

October 19, 2006

Ms. Suzanne Kaufman
Jones Edmunds
730 NE Waldo Road
Gainesville, FL 32641

Re: Betty Rushton's Review of the Sarasota County Pollutant Load Model Monitoring Proposal.

Dear Suzi:

I have completed my review of the "Sarasota County Pollutant Load Model Refinements" and find the monitoring plan adequate and one that if properly implemented and funded should provide useful results. It actually includes two different types of research projects and the final results should probably be presented as two separate reports. I hope you are able to receive funding to adequately sample all the sites listed for the EMC monitoring and also collect data on a yearly basis rather than the six months proposed. Since I am unable to edit and comment on an Adobe document, I have listed my primary concerns below and will mail you my outline with other minor comments.

Drainage Basin Tributary Monitoring:

- Yearly data would be more accurate. Not only are there wide variations between seasons, but also between years. Perhaps the between year variation can be calibrated by comparing with historic rainfall levels. Also a comparison with the literature values you have with the data you collected will be helpful.
- If I understand correctly, rainfall and water level will be measured continuously at the sites chosen and the water level converted to flow using rating curves or any existing weir configurations. This should be adequate, but I hope the rating curve will be developed for the entire range of water levels at the site. Also USGS has reported different flows for the rising limb and falling limb of the hydrograph. I don't know how serious this error would be. I am not familiar with the Flow Tracker (although I have had a good experience with other Sontek equipment), but I have had trouble with other velocity meters not measuring low flow accurately. I would be more concerned with measuring the full range of water depths rather than measuring on a weekly schedule to develop the rating curve.
- Since taking WQ measurements with field equipment is relatively easy, I would take some measurements across the section as well as at different depths. I am thinking about bank erosion and vegetation/algae contamination here.
- Water sample collected mostly during base flow may bias the data. You will not be getting the high concentrations discharged during storms.
- I also have a problem with many of your sites being located at the saltwater-freshwater interface. Once fresh water hits salt water many of your pollutants precipitate or change their chemical composition in other ways. This is often a turbidity zone. If you are trying to get a representative sample from the watershed, this is going to bias your data. You can get some indication from your

alkalinity measurements, but I would suggest that you sample well above the salt water influence to get a representative sample.

- For your selection of constituents, I would suggest COD or TOC instead of BOD which is a holdover from wastewater studies that contain mostly organic matter. Also in addition to TSS also measure SSC, which has been identified as a much better measure by USGS.
- I assume your rainfall WQ samples will be collected immediately after a storm event, not on what has been sitting in the bucket since the last rain event. From the report, it indicates that you have a rain recorder at each site, but that you are only going to collect WQ data from a single rainfall site. There can be a big difference between different locations. You may want to check your rainfall concentrations with some of my rainfall WQ data. I have a lot of it.
- In addition to your flow rate vs water depth, you may want to graph water level vs rain on a monthly basis. This can identify problems with your equipment as well as illicit discharges. I am assuming that the county is collecting continuous measurements on a 15 or 60 minute schedule.
- For your graphical WQ summary, can you also include fecal coliform.
- Be aware that concrete can leach phosphorus and that many structures such as metal road fenders and asphalt leach zinc. Sample upstream of your structures or roads. Don't necessarily pick the easiest sampling site.

Stormwater Runoff EMC Monitoring

- You have chosen an interesting mix of sites. I hope you are successful in getting funding for them all.
- In your land use analysis, how about also including percent impervious and the number of BMPs in the drainage basin.
- River Forest is not a good representation of a LID site. It is large lot zoning and this is not what we want to encourage if our goal is to reduce urban sprawl. The developer is to be commended for not disturbing much soil and keeping existing vegetation including the understory. It would be an interesting site to study and I am predicting it does not get much storm runoff (our goal).
- It may be difficult to get good measurements for some of your sites, especially using the Manning equation which is not a very accurate measurement even under the best of conditions. I question whether you will have enough slope (land elevation difference in the pipe) to use this method successfully. But I agree that it may be the best method available with the funds available. I have also had difficulty measuring low flows with a velocity meter. The Sontek may be more accurate. We had such erratic readings at low flow that the data was worthless until the velocity was about 1.0 ft/sec.
- QA/QC for the labs looks like normal procedures, but what kind of QA/QC in the field. It is important to change the tubing in the samplers at least every six months and a lot more often if the tubing is exposed to sunlight. We collected DI water samples through the equipment before and after changing the tubing. Also test the DI water since we have had problems with that being contaminated.

Memorandum

October 19, 2006

To: Suzanne Kaufman, Jones Edmunds

From: Betty Rushton, Ph.D. Senior Environmental Scientist.

Subject: Time spent reviewing project

I don't think we discussed an hourly rate. Since I am using all of my own equipment and have other out-of-pocket expenses, I think a rate between \$75.00 and \$100.00 per hour seems reasonable. Please adjust this amount to reflect your usual rates, if necessary.

I have spent seven hours reading and analyzing the proposal and writing up the results. I have included my hand written notes with the time spent on each section and these will be mailed to you.

I will be more than happy to visit the sites and offer advice if it seems like my monitoring experience would be helpful. This is an ambitious project and I would like to see that it provides much needed data, carefully collected. So little monitoring is actually ever done.

Thank you for including me in this interesting project.