

APPENDIX M

CONNECTICUT RIVER-

BELLOWS FALLS TO VERNON DAM WATERSHED

(HUC8: 01080107)

I. WATERSHED DESCRIPTION AND MAPS

This section of the Connecticut River Watershed covers an area of approximately 308 square miles on the Vermont-New Hampshire border in the southwest corner of New Hampshire. There are 12 New Hampshire towns located at least partially within the watershed which extends from Unity to Hinsdale, NH. As shown in Figure 1, the primary watercourse in the region is the Connecticut River which serves as the border between Vermont and New Hampshire. Notable mountains in the area are the Pisgah Range and numerous independent landforms. Lakes of notable size in the watershed include Spofford Lake and Lake Warren. Both are located in the eastern half of the watershed and not along the course of the Connecticut River.

The watershed consists of 78% forested land cover. A minor portion of the woodland is conserved and protected as part of Pisgah State Park and smaller state forests. Developed and disturbed land identified on the following land cover map (Figure 2) covers 4% of watershed area. There are no urban areas in the New Hampshire part of the watershed but developed land is found across the Connecticut River in Bellows Falls, VT and Brattleboro, VT as well as around Spofford Lake. Agriculture is more predominant than developed land at 11% and most commonly found in the middle section of the watershed close to the Vermont border.

To facilitate management of the State's water resources, surface waters in New Hampshire have been divided into over 5,200 smaller segments called Assessment Units (AUs) that each has a unique identification number or AUID. Due to resource constraints it is not possible to sample all AUs. Of the AUs sampled in this watershed, 8 have been assessed as impaired for bacteria. The location of each bacteria impaired surface water AU is shown on Figure 1 as either a dark blue circle or line. A majority of the impaired waters are located in the northern area of the watershed and all but one are streams. Section II presents all bacteria data collected in these impaired reaches over the past 10 years by NH DES, with exceedances of the state's water quality standards for bacteria noted. Applicable bacteria water quality criteria for each AU as well as an estimate of the percent reduction needed to meet each water quality criterion (and TMDL), based on the highest recorded bacteria measurement that exceeds the criterion, are also provided.

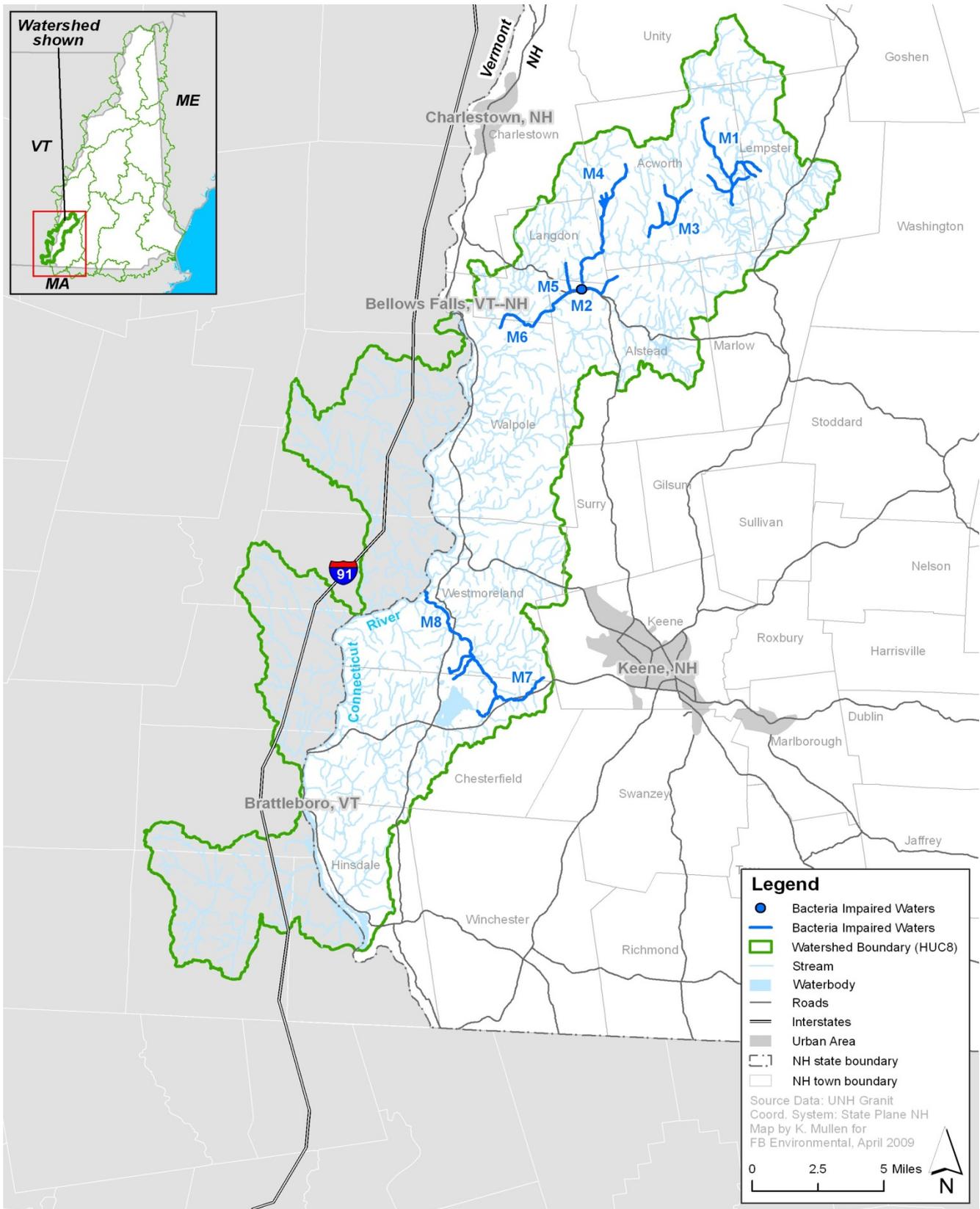


Figure 1. Bacteria-impaired waters in Connecticut River-Bellows Falls to Vernon Dam Watershed (segments labeled by table number)

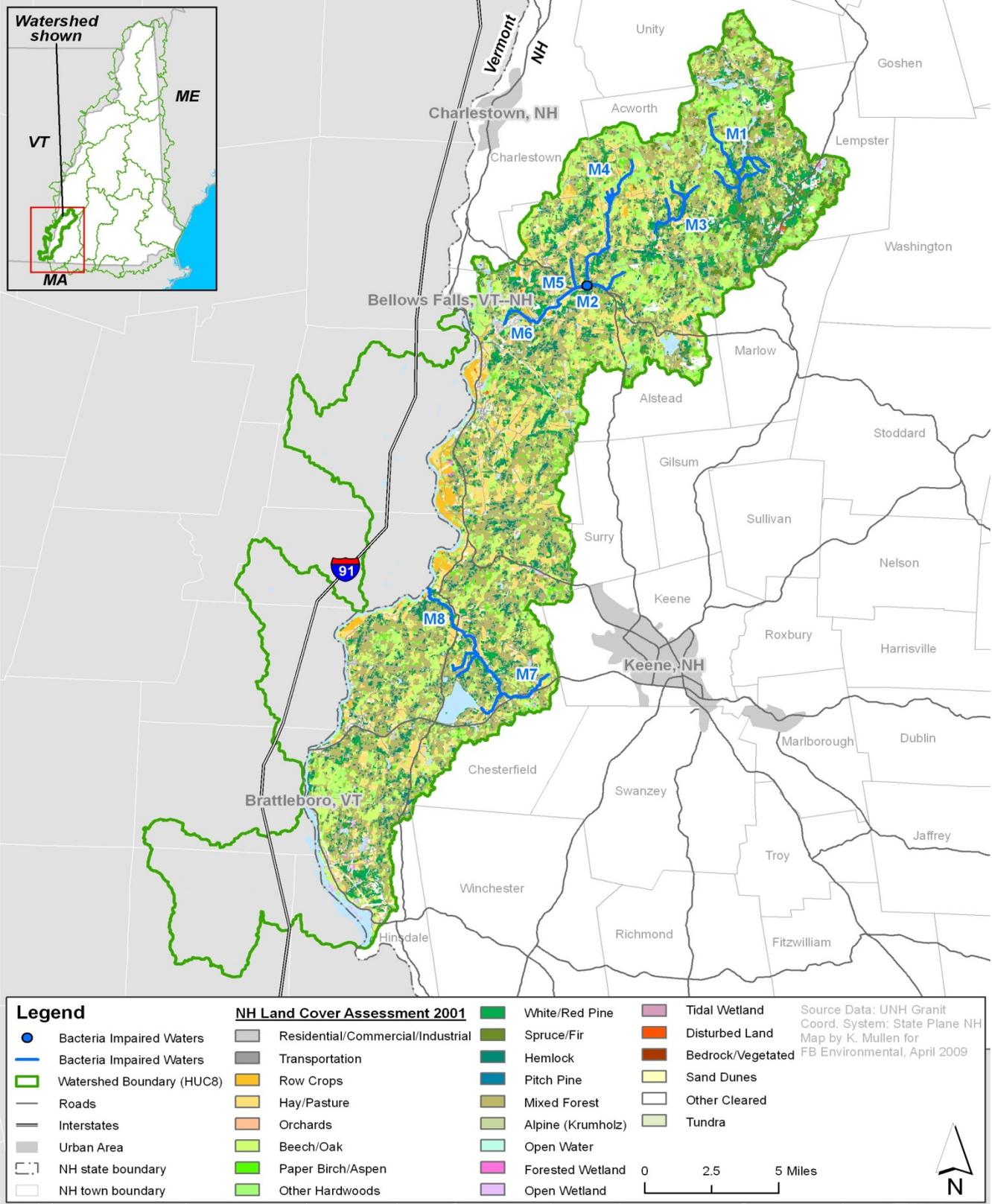


Figure 2. Land cover in Connecticut River-Bellows Falls to Vernon Dam Watershed with noted bacteria impaired water (segments labeled by table number)

II. WATER QUALITY DATA TABLES

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M 1: COLD RIVER – UNDERWOOD BROOK

AUID: NHRIV801070201-08

Characteristics: freshwater, class B designation, not designated beach, primary contact recreation.

Impairment: *E. coli*

Water Quality Criteria & TMDL for *E. coli*:

Geometric mean: 126 CTS/100mL

Single sample: 406 CTS/100mL

Percent reduction to meet TMDL:

Geometric mean: *in compliance*

Single sample: 73%

Data: 2005-2006 (inclusive) from NH DES, 2008 TMDL cycle

Single sample *E. coli* results (CTS/100ML)

Station ID	Station Name	Date	Result	Wet/dry
08-CLD	ALLEN ROAD BRIDGE	7/27/05	* 30	no data
08-CLD	ALLEN ROAD BRIDGE	8/24/05	* 5	no data
08-CLD	ALLEN ROAD BRIDGE	9/15/05	* 1530	no data
08-CLD	ALLEN ROAD BRIDGE	7/11/06	* 1490	no data
08-CLD	ALLEN ROAD BRIDGE	8/15/06	* 20	no data
08-CLD	ALLEN ROAD BRIDGE	9/12/06	* 10	no data

**Geometric mean
E. coli results
(CTS/100ML)**

Date	Result
9/15/05	61.2

Shaded cells indicate exceedance of water quality criteria

* During "critical period" defined as May 24 to Sept 15 (2008 NH CALM)

M 2: COLD RIVER – VILAS POOL BEACH

AUID: NHIMP801070202-01-02

Characteristics: freshwater, class B designation, designated beach, primary contact recreation.

Impairment: *E. coli*

Water Quality Criteria & TMDL for *E. coli*:

Geometric mean: 47 CTS/100mL

Single sample: 88 CTS/100mL

Percent reduction to meet TMDL:

Geometric mean: 3%

Single sample: 78%

Data: 2002 - 2006 (inclusive) from NH DES, 2008 TMDL cycle

Single sample *E. coli* results (CTS/100ML)

Station ID	Station Name	Date	Result	Wet/dry
BCHVSPALSCR	COLD RIVER VILAS POOL TB-CENTER	8/2/02 *	20	no data
BCHVSPALSCR	COLD RIVER VILAS POOL TB-CENTER	7/10/03 *	50	no data
BCHVSPALSCR	COLD RIVER VILAS POOL TB-CENTER	7/22/04 *	24	no data
BCHVSPALSCR	COLD RIVER VILAS POOL TB-CENTER	8/13/04 *	400	no data
BCHVSPALSCR	COLD RIVER VILAS POOL TB-CENTER	8/19/04 *	12	no data
BCHVSPALSCR	COLD RIVER VILAS POOL TB-CENTER	7/15/05 *	34	no data
BCHVSPALSCR	COLD RIVER VILAS POOL TB-CENTER	8/11/05 *	6	no data
BCHVSPALSCR	COLD RIVER VILAS POOL TB-CENTER	6/27/06 *	130	no data

**Geometric mean
E. coli results
(CTS/100ML)**

Date	Result
8/19/04	48.7

Shaded cells indicate exceedance of water quality criteria

* During "critical period" defined as May 24 to Sept 15 (2008 NH CALM)

M 3: COLD RIVER – BOWERS BROOK

AUID: NHRIV801070202-04

Characteristics: freshwater, class B designation, not designated beach, primary contact recreation.

Impairment: *E. coli*

Water Quality Criteria & TMDL for *E. coli*:

Geometric mean: 126 CTS/100mL

Single sample: 406 CTS/100mL

Percent reduction to meet TMDL:

Geometric mean: 50%

Single sample: 80%

Data: 2005-2006 (inclusive) from NH DES, 2008 TMDL cycle

Single sample *E. coli* results (CTS/100ML)

Station ID	Station Name	Date	Result	Wet/dry
06D-CLD	DEEP HOLE - COLD RIVER	7/27/05	* 20	no data
06D-CLD	DEEP HOLE - COLD RIVER	8/24/05	* 50	no data
01-BOB	BOWERS BROOK - ROUTE 123A BRIDGE	9/15/05	* 2000	no data
06D-CLD	DEEP HOLE - COLD RIVER	9/15/05	* 2000	no data
06D-CLD	DEEP HOLE - COLD RIVER	7/11/06	* 1360	no data
06D-CLD	DEEP HOLE - COLD RIVER	8/15/06	* 5	no data
01-BOB	BOWERS BROOK - ROUTE 123A BRIDGE	9/12/06	* 5	no data
06D-CLD	DEEP HOLE - COLD RIVER	9/12/06	* 5	no data

Geometric mean
E. coli results
(CTS/100ML)

Date	Result
9/15/05	251
9/12/06	5.00

Shaded cells indicate exceedance of water quality criteria

* During "critical period" defined as May 24 to Sept 15 (2008 NH CALM)

M 4: COLD RIVER – CRANE BROOK

AUID: NHRIV801070202-09

Characteristics: freshwater, class B designation, not designated beach, primary contact recreation.

Impairment: *E. coli*

Water Quality Criteria & TMDL for *E. coli*:

Geometric mean: 126 CTS/100mL

Single sample: 406 CTS/100mL

Percent reduction to meet TMDL:

Geometric mean: *in compliance*

Single sample: 98%

Data: 2005-2007 (inclusive) from NH DES, 2008 TMDL cycle

Single sample *E. coli* results (CTS/100ML)

Station ID	Station Name	Date	Result	Wet/dry
NH_HEX_43.03	COLD RIVER	6/6/05	* 10	no data
NH_HEX_43.03	COLD RIVER	7/7/05	* 60	no data
01-CRB	CRANE BROOK @ CONF. W/ COLD RIVER	7/27/05	* 20	no data
NH_HEX_43.03	COLD RIVER	8/2/05	* 5	no data
01-CRB	CRANE BROOK @ CONF. W/ COLD RIVER	8/24/05	* 10	no data
01-CRB	CRANE BROOK @ CONF. W/ COLD RIVER	9/15/05	* 2000	no data
01-CRB	CRANE BROOK @ CONF. W/ COLD RIVER	9/12/06	* 5	no data
03-CRB	ACROSS FROM CURRIER/ALAN CLARK	11/7/07	3200	no data
06-CRB	CRANE BROOK ROAD	11/7/07	5	no data
05-CRB	100' DS OF UNNAMED TRIB AT HOLDEN HILL RD	11/7/07	6600	no data
01-XCB	UNNAMED TRIB AT BOSCOMB HILL ROAD	11/7/07	20000	no data

Geometric mean *E. coli* results (CTS/100ML)

Date	Result
8/2/05	15.7
8/24/05	15.7
9/15/05	37.6

Shaded cells indicate exceedance of water quality criteria

* During "critical period" defined as May 24 to Sept 15 (2008 NH CALM)

M 5: COLD RIVER – WARREN BROOK

AUID: NHRIV801070203-04

Characteristics: freshwater, class B designation, not designated beach, primary contact recreation.

Impairment: *E. coli*

Water Quality Criteria & TMDL for *E. coli*:

Geometric mean: 126 CTS/100mL

Single sample: 406 CTS/100mL

Percent reduction to meet TMDL:

Geometric mean: 40%

Single sample: 80%

Data: 2005-2006 (inclusive) from NH DES, 2008 TMDL cycle

Single sample *E. coli* results (CTS/100ML)

Station ID	Station Name	Date	Result	Wet/dry
03T-CLD	WOODEN DAM - BELOW CONFL W/ WARREN BR	7/27/05	* 20	no data
03T-CLD	WOODEN DAM - BELOW CONFL W/ WARREN BR	8/24/05	* 20	no data
03T-CLD	WOODEN DAM - BELOW CONFL W/ WARREN BR	9/15/05	* 2000	no data
03B-CLD	250' U/S OF 03-CLD	10/12/05	520	no data
03T-CLD	WOODEN DAM - BELOW CONFL W/ WARREN BR	7/11/06	* 610	no data
01-WAB	WARREN BROOK - RTE 123A BRIDGE	7/11/06	* 700	no data
01-WAB	WARREN BROOK - RTE 123A BRIDGE	8/15/06	* 10	no data
03T-CLD	WOODEN DAM - BELOW CONFL W/ WARREN BR	8/15/06	* 50	no data
03T-CLD	WOODEN DAM - BELOW CONFL W/ WARREN BR	9/12/06	* 10	no data
01-WAB	WARREN BROOK - RTE 123A BRIDGE	9/12/06	* 5	no data
03T-CLD	WOODEN DAM - BELOW CONFL W/ WARREN BR	9/12/06	* 10	no data

Geometric mean *E. coli* results (CTS/100ML)

Date	Result
9/15/05	92.8
9/16/05	210
8/15/06	121
9/12/06	12.0

Shaded cells indicate exceedance of water quality criteria

* During "critical period" defined as May 24 to Sept 15 (2008 NH CALM)

M 6: COLD RIVER

AUID: NHRIV801070203-09

Characteristics: freshwater, class B designation, not designated beach, primary contact recreation.

Impairment: *E. coli*

Water Quality Criteria & TMDL for *E. coli*:

Geometric mean: 126 CTS/100mL

Single sample: 406 CTS/100mL

Percent reduction to meet TMDL:

Geometric mean: *in compliance*

Single sample: 84%

Data: 2005-2006 (inclusive) from NH DES, 2008 TMDL cycle

Single sample <i>E. coli</i> results (CTS/100ML)							Geometric mean <i>E. coli</i> results (CTS/100ML)	
Station ID	Station Name	Date		Result	Wet/dry		Date	Result
01T-CLD	TINKERS BRIDGE - US OF CONFL W/ GREAT BR	7/27/05	*	10	no data		9/15/05	49.9
01T-CLD	TINKERS BRIDGE - US OF CONFL W/ GREAT BR	8/24/05	*	5	no data		9/16/05	113
01T-CLD	TINKERS BRIDGE - US OF CONFL W/ GREAT BR	9/15/05	*	2490	no data			
02D-CLD	700 FT U/S OF 02-CLD	10/12/05		260	no data			
01T-CLD	TINKERS BRIDGE - US OF CONFL W/ GREAT BR	7/11/06	*	560	no data			
01T-CLD	TINKERS BRIDGE - US OF CONFL W/ GREAT BR	8/15/06	*	70	no data			
01T-CLD	TINKERS BRIDGE - US OF CONFL W/ GREAT BR	9/12/06	*	50	no data			

Shaded cells indicate exceedance of water quality criteria

* During "critical period" defined as May 24 to Sept 15 (2008 NH CALM)

M 7: PARTRIDGE BROOK

AUID: NHRIV801070503-02

Characteristics: freshwater, class B designation, not designated beach, primary contact recreation.

Impairment: *E. coli*

Water Quality Criteria & TMDL for *E. coli*:

Geometric mean: 126 CTS/100mL

Single sample: 406 CTS/100mL

Percent reduction to meet TMDL:

Geometric mean: *in compliance*

Single sample: 80%

Data: 2002-2007 (inclusive) from NH DES, 2008 TMDL cycle

Single sample <i>E. coli</i> results (CTS/100ML)						Geometric mean <i>E. coli</i> results (CTS/100ML)	
Station ID	Station Name	Date	Result	Wet/dry		Date	Result
SPOCHEO	SPOFFORD LAKE-OUTLET	6/11/02	* 14	no data		8/6/02	59.6
04-PTB	WESTMORELAND RD, WEST/CHEST T/L	6/28/02	* 1500	no data		8/27/02	40.5
SPOCHEO	SPOFFORD LAKE-OUTLET	7/16/02	* 12	no data		9/16/02	59.2
04-PTB	WESTMORELAND RD, WEST/CHEST T/L	8/6/02	* 50	no data		8/22/06	31.7
SPOCHEO	SPOFFORD LAKE-OUTLET	8/27/02	* 3	no data			
04-PTB	WESTMORELAND RD, WEST/CHEST T/L	9/16/02	* 2000	no data			
SPOCHEO	SPOFFORD LAKE-OUTLET	6/24/03	* 10	no data			
SPOCHEO	SPOFFORD LAKE-OUTLET	8/26/03	* 30	no data			
SPOCHEO	SPOFFORD LAKE-OUTLET	6/22/04	* 5	no data			
SPOCHEO	SPOFFORD LAKE-OUTLET	7/27/04	* 5	no data			
SPOCHEO	SPOFFORD LAKE-OUTLET	8/24/04	* 10	no data			
SPOCHEO	SPOFFORD LAKE-OUTLET	6/23/05	* 5	no data			
SPOCHEO	SPOFFORD LAKE-OUTLET	7/26/05	* 2.5	no data			
SPOCHEO	SPOFFORD LAKE-OUTLET	8/23/05	* 5	no data			
SPOCHEO	SPOFFORD LAKE-OUTLET	6/27/06	* 40	no data			
SPOCHEO	SPOFFORD LAKE-OUTLET	7/25/06	* 20	no data			
SPOCHEO	SPOFFORD LAKE-OUTLET	8/22/06	* 40	no data			
SPOCHEO	SPOFFORD LAKE-OUTLET	6/21/07	* 5	no data			
SPOCHEO	SPOFFORD LAKE-OUTLET	7/24/07	* 5	no data			
SPOCHEO	SPOFFORD LAKE-OUTLET	8/22/07	* 5	no data			

Shaded cells indicate exceedance of water quality criteria

* During "critical period" defined as May 24 to Sept 15 (2008 NH CALM)

M 8: PARTRIDGE BROOK

AUID: NHRIV801070503-03

Characteristics: freshwater, class B designation, not designated beach, primary contact recreation.

Impairment: *E. coli*

Water Quality Criteria & TMDL for *E. coli*:

Geometric mean: 126 CTS/100mL

Single sample: 406 CTS/100mL

Percent reduction to meet TMDL:

Geometric mean: 69%

Single sample: 80%

Data: 2002-2003 (inclusive) from NH DES, 2008 TMDL cycle

Single sample *E. coli* results (CTS/100ML)

Station ID	Station Name	Date	Result	Wet/dry
03-PTB	HATT RD	6/11/02 *	50	no data
02-PTB	INTERSECTION OF RTE 163 & SPOFFORD RD	6/28/02 *	770	no data
03-PTB	HATT RD	6/28/02 *	780	no data
03-PTB	HATT RD	8/6/02 *	50	no data
02-PTB	INTERSECTION OF RTE 163 & SPOFFORD RD	8/6/02 *	250	no data
02-PTB	INTERSECTION OF RTE 163 & SPOFFORD RD	9/16/02	2000	no data
03-PTB	HATT RD	9/16/02	2000	no data
03-PTB	HATT RD	6/9/03 *	80	no data
03-PTB	HATT RD	7/28/03 *	80	no data

Geometric mean *E. coli* results (CTS/100ML)

Date	Result
8/6/02	206
9/16/02	401

Shaded cells indicate exceedance of water quality criteria

* During "critical period" defined as May 24 to Sept 15 (2008 NH CALM)