

**COUNTY COUNCIL**

**OF**

**TALBOT COUNTY**

2014 Legislative Session, Legislative Day No.: February 11, 2014

Resolution No.: 210

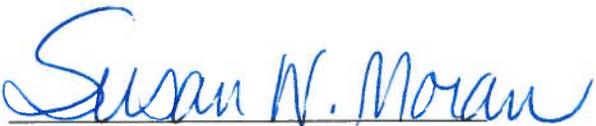
Introduced by: Mr. Bartlett, Mr. Duncan, Mr. Hollis, Mr. Pack

**A RESOLUTION TO AMEND THE TALBOT COUNTY COMPREHENSIVE WATER AND SEWER PLAN TO PROVIDE PERMANENT ALLOCATION OF WASTEWATER CAPACITY WITHIN THE TALBOT COUNTY REGION II WASTEWATER TREATMENT SYSTEM ("REGION II SYSTEM") TO THE MARTINGHAM SEWER SERVICE AREA ("SSA") AND TO INCREASE EXISTING FLOWS WITHIN THE REGION II SYSTEM FROM MARTINGHAM SSA BY 40,500 GALLONS PER DAY**

By the Council: February 11, 2014

Introduced, read the first time, and ordered posted, with Public Hearing scheduled on Tuesday, March 11, 2014 at 2:00 p.m. in the Bradley Meeting Room, South Wing, Talbot County Courthouse, Council Meeting Room, 11 North Washington Street, Easton, Maryland.

By order:

  
Susan W. Moran, Secretary

**A RESOLUTION TO AMEND THE TALBOT COUNTY COMPREHENSIVE WATER AND SEWER PLAN TO PROVIDE PERMANENT ALLOCATION OF WASTEWATER CAPACITY WITHIN THE TALBOT COUNTY REGION II WASTEWATER TREATMENT SYSTEM (“REGION II SYSTEM”) TO THE MARTINGHAM SEWER SERVICE AREA (“SSA”) AND TO INCREASE EXISTING FLOWS WITHIN THE REGION II SYSTEM FROM MARTINGHAM SSA BY 40,500 GALLONS PER DAY**

**WHEREAS**, the County Council of Talbot County, State of Maryland, by Resolution Number 100 has adopted the October 2002 Report of the Review of the Comprehensive Water and Sewerage Plan (the “Plan”); and

**WHEREAS**, Chapter Two of the Plan contains the *Talbot County Region II – Sanitary District Allocation Program*, pages 47-57, which presents a detailed analysis of allocation of wastewater treatment capacity within the Region II (St. Michaels) Wastewater Treatment System (“Region II System”), including classifying allocation to the Martingham Sewer Service Area (“SSA”) as “temporary”; and

**WHEREAS**, the County desires to change the allocation of wastewater capacity within the Region II System to the Martingham SSA from “temporary” to “permanent,” which would increase the existing flows within the Region II System by 40,500 gallons per day (“gpd”).

**NOW, THEREFORE, BE IT RESOLVED BY THE COUNTY COUNCIL OF TALBOT COUNTY**, that

1. In accordance with the requirements of Environment Article § 9-506(a)(1), Md. Ann. Code, the proposed amendment will be submitted to the Talbot County Planning Commission and the Talbot County Public Works Advisory Board for review and comment, within a 30-day period, for consistency with planning programs for the County. Pursuant to the requirements set forth in the above State statute, before the County Council may adopt the proposed amendment the Talbot County Planning Commission must first certify that the amendment is consistent with the County Comprehensive Plan prepared under Article 25A, §5 (X), Md. Ann. Code. Upon conclusion of the public hearing(s), closing of the public record, receipt and consideration of certifications and recommendations from the Planning Commission and Public Works Advisory Board, the County Council will consider and act upon the proposed amendment and approve Findings of Fact and Conclusions of Law.
2. Adoption of this resolution shall authorize the amendment of Chapter Two of the Talbot County Comprehensive Water and Sewerage Plan, *Talbot County Region II – Sanitary District Allocation Program*, pages 47-50F, for permanent allocation of wastewater capacity within the Region II (St. Michaels) Wastewater Treatment Plant to the Martingham SSA. Chapter Two shall reflect an increase in existing flows within the Region II System from Martingham SSA in the amount of 40,500 gpd pursuant to calculations by the County Engineer. To offset this increase, Chapter Two shall include new provisions reducing future Region II System flows from the Royal Oak, Newcomb, and Bellevue SSA by 40,500 gpd.

3. The text of this Amendment to Chapter Two of the Talbot County Comprehensive Water and Sewerage Plan is attached to this resolution as Exhibit "A" and incorporated by reference herein.

BE IT FURTHER RESOLVED, that this Resolution shall take effect immediately upon its date of passage.

**PUBLIC HEARING**

Having been posted and Notice, Time and Place of Hearing, and Title of Resolution No. 210 having been published, a public hearing was held on Tuesday, Marcy 11, 2014 in the Bradley Meeting Room, South Wing, Talbot County Courthouse, 11 North Washington Street, Easton, Maryland.

**BY THE COUNCIL**

Read the second time:

Enacted: **March 11, 2014**

By Order: Susan W. Moran  
Secretary

Pack	-	Aye
Hollis	-	Aye
Bartlett	-	Aye
Price	-	Nay
Duncan	-	Aye

EFFECTIVE: **March 11, 2014**

**TALBOT COUNTY REGION II - SANITARY DISTRICT ALLOCATION PROGRAM**

**Background**

1 The 2002 Report of the Review for the Talbot County Comprehensive Water and Sewerage Plan  
2 incorporated a detailed analysis to support the planning, design and construction of a 1.0 million  
3 gallon per day (MGD) wastewater treatment plant to replace the existing Region II Wastewater  
4 Treatment Plant with a design capacity of 500,000 gallon per day. Through negotiations with the  
5 Maryland Departments of the Environment (MDE) and Planning (MDP), the County and State  
6 agreed that the 1.0 million gallon per day (MGD) facility should be constructed but the National  
7 Pollution Discharge Elimination System (NPDES) Permit would only allow the discharge of  
8 800,000 gallons per day (gpd). The proposed wastewater treatment plant would be capable of  
9 enhanced nutrient removal, and would be capable of discharging concentrations of 3.0 mg/l of  
10 total nitrogen and 0.3 mg/l of total phosphorus at temperature of 10°C or greater to the receiving  
11 stream, Miles River.

12  
13 After seeking approval from MDE and MDP as to the design capacity of the Region II  
14 Wastewater Treatment Plant, Talbot County sought engineering proposals for design services for  
15 the new 1.0 MGD Enhanced Nutrient Removal (ENR) Upgrade and Expansion of the Region II  
16 Wastewater Treatment Plant. The County selected Rummel, Klepper and Kahl (RK&K) through  
17 a competitive bidding process to design the new ENR Wastewater Treatment Plant.

18  
19 During the design process, the County and RK&K sought ways to maximize the operation of the  
20 new 1.0 MGD ENR Upgrade and Expansion of the Region II Wastewater Treatment Plant. To  
21 provide temporary storage of extraneous flows experienced during periods of wet weather, the  
22 Bardnepho process would be constructed with two trains, each train capable of treating 500,000  
23 gpd. In addition to the two train process, a flow equalization basin was incorporated into the  
24 new wastewater treatment plant with a capacity of 100,000 gallons. The flow equalization basin  
25 would be connected to one of the treatment trains providing the County with 600,000 gallons of  
26 storage of extraneous flow in addition to the 1.7 million gallon pond used for emergency storage  
27 and volume for shellfish protection as required within the NPDES Permit.

28  
29 During the initial operation of the new Region II Wastewater Treatment Plant, flows would be  
30 treated through one train while efforts during this period would be made to improve the sewer  
31 collection system. As improvements were being made to the sewer collection system, thus  
32 creating capacity at the Region II Wastewater Treatment Plant, new opportunities to extend  
33 sewer into areas served by onsite sewage disposal systems would be created. Based on the  
34 information provided in the 1992 Update of the Talbot County Comprehensive Water and  
35 Sewerage Plan, the soils west of Route 50 are poor draining, clay laden soils, thus requiring  
36 groundwater penetration for effluent disposal for onsite sewage disposal systems. Utilizing the  
37 restricted, denied access sewer service policy that was adopted for the villages of Unionville,  
38 Tunis Mills and Copperville, the County could utilize the capacity reserved for inflow and  
39 infiltration for addressing water quality problems associated with septic systems thus  
40 establishing a program for protecting the tributaries of the Chesapeake Bay and promoting  
41 improvements of water quality of the tributaries in Talbot County.

42

43 As the design of the 1.0 MGD facility was being completed, MDE requested that the County  
44 execute the ENR agreement to proceed with the funding of the project using ENR grant funds  
45 and State Revolving Funds for low-interest loans. The ENR agreement was forwarded to the  
46 County Council President for execution, however, due to public concern as to the design and  
47 construction of a 1.0 MGD wastewater treatment facility to be permitted for 0.8 MGD, the  
48 County Council sought information from the Department of Public Works and input from the  
49 general public. During this period, the Region II Wastewater Treatment System experienced  
50 problems with extraneous flows associated with groundwater and stormwater entering the sewer  
51 collection system.

52  
53 These extraneous flows are defined as inflow and infiltration (I&I) flows. As the County was  
54 attempting to complete the design of the ENR upgrade and expansion of the Region II  
55 Wastewater Treatment Plant, the County was also completing in-pipe flow monitoring and  
56 smoke testing of the gravity sewer collection system in the Town of St. Michaels and the  
57 communities of Rio Vista and Bentley Hay. Through analysis by the Department of Public  
58 Works, the amount of I&I flows entering the Region II Wastewater Treatment Plant was fairly  
59 consistent with the difference in the daily average flows recorded for calendar year 2002 and  
60 2003. In 2002, the Mid-Atlantic Region of the United States experienced a serious drought and  
61 flows at the Region II Wastewater Treatment Plant averaged 298,000 gpd. In 2003, the Eastern  
62 Shore and the State of Maryland experienced record snowfalls and rainfalls that resulted in a  
63 yearly daily average flow of 486,000 gpd being recorded at the Region II Wastewater Treatment  
64 Plant. Using the difference in the yearly daily average flows for calendar year 2002 and 2003,  
65 the estimated amount of I&I entering the Region II Wastewater Treatment Plant is 170,000 gpd.

66

#### 67 **Revised Design Capacity from 1.0 MGD to 0.66 MGD**

68

69 As concerns from the general public mounted concerning the 1.0 MGD plant, permitted for 0.8  
70 MGD and on-going problems with the sewer collection system, the County Council introduced  
71 and adopted Resolution 106 to authorize the design and construction of a ENR wastewater  
72 treatment plant with a design capacity of 0.660 MGD.

73

74 With the adoption of Resolution 106, a conflict resulted within the Talbot County  
75 Comprehensive Water and Sewerage Plan associated with the analysis in Chapter 2 supporting  
76 the design and construction of a 1.0 MGD facility to be permitted for 0.8 MGD and the decision  
77 of the County Council to design and construct a 0.660 MGD ENR Wastewater Treatment Plant.  
78 Because of this conflict, MDE and MDP requested that Talbot County complete a new analysis  
79 to determine the allocation of capacity of the Region II Wastewater Treatment Plant to the  
80 various areas served by the treatment facility. In 2004, DPW completed the analysis and  
81 worked with the County Council to adopt the revised sewer allocations for the Region II  
82 Wastewater Treatment Plant having a designed hydraulic capacity of 660,000 gpd.

83

#### 84 **Determination of Wastewater Flow from the Villages, Communities, and Other Areas**

85

86 In the 2002 Report of the Review, the analysis used principles of MDE guidelines for  
87 determining water generation from a residential structure with the assumption that the  
88 wastewater generation equaled the water generation. Typically wastewater generation is a

89 percentage of water generation due to water being used for lawns, to wash cars or fill pools thus  
 90 resulting in water being used but is not being discharged into the sewer system. In accordance  
 91 with the MDE guidelines, flow projections for wastewater less than 80 gallons per day per  
 92 person must be justified. Metering the wastewater flow for over 17 months and reviewing the  
 93 data, the metered data is consistent and provides justification for using a flow projection less than  
 94 80 gallons per day per person or 184 gallons per equivalent dwelling per day. For areas within  
 95 the Town of St. Michaels that are served by a gravity sewer system, the allocation of wastewater  
 96 flow per dwelling shall be 250 gpd per dwelling. This flow rate uses a population equivalent of  
 97 2.3 people per dwelling with an estimated wastewater generation of 80 gpd per person which  
 98 totals 184 gpd per dwelling. To help account for inflow and infiltration 66 gpd is added to the  
 99 flow rate calculated for the dwelling to establish a flow rate of 250 gpd per dwelling (184  
 100 gpd/dwelling + 66 gpd of I & I/dwelling).

101  
 102 In an attempt to accurately assess the wastewater generation for the villages of Unionville, Tunis  
 103 Mills, Copperville, Royal Oak, Newcomb, and Bellevue, the wastewater flows were metered at  
 104 the Unionville Pump Station serving the villages of Unionville, Tunis Mills and Copperville and  
 105 Royal Oak Pump Station. The Royal Oak Pump station receives wastewater flows from the  
 106 villages of Bellevue, Newcomb and Royal Oak as well as the flows from the Unionville Pump  
 107 Station. The recorded flows from January, 2003 through May, 2004 are listed in Table 1.

**Table 1 - Pump Station Flow Data**

MONTH	Royal Oak Pump Station No. 1 (gallons per day)	Unionville Pump Station Unionville, Tunis Mills and Copperville Flows (gallons per day)	Royal Oak, Newcomb, and Bellevue Flows (gallons per day)
January, 2003	64,000	22,000	42,000
February, 2003	80,000	28,000	52,000
March, 2003	77,000	25,000	52,000
April, 2003	65,000	20,000	45,000
May, 2003	68,000	20,000	48,000
June, 2003	74,000	22,000	52,000
July, 2003	66,000	19,000	47,000
August, 2003	67,000	20,000	47,000
September, 2003	74,000	20,000	54,000
October, 2003	68,000	19,000	49,000
November, 2003	71,000	23,000	48,000
December, 2003	68,000	22,000	46,000
January, 2004	61,000	21,000	40,000
February, 2004	65,000	20,000	45,000
March, 2004	64,000	17,000	47,000
April, 2004	68,000	20,000	48,000
May, 2004	56,000	20,000	36,000

108 Using the data provided in Table 1, the daily average flows were calculated as follows:  
 109

110	<u>Unionville, Tunis Mills and Copperville</u>	
111	Calendar Year 2003 Daily Average Flow:	21,700 gallons per day
112	Calendar Year 2004 Daily Average Flow:	19,600 gallons per day
113	2003/2004 (Jan – May) Daily Average Flow:	21,100 gallons per day

115	<u>Royal Oak, Newcomb and Bellevue</u>	
116	Calendar Year 2003 Daily Average Flow:	48,400 gallons per day
117	Calendar Year 2004 Daily Average Flow:	43,800 gallons per day
118	2003/2004 (Jan – May) Daily Average Flow:	47,100 gallons per day

120 Unionville, Tunis Mills and Copperville

121

122 Within the Region I - Unionville, Tunis Mills and Copperville Sewer Service Area, 175  
 123 residential structures, as reported in 2004, are connected to the sewer system with a daily average  
 124 flow of 21,100 gpd, reported from January 2003 to May 2004. Based on Fiscal Year (FY) 2011,  
 125 170 residential structures were being billed for sewer service, but the 2004 analysis will be used  
 126 since the five (5) residential structure still would exist but are not occupied. Approximately 48  
 127 lots can be connected in the future. To assess the future flows from the proposed 48 lots, the  
 128 daily average flow of 21,100 gpd was divided by the existing number of residential structures  
 129 connected to the sewer system to establish a flow per connection. The flow per connections was  
 130 calculated to be 121 gpd per connection. To calculate the future flow rate of 48 lots, or future  
 131 connections, 48 lots were multiplied by 121 gpd per connection, with the future flow being  
 132 estimated to be 5,900 gpd. Because of various unknowns such as missing and/or broken  
 133 cleanout caps, broken laterals, leaking tank seals and/or leaking tank lids, a safety factor was  
 134 used. Consistent with EPA and MDE guidelines, a safety factor of 20% was used to estimate the  
 135 flow allocation for this region, and this safety factor addresses the variability of wastewater  
 136 flows for small systems. The following outlines how the flow allocation for Region I Unionville,  
 137 Tunis Mills and Copperville Sewer Service Area, of 32,400 gpd, was determined.

138

139 Estimated Total Flow (Q) = Existing Flow (Q<sub>existing</sub>) + Future Flows (Q<sub>future</sub>) + 20% Safety Factor

140 32,400 gpd = 21,100 gpd + 5,900 gpd + 5,400 gpd

142 Royal Oak, Newcomb and Bellevue

143

144 Within the Region II - Royal Oak, Newcomb and Bellevue Sewer Service Area, 376 residential  
 145 structures are connected to the sewer system with a daily average flow of 47,100 gpd as recorded  
 146 from January 2003 to May 2004. To assess the future flows, the daily average flow of 47,100  
 147 gpd was divided by the existing number of residential structures connected to the sewer system  
 148 to establish a flow per connection. The flow per connection was calculated to be 126 gpd per  
 149 connection. Because of various unknowns such as missing and/or broken cleanout caps, broken  
 150 laterals, leaking tank seals and/or leaking tank lids, a safety factor was used. Consistent with  
 151 EPA and MDE guidelines, a safety factor of 20% was used to estimate the flow allocation for  
 152 this region, and this safety factor addresses the variability of wastewater flows for small systems.

153

154 Formerly, 58,000 gpd of additional capacity had been allocated to Royal Oak, Newcomb, and  
 155 Bellevue. This capacity was sufficient to provide 460 additional connections (58,000 divided by

156 126 equals 460), which would have allowed the number of existing connections, 376, to increase  
157 to a total of 836 connections, representing an increase of approximately 122% (460 divided by  
158 376 equals 122%). This amount of additional capacity is inconsistent with the County  
159 Comprehensive Plan.

160  
161 Additionally, 40,500 gpd of existing capacity of the Region II Wastewater Treatment Plant must  
162 be allocated to the Martingham sewer service area to permanently connect Martingham to the  
163 Plant to resolve an existing public health problem. Accordingly, the 58,000 gpd formerly  
164 reserved to Royal Oak, Newcomb and Bellevue shall be reduced by 40,500 gpd, which shall be  
165 transferred to the Martingham sewer service area, leaving 17,500 gpd for Royal Oak, Newcomb,  
166 and Bellevue. This remaining capacity will be sufficient to permit an additional 139 connections  
167 in the Royal Oak, Newcomb, and Bellevue sewer service area. (17,500 gpd divided by 126 gpd  
168 equals 139 new connections). These new connections still permit an increase of 37% in new  
169 connections in the Royal Oak, Newcomb and Bellevue sewer service area.

170  
171 Finally, extension of sewer service to resolve water quality problems is being planned for the  
172 villages of Bozman, Neavitt, Claiborne, Whitman, and McDaniel. Extension of sewer service to  
173 those villages will require review and re-allocation of capacity from the Region II plant to  
174 address existing water quality issues. This will require another comprehensive review of sewer  
175 service capacity and allocation at that time.

176  
177 The following outlines how the flow allocation for the Region II Royal Oak, Newcomb and  
178 Bellevue Sewer Service Area, of 77,600 gpd, was determined.

179  
180 Estimated Total Flow (Q) = Existing Flow ( $Q_{existing}$ ) + Future Flows ( $Q_{future}$ ) + 20% Safety Factor  
181 77,600 gpd = 47,100 gpd + 17,500 gpd + 13,000 gpd

182  
183 Community of Bentley Hay

184  
185 In completing the 2002 Report of the Review of the Talbot County Comprehensive Water and  
186 Sewerage Plan, the Department of Public Works learned that the subdivision of Bentley Hay was  
187 excluded from the County and State Priority Funding Area maps. The subdivision of Bentley  
188 Hay is outside the municipal boundary of the Town of St. Michaels, yet receives water service  
189 from the Town of St. Michaels, and receives sewer service from Talbot County via the Region II  
190 Wastewater Treatment Plant.

191  
192 The Subdivision of Bentley Hay dates back to 1947 and has been assumed to be built out as of  
193 this date. The projected sanitary sewer flow from this subdivision was estimated to be 29,800  
194 gallons per day that was reported in the Region II Wastewater Treatment Plant Allocation  
195 Program in the 2002 Report of the Review.

196  
197 The allocation as presented in the 2002 Report of the Review shall be the same within the  
198 revised allocation. The Bentley Hay community allocation shall be 29,800 gpd.

199  
200 Other County Areas

201

202 As presented in the 2002 Report of the Review, flows from various areas in the County were  
203 incorporated into the allocation program. These areas included Chester Park, areas outside the  
204 priority funding areas and properties within the priority funding areas identified by Maryland  
205 Department of Planning (MDP). In addition to the areas in the County, estimated flows from the  
206 Perry Cabin Inn were incorporated into the flow calculations.

207  
208 With the completion of the expansion of the Inn at Perry Cabin, the estimated flow of 8,000 gpd  
209 has been assumed to be part of the existing flows for the Town of St. Michaels and Rio Vista.  
210 With the reduced capacity of the Region II Wastewater Treatment Plant, estimated wastewater  
211 flows from the Community of Back Creek and Chester Park have been incorporated into the  
212 category of Other County Areas with an estimated existing flow of 3,000 gpd and 12,000 gpd for  
213 future flows. The areas allocated wastewater flow in the 2002 Report of the Review,  
214 Unincorporated Areas being identified by MDP as being priority funding areas shall be  
215 incorporated into the future flows and made part of the reserved capacity for I&I flows for the  
216 Town of St. Michaels and Rio Vista as presented in this analysis. Both the County and the Town  
217 of St. Michaels will have to determine how future areas will be served with the capacity  
218 identified for future flows and the flows associated with the reserved capacity to I&I flows.

219  
220 Town of St. Michaels and Rio Vista

221  
222 As presented in the 2002 Report of the Review, the estimated existing and future flows from the  
223 incorporated limits of the Town and the Rio Vista Subdivision was 544,000 gpd. These  
224 wastewater flows were estimated on the statutory criteria for a priority funding areas (PFAs),  
225 minimum density of 3.5 lots per acre. In calculating this estimated flow rate, the County used  
226 data collected by Hyder Consulting that was presented in their August 2000 Region II  
227 Wastewater Collection System Study. The estimated flow rate for growth and high priority  
228 areas within the corporate limits of the Town was reported as 176,000 gpd that was incorporated  
229 into the total estimated sewerage flow of 544,000 gpd.

230  
231 The original design of the Region II Wastewater Treatment Plant was to serve primarily the  
232 Town of St. Michaels. The estimated flow associated with the unincorporated areas around St.  
233 Michaels and within the MDP defined priority funding area was found to be approximately  
234 52,500 gpd. This includes Chester Park and the proposed expansion at the Inn at Perry Cabin.  
235 The estimated flows of 42,000 gpd, excluding Chester Park and the Inn at Perry Cabin, will need  
236 to be established at the wastewater treatment plant by expanding the plant capacity or by making  
237 corrections within the St. Michaels sewer collection system to reduce the amount of flow being  
238 associated with extraneous, I&I flows.

239  
240 Within this analysis, the existing flows for St. Michaels and Rio Vista were determined by  
241 deducting the recorded and estimated flows for other areas and the extraneous flows associated  
242 with I&I flows. The estimated existing flow of 197,000 gallons per day was determined for St.  
243 Michaels and Rio Vista. To estimate the future flows from the Town of St. Michaels and Rio  
244 Vista, I&I flows were held constant establishing a reserved capacity for existing and future  
245 extraneous flows. The safety factors for Unionville, Tunis Mills and Copperville and Royal Oak,  
246 Newcomb and Bellevue Sewer Service Areas were incorporated as part of extraneous flows held  
247 constant as reserved capacity. In 2004, the estimated future flows for the Town of St. Michaels

248 and Rio Vista was estimated to be 116,100 gpd, or 109,700 gpd for the Town of St. Michaels and  
249 6,400 gpd for Rio Vista.

250  
251 Community of Rio Vista

252  
253 After completing the analysis to determine the existing and future flows for St. Michaels and Rio  
254 Vista, an estimate of the wastewater flows being generated by Rio Vista was completed. The  
255 Rio Vista Community has 264 residential lots with a church owning 16 of these lots.  
256 Incorporated into the Rio Vista flows are the lots along Maryland Route 33 with approximately  
257 65.25 equivalent dwelling units (EDUs) with a future total 97.25 EDUs. Using 200 gallons per  
258 day per residential lot, the estimated wastewater flow for Rio Vista area was determined to be  
259 63,050 gallons per day with 49,600 gpd associated with 248 residential lots in the Rio Vista  
260 Community, 400 gallons per day of wastewater flow being estimated for the church, and 13,050  
261 gpd being allocated for the businesses on Maryland Route 33. The future flows for this area  
262 were estimated to be 6,400 gpd with the assumption that Rio Vista was built-out, thus  
263 establishing a total allocation of 69,450 gpd for this area.

264  
265 Inflow and Infiltration Flows and Reserved Capacity

266  
267 Using calendar year 2003 flow data for the Region II Wastewater Treatment Plant and the design  
268 capacity of 500,000 gpd, the allocations for the various sewer service areas are provided in Table  
269 2. Based on the amount of extraneous, I&I flows experienced in calendar year 2003 being  
270 170,000 gpd, this value has been shown in Table 2 as I&I flows. Because of the extraneous  
271 flows currently being recorded at the Region II Wastewater Treatment Plant, measures need to  
272 be taken to reserve this capacity to avoid over allocating the existing and future capacity of the  
273 plant.

274  
275 The estimated flow being reserved for I&I is 170,000 gpd. The 170,000 gpd is primarily  
276 associated with the extraneous flows experienced in the gravity sewer collection system within  
277 Town of St. Michaels and the communities of Bentley Hay and Rio Vista but impacts the overall  
278 capacity of the Region II Wastewater Treatment Plant. By reserving capacity for the extraneous,  
279 I&I flows, this capacity will buffer peak flows associated with future extraneous, I&I flows  
280 allowing the Region II Wastewater Treatment Plant to be operated within the permit limitations  
281 for capacity. As improvements to the gravity sewer system are completed, the flows recorded at  
282 the Region II Wastewater Treatment Plant, recorded through in-pipe flow monitoring and  
283 computer analysis can be used to determine how much capacity can be removed from the  
284 reserved capacity set aside for I&I flows.

285  
286 The 170,000 gpd allocated for I&I flows (or the wastewater treatment plant safety factor) equates  
287 to approximately 26% of the design capacity. The use of a 20% safety factor for the village  
288 flows is associated with variability of small flows and was not intended to reflect additional  
289 reserve capacity within the wastewater treatment plant. As future efforts are made to reduce  
290 extraneous flows entering the St. Michaels Gravity Sewer Collection System, capacity within the  
291 Region II Wastewater Treatment Plant can be reallocated from the reserve and used to address  
292 sewer needs and water quality improvements.

Table 2. Existing Wastewater Flows to the Region II Treatment Plant

SEWER SERVICE AREA	EXISTING FLOWS
Existing Design Capacity	500000
Recorded Flows for Calendar Year 2003	-468000
<b>Remaining Capacity</b>	<b>32000</b>
REVIEW OF EXISTING FLOWS	
Total for the Region II Wastewater Treatment Plant	468000
Bentley Hay	-29800
Unionville, Tunis Mills and Copperville	-21100
Royal Oak, Newcomb and Bellevue	-47100
Other County Areas	-3000
Inflow and Infiltration Flow	-170000
<b>St. Michaels And Rio Vista</b>	<b>197000</b>

293 As presented in Table 2, the existing flows for the Town of St. Michaels and Rio Vista equates to  
 294 197,000 gpd with 133,950 gpd being estimated for the Town of St. Michaels and 63,050 gpd  
 295 being estimated for the Rio Vista area. Using the flows presented earlier in the analysis, the  
 296 projected flows for new wastewater treatment plant with a capacity of 660,000 gpd has been  
 297 presented in Table 3.

Table 3. Allocation of Capacity at the Region II Wastewater Treatment Plant

SEWER SERVICE AREA	EXISTING FLOWS	FUTURE FLOWS	RESERVED CAPACITY FOR I&I	TOTAL FLOWS
St. Michaels	133950	109700	143500	387150
Rio Vista Area	63050	6400	0	69450
Bentley Hay	29800	0	0	29800
Unionville, Tunis Mills and Copperville	21100	5900	5400	32400
Royal Oak, Newcomb and Bellevue	47100	58000	21100	126200
Other County Areas	3000	12000	0	15000
<i>Inflow and Infiltration Reserved Capacity</i>	170000	0	0	0
Totals	468000	192000	170000	660000

298 In comparison with the 2002 Report of the Review, the existing and future flows for the Town of  
 299 St. Michaels and the Rio Vista were reduced from 544,000 gpd to 313,100 gpd. The wastewater  
 300 flow allocation for the Town of St. Michaels can be increased as sewer collection system  
 301 improvements are made and confirmed by the Department of Public Works to have actually  
 302 reduced the amount of I&I flow into the sewer collection system.

303  
 304 Community of Martingham and Harbourtowne Golf Resort and Conference Center

305  
 306 In April, 2004, representatives from Martingham Utilities Cooperative met with the Talbot  
 307 County Department of Public Works to discuss the possibility of connecting to the Region II  
 308 Wastewater Treatment Plant. The current operation of the wastewater treatment system serving  
 309 the residents of the Martingham Community and the Harbourtowne Golf Resort and Conference  
 310 Center consists of a two stage stabilization lagoon followed by disinfection and an effluent

311 holding pond. Under proper weather conditions, the treated effluent is spray irrigated on various  
312 fairways.

313  
314 The wastewater treatment facility for the Martingham Community has a treatment plant capacity  
315 of 75,000 gpd but the spray disposal areas had a permit limit of 66,800gpd. The Martingham  
316 Community serves 330 residents and a commercial establishment, the Harbourtowne Golf  
317 Resort and Conference Center.

318  
319 Based on information received in 2004 from Martingham Utilities, MDE, and Maryland  
320 Environmental Service, the contract-operator for the Martingham Wastewater Treatment Plant at  
321 the time, the spray irrigation site on private land had been reduced by nearly 65% of the usable  
322 land area due to MDE requiring a 200 foot setback. It was concluded that the only option  
323 available to Martingham Utilities was to send flow to the Region II Wastewater Treatment Plant,  
324 especially during periods of dry weather in the late fall and winter months to establish enough  
325 pond capacity to retain water in the ponds when Martingham cannot spray irrigate.

326  
327 Based on the discussions with Martingham Utilities Cooperative in 2004, up to 8,000,000 gallons  
328 of either raw wastewater or treated effluent would need to be sent to the Region II Wastewater  
329 Treatment Plant. During years with normal precipitation amounts, an estimated 2,000,000 to  
330 4,000,000 gallons of flow would be sent to the Region II Wastewater Treatment. In the event of  
331 an extremely wet year, 8,000,000 gallons would be sent to the Region II Wastewater Treatment  
332 Plant over a period of 300 days (26,667 gpd).

333  
334 For the County to participate with Martingham Utilities Cooperative and MDE in resolving this  
335 issue, corrective measures that involve the Region II Wastewater Treatment Plant and Sewer  
336 Collection System needed to be completed in two phases. First, a short-term strategy would  
337 employ a temporary force main laid within the road drainage ditches or other approved  
338 temporary strategy conveying treated effluent to the Region II Wastewater Treatment Plant. The  
339 standard operating procedure, in the short-term, would need to limit the amount of treated  
340 effluent to 19,000 gpd or less on a calendar year daily average flow with no flow being conveyed  
341 during periods of rainfall. During this short-term, temporary period, improvements to the sewer  
342 collection system would occur, and the County believed that improvements to the sewer lines in  
343 areas around Mill and Carpenter Streets, and the north end of Town would reduce enough I&I  
344 flows from the system to allow Martingham to connect to the Region II Sewer Collection System  
345 on a permanent basis.

346  
347  
348 In 2008, the Talbot County Sanitary District assumed ownership of the Martingham Wastewater  
349 Treatment System. After assuming ownership of this wastewater system, the County pursued a  
350 long-term strategy of constructing a new force main from the Martingham Wastewater Treatment  
351 Plant to the sewer collection system of the Region II Wastewater Treatment Plant. To complete  
352 this long-term strategy, the Talbot County Sanitary District applied for low-interest loans and  
353 grant through USDA Rural Utility Service program and 2010. Due to limited grant funds being  
354 offered to extend the sewer to the Martingham Community, Talbot County submitted a grant  
355 request to the Maryland Water Quality Infrastructure Financing Program administered by MDE  
356 in 2010 seeking up to \$2.0 million in grant funds or loan forgiveness.

357  
 358 Because of the low-strength of the raw wastewater being treated at the Region II Wastewater  
 359 Treatment, raw sewage from the Martingham Wastewater Treatment Plant will be pumped for  
 360 treatment at the Region II Wastewater Treatment Facility. In reviewing the metered flows at the  
 361 Martingham Wastewater System, an average flow per EDU was determined to be 122.5  
 362 gpd/EDU. The Martingham Community requires 330 EDUs including residential structures and  
 363 the Harbourtowne Golf Resort and Conference Center; 122.5 gpd x 330 EDU's = 40,500 gpd.  
 364 Thus 40,500 GPD of capacity must be allocated permanently to connect the Martingham  
 365 Community to the Region II Wastewater Treatment Plant. That capacity will be allocated from  
 366 the future flows formerly allocated to the Royal Oak, Newcomb and Bellevue sewer service area.  
 367  
 368 To establish a temporary connection for Martingham, 26,700 gpd had been allocated to  
 369 Martingham from the 143,500 gpd of I&I previously allocated to the Town of St. Michaels. With  
 370 the permanent connection of Martingham to the Region II Plant, that temporary allocation will  
 371 be returned to the I & I allocated to the Town of St. Michaels.  
 372  
 373  
 374

Table 4.  
 Review of Existing Flows Including I & I

SEWER SERVICE AREA	EXISTING FLOWS
St. Michaels And Rio Vista	197000
Bentley Hay	29800
Unionville, Tunis Mills and Copperville	21100
Royal Oak, Newcomb and Bellevue	47100
Other County Areas	3000
<b>Martingham Community</b>	40,500
<i>Inflow and Infiltration</i>	170000
Totals	508,500

Table 5. Revised Allocation of Capacity for 660,000 gallons per day

SEWER SERVICE AREA	EXISTING FLOWS	FUTURE FLOWS	RESERVED CAPACITY FOR I&I	TOTAL FLOWS
St. Michaels	133,950	109700	151600	395250
Rio Vista	63,050	6400	0	69,450
Bentley Hay	29800	0	0	29800
Unionville, Tunis Mills and Copperville	21100	5900	5400	32400
Royal Oak, Newcomb and Bellevue	47100	17,500	13,000	77,600
Other County Areas	3000	12000	0	15000
<b>Martingham Community</b>	40,500	0		40,500
Totals	338,500	151,500	170,000	660000