

College Creek water quality, SAV, & mussel monitoring update, September, 2008
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Background:

Volunteers Jake & Lora Bleacher have been sampling monthly since April in a canoe provided by St. Johns College, using a NOAA meter that I loan them each month. The sites they sample are the same as those sampled by an SHA contractor from 2003-2007 (see map below). Cecily Stepe at USNA has added a 6th site (CC6) to the 5 that SHA sampled, where she sometimes samples daily. Jake & Lora visited CC6 twice, in April & May, but found it added too much time to continue sampling there, and it can be hard to reach by canoe on breezy days. This update does not include Cecily's data from CC6 but it will be included in future updates. Volunteers and agency staff that I organized visited the creek to do SAV and/or mussel surveys on 5/19/08, 7/14/08, 7/24/08, & 9/29/08.

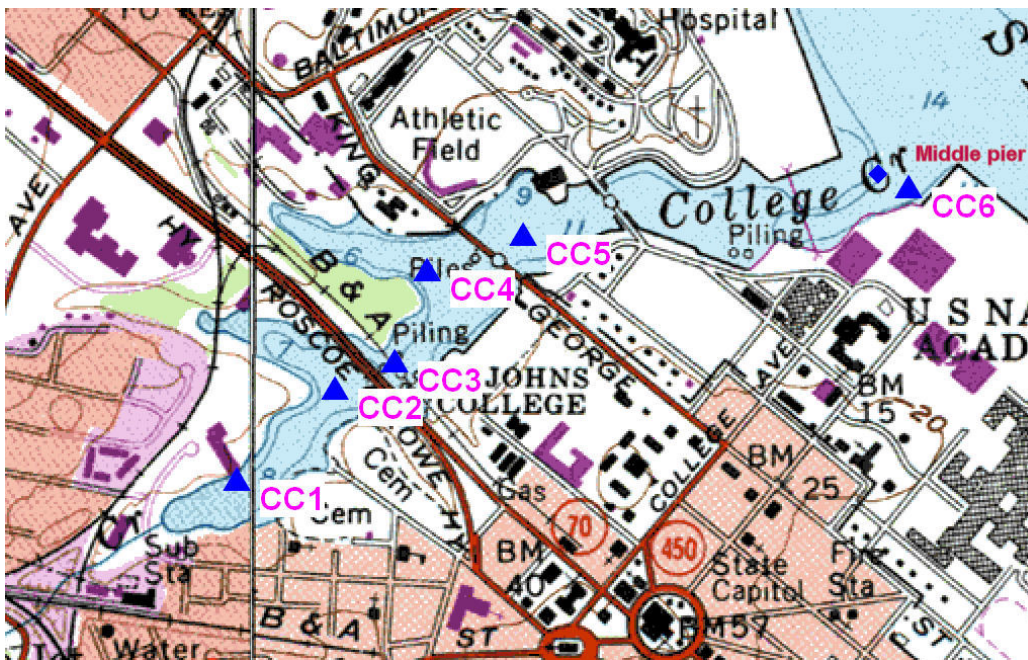


Fig. 1. Water quality monitoring stations in College Creek sampled by SHA contractors and FOCC volunteers (CC1-CC5) and by USNA staff and students (CC6).

2008 results through September

Table 1 below lists the 2008 DO & clarity status by site. The Dissolved oxygen (DO) status is complete (Jun-Sep only) while the clarity status will be revised with October data (Apr –Oct). DO status is the percent of June-September observations above (better than) the state standard, 5 mg/l, for both surface and bottom samples. The clarity (Secchi depth) status is the percent of April-October observations above (better than) the target to allow SAV growth, which is 0.97 m for medium salinity waters such as College Creek.

DO levels are affected by a variety of factors, but they generally are worse at (1) sites farther up creeks in urbanized areas, (2) deeper sites, and (3) sites with black, highly organic mud on the bottom, which tends to use up DO. The 2008 DO status was best at 2 sites near the middle of the creek, CC3 and CC4. While both of these sites, along with

CC5, are the deepest sites in the creek at about 3 meters, neither had black mud on the anchor when I pulled it up. I saw this mud at the 2 upper sites, CC1 and CC2, which are a bit shallower (1.7 and 2.5 m on 9/29), and also at the lowest site we sample on the creek, CC5.

TABLE 1. Dissolved Oxygen and water clarity status for College Creek sampling sites, 2008 (clarity data are preliminary).

2008 status	Incomplete
Site DO > 5	Clarity>0.97
CC1 25%	33%
CC2 38%	33%
CC3 50%	17%
CC4 50%	17%
CC5 38%	50%

Clarity levels tend to be lower (worse) as you move up urbanized creeks, and Table 1 shows this pattern to some extent, in that the lowest site (CC5) had the best clarity status (50%). However, the two uppermost sites, CC1 and CC2, had better much preliminary clarity status (33%) than the two middle sites, CC3 and CC4 (both 17%). There were more dark false mussels near CC1 and CC2 than there were near CC3 and CC4, but I doubt that there were enough mussels to account for this difference.

The DO status can't be compared to the results of SHA-funded sampling done at the same sites from 2003-2007, for two reasons. The SHA contractor did not sample surface DO, and they sampled "bottom" DO at 1.0 m above the bottom, rather than the 0.3 m above the bottom that we used in 2008, and is used in many other sampling protocols for small creeks. The water clarity values can be compared in the two data sets, however. I'll make these comparisons after we have complete 2008 data.

We can also compare the College Creek 2008 data to similar 2008 data from 3 Magothy sites that I sample (Table 2).

TABLE 2. Dissolved Oxygen and water clarity status for Magothy River sampling sites, 2008 (clarity data are preliminary).

2008 status		<i>Complete</i>	<i>Incomplete</i>
Site Name	DO > 5	Clarity>0.97	
M 9 Cattail Ck	31%	8%	
M 10 Old Man Ck	38%	8%	
MR8B Forked Ck	56%	17%	

- The DO status at CC3 & CC4 in College Creek (50%) was better than at the two upper creeks I sample on the Magothy, Cattail and Old Man (31-38%). The Magothy site that is farther downriver, Forked Creek, had slightly better status than any site in College Creek (56%), even though it is deeper than any of them (over 4 m deep).
- The preliminary 2008 clarity status at all sites in College Creek (17-50%) was much better than at the two upper creeks on the Magothy, Cattail and Old Man (both 8%). Both of those creeks had a mahogany tide on all 6 sampling dates from July through

September, and this was not seen in College Creek. The Magothy site that is farther downriver, Forked Creek, had the same clarity status as CC3 & CC4 on College Creek (17%), which had the worst 2008 clarity status in College Creek.

For the latest SAV and mussel observations (from 9/29/08), see <http://thumper-web.vims.edu/bio/sav/wordpress/index.php/archives/314>