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The Honorable Spencer Wetmore
South Carolina House District 115
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Dear Representative Wetmore,

Thank you very much for providing a summary of your conversation with Matt Fountain. Please see my comments below in order of priority (1 = highest priority). I have tried to not repeat anything I have said in earlier memos.

1. It might be possible to carry out water-level or streamflow monitoring without funding from, but hopefully with cooperation from, the City of Charleston.

My understanding from our meeting with USGS is that SCDOT might have some stream gaging stations that they no longer need and that they might be willing to use that money to pay for the operating costs of one or more stream gaging stations on James Island. It would be very nice if you could broach this subject with SCDOT. I would hate to lose this opportunity if it exists.

At the same time, I would hope that the City of Charleston would be willing to use these water-level or streamflow data and that they would require developers to use these data in designing stormwater infrastructure. In other words, I would hope that the City would use water-level or streamflow data for model verification and calibration and that they would require developers to do the same. This is part of why I have been encouraging partnership with USGS for water-level or streamflow monitoring, since no one could reasonably challenge the credibility of these data.

I would hope that the City of Charleston would make a commitment to not vandalize stream gaging stations and to not encourage others to do so. I hate to bring this up, but this has been an issue in other communities with which I have worked. This is another reason why I have been encouraging partnership with USGS for water-level or streamflow monitoring, since the stream gaging stations would be federal property.

2. “Over-design” is an alternative to model verification and calibration, but it is an arbitrary procedure and is not required of developers.

My understanding is that, instead of validating and calibrating stormwater models, the City of Charleston simply “over-designs” the stormwater infrastructure. In other words, the stormwater model is simply accepted “as is” and the stormwater infrastructure (such as the diameter of a



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pipe or the size of a storage pond) that the model predicts as necessary is increased by some amount to compensate for the uncertainty in the model. However, it is arbitrary as to whether required pipe diameters, for example, should be increased by 10% or 25% or 100%. This concept of over-design is not discussed anywhere in the 2020 Stormwater Design Standards Model. Since it is not discussed anywhere in the stormwater manual, there does not seem to be any requirement for developers to engage in this over-design.

3. Transferring funds from planning to construction does not necessarily save money.

I understand Matt Fountain's argument that, if less money is spent on planning (including stormwater model verification and calibration), there will be more money available for construction. This is not necessarily true because over-design also comes at a cost. For example, larger pipes will be more expensive than smaller pipes and sometimes proper model development could show that larger pipes are unnecessary.

If money is spent, and no positive outcomes result, then no money has been saved. It is most important to note that the AECOM stormwater model is not slightly inaccurate. It is so inaccurate that, by comparison with the USGS StreamStats tool, the AECOM stormwater model does not even use the correct watershed boundary. The watershed boundary is so inaccurate that some of the recommended stormwater improvements are not even in the Central Park watershed. On that basis, it is very unlikely that the recommended stormwater improvements will have any impact on flooding in the Central Park watershed.

4. Over-design does not provide a basis for project evaluation.

One of the purposes of water-level or streamflow monitoring is to create a dataset that could be used for the quantitative evaluation of stormwater infrastructure improvements. Over-design could reduce flooding (without spending money on planning), but it still would not provide any means for quantitative evaluation. My understanding is that it is standard for government projects to include a means for evaluating the outcomes of those projects.

Please let me know if I can provide any further information or help with anything else.

Best wishes,

Steven H. Emerman