

Date	t ₀	t ₁	t ₂	t ₃	V in/sec	Rainfall sample	NTU 0830 time	RAINFALL 08:30 - 08:30 DISTANCE ACROSS BRIDGE	= 21.25' TOP UPSTREAM	8 PPI
2/2/98	12.25'				2.3	—				
2/3/98	10.9'				2.0	1.00"				
2/4/98	13.9'	13.2	9.8	11.4	1.6	.40"				
2/5/98	15.2	10.6	18		1.4	.10"	57.0			
2/6/98	12.5	10.9	11	13	1.8	.80	1300	300		
2/7/98	9.25	13.4	10.2	13.2	1.7	.80	1700	Rainfall 0830 to 545 1200 = .70"		
2/8/98	4.5	water blocked by bridge.			2.35	1045	Flood -	534		
2/10/98	13.5	12.3	12.3		1.7	.10	1130			
2/11/98	16.25	13.2			1.6	.35	1730			
2/13/98	16.5	14.9	15.2		1.4		1200	46.6		
2/14/98	16.0	12.5			1.7	.40+	1300	55 = .95 since 0830	173	
2/14/98	13.16	11.5			1.8	.45	1300	1750 = .45 since 1300	410	
2/14/98	9.4							2980 = .1 since 1300	514	
2/15/98	12.3	10.5	9.6		2.1	1.2	1310	1300 on 2/14	137	
2/19/98	6.5	chips not floating through			.80	1430	Half across road	Flood - 4 ft over road, Rose 2 ft/hr from 1430 to 1630		
2/20/98	11.6	9.5	9.1	13.5	2.0	1.80	1315			
2/21/98						1.85		Flood 1.85 from about 1800 2/20 to 0830 2/21, water on bridge		
2/22/98	10.75	9.9	11.1		2.0	.45	1400			

BRIDGE OVER N FORK ELK RIVER @
ELK RIVER RD PM 3.38 (35305) BRIDGE

HC-57

Rainfall checked at 0830 representing
the previous 24 hrs. rainfall unless
otherwise noted.

BY RALPH KRAUS 2479 WRIGLEY RD
EUREKA CA
443-1469

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4-24-01

(1)

1998	Date	Site #	ft. Elevation	ft. above bridge deck	Water level	Rainfall since last measure	8.5 ft bridge deck angle	10.25'
						0830	Sampled at d' = 10.25' with sec	
11/6/98	19.56	GT	11.25					
11/7	18.6	10.25	16.4	14.8	11.3	1.00	1305	
11/8	19.0	18.09	21.5	15.8	11.5	.40	1305	
11/19	19.3	17.9	19.5	39.5	1.8	0	1340	
11/20	14.3	Poph sticks not blocking through	Ridge			1.1	2315	
11/21	5.8	"				3.2	0830	
11/22	10.5	9.78	9.12	11.28	2.12	2.0	0945	9.6
11/23/98	12.5	10.1				2.1	.8	0900
11/23/98	8.3	11.3				1.8	.2	1600
11/24/98	9.	12.5	13			1.6	.5	0740
11/25/98	16	14.8	10.4			1.6	0	0930
11/26/98	14.3	10.4	11.8			1.8	.9	0930
11/27/98	16.5	15.3				1.3	.55	0845
11/30/98	9	13.5	14.5	13.8		1.5	1.6	1630
12/1/98	10	12.2	10.9			1.8	.8	0930
12/1/98	13	9.4	11.2			2.0	.1	1630
12/1/98	13					2.0	.4	2300
12/2/98	6	Poph sticks can't flow over bridge				1.5	0815	5.25' 4.6
12/2/98		water over bridge roadway				.3	1400	
12/2/98	4	water on bridge approach				.3	1630	253
12/3/98	3.75					.9	0830	7.340
12/4/98	13.75	7.2				1.9	.1	0920
12/5/98	16.2	10.8				1.5	0	1000
12/5/98	16.5	11.1				1.5	.5	1700
12/6/98	13.3	8.3				1.6	.3	1000
54	12/7/98	13.2	7.7			1.7	0	0830
50	12/8/98	16.5	12.6			1.3	.3	1020
45	12/9/98	17.25	9.6			1.8	0	1110
	12/12	18.75	14.25			1.5	0	1010
	12/13	18.75	4.2			1.5	.1	1000

1998-99 DISTANCE ACROSS BRIDGE 21.25'	TOP OF UPSTREAM RAIL (MID) TO WATER = d'	8PP!
5.89" since Sept 29 prior to the 11" that mudied the river		
1.1" rain since 1340 on 11/19		
Flood - Over road from corner to bridge (5.5 up about 5 ft)		
11/21 at 1400 over top of bridge		
.9" fall in 7 hrs prior to 0930		
.35 fall in preceding 12 hrs.		
River over road and to underside of bridge.		
Cannot get to either fork sampling points.		
Water receding. Road to turn not passable. Road to SF impassable		
Water off road at 0930 12/3.		
Pictures of both NF and SE from bridges.		
(2)		
Trace of rain.		

Date	D ¹	E ²	F ³	G ⁴	H ⁵	I ⁶	J ⁷	K ⁸	L ⁹	M ¹⁰	N ¹¹	P ¹²	Rainfall since last measure (in)	Wind dir ¹³ angle to water ¹⁴ ft/sec ¹⁵	Wind speed at deck ¹⁶ ft/sec ¹⁷	
12/13	15.25	10.6			1.4	1.1	0	1800								
12/13	12.25	11.2			1.9	1.1	0	2200								
12/14	13.75	8.8			2.4	1.1	0	0845	10.9							
12/14	15.5	14.2			1.5	0	0	1700	11.0							
12/15	16.5	13.9	18.3	13.2	1.4	0	0	1005	11.3							
12/16	18.0	15.1			1.4	0	0	0930	11.5							
12/18	18.75	17.8	18.1		1.1	0	0	1630	12.0							
12/20	18.6	17.7			1.2	.48	0	1000	13.25							
12/21	19.2					0	0	0930								
12/22	19.3	18	19		1.1	0	0	1000	11.9							
12/23	19.3				1.1	0	0	1000	12.0							
12/25	19.5	18.8			1.1	.02	1245		12.0							
12/27	19.3	28.1	28.3		.75	trace	1400		12.1							
12/29	19.5				1.0	0	1400		12.1							
1/1/99	18.6	17	16		1.3	.45	1120		11.9							
1/4/99	19.75					0	0	1145								
1/15/99	17.5	17.5	13.5		1.3	.95	1000									
1/15/99	17.5				1.3	.2	0	1915								
1/16/99	16.8				1.8	.05	0915									
1/17/99	17.8				1.4	.10	0	1015								
1/17/99	14.5				1.6	.70	2245									
1/18/99	13.3	8.6	11.9		2.1	.10	0	1045								
1/19/99	14.6					.80	0	1000								
1/19/99	12.25					.20	0	2130								
1/20/99	14.2					.35	0	1020								
1/21/99	13.5					.40	0	1225								
1/22/99	13					.65	0	1630								
1/23/99	10					.40	0	0915								
1/24/99	14.5						0	1340								
1/25/99	16.3						0	1430								

SF BRIDGE DECK WIDTH 10:25'
1998-99

Rain, hail, sleet starting 1830 on 12/19. Temp. 34°

Temp. low 22°, 27° at 0930

Temp. low 22° 24° at 1000. Possible Snow melt?

Temp. low 22° 26° at 1000

.95" Fall from 1/14 A.M to 1/15 A.M.

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(3)

Bridge width 21.20 top of river - water - water level

Date	d ₁	t ₁	t ₂	t ₃	rainfall since last measure in/sec	Time of sample	d ₁₁	dt ₁₁ /sec
1/26/99	17.25				.05	0940		
1/27/99	18				0	1120		
1/28/99	18.5				0	0940		
1/29/99	18.8				0	1540		
1/30/99	19.0				0	1445		
1/31/99	18.6				.5	1530		
2/1/99	19.0				.2	1735		
2/3/99	19.2				.1	1445		
2/4/99	18.9				.4	1630		
2/5/99	18.75				.15	0845		
2/6/99	18.0				1.0	0900		
2/6/99	9.4				.3	1410		
2/6/99	8.5				Trace	1430		
2/6/99	6.75				0	1610		
2/6/99	6.8				0	1800		
2/6/99	7.5				0	2005		
2/7/99	7.6				.85	0905		
2/7/99	5.9				.10	1230		
2/8/99	13.9				.15	0915		
2/8/99	14.2				.35	1720		
2/9/99	15.3				1.35	0915		
2/10/99	12.25				.30	0920		
2/11/99	14.5				0	0850		
2/12/99	16.1				0	0910		
2/13/99	17.0				.15	0815		
2/14/99	15.6				.40	0930		
2/15/99	16.7				0 trace	0930		
2/16/99	16.9				.40	0930		
2/17/99	14.2				.60	0930		
2/18/99	15.2				.50	0800		

River rose 8.9 ft. in 5 hrs/0 min after 3 in of rain.

Water about 6' over road.

River 1 ft. over road Picture #7

(4)

Drage width 21.00 ft. C = up river to water.

Date	d'	t ₁	t ₂	t ₃	V ft/sec	Rainfalls since last measure	Time
2/20/99	15.6				0	0845	
2/21/99	14.9				0	0910	
2/22/99	13.3				.1	0900	
2/23/99	8.3				1.3	0945	
2/24/99	14.3				0	0920	
2/25/99	5.4				1.6	0930	
3/8/99	16.3				1.3	1835	
3/9/99	13.75				.2	0840	
3/10/99	13.25				0	1000	
3/11/99	16.25				0	0930	
3/13/99	18.25					2.200	
3/14/99	13.0				1.32	1015	
3/14/99	12.0				.1	1215	
3/14/99	11.25				.1	1415	
3/14/99	11.2				trace	1615	
3/15/99	14.25					0945	
3/16/99	16.25				0	1000	
3/18/99	18.0				0	1445	
3/19/99	18.5				0	0900	
3/20/99					.15	0900	
3/22/99	19.25					1010	
3/23/99	18.6				.5	0930	
3/24/99	13.9				1.3	0950	
3/24/99	9.6				.8	1430	
3/24/99	7.5				.4	1630	
3/24/99	4.25				.2	1920	Flood
3/25/99	8.5				.5	0930	
3/26/99	14.9				0	1030	
3/27/99	16.5				trace	0845	
3/28/99	17.5				0	0950	

1/2 across road at corner

Across road between Rosies & Kallb's. Not passable between corner and bridge.
River down to edge of road.

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(5)

Date	d'	t ₁	t ₂	t ₃	✓ ft/sec	Rainfall since last measure time
3/20/99	14.5				.20	1045
3/31/99	12.0				.25	1010
4/1/99	14.25				.10	1030
4/2/99	16.2				0	0930
4/3/99	16.9				.23	0930
4/4/99	17.5				0	1015
4/5/99	17.6				.25	1015
4/6/99	14.9				.50	0845
4/7/99	16.9				0	1045
4/8/99	13.5				.80	1020
4/9/99	13.2				.25	0845
4/10/99	16.4				.05	0945
4/11/99	13.3				.40	0925
4/12/99	16.9				0	1000
4/13/99	17.6				0	0930
4/14/99	18.2				0	0915
4/15/99	18.5				0	0910
4/16/99	18.9				0	0945
4/17/99	19.2				0	0950
4/18/99	19.4				0	1105
5/7/99	19.3				1.7	1030

✓ collected over one week.

(6)

bridge width = 2 * width of one unit

1999-2000	Date	d'	t'	t^2	t^3	V ft/sec	Rainfall since last measure	time	w
8/5/99						.23		0900	
8/7/99						.15		1115	
10/6						.30			
10/27						.33			
10/28	20.20					.90			
11/8						.50			
11/9	20.40					0	0925		
11/10	19.4	39				.54	1.8	0850	
11/12	19.5	55				.38	trace	0925	16.25
11/15						.15			
11/16	19.75	40				.95		0945	
11/16	19.3					.53	.50	1240	
11/16	18.3	35				.61	0	1900	
11/17	18.6	18				1.18	.15	0845	17
11/18	18.2	25				.85	0	0955	
11/19	19.3	32				.65		1010	
11/20	17.3	18.5				1.14	1.0	1315	19
11/22	18.2					0		0950	
11/25	18.5	29	28.4			.98	.20	0945	
11/29	19.8	45.5				.96	.15	1000	
11/29	18.0					1.3		2100	
11/30	13.9	12	9	15	1.8	.3		0930	35.25
11/30	10.9					.85		1630	
12/1	13.9	10	13	10	1.9	.10		0920	
12/2	10.4	17	21	23	.95	.50		1000	
12/3	17.0					.05		1720	
12/5	18.5	21	20.5	26	1.0	.10		1249	
12/7	18.4	19	19			1.1	.35	1000	
12/7	16.1					.50		1938	
12/8	16.2	19	19.4			0		0940	

RAIN GAUGE		EMPIRED @	08:30 DAILY	
Accumulations since 7/1/99				
- - - - -				
24 hr accumulation				
24 hr accumulation				
- - - - -				
River water is clear but black - like Okefenokee swamp.				
River looked clear but black.				
River muddy. Our class II archery range TH class III muddy flow.				
Our class II not flowing.				
- - - - -				
.20 fell on the 22-23.				
.15 fell 11/27 - 11/28				
- - - - -				
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4-81-01				(7)

$$V = \frac{\omega R^2 B}{2 \pi \mu_0}$$

21.25 = distance across bridge.

1999-2000 Rainfall since last measure time									
Date	d	t ₁	t ₂	t ₃	ft/sec	Rainfall since last measure	time		
12/9	10.8	9.5	9.3	9.5	2.2	.20	1625		
12/9	10.5						2030		
12/10	13.95	14.4	10.1	14.1	1.5	.0	0930		
12/11	15.65	15	22	16	1.2	0	1035		
12/12	17.8	29.5	30.3	14	.86	0	1020		
12/12	16.3					.95	2325		
12/13	12.3					.05	0830		
12/14	16.4					0	0925		
1/7/00	19.3	26	29		.77		1455	No rain of any consequence since 12/14	
1/10	19.5				.12		0820		
1/11	3.4					1.5	1000	Flood	River over roadway on bridge. We're flooded in.
1/12	13.3					.3	0920		
1/13	18.0					.2	1300		
1/14	3.1					2.4	0950	Flood	River over roadway on bridge. We're flooded in.
1/14	1.2					trace	1530		
1/14	7.2					0	2330		
1/15	12					.40	1020		
1/16	7.1					.90	0925		
1/18	18.1					.11	1315		
1/19	16.5					.40	1125		
1/20	13.2					.40	1005		
1/21	16.1					.20	1720		
1/22	16					.20	1005		
1/24	19.2					.20	1735		
1/25	17.2					.27	1330		
1/30	17.5					.65	1010		
1/30	13.9					.50	1700		
1/31	14.6					.40	1640		
2/1	16.1					0	1335		
2/4	18					.1	1415		

Date	d	t_1	t_2	t_3	Rainfall since last measure in mm	Time
2/10	18				0	0930
2/11	17.5				.30	1015
2/12	16.9				.55	1745
2/13	15.8				.50	1725
2/15	11.9				1.51	1010
2/16	15.9				.1	1715
2/20	18				.05	1310
2/21	18.5					
2/22	18.1					1010 Wind damage to rain gauge
2/22	17.8					1130
2/22	17.6					1200
2/23	14.0				1.15	1030
2/24	16.2				.10	1819
2/25	16.1				.15	1715
2/27	11.4				1.10	1320
2/28	8.5				.55	0840
2/28	11.4				0	1745
2/29	10.3				.90	1030
3/1	14				.05	1345
3/2	15.6				.35	1340
3/4	16.5				0	1650
3/5	14.7				.50	1020
3/7	17.3				.15	1805
3/10	17.4				.15	1235
3/14	17.8				.42	0905
3/16	16.5				.70	0950
3/16	15.5				0	1655
3/19	17.6				.25	1005
4/12					.05	
4/16	19.7				.23	1120
4/17	16.5				.17	0935

COD1=0 84
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9

Date	d"	t ₁	t ₂	t _{AV}	Rainfall since last measure	time
4/18	15.7				.45	0945
10/27	20.45					
10/30	19.8					
11/29	19.5				1.00	0845
12/14	16.5				.65	1020
1/8	19.95				.51	1325
1/10	17.9				.70	1045
1/11	15.65				.89	0915
1/23	1.22				.70	1600
1/23	1.74				0	2210
1/24	2.58				.08	1320
1/25	5.16	16.22	17.53	16.87	1.29	1.18
1/25	7.32				0	1340
1/26	7.00				.32	1650
1/26	5.94				0	0950
1/27	4.08				1630	
2/2	1.96				0	0925
2/11	4.13				1315	
2/17	1.70				.70	1015
2/18	4.36				.45	1030
2/19	3.3				.50	1030
2/21	4.82					1040
2/22	10.98				.51	0915
3/1	1.98				.90	0815
3/4	3.3					1555
					.62	1005

STAFF PLATE AFTER 1/11/01

.51 since midnight River clear.
.01 on 1/9 and 0.6 on 1/10 River muddy
.70 since 0930 on 10/23. No rain since 1/11

Low tide at 1054 - 0.5
Staff plate at 8.50 max in. early A.M.

.55 on 2/10. No rain since 2/1
.05 on 2/12, .40 on 2/17

Date	d"	t ₁	t ₂	t ₃	ft/sec	Rainfall since last measure	time
1/23	.90					.70	1600
1/24	1.56					.08	1330
1/25	5.48					1.18	1350
1/25	4.96					1645	
1/26	4.06					1.50	1645
2/11	3.14					.70	1025
2/17	1.3					.45	1035
2/18	2.58					.50	1035
2/21	3.56					.51	0925
2/22	7.09					1.03	1500
2/24	3.45						1310
3/1	1.58						1600
3/4	2.54					.62	1000

No rain since 1/11

Staff plate - 5.40 max sometime in early A.M.
.70 at 0830 2/11, .55 on 2/10 No rain since 2/11
Daily rainfall since 2/17. .45 2/17, .50 2/18, .20 2/19,
.28 2/20, .51 2/21

.62 in last 24 hrs.

2000-2001 d" measured from staff plate

S FORK ELK @ MARCIE BOHANNON'S

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