SKINEQUIT POND SITUATION REPORT- 2007

SOLARBEE ACTIVITY

ACTIVITY

4/5/2007	Installed and running.
6/20/2007	Start of intermittent brief shutdowns totaling approximately 24 hours of lost operation in June.
7/10/2007	Unit off full 24 hours.
7/11/2007	Solarbee technicians moved unit about 100' north toward deepest water. Unit running normally after being reprogrammed. Intake tube dropped from 6' to 7'.
7/12/2007 to 7/27/2007	On for a day or two and off for a day or two. Total off time: 10.5 days.
7/28/2007	Solarbee installed new controller. Unit has run continuously since.

SHUTDOWN SUMMARY

May	0
June	Approximately 1 day
July	10.5 days
Aug	0
September	0

WATER QUALITY
(SECCHI DISK READINGS IN FEET)

4/5/2007 to 6/9/2007

Clarity averaged over 6' for this period, ranging from 4.5' in early April to 8' in early May.

There is no comparable data available for this period from prior years. General impressions around the pond: best early spring clarity we've seen in years.

6/9/2007 to 7/19/2007

Clarity climbed from about 5' in early June to 8' by 7/19/2007, averaging just over 6'.

Prior year comparisons (feet):

2007	6
2006	3.5
2005	6
2004	4
2003	5
2002	7

7/19/2007 to 9/18/2007

Clarity dropped steadily every week from 8' on 7/19/2007 to 15" on 9/18/2007, with weekly losses ranging from 2" (8/14 to 8/21) to almost 24" (8/21 to 8/28). Most weeks lost about 1' of visibility.

9/29/2007 Back to to 2 feet
10/13/2007 Back to 3.9 feet

Prior year comparisons July- Sept. (feet):

2007	4.5	Declining after 7/19/2007
2006	4.5	Declining after 8/16/2006
2005	5	Declining after 7/20/2005
2004	4.5	Erratic
2003	6.5	Flat through 9/3/2003
2002	6	Declining after 8/7/2002
2001	6	Flat (limited data)

Summary:

- Very good clarity for April-May
- Better than average clarity for June and July
- About average in the first half of August but declining to below average clarity in September, improving in October

ALGAE ACTIVITY

7/31/2007 First noticeable algae—dark green floating 1/8" to 1/2" clumps.

8/1/2007 By next day, algae found floating all over pond 6" to 9" apart and from surface down to 12" to 15"

Call to Solarbee (Joel Bleth). Suspected to be blue-green algae (cyanobacteria). Algae alert issued to pond residents.

8/2/2007 Sent sample to Solarbee (Chris Knud-Hansen). Algae beginning to disappear.

8/3/2007 No visible algae.

8/6/2007 Sample confirmed to be two varieties of cyanobacteria (blue-green algae):

1. Oscillatoria
2. Microcystis

8/11/2007 Some floating blue-green algae early AM; not visible by 11:30 AM.

8/12/2007 to 8/28/2007 Floating algae appear and disappear. Difficult to get sample. Coffee filter shows no hint of algae.

Occasional brownish/black masses (2" to 6" in diameter) found floating 30' to 100' off the east and north side of the pond. Dissolve into small bits if touched.

These match closely the sediment samples taken from the bottom of the pond by Heinz Proft (Assistant Harbor Master) for analysis. The samples are gelatinous, grainy, and just slightly heavier than water.

8/29/2007 Sent water sample to Solarbee; analyzed on 8/30

- Found no blue-green algae
- A few small round flagellates and other chlorophytes
- Remnants of biological decomposition (various whitish substances visible with the naked eye)

Solarbee suggested turbidity and green color was the result of:

- Increased flocculent material from bottom sediment being circulated as fall turnover begins.
- The suspended white substance is picking up reflections from sun on surrounding trees.
- Solarbee statement: "Algae growth/biomass is likely not the reason for decreased water clarity or the apparent green color."
- Floating brown masses could be bottom sediment harboring the oscillatoria algae, which can live deeper in the water column. As it generates oxygen, it becomes more buoyant, breaks loose, and rises to the surface.

9/10/2007	Floating algae in strings and thick covering photographed off Thompson's and Seidel's dock. Photos sent to Solarbee. Disappeared by the next day but overall clarity seemed degraded.
9/12/2007 to Present	Small bits of algae come and go but not possible to collect sample large enough to analyze.

WEATHER

LOCAL RAINFALL

	Total Rainfall (inches)	Max 2-Day Rainfall (inches)	Date
May	0.7	0.4	5/21
June	1.4	1.1	6/4-6/5
July	1.9	.5	7/9-710
August	0.1	0.1	8/18
Sept (through 9/20)	1.6	1.5	9/15-9/16

Source: Weather-Warehouse.com (Chatham Airport)

NIGHTTIME TEMPERATURE DROPS (degrees)

8/16	70
8/17	66
8/18	58
8/19	51
8/20	57
8/21	59
8/22	61

8/28	60
8/29	59
8/30	N/A
8/31	66
9/1	57
9/2	57
9/3	63
9/4	N/A
9/5	54
9/6	N/A
9/7	67

9/11	65
9/12	57
9/13	54
9/14	54
9/15	51
9/16	47
9/17	47
9/18	57
9/19	60

OBSERVATIONS

- Dry summer with no rain over 1.5" at a time.
- Unusually low temperatures in mid-August

SKINEQUIT SOLARBEE QUESTIONS

Could the 10-day shutdown of the Solarbee have contributed to the steadily declining clarity beginning July 27?

Could the good clarity in the early spring have caused a deep-level oscillatoria bloom which then surfaced later in the season as the fall turnover started? Is there any data on this in other ponds? How can this cycle be interrupted to prolong clarity?

The early-September sample showed no cyanobacteria according to Solarbee testing in Colorado. Could the shipment time and conditions affected the sample? Do we need a local test capability?

The Solarbee objective is defined by Solarbee as cyanobacteria control. If our primary problem is something else, at least in late summer, what function can the Solarbee serve?

The dry summer and almost constant specific-conductance tests done by Solarbee suggest that a nutrient surge from outside the pond is probably not a cause of the several blooms and the decline in water clarity. True? The more frequent appearance of floating bottom material suggests that the sediment bed may have been a major contributing factor. How can the Solarbee help counteract this effect?