APPENDIX B
Water Quality Analyses and Plots of PADEP monitoring data

Ninety-six PADEP sampling locations in the Kiskiminetas River watershed were reviewed for data analysis on the basis of location on impaired segments and data record. Monitoring for parameters related to abandoned mine drainage impairments was conducted during five sampling events at each station. The locations include sampling along the mainstem drainage areas of the Kiskiminetas and Conemaugh rivers and their tributaries. The water quality results for the parameters being modeled as part of TMDL development (pH, total aluminum, total iron, and total manganese) were analyzed and compared to applicable standards. Note that the standard for total iron concentrations is a 30-day average, but the percent exceedance statistic is based on an individual assessment of each data point.

Analysis of metals data from PADEP confirms that in-stream metals concentrations, particularly total aluminum and iron, exceed water quality criteria. However, pH results suggest that the high metals concentrations do not always translate into pH criteria violations. Only 14 of the 96 stations recorded pH violations and of these two stations recoded 100 percent violations.

Kiskiminetas River

As part of the PADEP study, water quality was monitored at 19 locations in the mainstem drainage area of the Kiskiminetas River. Monitoring results for pH, total aluminum, total iron, and total manganese are summarized and compared to applicable water quality criteria in Tables B-1 through B-4.

Two station in the mainstem drainage of the Kiskiminetas River violated standards for all four parameters (Stations TR01 [Thorn Run] and WR01 [Wolford Run]). All stations had at least one sample violating the total aluminum standard and all but two stations violated the total iron standard. No station met all water quality criteria.

Table B-1. pH summary for PADEP monitoring stations in the mainstem drainage area of the Kiskiminetas River

Station ID	Station description	Period of record	Min.	Mean	Max.	Percentage exceeding criteria	Located in HQ/EV waters?
BL01	Blacklegs Creek	08/01/07–06/04/08	6.80	7.25	7.80	0%	
BR01	Beaver Run	08/02/07–06/05/08	6.99	7.22	7.41	0%	
BR02	Beaver Run	08/02/07–06/05/08	6.61	6.87	7.45	0%	
BR03	Beaver Run	08/02/07–06/05/08	5.98	6.96	7.57	20%	Yes
BR04	Beaver Run	08/02/07–06/05/08	6.70	7.23	7.64	0%	Yes
CON08	Conemaugh River	07/31/07–06/04/08	6.42	7.04	7.69	0%	
CON09	Conemaugh River	08/01/07–06/04/08	6.03	6.83	7.58	0%	
KIS01	Kiskiminetas River	07/31/07–06/04/08	6.62	7.14	7.95	0%	
KIS02	Kiskiminetas River	08/01/07–06/04/08	6.89	7.39	7.81	0%	
KIS03	Kiskiminetas River	08/01/07–06/04/08	7.04	7.52	7.84	0%	
KIS04	Kiskiminetas River	08/01/07–06/04/08	6.75	7.21	7.80	0%	
KIS05	Kiskiminetas River	08/01/07–06/04/08	7.07	7.46	7.88	0%	
LH06	Loyalhanna Creek	07/31/07–06/03/08	7.06	7.29	7.72	0%	
LH07	Loyalhanna Creek	07/31/07–06/03/08	7.23	7.43	7.78	0%	
LONG01	Longs Run	08/01/07–06/04/08	7.28	7.80	8.21	0%	
ROAR01	Roaring Run	08/01/07–06/04/08	6.35	7.16	8.00	0%	
TR01	Thorn Run	08/02/07–06/05/08	2.99	4.13	6.45	80%	Yes
UNTBR01	Unt Beaver Run	08/02/07–06/05/08	6.77	7.14	7.65	0%	
WR01	Wolford Run	08/01/07–06/04/08	4.01	5.70	7.60	60%	

Table B-2. Total aluminum summary for PADEP monitoring stations in the mainstem drainage area of the Kiskiminetas River

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
BL01	Blacklegs Creek	08/01/07–06/04/08	1,270	5,077	14,599	100%	
BR01	Beaver Run	08/02/07–06/05/08	500	1,592	3,892	60%	
BR02	Beaver Run	08/02/07–06/05/08	500	3,401	14,700	40%	
BR03	Beaver Run	08/02/07–06/05/08	500	1,486	3,570	100%	Yes
BR04	Beaver Run	08/02/07–06/05/08	500	1,096	2,080	100%	Yes
CON08	Conemaugh River	07/31/07–06/04/08	500	692	1,460	20%	
CON09	Conemaugh River	08/01/07–06/04/08	500	769	1,548	40%	
KIS01	Kiskiminetas River	07/31/07–06/04/08	500	804	1,976	20%	
KIS02	Kiskiminetas River	08/01/07–06/04/08	500	1,126	3,176	40%	
KIS03	Kiskiminetas River	08/01/07–06/04/08	500	1,735	6,428	20%	
KIS04	Kiskiminetas River	08/01/07–06/04/08	500	1,301	4,340	20%	
KIS05	Kiskiminetas River	08/01/07–06/04/08	500	1,234	4,054	20%	
LH06	Loyalhanna Creek	07/31/07–06/03/08	500	556	779	20%	
LH07	Loyalhanna Creek	07/31/07–06/03/08	500	943	2,160	40%	
LONG01	Longs Run	08/01/07–06/04/08	500	2,693	11,394	20%	
ROAR01	Roaring Run	08/01/07–06/04/08	500	1,989	7,489	40%	
TR01	Thorn Run	08/02/07–06/05/08	3,650	12,699	24,100	100%	Yes
UNTBR01	Unt Beaver Run	08/02/07–06/05/08	541	1,129	1,580	80%	
WR01	Wolford Run	08/01/07–06/04/08	2,060	6,864	10,425	100%	

Table B-3. Total iron summary for PADEP monitoring stations in the mainstem drainage area of the Kiskiminetas River

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
BL01	Blacklegs Creek	08/01/07–06/04/08	336	5,479	24,216	20%	
BR01	Beaver Run	08/02/07–06/05/08	300	1,522	4,190	40%	
BR02	Beaver Run	08/02/07–06/05/08	300	786	2,730	20%	
BR03	Beaver Run	08/02/07–06/05/08	312	1,594	3,910	100%	Yes
BR04	Beaver Run	08/02/07–06/05/08	414	1,211	2,025	100%	Yes
CON08	Conemaugh River	07/31/07–06/04/08	300	731	2,402	20%	
CON09	Conemaugh River	08/01/07–06/04/08	300	556	1,272	0%	
KIS01	Kiskiminetas River	07/31/07–06/04/08	300	1,089	4,042	20%	
KIS02	Kiskiminetas River	08/01/07–06/04/08	300	1,256	5,082	20%	
KIS03	Kiskiminetas River	08/01/07–06/04/08	300	3,089	14,096	20%	
KIS04	Kiskiminetas River	08/01/07–06/04/08	315	1,841	7,783	20%	
KIS05	Kiskiminetas River	08/01/07–06/04/08	300	1,908	8,169	20%	
LH06	Loyalhanna Creek	07/31/07–06/03/08	300	1,105	2,110	40%	
LH07	Loyalhanna Creek	07/31/07–06/03/08	300	758	1,795	20%	
LONG01	Longs Run	08/01/07–06/04/08	300	4,783	22,633	20%	
ROAR01	Roaring Run	08/01/07–06/04/08	300	3,161	13,701	20%	
TR01	Thorn Run	08/02/07–06/05/08	1,750	4,236	7,774	100%	Yes
UNTBR01	Unt Beaver Run	08/02/07–06/05/08	300	891	1,380	0%	
WR01	Wolford Run	08/01/07–06/04/08	13,042	17,383	23,572	100%	

Table B-4. Total manganese summary for PADEP monitoring stations in the mainstem drainage area of the Kiskiminetas River

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
BL01	Blacklegs Creek	08/01/07–06/04/08	649	1,062	1,663	40%	
BR01	Beaver Run	08/02/07–06/05/08	50	230	506	0%	
BR02	Beaver Run	08/02/07–06/05/08	203	1,549	4,570	60%	
BR03	Beaver Run	08/02/07–06/05/08	76	194	523	0%	Yes
BR04	Beaver Run	08/02/07–06/05/08	97	179	380	0%	Yes
CON08	Conemaugh River	07/31/07–06/04/08	130	403	595	0%	
CON09	Conemaugh River	08/01/07–06/04/08	311	511	714	0%	
KIS01	Kiskiminetas River	07/31/07–06/04/08	114	366	563	0%	
KIS02	Kiskiminetas River	08/01/07–06/04/08	60	342	630	0%	
KIS03	Kiskiminetas River	08/01/07–06/04/08	143	426	905	0%	
KIS04	Kiskiminetas River	08/01/07–06/04/08	78	359	725	0%	
KIS05	Kiskiminetas River	08/01/07–06/04/08	61	342	735	0%	
LH06	Loyalhanna Creek	07/31/07–06/03/08	115	380	726	0%	
LH07	Loyalhanna Creek	07/31/07–06/03/08	264	331	436	0%	
LONG01	Longs Run	08/01/07–06/04/08	50	493	2,078	20%	
ROAR01	Roaring Run	08/01/07–06/04/08	50	259	956	0%	
TR01	Thorn Run	08/02/07–06/05/08	1,784	3,168	4,630	100%	Yes
UNTBR01	Unt Beaver Run	08/02/07–06/05/08	50	324	1,150	20%	
WR01	Wolford Run	08/01/07–06/04/08	1,164	2,601	3,960	100%	

1.2. Conemaugh River

As part of the PADEP study, water quality was monitored at 19 locations in the mainstem drainage area of the Conemaugh River. Monitoring results for pH, total aluminum, total iron, and total manganese are summarized and compared to applicable water quality criteria in Tables B-5 through B-8.

Station YC02 (Yellow Creek) violated water quality standards for the four parameters, while UNTCON03 (UNT Conemaugh River) violated all but pH. Station YC02 (Yellow Creek) recorded the lowest pH and had the highest mean total aluminum and total iron concentrations and the second-lowest mean total aluminum concentration.

Table B-5. pH summary for PADEP monitoring stations in the mainstem drainage area of the Conemaugh River

Station ID	Station description	Period of record	Min.	Mean	Max.	Percentage exceeding criteria	Located in HQ/EV waters?
ALT01	Aultmans Creek	08/01/07–06/03/08	7.22	7.43	7.72	0%	
CON06	Conemaugh River	07/23/07–06/03/08	6.96	7.39	7.74	0%	
CON07	Conemaugh River	07/23/07–06/03/08	7.03	7.31	7.49	0%	
DR01	Dixon Run	07/25/07–05/28/08	6.60	7.12	7.65	0%	
LYC01	Little Yellow Creek	07/30/07–05/28/08	6.37	7.07	7.45	0%	Yes
LYC02	Little Yellow Creek	07/30/07–05/28/08	7.36	7.73	8.17	0%	Yes
NB01	North Branch	07/25/07–05/28/08	7.03	7.29	7.56	0%	
NB02	North Branch	07/25/07–05/28/08	7.24	7.48	7.68	0%	
STR01	Stony Run	07/23/07–05/28/08	7.38	8.10	8.63	0%	
TLC01	Two Lick Creek	07/24/07–05/28/08	7.42	7.79	8.15	0%	
TLC02	Two Lick Creek	07/24/07–05/28/08	7.17	7.72	8.43	0%	

Station ID	Station description	Period of record	Min.	Mean	Max.	Percentage exceeding criteria	Located in HQ/EV waters?
TLC03	Two Lick Creek	07/24/07–05/28/08	6.39	7.14	7.84	0%	
TLC04	Two Lick Creek	07/24/07–05/28/08	6.02	6.46	7.18	0%	
TLC05	Two Lick Creek	07/24/07–05/28/08	6.19	6.61	7.28	0%	
UNTBLK01	Unt Blacklick Creek	07/24/07–06/03/08	6.60	7.64	8.22	0%	
UNTCON03	Unt Conemaugh River	07/23/07–05/28/08	6.43	7.07	7.49	0%	
YC01	Yellow Creek	07/24/07–05/28/08	6.50	7.29	7.76	0%	
YC02	Yellow Creek	07/24/07–05/28/08	4.37	5.55	7.30	60%	
YC03	Yellow Creek	07/30/07–05/28/08	6.96	7.26	7.79	0%	

Table B-6. Total aluminum summary for PADEP monitoring stations in the mainstem drainage area of the Conemaugh River

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
ALT01	Aultmans Creek	08/01/07–06/03/08	500	738	1,262	40%	
CON06	Conemaugh River	07/23/07–06/03/08	500	691	933	40%	
CON07	Conemaugh River	07/23/07–06/03/08	500	677	1,041	20%	
DR01	Dixon Run	07/25/07–05/28/08	1,980	2,551	3,050	100%	
LYC01	Little Yellow Creek	07/30/07–05/28/08	500	621	1,012	100%	Yes
LYC02	Little Yellow Creek	07/30/07–05/28/08	500	710	1,518	100%	Yes
NB01	North Branch	07/25/07–05/28/08	500	857	1,301	40%	
NB02	North Branch	07/25/07–05/28/08	500	783	1,898	20%	
STR01	Stony Run	07/23/07–05/28/08	500	501	503	0%	
TLC01	Two Lick Creek	07/24/07–05/28/08	500	979	1,952	60%	
TLC02	Two Lick Creek	07/24/07–05/28/08	500	611	816	20%	
TLC03	Two Lick Creek	07/24/07–05/28/08	607	911	1,190	60%	
TLC04	Two Lick Creek	07/24/07–05/28/08	964	1,434	1,980	100%	
TLC05	Two Lick Creek	07/24/07–05/28/08	500	910	1,584	60%	
UNTBLK01	Unt Blacklick Creek	07/24/07–06/03/08	500	512	559	0%	
UNTCON03	Unt Conemaugh River	07/23/07–05/28/08	705	2,905	4,640	80%	
YC01	Yellow Creek	07/24/07–05/28/08	500	579	813	20%	
YC02	Yellow Creek	07/24/07–05/28/08	2,089	4,135	6,680	100%	
YC03	Yellow Creek	07/30/07–05/28/08	500	921	2,459	20%	

Table B-7. Total iron summary for PADEP monitoring stations in the mainstem drainage area of the Conemaugh River

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
ALT01	Aultmans Creek	08/01/07–06/03/08	300	492	1,262	0%	
CON06	Conemaugh River	07/23/07–06/03/08	300	930	1,979	20%	
CON07	Conemaugh River	07/23/07–06/03/08	1,014	1,346	2,246	20%	
DR01	Dixon Run	07/25/07–05/28/08	1,383	2,336	4,576	80%	
LYC01	Little Yellow Creek	07/30/07–05/28/08	301	564	773	100%	Yes
LYC02	Little Yellow Creek	07/30/07–05/28/08	300	548	1,528	100%	Yes
NB01	North Branch	07/25/07–05/28/08	300	469	1,146	0%	

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
NB02	North Branch	07/25/07–05/28/08	300	713	2,119	20%	
STR01	Stony Run	07/23/07–05/28/08	300	300	300	0%	
TLC01	Two Lick Creek	07/24/07–05/28/08	559	1,276	2,255	40%	
TLC02	Two Lick Creek	07/24/07–05/28/08	300	370	651	0%	
TLC03	Two Lick Creek	07/24/07–05/28/08	808	2,599	3,240	80%	
TLC04	Two Lick Creek	07/24/07–05/28/08	992	4,253	6,990	80%	
TLC05	Two Lick Creek	07/24/07–05/28/08	1,550	2,855	4,660	100%	
UNTBLK01	Unt Blacklick Creek	07/24/07–06/03/08	323	482	573	0%	
UNTCON03	Unt Conemaugh River	07/23/07–05/28/08	3,050	4,231	6,970	100%	
YC01	Yellow Creek	07/24/07–05/28/08	300	669	1,113	0%	
YC02	Yellow Creek	07/24/07–05/28/08	2,630	13,845	24,400	100%	
YC03	Yellow Creek	07/30/07–05/28/08	302	800	2,568	20%	

Table B-8. Total manganese summary for PADEP monitoring stations in the mainstem drainage area of the Conemaugh River

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
ALT01	Aultmans Creek	08/01/07–06/03/08	497	889	1,090	40%	
CON06	Conemaugh River	07/23/07–06/03/08	338	512	768	0%	
CON07	Conemaugh River	07/23/07–06/03/08	553	668	957	0%	
DR01	Dixon Run	07/25/07–05/28/08	238	680	914	0%	
LYC01	Little Yellow Creek	07/30/07–05/28/08	116	190	317	0%	Yes
LYC02	Little Yellow Creek	07/30/07–05/28/08	61	100	187	0%	Yes
NB01	North Branch	07/25/07–05/28/08	112	202	266	0%	
NB02	North Branch	07/25/07–05/28/08	181	210	236	0%	
STR01	Stony Run	07/23/07–05/28/08	50	57	76	0%	
TLC01	Two Lick Creek	07/24/07–05/28/08	160	205	285	0%	
TLC02	Two Lick Creek	07/24/07–05/28/08	50	101	277	0%	
TLC03	Two Lick Creek	07/24/07–05/28/08	162	218	303	0%	
TLC04	Two Lick Creek	07/24/07–05/28/08	341	450	537	0%	
TLC05	Two Lick Creek	07/24/07–05/28/08	351	448	519	0%	
UNTBLK01	Unt Blacklick Creek	07/24/07–06/03/08	52	82	109	0%	
UNTCON03	Unt Conemaugh River	07/23/07–05/28/08	2,483	4,373	6,640	100%	
YC01	Yellow Creek	07/24/07–05/28/08	71	186	338	0%	
YC02	Yellow Creek	07/24/07–05/28/08	365	769	1,100	40%	
YC03	Yellow Creek	07/30/07–05/28/08	193	209	220	0%	

Little Conemaugh River

As part of the PADEP study, water quality was monitored at 27 locations in the drainage area of the Little Conemaugh River. Monitoring results for pH, total aluminum, total iron, and total manganese are summarized and compared to applicable water quality criteria in Tables B-9 through B-12.

Both Station SPR01 (Spring Run) and UNTLC01 (UNT Little Conemaugh River) violated criteria for the 4 parameters. Many other violated for three or the four parameters. There were 16 Stations that did not meet criteria, for at least on parameter, 100 percent of the samples, with Station HR01 (Hinkston Run) not

meeting any metal criteria in all the samplers. No station met all water quality criteria. Station SPR01 (Spring Run) had the lowest mean total aluminum and total manganese concentrations. Station SFLC01 (South Fork Little Conemaugh River) had the highest mean iron concentration.

Table B-9. pH summary for PADEP monitoring stations in the Little Conemaugh River drainage area

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
BC01	Bens Creek	07/18/07–05/15/08	5.42	6.68	7.37	20%	Yes
BSR01	Big Springs Run	07/19/07–05/27/08	4.82	5.67	6.29	60%	
CBR01	Clapboard Run	07/19/07–05/15/08	4.40	5.73	7.12	60%	
CON01	Conemaugh River	07/19/07–05/27/08	7.00	7.27	7.52	0%	
CON02	Conemaugh River	07/19/07–05/27/08	6.92	7.21	7.52	0%	
CON03	Conemaugh River	07/19/07–05/27/08	6.91	7.38	7.88	0%	
CON04	Conemaugh River	07/19/07–05/28/08	6.67	7.01	7.45	0%	
CON05	Conemaugh River	07/20/07–06/02/08	6.14	6.64	7.14	0%	
ER01	Elk Run	07/19/07–05/14/08	6.88	7.68	8.30	0%	
HR01	Hinkston Run	07/19/07–05/27/08	6.88	7.12	7.36	0%	
LCON01	Little Conemaugh River	07/18/07–05/15/08	5.94	6.92	7.53	20%	
LCON02	Little Conemaugh River	07/18/07–05/15/08	6.19	7.06	7.64	0%	
LCON03	Little Conemaugh River	07/18/07–05/15/08	6.30	6.77	7.07	0%	
LCON04	Little Conemaugh River	07/18/07–05/15/08	6.20	6.93	7.74	0%	
LCON05	Little Conemaugh River	07/18/07–05/15/08	6.55	6.87	7.40	0%	
LCON06	Little Conemaugh River	07/19/07–05/15/08	6.77	7.13	7.48	0%	
LCON07	Little Conemaugh River	07/19/07–05/15/08	6.85	7.10	7.57	0%	
LCON08	Little Conemaugh River	07/19/07–05/15/08	6.25	6.89	7.42	0%	
RR01	Richards Run	07/20/07–06/02/08	4.66	6.02	7.40	60%	
SCR01	St. Clair Run	07/19/07–05/14/08	7.24	7.35	7.55	0%	
SFLC01	South Fork Little Conemaugh River	07/19/07–05/15/08	6.28	6.59	7.12	0%	
SLR01	Salt Lick Run	07/19/07–05/15/08	6.79	7.03	7.56	0%	Yes
SPR01	Spring Run	07/18/07–05/15/08	3.60	4.89	6.70	60%	
TMC01	Tub Mill Creek	07/23/07–06/02/08	6.36	7.01	7.75	0%	
UNTCON01	Unt Conemaugh River	07/19/07–05/27/08	7.46	7.78	8.32	0%	
UNTCON02	Unt Conemaugh River	07/20/07–06/02/08	3.51	4.13	5.51	100%	
UNTLC01	Unt Little Conemaugh River	07/18/07–05/15/08	4.38	4.90	5.41	100%	

Table B-10. Total aluminum summary for PADEP monitoring stations in the Little Conemaugh River drainage area

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
BC01	Bens Creek	07/18/07–05/15/08	541	5,155	22,000	100%	Yes
BSR01	Big Springs Run	07/19/07–05/27/08	500	755	1,424	20%	
CBR01	Clapboard Run	07/19/07–05/15/08	876	3,380	6,180	100%	
CON01	Conemaugh River	07/19/07–05/27/08	500	1,076	2,130	40%	
CON02	Conemaugh River	07/19/07–05/27/08	500	1,126	2,188	60%	
CON03	Conemaugh River	07/19/07–05/27/08	500	1,347	2,078	80%	
CON04	Conemaugh River	07/19/07–05/28/08	500	887	1,280	60%	

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
CON05	Conemaugh River	07/20/07–06/02/08	500	910	1,260	60%	
ER01	Elk Run	07/19/07–05/14/08	500	597	854	20%	
HR01	Hinkston Run	07/19/07–05/27/08	2,350	3,312	4,054	100%	
LCON01	Little Conemaugh River	07/18/07–05/15/08	701	1,883	4,880	80%	
LCON02	Little Conemaugh River	07/18/07–05/15/08	628	2,115	5,210	80%	
LCON03	Little Conemaugh River	07/18/07–05/15/08	955	2,763	6,470	100%	
LCON04	Little Conemaugh River	07/18/07–05/15/08	811	1,572	3,200	100%	
LCON05	Little Conemaugh River	07/18/07–05/15/08	1,134	3,089	6,280	100%	
LCON06	Little Conemaugh River	07/19/07–05/15/08	506	1,266	2,574	60%	
LCON07	Little Conemaugh River	07/19/07–05/15/08	826	1,486	2,561	100%	
LCON08	Little Conemaugh River	07/19/07–05/15/08	708	1,570	2,823	80%	
RR01	Richards Run	07/20/07–06/02/08	538	3,285	5,560	80%	
SCR01	St. Clair Run	07/19/07–05/14/08	945	1,736	2,606	100%	
SFLC01	South Fork Little Conemaugh River	07/19/07–05/15/08	1,438	2,272	3,174	100%	
SLR01	Salt Lick Run	07/19/07–05/15/08	500	641	1,206	100%	Yes
SPR01	Spring Run	07/18/07–05/15/08	1,130	9,872	20,100	100%	
TMC01	Tub Mill Creek	07/23/07–06/02/08	500	699	993	40%	
UNTCON01	Unt Conemaugh River	07/19/07–05/27/08	500	647	1,119	20%	
UNTCON02	Unt Conemaugh River	07/20/07–06/02/08	1,571	4,002	6,430	100%	
UNTLC01	Unt Little Conemaugh River	07/18/07–05/15/08	882	3,519	8,770	100%	

Table B-11. Total iron summary for PADEP monitoring stations in the Little Conemaugh River drainage area

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
BC01	Bens Creek	07/18/07–05/15/08	300	330	450	100%	Yes
BSR01	Big Springs Run	07/19/07–05/27/08	300	786	2,020	20%	
CBR01	Clapboard Run	07/19/07–05/15/08	910	3,114	5,070	80%	
CON01	Conemaugh River	07/19/07–05/27/08	1,260	2,689	4,057	80%	
CON02	Conemaugh River	07/19/07–05/27/08	1,930	2,597	3,150	100%	
CON03	Conemaugh River	07/19/07–05/27/08	814	1,920	2,960	60%	
CON04	Conemaugh River	07/19/07–05/28/08	598	1,450	2,764	40%	
CON05	Conemaugh River	07/20/07–06/02/08	650	1,326	2,643	40%	
ER01	Elk Run	07/19/07–05/14/08	300	306	332	0%	
HR01	Hinkston Run	07/19/07–05/27/08	1,880	3,442	4,640	100%	
LCON01	Little Conemaugh River	07/18/07–05/15/08	710	1,125	2,400	20%	
LCON02	Little Conemaugh River	07/18/07–05/15/08	407	1,377	4,810	20%	
LCON03	Little Conemaugh River	07/18/07–05/15/08	854	2,226	5,630	40%	
LCON04	Little Conemaugh River	07/18/07–05/15/08	645	886	1,439	0%	
LCON05	Little Conemaugh River	07/18/07–05/15/08	1,564	5,540	13,900	100%	
LCON06	Little Conemaugh River	07/19/07–05/15/08	2,832	5,708	9,010	100%	
LCON07	Little Conemaugh	07/19/07–05/15/08	2,941	5,896	10,700	100%	

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
	River						
LCON08	Little Conemaugh River	07/19/07–05/15/08	2,683	5,459	10,800	100%	
RR01	Richards Run	07/20/07–06/02/08	1,375	9,824	17,400	80%	
SCR01	St. Clair Run	07/19/07–05/14/08	538	1,310	1,880	40%	
SFLC01	South Fork Little Conemaugh River	07/19/07–05/15/08	5,092	16,908	24,800	100%	
SLR01	Salt Lick Run	07/19/07–05/15/08	300	1,119	3,791	100%	Yes
SPR01	Spring Run	07/18/07–05/15/08	960	3,061	6,561	60%	
TMC01	Tub Mill Creek	07/23/07–06/02/08	300	564	843	0%	
UNTCON01	Unt Conemaugh River	07/19/07–05/27/08	658	1,022	1,520	20%	
UNTCON02	Unt Conemaugh River	07/20/07–06/02/08	1,323	1,674	1,916	80%	
UNTLC01	Unt Little Conemaugh River	07/18/07–05/15/08	325	1,436	5,350	20%	

Table B-12. Total manganese summary for PADEP monitoring stations in the Little Conemaugh River drainage area

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
BC01	Bens Creek	07/18/07–05/15/08	122	168	226	0%	Yes
BSR01	Big Springs Run	07/19/07–05/27/08	180	305	496	0%	
CBR01	Clapboard Run	07/19/07–05/15/08	96	524	953	0%	
CON01	Conemaugh River	07/19/07–05/27/08	728	841	1,090	20%	
CON02	Conemaugh River	07/19/07–05/27/08	681	931	1,400	40%	
CON03	Conemaugh River	07/19/07–05/27/08	570	879	1,610	20%	
CON04	Conemaugh River	07/19/07–05/28/08	662	772	952	0%	
CON05	Conemaugh River	07/20/07–06/02/08	482	668	931	0%	
ER01	Elk Run	07/19/07–05/14/08	50	105	220	0%	
HR01	Hinkston Run	07/19/07–05/27/08	1,038	2,919	5,150	100%	
LCON01	Little Conemaugh River	07/18/07–05/15/08	247	379	591	0%	
LCON02	Little Conemaugh River	07/18/07–05/15/08	97	319	713	0%	
LCON03	Little Conemaugh River	07/18/07–05/15/08	178	339	770	0%	
LCON04	Little Conemaugh River	07/18/07–05/15/08	121	218	418	0%	
LCON05	Little Conemaugh River	07/18/07–05/15/08	375	710	884	0%	
LCON06	Little Conemaugh River	07/19/07–05/15/08	526	1,031	1,390	60%	
LCON07	Little Conemaugh River	07/19/07–05/15/08	542	1,039	1,530	60%	
LCON08	Little Conemaugh River	07/19/07–05/15/08	502	975	1,470	40%	
RR01	Richards Run	07/20/07–06/02/08	50	137	213	0%	
SCR01	St. Clair Run	07/19/07–05/14/08	363	505	655	0%	
SFLC01	South Fork Little Conemaugh River	07/19/07–05/15/08	736	1,670	2,240	80%	
SLR01	Salt Lick Run	07/19/07–05/15/08	50	106	164	0%	Yes
SPR01	Spring Run	07/18/07–05/15/08	1,680	3,762	5,060	100%	
TMC01	Tub Mill Creek	07/23/07–06/02/08	50	80	119	0%	
UNTCON01	Unt Conemaugh River	07/19/07–05/27/08	53	138	248	0%	
UNTCON02	Unt Conemaugh River	07/20/07–06/02/08	634	1,057	1,540	40%	
UNTLC01	Unt Little Conemaugh River	07/18/07–05/15/08	423	774	1,170	20%	

Stonycreek River

As part of the PADEP study, water quality was monitored at 24 locations in the drainage area of the Stonycreek River. Monitoring results for pH, total aluminum, total iron, and total manganese are summarized and compared to applicable water quality criteria in Tables B-13 through B-16.

All stations in the Stonycreek River watershed exceeded the total aluminum criteria at least once during the study period with station WC01 recording the highest mean concentration (3,442 µg/L). Solomans Run had the highest Iron concentration (10,001 µg/L). One station, SR01 (Sams Run) was greater than the pH standard, while SC05 was the only station lower than the pH standard..

Table B-13. pH summary for PADEP monitoring stations in the Stonycreek River drainage area

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
GC01	Glades Creek	07/16/07–05/12/08	7.12	7.50	8.42	0%	
LR01	Lamberts Run	07/16/07–05/13/08	7.06	7.36	7.84	0%	
LR02	Lamberts Run	07/16/07–05/13/08	6.92	7.49	7.99	0%	
RC01	Reitz Creek	07/16/07–05/12/08	6.21	7.16	8.36	0%	
RHC01	Rhoads Creek	07/16/07–05/12/08	7.12	7.72	8.92	0%	
SC01	Stonycreek River	07/16/07–05/12/08	6.89	7.41	8.04	0%	
SC02	Stonycreek River	07/16/07–05/12/08	7.21	7.73	8.73	0%	
SC03	Stonycreek River	07/16/07–05/12/08	7.20	7.63	8.60	0%	
SC04	Stonycreek River	07/17/07–05/13/08	7.52	7.96	8.67	0%	
SC05	Stonycreek River	07/17/07–05/13/08	5.58	7.35	8.43	20%	
SC06	Stonycreek River	07/17/07–05/13/08	6.12	7.60	9.00	0%	
SC07	Stonycreek River	07/17/07–05/13/08	6.45	7.85	8.94	0%	
SC08	Stonycreek River	07/17/07–05/13/08	6.64	7.35	7.93	0%	
SC09	Stonycreek River	07/17/07–05/13/08	6.30	6.92	7.46	0%	
SC10	Stonycreek River	07/18/07–05/13/08	6.66	7.27	7.58	0%	
SC11	Stonycreek River	07/18/07–05/13/08	6.43	7.30	7.73	0%	
SCH01	Schrock Run	07/16/07–05/12/08	6.98	7.43	8.50	0%	
SFB02	South Fork Bens Creek	07/17/07–05/14/08	7.18	7.40	7.92	0%	Yes
SFB03	South Fork Bens Creek	07/17/07–05/14/08	7.18	7.69	8.09	0%	Yes
SFB04	South Fork Bens Creek	07/17/07–05/14/08	7.11	7.39	7.67	0%	Yes
SFB05	South Fork Bens Creek	07/17/07–05/14/08	7.33	7.70	8.16	0%	Yes
SOLR01	Solomons Run	07/18/07–05/14/08	6.57	7.13	7.41	0%	
SR01	Sams Run	07/18/07–05/14/08	7.41	8.19	9.31	20%	
WC01	Wells Creek	07/17/07–05/13/08	7.51	7.57	7.78	0%	

Table B-14. Total aluminum summary for PADEP monitoring stations in the Stonycreek River drainage area

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
GC01	Glades Creek	07/16/07–05/12/08	500	1,357	3,783	60%	
LR01	Lamberts Run	07/16/07–05/13/08	500	1,642	2,460	80%	
LR02	Lamberts Run	07/16/07–05/13/08	500	883	1,870	40%	
RC01	Reitz Creek	07/16/07–05/12/08	500	1,942	4,370	60%	
RHC01	Rhoads Creek	07/16/07–05/12/08	500	720	1,096	40%	
SC01	Stonycreek River	07/16/07–05/12/08	500	1,969	5,996	80%	
SC02	Stonycreek River	07/16/07–05/12/08	500	1,157	2,911	40%	

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
SC03	Stonycreek River	07/16/07–05/12/08	500	1,119	2,496	60%	
SC04	Stonycreek River	07/17/07–05/13/08	500	1,132	2,640	60%	
SC05	Stonycreek River	07/17/07–05/13/08	500	1,205	2,290	60%	
SC06	Stonycreek River	07/17/07–05/13/08	500	1,350	2,590	80%	
SC07	Stonycreek River	07/17/07–05/13/08	500	971	2,060	60%	
SC08	Stonycreek River	07/17/07–05/13/08	500	1,309	3,380	80%	
SC09	Stonycreek River	07/17/07–05/13/08	500	1,761	4,190	80%	
SC10	Stonycreek River	07/18/07–05/13/08	919	2,653	6,460	100%	
SC11	Stonycreek River	07/18/07–05/13/08	786	3,149	8,020	100%	
SCH01	Schrock Run	07/16/07–05/12/08	500	1,435	3,319	40%	
SFB02	South Fork Bens Creek	07/17/07–05/14/08	500	2,567	10,300	100%	Yes
SFB03	South Fork Bens Creek	07/17/07–05/14/08	500	1,144	3,170	100%	Yes
SFB04	South Fork Bens Creek	07/17/07–05/14/08	500	1,285	2,970	100%	Yes
SFB05	South Fork Bens Creek	07/17/07–05/14/08	500	1,642	5,230	100%	Yes
SOLR01	Solomons Run	07/18/07–05/14/08	543	1,614	2,470	80%	
SR01	Sams Run	07/18/07–05/14/08	500	844	2,218	20%	
WC01	Wells Creek	07/17/07–05/13/08	500	3,442	14,400	60%	

Table B-15. Total iron summary for PADEP monitoring stations in the Stonycreek River drainage area

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
GC01	Glades Creek	07/16/07–05/12/08	300	868	2,404	20%	
LR01	Lamberts Run	07/16/07–05/13/08	1,193	1,962	3,678	60%	
LR02	Lamberts Run	07/16/07–05/13/08	704	1,223	2,583	20%	
RC01	Reitz Creek	07/16/07–05/12/08	315	822	2,157	20%	
RHC01	Rhoads Creek	07/16/07–05/12/08	300	342	478	0%	
SC01	Stonycreek River	07/16/07–05/12/08	309	998	3,175	20%	
SC02	Stonycreek River	07/16/07–05/12/08	333	721	1,779	20%	
SC03	Stonycreek River	07/16/07–05/12/08	421	774	1,852	20%	
SC04	Stonycreek River	07/17/07–05/13/08	300	451	887	0%	
SC05	Stonycreek River	07/17/07–05/13/08	680	931	1,110	0%	
SC06	Stonycreek River	07/17/07–05/13/08	300	598	1,211	0%	
SC07	Stonycreek River	07/17/07–05/13/08	300	421	754	0%	
SC08	Stonycreek River	07/17/07–05/13/08	300	693	1,200	0%	
SC09	Stonycreek River	07/17/07–05/13/08	365	1,256	1,830	40%	
SC10	Stonycreek River	07/18/07–05/13/08	694	2,151	6,970	20%	
SC11	Stonycreek River	07/18/07–05/13/08	1,154	2,618	5,010	60%	
SCH01	Schrock Run	07/16/07–05/12/08	912	2,741	5,448	60%	
SFB02	South Fork Bens Creek	07/17/07–05/14/08	300	333	466	100%	Yes
SFB03	South Fork Bens Creek	07/17/07–05/14/08	300	300	300	100%	Yes
SFB04	South Fork Bens Creek	07/17/07–05/14/08	712	912	1,162	100%	Yes
SFB05	South Fork Bens Creek	07/17/07–05/14/08	300	460	768	100%	Yes
SOLR01	Solomons Run	07/18/07–05/14/08	2,184	10,001	25,500	100%	
SR01	Sams Run	07/18/07–05/14/08	300	357	584	0%	
WC01	Wells Creek	07/17/07–05/13/08	300	472	771	0%	

Table B-16. Total manganese summary for PADEP monitoring stations in the Stonycreek River drainage area

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
GC01	Glades Creek	07/16/07–05/12/08	50	233	460	0%	
LR01	Lamberts Run	07/16/07–05/13/08	2,250	4,637	7,266	100%	
LR02	Lamberts Run	07/16/07–05/13/08	2,160	3,731	5,460	100%	
RC01	Reitz Creek	07/16/07–05/12/08	170	350	658	0%	
RHC01	Rhoads Creek	07/16/07–05/12/08	81	562	1,340	20%	
SC01	Stonycreek River	07/16/07–05/12/08	50	208	390	0%	
SC02	Stonycreek River	07/16/07–05/12/08	54	260	409	0%	
SC03	Stonycreek River	07/16/07–05/12/08	293	467	683	0%	
SC04	Stonycreek River	07/17/07–05/13/08	68	192	406	0%	
SC05	Stonycreek River	07/17/07–05/13/08	291	503	646	0%	
SC06	Stonycreek River	07/17/07–05/13/08	165	397	702	0%	
SC07	Stonycreek River	07/17/07–05/13/08	68	220	398	0%	
SC08	Stonycreek River	07/17/07–05/13/08	307	498	858	0%	
SC09	Stonycreek River	07/17/07–05/13/08	436	970	1,520	40%	
SC10	Stonycreek River	07/18/07–05/13/08	411	735	1,180	40%	
SC11	Stonycreek River	07/18/07–05/13/08	375	677	1,210	20%	
SCH01	Schrock Run	07/16/07–05/12/08	526	2,389	3,730	80%	
SFB02	South Fork Bens Creek	07/17/07–05/14/08	50	53	62	0%	Yes
SFB03	South Fork Bens Creek	07/17/07–05/14/08	69	138	228	0%	Yes
SFB04	South Fork Bens Creek	07/17/07–05/14/08	105	169	255	0%	Yes
SFB05	South Fork Bens Creek	07/17/07–05/14/08	84	102	131	0%	Yes
SOLR01	Solomons Run	07/18/07–05/14/08	157	696	1,770	20%	
SR01	Sams Run	07/18/07–05/14/08	50	50	50	0%	
WC01	Wells Creek	07/17/07–05/13/08	50	125	257	0%	

Loyalhanna Creek

As part of the PADEP study, water quality was monitored at seven locations in the drainage area of Loyalhanna Creek. Monitoring results for pH, total aluminum, total iron, and total manganese are summarized and compared to applicable water quality criteria in Tables B-17 through B-20.

Station CT01 (Crabtree Creek) and UNTLH01 (UNT Loyalhanna Creek) had the lowest mean pH values. CT01 had the highest iron mean concentration ((42,046 µg/L), while UNTLH01 had the highest mean aluminum concentration (3,330 µg/L).

Table B-17. pH summary for PADEP monitoring stations in the Loyalhanna Creek drainage area

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
CT01	Crabtree Creek	07/31/07–06/03/08	6.27	6.47	6.78	0%	
LH01	Loyalhanna Creek	07/31/07–06/03/08	6.05	7.04	7.77	0%	
LH02	Loyalhanna Creek	07/31/07–06/03/08	6.93	7.26	7.87	0%	
LH03	Loyalhanna Creek	07/31/07–06/03/08	6.87	7.14	7.77	0%	
LH04	Loyalhanna Creek	07/31/07–06/03/08	7.07	7.31	7.63	0%	
LH05	Loyalhanna Creek	07/31/07–06/03/08	6.68	7.09	7.78	0%	
UNTLH01	Unt Loyalhanna Creek	07/31/07–06/03/08	6.22	6.50	7.12	0%	

Table B-18. Total aluminum summary for PADEP monitoring stations in the Loyalhanna Creek drainage area

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
CT01	Crabtree Creek	07/31/07–06/03/08	500	1,077	1,412	80%	
LH01	Loyalhanna Creek	07/31/07–06/03/08	500	549	658	0%	
LH02	Loyalhanna Creek	07/31/07–06/03/08	500	529	582	0%	
LH03	Loyalhanna Creek	07/31/07–06/03/08	500	640	1,020	20%	
LH04	Loyalhanna Creek	07/31/07–06/03/08	500	620	864	20%	
LH05	Loyalhanna Creek	07/31/07–06/03/08	500	554	753	20%	
UNTLH01	Unt Loyalhanna Creek	07/31/07–06/03/08	2,690	3,330	4,300	100%	

Table B-19. Total iron summary for PADEP monitoring stations in the Loyalhanna Creek drainage area

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
CT01	Crabtree Creek	07/31/07–06/03/08	27,309	42,046	55,000	100%	
LH01	Loyalhanna Creek	07/31/07–06/03/08	300	341	506	0%	
LH02	Loyalhanna Creek	07/31/07–06/03/08	614	1,033	1,510	20%	
LH03	Loyalhanna Creek	07/31/07–06/03/08	1,157	1,845	2,540	60%	
LH04	Loyalhanna Creek	07/31/07–06/03/08	313	1,106	2,340	20%	
LH05	Loyalhanna Creek	07/31/07–06/03/08	1,380	2,606	3,938	80%	
UNTLH01	Unt Loyalhanna Creek	07/31/07–06/03/08	7,513	14,030	17,100	100%	

Table B-20. Total manganese summary for PADEP monitoring stations in the Loyalhanna Creek drainage area

Station ID	Station description	Period of record	Min. (µg/L)	Mean (µg/L)	Max. (µg/L)	Percentage exceeding criteria	Located in HQ/EV waters?
CT01	Crabtree Creek	07/31/07–06/03/08	1,372	1,776	2,150	100%	
LH01	Loyalhanna Creek	07/31/07–06/03/08	50	55	77	0%	
LH02	Loyalhanna Creek	07/31/07–06/03/08	88	251	433	0%	
LH03	Loyalhanna Creek	07/31/07–06/03/08	220	602	1,170	20%	
LH04	Loyalhanna Creek	07/31/07–06/03/08	299	397	583	0%	
LH05	Loyalhanna Creek	07/31/07–06/03/08	304	481	672	0%	
UNTLH01	Unt Loyalhanna Creek	07/31/07–06/03/08	2,018	3,464	4,940	100%	

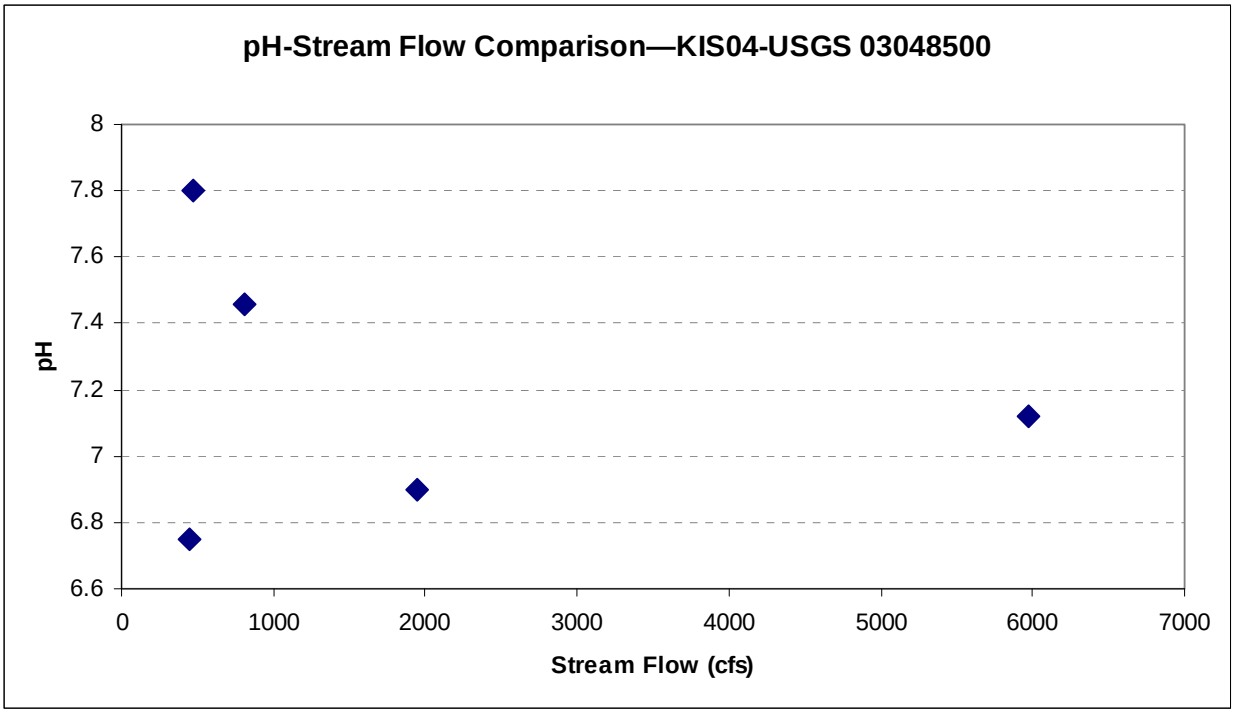

Figure B-1. pH-stream flow comparison at PADEP monitoring station KIS04 and USGS 03048500.

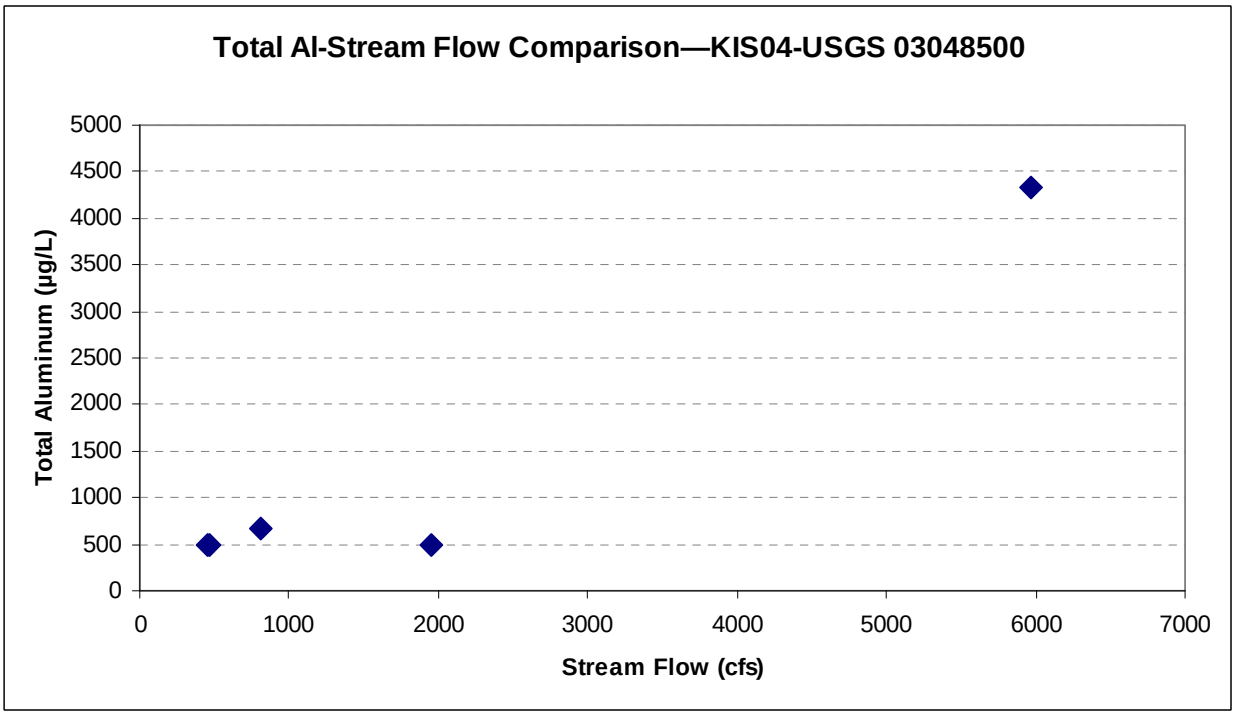

Figure B-2. Total aluminum-stream flow comparison at PADEP monitoring station KIS04 and USGS 03048500.

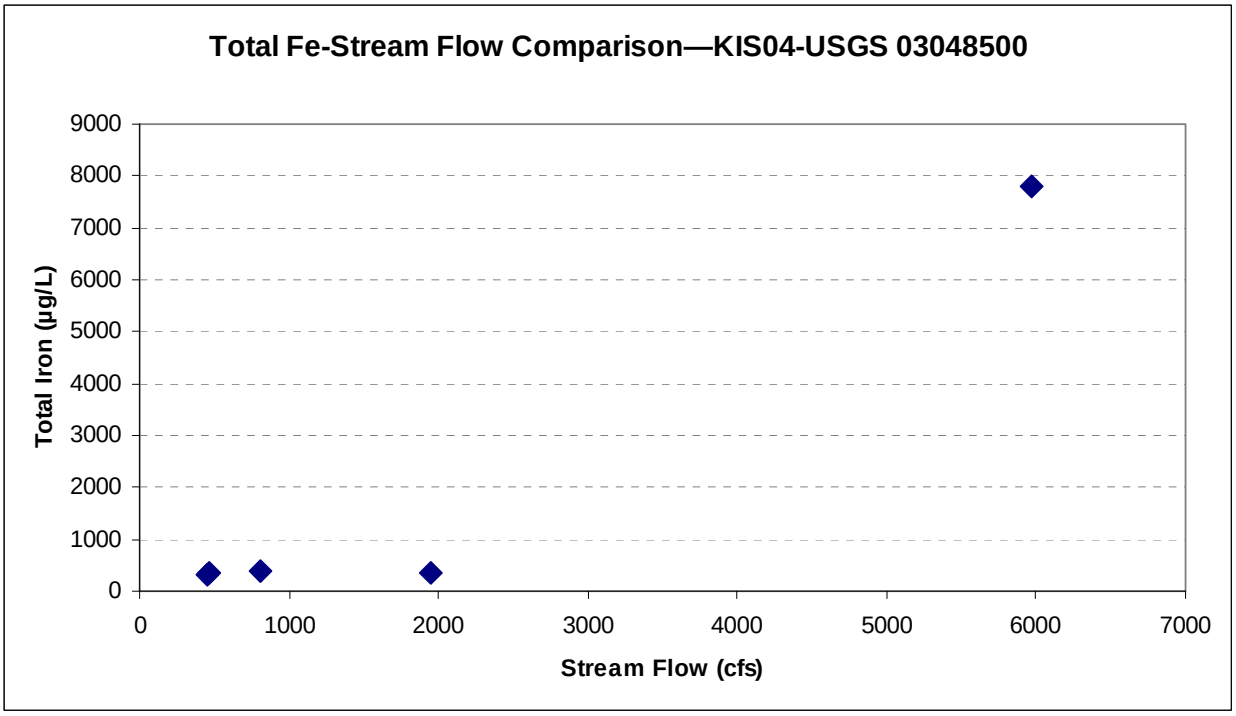

Figure B-3. Total iron-stream flow comparison at PADEP monitoring station KIS04 and USGS 03048500.

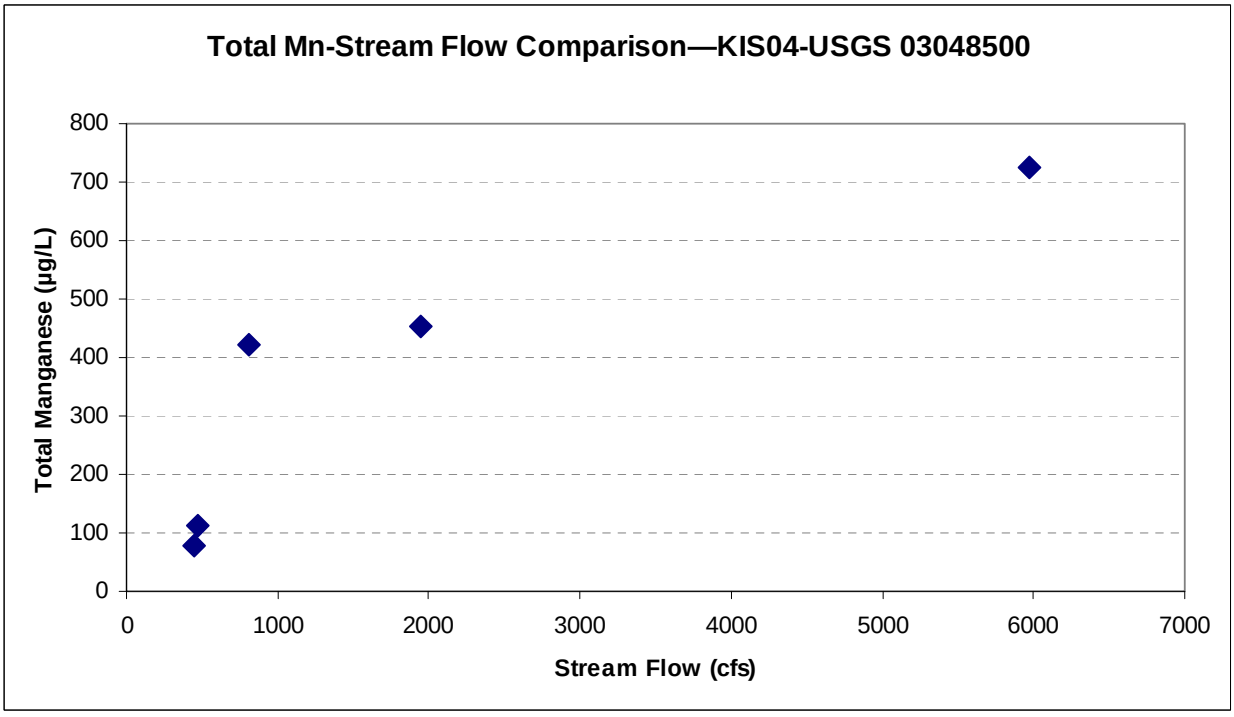

Figure B-4. Total manganese-stream flow comparison at PADEP monitoring station KIS04 and USGS 03048500.

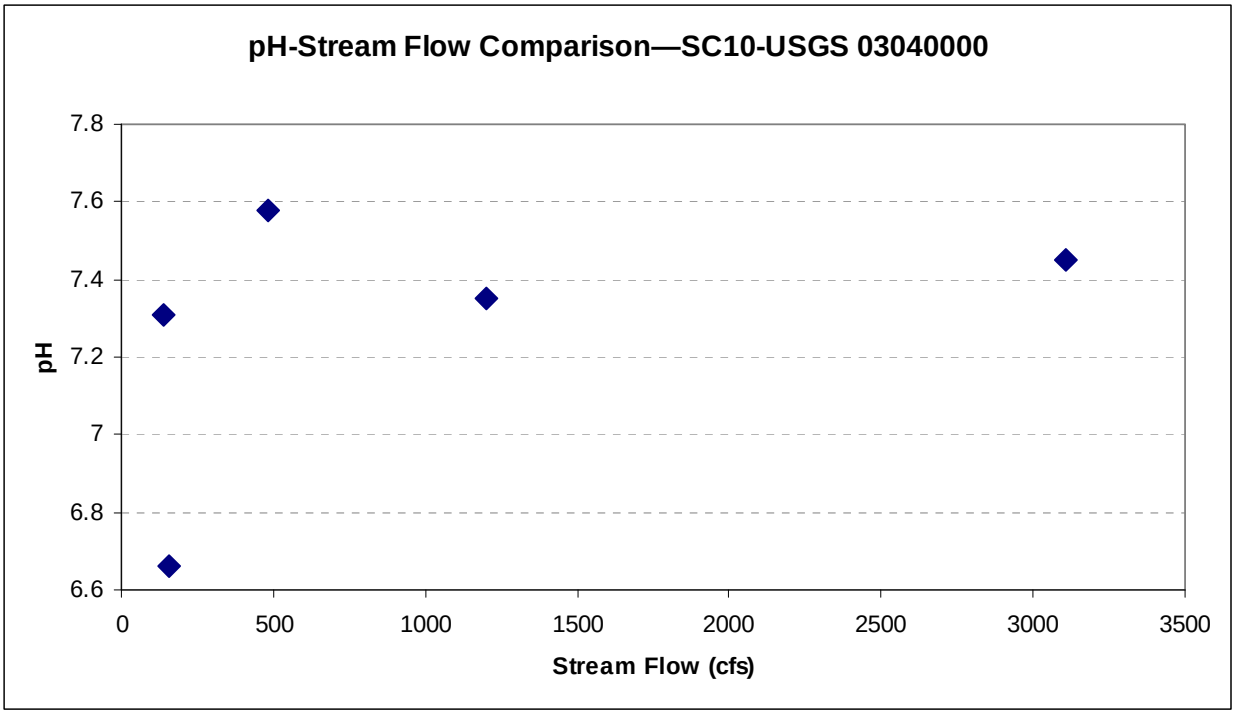

Figure B-5. pH-stream flow comparison at PADEP monitoring station SC10 and USGS 03040000.

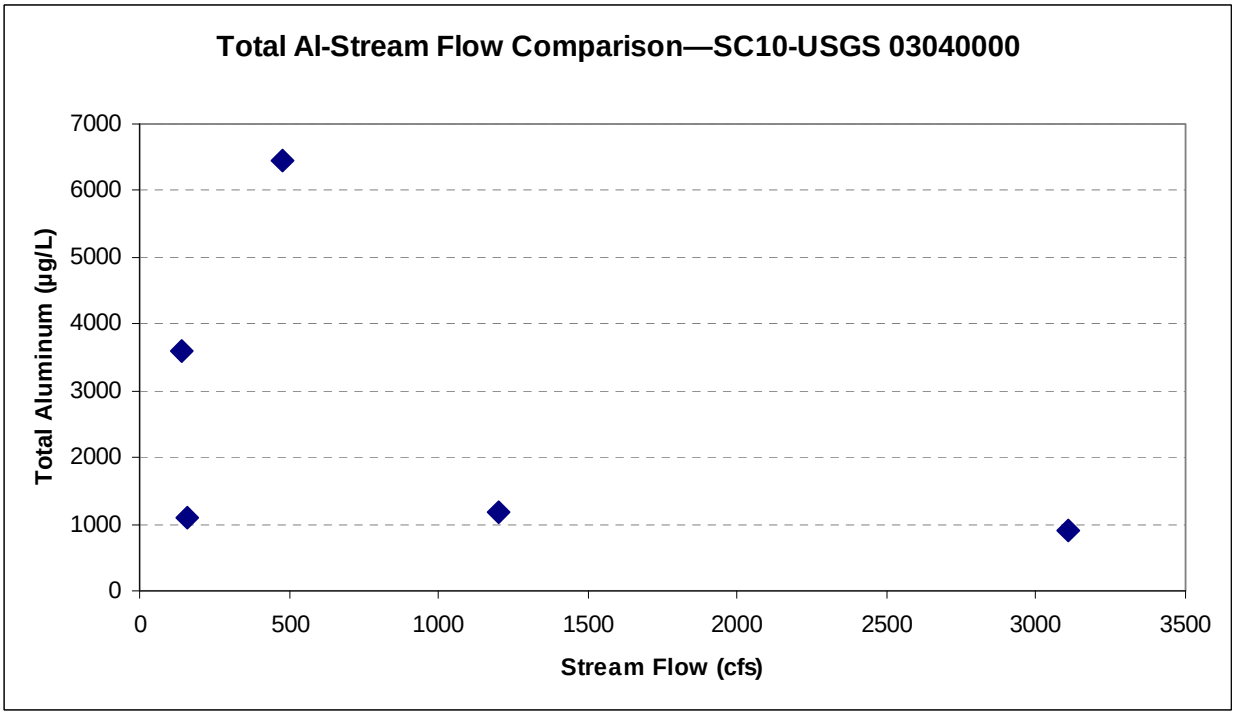

Figure B-6. Total aluminum-stream flow comparison at PADEP monitoring station SC10 and USGS 03040000.

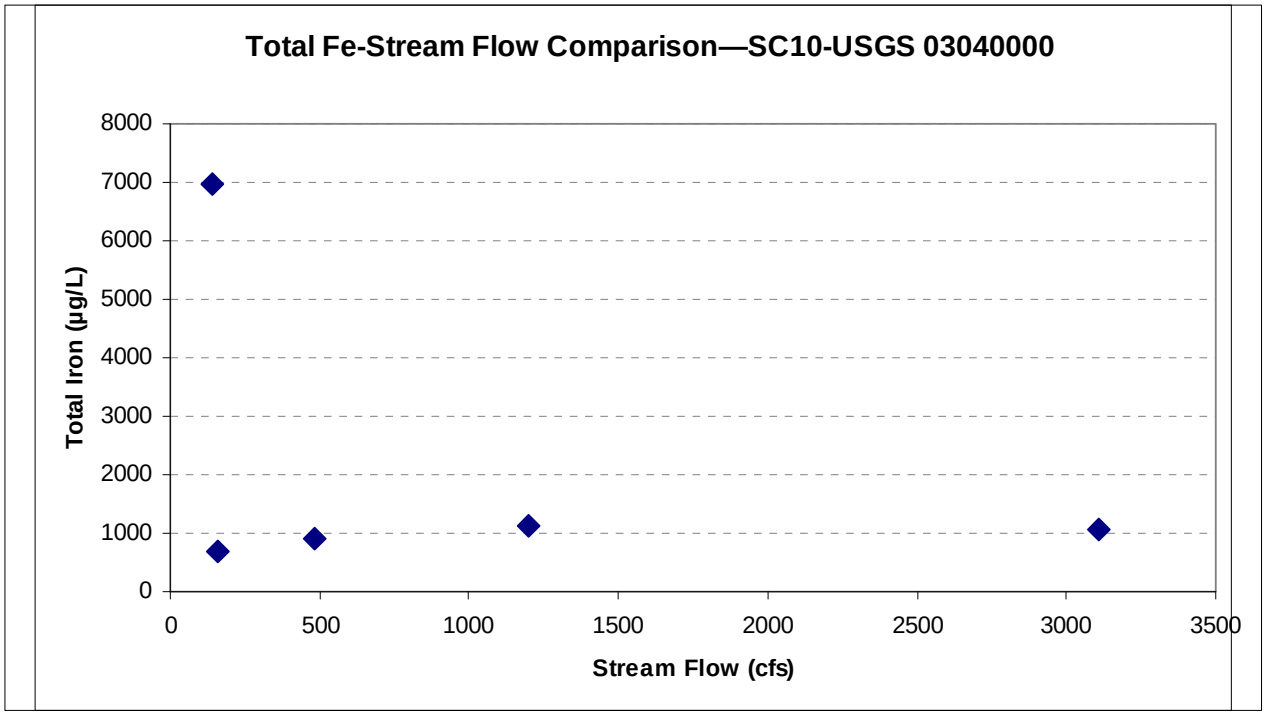

Figure B-7. Total iron-stream flow comparison at PADEP monitoring station SC10 and USGS 03040000.

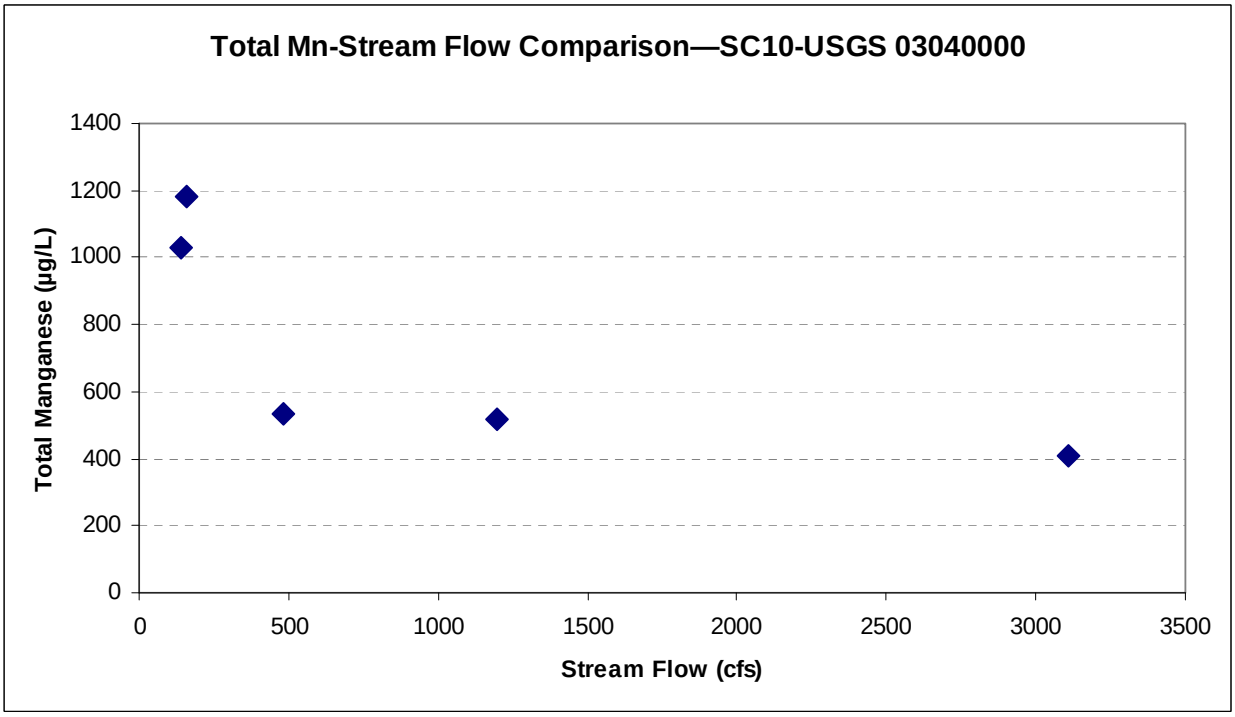

Figure B-8. Total manganese-stream flow comparison at PADEP monitoring station SC10 and USGS 03040000.