

BSDMS Summary Report

48 Killbuck Creek at C.R. 621 at Killbuck, OH

Site Location:

Site ID: 48

Site Name: Killbuck Creek at C.R. 621 at Killbuck, OH

County: Holmes

Nearest City: Killbuck

State: OH

Latitude: 402941

Longitude: 815912

USGS Station ID: 3139000

Route Number: 621

Route Class: County

Service Level: Mainline

Route Direction: NA

Highway Mile Point:

Stream Name: Killbuck Creek

River Mile:

Contact:
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Publication:
Jackson, K.S., 1996, Evaluation of
bridge-scour data at selected
sites in Ohio: U.S. Geological
Survey Water-Resources
Investigations Report 97-4182.

Site Description:

The site is at the Front St. (Holmes County Road 621) bridge crossing Killbuck Creek in Killbuck, Holmes County, Ohio. A USGS streamflow-gaging station, Killbuck Creek at Killbuck (03139000), is 0.9 mi downstream from the site at U.S. 62. Gage data is available from 1930 to current year (1994). The site is in a straight reach with a wide, wooded floodplain along the right bank.

Bed-material samples were collected during annual low-flow surveys.

Notes: All piers are referenced numerically, increasing from left to right, when viewing the upstream face of the bridge while facing in the downstream direction.

Slope in Vicinity (reported in Stream Site Data) is estimated from USGS 7.5-minute quadrangle topographic maps.

Water-surface slope (if reported in Pier Scour Data comments section) is the measured slope between water surfaces at the approach and bridge sections during the scour measurement.

Elevation Reference

Datum: MSL

MSL (ft): 0

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Description of Reference Elevation:

RM1 - Chiseled square on left upstream abutment.
MSL elevation = 812.32 ft.

Stream Data

Drainage Area (sq mi):	462	Floodplain Width:	Narrow
Slope in Vicinity(ft/ft):	0.00023	Natural Levees:	Little
Flow Impact:	Straight	Apparent Incision:	None
Channel Evolution	Threshold	Channel Boundary:	Alluvial
Armoring:	None	Banks Tree Cover:	High
Debris Frequency:	Occasional	Sinuosity:	Straight
Debris Effect:	Both	Braiding:	None
Stream Size:	Medium	Anabranching:	None
Flow Habit:	Perennial	Bars:	Unknown
Bed Material:	Sand	Stream Width Variability:	Equiwidth
Valley Setting:	Moderate		

Roughness Data

Manning's n Values

	Left Overbank	Channel	Right Overbank
High:	0.075	0.04	0.075
Typical	0.06	0.035	0.06
Low:	0.045	0.035	0.045

Bed Material

Measurement Number	Yr	Mo	Dy	Sampler	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)	SP	Shape	Cohesion
AP-1	1991	7	11		0.36	0.2	0.09	0.02	2.65		Unknown
AP-2	1993	6	29		1.4	0.8	0.25	0.09	2.65		Unknown

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AP-3	1994	6	27		1	0.6	0.19	0.03	2.65	Unknown
BR-1	1990	9	10	HAND	1.4	0.8	0.3	0.11	2.65	Mildly
BR-2	1991	7	11		0.85	0.5	0.17	0.02	2.65	Unknown
BR-3	1992	7	2		0.29	0.2	0.09	0.03	2.65	Unknown
BR-4	1993	6	29		1.7	1.2	0.37	0.14	2.65	Unknown
BR-5	1994	6	27		23	2.3	0.4	0.09	2.65	Unknown
P1-1	1990	9	10	HAND	1.1	0.5	0.19	0.08	2.65	Mildly
P1-2	1991	7	11		15.3	8	1.09	0.26	2.65	Unknown
P1-3	1992	7	2		10	6.4	0.94	0.14	2.65	Unknown
P1-4	1993	6	29		1.6	0.9	0.28	0.12	2.65	Unknown
P1-5	1994	6	27		1.05	0.6	0.23	0.03	2.65	Unknown
P2-1	1990	9	10	HAND	0.11	0.05	0.02	0.007	2.65	Mildly
P2-2	1991	7	11		0.15	0.07	0.04		2.65	Unknown
P2-3	1992	7	2		0.13	0.07	0.03		2.65	Unknown
P2-4	1993	6	29		0.17	0.07	0.02	0.005	2.65	Unknown

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P2-5 1994 6 27 0.15 0.05 0.01 0.004 2.65 Unknown

Bed Material Comments

Measurement No: AP-1

Approach-section composite sample

Measurement No: AP-2

Approach-section composite sample

Measurement No: AP-3

Approach-section composite sample

Measurement No: BR-1

Bridge-section composite sample, collected along the upstream bridge face.

Measurement No: BR-2

Bridge-section composite sample, collected along the upstream bridge face.

Measurement No: BR-3

Bridge-section composite sample, collected along the upstream bridge face.

Measurement No: BR-4

Bridge-section composite sample, collected along the upstream bridge face.

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Measurement No: BR-5

Bridge-section composite sample, collected along the upstream bridge face.

Measurement No: P1-1

Sample collected at the upstream face of Pier 1.

Measurement No: P1-2

Sample collected at the upstream face of pier 1

Measurement No: P1-3

Sample collected at the upstream face of pier 1

Measurement No: P1-4

Sample collected at the upstream face of pier 1

Measurement No: P1-5

Sample collected at the upstream face of pier 1

Measurement No: P2-1

Sample collected at the upstream face of Pier 2.

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Measurement No: P2-2

Sample collected at the upstream face of pier 2

Measurement No: P2-3

Sample collected at the upstream face of pier 2

Measurement No: P2-4

Sample collected at the upstream face of pier 2

Measurement No: P2-5

Sample collected at the upstream face of pier 2

Bridge Data

Structure No: Holmes County 621

Length(ft): 184

Width(ft): 34

Number of Spans: 3

Vertical Configuration: Sloping

Low Chord Elev (ft): 807.9

Upper Chord Elev (ft): 811.7

Overtopping Elev (ft): 811.7

Skew (degrees): 6

Guide Banks: None

Waterway Classification: Main

Year Built: 1973

Avg Daily Traffic:

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Plans on File: Yes

Parallel Bridges No

Upstream/Downstream: Unknown

Continuous Abutment: No

Distance Between Centerlines:

Distance Between Pier Faces:

Bridge Description:

The bridge has continuous steel beams with a reinforced-concrete deck and substructure. The site plans are dated 1972, and it is assumed construction was completed in 1973.

Abutment Data

Left Station: 18.8601

Right Station: 17.0199

Left Skew (deg): 0

Right Skew (deg) 0

Left Abutment Length (ft): 54

Right Abutment Length (ft) 54

Left Abutment to Channel Bank (ft): 30

Right Abutment to Channel Bank (ft): 80

Left Abutment Protection:

Right Abutment Protection

Contracted Opening Type: III

Embankment Skew (deg): 6

Embankment Slope (ft/ft): 2

Abutment Slope (ft/ft) 2

Wingwalls: No

Wingwall Angle (deg): 0

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Pier Data

Pier ID	Bridge			PierType	# Of Piles	Pile Spacing(ft)
	Station(ft)	Alignment	Highway Station			
1	57	6	18.29	Single	0	
2	127	6	17.59	Single	0	

Pier ID	Pier			Length(ft)	Protection	Foundation
	Width(ft)	Pier Shape	Shape Factor			
1	2.5	Round		31.5	None	Piles
2	2.5	Round		31.5	None	Piles

Pier ID	Top	Bottom	Foot or Pile		File Tip Elevation(ft)
	Elevation(ft)	Elevation(ft)	Cap Width(ft)	Cap Shape	
1	789	786.5	9	Square	736.5
2	789	786.5	9	Square	736.5

Pier Description

Pier ID 1

The concrete pier is a solid wall with round nose.

Pier ID 2

Same as Pier 1.

Pier Scour Data

Pier ID	Date	Time	USOrDS
1	5/17/90	12:15	Upstream
1	7/23/90	13:05	Upstream

Pier ID	Scour Depth	Accuracy (ft)	Side Slope (ft/ft)	TopWidth (ft)	Apprch Vel (ft/s)	Apprch Depth(ft)	Effective Pier Width	Skew to Flow(deg)
1	1.3	0.5	5.6	14	2.4	7.3	2.5	0
1	1.4	0.5	3.6	19	3	9.1	2.5	0

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PierID	Sediment Transport	Bed Material	BedForm	Trough (ft)	Crest (ft)	Sigma	Debris Effects
1	Live-bed	Non-cohesive	Unknown			2.6	Insignificant
1	Live-bed	Non-cohesive	Unknown			2.6	Insignificant
PierID	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)			
1	1.1	0.54	0.185	0.077			
1	1.1	0.54	0.185	0.077			

Pier Scour Comments

Pier ID 1 Time: 12:15 US/DS: Upstream

A large, tightly interwoven debris pile was found on pier 1 when the site was initially established in December 1989, and it was removed by county highway crews around March 1990.

Pier ID 1 Time: 13:05 US/DS: Upstream

See comments for 5/17/90 scour measurement.

Abutment Scour

Contraction Scour

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Stage and Discharge Data

Peak Discharge					Flow (cfs)	Qacc	Peak Stage					Stage (ft)	Water Temp (C)	Return Period(yr)
year	mo	dy	hr	mi			year	mo	dy	hr	mi			
1990	7	23	13:05	5	1890	5					0	19.5	2	
1990	5	17	12:15	15	1500	8					0	15	2	

Hydrograph

Hydrograph Number	Year	Month	Day	Hr	Min	Sec	Stage(ft)	Discharge (cfs)
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Supporting Files
