

LAKE: ECHO L (CROTCHED P) (VLMP 11 )  
 TOWN: FAYETTE  
 COUNTY: KENNEBEC

MIDAS: 5814  
 TRUE BASIN: 1  
 SAMPLE STATION: 1

WHOLE LAKE INFORMATION

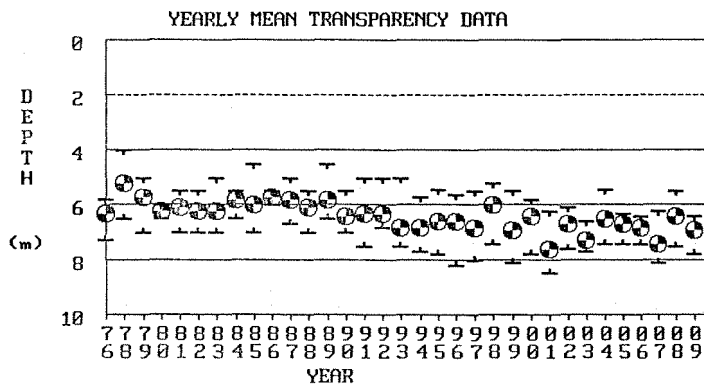
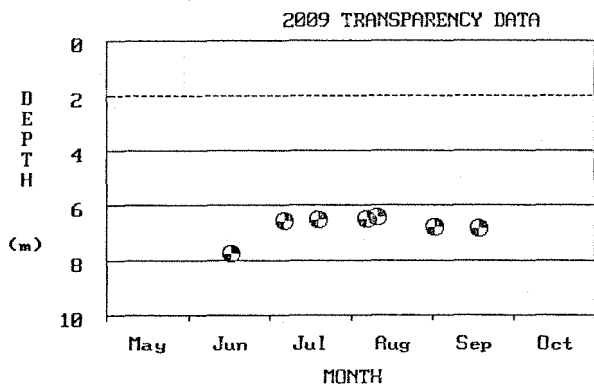
MAX. DEPTH: 36 m. (117 ft.)  
 MEAN DEPTH: 6 m. (21 ft.)  
 DELORME ATLAS #: 12  
 USGS QUAD: FAYETTE  
 IFW REGION B: Belgrade Lakes (Augusta)  
 IFW FISH. MANAGMENT: Warmwater & Coldwater

TRUE BASIN CHARACTERISTICS

SURFACE AREA: 420.0 ha. (1037.8 a.)  
 FLUSHING RATE: 1.91 flushes/yr.  
 VOLUME: 28534896.0 cu. m. (23147 ac.-ft.)  
 DIRECT DRAINAGE AREA: 21.75 sq. km. (8.40 sq. mi.)

PLEASE NOTE THE FOLLOWING: The SAMPLE STATION # refers to the location sampled. The term TRUE BASIN is used to define areas within a lake that are separated by shallow reefs or shoals and therefore function as separate lakes. There are approximately 50 lakes in the state that have more than 1 True Basin. True Basin Characteristics are now being included in the first section of these reports to enable users of the Phosphorous Loading Methodology to better evaluate the data. If there is no data for a particular True Basin, True Basin Characteristics must be obtained from the DEP. ECHO L (CROTCHED P) has 1 True Basin(s).

**SECCHI DISK TRANSPARENCY GRAPHS:**



Note: 2009 graphs may indicate multiple readings taken on a given day.

**SUMMARY OF CHEMICAL AND TROPHIC STATE PARAMETERS:**

[\* indicates that Secchi disk was visable at bottom of lake (or one reading used in calculation was visable)].

YEAR	MEAN COLOR	MEAN pH	MEAN ALK	MEAN COND.	TOTAL PHOS. MEANS (ppb)				SECCHI DISK (m.)				CHLOROPHYLL A(ppb)			TROPIC STATE INDICES			
	(SPU)		(mg/l)	(uS /cm)	EPI	SURF	BOT.	PRO.	MIN.	MEAN	MAX.	N	MIN.	MEAN	MAX.	C	G	SEC	CHL
1976	-	-	-	-	8	-	-	-	5.8	6.3	7.3	5	1.6	3.2	10.0	36	-	37	41
1978	-	-	-	-	-	-	-	-	4.0	5.2	6.5	5	-	-	-	-	-	46	-
1979	10	6.80	18.0	52	4	-	4	-	5.0	5.7	7.0	5	1.9	1.9	1.9	-	-	42	-
1980	-	-	-	-	-	-	-	-	6.0	6.2	6.5	4	-	-	-	-	-	-	-
1981	-	-	-	-	-	-	-	-	5.5	6.1	7.0	6	-	-	-	-	-	38	-
1982	15	6.50	10.0	45	6	-	7	-	5.5	6.2	7.0	6	2.8	2.8	2.8	-	-	37	-
1983	-	-	-	-	-	-	-	-	5.0	6.2	7.0	6	-	-	-	-	-	37	-
1984	-	-	-	-	-	-	-	-	5.5	5.8	6.5	4	-	-	-	-	-	-	-
1985	10	7.00	9.0	36	4	-	6	-	4.5	6.0	7.0	4	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	5.5	5.7	6.0	6	-	-	-	-	-	42	-
1987	-	-	-	-	-	-	-	-	5.0	5.8	6.7	5	-	-	-	-	-	41	-
1988	-	6.40	-	-	9	-	9	-	5.5	6.1	7.0	5	-	-	-	-	-	38	-
1989	-	-	-	-	-	-	-	-	4.5	5.8	6.5	6	-	-	-	-	-	41	-
1990	-	-	-	-	-	-	-	-	5.5	6.4	7.0	5	-	-	-	-	-	36	-
1991	-	-	-	-	-	-	-	-	5.0	6.3	7.5	6	-	-	-	-	-	37	-

LAKE: ECHO L (CROTCHED P) (VLMP 11 )  
 TOWN: FAYETTE  
 COUNTY: KENNEBEC

MIDAS: 5814  
 \*TRUE BASIN: 1  
 \*SAMPLE STATION: 1

SUMMARY OF CHEMICAL AND TROPHIC STATE PARAMETERS:

YEAR	MEAN	MEAN	MEAN	MEAN	TOTAL PHOS. MEANS (ppb)				SECCHI DISK (m.)				CHLOROPHYLL A(ppb)			TROPIC STATE INDICES			
	COLOR (SPU)	pH	ALK (mg/l)	COND. (uS /cm)	EPI CORE	SURF GRAB	BOT. GRAB	PRO. GRAB	MIN.	MEAN	MAX.	N	MIN.	MEAN	MAX.	C	G	SEC	CHL
1992	-	-	-	-	-	-	-	-	5.0	6.3	6.8	6	-	-	-	-	-	37	-
1993	-	-	-	-	-	-	-	-	5.0	6.8	7.5	5	-	-	-	-	-	33	-
1994	-	-	-	-	6	-	-	-	5.7	6.8	7.7	5	-	-	-	-	-	33	-
1995	-	-	-	-	-	-	-	-	5.4	6.6	7.8	5	-	-	-	-	-	34	-
1996	-	-	-	-	-	-	-	-	5.6	6.6	8.2	5	-	-	-	-	-	34	-
1997	10	7.29	13.0	49	6	-	-	-	5.5	6.8	8.0	5	1.4	1.4	1.4	-	-	33	-
1998	-	-	-	-	-	-	-	-	5.2	6.0	7.4	6	-	-	-	-	-	39	-
1999	-	-	-	-	-	-	-	-	5.5	6.9	8.1	5	-	-	-	-	-	32	-
2000	-	-	-	-	-	-	-	-	5.8	6.4	7.8	5	-	-	-	-	-	36	-
2001	-	-	-	-	-	-	-	-	6.2	7.6	8.5	5	-	-	-	-	-	28	-
2002	14	-	13.0	53	7	-	5	-	6.1	6.7	7.6	5	2.4	2.5	2.5	-	-	34	-
2003	-	-	-	-	-	-	-	-	6.6	7.3	7.7	3	-	-	-	-	-	-	-
2004	-	-	-	-	-	-	-	-	5.4	6.5	7.4	4	-	-	-	-	-	-	-
2005	-	-	-	-	-	-	-	-	6.3	6.7	7.4	5	-	-	-	-	-	34	-
2006	-	-	-	-	-	-	-	-	6.4	6.8	7.4	3	-	-	-	-	-	-	-
2007	12	7.31	10.2	46	-	3	-	-	6.2	7.4	8.1	4	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-	5.5	6.4	7.5	5	-	-	-	-	-	36	-
2009	-	-	-	-	-	-	-	-	6.4	6.9	7.8	4	-	-	-	-	-	-	-
UMMARY:	12	6.75	12.2	47	6	3	6	-	4.0	6.4	8.5	33	1.4	2.4	10.0	36	-	37	41

LATE SUMMER TEMPERATURE / DISSOLVED OXYGEN PROFILES:

DEPTH m	SAMPLE DATE															
	08/18/08		08/28/08		09/03/08		09/22/08		08/06/09		08/10/09		09/01/09		09/17/09	
	°C	ppm	°C	ppm	°C	ppm	°C	ppm	°C	ppm	°C	ppm	°C	ppm	°C	ppm
0.0	23.3	8.3	22.5	8.2	22.9	8.3	19.0	8.5	24.5	8.2	22.3	8.2	22.6	7.9	20.2	8.1
1.0	23.3	8.3	22.3	8.2	22.8	8.3	18.7	8.4	24.3	8.2	22.1	7.9	22.0	8.2	20.0	8.1
2.0	23.2	8.3	22.2	8.2	22.4	8.3	18.4	8.4	24.2	8.2	21.2	8.2	21.8	7.9	19.9	8.1
3.0	23.0	8.3	22.1	8.2	22.2	8.3	18.3	8.3	24.1	8.2	21.1	8.0	21.7	7.9	19.8	8.1
4.0	22.6	8.2	22.1	8.2	21.9	8.3	18.3	8.3	24.0	8.0	21.1	8.1	21.6	7.9	19.8	8.1
5.0	21.5	7.7	21.8	8.0	21.7	8.2	18.2	8.3	21.3	7.1	20.9	7.8	21.5	7.9	19.8	8.1
6.0	20.3	7.5	20.5	7.0	21.3	7.7	18.2	8.3	19.1	5.7	20.8	7.8	20.9	6.2	19.7	8.2
7.0	18.2	8.0	15.7	5.9	17.3	5.7	18.2	8.2	17.9	4.8	20.1	4.5	18.2	2.9	19.7	7.9
8.0	13.2	6.6	13.1	4.7	13.8	4.6	17.6	7.4	15.1	3.7	15.9	1.0	15.8	1.6	16.8	1.4
9.0	11.5	4.4	11.7	3.7	12.0	3.2	13.3	2.2	13.0	3.1	14.2	1.0	14.4	1.6	14.2	0.8
10.0	10.7	3.4	10.1	3.9	10.5	3.6	10.6	2.1	12.3	3.4	12.9	1.9	13.5	2.0	12.7	1.6
11.0	9.6	4.7	9.0	4.7	9.2	4.0	9.8	3.0	10.6	5.6	11.4	3.2	11.5	3.9	11.1	3.6
12.0	8.8	5.8	7.9	5.4	8.1	5.0	8.9	3.7	9.2	6.7	10.1	4.9	9.6	5.7	9.9	4.9
13.0	7.8	6.1	7.3	5.6	7.5	5.2	7.8	4.3	8.9	6.9	9.1	5.6	8.4	6.2	8.3	5.3
14.0	7.2	6.5	7.0	6.1	7.3	5.4	7.3	4.7	7.6	7.4	8.0	5.9	7.5	6.6	7.8	5.8
15.0	6.7	6.7	6.8	5.7	7.0	5.7	7.0	5.1	7.3	7.4	7.6	5.7	7.3	6.2	7.6	6.0
16.0	6.6	6.5	6.7	5.7	6.8	5.6	6.9	5.1	7.2	7.2	7.3	5.6	7.2	6.2	7.3	5.9
17.0	6.5	6.4	6.6	5.8	6.7	5.5	6.8	4.8	7.0	7.4	7.1	5.9	7.1	6.4	7.2	5.9
18.0	6.4	6.3	6.6	5.8	6.6	5.5	6.7	4.8	7.0	7.3	7.0	6.1	7.0	6.6	7.1	6.0
19.0	6.4	6.3	6.5	5.7	6.5	5.5	6.7	4.7	6.9	7.3	6.9	6.0	6.9	6.4	7.0	5.9
20.0	-	-	-	-	-	-	-	-	6.8	7.3	6.8	6.0	6.9	6.3	6.9	6.0
21.0	6.3	6.3	6.4	5.8	6.5	5.5	6.5	4.9	6.7	7.4	6.7	6.0	6.8	6.3	6.8	5.8



## WATER QUALITY SUMMARY

### **Echo Lake (Crotched Pond), Fayette**

Midas: 5814, Basin: Primary, Sample Station 1

The Maine Department of Environmental Protection (ME-DEP) and the Volunteer Lake Monitoring Program (VLMP) have collaborated in the collection of lake data to evaluate water quality, track algal blooms, and determine water quality trends. This dataset does not include data for bacteria, mercury, or nutrients other than phosphorus.

Water quality monitoring data have been collected from Echo Lake since 1976. During this period, 6 years of basic chemical information were collected in addition to Secchi Disk Transparencies (SDT). In summary, the water quality of Echo Lake is considered to be above average based on measures of SDT, total phosphorus (TP), and Chlorophyll-a (Chla). The potential for nuisance algal blooms on Echo Lake is low.

Water Quality Measures: Echo is a non-colored lake (average color 12 SPU) with an average SDT of 6.3m (20.7ft). The range of water column TP for Echo Lake is 4-9 parts per billion (ppb) with an average of 6 ppb, while Chla ranges from 1.4-10.0 ppb with an average of 2.4 ppb. Recent dissolved oxygen (DO) profiles show no DO depletion in deep areas of the lake. The potential for TP to leave the bottom sediments and become available to algae in the water column (internal loading) is low. Oxygen levels below 5 parts per million stress certain cold water fish, and persistent loss of oxygen may eliminate or reduce habitat for sensitive cold water species.

See the ME-DEP *Explanation of Lake Water Quality Monitoring Report* for measured variable explanations. Additional lake information can be found on the Internet at <http://www.pearl.maine.edu> and/or <http://www.maine.gov/dep/blwq/lake.htm>, or telephone the ME-DEP at 207-287-3901 or the VLMP at 207-783-7733.

Filename: echo5814, Revised: 12/2004, By jm