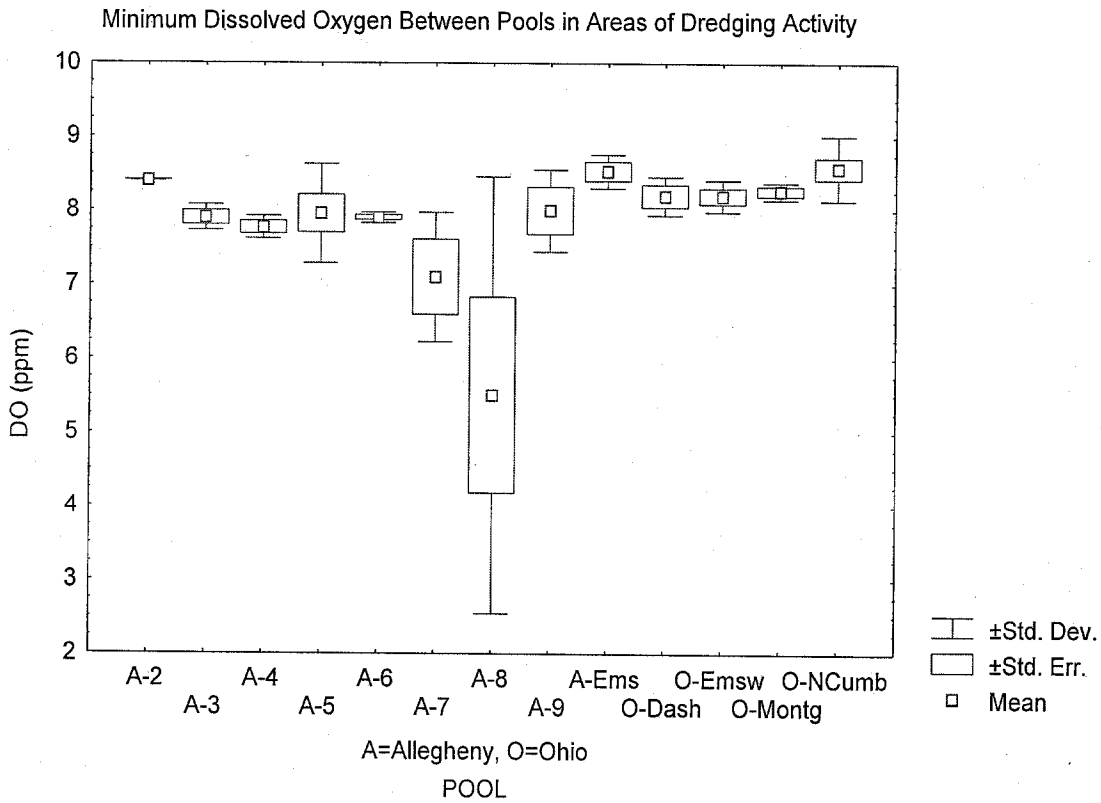


Figure G-7. Minimum Dissolved Oxygen Between Pools in Areas of Dredging Activity.

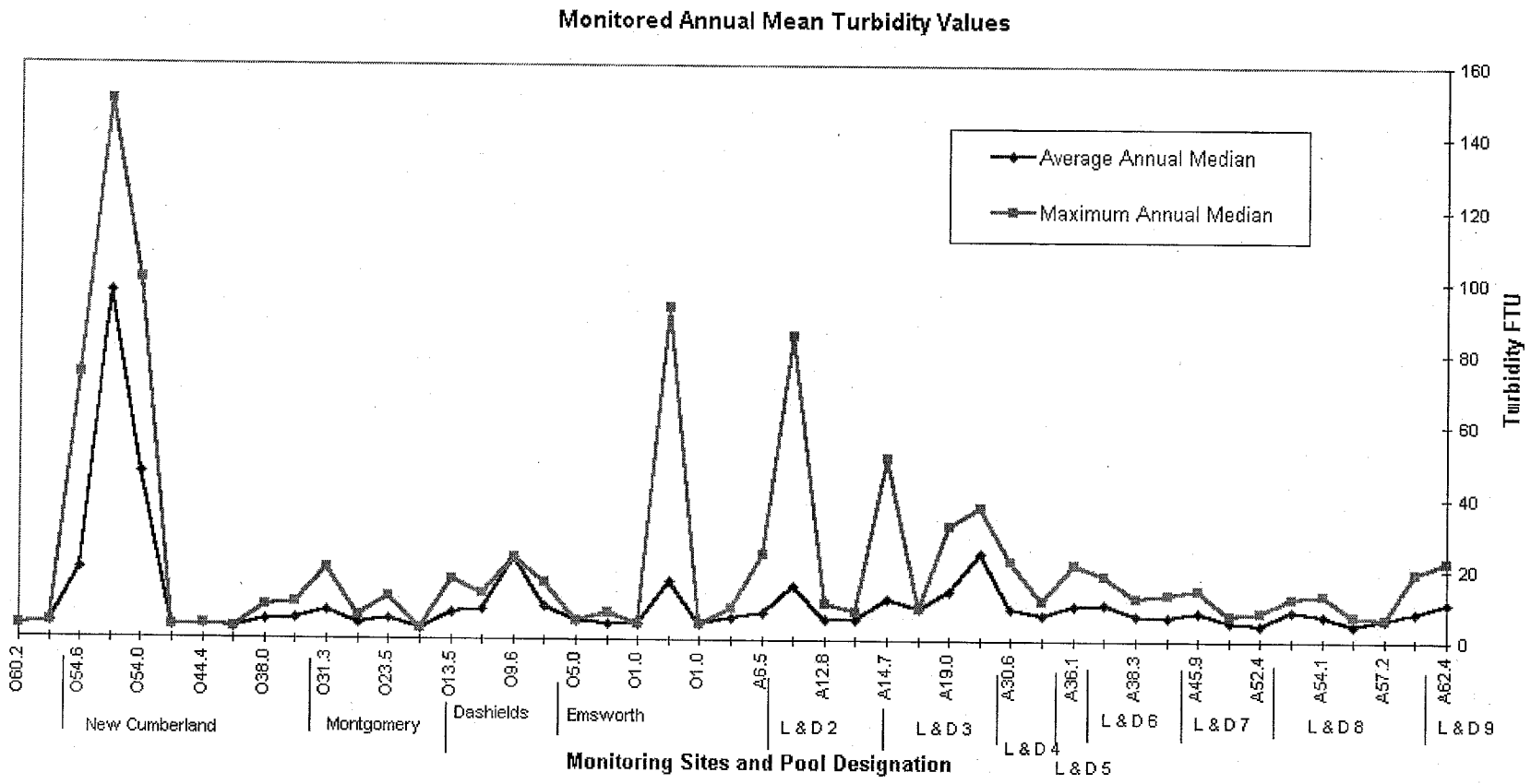


Figure G-8. Turbidity Within the Study Area. Data for Allegheny River miles 62.2 - 69.5 are being obtained.

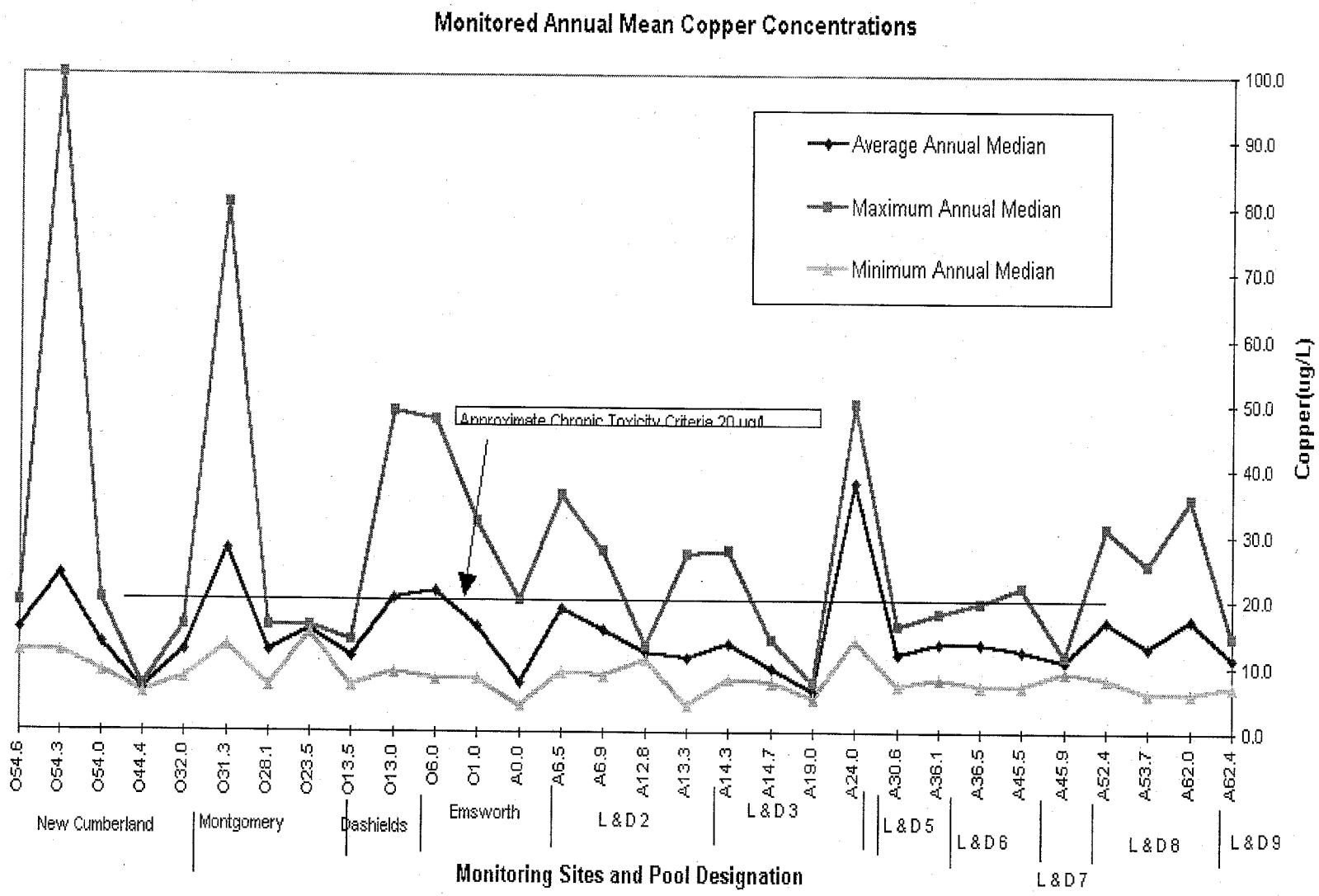


Figure G-9. Total Copper Levels Within the Study Area.

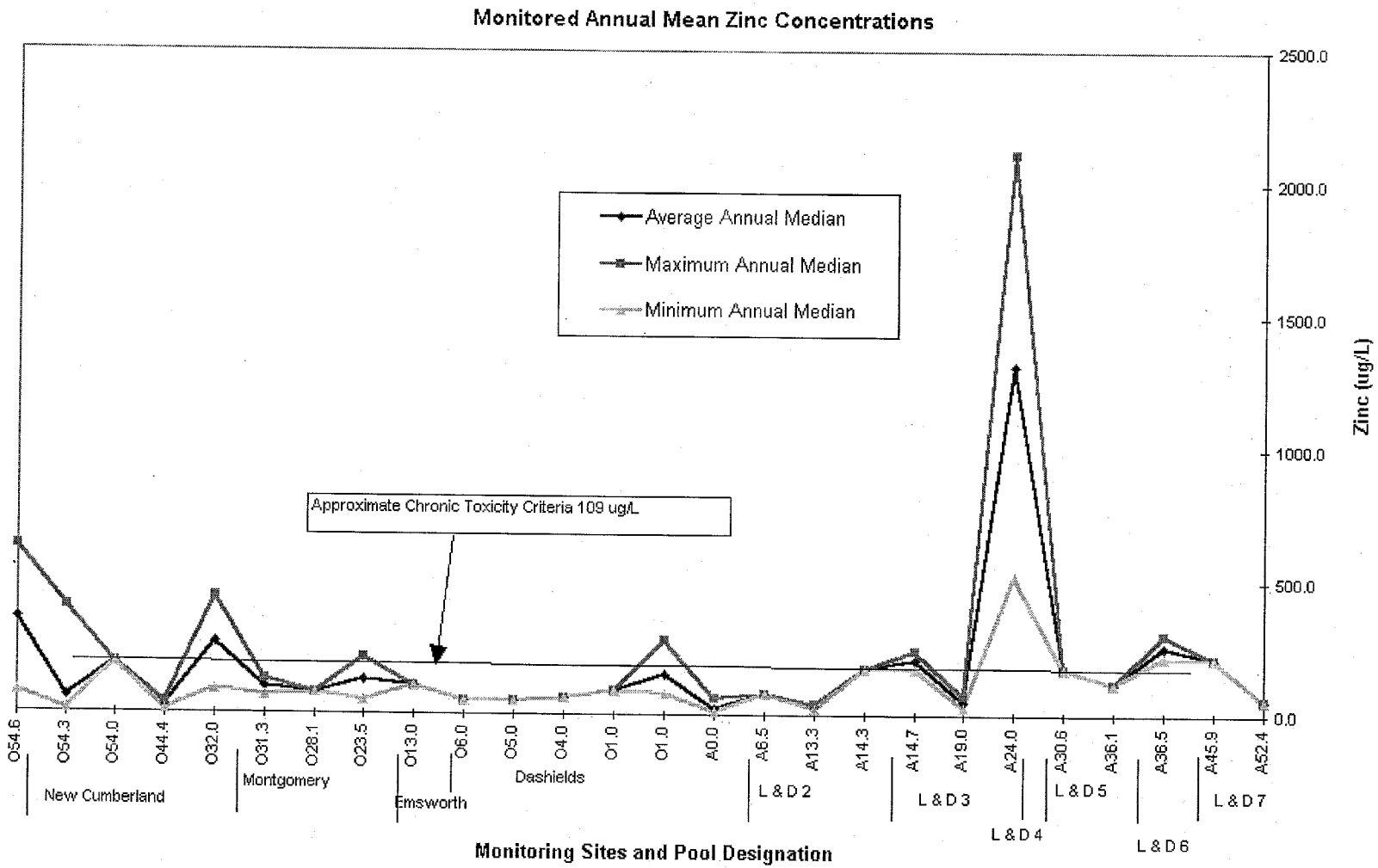


Figure G-10. Total Zinc Levels Within the Study Area.

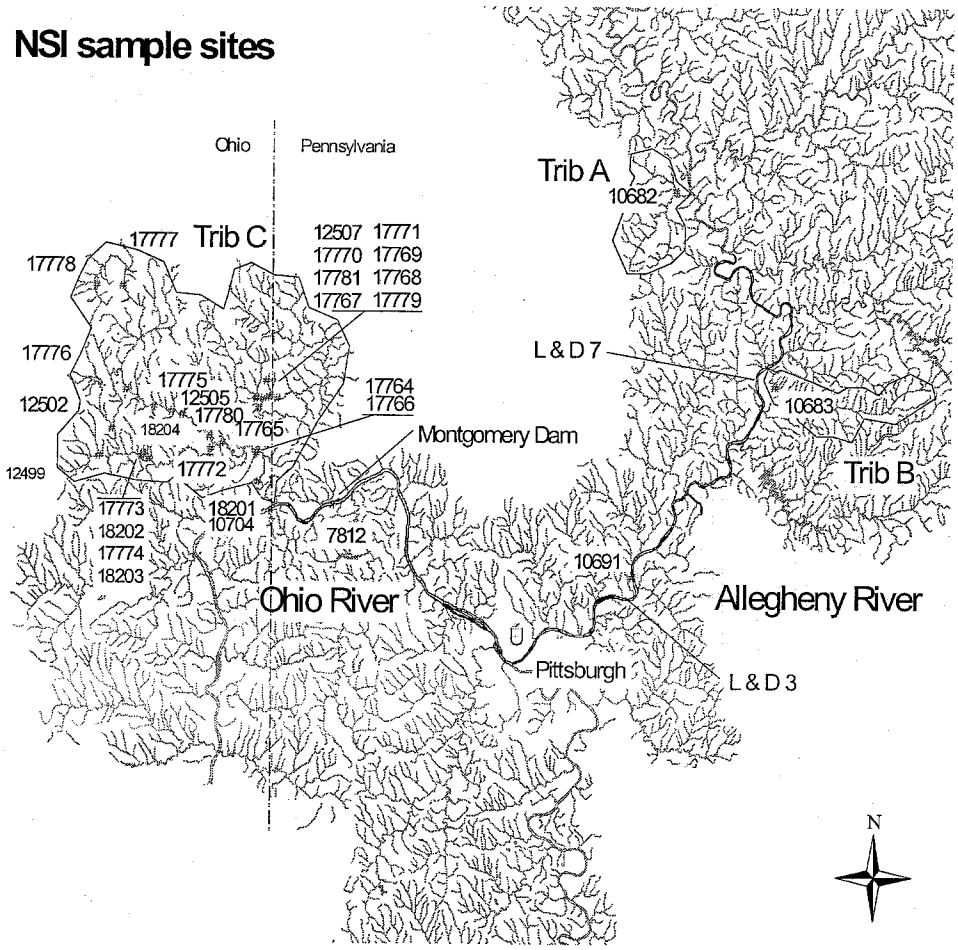
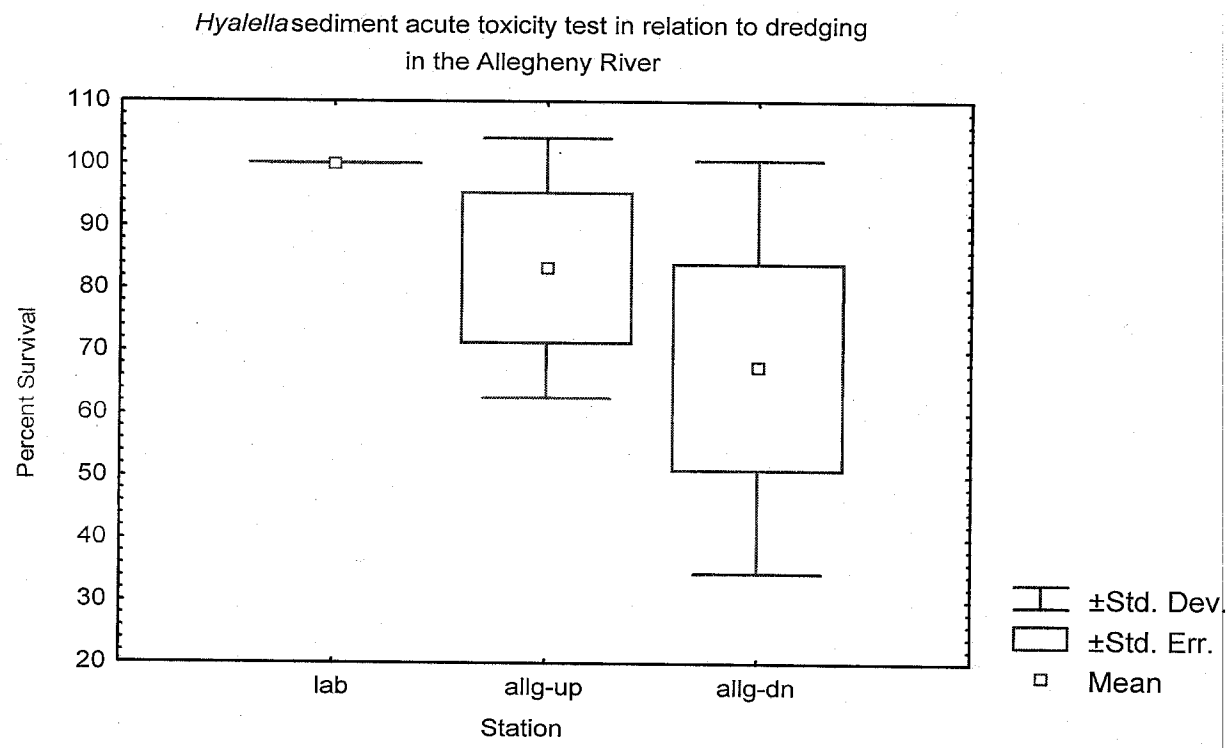


Figure G-11. NSI Sample Sites.



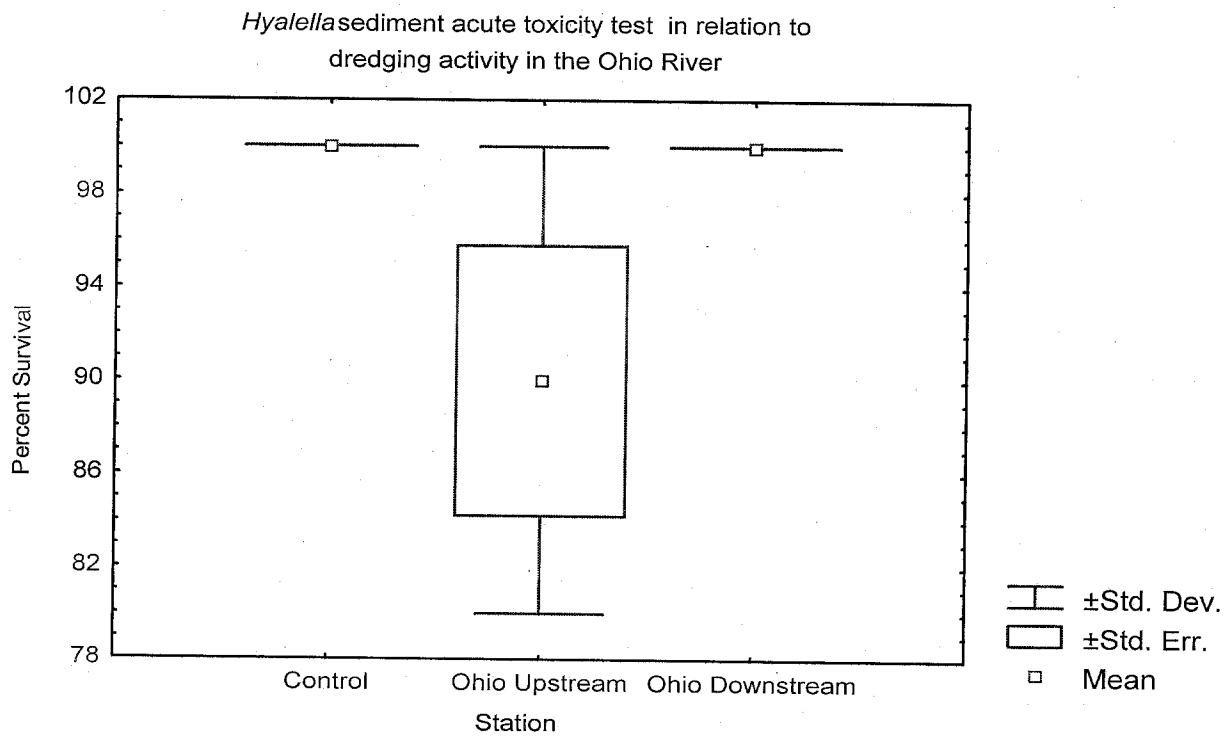
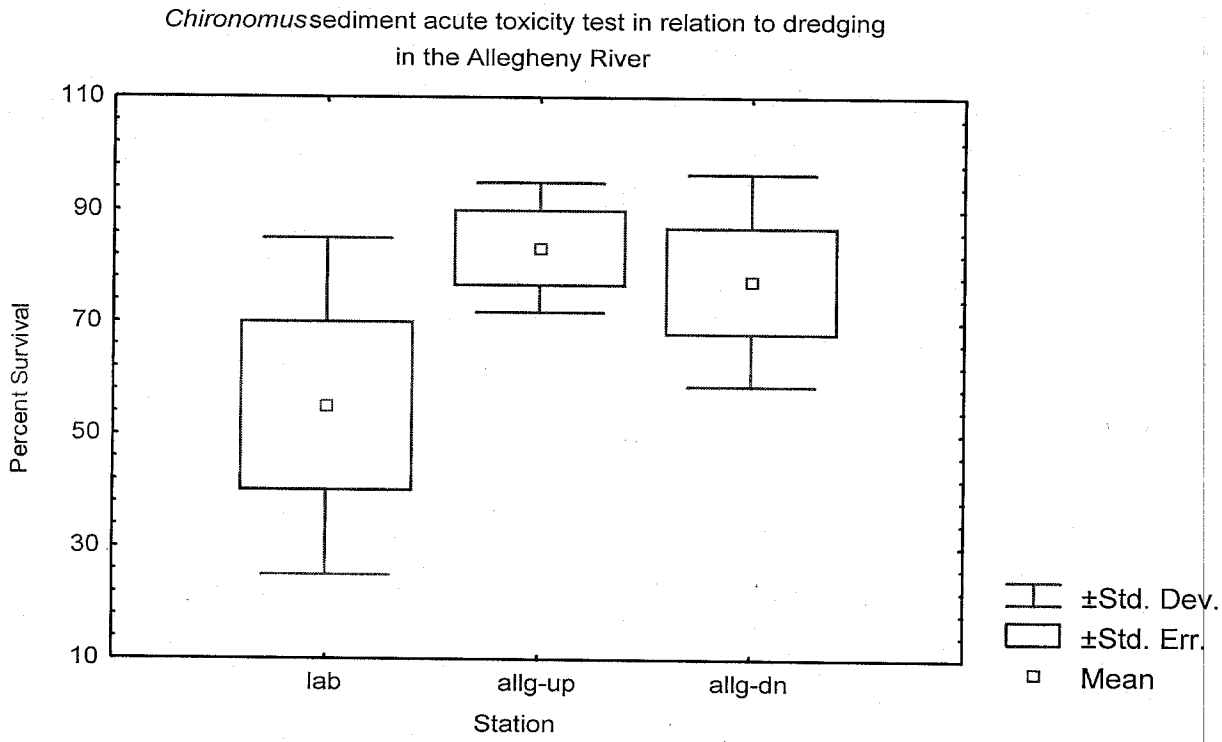


Figure G-12. Summary of *Hyalella azteca* sediment toxicity tests



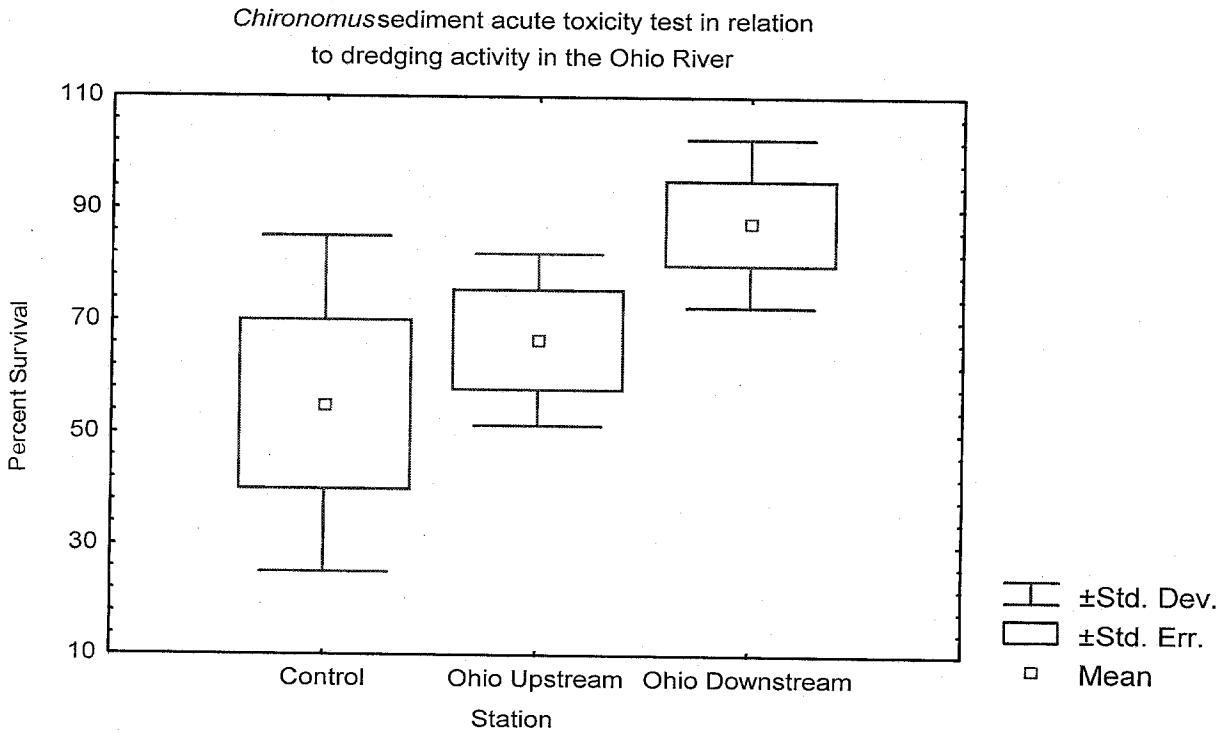


Figure G-13. Summary of *Chironomus* toxicity testing on river sediment samples

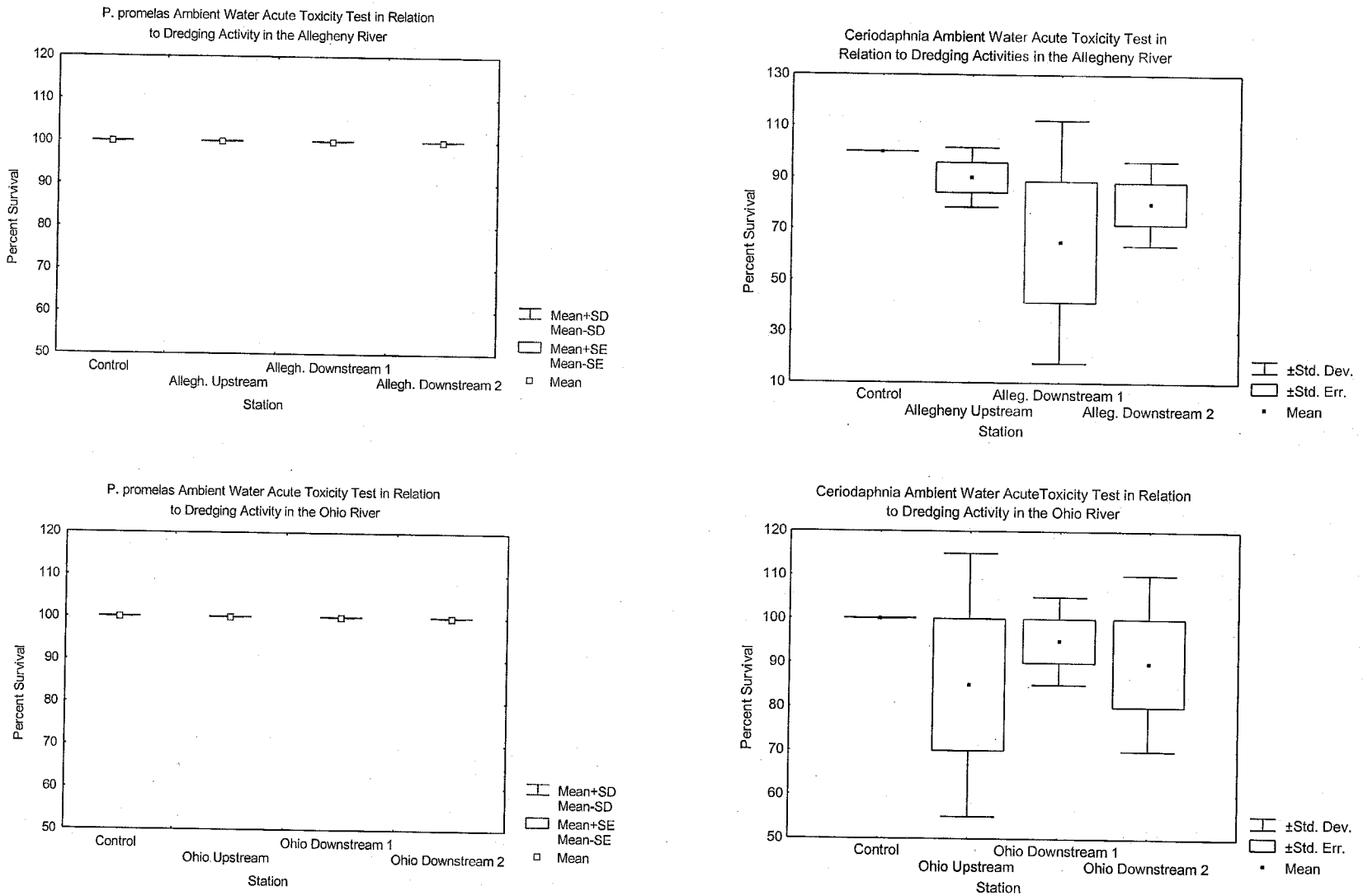


Figure G-14. Summary of acute toxicity testing on ambient water samples.

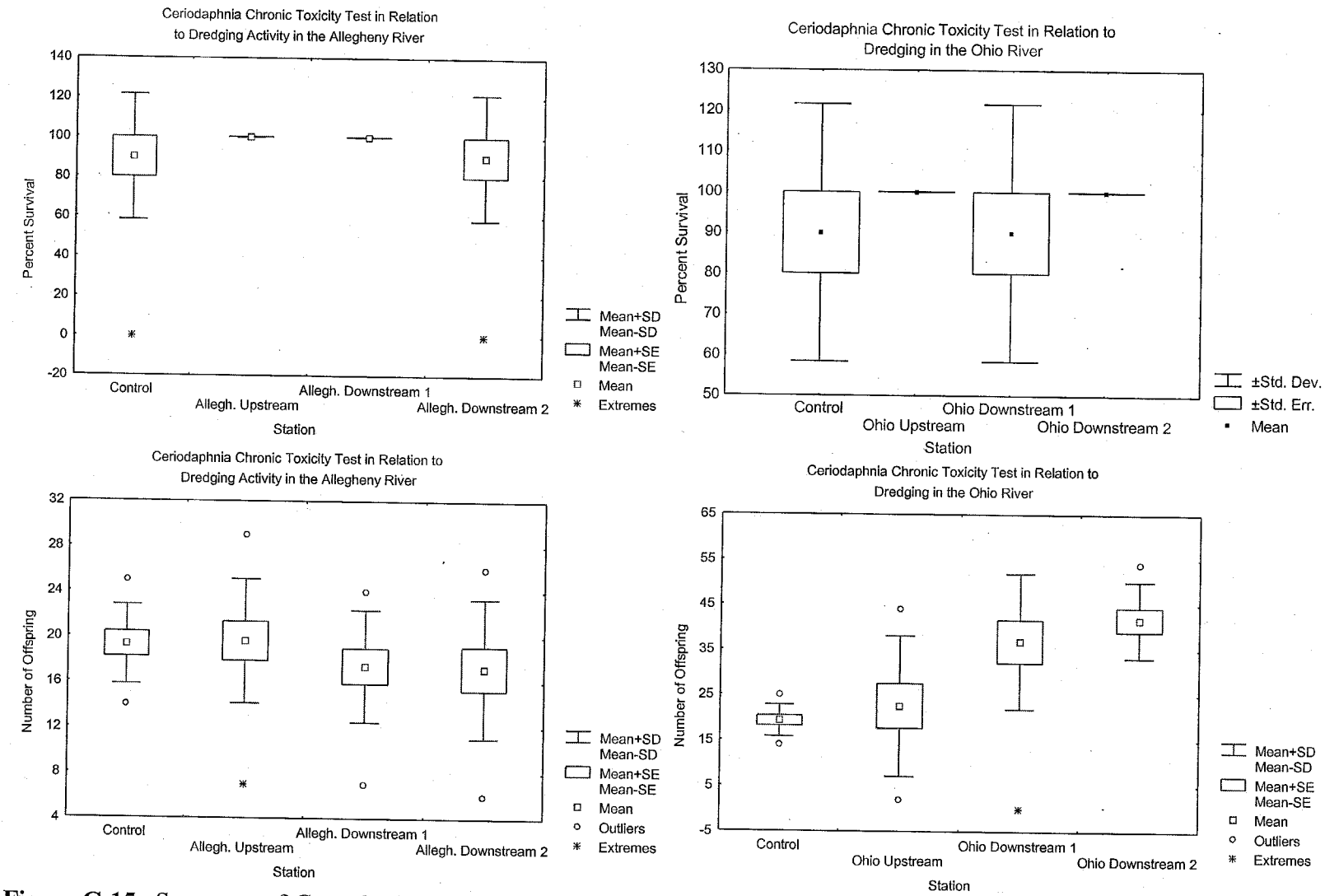


Figure G-15. Summary of *Ceriodaphnia* chronic testing on ambient river samples

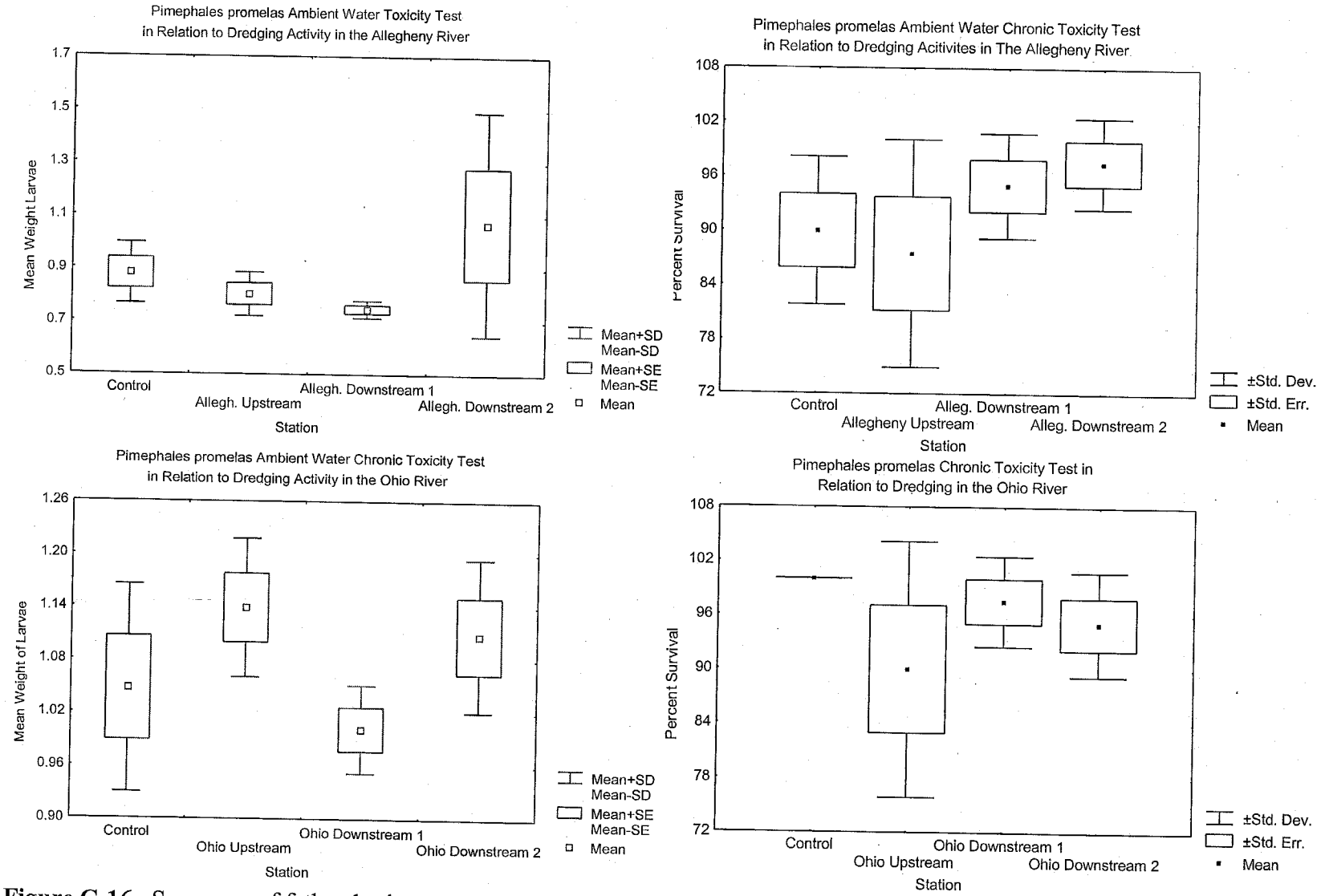


Figure G-16. Summary of fathead minnow chronic test results on ambient river samples