

TESTS OF WATER QUALITY AT THE FLCA

September 4, 2006 (Adams)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Canoe Launch	65	10	7.0	42.6	N/A	N/A

November 19, 2006 (Adams, Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	45	13	6.9	28.4	0.08	0.7/3.08

December 3, 2006 (Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	42	10	6.9	~51.3 (hi rng.)	0.10	0.30/1.32
Canoe Launch	42	10	6.9	~51.3 (hi rng.)	0.10	0.15/0.66
Dam	42	9	6.7	~34.2 (hi rng.)	0.06	0.01/0.04
Marsh, opp. blind	42	11	6.3	~34.2 (hi rng.)	0.04	0.02/0.09
Marsh, Gessing Pt.	42	7	6.3	27.4 (lo rng.)	0.04	0.01/0.04

March 10, 2007 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	30	13	7.2	34.2	0.10	0.62/2.73
Canoe Launch	30	13	7.4	41.0	0.10	0.24/1.06
Dam	30	12	6.5	20.5	0.08	0.20/0.88
Marsh, opp. blind	30	11	6.8	34.2	0.08	0.13/0.57
Marsh, Gessing Pt.	30	8	6.3	27.4	0.08	0.06/0.26

Notes

Dam: ice on lake was ~12 inches thick; made use of an ice fisherman's hole ~200 ft west of dam

Marsh: cracked through thin ice adjacent to large beaver lodge, slightly upstream of site used on 12/3/06

Gessing Point: sample taken under broken ice, just downstream of new beaver dam

March 22, 2007 (Zimmermann); Calibration of Hach kit with measurement by Environmental Institute

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	30	N/A	N/A	N/A	N/A	0.38/1.67
Brd Brk, E of NFR*	30	N/A	N/A	N/A	N/A	0.472/2.09

*Measured by The Environmental Analysis Laboratory, Environmental Institute, UMass

June 21, 2007 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	70	11*	7.2	41.0	0.14	0.44/1.94
Canoe Launch	70	10	7.4	34.2	0.14	0.22/0.97
Dam	70	8	7.2	34.2	0.12	0.02/0.09
Marsh, opp. blind	70	5	6.8	47.9	0.12	0.02/0.09
Marsh, Gessing Pt.	70	3	6.4	41.0	0.14	0.02/0.09
Vernal Pool, Post 4	70	2	5.7	6.8	0.50	0.02/0.09

*On-site measurement: 10 ppm

September 8, 2007 (Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	80	7	7.2	47.9	0.14	0.82/3.61
Canoe Launch	80	7	7.5	61.6	0.10	0.20/0.88
Dam	80	6	7.0	47.9	0.10	0.02/0.09
Marsh, opp. blind	80	4	6.6	54.7	0.12	0.02/0.09
Marsh, Gessing Pt.	80	5	6.7	41.0	0.09	0.02/0.09

Note

These measurements were made after a period of roughly two weeks in which there was no rainfall

December 8, 2007 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Spr Grv Cem, drain	32					0.11/0.48
Brd Brk, W of NFR	32	11	6.8	41.0	0.08	0.68/2.99
Brd Brk, E of NFR	32	11	6.9	41.0	0.08	0.66/2.90
Canoe Launch	32	11	7.4	61.6	0.08	0.18/0.79
Dam	32	11	6.8	47.9	0.06	0.02/0.09
Marsh, beavr lodge	32	9	6.8	41.0	0.06	0.02/0.09
Marsh, Gessing Pt.	32	6	6.5	47.9	0.06	0.02/0.09

Note

Dam: sample taken at dam outflow

March 2, 2008 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	28	14	7.1	27.4	0.12	0.42/1.85
Canoe Launch	28	12	7.2	27.4	0.10	0.18/0.79
Dam	28	12	6.3	20.5	0.08	0.04/0.18

Note

Dam: sample taken at dam outflow

June 12, 2008 (Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	70	9	7.2	41.0	0.14	0.75/3.30
Canoe Launch	70	9	7.4	57.9	0.12	0.22/0.97
Dam	70	7	7.2	34.2	0.04	0.02/0.09
Marsh, beavr lodge	70	8	6.6	41.0	0.16	0.02/0.09
Marsh, Gessing Pt.	70	4	6.5	61.6	0.20	0.02/0.09
Vernal Pool, Post 4	70	2	5.4	13.7	0.56	0.02/0.09

September 13, 2008 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	65	9	7.0	34.2	0.12	0.20/0.88
Canoe Launch	65	6	6.5	41.0	0.12	0.02/0.09
Dam	65	8	6.8	34.2	0.12	0.02/0.09

Notes

Dam: sample taken at dam outflow

Weather in preceding 24 hr: clear, T in 60's & 70's °F; rainfall ~0.25"

December 6, 2008 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	18-32	13	7.0	41.0	0.04	0.39/1.72
Canoe Launch	18-32	12	7.0	41.0	0.04	0.21/0.92
Dam	18-32	9	6.5	34.2	0.06	0.01/0.04
Marsh, beavr ldge	18-32	9	7.0	34.2	0.04	0.01/0.04
Marsh, Gessing Pt.	18-32	9	6.2	27.4	0.06	0.01/0.04
Vernal Pool, Post 4	18-32	2	5.2	20.5	0.32	0.01/0.04
Nrth Drain, E of NFR	18-32					2.0/8.8

Notes

Weather in preceding 24 hr : clear, T in 20's & 30's °F; no rainfall

March 7, 2009 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	45-50	12	7.2	34.2	0.07	0.44/1.94
Canoe Launch	45-50	12	7.2	41.0	0.07	0.20/0.88
Dam	45-50	11	6.7	34.2	0.08	0.08/0.35

Notes

Dam: sample taken at dam outflow

Weather: sunny, 45-50 °F; lots of melt water; no significant pptn since snow storm on 3/2/09

June 4, 2009 (Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	60-70	10	7.2	34.2	0.06	0.82/3.61
Canoe Launch	60-70	9	7.4	54.7	0.04	0.22/0.97
Dam	60-70	8	7.2	34.2	0.06	0.03/0.13
Marsh, beavr ldge	60-70	8	7.2	34.2	0.08	0.03/0.13
Marsh, Gessing Pt.	60-70	6	6.8	34.2	0.08	0.02/0.09
Vernal Pool, Post 4	60-70	3	5.7	13.7	0.34	0.02/0.09

Notes

Dam: sample taken at dam outflow

Weather: sunny, 60-70 °F; no precipitation in past 24 hr

Vernal Pool: did not dry out over winter of 08-09

September 26, 2009 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	45-50	9	7.2	41.0	0.08	0.50/2.2
Canoe Launch	45-50	4	6.4	41.0	0.12	0.02/0.09
Dam	45-50	8	7.1	41.0	0.02	0.02/0.09

Notes

Dam: sample taken at dam outflow

Weather in preceding 24 hr: clear, T ranged from 35-65 °F, no rain

December 6, 2009 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	30-34	9	7.1	27.4	0.06	0.32/1.41
Canoe Launch	30-34	10	7.1	34.2	0.06	0.08/0.35
Dam	30-34	9	7.1	34.2	0.04	0.02/0.09
Marsh, beavr ldge	30-34	12	6.9	27.4	0.06	0.01/0.04
Marsh, Gessing Pt.	30-34	10	6.2	20.5	0.08	0.01/0.04

Notes

Weather in preceding 24 hr : cloudy T in upper 20's & lower 30's °F; light snow and rain

April 17, 2010 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	40-45	12	7.0	27.4	0.06	0.22/0.97
Canoe Launch	40-45	10	7.0	41.0	0.06	0.08/0.35
Dam	40-45	11	7.0	20.5	0.04	0.01/0.04
Marsh, beavr ldge	40-45	9	6.8	27.4	0.04	0.01/0.04
Marsh, Gessing Pt.	40-45	7	6.4	27.4	0.10	0.01/0.04
Vernal Pool, Post 4	40-45	4	5.4	13.7	0.18	0.01/0.04

Notes

Dam: sample taken at dam outflow

Weather: overcast with showers, 40-45 °F; intermittent showers during past 24 hr; no wind

October 9, 2010 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	50-60	11	7.2	41.0	0.06	0.22/0.97
Canoe Launch	50-60	8	6.7	41.0	0.06	0.03/0.13
Dam	50-60	9	7.0	41.0	0.06	0.02/0.09
Marsh, beavr ldge	50-60	9	6.8	36.2	0.08	0.01/0.04
Marsh, Gessing Pt.	50-60	6	6.5	36.2	0.008	0.01/0.04

Notes

Dam: sample taken at dam outflow

Weather: sunny, 50-60 °F; no rain during past 24 hr; no wind (several inches of rain in past 10 days)

April 9, 2011 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	40-60	12	7.0	27.4	0.02	0.50/2.20
Canoe Launch	40-60	12	7.0	34.2	0.02	0.21/0.92
Dam	40-60	11	6.8	13.7	0.04	0.02/0.09
Marsh, beavr ldge	40-60	12	6.8	20.5	0.04	0.02/0.09
Marsh, Gessing Pt.	40-60	10	6.5	13.7	0.04	0.02/0.09
Vernal Pool, Post 4	40-60	7	5.4	6.8	0.16	0.02/0.09

Notes

Dam: sample taken at dam outflow

Weather: sunny, 40-60 °F; no rain during past 24 hr; no wind

November 20, 2011 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	45-60	12	7.0	41.0	0.0	0.25/1.10
Canoe Launch	45-60	12	7.0	47.9	0.0	0.09/0.40
Dam	45-60	13	7.0	41.0	0.0	0.01/0.04
Marsh, beavr ldge	45-60	10	6.8	34.2	0.0	0.0/0.0
Marsh, Gessing Pt.	45-60	9	6.2	20.5	0.0	0.0/0.0
Vernal Pool, Post 4	45-60	2	5.4	13.7	0.12	0.0/0.0

Notes

Dam: sample taken at dam outflow

Weather: sunny, 45-60 °F; no rain during past 24 hr; no wind

April 21, 2012 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	58-62	9	7.4	41.0	0.0	0.36/1.58
Canoe Launch	58-62	9	7.2	47.9	0.0	0.15/0.66
Dam	58-62	8	7.3	34.2	0.0	0.0/0.0
Marsh, beavr ldge	58-62	8	7.2	34.2	0.0	0.0/0.0
Marsh, Gessing Pt.	58-62	5	6.8	34.2	0.0	0.0/0.0
Vernal Pool, Post 4	58-62	4	5.7	13.7	0.06	0.0/0.0

Notes

Weather: cloudy, 58-62 °F; no rain for approximately 2 weeks; light breeze
 Brd Brk at NFR: water level in brook high, covering 3/4 diameter of main culvert; suggests brook may be partially obstructed downstream (beavers?)
 Canoe Launch: water level of lake normal (controlled by standpipe at dam)
 Dam: sample taken at dam outflow
 Marsh (beaver lodge): water level in marsh down ~18 inches; suggests breach in dam across marsh
 Marsh (Gessing Pt.): water level normal

December 9, 2012 (Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	35-40	11	7.2	27.4	0.0	0.59/2.59
Canoe Launch	35-40	11	7.1	27.4	0.0	0.12/0.53
Dam	35-40	11	7.3	27.4	0.0	0.0/0.0
Marsh, beavr ldge	35-40	12	6.8	20.5	0.0	0.0/0.0
Marsh, Gessing Pt.	35-40	8	6.2	20.5	0.0	0.0/0.0
Vernal Pool 2, Post 4 east	35-40	3	5.6	6.8	0.12	0.0/0.0

Notes

Weather: cloudy, 35-40 °F; rain previous 24 hrs; no breeze
 Dam: sample taken at dam outflow
 Vernal Pool 2 is just to east of Post 4; vernal pool at Post 4 dry

12/13/12

June 19, 2013 (Wiliams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	60-70	9	7.1	34.2	0.28	0.1/0.44
Brdwlk Stream	60-70	9	7.2	34.2	0.08	0.1/0.44
Dam, upstream	60-70	7	6.6	34.2	0.08	0.0/0.0
Marsh, beavr ldge	60-70	9	6.8	27.4	0.08	0.0/0.0
Marsh, Gessing Pt.	60-70	8	6.5	27.4	0.08	0.0/0.0
Vernal Pool, Post 4	60-70	4	5.6	13.7	0.53	0.0/0.0

Notes

Weather: sunny, 60-70 °F; rain: ~0.4" in past 24 hr, 3-4" in past week
 Brd Brk at NFR: water level normal
 Boardwalk/Canoe Launch: water level of lake 12-15" above normal due to obstruction of dam drain; couldn't reach canoe launch
 Dam: sample taken from lake above dam; water level with drain grate, i.e., 12-15" above normal, due to obstruction of dam
 Marsh (beaver lodge): water level normal
 Marsh (Gessing Pt.): water level normal

06/19/13

November 16, 2013 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	42-55	11	7.2	27.4	0.04	0.68/2.99
Dock	42-55	11	7.2	34.2	0.20	0.42/1.85
Dam, downstream	42-55	12	7.2	27.4	0.04	0.0/0.0
Marsh, beavr ldge	42-55	11	7.2	27.4	0.0	0.0/0.0
Marsh, Gessing Pt.	42-55	10	6.8	27.4	0.0	0.0/0.0

Notes

Weather: sunny, 42-55 °F; rain: none in past 24 hr, none in past week
 Brd Brk at NFR: beaver dam downstream has backed water up to NFR culvert
 Boardwalk/Canoe Launch: flooded; water level of lake 2-6" above normal; check flow at dam
 Dam: flow appeared normal; check level of water at lip of drain pipe to account for high water that continues to flood boardwalk and dock
 Marsh (beaver lodge): water level normal
 Marsh (Gessing Pt.): water level normal

November 20, 2014 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	32-40	11	6.9	27.4	0.12	0.34/1.50
Brdwlk/Dock	32-40	13	7.3	41.0	0.10	0.20/0.88
Dam, downstream	32-40	12	6.9	27.4	0.08	0.02/0.09
Marsh, beavr ldge	32-40	12	7.2	27.4	0.12	0.01/0.04
Marsh, Gessing Pt.	32-40	11	6.4	20.5	0.10	0.01/0.04

Notes

Weather: sunny, 32-40 °F; no rain in past 24 hr, ~2" in past week
 Brd Brk at NFR: beaver dam downstream has backed water up to middle of NFR culvert
 Boardwalk/Canoe Launch: flooded; water level of lake 8-10" above normal due to obstruction of dam drain; couldn't reach canoe launch/dock
 Dam: sample taken from below dam; water level high due to obstruction of dam drain, about 12" below drain grate
 Marsh (beaver lodge): no evidence of beaver lodge; recent dam buidlding activity noted
 Marsh (Gessing Pt.): water level normal; otter scat on slope

May 11, 2015 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	55-85	9	7.3	27.4	0.06	0.14/0.62
Brdwlk/Dock	55-85	9	6.6	27.4	0.30	0.04/0.18
Dam, downstream	55-85	8	6.8	20.5	0.04	0.01/0.04
Marsh, beavr ldge	55-85	7	6.6	13.7	0.02	0.01/0.04
Marsh, Gessing Pt.	55-85	6	6.6	20.5	0.04	0.01/0.04
Vernal Pool, Post 4	55-85	4	5.6	6.8	0.50	0.01/0.04

Notes

Weather: cloudy to sunny, 55-85 °F; no rain in since 04/20-21/2015 (i.e., no rain for ~ 3 weeks)
 Brd Brk at NFR: beaver dam downstream has backed water up to lower third of NFR culvert
 Boardwalk/Canoe Launch: flooded; water level of lake ~15" above normal due to obstruction of dam drain; sample taken from marsh adjoining boardwalk, ~200 feet from dock
 Dam: sample taken from below dam; water level high due to obstruction of dam drain, lake level about 4" below drain grate
 Marsh (beaver lodge): beaver lodge flattened, water level low in marsh; sample from main channel of stream (north side of marsh)
 Marsh (Gessing Pt.): water level normal; ~dozen *Phragmites* stalks visible in stands 1 & 2

November 2, 2015 (Williams, Zimmermann)

Location	T (°F)	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1
Brd Brk, E of NFR	50-60	12	7.2	20.5	0.08	0.23/1.01
Brdwlk/Dock	50-60	11	7.0	20.5	0.04	0.02/0.09
Dam, downstream	50-60	11	6.9	13.7	0.04	0.01/0.04
Marsh, S of Cooke's	50-60	10	6.8	13.7	0.04	0.01/0.04
Marsh, Gessing Pt.	50-60	6	6.5	13.7	0.04	0.01/0.04

Notes

Weather: sunny, 50-60 °F; no rain in past 24 hr; water temp at dock 48 °F
 Brd Brk at NFR: beaver dam downstream has backed water up to lower third of NFR culvert
 Boardwalk/Canoe Launch: water level normal; sample taken off dock
 Dam: sample taken from below dam
 Marsh (south of Cooke's Pasture): beaver lodge has disappeared, water level has significantly risen since spring (beaver dam repaired?); sample from main channel
 Marsh (Gessing Pt.): water level normal; ~two dozen *Phragmites* stalks observed upstream

May 9, 2016 (Williams, Zimmermann)

Location	T (°F) amb.	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)	T (°F) H ₂ O
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1	
Brd Brk, E of NFR	54-62	11	7.3	13.7	0	0.07/0.31	58
Brdwlk/Dock	54-62	10	7.3	13.7	0	0.02/0.09	58
Dam, downstream	54-62	9	7.2	27.4	0	0	60
Marsh, beavr ldge	54-62	9	7.2	20.5	0	0	63
Marsh, Gessing Pt.	54-62	9	6.4	20.5	0	0	56
Vernal Pool, Post 4	54-62	3	5.6	6.8	0.52	0	55

Notes

Weather: sunny, 54-62 °F; continuous rain in previous 8 days 05/01-08/2016
 Brd Brk at NFR: beaver dam downstream has backed water up to lower third of NFR culvert
 Boardwalk/Canoe Launch: lake water level normal; sample taken off dock
 Dam: sample taken from below dam
 Marsh (former beaver lodge): beaver lodge flattened, water level high in marsh; 2 of 3 flow pipes in beaver "berm" covered; sample from main channel
 Marsh (Gessing Pt.): water level normal; ~30 *Phragmites* stalks visible upstream

November 13, 2016 (Williams, Zimmermann, Petersen, Miskiv)

Location	T (°F) amb.	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)	T (°F) H ₂ O
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1	
Brd Brk, E of NFR	45-55	11	7.2	34.2	0.1	0.31/1.36	50
Brdwlk/Dock	45-55	13	7.2	34.2	0.04	0.19/0.84	48
Dam, downstream	45-55	14	7.2	27.4	0.04	0	48
Marsh, beavr ldge	45-55	16	6.8	27.4	0.06	0	48
Marsh, Gessing Pt.	45-55	14	6.4	34.2	0	0	42

Notes

Weather: sunny, 45-55 °F; no significant rain in previous week
 Brd Brk at NFR: water level within normal range
 Boardwalk/Canoe Launch: lake water level normal; sample taken off end of old boardwalk
 Dam: sample taken from pool created by beavaer dam below dam
 Marsh (former beaver lodge): vestige of beaver lodge no longer visible, water level below flow pipes in beaver "berm"; sample from edge of marsh
 Marsh (Gessing Pt.): water level normal; ~15 *Phragmites* stalks visible upstream

November 14, 2017 (Williams, Zimmermann, Johnson)

Location	T (°F) amb.	Dissolved O ₂ (ppm)*	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)	T (°F) H ₂ O
Ideal Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1	
Brd Brk, E of NFR	32-40	11	7.2	27.4	0	0.27/1.19**	-
Brdwlk/Dock	32-40	12	7.2	27.4	0	0.20/0.88**	-
Dam, lake	32-40	10	7.0	20.5	0	0	-
Dam, downstream	32-40	11	7.0	20.5	0	0	-
Marsh, beavr lodge	32-40	11	6.8	20.5	0.	0	-
Marsh, Gessing Pt.	32-40	12	6.4	13.7	0.1	0	-

Notes

Weather: cloudy, 32-40 °F; no significant rain in past 24 h; <1" in past week

Brd Brk at NFR: water level within normal range

Boardwalk/Canoe Launch: lake water level normal; sample taken off end of **new** boardwalk

Dam, lake: sample taken from edge of lake north of dam

Dam, downstream: sample taken from pool created by beaver dam below dam

Marsh (former beaver lodge): vestige of beaver lodge no longer visible, water level below flow pipes in beaver "berm"; sample from edge of marsh

Marsh (Gessing Pt.): water level normal; 3 clumps of 10-20 *Phragmites* stalks visible upstream

*DO measurement of vigorously shaken (i.e., oxygenated) sample was 12 ppm

**average of two measurements

2017-11-15

May 22, 2018 (Williams, Zimmermann)

Location	T (°F) amb.	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm) Hach EAL	Nitrate (ppm N/NO ₃)	T (°F) H ₂ O
Desirable Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1	
Brd Brk, E of NFR	58-65	10	7.3	20.5	0.18 0.401	0.08/0.35	56
Dock	58-65	11	7.0	20.5	0.16 0.383	0	64
Vernal pool	58-65	4	5.6	13.7	0.64 0.869	0	58
Dam, lake side	58-65	11	6.4	20.5	0.24 0.248	0	68
Marsh, beavr lodge	58-65	10	6.5	20.5	0.22 0.083	0	66
Marsh, Gessing Pt.	58-65	9	6.8	13.7	0.16 0.104	0	61

Notes

Weather: cloudy, 58-65 °F; no significant rain in past 24 h; ~1" in past week

Brd Brk at NFR: water level within normal range

Dock: lake water level normal; sample taken off new dock

Dam, lake: sample taken from edge of lake north of dam

Marsh (former beaver lodge): beaver lodge no longer visible, water level below flow pipes in beaver "berm"; sample from edge of marsh

Marsh (Gessing Pt.): water level normal

Phosphate: Hach is inorganic phosphate concentration measured with Hach kit;

EAL is inorganic and organic phosphorous concentration measured atUMass Environmental Analysis Laboratory expressed as phosphate equivalents

2018-05-27

November 29, 2018 (Williams, Zimmermann)

Location	T (°F) amb.	Dissolved O (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm)	Nitrate (ppm N/NO ₃)	T (°F) H ₂ O
Desirable Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1	
Brd Brk, E of NFR	37-40	13	6.9	34.2	0	0.13/0.55* *	44
Dock	37-40	12	6.8	27.4	0	0.17/0.73* *	42
Vernal pool	37-40	10	5.3	27.4	0.4	0	37
Dam, lake side	37-40	10	6.6	13.7	0.24	0	41
Marsh, beavr lodge	37-40	11	6.3	20.5	0	0	42
Marsh, Gessing Pt.	37-40	11	6.4	20.5	0	0	41

Notes

Weather: cloudy, 37-40 °F; no significant rain in past 24 h; ~1.8" in past week

Brd Brk at NFR: water level high (~□ height of culvert tunnel)

Dock: lake water level normal; sample taken off new dock

Dam, lake: sample taken from edge of lake north of dam

Marsh (intake for pump, upstream from former beaver lodge): water level high, roughly equal to height of flow pipes in beaver "berm"; sample from edge of marsh

Marsh (Gessing Pt.): water level several inches higher than usual

**average of two measurements

2018-11-30

June 26, 2019 (Williams, Zimmermann)

Location	T (°F) amb.	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm PO ₄ ⁱ)	Nitrate (ppm N/NO ₃)	T (°F) H ₂ O
Desirable Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1	
Brd Brk, W of NFR	74-86	9	7.1	34.2	0.18	0.20/0.88	66
Dock	74-86	11	7.1	41.0	0.14	0	72
Vernal pool	74-86	5	5.7	13.7	0.54	0	68
Dam, lake side	74-86	7	6.7	34.2	0.1	0	75
Marsh, pump intake	74-86	7	6.6	20.5	0.1	0	75
Marsh, Gessing Pt.	74-86	7	6.4	20.5	<0.1	0	72

Notes

Weather: sunny, 74-86 °F; 0.65" in past 24 h; ~2" in past week

Brd Brk at NFR: water level within normal range

Dock: lake water level normal; sample taken off new dock

Dam, lake: sample taken from edge of lake north of dam

Marsh (intake for pump, upstream from former beaver lodge): water level high, roughly equal to height of flow pipes in beaver "berm"; sample from edge of marsh

Marsh (Gessing Pt.): water level normal

2019-06-27

November 21, 2019 (Williams, Zimmermann)

Location	T (°F) amb.	Dissolved O ₂ (ppm)	pH	Alkalinity (ppm CaCO ₃)	Phosphate (ppm PO ₄ ⁱ)	Nitrate (ppm N/NO ₃)	T (°F) H ₂ O
Desirable Range		>6	6-7.5	100-200	<0.1	<0.1/<0.1	
Brd Brk, E of NFR	36-44	12	6.8	20.5	0.28	0.38/1.67	45
Dock	36-44	14	6.9	3D4.2	0.08	0.22/0.97	46
Dam, lake side	36-44	14	7.0	34.2	0.08	0	44
Marsh, pump intake	36-44	13	6.8	34.2	0.12	0	42
Marsh, Gessing Pt.	36-44	15	6.8	13.7	0.10	0	40

Notes

Weather: sunny, 35-44 °F; no significant rain in past 24 h

Brd Brk at NFR: water level normal

Dock: lake water level normal; sample taken off new dock

Dam, lake: sample taken from edge of lake north of dam

Marsh (intake for pump, upstream from former beaver lodge): water level normal, sample from edge of marsh

Marsh (Gessing Pt.): water level normal