Questions from South Kent Island Public Hearings
May 1, 2014
7:00 PM Kent Island High School

1. WHAT STORMWATER MANAGEMENT IMPROVEMENTS ARE ANTICIPATED IN THE COMMUNITIES TO BE SERVED BY THE PROJECT?

R1. As part of various concluded road upgrade projects in the SKI Communities, most recently in Kent Island Estates, we incorporated drainage improvements and stormwater management features with these projects. We do anticipate that similar projects, both road upgrades and stormwater/drainage improvements will be initiated in the future. The extension of public sewer to the SKI communities will likely accelerate these projects. The cost for these improvements are not included in the cost of the sewer system's construction. However any roads disturbed by the sewer system's construction will be repaired as part of the sewer project.

2. EXPLAIN THE EVOLUTION AND JUSTIFICATION FOR MANDATING HOLDING TANKS IN CERTAIN CIRCUMSTANCES?

R2. We are simply calling attention to this long-standing public health concern in these communities. Our effort has been an open process and we have engaged multiple state agencies and the General Assembly in order to offer the best permanent solution to our citizens.

Areas of failing septic systems on South Kent Island have been designated in the Counties Comprehensive Water and Sewage plan since 1975. Plans to provide public sewer to these older communities has been programed since this time frame.

The Queen Anne's County Health Department, a state agency, is the regulating agency over on-site wastewater disposal or septic systems. The Health Department has been addressing failures with existing septic systems under the premise that public sewer would one day provide a permanent wastewater solution to these remaining older communities.

Conditions have continued to degrade over the years such that continuing to make temporary on-site repairs to existing septic systems is no longer adequate as it compromises Public Health.

In April 2013, the County Health Officer recommended to the Maryland Department of the Environment a policy by which holding tanks would have to be installed for septic systems that are failing. This policy has been approved by the state MDE. Installation of a holding tank system to replace a failing septic system shall be required when it has been determined that an on-site system that discharges to the soil cannot be installed that could be expected to provide long-term adequate protection of public health or the environment. The April 2013 holding tank policy is posted on the County's SKI webpage.

3. DOES THE CHARGE TO THE PROPERTY OWNER FOR THE PROJECT BECOME PART OF A MORTGAGE AND IS THERE A REQUIRED DISCLOSURE ABOUT THE CHARGE TO A PERSON BUYING THE PROPERTY?

** All responses stated herein are based on existing and currently available records, statistics and researched conclusions by noted sources.*

R3. A "special benefit assessment" will be levied on every homeowner and vacant lot owner in the project. This bill will not be added to monthly mortgage payments. Property owners within the project will not begin making payments for the sewer system infrastructure until after service is made available to their specific property. At that time they will start receiving quarterly public utility bills. For homeowners, this utility bill will include a debt service charge of $70 per month for the new public sewer system and a $30 per month charge for operations & maintenance. The debt service on the new public sewer system will be paid in full after 20-years at which time the monthly bill will be lowered to the operations & maintenance charge only.

The special benefit assessment is a matter of public record similar to outstanding property taxes due at the time any lot is sold/transferred to a new owner. This information is available at the County Office of Finance and will be disclosed as part of the typical title search process when the property is sold. Special benefit assessments do not become part of a property owner's mortgage nor do they become a reference to a property owner's deed.

4. WHAT IS THE JUSTIFICATION FOR HAVING TOWER GARDENS SERVED BY THE PROJECT WHILE TWIN COVE AND CROSS WINDS ARE NOT?

R4. The community of Tower Gardens currently consists of 199 homes. Based on Health Department septic system installation records, 101 of these homes are situated on properties/lots that have insufficient land area remaining for another replacement septic system drain field. At a minimum, all of these homes will eventually have to be on holding tanks as they will have no other option.

The communities of Twin Cove Estates and Crosswinds were excluded from the project as they were developed after modern septic systems regulations as well as new land use regulations were established. These communities have very few homes which are situated on much larger lots [Twin Cove has 13 lots with an average size of 15.6 acres/lot and Crosswinds has 32 lots with an average size of 1.4 acres per lot].

5. HOW WILL SITUATIONS WHERE IT IS NOT FEASIBLE OR PRACTICAL TO INSTALL THE STEP HOLDING TANK IN THE FRONT YARD ADJACENT TO THE STREET BE ACCOMODATED?

R5. It is our preference to install the new STEP tanks in the front yard close to the street for existing residences. At this location, our maintenance personnel can access the tank for routine maintenance operations much easier as well as cause less disturbance to the residents. We understand a front yard installation may not be possible in every case. That is why every installation will have to be designed uniquely to best suit the site constraints and conditions. In some cases, STEP tanks may have to be located in the rear yard to avoid conflicts and unnecessary disturbances.

As part of the project, the new STEP system installation will accommodate existing well locations and drainage features so that these and other existing utilities are minimally disrupted. Complete yard, lawn, landscaping, drainage and road restoration work is anticipated and is included in the total project cost.

6. WHAT FINANCIAL RISKS ARISE FOR PROPERTY OWNERS IN TOWER GARDENS WHICH IS PLANNED TO BE THE FIRST COMMUNITY TO BE SERVED BY THE PROJECT?

** All responses stated herein are based on existing and currently available records, statistics and researched conclusions by noted sources.*

R6. The project financing is based on all nine communities eventually being connected to the public sewer system. As part of the project financing plan, the County and State will be establishing a master agreement for Bay Restoration Fund grants and State Water Quality Revolving Loans to fund the entire project.

On May 24, 2014, the County Commissioners determined it would be most prudent to serve Kent Island Estates & Romancoke communities as the first phase since these areas have the greatest number and concentration of failed septic systems.

7. HOW WILL HOMES SALES BE MANAGED DURING THE PHASING OF THE PROJECT?

R7. Both Homeowners and vacant property owners can sell their lots at any time before, during or after the project. The special benefit assessment for the sewer project will be levied at such time when the project is complete for a specific phase and service is available to the property in question. The owner of the property at that time will be responsible for the assessment, which will be in the form of a public utility bill.

Resolution 14-07 does provide a provision which will allow special benefit assessments to transfer to subsequent buyers as a continuing lien against the property if desired. It is not a requirement for the special benefit assessment to be paid in full upon transfer of the assessed property.

8. WHAT MIGHT BE THE IMPACT ON THE HOUSING MARKET IN THE COMMUNITIES TO BE SERVED BY THE PROJECT?

R8. The project along with lot consolidation ordinance #13-24 will yield a maximum of 658 potential new home sites in the SKI area. Based upon our experience on similar projects, the total new homes constructed (at full build out) will be about 560 units. This is based on other voluntary actions to consolidate lots and lot donations.

We envision the project to be constructed in four or more phases. Overall these phases could begin in 2015 and conclude in 2023 or later. The vacant lot inventory will come online at the conclusion of each phase when public sewer service is available. In other words, all of the vacant property owners will not be able to build homes immediately. Reference is made to the Growth Impact Mitigation Considerations white paper also attached to this report.

In addition, resolution #14-07 allows for vacant property owners to defer payment. This feature allows them to pay a much smaller fee to reduce the financial pressure for them to "sell or develop" their vacant lot <u>after service is available.</u>

The sewer project will have a positive impact on existing home values. Already we know that several homeowners could not sell their properties as a result of a failed septic system and the need to install a holding tank. Public sewer service to these communities will eliminate this problem. Currently homeowners cannot add additions to their homes due to septic system limitations. A public sewer service project will change this condition.

Community property values on other now completed projects (Cloverfields and Bay City) have notably increased.

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9. WHAT IMPACTS ON INFRASTRUCTURE ARE ANTICIPATED FROM THE VACANT LOT DEVELOPMENT AND HOW WILL THOSE IMPACTS BE MANAGED?

R9. Please refer to attached Growth Impact Mitigation Considerations white-paper (also posted on the county SKI website).

10. WHY IS THE PROPOSED $30 OPERATIONS AND MAINTENANCE FEE UNIFORM AND NOT BASED ON USAGE?

R10. The $30 charge for operations and maintenance is the estimated base operations and maintenance charge.

It is common practice in the water wastewater industry to establish uniform base rates for customers that have sewer service only. Customers that have both public water and public sewer service are billed the base rate plus a volumetric rate determined by their water meter reading.

The operations and maintenance fee was conservatively estimated based on research of similar STEP systems in Communities located in Washington and Oregon. Also please note the $30 fee also includes the $5 Bay Restoration Fund surcharge which goes to the State.

11. WHAT PLANS MIGHT THERE BE FOR The COUNTY TO ASSUME RESPONSIBILITY FOR THE REMAINING PRIVATE ROADS IN THE PROJECT AREA AND WHAT MIGHT BE THE FINANCIAL IMPACT ON LOT OWNERS OF THESE PLANS? [12, 13, 14]

R11. The county is willing to take over all of the remaining private roads in the SKI communities with or without a public sewer extension project. In fact, we have recently assumed responsibility for five (5) additional private roads during the years 2004-06 in the community of Kent Island Estates.

As a condition, the county upgraded these roads to public street standards and levied special benefit assessments to the property owners along those individual streets. These projects included Wicomico Road, New Jersey Road, North Lake Road and Baltimore Road. These projects were handled individually on a street-by-street basis based on property owner requests.

The above mentioned road improvement/upgrade projects cost on average $5,300 per property owner payable over 10 years.

12. WHAT COMMERCIAL USERS MIGHT BE SERVED BY THE PROJECT AND HOW MIGHT THEIR USES INCREASE?

R12. The project includes connection of a few commercial and/or non-residential uses in these communities. They include a fire station, a church, two community halls, two restaurants, and two marinas. At such time any of these non-residential uses make changes to their properties or how they may propose to use it, they will have to comply with all local zoning and land use requirements. This would include public review meetings. Reference is made to the Growth Impact Mitigation Considerations white paper also attached to this report with more specifics.

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13. WHY WERE ONLY THE EXISTING HOMEOWNERS SURVEYED AND HOW WILL THE OPINIONS OF THE VACANT LOT OWNERS BE CONSIDERED?

R13. The survey that was sent out in November 2013 targeted homeowners only. Our primary objective is to permanently correct the long-standing public health risk in these nine communities. This is the reason only homeowners were targeted in the survey, since they are the source of the public health risk. We wanted to get a sense of their support and perception of the magnitude of this problem.

We were also very confident that vacant lot owners would be favorable for a public sewer extension project so their properties would become buildable. A second public notification was mailed to all property owners inviting everyone to attend the recent series of Public Hearings held on May 1, 2014. Comments can still be directed to the County Commissioners via the Department of Public Works Director's Office. Contact: Todd R. Mohn, tmohn@qac.org.

14. WHAT IS THE JUSTIFICATION FOR THE VACANT LOT OWNERS PAYING MORE FOR THE PROJECT THAN THE EXISTING HOMEOWNERS?

R14. Economic theory, market behavior, and common sense would all argue that buildable lots have a greater market value than non-buildable lots. The construction of a public sewer, which transforms non-buildable lots into buildable lots, confers a windfall gain on the owners of the presently non-buildable lots in the form of increased market value. The County has documented evidence and past experience on similar projects demonstrating it is in fact fair to assess vacant unbuildable properties a greater share of the project cost in the form of an Economic Benefit Premium. Please refer to Tidewater Properties Residential Buildable and Non-buildable Lot Appraisal Report on the SKI web page [the Economic Benefit Premium assessment withstood legal challenge in the Cloverfields case].

15. WHAT IS THE JUSTIFICATION FOR LIMITING VACANT LOT DEVELOPMENT, AFTER THE LOT CONSOLIDATION, TO ONLY THOSE VACANT LOTS IN THE PROJECT AREA INTERSPERCED AMONG DEVELOPED LOTS?

R15. The county is not necessarily obligated to provide service to a street with all vacant lots. Under state law, the Sanitary Commission may determine the extent of sewerage services by defining its service area. If there is no current need for sewer line along a street and it would be feasible to design a system without laying a line along that street the street can be excluded from the defined service area.

In 2006 the County adopted a Comprehensive Water and Sewerage Plan with defined service areas which excluded vacant blocks of lots where it was determined that sewer service and sewer lines were not needed for this system. [SEWER EXTENSION BASED ON RESOLVING A LONGSTANDING HEALTH ISSUE. SERVICE TO ANY VACANT LOTS BASED UPON LEGAL OBLIGATION AS DEFINED BY THE ATTORNEY GENERAL. See 90 *Opinions of the Attorney General* 60 (2005)]

16. Are there any alternative "on-site" wastewater treatment and disposal solutions that are have been or should be evaluated for this project?

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R16. In 2007, a sub-committee of the counties 15 member Public Works Advisory Board evaluated alternative on-site wastewater disposal options. In their final report, the subcommittee identified 10 alternative systems that were approved for use in Maryland by MDE. Their conclusion was that "due to the high water table, the small lot sizes and the less than state-of-the-art effluent treatment, on-site alternative systems or "home systems" should not be further examined".

*Dr. Robert A. Rubin**, Environmental Scientist & Professor Emeritus, concluded in his 2007 independent review of the South Kent Island septic system public health problem that:*

- *Alternative systems are expensive to construct and operate*
- *They require comprehensive maintenance to remain in proper working condition for life of property*
- *Systems cannot overcome hydraulic limitations (poor soils and high groundwater)*
- *Unless corrected the input of nitrogen and other constituents will continue to flow into the Bay*
- *"Use of the public utility appears most cost effective, use of the County ENR managed facility offers greatest potential for improving treatment levels in the future"*

Dr. Robert A. Rubin, Environmental Scientist & Professor Emeritus, (email May 2014):

> *"The conclusions reached in the 2007 report to the county on the southern portion of Kent Island have not changed. I am aware of many new onsite technologies and many are capable of achieving some degree of nutrient removal. Those onsite removal technologies are often tested and certified to meet the nsf standard 245 for nutrient removal. more recently, the nsf 350 standard was developed for reclaimed water and that standard addresses nutrients, organic matter and bacteria. regardless of the technology, management is critical and a minimum of quarterly inspection would be required of these systems. Even with the management, these onsite systems would not achieve the 2 to 3 mg/l total n levels achieved in the county wastewater reclamation facility".*

In 2014, evaluation of a new alternative technology for on-site waste disposal, the Busse GT sewage treatment system, was examined. This is a relatively new technology that is not widely used, presently less than 1,000 systems in worldwide operation. Like other alternative on-site solutions, effluent must be discharged into clean, dry soil with a separation zone from the seasonal high water table. This condition is not the typical situation on South Kent Island. The cost of the Busse system was found to be about $22,000 plus about $500 per year for annual maintenance. This is a greater expense than what the proposed public sewer system will cost existing homeowners ($14,417 plus $360 per year for maintenance). This system is not approved in Maryland, however if it becomes available for present homeowners, vacant lot owners could claim entitlement for their lots. For example, the Busse system has been approved in Maine for both retrofits of failed septic systems and for new construction. Currently they are about eight Systems in use there. If this same entitlement proved valid in Maryland, efforts to manage growth in South Kent Island would be undermined.

Regarding the Busse System and other alternative on-site wastewater treatment and disposal technologies, State of Maryland Officials and Experts have documented the following:

> *John Nickerson, Director Environmental Health Services (Letter to Mike Warring PWAB Chairman 2011)*
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> > *It is my professional opinion public sewer is the proper permanent solution to the SKI sewage disposal issues. The county has a well-run ENR sewage treatment plant with 500,000 gallons of capacity dedicated for this purpose. I base my final decision upon the best known scientific facts available as approving authority for on-site waste disposal in Queen Anne's County. The following facts continue to exist:*

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Seasonal high water tables causing severe limitations to on site waste disposal systems.

Small lot sizes and small lot areas to accommodate on site waste disposal systems.

Slowly permeable soil conditions which limit the ability of the sewage wastes to percolate screw it up for soil strata.

Poor surface drainage.

Failing septic systems needing a permanent solution to the properties wastewater disposal needs as on-site remedies require continual penetration of states groundwater with sewage wastes. Less and less available land area is available for even these types of (temporary) system repairs.

My professional opinion is that it is unsound thinking to conclude that ultimately 1500+ individual homes each having their own alternative on-site (or little sewage treatment plant) will operate correctly as a permanent wastewater disposal solution versus one main public sewer collection line transporting the sewage waste to a properly run ENR sewage treatment plant. The EPA concluded that individual homeowner managed treatment plants across the nation are a failure because of lack of maintenance and lack of enforcement capabilities to assure their proper operations. Also if these individual treatment units were a permanent wastewater disposal option then it will be plausible the vacant lot owners could utilize the same technology to exercise their right to build.

Jay Prager, MDE Environmental Program Manager Wastewater Permits Program, (email April 2014),

"I am writing in response to recent correspondence concerning the use of the Busse system and other wastewater treatment technologies to address failing septic systems on southern Kent Island. The issue of how to address failing septic systems on Southern Kent Island is a wastewater disposal, rather than a wastewater treatment issue. The combination of small lots, shallow groundwater tables, individual wells and slowly permeable soils makes the on-site repair of individual septic systems impossible to accomplish in this area without compromising the public health. The use of advanced technologies to treat wastewater does not overcome the site constraints found on many, probably most of the lots found on Southern Kent Island".

Dr. Robert M. Summers, PHD Secretary MDE (Letter to Joseph McGurrin 2011)

"The Queen Anne's County Health Department has documented a very serious public health and water quality problem from septic systems that do not function properly, primarily due to poor soils and high groundwater table. The Department concurs with this assessment by the County. The small lot size of most homes makes on-site repair or replacement very challenging and infeasible. Given that there are fifteen hundred improved properties, there is a current, existing issue that cannot be ignored by the public health and environmental agencies."

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17. What has the County done to evaluate and recommend the STEP system as the most appropriate technology for a public sewer extension to South Kent Island?

R17. There are generally only three public sewer collection system technologies available to any community: gravity, vacuum, and pressure.

The County generally prefers gravity due to its very low operating cost. However due to the flat topography, large service areas, and high water tables (which equate to higher construction costs and excess water leaking into the system or inflow and infiltration), gravity is simply not feasible for this region. This is due to the absence of sufficient topographical relief needed to convey wastewater through sewer lines.

Vacuum (and pressure) are mechanical systems where energy is added to convey wastewater through sewer lines. These are the predominate systems currently used in the County due to flat topography. These systems are more energy and labor intensive. It requires a central vacuum station for each community or subarea (the last one built was in Bay City 20 years ago at a cost of $950,000) and needs to have 24/7 staffing to provide constant service.

There are two predominate pressure systems, grinder pumps and Septic Tank Effluent Pumps (STEP). Both systems rely on small pumps on each property being served. Both pressure systems are situated on private property.

The grinder pumps have a blade incorporated in the pump (hence the 'grinder') that chops up any solids and pumps them into the pressure mains. This additional load on the pumps requires them to be a little larger and the heavier service tends to reduce their service life over the STEP. Also, as solids are being pumped, the pipes have to be sized such that the flow through the pipes exceeds 2-feet per second or else the solids will eventually clog the pipes. Another disadvantage of the grinder system is the grinder pump chamber is usually rather small, maybe 50 gallons, so there is little emergency storage should the pump become inoperable.

The STEP system filters out the solids, which stay in the tank, so the pumps tend to be smaller and last much longer. The 'septic tank' typically used to house the pump is much larger so there is a day or two of storage should the pump become inoperable or the power goes out.

In addition to researching available literature, in November of 2013, County staff visited several west coast jurisdictions which had extensive experience with STEP systems. All the managers and operators provided positive experiences with their operation. In our application, the STEP systems can pump all the way to the wastewater treatment plant and no intermediate lift stations are required for their operation. In addition, the force main, which will convey the wastewater, will run all the way from the southernmost connection to the treatment plant. This will virtually eliminate inflow and infiltration of stormwater into the system.

All sewer systems have problems on occasion, gravity systems are no exception. However any mechanical system, vacuum or pressure, will have many more problems than gravity as they rely on moving parts to transport the sewage. In regards to STEP, corrosion of concrete and odors seem to be the primary issues. Neither will be an issue with SKI. Typically a STEP system is used as an extension of an existing gravity system. In other words, gravity is run as far as it can be run (without requiring a new pump station) and then STEP is used to go beyond the last gravity manhole (which are typically concrete). The odor issue comes about from the STEP pumping into the last gravity manhole which acts to release the noxious hydrogen sulfide gas. SKI will have no manholes and the STEP sewage odors will not be released until it reaches the sewage plant.

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18. How the does the STEP System work without intermediate lift stations?

R18. The pumps are 'high head' pumps capable of pumping a column of water 200 feet into the air. In fact, they are drinking water well pumps. Given the flat terrain/topography of South Kent Island, the pumps are capable of pumping the entire distance from SKI to the wastewater treatment plant. In addition, the STEP pumps only pump fluids that are absent of any solids so they can pump a longer distance at slower velocity since there are no solids to move in the force main.

19. What other advantages does the STEP System Offer?

R19. The construction cost is lower since intermediate pump stations are not needed, including the real estate to situate them. Most of the sewer pipe network can be placed using 'horizontal directional drilling' techniques which greatly reduces the amount of road disruption and restoration necessary. Operations and maintenance costs are low since the technology is very simple and problems are easy to identify. Each home has an alarm panel with a light when the pump malfunctions which pinpoints where service is needed immediately. The complete system, including the STEP tank and pump, is closed which virtually eliminates inflow and infiltration of stormwater. All aspects of the Step system will be maintained by the County to ensure optimal performance at all times.

Footnote Biography:

**** Dr. Robert A. Rubin, Environmental Scientist & Professor Emeritus*

Served the Biological and Agricultural Department of North Carolina State University from 1978 to 2004; Served as a visiting scientist with the US EPA in Washington, DC where he assisted with development of wastewater management guidelines; Provided national leadership in the critically important areas of rural water quality and wastewater management; Hired by County Commissioners in 2007 to complete an independent assessment of the South Kent Island Public Health Concern and other regions of failing septic systems in QAC.

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