



**Queen
Anne's
County**

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Queen Anne's County
2011 Comprehensive Water and Sewerage Plan
Amendment No.11-05
September 9, 2014

Text Amendment – (replace as indicated)

EXECUTIVE SUMMARY – SEWERAGE SERVICE NEEDS

(replace in its entirety)

Queen Anne's County recognizes two sewerage Public Health Areas of Concern. Many of the septic systems existing in the two areas of concern are not operating correctly and are discharging septic effluent directly into the groundwater on a seasonal basis (typically the spring). This ongoing, direct seasonal penetration of groundwater does not conform to the Code of Maryland Regulations' (COMAR) requirement for unsaturated soil treatment zones. In addition, many of the properties lack sufficient land area for a replacement system regardless of the groundwater penetration violations.

The two Public Health Areas of Concern consist of nine communities known as Southern Kent Island (SKI) along the mid to lower extents of MD Route 8 (Romancoke Road), and the two communities at the end of MD Route 552 (Dominion Road) consisting of the Marling Farms and Dominion (MFD) communities. The SKI area has been the primary concern given the greater incidence of failure, the hydro-geological nature of the area, its poorer surface drainage, and the typically smaller lots sizes. Thus, all efforts over the past several decades have focused on this area.

It is the intent to move forward with serving the MD Route 8 Corridor with a sewer service area closely resembling the 2011 Johnson Mirmiran & Thompson, Inc. study scenario known as "Plan B" (which excludes large blocks of contiguous vacant lots within the communities from the proposed service area in accordance with the Attorney General's opinion of April 13, 2005). The service area will include the 1,518 existing dwellings as well as the commercial areas in Queen Anne Colony and Kentmorr. This scenario also includes approximately 1050 vacant lots of record in the service area.



A 'lot consolidation' ordinance was adopted by the County (Ordinance 13-24 – refer to Appendix IX – Section 3) has required adjacent vacant lots in common ownership to be combined to meet the overlying zoning of the service area. This will effectively reduce the maximum number of vacant lots from approximately 1050 to 632. It is anticipated that additional voluntary consolidations will occur bringing the ultimate number of vacant lots to approximately 560. The anticipated flow from the 1,518 existing dwellings, 8 commercial properties, and the 632 vacant lots is anticipated to generate an average daily flow of approximately 450,000 gallons per day (using 200 gallons per day per dwelling as the average anticipated flow per dwelling and an additional 7,500 gpd for commercial use).

It is envisioned that the first phase of the project would be to construct the sewerage force main and the collection system to service Kent Island Estates & Romancoke on the Bay. It is anticipated that the in-service timeframe for these two subdivisions will be within 6 years from the initiation of design. Subsequent phases would be addressed from a south (Tower Gardens) to north progression, with the entire service area online within approximately 10 years.

CHAPTER 4 – SEWERAGE DISPOSAL

(insert at end of Chapter)

4.5 SEWERAGE PUBLIC HEALTH AREAS OF CONCERN

Queen Anne's County recognizes two sewerage Public Health Areas of Concern. Many of the septic systems existing in the two areas of concern are not operating correctly and are discharging septic effluent directly into the groundwater on a seasonal basis (typically the spring). This ongoing, direct seasonal penetration of groundwater does not conform to the Code of Maryland Regulations' (COMAR) requirement for unsaturated soil treatment zones. In addition, many of the properties lack sufficient land area for a replacement system regardless of the groundwater penetration violations.

The two Public Health Areas of Concern consist of nine communities known as Southern Kent Island (SKI) along the mid to lower extents of MD Route 8 (Romancoke Road), and the two communities at the end of MD Route 552 (Dominion Road) consisting of the Marling Farms and Dominion (MFD) communities. The SKI area has been the primary concern given the greater incidence of failure, the hydro-geological nature of the area, its poorer surface drainage, and the typically smaller lots sizes. Thus, all efforts over the past several decades have focused on this area.

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A 'lot consolidation' ordinance adopted by the County (Ordinance 13-24 – refer to Appendix IX – Section 3) has required adjacent vacant lots in common ownership to be combined to meet the overlying zoning of the service area. This will effectively reduce the maximum number of vacant lots from approximately 1050 to 632. It is anticipated that additional voluntary consolidations will occur bringing the ultimate number of vacant lots to approximately 560. The anticipated flow from the 1,518 existing dwellings, 8 commercial properties, and the 632 vacant lots is anticipated to generate an average daily flow of approximately 450,000 gallons per day (using 200 gallons per day per dwelling as the average anticipated flow per dwelling and an additional 7,500 gpd for commercial use). This wastewater will be treated at the County's existing wastewater treatment plant in Stevensville.

All full discussion on this issue can be found in Appendix VI of this Plan.

(insert three Public Health Areas of Concern sewer service area maps)

CHAPTER V – SECTION 5.14.3.8 – SUFFIX DEFINITIONS

(add below the "P" suffix definition)

Exempt Lots in 'P' service areas – Certain lots as shown on the Public Health Areas of Concern maps are "exempt" from paying the benefit assessment in accordance with Section 10.a of Resolution 14-07 due to suspected environmental constraints (refer to Appendix IX – Section 3). These lots of record are technically in the service area, in accordance with the April 2005 Attorney General's opinion, but will not be served with sewer unless a written request is made by the property owner to the contrary. Upon request, and upon presentation of satisfactory evidence that the lot in question is buildable, the lots will be served and will be required to pay the applicable benefit assessment. At a minimum, the evidence shall consist of an Army Corp of Engineers jurisdictional determination and verification of the limits of any non-tidal wetlands, if any, on the lot. These lots are represented on the service area maps as having a 'red' outline. Owners of other properties that are not 'red-line' designated, and which have evidence that those properties are unbuildable, may apply for an "exempt" designation in accordance with County Resolution 14-07.

APPENDIX VI – WATER & SEWERAGE PROBLEM AREAS – SEWERAGE PROBLEM AREAS

(replace in its entirety)

Introduction

Although there is a County operated central system serving part of the Kent Island, residents outside the service area still use individual on-site disposal systems (OSDS – i.e. septic systems) for the treatment of their domestic wastewater. In order to function properly in the removal of pathogens, a minimum dry soil 'treatment zone' of at least 2-feet beneath the bottom of the disposal trench is necessary year round.

The approving authority for OSDS is the local Environmental Health Department of the County Health Department, a division of the State of Maryland's Department of Health and Mental Hygiene. This duty is delegated to the Environmental Health Department by the Maryland Department of the Environment which by law regulates OSDS.

Queen Anne's County recognizes two sewerage Public Health Areas of Concern. Many of the septic systems existing in the two areas of concern are not operating correctly and are discharging septic effluent directly into the groundwater on a seasonal basis (typically the spring). This ongoing, direct seasonal penetration of groundwater does not conform to the Code of Maryland Regulations' (COMAR) requirement for unsaturated soil treatment zones. In addition, many of the properties lack sufficient land area for a replacement system regardless of the groundwater penetration violations.

The two Public Health Areas of Concern consist of nine communities known as Southern Kent Island (SKI) along the mid to lower extents of MD Route 8 (Romancoke Road), and the two communities at the end of MD Route 552 (Dominion Road) consisting of the Marling Farms and Dominion (MFD) communities. The SKI area has been the primary concern given the greater incidence of failure, the hydro-geological nature of the area, its poorer surface drainage, and the typically smaller lots sizes. Thus, all efforts over the past several decades have focused on this area.

Southern Kent Island Public Health Area of Concern - Introduction

In February 1989, the Director of Environmental Health presented a report to the County Commissioners that detailed rates of uncorrectable septic system failure for four major subdivisions on Kent Island (Cloverfields, Bay City, Kent Island Estates and Romancoke on the Bay - the first two priorities, Cloverfields and Bay City, have since been served with County sewer). The report defined uncorrectable failures as those that cannot be remedied without direct groundwater penetration or a "holding tank." However, while holding tanks are a means to correct failures, they are still defined in regulation as OSDS and are a poor solution.

Such was the Director's concern over the situation that his office took the unprecedented step in 1989 of overturning 216 existing, previously approved, percolation tests (i.e. indicating a septic system was viable and hence the lot was buildable) in the communities that now comprise the Southern Kent Island service area (as well as another 139 perc tests in other communities on Kent Island) and required the lots to be re-tested under the then current criteria. Over 90% failed the re-test. Since the time that the re-tests were conducted, the percolation test criteria have become even more stringent.

The other two subdivisions identified in the 1989 report, Kent Island Estates and Romancoke on the Bay (which were not adjacent to the original service area as were Cloverfields and Bay City), have long been identified as areas of concern. They have been mapped as needing sewer service in each of the County's Comprehensive Water and Sewerage Plans since the Plans' inception (i.e. in 1974, 1984, 1990, 1996, 2006 and again in the draft of the 2011 Plan).

Subsequent documentation has been provided by the Environmental Health Department to reinforce the need for a solution for the original two communities, as well as documenting the need for the additional seven communities (refer to Appendix IX – Section 1). This concern is due to the large number of existing septic systems, estimated to be at least 80% by the local Environmental Health office, that discharge directly into groundwater during seasonal high water table months. To demonstrate this groundwater issue, the Maryland Department of the Environment developed maps using available soil data which show the groundwater elevations for the nine subdivisions (refer to Appendix IX – Section 6). The lack of a ‘dry soil treatment zone’ beneath the drain field trench inhibits the remediation of pathogens leading to a concern that a communicable disease could infect the residents.

The SKI service area is defined as nine ‘older’ subdivisions or communities consisting of (from north to south) Matapeake Estates, Normans (also known as Batts Neck), Sunny Isle of Kent, Chesapeake Estates, Kentmorr, Queen Anne Colony, Kent Island Estates, Romancoke on the Bay, and Tower Gardens, in which 1518 homes exist.

An additional concern is the amount of nitrogen being released into the Chesapeake Bay and its tributaries given the proximity of these failing systems to these waters. An analysis by the Maryland Department of the Environment in January 2014 indicated that 30,400 pounds per year of nitrogen was entering the environment from the 1518 existing homes. Thus, the septic systems on SKI pose an environmental concern as well.

In April 2014, the Environmental Health Department adopted a Holding Tank Policy that requires any property with an uncorrectable failure and inadequate land area for a replacement system to install a holding tank (refer to Appendix IX – Section 3). This places a tremendous financial burden on the property owner and makes the sale of the property extremely difficult. It should be noted that it is not typically a government agency that determines a system is failing. It is usually an independent inspection contractor hired by the purchaser at the time of a pending property transfer. Only if deemed failing by the contractor is the Environmental Health Department contacted to see if there is a solution short of a holding tank.

This amendment to the 2011 Plan proposes a sub district be established to serve Southern Kent Island (SKI) and to be operated by the County’s Sanitary District. This total area, from Matapeake Estates to Tower Gardens, was identified in the 2006 Plan as areas of increasing concern.

It is not the intent to incorporate any other intervening vacant lands along this route. To further restrict any new development on currently large vacant tracts, the sewerage pipe connecting the communities being served to the wastewater treatment plant will carry a ‘denied access’ provision as defined in section 5.8 of this plan. The County has two existing ‘denied access’ pipes, the oldest being the pipe from Prospect Bay placed in service in 2000, and has successfully enforced the denial of new connections to the pipe.

Many opponents to the extension of sewer service indicate that the threat to public health occasioned by this situation is exaggerated. It is the Environmental Health Department’s charge to

prevent disease from occurring and the threats of disease from contact with untreated sewage has been acknowledged for centuries. In fact there have been 37 reported incidences of communicable disease from 2007 through 2012 in the 21666 zip code area (which is how the Health Department categorizes the cases). These include incidences of Giardiasis, Cryptosporidiosis, Shigellosis and Shiga toxin-producing Escherichia Coli which can be caused by contact with untreated sewage. However, though it is accurate to state there has been no direct link documented between these diseases and the failing septic systems, direct causation would be difficult to establish even if attempted. It is noted these are the reported communicable disease figures and there certainly may be cases where a physician was not seen, so no report was made, or if seen by a physician stool cultures were not taken and analyzed to determine the exact cause of the illness.

Southern Kent Island - Alternative Solution Investigations

The 1990 Comprehensive Water and Sewer Plan, prepared by Gannett Fleming, Inc., evaluated a number of options to alleviate these areas of concern. On-site, clustered or shared systems, and land disposal central systems were rejected due to the site constraints of soil, surface water, or available land. Thus, on-site correction was not considered a viable alternative.

Gannett Fleming, Inc. also developed a concept for a new central sewage treatment facility located in the region. Land disposal of the effluent was evaluated for the problem area. Ultimately, land disposal could require nearly 750 acres (if required buffers are included) under the most optimistic scenario just for Kent Island Estates and Romancoke subdivisions due to the poor soils prevalent in the area. This alternative was therefore rejected.

In 2005 the County hired Dr. A. Robert Rubin, at that time a professor with North Carolina State University (as well as in this capacity, a consultant with the engineering firm, McKim & Creed, Inc.), to investigate the possibility of alternative on-site, off-site cluster, or other community soil adsorption means to resolve the issue (the Rubin Report). Dr. Rubin has a reputation for favoring 'decentralized' solutions to septic system problems as opposed to connecting the areas of concern to a regional sewer treatment plant. However after an extensive review of the Environmental Health Department's septic system installation records, and given the hydro-geological constraints of the area, he concluded that connecting the area to a wastewater treatment plant was the only viable permanent solution.

In the spring of 2007, the County Commissioners assembled a "Department of Public Works Citizen Advisory Board" to provide input on various Public Works issues. The SKI issue consumed the majority of the Board's efforts. A SKI subcommittee was formed and three groups were formed under this subcommittee: Options, Construction, and Financing. It was the Options Group's task to determine what options were viable to resolve the failing septic system issue. On November 14, 2007, the Options Group submitted their final recommendation which indicated that on-site solutions were not viable given the site constraints that occasioned the septic system failures problem to begin with, i.e. "poor soils, high water table, and small lots."

In 2011 an exhaustive study was completed by the consulting firm of Johnson Mirmiran & Thompson, Inc (JMT). The study looked at the costs of providing sewer (and water) service to the

Route 8 communities. The study not only evaluated the cost of these sanitary services but also the associated costs of growth that service to the area may bring should any of the existing unbuildable vacant lots of record be served (schools, public safety, traffic, etc.). The study also considered any incidental environmental impacts the new development would cause due to loss of forest or wetlands, as well as increases in runoff from new impervious areas.

The JMT report evaluated six service area scenarios from a scenario known as Plan A, in which all existing vacant lots of record are served, to Plan E in which zero vacant lots were served. The sixth scenario, a variation of Plan E known as Plan F, used a different sewerage collection technology (Septic Tank Effluent Pumps) and envisioned a new wastewater treatment plant to be constructed in the vicinity of the end of MD Route 8.

Plans A through E of the JMT report envisioned three vacuum sewer collection systems connecting to a 'denied-access' sewerage force main extending from the existing Kent Narrows/Stevensville/Grasonville Wastewater Treatment Plant (KNSG WWTP), located in downtown Stevensville, south along MD Route 8 to the vicinity of its intersection with Kent Point Road, to convey sewerage from the nine communities to the WWTP. The '**denied access**' provision would prohibit service to any large tracts of vacant or agricultural properties located outside of the nine designated communities along these corridors.

Plan F of the JMT report envisioned the utilization of Septic Tank Effluent Pumps (STEP) with a new regional wastewater treatment facility located in the midst of the SKI service area. This plan was partially rejected as it was determined that it would be very difficult to obtain a new surface water discharge permit into the Chesapeake Bay for the treated wastewater effluent, particularly when there was existing capacity available and reserved for this service area at the Kent Narrows/Stevensville/Grasonville (KNSG) wastewater treatment plant.

This option of utilizing the existing KNSG wastewater treatment plant has both advantages and disadvantages. The primary advantage is the ability to serve other older, but significantly smaller, intervening small lot subdivisions that exist along the Route 8 corridor which also have varying degrees of septic system failure. These communities were first mapped as problem areas in 2006. Another advantage is these intervening communities could share the cost of the transmission system thereby reducing the per lot cost for sewer.

The disadvantages with this option are basically the inherent negative impact from any increase in population due to infill in the service areas if currently unbuildable vacant lots are developed as well as the pressure for new development along Route 8 created by the sewer force main traveling its entire length. For instance, the force main carrying the wastewater along Route 8 from Kent Island Estates and Romancoke would cross a few large parcels designated in the Comprehensive Land Use Plan as low density, primarily large agricultural properties. This causes some concern that the force main would enable new development in these low-density lands. However, as the force main would be designated as '**denied access,**' and much of the vacant lands are already designated Resource Conservation Areas in the Critical Area Ordinance (which limits lot sizes to 20 acres), the County should be able to resist any effort to rezone the existing lands to a higher density (dwellings per acre) unless the increase in density

is already supported by the Comprehensive Land Use Plan. It should be noted that in order to develop these intervening vacant lands, the County's Comprehensive Land Use Plan would have to be amended, the zoning of the lands would have to be changed, an amendment into this Water and Sewerage Plan would be required, and Critical Area Growth Allocation would need to be granted. All four of these steps are public processes, the last two of which require the State's review and concurrence.

The infill issue is caused by serving the existing, but currently unbuildable, vacant lots within the planned service areas with sewer. While serving the existing vacant lots makes the project more affordable for existing residents, the associated increase in population occasioned by serving the currently unbuildable vacant lots aggravates two other issues always associated with residential growth; traffic and schools. All of these issues were evaluated in the study conducted by Johnson Mirmiran & Thompson.

In order to mitigate the growth issue to the extent legally possible, the County took two steps. First the proposed service area was drawn to exclude large blocks of contiguous vacant lots in accordance with the Attorney General's opinion. This reduced the number of vacant lots to be served from approximately 1600 to approximately 1050. In addition the County adopted Ordinance 13-24 which mandates adjacent vacant lots of record in common ownership to be combined in order to meet the existing zoning. This further reduced the number of vacant lots to 632. It is anticipated there will be further voluntary lot consolidation as well as some lots within the service area being unbuildable due to severe environmental constraints.

Southern Kent Island - Alternative On-Site Disposal Systems Investigated

Opponents of serving the area with County sewer postulate that there are a number of On Site Disposal Systems (OSDS) that would resolve the problem on a case by case basis and thereby not force all properties to connect to the system or allow the current unbuildable vacant lots to develop. This theory is flawed due to the following factors:

- The issue isn't just inadequate treatment of the wastewater, the issue is more of a wastewater disposal issue. Given the hydro-geology of the area and additional limitations imposed by lot sizes, there simply is no way to comprehensively dispose of the treated wastewater employing OSDS in a manner in accordance with regulation.
- On-site systems are typically more expensive to construct and operate than the current proposal to serve the areas with County sewer.
- These advanced on-site systems require perpetual maintenance in order to operate properly.
- Should there be a system that could overcome these issues, it is likely the currently unbuildable vacant lots could avail themselves of the technology which could occur with none of the growth mitigation efforts the County seeks to employ.

Southern Kent Island - Proposed Solution

In recognition of this issue, in 2004 the County Commissioners, sitting as the Sanitary Commission, via Resolution 04-68, determined to utilize the existing KNSG wastewater treatment plant to service the Public Health Areas of Concern and thereby set aside 500,000 gallons of the 1 million gallon wastewater plant expansion completed in 2007 in order to begin addressing this concern. It should be noted that the 500,000 gallons per day (gpd) reserved is unlikely to be enough to service all 11 communities (9 on Route 8 & 2 on Route 552), particularly if a substantial number of the existing vacant lots of record in those communities are served.

The STEP collection system was further evaluated and found to have merit in addressing the collection system issue in that it had some advantages over the vacuum system. In regards to the capital cost of constructing the system, its cost to design and construct was considered to be much more affordable than a vacuum system. First, the majority of the mains could be installed using the horizontal drilling technology which greatly reduces the amount of road disturbed during construction, thereby avoiding much of the cost of road restoration. Secondly, certain STEP systems also have pumps with sufficient capacity to pump the entire distance from the home to the WWTP, thereby eliminating the need to design and construct intermittent pumping stations.

From an operation and maintenance point of view, three issues keep the monthly cost of a STEP system less than that of a vacuum system. First there is no electricity cost to pass on to the customer as each home's electric supplies power to the pump serving their property. Secondly, as the STEP tanks are typically 1,500 gallon tanks, of which only a portion is typically used during normal operations, there is a day or two of emergency storage available in the tank should there be a pump malfunction or a prolonged electrical outage. This allows staff to respond during normal business hours rather than having staff available 24/7 as is essential with a vacuum system. Lastly, the pumps have a long service life (the pumps are essentially high-head well pumps) and are relatively cheap to purchase when they need to be replaced relative to other sewerage pumping systems. It is the intent that the County's Sanitary District will own and operate the STEP assemblies.

There are disadvantages to the STEP system as well. The primary one being that the STEP assemblies need to be placed on each individual yard thereby requiring a permanent easement to allow the County to maintain. Also, as implied by the STEP name, only the effluent from the tank is being pumped, the solids are captured in the tank and need to be removed via a vacuum truck periodically by the County. However, communities on the west coast, where STEP systems are more prevalent, indicate that the necessity to pump out the tanks is quite infrequent, typically on the order of every 5 to 10 years.

It is the intent to move forward with serving the MD Route 8 Corridor with a sewer service area closely resembling the JMT scenario known as "Plan B" which will service the 1518 existing dwellings as well as the commercial areas in Queen Anne Colony and Kentmorr. This scenario also includes approximately 1050 vacant lots of record. However the County has adopted a 'lot consolidation' ordinance (County Ordinance 13-24) which will compel adjacent vacant lots in common ownership to be combined to meet the overlying zoning of the service area. It is believed this will reduce the maximum number of vacant lots to 632 with the belief that additional voluntary consolidations may

bring the number of vacant lots to approximately 560. The anticipated flow from the 1518 existing dwellings, 8 commercial properties, and the 632 vacant lots is anticipated to generate an average daily flow of approximately 450,000 gallons per day (using 200 gallons per day per dwelling as the average anticipated flow and an additional 7,500 gpd for the commercial uses).

It is envisioned that the first phase of the project would be to construct the sewerage force main and the collection system to serve Kent Island Estates & Romancoke on the Bay. It is anticipated that the in-service timeframe for these two phases will be within 6 years from the initiation of design. Subsequent phases would be addressed from a south (Tower Gardens) to north progression, with the entire service area being served in 10 years if there is no 'down-time' between phases.

In order to keep the project affordable to property owners, the county does not intend to serve the areas with public water as there is no known health or environmental issue associated with the on-site wells currently being used.

Southern Kent Island - Funding

The estimated cost of the STEP system is \$37.4M as is detailed on the estimates provided in Appendix IX – Section 5. This is considerably cheaper than the \$49.1M cost for a vacuum system and it is believed that the actual cost for the STEP system will be cheaper than the current estimate of \$37.4M

Funding for the project comes from three primary sources.

- The construction cost will be funded via a low interest loan from the Maryland Department of the Environment's Water Quality Loan Fund. As the service area is not located in a Priority Funding Area, the project must be granted a Public Health Exception from the State of Maryland's Smart Growth Coordinating Committee.
- The 2014 Maryland Legislature passed a modification to the Bay Restoration Fund law (know as HB-11) that allowed those grant funds to be used to subsidize the cost of connecting existing homeowners to the system, again provided the project is granted a Public Health Exception from the State of Maryland's Smart Growth Coordinating Committee.
- Following the convention utilized in both the Cloverfields and Bay City's septic system abatement projects, unbuildable vacant lots within the service area (i.e. those lots without a valid 'perc' test, without which a septic system cannot be constructed) are charged an additional fee which is known as the Economic Benefit Premium. This fee is justified since the increase in the value of an unbuildable vacant lot once served with sewer, and hence deemed buildable, far exceeds the increase in value enjoyed by an existing home once connected to sewer. The fee is formula driven and is a function of the number of unbuildable vacant lots ultimately served by the sewer system, as well as the final construction cost.

Refer to Resolution 14-07 for more details on funding (Appendix IX – Section 3).

On July 9, 2014, the State of Maryland's Smart Growth Coordinating Committee conditionally approved the County's request for a Priority Funding Area (PFA) Public Health Exception (refer to Appendix IX – Section 2). The 7 conditions are listed below:

"The following conditions shall apply to the approval of the PFA Exception and failure to implement or comply with any one or more of these conditions may result in revocation of approval.

- 1. The provision of sewer service under this PFA exception shall be limited to 1,518 existing single family homes and to no more than 632 currently vacant lots, as shown on the attached sewer service area maps. Service to the vacant lots is to be for single family residential use only. Sewer Service Area maps, clearly delineating the sewer service area boundary, shall be submitted to MDE for approval as an amendment to the county's Master Water and Sewer Plan and referenced in the county's comprehensive plan.*
- 2. The county shall report on the status of the provision of sewer service and compliance with these conditions annually through its annual report submission to MDP. The report should include number and location of new connections.*
- 3. The sewerage capacity to be provided within the sewer service area as shown on the attached maps shall not to exceed 500,000 gpd. Except for certain non-residential properties as discussed below, each of the lots to be served shall be assigned one EDU which shall not be transferable to another lot. This allocation of maximum capacity shall be submitted to MDE for approval as an amendment to the county's Master Water and Sewer Plan.*
- 4. Sewer service to the Kentmorr marina property and other non-residential uses in the service area shall be allocated based upon the existing uses or to the equivalent amount of capacity should an existing use change before service is provided.*
- 5. The project must ensure denial of access for any future connections that are not included in the project's service area. This provision must also be incorporated into the county's Master Water and Sewer Plan.*
- 6. The county shall adopt provisions in its floodplain ordinance in conformance with the 2013 model Maryland Floodplain Ordinance, requiring all new, substantially improved, and reconstruction of substantially damaged structures as meeting or exceeding the requirements of the 2013 model Maryland Floodplain Ordinance, that are located within a mapped Special Flood Hazard Area, to be constructed with a minimum of two (2) feet of freeboard above the 100-year base flood elevation, as defined by the National Flood Insurance program.*

7. *Queen Anne's County, with the technical assistance of the Maryland DNR, shall more thoroughly assess climate change impact vulnerability and outline specific strategies for enhancing resilience to the impacts of climate change (i.e., sea level rise, coastal storm surge, drought, and extreme precipitation related events)."*

Southern Kent Island - Phasing

Phase 1 - Kent Island Estates and Romancock on the Bay

Platted in the late 1950s, Kent Island Estates and Romancock are located near the southern extremity of Kent Island, directly adjacent to each other. They share similar soil conditions and both have small lot sizes (typically 10,000 to 20,000 square feet). The two subdivisions combined had approximately 2260 lots of record when platted, of which 777 homes have been constructed (typically on more than one lot). Of the 851 vacant lots remaining, 124 contiguous vacant lots are excluded from the service area in accordance with the Attorney General's opinion of April 13, 2005. Of the 727 remaining lots in the service area, only 450 will remain after the mandatory lot consolidation ordinance.

The Environmental Health Department has estimated that 90% of the existing septic systems in the Kent Island Estates/Romancock area discharge directly into groundwater on a seasonal basis (March and April when water tables are at their highest). These systems cannot be remedied without utilizing direct groundwater penetration during the high water table season or a holding tank. Because of the small lot sizes, poor soil conditions, and seasonal high water table, such on-site correction is not considered a long-term viable alternative.

In addition, the Environmental Health Department has indicated that of the 777 improved properties, 245 appear to have insufficient land available for a replacement septic system and if deemed failing, a holding tank would be required.

It is anticipated that construction of this phase, which includes the construction of the sewage transmission main along MD Route 8, will begin January 2016 and conclude July 2020. The estimated cost of these improvements is \$22,400,000 (\$7,000,000 for the transmission main and \$15,400,000 for the collection system).

Phase 2 – Tower Gardens Subdivision

Tower Gardens was platted in the early 1970s and is located south of Kent Island Estates on Kent Point Road. Overall the situation in Tower Gardens is not as bad as in Kent Island Estates and Romancock since the community is not as old and some of the inland lots are much larger than those in Kent Island Estates and Romancock. However there are numerous small lots, primarily located along the shore of the Chesapeake Bay and Carter Creek, which suffer the same issues as the Kent Island Estates and Romancock subdivisions. Currently it is estimated that there are 254 properties of which 199 are improved.

The subdivision had 254 lots of record when platted of which 199 homes have been constructed. Of the 33 remaining lots in the service area, only 25 will remain after the mandatory lot consolidation ordinance.

The Environmental Health Department has indicated that of the 199 improved properties, 101 appear to have insufficient land available for a replacement septic system and if deemed failing, a holding tank would be required.

It is anticipated that construction of this phase will begin July 2020 and conclude July 2021. The estimated costs of these improvements are \$3,700,000.

Phase 3 - Queen Anne Colony and Kentmorr

These two subdivisions were also platted in the 1950s and 1960s and are immediately adjacent to each other. While Queen Anne Colony typically has one-half to one-acre lots, the poor permeability of the soils and the high water table, particularly amongst the properties along Price Creek, have uncorrectable failures. Kentmorr, on the other hand, has very small lots (typically 5000-ft²) and most improved properties consist of two to four lots of record.

The two subdivisions combined had 944 lots of record when platted, of which 332 homes have been constructed (typically on more than one lot). Of the 412 vacant lots remaining, 272 contiguous vacant lots are excluded from the service area in accordance with the Attorney General's opinion of April 13, 2005. Of the 141 remaining lots in the service area, only 90 will remain after the mandatory lot consolidation ordinance.

The Environmental Health Department has indicated that of the 102 improved properties in Kentmorr, 26 appear to have insufficient land available for a replacement septic system and if deemed failing, a holding tank would be required. Similarly, for the 230 improved lots in Queen Anne Colony, 72 appear to have insufficient land available for a replacement septic system.

It is anticipated that construction of this phase will begin July 2021 and conclude July 2022. The estimated costs of these improvements are \$6,800,000.

Phase 4 - Chesapeake Estates, Sunny Isle of Kent, Normans/Batts Neck and Matapeake Estates

These three subdivisions were platted in the 1960s with Chesapeake Estates and Sunny Isle of Kent being immediately adjacent to each other. The community of Normans, also known locally as Batts Neck, is northeast of these two subdivisions and predates any of the subdivisions along Route 8. Matapeake Estates is the northern most community in the SKI service area and is small with regards to

the number of lots, which are typically one acre in size or greater. However, they also have poor soils as is typical of the service area.

The three subdivisions (and Batts Neck/Normans) combined had 510 lots of record when platted of which 210 homes have been constructed (typically on more than one lot). Of the 254 vacant lots remaining, 156 contiguous vacant lots are excluded from the service area in accordance with the Attorney General's opinion of April 13, 2005 (predominately in the Sunny Isle of Kent subdivision). Of the 98 remaining lots in the service area, only 67 will remain after the mandatory lot consolidation ordinance.

The Environmental Health Department has indicated that of the 210 improved properties, 70 appear to have insufficient land available for a replacement septic system and if deemed failing, a holding tank would be required.

It is anticipated that construction of this phase will begin July 2022 and conclude July 2023. The estimated costs of these improvements are \$4,500,000.

This concludes the discussion on the Southern Kent Island Public Health Area of Concern.

APPENDIX IX – SOUTHERN KENT ISLAND DOCUMENTATION

(insert in its entirety – only the document's date and title are listed below)

Section 1 – Environmental Health Documentation & Other State of Maryland Documents

May 25, 1990 – John Nickerson to Department of the Environment
April 29, 1997 - John Nickerson to Queen Anne's County Public Works
December 17, 1998 - John Nickerson to Queen Anne's County Public Works
February 12, 2004 - John Nickerson to Queen Anne's County Public Works
November 14, 2007 – Dr. Devadason to Department of the Environment
July 8, 2011 - John Nickerson to Queen Anne's County Citizen Advisory Board
June 9, 2014 – Dr. Ciotola to County Commissioners

Section 2 - July 17, 2014 – Maryland Department of Planning – Smart Growth Coordinating Committee – Priority Funding Area Public Health Exception

Section 3 – Policies, Ordinances, and Resolutions

December 14, 2004 – Resolution 04-68
April 1, 2013 – Policy Regarding Sewage “Holding Tanks”
November 12, 2013 – Ordinance 13-24
May 27, 2014 – Resolution 14-07

Section 4 – Rubin Report

Section 5 – STEP Cost Estimate

Section 6 – Department of the Environment – Depth to High Water Table Maps

Map Amendments

Chesapeake Estates/Sunny Isle of Kent/Batt's Neck/Kentmorr Sewerage Public Health Areas of Concern

Queen Anne Colony and Kentmorr Sewerage Public Health Areas of Concern

Kent Island Estates and Romancoke Sewerage Public Health Areas of Concern

(end of amendment 11-05)

Kent Island Estates and Romancock Sewerage Public Health Areas of Concern



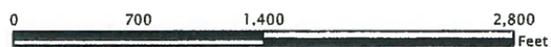
LEGEND

Sewer Service

- S1 Current Sewer Service
- S2 1 to 3 years ('15 - '17)
- S3 4 to 10 years ('18 - '23)
- S6 No Planned Service
- Public Health Concern

- Building Footprint
- Proposed Denied Access Line

Lots in the service area that may be exempt from the benefit assessment due to the presence of existing environmental constraints. Property owners may request relief from the exemption by providing evidence that the property is buildable.



Queen Anne Colony and Kentmorr Sewerage Public Health Areas of Concern



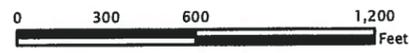
LEGEND

Sewer Service

- S1 Current Sewer Service
- S2 1 to 3 years ('15 - '17)
- S3 4 to 10 years ('18 to '23)
- S6 No Planned Service
- Public Health Concern

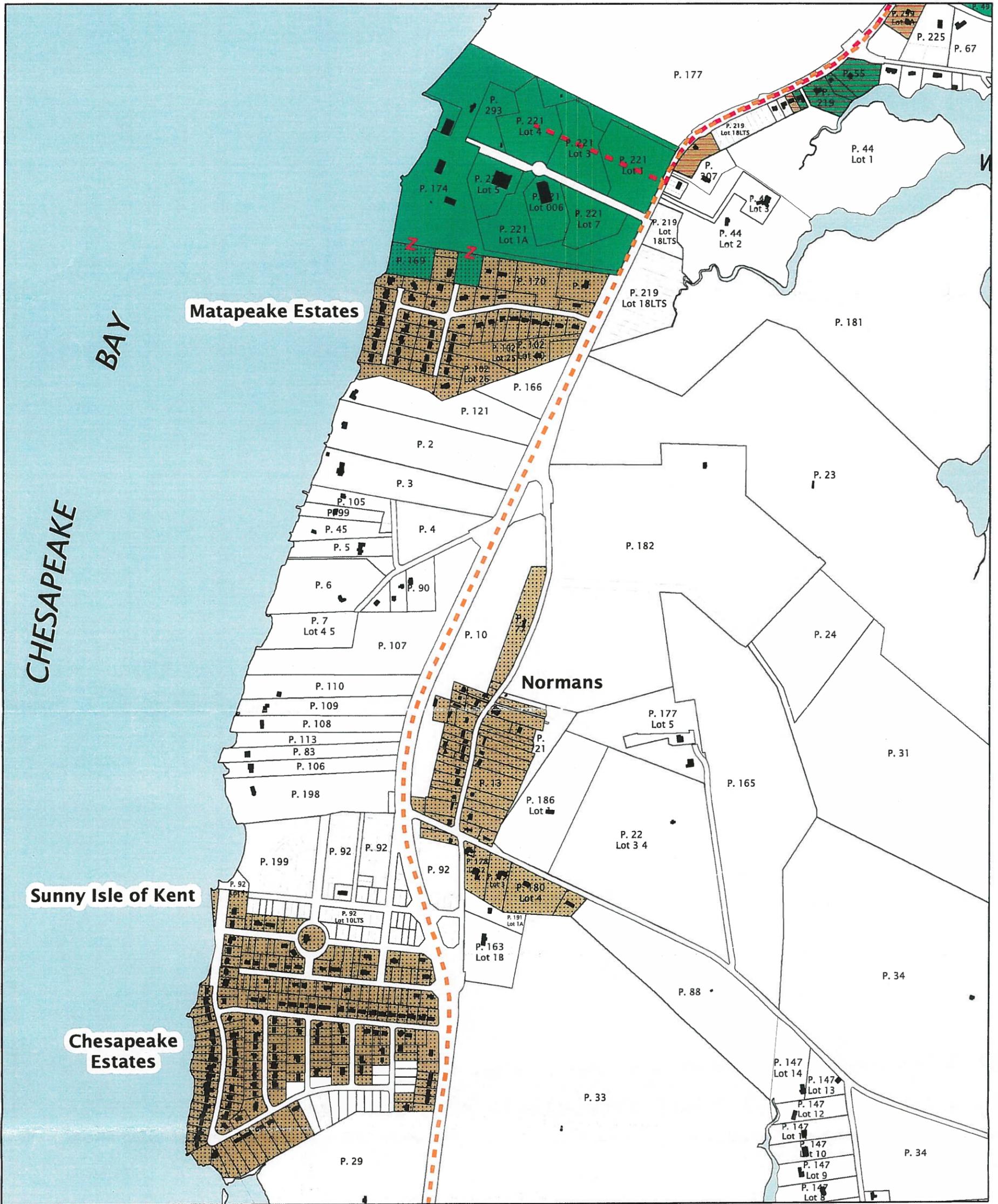
Proposed Denied Access Line

Building Footprint



File No.: 081414- SAN01

Chesapeake Estates/Sunny Isle of Kent/Batt's Neck/Matapeake Estates Sewerage Public Health Areas of Concern

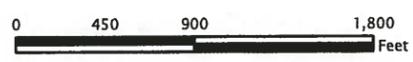


LEGEND

Sewer Service

- S1 Current Sewer Service
- S2 1 to 3 years ('15 - '17)
- S3 4 to 10 years ('18 - '23)
- S6 No Planned Service
- Public Health Concern
- Properties with Limited Sewer Allocation

- Existing 3" Denied Access Line
- Proposed Denied Access Line
- Building Footprint



File No.: 081114- SAN03