Flow Calculations for Sand River

U. S. Steel Minntac - Sand River Monitoring

SW001, Station 701 (Sand River at Cty Rd 306)

Date: 6/3/2016

Stream Width: 12 feet

Staff Gauge Level: n/a

Field Crew: EE/SS

Segment Center	Segment Width	Segment Depth	Segment Area	Depth - 20%	Depth - 60%	Depth - 80%	Velocity at (Depth - 20%)	Velocity at (Depth - 60%)	Velocity at (Depth - 80%)	Average Velocity	Segment Flow
(feet)	(feet)	(feet)	(sqft)	(feet)	(feet)	(feet)	(fps)	(fps)	(fps)	(fps)	(cfs)
0.5	1.0	2.80	2.80	2.24	1.12	0.56	0.02		0.01	0.02	0.042
2	2.0	3.20	6.40	2.56	1.28	0.64	0.19		0.37	0.28	1.792
4	2.0	3.10	6.20	2.48	1.24	0.62	0.11		0.27	0.19	1.178
6	2.0	3.50	7.00	2.80	1.40	0.70	0.32		0.87	0.60	4.165
8	2.0	3.50	7.00	2.80	1.40	0.70	1.06		0.85	0.96	6.685
10	2.0	3.60	7.20	2.88	1.44	0.72	0.65		0.80	0.73	5.220
11.5	1.0	2.40	2.40	1.92	0.96	0.48		0.44		0.44	1.056

Σ (sqft) = 39.0

Total Flow (cfs): 20.14

Total Flow (gpm): 9062.10

Comments: 13.049424 MGD
Large amount of rotation affecting flow on left side of culvert.