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ENGINEERING & CONSULTING SERVICES

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**MEMORANDUM**

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**Date:** March 5, 2008  
**To:** Tom Zeuner, Executive Director, Northampton Authority  
**From:** Stu Rosenthal  
**Reference:** Possible Impact of Sanitary Sewer Construction on Private Drinking Water Wells

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It is my understanding that there has been a certain degree of confusion or misunderstanding with regard to statements I have made at meetings concerning the possible impact of the proposed sanitary sewer project on private drinking water wells. I would like to take this opportunity to clarify my remarks.

There are two (2) possible ways in which the proposed sewer project could impact the quantity of groundwater available for the nearby private wells. Firstly, the new sewer system will eliminate the use of septic systems, in turn eliminating that as a source of groundwater recharge. Secondly, the sewer construction itself, and the trench backfilling around the sewer pipe, can act as a french drain removing shallow groundwater from the area and preventing its recharge to deeper levels.

As I've tried to say at recent Authority meetings, it's impossible to predict with any certainty, absent a detailed hydrogeologic investigation, what the impacts of the proposed project will be on the private wells. This is because we do not know the size of the groundwater recharge area from which these wells draw water nor do we have any information regarding the construction of the various wells.

That said though, we can make a few general observations. Deeper wells will undoubtedly be less prone to negative impacts than shallow ones. The depth that a well becomes more susceptible to changes in groundwater recharge varies. Generally, it is our experience that wells less than 100 feet deep are at greatest risk. If the recharge area is sufficiently large, then the loss of some shallow recharge should not have an appreciable affect on most wells.

Page 1 of 2

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Elimination of the septic system discharges is really a good news/bad news type scenario. Clearly less water will be discharged to the shallow groundwater once connections are made to the sanitary sewer, but just as certainly, multiple sources of groundwater contamination will also be removed. The contamination threat from the malfunctioning septic systems on the private wells, most specifically bacteriological and nitrate related, is very real and an obvious driving force for this project in the first place.

In summary then, I have to reiterate that we cannot predict with certainty at this time how the private wells will respond once the sanitary sewer is installed and hookups are made. We expect though, that the overall impacts will be slight provided that the wells in question are reasonably deep and that construction is managed so as to be sensitive to groundwater issues.