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Specializing in Groundwater and Mining

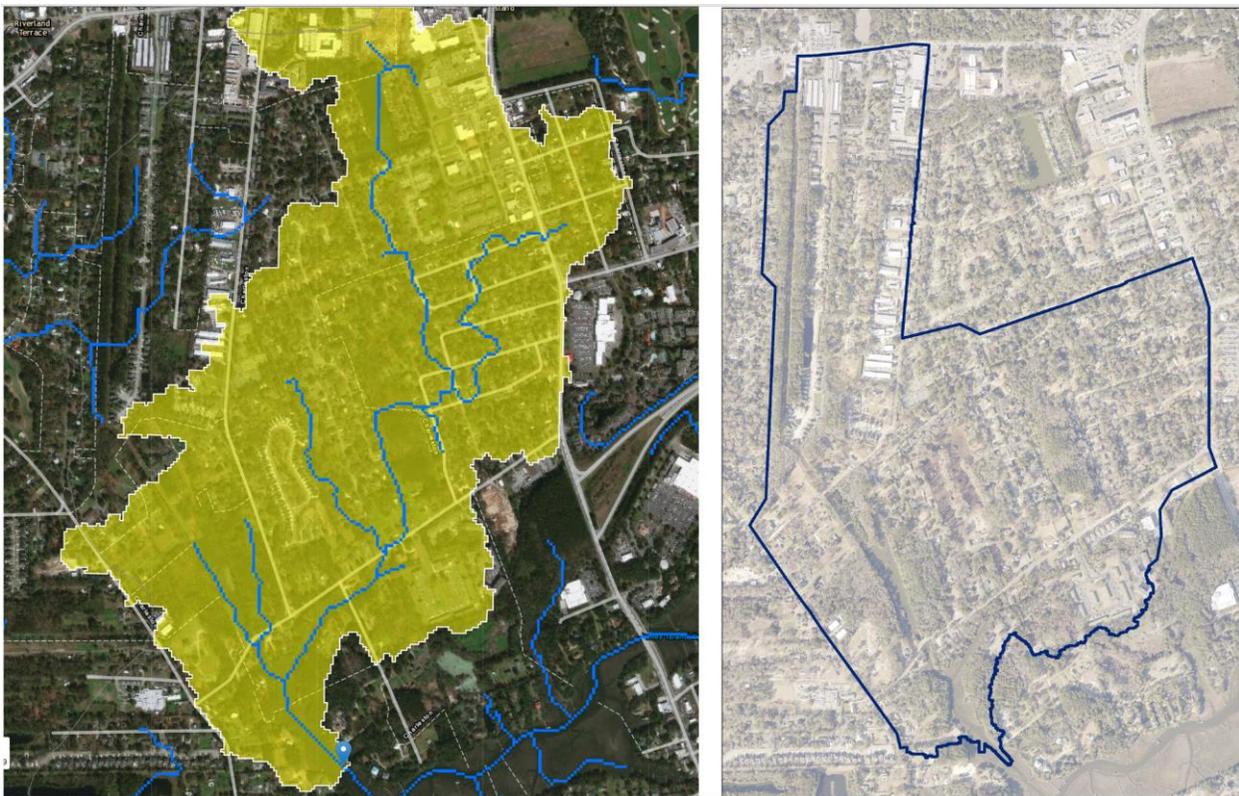
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October 30, 2020

The Honorable Spencer Wetmore
South Carolina House District 115
E-mail: spencer@spencerwetmore.com
Tel: (843) 693-8292

Dear Rep. Wetmore,

I am writing in response to your questions regarding the next steps following our meeting with USGS. I would first like to try your attention to the follow-up e-mail that I received from Jimmy Clark with the image below:



The map on the right is the Central Park watershed as delineated by the AECOM drainage study. The map on the left is the Central Park watershed as delineated by the online USGS tool StreamStats. If StreamStats is correct, then the AECOM stormwater model is so inaccurate that it does not even use the correct boundary to the watershed. In fact, if StreamStats is correct, some



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of the stormwater infrastructure improvements recommended by the AECOM study (Area 4 Improvements) are not even in the Central Park watershed.

I had always known about the StreamStats tool, but I had assumed that the AECOM study would be more accurate because it was based upon the 2017 Lidar data and incorporated small-scale engineering reports and fieldwork. However, this was the response from Jimmy Clark, “While they [AECOM] did use the newer 2017 lidar derived data, I wouldn't expect the difference seen. It's possibly from missing connectors such as culverts or ditches linking the actual drainage system. Though far from perfect, we took great pains to accurately account for these connectors as part of our 2014-2018 study with the SCDOT to implement StreamStats for SC. Also note the part of their drainage area shown in the NW quadrant of their study area map draining to James Island Creek actually is showing up in StreamStats as being part of the Stono River drainage area.”

I did not know about the 2014-2018 joint SCDOT/USGS study to implement StreamStats for South Carolina. AECOM apparently did not know about this either because it would have been much cheaper and more accurate for them to rely on StreamStats instead of the engineering reports from the consultants for the developers. The same would apply to Seamon Whiteside, the consultants for the proponents of the Central Park development.

This is why I am very hesitant to charge forward with constructing stormwater improvements based on the recommendations of the AECOM study without quantitative verification of the AECOM stormwater model and without a method of quantitative evaluation of the outcomes of the stormwater improvements.

Along the same lines, we have previously discussed my confusion as to what asset the City and County of Charleston own that is called the “AECOM stormwater model.” That is, I have been confused as to the City and County’s ability to modify the AECOM stormwater model, for example, by replacing the proposed Central Park development with the current configuration of forest and wetlands. Based on my reading between the lines of various responses by Matt Fountain at the neighborhood meetings, my current understanding is that the City and County do not possess any computational asset. In other words, only AECOM has the stormwater model, and the City and County have only the recommendations from AECOM that are based on their stormwater model.

In terms of stream stage monitoring, the ideal solution would be to partner with SCDOT and USGS. This was my understanding from our meeting with USGS: The cost of installation of a stream gage would be \$15,000, which would be covered by USGS. The annual operating cost of \$7000 would be funded by a local partner. USGS has been partnering with SCDOT for the operation of stream gages. SCDOT might have some leftover funding because they might have



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been funding some stream gages that they no longer need. It seems to me that we should discuss this possibility with SCDOT before doing anything else.

I am addressing this comment of yours: “My impression is that USGS typically installs much higher-tech gauges than we need for local flooding issues.” That is not correct. In fact, there is nothing high-tech at all about the stream gages that are installed by USGS for routine stream stage monitoring. All of the same equipment can be purchased from Rickly Hydrological. I have worked with many communities that have contracted with one-man consulting companies for streamflow monitoring.

What USGS offers is their reputation, organization and manpower. These would be the advantages of collaborating with USGS:

- 1) USGS has been globally recognized as the leading experts in streamflow monitoring for at least 150 years.
- 2) The quality control by USGS is first-rate.
- 3) The inspection and maintenance of the stream gage would be first-rate.
- 4) All of the data would be fully integrated with the National Water Information Service.

Whether all of the above matters depends upon what will ultimately be done with the data. For example, if the data were going to be used in a legal case, it would certainly help if the data were collected by USGS.

Now at some point the City of Charleston Department of Stormwater Management should be brought into this discussion. Certainly, I would like the Department to use the stream gage monitoring data for model verification and for evaluating the outcomes of improvements. There would need to be some cooperation with the Department in terms of where stream gages might be placed and where the Department plans to carry out stormwater infrastructure improvements. Of course, I would like the Department to commit to not destroying stream gages in the course of infrastructure maintenance or improvement.

Please let me know if I can help with anything else.

Best wishes,

Steven H. Emerman

Steven Emerman

cc: Betsy La Force, Communities & Transportation Project Manager, South Carolina Coastal Conservation League