BSDMS Summary Report

65 Salt Creek at U.S. 50 near Londonderry, OH

Site Location:

Site ID: 65

Site Name: Salt Creek at U.S. 50 near Londonderry, OH

County: Ross

Nearest City: Londonderry

State: OH

Latitude: 391520

Longitude: 824612

USGS Station ID:

Route Number: 50

Route Class: US

Service Level: Mainline

Route Direction: West

Highway Mile Point: 36.92

Stream Name: Salt 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:

This site is located at the US 50 bridge crossing Salt Creek near Londonderry, Ross County, Ohio. Site is located approximely two-thirds of a mile from the Ross - Vinton County line. The Ohio Department of Transportation (ODOT) bridge identification is "ROS-50-3692".
Bed-material samples were collected during an annual low-flow survey.
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):

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Description of Reference Elevation:

RM2 - Bolt in power pole on left upstream bank. Approximately 15 feet upstream of bridge.
MSL elevation = 601.02 ft.

Stream Data

Drainage Area (sq mi):	286	**Floodplain Width:**	Narrow
Slope in Vicinity(ft/ft):	0.00082	**Natural Levees:**	Little
Flow Impact:	Right	**Apparent Incision:**	None
Channel Evolution	Premodified	**Channel Boundary:**	Alluvial
Armoring:	None	**Banks Tree Cover:**	Medium
Debris Frequency:	Frequent	**Sinuosity:**	Meandering
Debris Effect:	Local	**Braiding:**	None
Stream Size:	Small	**Anabranching:**	None
Flow Habit:	Perennial	**Bars:**	Narrow
Bed Material:	Sand	**Stream Width Variability:**	Equiwidth
Valley Setting:	Moderate		

Roughness Data

Manning's n Values

	Left Overbank	Channel	Right Overbank
High:	0.075	0.042	0.075
Typical	0.07	0.04	0.07
Low:	0.06	0.038	0.06

Bed Material

Measurement Number	Yr	Mo	Dy	Sampler	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)	SP	Shape	Cohesion
AP-1	1993	10	6		15	10	1	0.32	2.65		Unknown

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AP-2	1994	6	14	10	4.8	1	0.23	2.65	Unknown
BR-1	1990	9	17	0.9	0.5	0.16	0.03	2.65	Unknown
BR-2	1991	8	19	22	12	1.15	0.4	2.65	Unknown
BR-3	1992	7	15	0.31	0.2	0.12	0.03	2.65	Unknown
BR-4	1993	10	6	15	8	2	0.63	2.65	Unknown
BR-5	1994	6	14	4.8	2.4	0.71	0.18	2.65	Unknown
P1-1	1990	9	17	0.38	0.3	0.1	0.02	2.65	Unknown
P1-2	1991	8	19	17.5	5.8	0.97	0.42	2.65	Unknown
P1-3	1992	7	15	3.6	2.1	1.05	0.53	2.65	Unknown
P1-4	1993	10	6	1.4	0.8	0.3	0.1	2.65	Unknown
P1-5	1994	6	14	2.95	1.4	0.46	0.08	2.65	Unknown
P2-1	1990	9	17	1.78	1.4	0.68	0.1	2.65	Unknown
P2-2	1991	8	19	6.8	3.8	1.43	0.68	2.65	Unknown
P2-3	1992	7	15	5.5	3	1.7	0.72	2.65	Unknown
P2-4	1993	10	6	15	8	2.2	0.46	2.65	Unknown

P2-5	1994	6	14		5.1	2.5	0.58	0.16	2.65	Unknown

Bed Material Comments

Measurement No: AP-1

Approach-section composite sample

Measurement No: AP-2

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.

Measurement No: BR-5

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

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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

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: ROS-50-3692

Length(ft): 156

Width(ft): 28

Number of Spans: 3

Vertical Configuration: Horizontal

Low Chord Elev (ft): 601.84

Upper Chord Elev (ft): 604.25

Overtopping Elev (ft): 605.85

Skew (degrees): 0

Guide Banks: None

Waterway Classification: Main

Year Built: 1933

Avg Daily Traffic: 3530

Plans on File: Yes

Parallel Bridges No

Upstream/Downstream: Unknown

Continuous Abutment: No

Distance Between Centerlines:

Distance Between Pier Faces:

Bridge Description:

The bridge is constructed of concrete and steel I-beams, and it has solid-wall round-nose piers. The site plans are not dated. The piers are referenced from the left to right abutments when looking downstream.

Abutment Data

Left Station: 55.78

Right Station: 54.22

Left Skew (deg): 0

Right Skew (deg) 0

Left Abutment Length (ft): 28

Right Abutment Length (ft) 28

Left Abutment to Channel Bank (ft): 28

Right Abutment to Channel Bank (ft): 10

Left Abutment Protection:

Right Abutment Protection

Contracted Opening Type: I

Embankment Skew (deg): 0

Embankment Slope (ft/ft): 1

Abutment Slope (ft/ft) 2

Wingwalls: No

Wingwall Angle (deg): 0

Pier Data

Pier ID	Bridge Station(ft)	Alignment	Highway Station	PierType	# Of Piles	Pile Spacing(ft)

1	48	0	55.3	Single	0
2	108	0	54.7	Single	

Pier ID	Pier Width(ft)	Pier Shape	Shape Factor	Length(ft)	Protection	Foundation
1	4.4	Round		27.1	None	Poured
2	4.4	Round		27.1	None	Poured

Pier ID	Top Elevation(ft)	Bottom Elevation(ft)	Foot or Pile Cap Width(ft)	Cap Shape	Pile Tip Elevation(ft)
1	600	574	6.5	Square	
2	600	565	6.5	Square	

Pier Description

Pier ID 1

Concrete solid wall pier, with a rounded face.

Pier ID 2

Concrete solid wall pier, with a rounded face.

Pier Scour Data

Pier ID	Date	Time	USOrDS
1	1/28/94	10:50	Upstream
2	1/28/94	10:50	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	2	0.5	6	30	4.9	14.7	4.4	18
2	2.9	0.5	3.7	30	5.6	19.7	4.4	18

PierID	Sediment Transport	Bed Material	BedForm	Trough (ft)	Crest (ft)	Sigma	Debris Effects
1	Live-bed	Non-cohesive	Unknown			2.74	Insignificant
2	Live-bed	Non-cohesive	Unknown			4.17	Unknown

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PierID	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)
1	1.4	0.75	0.3	0.1
2	15	8	2.2	0.46

Pier Scour Comments

Pier ID 1 **Time:** 10:50 **US/DS:** Upstream

The bed-material sample was collected during low flow on xxxxxx.

Pier ID 2 **Time:** 10:50 **US/DS:** Upstream

The bed-material sample was collected during low flow on xxxxx.

Abutment Scour

ContractionScour

Measurement Number	Contracted Date	Contracted Time	Uncontracted Date	Uncontracted Time	US/DS	Scour Depth(ft)
1	1/28/94	10:00	6/15/94			0.3

Measurement Number	Accuracy	Contracted Avg Vel(ft/s)	Contracted Discharge(cfs)	Contracted Depth(ft)	Contracted Width(ft)
1	0.5	4.03	8390	18.9	100

Measurement Number	Uncontracted Avg Vel(ft/s)	Uncontracted Discharge(cfs)	Uncontracted Depth(ft)	Uncontracted Width(ft)	Channel Contraction Ratio
1	3.89	7890	18.2	82	0.095

Measurement Number	Pier Contraction Ratio	Scour Location	Eccent-ricity	Sediment Transport	Bed Form	Debris Effects

1	0.064	Main Channel	0.116	Live-bed	Unknown	Unknown

Measurement Number	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)	Sigma Bed Material	Bed Material
1	15	8	2	0.63	3.56	Non-cohesive

Contraction Scour Comments

Measurement No. 1

The data for the contracted section were measured from the bridge deck during the flood event on the specified date. The geometry of the reference uncontracted section was measured during low flow. The hydraulic data for the uncontracted section were estimated using WSPRO to estimate the approach hydraulics for the reference channel geometry and the flood discharge observed on the date of the contracted section measurement.

Stage and Discharge Data

Peak Discharge					Flow		Peak Stage					Stage	Water	Return
year	mo	dy	hr	mi	(cfs)	Qacc	year	mo	dy	hr	mi	(ft)	Temp (C)	Period(yr)
1994	1	28	10:50		10500								3	2

Hydrograph

Supporting Files