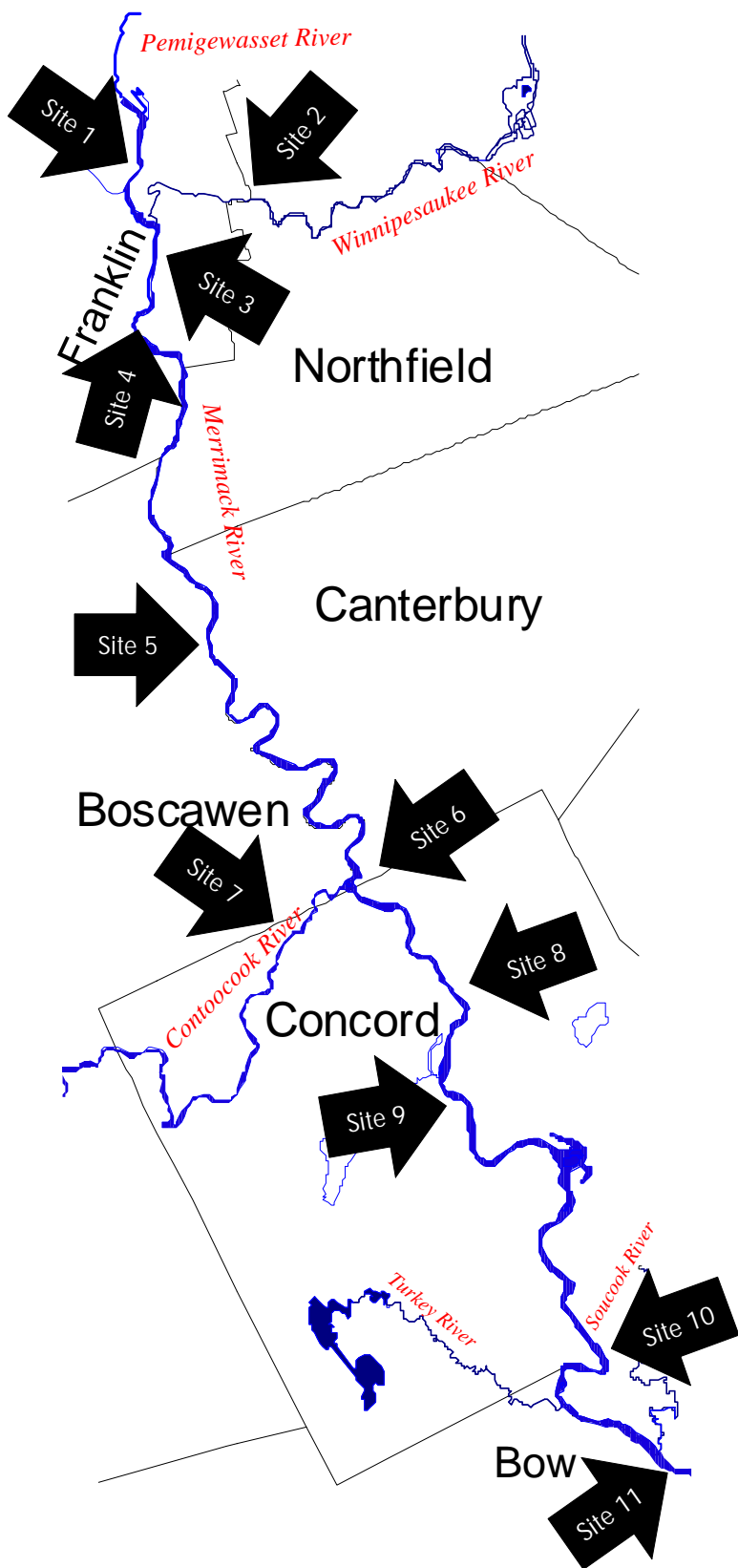


# UPPER MERRIMACK MONITORING PROGRAM SITE MAP AND MONITORING LOCATIONS



## Site 1

Pemigewasset River, Franklin

## Site 2

Winnipisaukee River, Franklin

## Site 3

Above Franklin Wastewater Treatment Facility, Franklin

## Site 4

Below Franklin Wastewater Treatment Facility, Franklin

## Site 5

Merrimack River State Forest, Boscawen and Canterbury

## Site 6

Below Riverlands, Boscawen and Canterbury

## Site 7

Contoocook River, Boscawen and Penacook

## Site 8

Sewall's Falls, Concord

## Site 9

Manchester Street Bridge, Concord

## Site 10

Above Garvins Falls Dam, Bow

## Site 11


Below Garvins Falls Dam, Bow

## UPPER MERRIMACK MONITORING PROGRAM PARTNERS

Concerned citizens from NH, VT, MA, and ME  
Franklin High School, students and faculty  
Franklin Wastewater Treatment Facility  
Manchester Fly Fishing Club  
Merrimack River Watershed Council  
NH Department of Environmental Services  
Notre Dame College, students and faculty  
River Watch Network  
Rundlett Junior High School  
St. Paul's School, students and faculty  
Trout Unlimited, Basil W. Woods Chapter  
Upper Merrimack River Local Advisory Committee  
Volunteer Environmental Monitoring Network  
The Conservation Commissions of the Towns of Boscawen, Bow, Canterbury, and Northfield  
and the Cities of Concord and Franklin

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Valorie Wright  
Sue Yeager

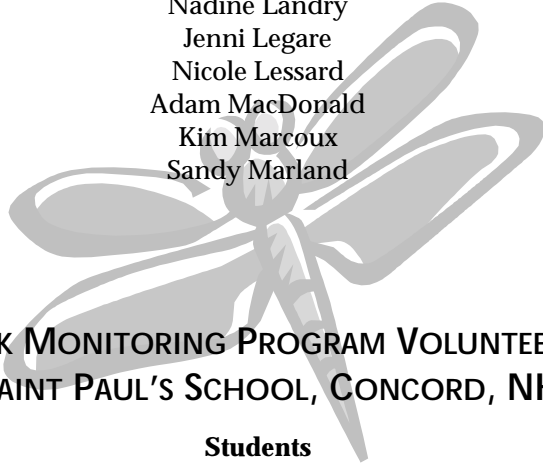
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 Albert LaFlamme  
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 Nicole Lessard  
 Adam MacDonald  
 Kim Marcoux  
 Sandy Marland

Aaron Miller  
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Jerry O'Connor  
 Eric O'Connor  
 Morgan Pietz  
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 Amanda Wynn

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 Stephen C. Landry  
 Michele L. Tremblay

**Canterbury**  
 Vacant

**Franklin**  
 Marilee A. Horn  
 Richard LaFlamme

**Bow**  
 Gary Lynn  
 Susan Paschell

**Concord**  
 Edwin Robinson  
 Stephen Robinson

**Northfield**  
 Richard Bellerose

## ADOPT-A-RIVER SITE SPONSORS

Adopt-a-River Site Sponsors have demonstrated river stewardship by their commitment to preserving and protecting the upper Merrimack and its watershed. Sponsors provide annual financial assistance and volunteer effort to the Upper Merrimack Monitoring Program.

The UMMP recognizes the following organizations:

**Aries Engineering, Inc., Concord, NH**  
**Franklin Waste Water Treatment Facility, Franklin, NH**  
**Franklin Savings Bank, Franklin, NH**  
**Public Service of NH, Corporate Offices, Manchester, NH**  
**Public Service of NH, Merrimack Station, Bow, NH**  
**Webster Valve, Inc., Watts Regulator, Co., Franklin, NH**

*Would you or your organization like to become a friend of the upper Merrimack?  
For further information on the Adopt-a-River Site Program, please contact Michele L. Tremblay  
at (603) 796-2615 or email at [mtrembla@tds.net](mailto:mtrembla@tds.net)*



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Angela Archer, NH Department of Environmental Services  
Susan Paschell, UMLAC  
Keith Robinson, United States Geological Survey  
Stephanie Vaine, Central NH Regional Planning Commission

*The Upper Merrimack Monitoring Program extends its gratitude to the members of the Team who painstakingly reviewed this report and made it better with their input and perspectives.*

# ***E. coli* Data Summary**

(Colonies per 100 milliliters)

	9/25/95	10/9/95	10/23/95	11/6/95	11/20/95	
Site 1	*	80	710	70	<1	
Site 2	*	<1	170	<1	<1	
Site 3	20	20	1150	10	<1	
Site 4	<1	100	1000	10	10	
Site 5	<1	*	900	10	*	
Site 6	<1	20	870	30	10	
Site 7	40	120	530	<1	<1	
	8/28/96	9/12/96	9/25/96	10/9/96	10/23/96	11/6/96
Site 1	50	109	174	40	170	2
Site 2	17	7	13	39	120	5
Site 3	70	83	86	92	100	5
Site 4	18	28	37	30	230	4
Site 5	3	3	10	62	205	5
Site 6	7	*	17	6	*	11
Site 7	25	33	25	18	155	6
Site 8	9	27	19	40	355	18
Site 9	5	14	77	34	480	22
Site 10	81	78	78	94	275	2
Site 11	20	25	32	44	525	14
	8/20/97	9/10/97	9/24/97	10/8/97	10/22/97	11/5/97
Site 1	8	102	1	16	19	111
Site 2	1	18	1	12	7	32
Site 3	1	47	7	25	22	101
Site 4	4	19	4	6	7	121
Site 5	1	11	15	8	14	77
Site 6	5	11	16	*	1	63
Site 7	68	80	127	*	4	146
Site 8	13	26	4	26	11	230
Site 9	7	53	4	20	1	37
Site 10	34	42	12	17	4	34
Site 11	2	28	1	24	9	103

# Flow Data Summary

(Cubic feet per second)

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11
9/25/95	321	232	883	883	883	883	101	*	*	*	*
10/9/95	542	253	1,070	1,070	1,070	1,070	529	*	*	*	*
10/23/95	6,500	431	16,100	16,100	16,100	16,100	2,340	*	*	*	*
11/6/95	1,910	779	4,190	4,190	4,190	4,190	1,990	*	*	*	*
11/20/95	2,120	1,260	5,150	5,150	5,150	5,150	2,170	*	*	*	*

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11
8/28/96	262	221	652	652	652	652	132	784	784	784	784
9/12/96	204	222	576	576	576	576	108	684	684	684	684
9/25/96	181	228	614	614	614	614	327	941	941	941	941
10/9/96	303	238	879	879	879	879	445	1,324	1,324	1,324	1,324
10/23/96	4,980	1,220	14,100	14,100	14,100	14,100	3,030	17,130	17,130	17,130	17,130
11/6/96	705	910	2,210	2,210	2,210	2,210	634	2,844	2,844	2,844	2,844

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10	Site 11
8/20/97	231	210	670	670	670	670	142	812	812	812	812
9/10/97	371	319	*	*	*	*	171	171	171	171	171
9/24/97	317	220	*	*	*	*	111	111	111	111	111
10/8/97	455	224	1,020	1,020	1,020	1,020	169	1,189	1,189	1,189	1,189
10/22/97	244	278	780	780	780	780	249	1,029	1,029	1,029	1,029
11/5/97	3,070	100	4,140	4,140	4,140	4,140	1,060	5,200	5,200	5,200	5,200

## Field Chemistry Data Summary

Parameter	pH (units)		ANC (mg/L)		Conductivity (µmhos/cm)		Dissolved Oxygen (mg/L)		
	1996	1997	1998	1996	1997	1998	1996	1997	1998
Site 1	6.38	6.32	6.71	4.6	5.2	6.4	42.3	51.6	59.1
Site 2	6.78	6.62	6.81	7.5	6.4	7.4	75.6	71.1	70.2
Site 3	6.66	6.45	6.89	7.4	7.3	7.3	71.1	69.1	70.4
Site 4	6.57	6.55	6.52	6.1	8.1	7.2	55.6	62.6	64.7
Site 5	6.58	6.72	6.78	6.6	8.7	7.5	59.4	64.2	67.5
Site 6	6.51	6.53	n/a	6.6	7.5	n/a	59.5	66.1	n/a
Site 7	6.48	6.88	6.95	7.2	12.3	9.6	65.9	91.9	83.0
Site 8	6.50	6.57	6.56	6.8	8.5	8.0	60.3	69.3	84.3
Site 9	6.47	6.37	6.70	6.4	8.4	7.4	63.2	101.3	74.5
Site 10	6.45	6.51	6.70	6.9	12.1	8.0	65.4	83.2	76.3
Site 11	6.48	6.27	6.51	7.2	9.9	8.4	67.1	74.2	78.1

# Macroinvertebrate Data Summary

## 1995

Metric	Sites										
	1	2	3	4	5	6	7	8	9	10	11
Organism Density	392	1616	1853	527	3343	2172	1256	*	*	*	*
EPT Richness	9	14	13	12	16	11	11	*	*	*	*
Total Taxa Richness	18	24	19	24	24	17	17	*	*	*	*
Biotic Index	6.30	3.84	3.94	4.52	3.99	4.32	4.12	*	*	*	*
% Contribution of Dominant Family	26%	57%	64%	28%	68%	68%	54%	*	*	*	*
Community Similarity Index (1)	1	0.95	0.87	0.89	0.75	0.79	65%	*	*	*	*

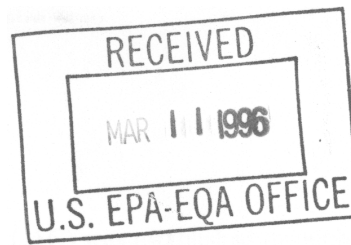
## 1996

Metric	Sites										
	1	2	3	4	5	6	7	8	9	10	11
Organism Density	3769	473	1512	2001	1436	0	1020	0	0	824	0
EPT Richness	9	9	12	13	12	0	6	0	0	10	0
Total Taxa Richness	14	14	19	22	24	0	12	0	0	20	0
Biotic Index	4.13	4.09	4.30	4.87	4.27	*	3.86	*	*	5.15	*
% Contribution of Dominant Family	66%	25%	60%	33%	58%	*	64%	*	*	21%	*
Community Similarity Index (1)	1	0.95	0.87	0.89	0.75	*	65%	*	*	0.5	*

## 1997

Metric	Sites										
	1	2	3	4	5	6	7	8	9	10	11
Organism Density	865	1591	1905	1153	746	816	1795	*	247	428	583
EPT Richness	15	16	14	12	11	12	15	*	7	8	7
Total Taxa Richness	25	23	21	21	20	15	20	*	15	18	16
Biotic Index	5.00	3.45	3.97	3.90	4.47	4.59	3.77	*	5.49	5.51	4.55
% Contribution of Dominant Family	38%	56%	76%	48%	40%	55%	65%	*	42%	33%	53%
Community Similarity Index (1)	1	0.95	0.87	0.89	0.75	0.79	65%	*	0.58	0.5	0.48





# UPPER MERRIMACK MONITORING PROJECT

## a citizen volunteer water quality monitoring program

prepared by  
UPPER MERRIMACK RIVER LOCAL ADVISORY COMMITTEE

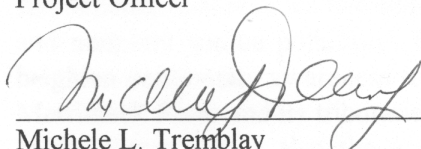
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Michele L. Tremblay  
Chairperson, UMRLAC

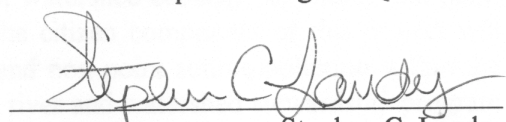
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Merrimack River Initiative  
New England Interstate Water Pollution Control Commission

Submitted December 14, 1995  
Revised March 4, 1996

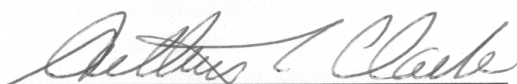
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## RESOURCES AND REFERENCES

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- United States Geological Survey** in cooperation with the US Department of the Interior and States of New Hampshire and Vermont. 1995, 1996, and 1997. Water Resources Data New Hampshire and Vermont
- Macroinvertebrate data processed with customized data processing templates created by River Watch Network, Montpelier, Vermont
- E. coli* samples processed by Franklin Waste Water Treatment Facility, Franklin, New Hampshire
- Random Quality Control/ Quality Assurance *E. coli* samples processed by the NH Department of Environmental Services, Concord, New Hampshire
- Quality Control/ Quality Assurance macroinvertebrate samples processed by EcoAnalysts, Moscow, Idaho
- Topographic maps produced using TOPO! Software, Wildflower Productions, San Francisco, California
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