

**Michael Crotty**

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**From:** Christopher Teaf <cteaf@hswmr.com>  
**Sent:** Wednesday, July 23, 2014 1:22 PM  
**To:** Michael Crotty  
**Subject:** Sampling issues  
**Attachments:** Fig 1a-Surfside Beach.pdf; ATT00001..htm

Mike,

The Draft Sand Sampling & Chemical Analysis Plan that was discussed at the Monday meeting can be modified as appropriate to incorporate some of the comments received from Sand Committee members and from the public. For several reasons, however, I recommend holding off on that revision process for a bit, given uncertainty about the process as it moves ahead.

That Draft Plan specifically was prepared with an intention of being able to compare chemical properties of the Surf Club renourishment sand with chemical properties of nonrenourishment sand that was in place prior to deposition of the Surf Club sand. Such an intent to compare distinct "populations" requires an approach with sufficient statistical power to distinguish the sample populations. That intent was the basis for the relatively large number of proposed samples (60) and sample locations (38) in the Draft Plan.

On the other hand, if a different scientific question is asked, for example "*Are there chemical aspects of the renourishment sand down to about 20 inches below the surface that represent a public health concern*", it is somewhat more straightforward to answer that question with fewer samples. The available statistical methods recommended by Florida DEP and analogous local environmental/health agencies (e.g., Miami-Dade County DERM) are the Florida UCL (FL-UCL) program and/or the USEPA Pro-UCL program. Both programs require a minimum of 10 soil samples, with some additional constraints that apply and that may increase the number of samples needed, to the extent that there are a significant number of non-detect values in the population. Both of those programs can provide information on mean, standard deviation, 95% Upper Confidence Limit (95% UCL) and other parameters. The 17 locations proposed for the Surfside renourishment sand sampling (Figure 1 attached) would be sufficient to make technically defensible decisions concerning the quality of the Surf Club sand that has been placed on Surfside beaches. The analyte groups would include the four (4) as described in the Draft Plan (i.e., RCRA 8 metals, FL-PRO, chlorinated pesticides, and PCBs). Given this alternately posed question, there probably is little value in collecting deep sand samples beneath the renourishment sand. It could be done, but you may want to see whether there is a real interest before pursuing it. It would be trivial to add a few samples to the sample plan.

If there was a question concerning the potential for existing soil/sand to contaminate drinkable groundwater, in some cases it may be appropriate and useful to conduct a test called the Synthetic Precipitation Leaching Test (SPLP), developed as USEPA Method 1312 for that purpose. Given that there is not a potable groundwater question relating to the beach, in my judgment that test would not be instructive. The only potential benefit might be to include a few SPLP samples as an alternative to collecting deeper sand samples. I would not recommend conducting TCLP analysis in the context of the beach sand.

Please give me a call if there is more information that would be useful before your meeting on Tuesday.

Regards,

Chris

