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Betsy La Force  
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Dear Betsy,

I am writing in response to your request for an interpretation of the article in the August 23 Post and Courier entitled “Tackling a tricky task: Making development improve drainage.”

In his interview by Robert Behre, Matt Fountain argues that the conversion of forest and wetland into urban development can actually improve drainage and reduce flooding. I understand that this is theoretically possible. In fact, the C-SWPPP application by Crescent Homes for the Central Park development illustrates the theoretical possibility of reducing peak discharge rates by converting forest and wetland into single-family lots as long as enough detention ponds are constructed. The fact that this particular application was based upon a hypothetical stormwater infrastructure, as opposed to the actual stormwater infrastructure, does not detract from the theoretical possibility.

The important question is whether this theoretical possibility has been realized in practice and what factors made the practical realization possible.

According to the article, “Fountain says that there are few recent developments that serve as poster children for actually improving drainage.” I am not aware of any examples for which it has been documented that the conversion of forest and wetland into urban development improved drainage and reduced flooding, which does not mean that there are not any examples. The article does describe the Grace Homes affordable housing project and the Church Creek development, but does not specifically state that these developments have reduced flooding in their neighborhoods.

My concern is that, if Matt Fountain could have listed some successful examples of reducing flooding by converting forest and wetland into urban development within the city of Charleston, he would certainly have done so. On the other hand, there are examples of attempts to reduce flooding by constructing developments. Since 2013 every development in the city of Charleston within a Special Protection Area has required the developers to comply with the following



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requirement: “The post-development, peak discharge rates [are] restricted to one-half the pre-development rates for the 2 and 10-year 24-hour storm event or to the downstream system capacity, whichever is less.” On that basis, every example of a development within a Special Protection Area since 2013 should be regarded as an unsuccessful example of an attempt to improve drainage and reduce flooding by converting a natural area into an urban development.

My question is: Why should we expect the proposed Central Park and Riverland Oaks developments to succeed where every previous development has failed?

It is most likely that previous developments have failed to reduce flooding for the following reasons:

- 1) The demonstration by the developers that the post-development, peak discharge rates would not exceed one-half the pre-development rates was based upon a hypothetical, design stormwater infrastructure, rather than the actual stormwater infrastructure.
- 2) Developers have not been required to calculate or take into account the downstream system capacity, which should set a lower bound on the permissible peak discharge rate.

In the above respect, the applications by the Central Park and Riverland Oaks developments are no different than any other previous application, so that I would not expect to see a different result.

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

Best wishes,

A handwritten signature in black ink that reads "Steven H. Emerman".

Steven H. Emerman