

Table 23  
Stream Water Quality  
Upper Twolick Creek

Location ID	Name	Beginning Sample Date	Ending Sample Date	Flow	Average pH	Number of pH Samples	Number of Al Samples	Average Al	Number of Iron Samples	Average Iron	Number of Mn Samples	Average Mn	Number of Sulfate Samples	Average Sulfate	Number of Acidity Samples	Average Acidity	Total Average
UTLC-137	Sample Run	6/23/1999	10/31/2003	299.00	3.27	13	13	37.72	13	81.74	13	59.98	13	939.94	5	374.88	298.85
UTLC-044	North Branch Twolick Creek	6/1/2002	6/1/2002		4.25	1	1	4.26	1	3.43	1	0.61	1	335.00	1	24.00	73.46
UTLC-055	North Branch Twolick Creek	6/1/2002	6/1/2002		4.25	1	1	4.26	1	3.43	1	0.61	1	335.00	1	24.00	73.46
UTLC-246	Starford #2	7/10/1996	9/16/1997		3.74	5	5	3.92	5	0.81	5	1.25	5	311.38	5	44.40	72.35
UTLC-200	TLC Upstream of IUP Site 14	5/30/2002	4/30/2003	113.84	5.20	12	12	2.78	12	0.39	12	0.98	12	296.15	12	19.85	64.03
UTLC-132	Mouth of Buck Run	7/22/1998	10/31/2003		4.83	12	12	2.34	12	6.93	12	10.80	12	254.35	3	44.13	63.71
UTLC-051	Northbranch Twolick Creek	6/1/2002	6/1/2002		4.80	1	1	3.22	1	0.19	1	0.43	1	293.00	1	14.00	62.17
UTLC-213	TLC Downstream of IUP site 3	5/30/2002	4/30/2003	4.30	4.89	13	13	4.40	13	2.51	13	0.83	13	218.22	13	34.18	52.03
UTLC-212	TLC Upstream of IUP site 2	5/30/2002	4/30/2003	7.16	6.44	12	12	3.36	12	2.77	12	0.72	12	227.77	12	13.35	49.59
UTLC-039	Penn Run	6/1/2002	6/1/2002	700.00	5.87	1	1	2.81	1	0.44	1	1.38	1	235.00	1	3.60	48.65
UTLC-084	Penn Run Sample	6/1/2002	6/1/2002	50.00	3.22	1	1	4.59	1	0.31	1	4.06	1	196.00	1	37.60	48.51
UTLC-211	TLC Downstream of IUP site 2	5/30/2002	4/30/2003	7.07	6.60	12	12	2.56	12	2.19	12	0.72	12	225.90	12	7.96	47.87
UTLC-083	Penn Run	6/1/2002	6/1/2002	225.00	4.00	1	1	2.02	1	0.56	1	3.32	1	195.00	1	23.20	44.82
UTLC-080	Penn Run	6/1/2002	6/1/2002	304.00	3.76	1	1	3.14	1	8.20	1	4.67	1	164.00	1	42.80	44.56
UTLC-228	Dixon Run	11/3/1986	10/31/2003	2488.30	6.86	17	17	0.88	17	1.87	17	1.35	13	213.54	3	0.40	43.61
UTLC-214	TLC Upstream of IUP site 4	5/30/2002	4/30/2003	314.17	6.16	13	13	1.85	13	0.57	13	0.69	13	197.16	13	10.33	42.12
UTLC-120	Buck Run	6/1/2002	6/1/2002	2146.00	6.96	1	1	3.44	1	1.00	1	1.10	1	177.00	1	23.97	41.30
UTLC-134	Penns Run	5/12/1999	5/14/2004	9752.94	6.21	18	18	1.96	18	5.51	18	1.89	18	188.70	12	7.32	41.07
UTLC-241	North Branch	7/9/1985	11/9/1992	3438.45	7.07	27			24	0.80	24	0.34	24	151.52	24	3.75	39.10
UTLC-124	Buck Run	6/1/2002	6/1/2002	2551.00	6.70	1	1	3.09	1	1.90	1	0.80	1	175.00	1	14.45	39.05
UTLC-123	Buck Run	6/1/2002	6/1/2002	1885.00	5.77	1	1	3.75	1	1.40	1	0.50	1	162.00	1	24.04	38.34
UTLC-245	Starford #2	7/10/1996	9/16/1997		6.42	5	5	0.49	5	0.35	5	0.38	5	139.94			35.29
UTLC-251	Buck Run below	5/6/1987	3/13/1991	226.76	7.46	17			17	0.38	17	0.40	17	134.65	5	3.76	34.80
UTLC-238	Dixon Run	9/26/1989	7/23/1998	2131.00	6.82	34	28	1.16	34	3.33	34	0.47	34	157.00	34	7.46	33.89
UTLC-198	TLC Upstream of IUP Site 13	5/30/2002	4/30/2003	7.48	6.98	12	12	0.98	12	0.32	12	0.24	12	158.56	12	4.81	32.98
UTLC-224	TLC Downstream of IUP site 9	5/30/2002	4/30/2003	7.26	6.91	12	12	0.65	12	0.65	12	0.42	12	159.09	12	4.03	32.97
UTLC-202	TLC Downstream of IUP Site 15	5/30/2002	4/30/2003	7.48	6.90	12	12	1.39	12	1.27	12	0.23	12	153.26	12	8.39	32.91
UTLC-229	Two Lick Clymer	11/4/1986	10/31/2003	12755.78	6.54	10	10	0.71	10	2.11	10	0.97	6	156.27	2	0.20	32.05
UTLC-242	North Branch	7/17/1985	4/30/2003	1923.67	6.82	26	12	0.57	23	0.69	23	0.37	23	150.30	23	5.88	31.56
UTLC-209	TLC US of Sample Run	5/30/2002	4/30/2003	7.65	7.32	12	12	0.96	12	1.43	12	0.34	12	147.17	12	4.39	30.86
UTLC-208	TLC DS of Sample Run	7/22/1998	4/30/2003	8464.65	7.11	13	13	1.53	13	1.81	13	0.36	13	142.55	13	6.72	30.59
UTLC-113	Two lick Creek	6/1/2002	6/1/2002	17081.00	7.10	1	1	0.45	1	0.76	1	0.14	1	146.00	1	1.00	29.67
UTLC-250	Two lick Cr.	6/23/1999	4/30/2003	124.89	7.29	28	28	1.24	28	2.32	28	0.40	28	137.30	28	5.01	29.25
UTLC-221	TLC DS of Diamondville Discharge	7/22/1998	4/30/2003	7084.63	7.01	13	13	2.40	13	3.69	13	0.21	13	117.75	13	17.35	28.28
UTLC-196	TLC Upstream Sampling Point	7/22/1998	4/30/2003	282.34	7.01	13	13	0.61	13	0.56	13	0.22	13	130.11	13	3.82	27.06
UTLC-247	Two Lick Cr.	3/18/1981	9/11/1986	17053.33	6.84	15			15	0.64	15	0.23	15	100.37	9	5.22	26.61
UTLC-248	Dixon Run below	3/17/1994	3/7/2002	471.10	6.43	31			31	0.13	31	0.13	31	97.96	11	7.19	26.35
UTLC-255	TLC UpStream of Buck Run	7/22/1998	7/23/1998	13215.59	7.60	1	1	0.78	1	1.92	1	0.16	1	127.00	1	0.00	25.97
UTLC-111	Two lick Creek	6/1/2002	6/1/2002	16922.00	7.60	1	1	1.13	1	1.62	1	0.22	1	125.00	1	1.00	25.79
UTLC-218	TLC Downstream of IUP site 7	5/30/2002	4/30/2003	7.59	7.24	12	12	1.25	12	3.12	12	0.23	12	116.31	12	7.50	25.68
UTLC-215	TLC Downstream of IUP site 5	5/30/2002	4/30/2003	9019.86	7.31	12	12	0.98	12	2.45	12	0.24	12	116.27	12	5.89	25.16
UTLC-110	TLC DS of Buck Run and Dixon Run	7/22/1998	6/1/2002	15077.22	7.80	2	2	0.54	2	1.12	2	0.18	2	121.00	2	0.50	24.67
UTLC-104	Mouth of North Branch Two lick Creek	7/22/1998	6/1/2002	5329.86	6.80	3	3	1.38	3	1.95	3	0.35	3	112.00	3	0.33	23.20
UTLC-219	TLC Upstream of IUP site 7	5/30/2002	4/30/2003	7.86	7.51	12	12	0.80	12	1.41	12	0.15	12	98.95	12	3.63	20.99
UTLC-252	Two lick Cr.	6/23/1999	6/6/2002		7.84	15	15	0.16	15	0.37	15	0.11	15	102.11	11	2.17	20.98
UTLC-100	Dixon Run	6/1/2002	6/1/2002	5.00	0.00	1	1	1.40	1	1.50	1	0.00	1	0.00	1	102.00	20.98
UTLC-203	TLC Upstream of IUP Site 15	5/30/2002	4/30/2003	7.48	6.76	12	12	1.03	12	0.59	12	0.26	12	89.38	12	7.72	19.80

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Location ID	Name	Beginning Sample Date	Ending Sample Date	Flow	Average pH	Number of pH Samples	Number of Al Samples	Average Al	Number of Iron Samples	Average Iron	Number of Mn Samples	Average Mn	Number of Sulfate Samples	Average Sulfate	Number of Acidity Samples	Average Acidity	Total Average
UTLC-253	TLC Mouth of the South Branch	7/22/1998	7/22/1998	5377.30	8.40	1	1	0.20	1	0.58	1	0.04	1	98.00	1	0.00	19.76
UTLC-222	TLC US of Diamondville Discharge	5/28/1999	4/30/2003	7353.18	7.76	13	13	0.41	13	0.32	13	0.11	13	85.78	13	2.70	17.87
UTLC-254	TLC DS of Confluence of Branches	7/22/1998	7/23/1998	12453.98	7.90	2	2	1.58	2	1.89	2	0.14	2	82.00	2	0.00	17.12
UTLC-043	Penn Run	6/1/2002	6/1/2002	200.00	4.45	1	1	2.12	1	0.58	1	1.22	1	66.00	1	13.60	16.70
UTLC-089	Penn Run	6/1/2002	6/1/2002	10.00	5.56	1	1	0.14	1	0.19	1	0.07	1	73.00	1	1.00	14.88
UTLC-103	North Branch Two lick Creek	6/1/2002	6/1/2002	557.00	6.80	1	1	0.77	1	1.06	1	0.07	1	70.00	1	1.00	14.58
UTLC-234	South Branch Twolick Creek	6/30/2003	5/14/2004	7227.04	8.02	12	12	0.21	12	0.30	12	0.04	12	59.53	12	0.44	12.11
UTLC-035	S. Branch Twolick	11/3/1986	6/1/2002	8976.97	7.33	133	133	0.21	133	0.35	133	0.06	128	59.47	4	0.05	12.03
UTLC-112	Two lick Creek	6/1/2002	6/1/2002		6.87	1	1	0.29	1	0.60	1	0.10	1	56.18	1	1.00	11.63
UTLC-057	North Branch Twolick Creek	6/1/2002	6/1/2002		6.90	1	1	0.13	1	0.05	1	0.02	1	45.00	1	1.00	9.24
UTLC-249	Buck Run above	5/6/1987	3/13/1991	162.88	7.15	16			16	0.86	16	0.42	16	29.19	7	3.57	8.51
UTLC-066	Pompey Run	6/1/2002	6/1/2002		7.04	1	1	0.11	1	0.11	1	0.02	1	28.00	1	1.00	5.85
UTLC-240	Pompey Run	7/9/1985	11/9/1992	1549.88	7.09	27			24	0.56	24	0.06	24	19.47	24	2.56	5.66
UTLC-226	Unnamed Trib to Dixon Run	11/3/1986	8/17/1988	10.80	6.88	5	5	0.52	5	1.16	5	0.27	1	25.00	2	0.10	5.41
UTLC-227	Unnamed Trib to NB Two Lick	11/3/1986	8/17/1988	28.74	6.58	4	4	0.21	4	0.36	4	0.05	1	26.00	2	0.00	5.33
UTLC-131	South Branch Two Lick	6/1/2002	6/1/2002	7.00	6.15	1	1	0.10	1	1.98	1	0.21	1	17.00	1	2.00	4.26
UTLC-127	Buck Run	6/1/2002	6/1/2002	1468.00	6.53	1	1	1.10	1	0.30	1	0.60	1	0.00	1	1.00	0.60
UTLC-101	Dixon Run	6/1/2002	6/1/2002	225.00	0.00	1	1	0.50	1	0.30	1	0.00	1	0.00	1	1.00	0.36



Table 24 - Discharge Water Quality Rankings  
Upper Twolick Creek

Location ID	Name	Beginning Sample Date	Ending Sample Date	Flow	Average pH	Number of pH Samples	pH Rank	Number of Al Samples	Average Al	Al Rank Factor	Al Rank	Number of Iron Samples	Average Iron	Iron Rank Factor	Iron Rank	Number of Mn Samples	Average Mn	Mn Rank Factor	Mn Rank	Number of Sulfate Samples	Average Sulfate	Sulfate Rank Factor	Sulfate Rank	Number of Acidity Samples	Average Acidity	Acidity Rank Factor	Acidity Rank	FINAL AVERAGE RANK
UTLC-025	Seep from old strip	3/28/2001	9/9/2002	41.29	7.80	7	79	7	0.47	0.23	61	7	0.95	0.95	42	7	0.13	0.13		7	101.43	101.43	54					59.00
UTLC-087	Discharge Sample	6/1/2002	6/1/2002	3.00	6.28	1	62	1	0.10	0.05	74	1	44.50	22.25	12	1	2.82	1.41		1	62.00	31	72	1	1.00	0.50	76	59.20
UTLC-060	Discharge Sample	6/1/2002	6/1/2002		6.18	1	61	1	0.16	0.08	70	1	5.21	2.605	34	1	1.68	0.84		1	157.00	78.5	62	1	1.00	0.50	70	59.40
UTLC-204	Discharge to Two Lick Creek (IUP site 16)	5/30/2002	4/30/2003	8.01	7.68	12	78	12	0.37	0.37	53	44	0.36	0.36	56	12	0.19	0.19		12	93.99	93.99	57	12	2.64	2.64	65	61.80
UTLC-065	Discharge Sample	6/1/2002	6/1/2002		6.17	1	60	1	0.11	0.06	73	1	3.08	1.54	38	1	0.63	0.32		1	87.00	43.5	69	1	1.00	0.50	74	62.80
UTLC-036	Discharge Sample	6/1/2002	6/1/2002	15.00	5.45	1	52	1	0.18	0.09	66	1	1.81	0.905	43	1	0.85	0.43		1	51.00	25.5	75	1	1.00	0.50	79	63.00
UTLC-088	Discharge Sample	6/1/2002	6/1/2002	25.00	6.09	1	58	1	0.10	0.05	76	1	14.40	7.2	25	1	1.38	0.69		1	48.00	24	76	1	1.00	0.50	80	63.00
UTLC-046	Discharge Sample	6/1/2002	6/1/2002		6.63	1	66	1	0.10	0.05	77	1	8.60	4.3	31	1	1.84	0.92		1	72.00	36	71	1	1.00	0.50	75	64.00
UTLC-205	Discharge to NB Two Lick Creek (IUP site 17)	5/30/2002	4/30/2003	7.19	7.01	12	74	12	0.42	0.42	49	12	0.21	0.21	65	12	0.04	0.04		12	42.23	42.23	70	12	3.03	3.03	63	64.20
UTLC-026	Seep from old strip	3/28/2001	9/9/2002	39.71	7.93	7	81	7	0.18	0.09	68	7	0.34	0.34	59	7	0.06	0.06		7	106.14	106.14	52					65.00
UTLC-235	Starford Area - Refuse Piles	6/30/2003	5/14/2004	2661.09	7.07	12	75	12	0.28	0.28	59	12	0.35	0.35	57	12	0.01	0.01		12	23.58	23.58	77	12	3.65	3.65	60	65.60
UTLC-086	Discharge Sample	6/1/2002	6/1/2002	50.00	4.68	1	48	1	0.12	0.06	72	1	0.07	0.035	80	1	0.36	0.18		1	103.00	51.5	68	1	6.80	3.40	61	65.80
UTLC-052	Discharge Sample	6/1/2002	6/1/2002		6.42	1	63	1	0.44	0.22	62	1	0.09	0.045	78	1	0.17	0.09		1	167.00	83.5	61	1	1.00	0.50	69	66.60
UTLC-091	Discharge Sample	6/1/2002	6/1/2002	200.00	6.87	1	72	1	0.10	0.05	79	1	1.58	0.79	48	1	0.22	0.11		1	109.00	54.5	67	1	1.00	0.50	73	67.80
UTLC-244	Starford #2 Discharge	6/1/1986	10/26/1996	814.48	6.84	36	71					36	0.30	0.30	61	36	0.06	0.06		36	19.85	19.85	78	36	3.22	3.22	62	68.00
UTLC-189	Strip Mine	6/1/2002	6/1/2002		6.63	1	65	1	0.17	0.09	69	1	0.13	0.065	76	1	0.02	0.01		1	119.00	59.5	66	1	1.00	0.50	72	69.60
UTLC-058	Discharge Sample	6/1/2002	6/1/2002		6.71	1	68	1	0.18	0.09	67	1	0.38	0.19	68	1	0.19	0.10		1	60.00	30	73	1	1.00	0.50	77	70.60
UTLC-167	Empire Mine No. 7 #1	6/1/2002	6/1/2002	5610.00	7.85	1	80	1	0.10	0.05	80	1	0.20	0.1	74	1	0.06	0.03		1	60.00	30	74	1	1.00	0.50	78	77.20



Table 25 - Discharge Loading Rankings  
Upper Twolick Creek

Location ID	Name	Beginning Sample Date	Ending Sample Date	Average Flow	Number of Al Loadings	Average Al Loading	AL Loading Rank Factor	AL Loading Rank	Number of Iron Loadings	Average Iron Loading	Iron Loading Rank Factor	Iron Loading Rank	Number of Mn Loadings	Average Mn Loading	Mn Loading Rank Factor	Mn Loading Rank	Number of Sulfate Loadings	Average Sulfate Loading	Sulfate Loading Rank Factor	Sulfate Loading Rank	Number of Acidity Loadings	Average Acidity Loading	Acidity Loading Rank Factor	Acidity Loading Rank	FINAL LOADING AVG RANK	FINAL WATER QUALITY AVG RANK	FINAL AVG RANK	FINAL RANK
UTLC-025	Seep from old strip	3/28/2001	9/9/2002	41.29	7	0.10	0.10	36	7	0.18	0.18	35	7	0.03	0.03	46	7	39.86	39.86	26					35.75	59.00	65.25	67
UTLC-079	Discharge Sample	6/1/2002	6/1/2002	20.00	1	0.02	0.01	51	1	0.41	0.21	34	1	0.66	0.33	22	1	42.24	21.12	31	1	2.21	1.10	45	36.60	58.20	65.70	68
UTLC-197	Discharge to NB Two Lick Creek (IUP site 13)	5/30/2002	4/30/2003	7.16	1	0.00	0.00	55	1	0.76	0.38	32	1	0.09	0.04	42	1	11.62	5.81	49	1	0.18	0.09	51	45.80	44.80	68.20	69
UTLC-082	Discharge Sample	6/1/2002	6/1/2002	5.00	1	0.04	0.02	47	1	0.79	0.39	31	1	0.30	0.15	30	1	7.68	3.84	53	1	0.36	0.18	49	42.00	53.60	68.80	70
UTLC-085	Discharge Sample	6/1/2002	6/1/2002	20.00	1	0.19	0.09	37	1	0.02	0.01	53	1	0.11	0.06	38	1	47.76	23.88	30	1	1.82	0.91	46	40.80	58.00	69.80	71
UTLC-088	Discharge Sample	6/1/2002	6/1/2002	25.00	1	0.03	0.02	49	1	4.32	2.16	22	1	0.41	0.21	27	1	14.40	7.20	44	1	0.30	0.15	50	38.40	63.00	69.90	72
UTLC-086	Discharge Sample	6/1/2002	6/1/2002	50.00	1	0.07	0.04	44	1	0.04	0.02	47	1	0.22	0.11	34	1	61.80	30.90	27	1	4.08	2.04	36	37.60	65.80	70.50	73
UTLC-028	Mahoning Deep mine discharge	3/30/2000	10/24/2002	10.73	31	0.05	0.05	42	31	0.12	0.12	41	31	0.03	0.03	48	30	11.70	11.70	35	29	0.69	0.69	47	42.60	58.20	71.70	74
UTLC-026	Seep from old strip	3/28/2001	9/9/2002	39.71	7	0.06	0.06	40	7	0.09	0.09	42	7	0.02	0.02	50	7	41.34	41.34	25					39.25	65.00	71.75	75
UTLC-126	Discharge Sample	6/1/2002	6/1/2002	4.00	1	0.19	0.09	38	1	0.01	0.01	55	1	0.07	0.03	45	1	0.00	0.00	57	1	2.58	1.29	41	47.20	51.60	73.00	76
UTLC-036	Discharge Sample	6/1/2002	6/1/2002	15.00	1	0.03	0.02	48	1	0.33	0.16	37	1	0.15	0.08	35	1	9.18	4.59	52	1	0.18	0.09	52	44.80	63.00	76.30	77
UTLC-087	Discharge Sample	6/1/2002	6/1/2002	3.00	1	0.00	0.00	56	1	1.60	0.80	29	1	0.10	0.05	40	1	2.23	1.12	55	1	0.04	0.02	57	47.40	59.20	77.00	78
UTLC-201	Commodore No. 1 Mine (IUP site 15)	5/30/2002	4/30/2003	7.50	1	0.03	0.01	50	1	0.02	0.01	54	1	0.01	0.01	55	1	14.96	7.48	41	1	0.14	0.07	54	50.80	55.20	78.40	79
UTLC-207	Discharge to NB Two Lick Creek (IUP site 19)	9/9/2002	4/30/2003	7.66	1	0.00	0.00	53	1	0.03	0.02	48	1	0.01	0.00	56	1	11.59	5.80	50	1	0.15	0.07	53	52.00	57.20	80.60	80
UTLC-204	Discharge to Two Lick Creek (IUP site 16)	5/30/2002	4/30/2003	8.01	1	0.00	0.00	52	1	0.03	0.01	50	1	0.02	0.01	54	1	10.16	5.08	51	1	0.05	0.02	56	52.60	61.80	83.50	81
UTLC-205	Discharge to NB Two Lick Creek (IUP site 17)	5/30/2002	4/30/2003	7.19	1	0.00	0.00	54	1	0.01	0.01	56	1	0.00	0.00	57	1	4.42	2.21	54	1	0.10	0.05	55	55.20	64.20	87.30	82

Table 26  
Upper Twolick Creek  
Prioritized Sites and General Recommendations

Assessed Rank	Loading Rank	Water Quality Rank	Site Designation/Name	Subwatershed	Principal Problem's	Range of Flows (gpm)	Source Reduction	Aerobic Wetlands	Anaerobic Wetlands	Oxic LS Channel	Anoxic LS Trench	Vertical Flow Reactor	Active Treatment	Comments
1	2	2	UTLC-191 Discharge Southwest of Clymer (IUP Twolick Site 1)	Two Lick Creek	Low flow; Very high AL (143 mg/l), Fe (155 mg/l); High MN, SO4, Acidity; Low pH < 3.00.	3-45						X	X	pH and Al values preclude use of wetlands or oxic/anoxic LS systems; insufficient information to evaluate source reduction; reasonable flows permit passive treatment systems.
2	1	6	UTLC-220 Diamondville Discharge (IUP Twolick Site 8)	Two Lick Creek	Moderate/high flow; High AL (32mg/l), FE (53 mg/l); Moderate SO4, Acidity; Low MN; Low pH < 2.90.	3-730						X	X	pH and Al values preclude use of wetlands or oxic/anoxic LS systems; insufficient information to evaluate source reduction; reasonable flows permit passive treatment systems. Peak flows may be problematic.
7	3	21	UTLC-236 Surface mine discharge below Clymer BCWA Assessment IUP - UT3	Two Lick Creek	High flow; Moderate Fe (22.5 mg/l), SO4; Low AL (1.3 mg/l), MN, Acidity; Moderate pH < 4.00.	229-517		X	X			X		Low Al value makes this a site that could possibly use multiple passive treatment techniques, possibly a small vertical drain or SRB, followed by a wetland to capture the moderate volume of iron; however, high peak flows may be problematic
10	15	13	UTLC-180 Buterbaugh/Harve Mack Mine #2 (IUP Twolick Site 12)	N. Branch Two Lick Creek	Moderate flow; Low Al (4.2 mg/l), FE (2.1 mg/l), Acidity; Moderate MN, SO4; Low pH < 3.40.	4-114		X	X	X	X			Relatively low Al but low pH make this a candidate for oxic/anoxic limestone treatment followed by a wetland polishing area; insufficient information to evaluate source reduction; peak flows may require a fairly large wetland or possibly multiple limestone treatment cells
12	22	8	UTLC-145 Victor No. 29 Mine, seeps. (IUP Twolick Site 2)	Dixon Run	Low flow; High AL (47 mg/l), SO4; Moderate FE (26 mg/l), MN, Acidity; Low pH < 3.40.	3-45						X	X	pH and Al values preclude use of wetlands or oxic/anoxic LS systems; insufficient information to evaluate source reduction; reasonable flows permit passive treatment systems.
13	7	28	UTLC-223 Discharge to NB Two Lick Creek (IUP Twolick Site 9)	N. Branch Two Lick Creek	Moderate/High flow; Low Al (4 mg/l); Very low FE (<1 mg/l); Moderate MN, SO4; Low Acidity; Moderate pH < 4.00.	4-672		X	X			X		Marginal Al value makes this a site that could possibly use multiple passive treatment techniques, possibly a small vertical drain or SRB, followed by a wetland to capture the moderate volume of iron; however, high peak flows may be problematic
14	26	4	UTLC-231 Discharge to Buck Run (IUP Twolick Site 4)	Buck Run	Very low flow; Very high AL (80 mg/l), Fe (71 mg/l); High SO4, Acidity; Moderate MN; Very low pH < 2.80.	2.7						X	X	pH and Al values preclude use of wetlands or oxic/anoxic LS systems; insufficient information to evaluate source reduction; reasonable flows permit passive treatment systems.
17	54	3	UTLC-232 Large Seep to Two Lick Creek (IUP Twolick Site 5)	Two Lick Creek	Very low flow; Very high AL (54 mg/l), Fe (85 mg/l); High SO4, Acidity; Moderate MN; Very low pH < 2.60.	2.6						X	X	pH and Al values preclude use of wetlands or oxic/anoxic LS systems; insufficient information to evaluate source reduction; reasonable flows permit passive treatment systems.
19	9	46	UTLC-173		High flow; Very low AL (<1 mg/l), Moderate FE (10 mg/l); Low									Low Al value makes this a site that could possibly use multiple passive

Table 26  
 Upper Twolick Creek  
 Prioritized Sites and General Recommendations

Assessed Rank	Loading Rank	Water Quality Rank	Site Designation/Name	Subwatershed	Principal Problem's	Range of Flows (gpm)	Source Reduction	Aerobic Wetlands	Anaerobic Wetlands	Oxic LS Channel	Anoxic LS Trench	Vertical Flow Reactor	Active Treatment	Comments
			Cherryhill No. 1 and Victor No. 47 Mines BCWA Assessment IUP - UT4	Two Lick Creek	MN, SO4, Acidity; High pH > 6.50.	320-665		X	X			X		treatment techniques, possibly a small vertical drain or SRB, followed by a wetland to capture the moderate volume of iron; however, high peak flows may be problematic
21	24	18	UTLC-193 Discharge to NB Two Lick Creek (IUP Twolick Site 11)	N. Branch Two Lick Creek	Moderate flow; Moderate AL (7.3 mg/l), Very low FE (<1 mg/l); Low MN, Acidity; Moderate SO4; Moderate pH > 3.50.	0-220						X	X	pH and Al values preclude use of wetlands or oxic/anoxic LS systems; insufficient information to evaluate source reduction; reasonable flows permit passive treatment systems.