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WATER AND WASTEWATER SUPPLY AND DEMAND MONITORING REPORT

The Planning and Economic Development Committee recommends the adoption of the recommendation contained in the following report dated September 1, 2010, from the Commissioner of Planning and Development Services.

1. RECOMMENDATION

It is recommended that:

1. The Regional Clerk forward a copy of this report and the Water and Wastewater Supply and Demand Monitoring Report (*Council Attachment 1*) to the Clerks of the local municipalities in York Region.

2. PURPOSE

This report informs Council about the 2010 Water and Wastewater Supply and Demand Monitoring Report. The Monitoring Report tracks the current water and wastewater system demands versus the available servicing capacity on a community/service area basis in York Region to 2011 and highlights areas of potential constraints in the systems for further evaluation. There are other reports to Council that address the related issues of population forecasts, servicing allocation and the delivery of water and wastewater infrastructure.

3. BACKGROUND

The 2010 Supply and Demand Monitoring Report has the same objectives as the previous two Supply and Demand Monitoring Reports

The first York Region Water and Wastewater Supply and Demand Monitoring Report was published in 2005 and the second was published in 2007. The 2010 Supply and Demand Monitoring Report has the same objectives as the previous two reports and utilizes a similar capacity monitoring approach. In addition, the 2010 version includes information on metered water and wastewater demands and takes a more comprehensive look at the progress of capital plan projects and the potential impact of delays.

The 2010 Supply and Demand Monitoring Report should be read in conjunction with other related Regional reports

The 2010 Water and Wastewater Supply and Demand Monitoring Report should be read in conjunction with a number of other related Regional reports. These include: (1) the Regional Official Plan; (2) the 2009 Water and Wastewater Master Plan Update; (3) the 10-year Capital Plan; (4) the Water and Wastewater Infrastructure Status Report (produced quarterly); (5) the Capacity and Servicing Assignment Protocol (June 2005); and (6) previous Regional Council Reports on servicing allocation dated November 2007, December 2008 and February 2010.

The above mentioned reports work together as follows. The Regional Official Plan sets population growth targets for each local municipality and the Water and Wastewater Master Plan Update recommends infrastructure based on these population growth targets. The quarterly Water and Wastewater Infrastructure Status Report from the Environmental Services Department tracks the implementation status of the critical new infrastructure that was recommended in the Master Plan and the 10-year Capital Plan. Other Council reports assign water and wastewater servicing allocation to the local municipalities to ensure that development occurs where servicing capacity will exist. The Water and Wastewater Supply and Demand Monitoring Report then tracks the water and wastewater system demands versus the available servicing capacity on a community/service area basis and highlights areas for further evaluation.

4. ANALYSIS AND OPTIONS

Monitoring was done by comparing 2009 populations with 2011 population forecasts and planned infrastructure. The capacity of the water and wastewater infrastructure was also compared with measured flow data

Water and wastewater capacity and infrastructure must be built ahead of development demand. This monitoring report is part of an overall process to ensure that demand does not exceed available capacity. To accomplish the goal of monitoring water and wastewater supply and demand, a comparison is made between the latest available demand data, measured 2009 water and wastewater demands and the projected 2011 demands. Since the 2009 Water and Wastewater Master Plan Update used the projected 2011 demands to size Regional infrastructure for 2011, any significant deviations between the measured 2009 and projected 2011 demands are noted and evaluated in this report. Also, any infrastructure projects that are not being built according to the schedule in the 2009 Water and Wastewater Master Plan Update are documented and evaluated, since these projects could affect available servicing capacity. Additionally, measured flow data, where available, is compared to water supply and wastewater treatment capacities.

SUMMARY OF FINDINGS: WATER

Generally no water supply constraints on the York Water System (YWS) although some areas require further investigation

The residential serviced population for the York Water System (YWS), including the Yonge Street Aquifer System, is approximately 937,000 by end of year 2009. This figure is within the projections utilized by the 2009 Water and Wastewater Master Plan Update. Generally, no future water supply issues are anticipated, although the populations in a few pressure districts are building out faster than anticipated. Two pressure districts have been flagged for further investigation by Regional staff in consultation with local municipal staff and will be reported on in the next monitoring report. Measured 2009 maximum day demand from the Toronto water supply system was within the agreement limits. Measured 2009 maximum day demand from the Peel water supply system was approximately 20% beyond the agreement limits. However, no issues are anticipated as York's water demands can be managed within the Toronto and Peel Region agreement limits. The current progress of the Region's capital plan generally matches the system demands on the YWS up to 2011. The 2009 Water and Wastewater Master Plan Update has examined the longer term demand situation and made appropriate recommendations regarding infrastructure requirements and timing.

No water supply constraints in the stand-alone water systems

The residential serviced population reached by the end of the year 2009 in the communities with stand-alone water systems (including the Town of Georgina) is approximately 56,000 and is within the corresponding planning forecasts used by the 2009 Water and Wastewater Master Plan Update. Measured 2009 maximum day demand in some of the stand-alone water supply systems was beyond the available firm capacity. However, upgrades in these communities will be completed this year to rectify the problems and a project to upgrade the water supply system in Ansnorveldt is expected to commence this year as part of the Region's rehabilitation program. The 2009 Water and Wastewater Master Plan Update has examined the longer term demand situation and made appropriate recommendations regarding infrastructure requirements and timing.

SUMMARY OF FINDINGS: WASTEWATER

Generally no wastewater servicing constraints on the York-Durham Sewage System (YDSS) although some areas require further investigation

The Region has committed to servicing 970,000 residential persons on the York-Durham Sewage System (YDSS) by the end of 2010. This figure is based on the capacity available at the Duffin Creek Water Pollution Control Plant (WPCP) for flows from York Region and the allowable flows to Peel Region. At end of year 2009, the residential

population on the YDSS, including Peel diversion has reached approximately 926,000 persons. This figure is within the 2011 projections utilized by the 2009 Water and Wastewater Master Plan Update. Measured 2009 average day sanitary flow from York Region to the Duffin Creek treatment plant is within the plant's rated capacity. Measured 2009 average day sanitary flow from York Region to Peel Region is within the agreement limits. Generally no future sanitary capacity issues are anticipated, although the populations in a few service areas are building out faster than forecasted. The Newmarket and Thornhill service areas have been flagged for further investigation by Regional staff in consultation with local municipal staff and will be reported on in the next monitoring report. The current progress of the Region's capital plan generally matches the wastewater demands on the YDSS up to 2011. The 2009 Water and Wastewater Master Plan Update has examined the longer term demand situation and made appropriate recommendations regarding infrastructure requirements and timing.

No sanitary servicing constraints in the stand-alone wastewater systems

The residential serviced population reached by the end of the year 2009 in the communities with stand-alone wastewater systems (including the Town of Georgina) is approximately 45,000 and is within the corresponding planning forecasts used by the 2009 Water and Wastewater Master Plan Update. Measured 2009 average day sanitary flows from the stand-alone wastewater systems are within the rated capacities of the respective treatment plants. The current progress of the Region's capital plan generally matches the system demands up to 2011. The 2009 Water and Wastewater Master Plan Update has examined the longer term demand situation and made appropriate recommendations regarding infrastructure requirements and timing.

5. FINANCIAL IMPLICATIONS

This report does not have any direct financial impacts.

6. LOCAL MUNICIPAL IMPACT

The Supply and Demand Monitoring Report provides detailed information on the capacity of and demand on the Regional water and wastewater systems. The local municipalities benefit from this report by having additional information on system performance and the impact on growth in their respective municipality.

7. CONCLUSION

The 2010 Supply and Demand Monitoring Report has revealed that the 2009 year end residential populations relying on the York Water System (YWS), York-Durham Sewage

System (YDSS) and the stand-alone water and wastewater systems (including the Town of Georgina) are within the corresponding 2011 planning forecasts used by the 2009 Water and Wastewater Master Plan Update. However, residential populations in a few water pressure districts and sanitary service areas on the YWS and YDSS are building out faster than anticipated. These service areas will be further investigated by Regional staff in consultation with local municipal staff and will be reported on in the next monitoring report. The information will assist the Environmental Services Department in the timing of their projects. The current progress of the Region's capital plan generally matches water and wastewater demands up to 2011. The 2009 maximum day water demands and average day sanitary flows measured at the treatment plants are generally within allowable levels.

For more information on this report, please contact Jonathan P'ng, Manager, Water and Wastewater Planning, at ext. 1573.

The Senior Management Group has reviewed this report.

(The attachment referred to in this clause is attached to this report.)



Water and Wastewater Supply and Demand Monitoring Report



September 2010

DISCLAIMER

The information contained in this report has been provided as a public service. Although efforts have been made to ensure its accuracy, The Regional Municipality of York makes no guarantee, warranty or any representation of any kind whatsoever, whether express or implied, concerning the accuracy, reliability, usefulness or completeness of the information or various sources of information contained in this report. Any use that any third party makes of this report or the information contained in this report is the responsibility of the third party.

Water and Wastewater Supply and Demand Monitoring Report

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Executive Summary

The purpose of the Water and Wastewater Supply and Demand Monitoring Report is to monitor the current water and wastewater system demands versus the available servicing capacity on a community/service area basis in York Region. To accomplish this, a comparison is made between the measured 2009 water and wastewater demands and the projected 2011 demands. Since the 2009 Water and Wastewater Master Plan Update used the projected 2011 demands to size Regional infrastructure for 2011, any significant deviations between the measured 2009 and projected 2011 demands were noted and evaluated in this report. Also, any infrastructure projects that are not being built according to the schedule in the 2009 Water and Wastewater Master Plan Update were documented and evaluated, since these projects could affect available servicing capacity. Additionally, measured flow data, where available, was compared to water supply and wastewater treatment capacities.

The 2010 Supply and Demand Monitoring Report has the same objectives as the previous two Supply and Demand Monitoring Reports

The first York Region Water and Wastewater Supply and Demand Monitoring Report was published in 2005 and the second was published in 2007. The 2010 Supply and Demand Monitoring Report has the same objectives as the previous two reports and utilizes a similar capacity monitoring approach. In addition, the 2010 version includes information on metered water and wastewater demands and takes a more comprehensive look at the progress of capital plan projects and the potential impact of delays.

The 2010 Supply and Demand Monitoring Report should be read in conjunction with other related Regional reports

The 2010 Water and Wastewater Supply and Demand Monitoring Report should be read in conjunction with a number of other related Regional reports. These include: (1) the Regional Official Plan; (2) the 2009 Water and Wastewater Master Plan Update; (3) the 10-year Capital Plan; (4) the Water and Wastewater Infrastructure Status Report (produced quarterly); (5) the Capacity and Servicing Assignment Protocol (June 2005); and (6) previous Regional Council Reports on servicing allocation dated November 2007, December 2008 and February 2010.

The above mentioned reports work together as follows. The Regional Official Plan sets population growth targets for each local municipality and the Water and Wastewater Master Plan Update recommends infrastructure based on these population growth targets. The quarterly Water and Wastewater Infrastructure Status Report from the Environmental Services Department tracks the implementation status of the critical new infrastructure that was recommended in the Master Plan and the 10-year Capital Plan. Other Council reports assign water and wastewater servicing allocation to the local municipalities to ensure that development occurs where servicing capacity will exist. The Water and Wastewater Supply and Demand Monitoring Report then tracks the water and wastewater system demands versus the available servicing capacity on a community/service area basis and highlights areas for further evaluation.

Summary of Supply and Demand Monitoring: Water

Generally no water supply constraints on the York Water System (YWS) although some areas require further investigation

The residential serviced population for the York Water System (YWS), including the Yonge Street Aquifer System, is approximately 937,000 by end of year 2009. This figure is within the projections utilized by the 2009 Water and Wastewater Master Plan Update. Generally, no future water supply issues are anticipated, although the populations in a few pressure districts are building out faster than anticipated. In particular, Vaughan Pressure District 9 and Stouffville Zone 2 have been flagged for further investigation by Regional staff in consultation with local municipal staff and will be reported on in the next monitoring report. Measured 2009 maximum day demand from the Toronto water supply system was within the agreement limits. Measured 2009 maximum day demand from the Peel water supply system was approximately 20% beyond the agreement limits. However, no issues are anticipated as York's water demands can be managed within the Toronto and Peel Region agreement limits. The current progress of the Region's capital plan generally matches the system demands on the YWS up to 2011. The 2009 Water and Wastewater Master Plan Update has examined the longer term demand situation and made appropriate recommendations regarding infrastructure requirements and timing.

No water supply constraints in the stand-alone water systems

The residential serviced population reached by the end of the year 2009 in the communities with stand-alone water systems (including the Town of Georgina) is approximately 56,000 and is within the corresponding planning forecasts used by the 2009 Water and Wastewater Master Plan Update. Measured 2009 maximum day demand in some of the stand-alone water supply systems was beyond the available firm capacity. However, upgrades in these communities will be completed this year to rectify the problems and a project to upgrade the water supply system in Ansnorveldt is expected to commence this year as part of the Region's rehabilitation program. The 2009 Water and Wastewater Master Plan Update has examined the longer term demand situation and made appropriate recommendations regarding infrastructure requirements and timing.

Summary of Supply and Demand Monitoring: Wastewater

Generally no wastewater servicing constraints on the York-Durham Sewage System (YDSS) although some areas require further investigation

The Region has committed to servicing 970,000 residential persons on the York-Durham Sewage System (YDSS) by the end of 2010. This figure is based on the capacity available at the Duffin Creek Water Pollution Control Plant (WPCP) for flows from York Region and the allowable flows to Peel Region. At end of year 2009, the residential population on the YDSS, including Peel diversion has reached approximately 926,000 persons. This figure is within the 2011 projections utilized by the 2009 Water and Wastewater Master Plan Update. Measured 2009 average day sanitary flow from York Region to the Duffin Creek treatment plant is within the plant's rated capacity. Measured 2009 average day sanitary flow from York Region to Peel

Region is within the agreement limits. Generally no future sanitary capacity issues are anticipated, although the populations in a few service areas are building out faster than forecasted. The Newmarket and Thornhill service areas have been flagged for further investigation by Regional staff in consultation with local municipal staff and will be reported on in the next monitoring report. The current progress of the Region's capital plan generally matches the wastewater demands on the YDSS up to 2011. The 2009 Water and Wastewater Master Plan Update has examined the longer term demand situation and made appropriate recommendations regarding infrastructure requirements and timing.

No sanitary servicing constraints in the stand-alone wastewater systems

The residential serviced population reached by the end of the year 2009 in the communities with stand-alone wastewater systems (including the Town of Georgina) is approximately 45,000 and is within the corresponding planning forecasts used by the 2009 Water and Wastewater Master Plan Update. Measured 2009 average day sanitary flows from the stand-alone wastewater systems are within the rated capacities of the respective treatment plants. The current progress of the Region's capital plan generally matches the system demands up to 2011. The 2009 Water and Wastewater Master Plan Update has examined the longer term demand situation and made appropriate recommendations regarding infrastructure requirements and timing.

Conclusion

The 2010 Supply and Demand Monitoring Report has revealed that the 2009 year end residential populations relying on the York Water System (YWS), York-Durham Sewage System (YDSS) and the stand-alone water and wastewater systems (including the Town of Georgina) are within the corresponding 2011 planning forecasts used by the 2009 Water and Wastewater Master Plan Update. However, residential populations in a few water pressure districts and sanitary service areas on the YWS and YDSS are building out faster than anticipated. These service areas will be further investigated by Regional staff in consultation with local municipal staff and will be reported on in the next monitoring report. The information will assist the Environmental Services Department in the timing of their projects. The current progress of the Region's capital plan generally matches water and wastewater demands up to 2011. The 2009 maximum day water demands and average day sanitary flows measured at the treatment plants are generally within allowable levels.

Chapter 1

Background

The 2010 Supply and Demand Monitoring Report has the same objectives as the previous two Supply and Demand Monitoring Reports

In September 2005, the Region prepared the first Water and Wastewater Supply and Demand Monitoring Report as part of the Water and Wastewater Supply and Demand Monitoring Program. The Report, which was prepared through consultation and discussion with staff from the nine area municipalities, had the following objectives:

- Increase the Region's ability to manage the water and wastewater servicing supply and demand requirements of the municipalities;
- Provide a technical reference for maintaining and applying the Region's water and wastewater modelling tools;
- Provide a basis for water and wastewater planning staff to review and provide comments on the water and wastewater aspects of development applications; and
- Become a reference document for Regional and Municipal technical staff, the development industry and regulatory agencies.

In the subsequent 2007 Water and Wastewater Supply and Demand Monitoring Report, it was also intended to monitor the growth (current versus projected) in the service areas relative to the ultimate servicing capacity of the existing infrastructure wherever possible. Such monitoring would provide guidance in the development review process with respect to the capacity issues in case of any significant deviations in terms of the population density, or with regards to the timing of the proposed growth related infrastructure upgrades.

This release of the 2010 Supply and Demand Monitoring Report has the same objectives as the previous two reports. It provides an up-to-date description of the current water and wastewater demands in the nine area municipalities and compares them to the 2011 demand projections that were assumed in the 2009 Water and Wastewater Master Plan Update. Since Regional infrastructure has been sized to accommodate the 2011 demands and beyond, any observed deviations from the 2011 demands will be noted in this report. Therefore, as with the previous Supply and Demand Monitoring Reports, the purpose is to document any service areas where shortfalls in water and wastewater servicing capacity exist, or may soon exist. Additionally, information on servicing allocation and growth projections by municipality is presented. Also, measured flow data, where available, is compared to water supply and wastewater treatment capacities.

The 2010 Supply and Demand Monitoring Report should be read in conjunction with other related Regional reports

The 2010 Water and Wastewater Supply and Demand Monitoring Report should be read in conjunction with a number of other related Regional reports. These include: (1) the Regional Official Plan; (2) the 2009 Water and Wastewater Master Plan Update; (3) the 10-year Capital Plan; (4) the Water and Wastewater Infrastructure Status Report (produced quarterly); (5) the Capacity and Servicing Assignment Protocol (June 2005); and (6) previous Regional Council Reports on servicing allocation dated November 2007, December 2008 and February 2010.

The above mentioned reports work together as follows. The Regional Official Plan sets population growth targets for each local municipality and the Water and Wastewater Master Plan Update recommends infrastructure based on these population growth targets. The quarterly Water and Wastewater Infrastructure Status Report from the Environmental Services Department tracks the implementation status of the critical new infrastructure that was recommended in the Master Plan and the 10-year Capital Plan. Other Council reports assign water and wastewater servicing allocation to the local municipalities to ensure that development occurs where servicing capacity will exist. The Water and Wastewater Supply and Demand Monitoring Report then tracks the water and wastewater system demands versus the available servicing capacity on a community/service area basis and highlights areas for further evaluation.

Chapter 2

2.1 Growth Areas

The Province has directed that 40% of all new growth in York Region shall occur within the built boundary of existing communities through intensification and that the remaining 60% can occur outside of the existing built boundary. Key intensification growth areas have been identified as “Regional Growth Centres” and are shown as black circles on Figures 2-1 and 2-2. In addition, it can be seen from Figures 2-1 and 2-2 that significant intensification is expected to occur in the Yonge Street and Highway 7 corridors. It can also be seen from Figure 2-2 that Queensville/Holland Landing/Sharon and the northern areas of Vaughan and Markham are expected to experience significant growth between now and 2051. Figure 2-3 shows the locations of planned new communities in York Region that are currently proceeding through the planning approval process. These communities only represent the “greenfield” development areas and are generally on the outskirts of the existing built-up areas.

2.2 Servicing Allocation and Forecast Growth

Figure 2-4 presents information on building permits, future servicing allocation and growth projections for municipalities on the YDSS. So far servicing allocation has been given out to the year 2013. From the graph it can be seen that building permits slowed down significantly in 2008 and 2009 and were generally lower than the forecasted growth for those years. However, on a Region-wide basis, the allocation given to the local municipalities on the YDSS has been consistently higher than the forecast growth since 2005. Thus allocation has not been fully utilized since 2005. Extra allocation has been given to the local municipalities beyond the planning forecasts to allow flexibility in the planning approval process.

Population Growth Intensity Projections 2011-2016

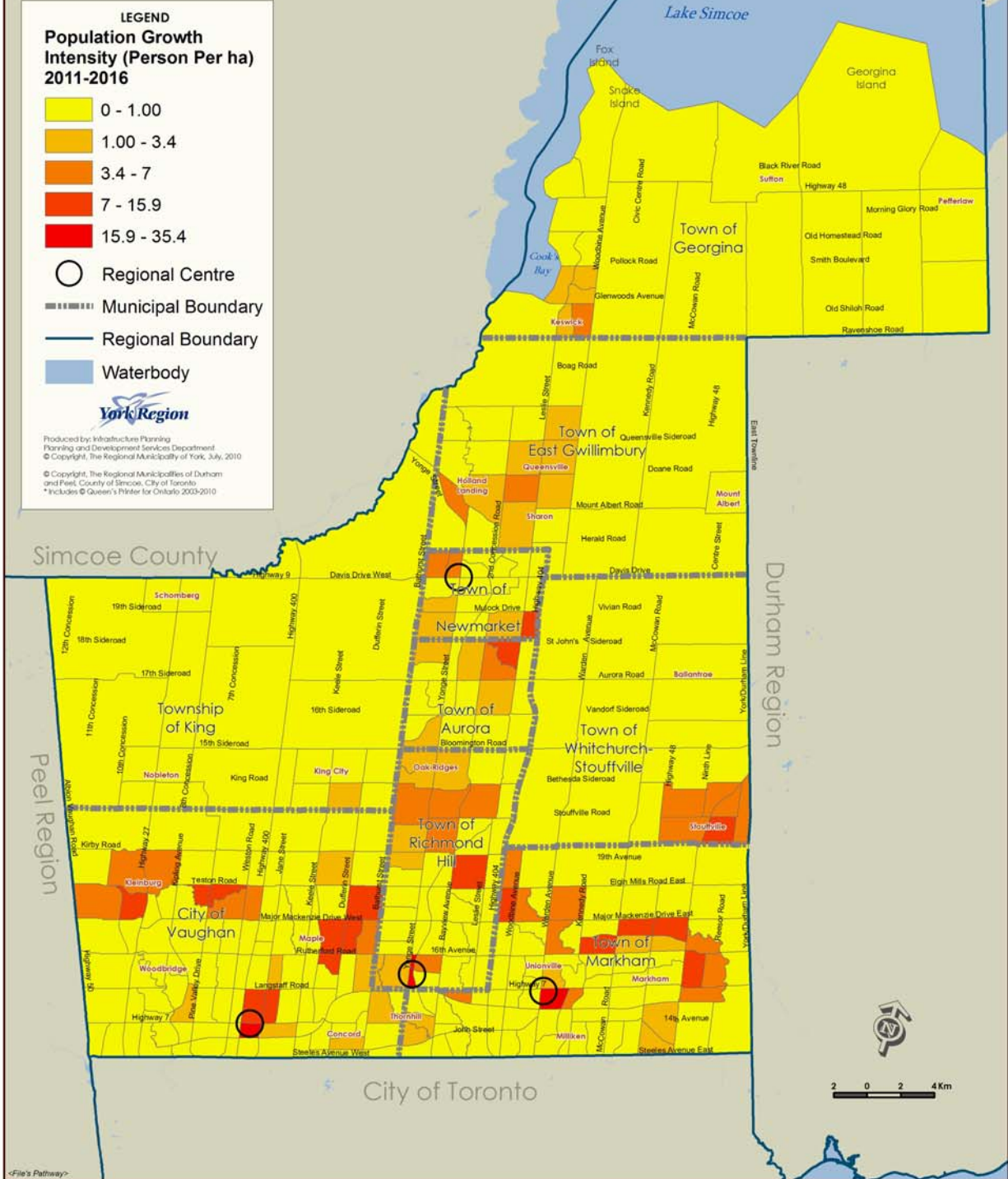


Figure 2-1 York Region Population Growth Intensity Forecasts by Traffic Zones 2011-2016

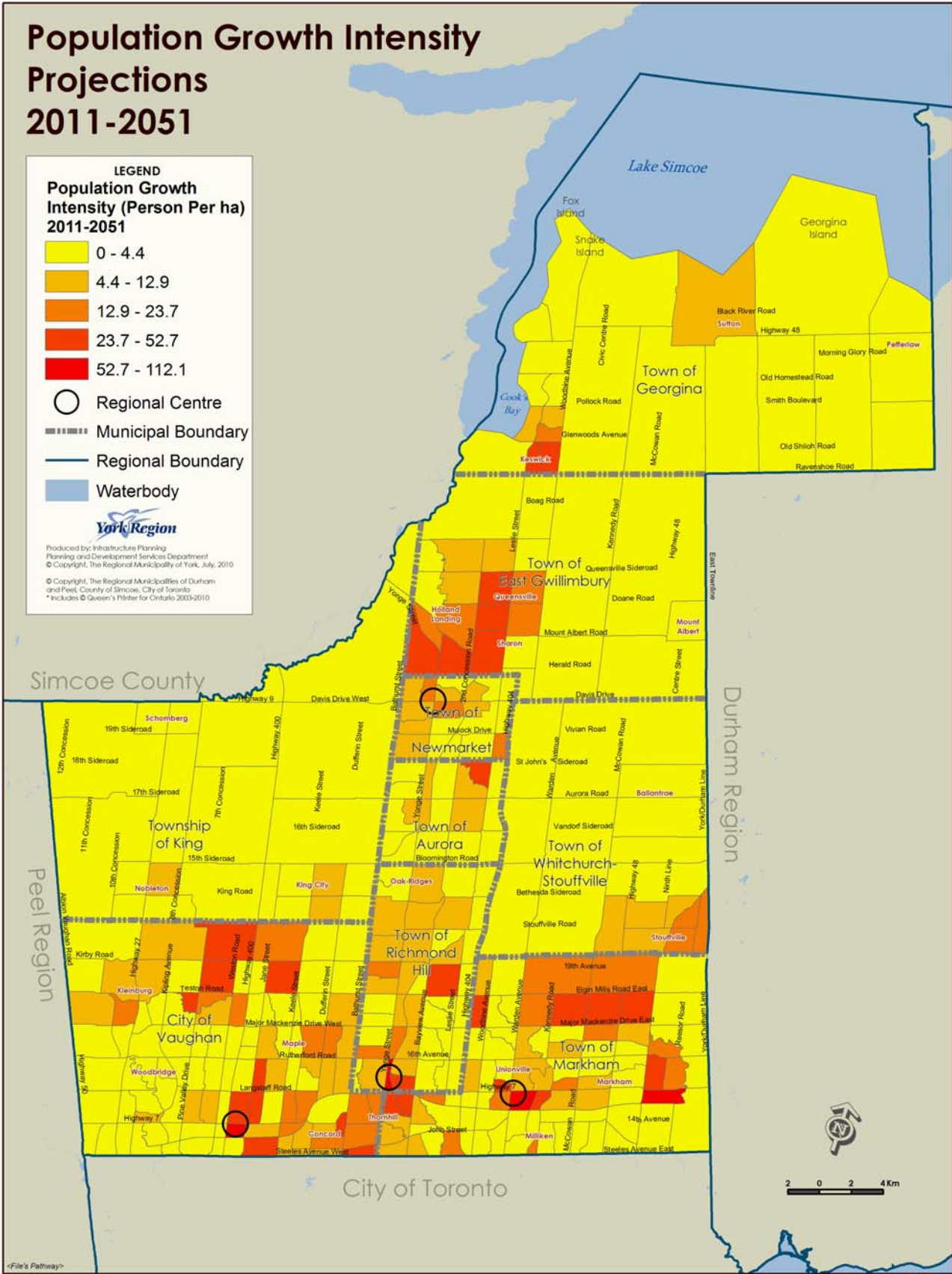


Figure 2-2 York Region Population Growth Intensity Forecasts by Traffic Zones 2011-2051

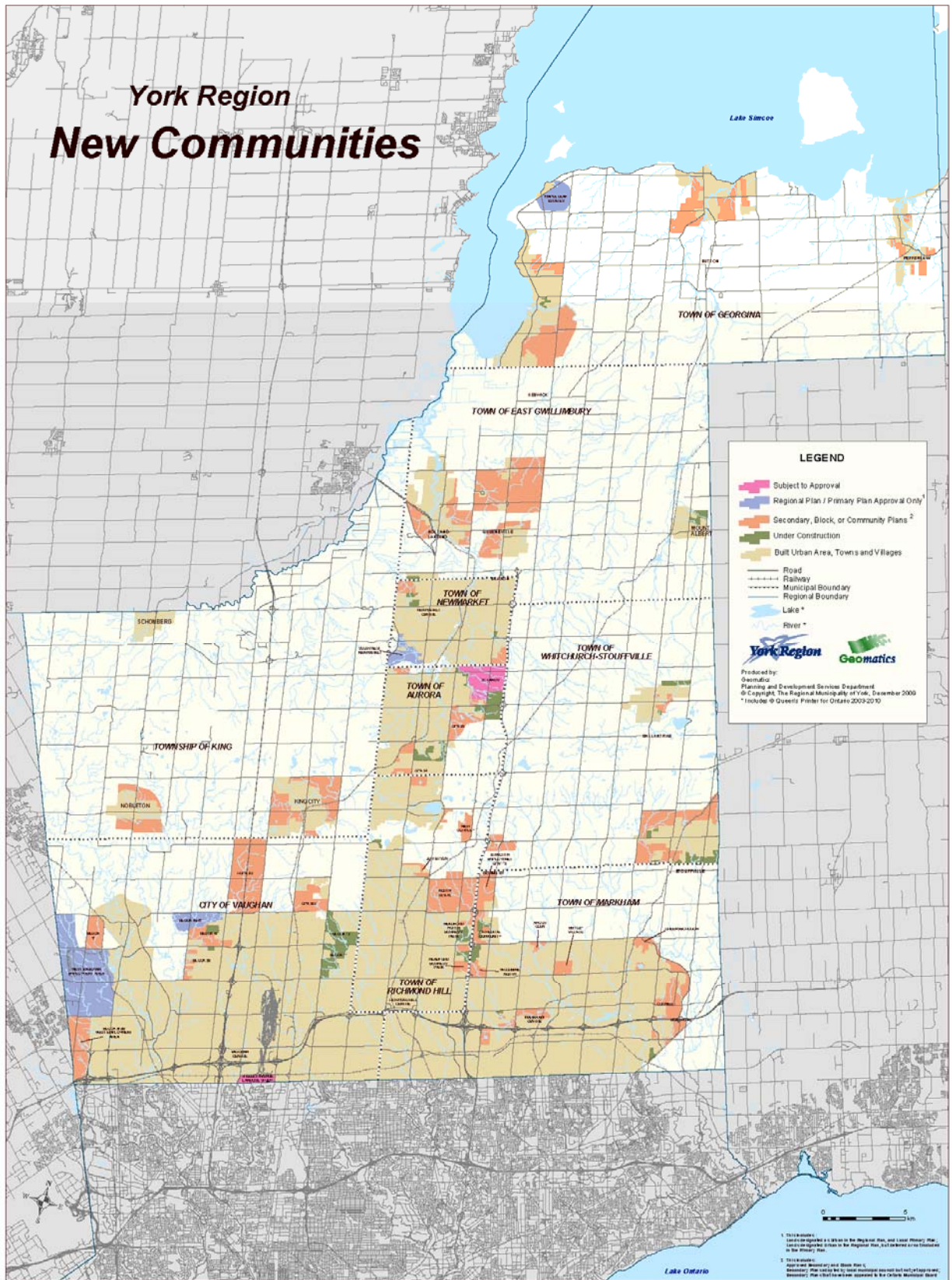


Figure 2-3 New Communities in York Region

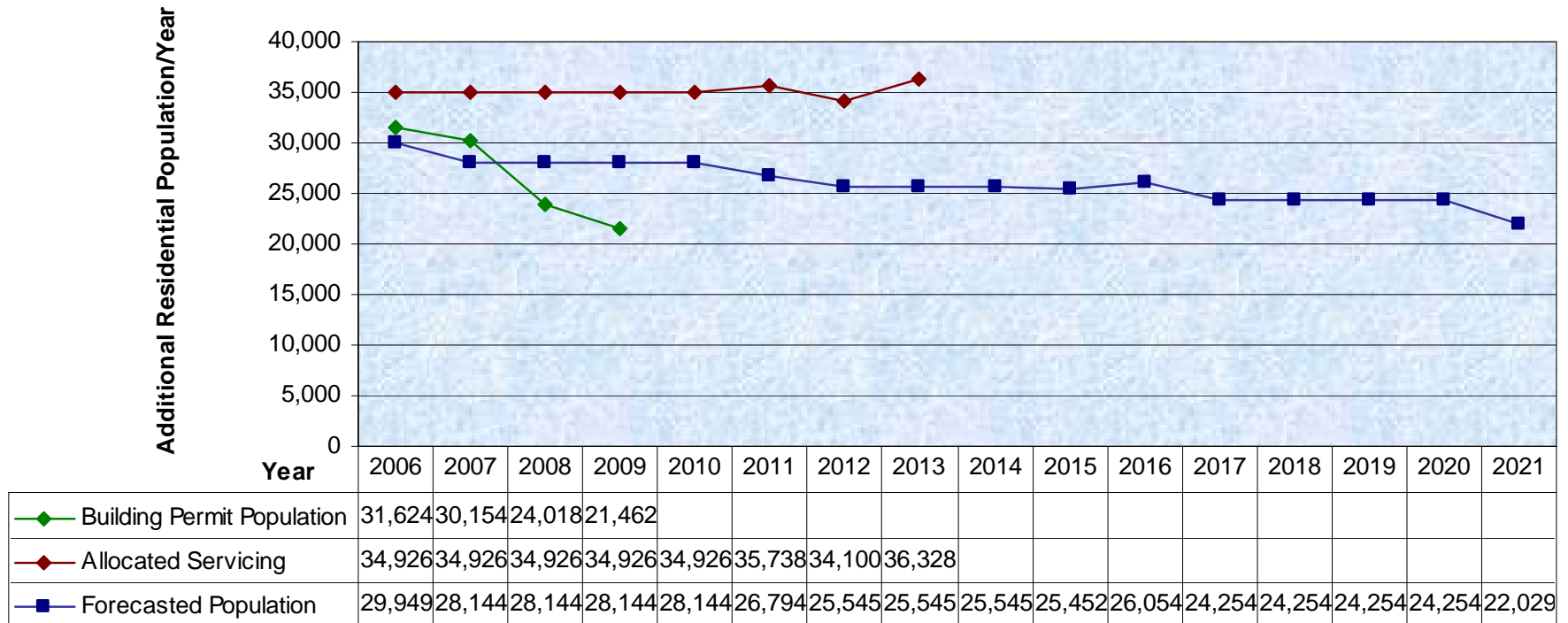


Figure 2-4 Population Growth Forecasts, Building Permits and Servicing Allocation for All Municipalities Serviced by the YDSS

Chapter 3

3.1 Serviced Population Estimation Methodology

Service areas were delineated with collaboration from local municipalities

During the preparation of the 2005 Report, extensive consultation was done by Regional staff with the local municipalities to determine the boundaries that would most suit the needs of monitoring supply and demand in each municipality. In the subsequent update (2007), Regional staff, in cooperation with the local municipalities, spent considerable time determining the limits of currently serviced water and wastewater service boundaries within the Region. While most service boundaries have not changed since the last update, there have been some changes. Examples include the recent addition of the Bathurst Langstaff Trunk sewer drainage area and the Nobleton sanitary drainage area. Also some new sanitary service areas will shortly become active such as the Sharon/Holland Landing/Queensville sanitary service area and the 19th Avenue sanitary service area. This report incorporates these changes where possible.

Mid-year 2006 serviced population was used as the baseline population

The Planning Department has recently updated the estimated mid-year 2006 baseline water and wastewater serviced population by service areas. Improvements in the parcel fabric information in the Region's Geographic Information System (GIS) has allowed this baseline population update to occur. With correct parcel fabric information in GIS layers and the service areas also in GIS layers, an automated approach to determining the number of parcels in each service area was made possible. Previous versions of the Water and Wastewater Supply and Demand Monitoring Report had to rely upon a similar semi-automated process that involved a significant amount of manual checking.

Building permit data was used to derive the end of year 2009 serviced population

The Planning Department maintains an up-to-date database of the residential building permits issued by the local municipalities. The building permit data obtained from the municipalities includes unit types and addresses. The building permits issued in the year 2006, 2007, 2008 and 2009 were geo-coded to associate the new units to respective traffic zones and water and wastewater service areas. These units were converted into serviced population using the 2006 census based persons per unit (PPUs). Finally, this newly serviced population was added to the 2006 serviced base population to derive the year-end 2009 population.

Mid-year 2011 serviced population was estimated using the traffic zone population forecast data

The 2011 estimated serviced populations used in this analysis are identical to those used in the 2009 Water and Wastewater Master Plan Update and are based on forecasts generated by the Region's Planning Department. As the traffic zones are the lowest geographical units these projections are available for, this analysis is also based on the traffic zone approach. The 2011 wastewater service area populations shown in this report are the sum of the mid-year 2006 populations and the serviced growth between 2006 and 2011 as estimated by the Region's Planning Department.

3.2 Flow Data Collection Methodology

Measured water and wastewater flow data in the Regional systems for 2009 was received from the Environmental Services Department. This data was collected using a variety of metering technologies including magentic, doppler, ultrasonic, venturi, turbine, radar, insertion, thermal mass and coriolis.

Chapter 4

Supply and Demand Monitoring - Water

Water service areas in York Region are described generally as the York Water System (YWS), the Yonge Street Aquifer System, the Georgina Water System and the independent stand-alone systems

Water is provided to residents, businesses and institutions in York Region through a variety of systems and facilities. Water service areas in the Region are described generally as the York Water System (YWS), the Yonge Street Aquifer System, the Georgina Water System and the independent stand-alone systems. The southern municipalities of Markham, Vaughan, and Richmond Hill receive their water supply from the York Water System – an extension of the Lake Ontario-based system from the City of Toronto and the Region of Peel.

Aurora, Newmarket and the communities of Holland Landing, Sharon and Queensville in East Gwillimbury are serviced by groundwater from the Yonge Street Aquifer system. Since January 2002, lake-based surface water from the York Water System has been introduced to Aurora from pressure district 9, to supplement the groundwater supply. The lake-based supply to these service areas has further increased after the completion of the Aurora/Newmarket Feedermain. Since January 2002, lake-based surface water from the York Water System has also been introduced to Newmarket from Aurora. Since September 2009, lake-based surface water from the York Water System has been introduced to Stouffville, to supplement the groundwater supply. Shortly the YWS will be extended to Kleinburg (2011) and King City (2011).

Currently, two water treatment plants in Georgina and groundwater-based systems in Vaughan (Kleinburg), King, East Gwillimbury and Whitchurch-Stouffville (Ballantrae) service the stand-alone systems.

4.1 York Water System

The York Water System (YWS) receives water from the City of Toronto and Region of Peel to serve Markham, Richmond Hill and Vaughan. There are six pressure districts (PD4 to PD9) with local intermediate zones within these systems. The inclusion of the Yonge Street Aquifer System to the YWS adds an additional 7 pressure districts from Aurora and Newmarket. The inclusion of the Stouffville area to the YWS adds an additional 3 pressure districts. Further detail on the supply capacity and service areas of the Yonge Street Aquifer, Stouffville and the York Water System is provided in the 2009 Water and Wastewater Master Plan Update. A map showing the existing York Water System (YWS) infrastructure and its pressure districts is presented in Figure 4-1.

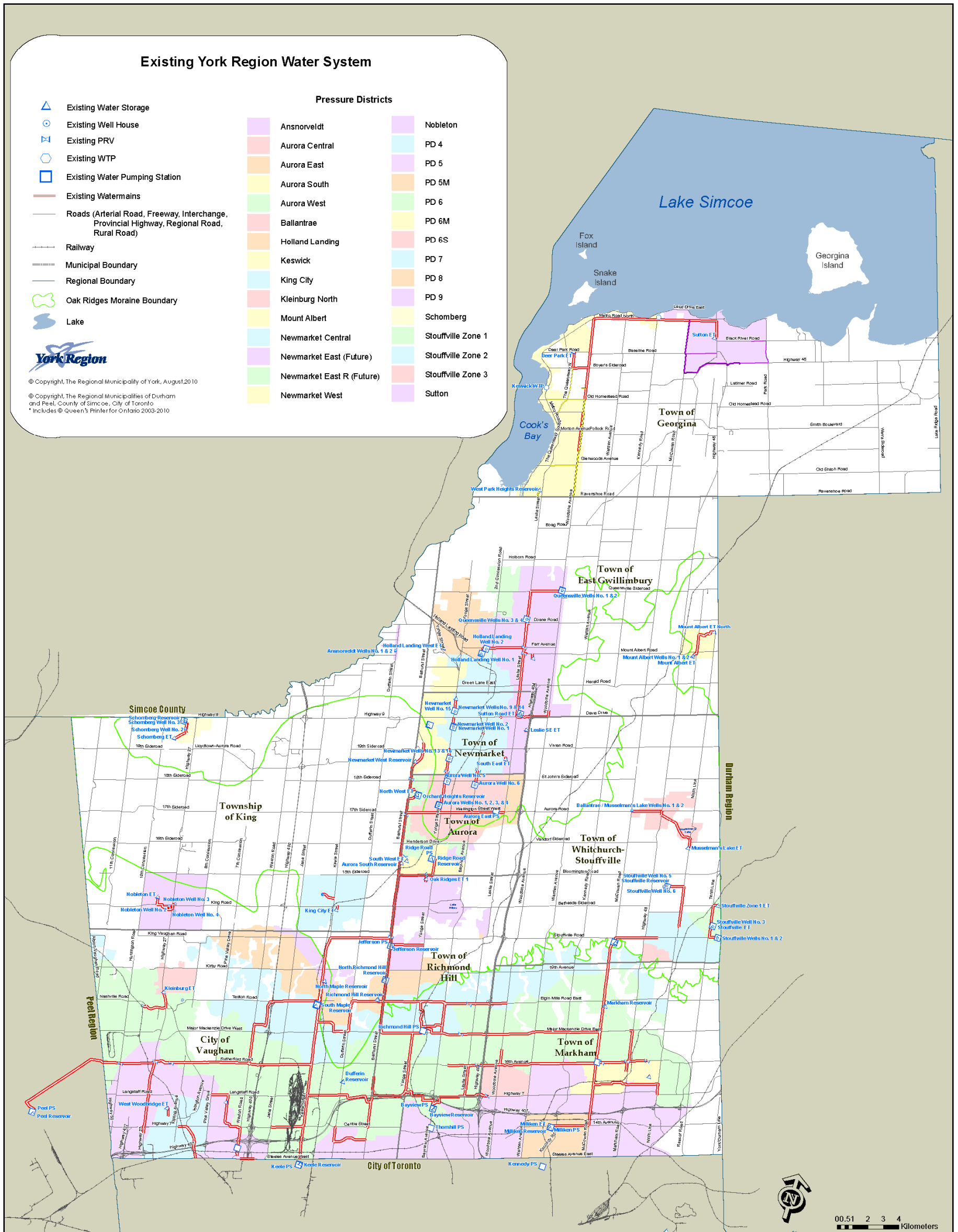


Figure 4-1 York Region Water System

Maximum day water demand from Toronto is within the supply capacity outlined in the agreement. Maximum day water demand from Peel Region is beyond the supply capacity outlined in the agreement, although this should not be a concern.

As seen below in Table 4-1, the measured 2009 maximum day water demand from Toronto is within the supply capacity outlined in their agreement with York Region. There was an exception on the day that the Peel Feedermain broke, which required more water to be pumped from Toronto to make up for the reduced supply from Peel Region. However, that day should be considered as an anomaly and not considered as a true maximum day demand. The measured 2009 maximum day water demand from Peel Region was 107 megalitres per day (MLD), which exceeds the supply capacity outlined in their agreement with York Region. However, Peel Region did not have any objections to pumping more water to York Region on the day of maximum demand and if Peel Region had not agreed to pump the additional water, then York Region could have simply obtained the extra water required from Toronto. As can be seen from Table 4-1 even under maximum day conditions York Region is only using 64% of the water that they are allowed to obtain from Toronto. Therefore the fact that the 2009 maximum day demand from Peel exceeded the amount allowed under the agreement should not be a concern.

Table 4-1 Toronto and Peel Region Water Supply, 2009 Maximum Day Water Demand vs. Maximum Day Capacity

Water Supply Provider	2009 Maximum Day Demand	2009 Maximum Day Supply as per Agreement	Demand vs. Agreement Capacity
	MLD	MLD	%
Toronto	357 ¹	482	74%
Toronto	310	482	64%
Peel Region	107	90	119%

¹ Demand on day that Peel Feedermain broke

Although there are agreements in place with the City of Toronto and Peel Region to ensure sufficient water supply to the YWS to accommodate the Region’s population planning projections, future growth in certain areas of the YWS is dependent upon the completion of localized Regional water infrastructure. For example, growth in the Aurora East Pressure District requires completion of the Leslie/Wellington Street watermain, which is scheduled to be completed in early 2011. A complete listing of all of the critical YWS projects, their expected completion dates and the additional population growth they can accommodate can be referenced in Report No. 6 of the Environmental Services Committee Regional Council Meeting of June 24, 2010.

As shown in Tables 4-2 and 4-3 the serviced population at the end of 2009 on the YWS is approximately 937,000 people.

Table 4-2 2009 and Projected 2011 Serviced Population on York Water System by Municipalities

Municipality	2009 Serviced Population	2011 Planning Forecasts	2009 vs. 2011 Population
	Residential	Residential	%
Aurora	53,264	57,384	93%
East Gwillimbury (Holland Landing, Sharon, Queensville)	11,192	17,015	66%
Markham	299,239	304,897	98%
Newmarket ¹	83,772	84,017	100%
Richmond Hill	181,014	196,165	92%
Vaughan	286,763	290,595	99%
Whitchurch-Stouffville	21,635	24,766	87%
Total Serviced on YWS	936,880	974,839	96%

¹ Includes East Gwillimbury's Green Lane West development

Table 4-3 YWS 2009 and Projected 2011 Serviced Population by Pressure Districts

Pressure District (PD)/Service Area Name	2009 Serviced Population	2011 Planning Forecasts	2009 vs. 2011 Population
	Residential	Residential	%
PD4 West (Woodbridge)	20,419	19,186	106%
Vaughan PD 5	77,237	71,171	109%
Markham PD 5	127,472	124,129	103%
PD 5 Milliken	33,768	35,421	95%
Vaughan PD 6	120,915	129,366	93%
Richmond Hill PD6	82,363	85,149	97%
Buttonville PD 6S	12,712	10,054	126%
Markham PD 6	91,639	101,944	90%
Markham PD6M	31,996	30,874	104%
Maple PD 7	59,461	62,506	95%
Richmond Hill PD 7	46,341	47,331	98%
Markham PD 7	1,651	2,476	67%
Richmond Hill PD 8	16,567	19,949	83%
Vaughan PD 8	3,934	4,578	86%
Richmond Hill PD 9	35,742	43,736	82%
Vaughan PD 9	4,797	3,786	127%
PD Aurora Central (AC)	40,403	40,830	99%
PD Aurora South (AS)	1,981	5,025	39%
PD Aurora East (AE)	44	1,013	4%
PD Aurora West (AW)	10,837	10,516	103%
PD Newmarket East (NE)	11,221	9,802	114%
PD Newmarket Central (NC)	51,931	54,055	96%
PD Newmarket West (NW) ¹	20,620	20,160	102%
PD Sharon/Queensville/Holland Landing	11,192	17,015	66%
PD Stouffville Zone 1	2,579	5,442	47%
PD Stouffville Zone 2	18,370	17,637	104%
PD Stouffville Zone 3	687	1,687	41%
Total YWS	936,880	974,839	96%

¹ Includes East Gwillimbury's Green Lane West development

Serviced populations within certain pressure districts exceed the 2011 forecast populations

The actual serviced population on the overall York Water System by year end 2009 is within the planning forecasts utilized by the 2009 Water and Wastewater Master Plan Update. However, the serviced population within certain pressure districts exceeds the 2011 forecast populations. There are a number of reasons why this may have occurred. The simplest reason is that development in a given area may have occurred faster than anticipated by the projections from the Region's Long Range and Strategic Planning Branch. It should be kept in mind that the 2011 planning projections are forecasts only and require recalibration on a regular basis and the results of this water and wastewater monitoring report will assist in the recalibration process. It is also noted that the end of year 2009 population estimates were developed in accordance with the methods described in Chapter 3 and there were many assumptions involved, such as the populations per unit, number of units per parcel, unit types and number of parcels etc. Therefore even though some of the service area population estimates for 2009 appear to be beyond their projected mid-year 2011 populations already, this does not necessarily mean they are.

In addition there is inherent uncertainty in the results of the water and wastewater computer models. Even though there are some sources of uncertainty as described above, all of the service areas that showed a 2009 population estimate above their 2011 planning forecast were evaluated to see if servicing capacity problems may soon exist.

Service Area Capacity Assessment

The **PD4 West (Woodbridge)** service area has a 2009 residential population that is 106% of the 2011 population. It is a mature community and is supplied directly from Toronto to the south. This area is projected to have little to no growth over the next 41 years and accordingly no infrastructure has been planned in the 2009 Water and Wastewater Master Plan Update to increase water supply to this area. York Region staff are not aware of any operational or supply issues in PD4 West (Woodbridge) and therefore it is suggested that no further investigation be undertaken for this service area.

Vaughan PD5 is showing a 2009 residential population that is 109% of the 2011 forecast population. The population in Vaughan PD5 was 74,639 in 2006 and 77,237 in 2009. Vaughan PD5 is not expected to experience any additional growth until 2026 and supply is directly from the City of Toronto. The only improvements planned for PD5 in the 2009 Water and Wastewater Master Plan Update is a new reservoir and connecting watermain with a 2015 completion. York Region staff are not aware of any operational or supply issues in Vaughan PD5 and therefore it is suggested that no further investigation be undertaken for this service area.

Markham PD5 has a 2009 population that is 103% of the 2011 forecast population. The 2006 population Markham PD5 was approximately 113,579 and in 2009 127,472. This PD has been experiencing significant population growth and is expected to have substantial population growth into the future. This PD is fed directly from the City of

Toronto. However, the 2009 Water and Wastewater Master Plan Update has not recommended any new infrastructure for this PD within the next 41 years. According to the Master Plan this PD can accommodate up to 175,000 people with no infrastructure improvements. Therefore, the fact that this PD is building out faster than anticipated is not expected to be a concern from a York Region infrastructure perspective. However, the City of Toronto may need to make changes to their infrastructure requirements to meet the accelerated demands in Markham PD5. Any required changes will be revealed by the Toronto/York Joint Optimization Study which is expected to be completed in 2011.

The 2009 residential population in **Buttonville PD6S** is 126% of the 2011 forecast population. This PD is supplied with water through the much larger Richmond Hill PD6 system. The current Regional long range planning forecasts predict no growth until at least 2016 in this area and only 20% additional growth by 2031. This forecast could change however if a proposed OPA gets approved to redevelop the Buttonville Airport. Since this PD is supplied through the much larger PD6 system and all improvements to the PD6 system that are needed for the next 41 years will be completed by 2011, no action is needed to improve the Buttonville PD6S system. York Region staff are not aware of any operational or supply issues in Buttonville PD6S and therefore it is suggested that no further investigation be undertaken for this service area.

The **Markham PD6M** pressure district is showing a 2009 residential population that is 104% of the 2011 population. This pressure district is supplied through York PD5 and through pressure reducing valves from Markham PD6. According to the Long Range Planning forecasts Markham PD6M is not expected to experience any new growth until at least 2041. Since this PD is supplied through the much larger PD5 and PD6 systems and all improvements to the PD5 and PD6 system that are needed for the next 41 years will be completed by 2011, no action is needed to improve the Buttonville PD6M system. York Region staff are not aware of any operational or supply issues in Buttonville PD6M and therefore it is suggested that no further investigation be undertaken for this service area.

The 2009 residential population in **Vaughan PD9** is 127% of the 2011 forecast population. This is a very small pressure district that is supplied by a City of Vaughan pumping station which is connected to York Region's PD7 North Maple Reservoir. Improvements to the Vaughan PD9 system are not planned until 2017-2021 when the population is expected to be between 4,300 people and 7,500 people. However, according to Table 4-3 the population is already at approximately 4,800 in this PD. Therefore the Regional upgrades to the PD9 system may need to be advanced. York Region staff will be doing further analysis on the PD9 service area to determine the exact needs.

The **Aurora West** pressure district has a 2009 residential population that is 127% of the 2011 forecast population. This is a mature service area that has only experienced growth of 3 additional housing units since 2006. Residential population is only expected to grow by an additional 2% by 2031. The Aurora West zone is supplied from the Aurora Central zone from the Orchard Heights Pumping Station. It is well known to Regional staff that the existing Orchard Heights pumping station is not capable of adequately servicing

existing demands in Aurora West and Newmarket West. The pumping station is currently being upgraded and is expected to be completed by 2012.

The 2009 residential population in the **Newmarket East** pressure district is 114% of the 2011 forecast population. The Newmarket East zone is currently supplied by the Queensville wells. The 2009 Water and Wastewater Master Plan Update assumed the population in Newmarket East would be 11,376 people in 2016 and 13,019 people in 2021. The 2009 Water and Wastewater Master Plan Update recommended two improvements over the next 41 years for the Newmarket East zone: (1) a new watermain along Leslie Street connecting to the Aurora East zone (2012 expected completion); and (2) a new pumping station on Davis Drive to pump water from Newmarket Central to the Newmarket East zone (2027-2031 expected completion). It is anticipated that the new watermain along Leslie Street will solve any capacity constraints in the Newmarket East pressure district until at least 2027 when the new pumping station may be required.

The **Newmarket West** Pressure District has a 2009 residential population that is 102% of the projected 2011 population. This pressure district is supplied from the Newmarket Central zone (Kirby Pumping Station) and from the Aurora West zone (Orchard Heights Pumping Station). Newmarket West has grown by approximately 4,000 people in the last 4 years and is expected to grow to 22,602 in 2016 and 24,253 people in 2021. To accommodate this growth in the short term the 2009 Water and Wastewater Master Plan Update recommended upgrades to both the Orchard Heights PS and the Kirby PS with expected completions of 2012. With these upgrades in place there are not anticipated to be any constraints to the servicing capacity in Newmarket West.

The 2009 residential population of the **Stouffville Zone 2** pressure district is 104% of the 2011 forecast population. The 2009 Water and Wastewater Master Plan Update anticipates significant growth in the Stouffville Zone 2 pressure district, with the population going to 24,567 people in 2016 and 29,126 people in 2021, compared to the 2009 population of 18,370. Upgrades in the near future for the Stouffville Zone 2 pressure district include a new elevated tank and watermain on 10th Line. The planned completion date of this infrastructure is 2016 in the Region's 10-year Capital Plan. However, the 2009 Water and Wastewater Master Plan Update suggested the watermain be completed by 2012 and the storage tank by 2013. Since Zone 2 is building out faster than anticipated, Regional staff will do a further evaluation of this pressure district to see if the watermain and storage tank on 10th Line should be advanced.

4.2 Georgina Water System

Water supply for the Town of Georgina is provided from two Lake Simcoe water treatment plants: the Keswick Water Treatment Plant (WTP) and the Georgina Water Treatment Plant. For a further description of the Regional Georgina Water System (GWS), please see the 2009 Water and Wastewater Master Plan Update.

The 2009 Water and Wastewater Master Plan Update recommended infrastructure improvement projects to address the growth in GWS. A summary of the estimated 2009 serviced population by service area within GWS is provided in Table 4-4.

Table 4-4 Georgina Water System, 2009 and Projected 2011 Serviced Population

Pressure District (PD)/Service Area Name	2009 Serviced Population	2011 Planning Forecasts	2009 vs. 2011 Population
	Residential	Residential	%
Keswick/Willowbeach	28,784	29,036	99%
Sutton	5,306	8,266	64%
Total	34,090	37,302	91%

The estimated water serviced population in Keswick, Willowbeach and Sutton by year end 2009 are within the planning forecasts utilized by the 2009 Water and Wastewater Master Plan Update.

Also as seen below in Table 4-5, the measured 2009 maximum day water demand in the Georgina water service area is well within the supply capacities of the Keswick and Georgina water treatment plants.

Table 4-5 Georgina Water Servicing, 2009 Maximum Day Water Demand vs. Treatment Plant Maximum Day Capacity

Service Area Name	2009 Maximum Day Demand	2009 Treatment Plant Maximum Day Firm Capacity	Demand vs. Firm Capacity
	MLD	MLD	%
Keswick/Willowbeach/Sutton	14.5	35.6	41%

4.3 Stand-alone Water Systems

The Region owns and operates a number of independent stand-alone water systems to service communities around the Region. Water supply for the stand-alone systems is obtained from a system of groundwater wells. For a further description of the Regional

stand-alone water systems, please refer to the 2009 Water and Wastewater Master Plan Update.

Table 4-6 summarizes the 2009 serviced and future projected population for each service area.

Table 4-6 Stand-alone Water Systems, 2009 and Projected 2011 Serviced Population

Pressure District (PD)/Service Area Name	2009 Serviced Population	2011 Planning Forecasts	2009 vs. 2011 Population
	Residential	Residential	%
Kleinberg ¹	3,780	5,269	72%
Nobleton ²	3,167	4,746	67%
King City ¹	4,066	6,398	64%
Schomberg ²	2,051	2,661	77%
Ansnorveldt	231	240	96%
Ballantrae	4,598	4,622	99%
Mount Albert ²	4,245	5,743	74%
Total Stand-alone	22,138	29,679	75%

¹ These communities will be connected to the YWS in 2011

² The water supply firm capacity in these communities will be upgraded in 2010

The estimated serviced population in the stand-alone systems by year end 2009 are within the planning forecasts utilized by the 2009 Water and Wastewater Master Plan Update.

Also as seen below in Table 4-7, the measured 2009 maximum day water demand in the stand-alone communities is not always within the firm supply capacities of the Regional water systems. The Kleinburg and King City communities are being connected to the York Water System in 2011, so the firm capacities of their wells will no longer be a concern once connected. The Nobleton water supply system is being upgraded in 2010 to a firm maximum day capacity of 4 MLD. The Schomberg water supply system is being upgraded in 2010 to a firm maximum day capacity of 3.1 MLD. The Mt. Albert water supply system is being upgraded in 2010 to a firm maximum day capacity of 3.9 MLD. The 2009 maximum day demand in Ansnorveldt is 262% of the firm capacity of the water supply system. The consultants and York Region staff who were involved in the 2009 Water and Wastewater Master Plan Update were aware of the lack of firm capacity in Ansnorveldt, however, a decision was made not to increase the firm capacity. The maximum operating capacities of the two wells in Ansnorveldt are 0.037 MLD and 0.097 MLD. The firm capacity of the system is the capacity with the largest well out of service. So although it is unlikely that the largest well would be out of service when the maximum

day demand is required, it is a possibility. A project to upgrade the water supply system in Ansnorveldt is expected to commence this year as part of the Region's rehabilitation program.

Table 4-7 Stand-alone Water Systems, 2009 Maximum Day Water Demands vs. Maximum Day Supply Capacities

Service Area Name	2009 Maximum Day Demand	2009 Maximum Day Supply Firm Capacity	Demand vs. Firm Capacity
	MLD	MLD	%
Kleinberg ¹	3.440	3.578	96%
Nobleton ²	2.157	1.890	114%
King City ¹	2.952	1.850	160%
Schomberg ²	2.055	1.507	136%
Ansnorveldt	0.097	0.037	262%
Ballantrae	2.259	2.390	95%
Mount Albert ²	2.160	1.702	127%

¹ These communities will be connected to the YWS in 2011

² The water supply firm capacity in these communities will be upgraded in 2010

4.4 Status of Water Infrastructure Projects

In order to verify that capacity remains available in each of the Regional water service areas, not only is it necessary to compare the existing populations with the forecast populations used in the York Water System computer model, it is also necessary to confirm that all of the infrastructure assumed to be in place in the computer model are progressing and will be in place as planned. The table below lists all of the water infrastructure recommended by the 2009 Water and Wastewater Master Plan Update to be in place between 2006 and 2011 and the current status of the projects. None of these projects were complete as of November 2009 when the 2009 Water and Wastewater Master Plan Update was finished.

Table 4-8 Comparison of the 2009 Water & Wastewater Master Plan Update Recommended Water Project Schedule with the Current Project Status (2006-2011)

Project Name	Master Plan Recommended Completion	Current Expected Completion
Decommission PD9 standpipe	2009	2011
Ballantrae well #3	2009	2012
Ballantrae watermain (well#3 to town)	2009	2012
Kennedy Road watermain	2009-2011	2011
Orchard Heights pumping station (PS)	2009-2011	2012
North Queensville elevated tank	2009-2011	2011
Toronto/Peel External Projects	2009-2011	2011
Mount Albert well and supply	2009-2011	2010
New Nobleton well	2009-2011	2010
Schomberg well and supply watermain	2009-2011	2010
South Maple pumping station (PD7) upgrade	2010	2011
Yonge Street watermain (Jefferson Sdrd to Bond Cres.) (PD9)	2010	2010
Bloomington Rd watermain (PD9) (Yonge to Bayview Ave.)	2010	2010
Bayview Ave. watermain (PD9) (North Lake Rd to Bloomington Road)	2010	2015
Oak Ridges elevated tank (ET) replacement	2010	2011
Decommission existing Kirby pumping station	2010	project deleted
Decommission Sharon ET	2010	2011
King Road watermain (King-Vaughan to Proposed PS/ET)	2010	2011
King Rd/Dufferin watermain (proposed PS/ET to Town)	2010	2011
King City tank 2	2010	2011
King City PS	2010	project deleted
Decommission King City wells	2010	2011
Woodbine Ave. and Ravenshoe Rd. watermains	2010	2011
Nobleton watermain (well #4 to town)	2010	2010
Bathurst St. (Shaftbury Ave. to Jefferson PS) (PD8)	2011	2011

Project Name	Master Plan Recommended Completion	Current Expected Completion
Teston Rd/Bathurst St. (West Richmond Hill PS to Shaftsbury Ave. (PD8))	2011	2011
PD9 watermain north of Kirby Road (PD9 Vaughan PS to Keele Street)	2011	To be determined
Kleinburg PS	2011	2011
Decommission Kleinburg wells	2011	2012
Keswick elevated tank	2011	2012
Nobleton watermain (proposed ET to town)	2011	2010
Nobleton ET #2	2011	2010
Georgina water treatment plant expansion	2011	2011

Explanations for Schedule Differences

The expected delay in the decommissioning the PD9 Standpipe, the Sharon ET, the King City wells and the Kleinburg wells will not impact available servicing capacity, since they only involve the decommissioning of infrastructure that is no longer needed. The new Ballantrae well #3 and watermain is only required for firm capacity, therefore the projected three year delay will not limit population growth, only supply security. Orchard Heights pumping station supplies the Aurora West and Newmarket West pressure districts. It is well known to Regional staff that the existing Orchard Heights pumping station is not capable of adequately servicing existing demands in these pressure districts. Temporary pumping is currently in place to bridge the gap until 2012 when this pumping station will be upgraded. The South Maple Pumping Station (PD7) upgrade is expected to experience a one year delay. Determining the impact of the delay requires further study. The Environmental Assessment for the pressure district (PD9) Bayview Avenue watermain project has revealed that it can be delayed until 2015 without impacting existing or future development.

The Oak Ridges Elevated Tank (ET) Replacement is anticipated to be delayed by one year. Population growth is managed through servicing allocation, which is tied to completion of this elevated tank. The decommission of the existing Kirby Pumping Station is no longer required, since further modeling has revealed that the existing Kirby pumping station can be upgraded rather than replaced. The Environmental Assessment for servicing King City servicing has revealed that the King City pumping station project is not required. The other required water infrastructure for King City has been delayed by one year, however, population growth in King City is managed through servicing allocation, which is tied to completion of this infrastructure. The Woodbine Avenue and Ravenshoe Road watermains are expected to be delayed by one year. Population growth in the affected areas of Keswick is managed through servicing allocation, which is tied to completion of this infrastructure. The completion schedule for the PD9 watermain north of Kirby Road is yet to be determined. York Region staff are currently consulting with

City of Vaughan staff to confirm the need for this watermain and to determine who should own future infrastructure in PD9. The Keswick Elevated Tank is expected to be delayed by one year. However, the population dependent upon this tank is not building out as quickly as assumed in the 2009 Water and Wastewater Master Plan Update, therefore the one year delay is not expected to be a concern.

Chapter 5

Supply and Demand Monitoring - Wastewater

York Region operates the YDSS and stand-alone WPCPs in smaller communities

The Region provides wastewater conveyance and treatment services to York Region residents, businesses and institutions through sewage treatment plants, major trunk sewers and pumping stations. The York Durham Sewage System (YDSS) services the communities of King City and Stouffville, the Towns of Newmarket, Aurora, Richmond Hill and Markham and the City of Vaughan. The YDSS will be extended to service the communities of Holland Landing, Queensville and Sharon in 2012.

The Region operates stand-alone water pollution control plants in the communities of Sutton, Keswick, Mount Albert, Schomberg and Kleinburg. A Regional stand-alone water pollution control plant will be operational in Nobleton in mid 2010. Lagoon treatment facilities are operated in Holland Landing. A map showing the existing York Wastewater System including the York Durham Sewage System (YDSS) infrastructure and its service areas is presented in Figure 5-1.

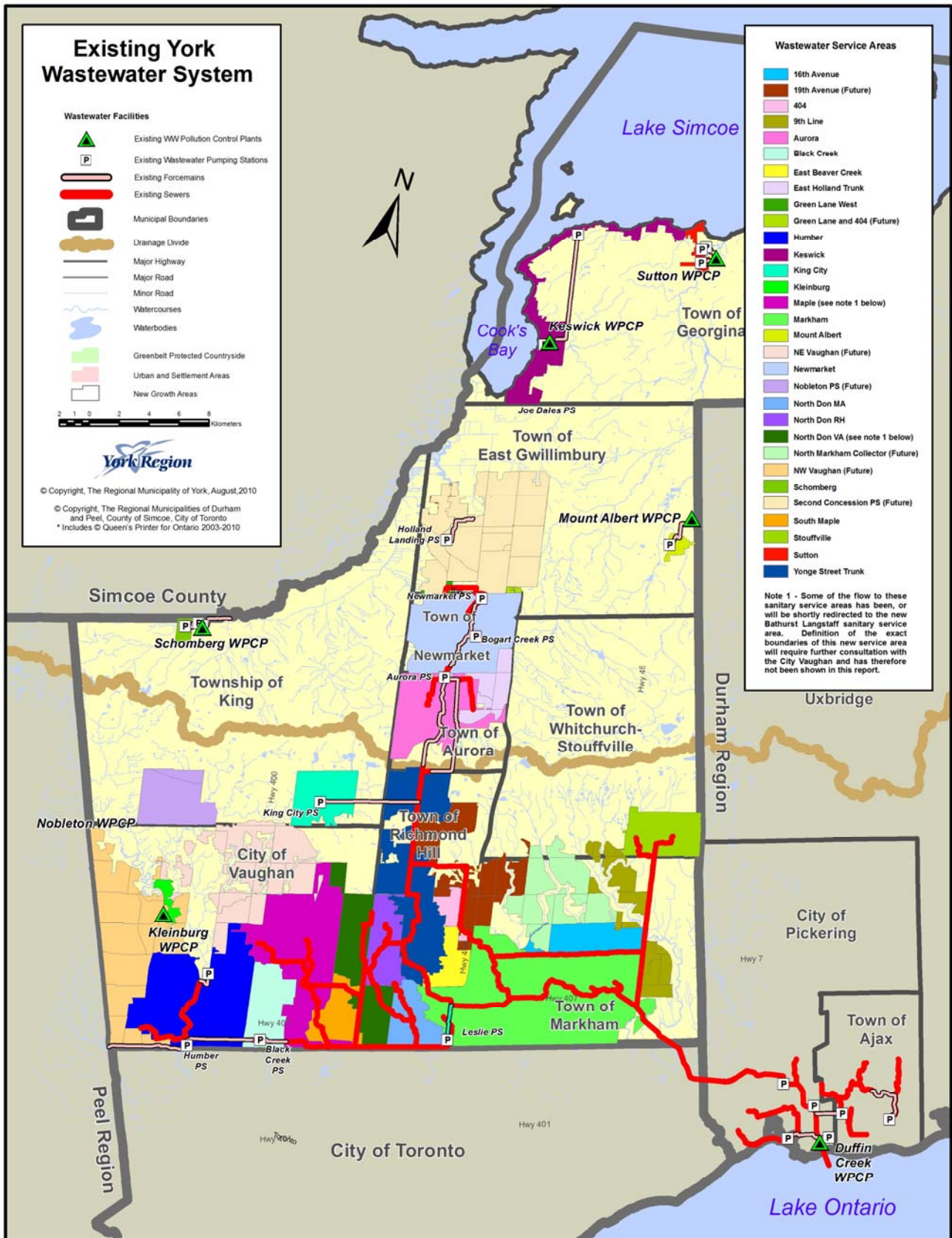


Figure 5-1 York Region Wastewater System

5.1 York Durham Sewage System

YDSS flows go to Duffin Creek WPCP and also to Peel Region

The YDSS consists of a series of gravity sewers, pumping stations, forcemains and the Duffin Creek Water Pollution Control Plant (WPCP) located in Durham Region. Approximately 85% of York Region sewage is collected through the York-Durham Sewer System (YDSS) and treated at the Duffin Creek Water Pollution Control Plant on the shores of Lake Ontario in Pickering, Ontario. Since the beginning of 2006, the Region has started pumping wastewater flows from the Humber Pumping Station to the Region of Peel. The York-Peel Wastewater Agreement includes a schedule of flows permitted by Peel. The agreement provides for a partial diversion of flows initially and full diversion of flows by 2011.

Monitoring data of the actual flows at the Duffin Creek WPCP and the amount of diversion to Peel is shown in Table 5-1.

Table 5-1 Sanitary Flows at the Duffin Creek WPCP and Diversion to Peel

Year	Average Daily Flow to Duffin Creek WPCP from York Region (MLD)		Peel Diversion Average Daily Flow (MLD)	
	Master Plan Assumption	Recorded Flow	Master Plan Assumption	Recorded Diversion
2006	338	373	0	1.4
2007	358	316	8	26.9
2008	379	354	16	29.1
2009	400	352	24	31.5

Average daily wastewater flow to Duffin Creek WPCP and Peel Region is within allowable limits

The 2009 Water and Wastewater Master Plan Update assumed that York Region's average daily wastewater flow (ADF) to the Duffin Creek WPCP would be 400 MLD for 2009. However, the measured ADF at the Duffin Creek WPCP was only 352 MLD. This discrepancy is likely attributed to reduced wastewater generation rates and higher wastewater flow diversion to Peel Region than was expected. Since the current rated capacity of the Duffin Creek WPCP is 420 MLD, the treatment plant will have sufficient capacity to accommodate growth beyond the end of 2010. The Duffin Creek WPCP Stage 3 expansion is expected to be completed by the end of 2010, when the plant capacity will be increased to 520 MLD. However, only 470 MLD will be available temporarily due to required upgrades to the existing plant. Measured 2009 average day sanitary flow from York Region to Peel Region is 31.5 MLD. The agreement with Peel

Region for diversion of York's flows does not specify a limit for 2009, only for 2006 (22.29 MLD) and 2011 (40.09 MLD). The interpolated limit for 2009 is 32.97 MLD and therefore the measured 2009 average day flow of 31.5 MLD is within the agreement limits.

Although there is sufficient treatment capacity at the Duffin Creek WPCP, future growth in certain areas of the YDSS is dependent upon the completion of localized Regional sanitary infrastructure. For example, growth in Queensville requires completion of the Queensville/Holland Landing/Sharon YDSS connection, which is scheduled to be completed near the end of 2011. A complete listing of all of the critical YDSS projects, their expected completion dates and the additional population growth they can accommodate can be referenced in Report No. 6 of the Environmental Services Committee Regional Council Meeting of June 24, 2010.

Estimates of 2009 year-end serviced and projected mid-year 2011 serviced population by municipality and service area are provided in Table 5-2.

Table 5-2 YDSS Service Areas, 2009 and Projected 2011 Serviced Population

Service Area Name	2009 Serviced Population	2011 Planning Forecasts	2009 vs. 2011 Population
	Residential	Residential	%
Newmarket	83,028	82,830	100%
Aurora	52,984	55,723	95%
Richmond Hill			
Yonge Street Trunk	121,643	129,891	94%
North Don RH	36,164	36,627	99%
Highway 404	12,441	15,968	78%
East Beaver Creek	10,605	11,226	94%
19 th Avenue	0	939	0%
Markham			
Markham	199,066	216,842	92%
16 th Avenue	48,603	45,303	107%
Ninth Line	12,854	9,637	133%
North Don Markham	38,247	38,347	100%
Vaughan			
Humber	97,909	95,282	103%
Black Creek (Jane St.)	28	3,333	1%
Maple ¹	90,247	97,069	93%
South Maple	40,450	42,388	95%
North Don Vaughan ¹	57,177	56,926	100%
Whitchurch- Stouffville			
Stouffville	21,647	25,810	84%
King City²	2,182	5,500	40%
East Gwillimbury			
Green Lane West	693	1194	58%
Holland Landing/Queensville/ Sharon ³	0	2,940	0%
Total YDSS Serviced	925,968	973,775	95%

¹ Some of the flow to these sanitary service areas has been, or will be shortly redirected to the new Bathurst Langstaff sanitary service area. Definition of the exact boundaries of this new service area will require further consultation with the City of Vaughan and has therefore not been shown in this report.

² This community is in the process of connecting customers to the newly installed sanitary sewer system

³ These service areas will shortly transition from stand-alone/private septic systems to the YDSS

Populations in the YDSS serviced communities are generally within the forecast 2011 populations

As of the end of 2009, the YDSS serviced population has reached approximately 926,000 (Table 5-2). The estimated populations in the YDSS serviced communities are generally within the currently forecast 2011 populations. Exceptions to this are examined below.

Service Area Capacity Assessment

The year end 2009 residential population in **Newmarket** is approximately equal to the 2011 planning forecast. The 2009 Water and Wastewater Master Plan Update anticipated around 10% population growth between 2011 and 2016, however it did not recommend any new infrastructure until approximately 2016 in coordination with the completion of the Upper York Sewage Solutions (UYSS) project. The recommended projects include a diversion sewer from the Northwest Newmarket Trunk sewer and new connections from the Newmarket Pumping Station and Bogart Creek Pumping Station to the future UYSS. Since Newmarket is building out faster than anticipated, Regional staff will do a further evaluation of this service area to see if the new growth rates can be accommodated.

The **16th Avenue** sanitary service area has a 2009 year end residential population that is 107% of the mid-year 2011 population. This area is also expected to experience significant growth over the next five years and beyond. The 2009 Water and Wastewater Master Plan Update does not recommend any new infrastructure to service this area out to 2051, as the existing YDSS provides sufficient capacity. Therefore, even though this service area is growing faster than anticipated, this should not be a concern from a sanitary servicing perspective.

The year end 2009 residential population in the **Ninth Line** sanitary service area is 133% of the 2011 planning forecast. This area is also expected to experience significant growth over the next five years and beyond. The 2009 Water and Wastewater Master Plan Update does not recommend any new infrastructure to service this area out to 2051, as the existing YDSS provides sufficient capacity. Therefore, the fact that this service area is growing faster than anticipated should not be a concern from a sanitary servicing perspective.

The **North Don Markham** sanitary service area has a 2009 year end population that is approximately equal to the 2011 forecast population. The only upgrades recommended for this area from the 2009 Water and Wastewater Master Plan Update are an upgrade to the Leslie Street Pumping Station (2012 expected completion) and a new Leslie Street PS forcemain that is needed between 2021 and 2026. However, the Master Plan did not include the updated population that is now expected to be associated with the Richmond Hill/Langstaff Urban Growth Centre (UGC). Additional sanitary system modeling has been done to include the latest growth projection for the Richmond Hill/Langstaff UGC, that may result in the need for an additional Regional sewer or forcemain connecting the Richmond Hill/Langstaff Urban Growth Centre to the existing Regional Richmond Hill Collector sewer. A map of this area and the associated trunk sewers is shown in Figure

5-2. It has been suggested that this proposed sewer or forcemain should also service some areas that are currently serviced by the North Don Collector and Central Collector. If this ends up happening then additional growth could be accommodated within the North Don Markham sanitary service area. Therefore the fact that the North Don Markham service area has grown faster than anticipated may not be a concern. However, this will be the subject of further study by Regional staff.

The year end 2009 residential population in the **Humber** sanitary service area is 103% of the 2011 planning forecast. There is little residential growth planned over the next 42 years in the Humber service area. The majority of new growth will be industrial, commercial or institutional (ICI). However, much of the ICI development in the Humber sanitary service area is serviced by the newly constructed West Rainbow Creek Trunk sewer and according to the 2009 Water and Wastewater Master Plan, no new sanitary sewer infrastructure is planned to service the residential or ICI population in this area for the next 41 years. Therefore, it is not anticipated that there will be any sanitary servicing constraints to this area. However, Regional staff will continue to monitor closely the population buildout.

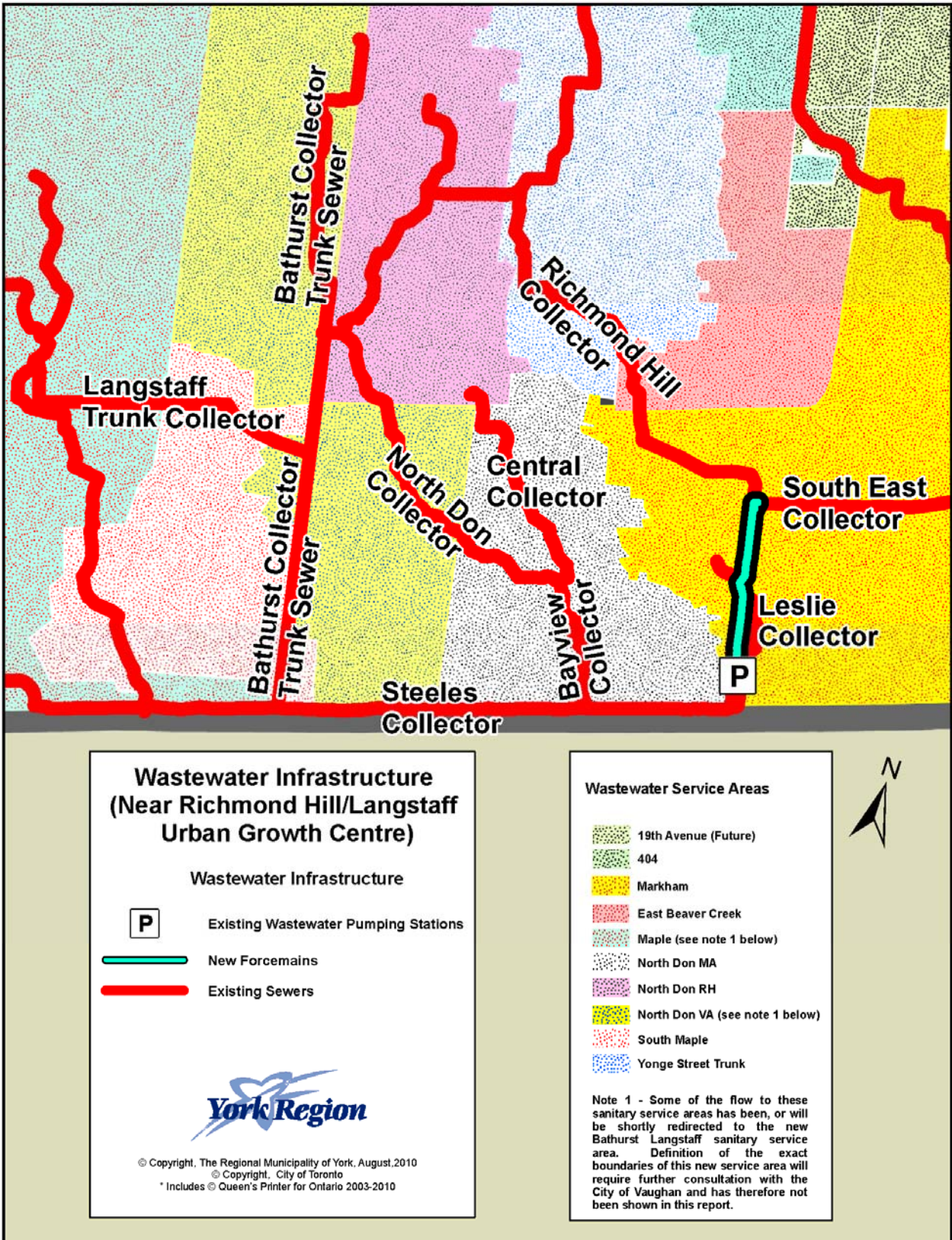


Figure 5-2 York Region Wastewater Infrastructure near the Richmond Hill/Langstaff Urban Growth Centre

The **North Don Vaughan** sanitary service area has a 2009 year end residential population that is approximately equal to the 2011 planning forecast population. The northern portion of this service area (West of Bathurst and North of Highway 7) has already been redirected to the Bathurst Langstaff trunk sewer which has sufficient capacity to accommodate additional growth. The southern portion of the North Don Vaughan sanitary service area (East of Bathurst and south of Highway 7) is mostly draining to the North Don Collector. As discussed earlier in this section a new sewer or forcemain connecting the Richmond Hill/Langstaff UGC to the existing Regional Richmond Hill Collector sewer could service some areas in Richmond Hill that are currently serviced by the North Don Collector thus reducing flows in the North Don Collector. Therefore, the fact that the North Don Vaughan service area has grown faster than anticipated may not be a concern. However, this will be the subject of further study by Regional staff.

5.2 Georgina Wastewater System

The Georgina Wastewater system is comprised of two separately functioning treatment plants, one in Keswick and the other in Sutton. For a further description of the Regional Georgina Wastewater Systems, please see the 2009 Water and Wastewater Master Plan Update.

Table 5-3 provides the year end 2009 serviced and mid-year 2011 future serviceable population for the Keswick and Sutton service areas.

Table 5-3 Georgina Wastewater Service Areas, 2009 and Projected 2011 Serviced Population

Service Area Name	2009 Serviced Population	2011 Planning Forecasts	2009 vs. 2011 Population
	Residential	Residential	%
Keswick/Willowbeach	28,868	29,928	96%
Sutton	5,188	8,266	63%
Total Georgina	34,056	38,194	89%

The estimated sanitary serviced population in Keswick, Willowbeach and Sutton by year end 2009 are within the planning forecasts utilized by the 2009 Water and Wastewater Master Plan Update.

Also as seen below in Table 5-4, the measured 2009 average daily wastewater flows to the Georgina wastewater treatment plants are within the capacities of the treatment plants.

The Keswick wastewater treatment plant is being upgraded in 2012 to a capacity of 18 MLD.

Table 5-4 Georgina Wastewater Service Areas, 2009 Average Daily Wastewater Flows vs. Treatment Plant Capacity

Service Area Name	2009 Average Daily Flow	2009 Treatment Plant Capacity	Flow vs. Capacity
	MLD	MLD	%
Keswick/Willowbeach	10.547	12	88%
Sutton	1.779	3.41	52%

5.3 Stand-alone Wastewater Systems

The Region operates and maintains local separate wastewater systems in East Gwillimbury, King and Vaughan. For a further description of the Regional stand-alone wastewater systems, please refer to the 2009 Water and Wastewater Master Plan Update.

Table 5-5 provides the information on the existing and future estimated populations in each service area.

Table 5-5 Stand-alone Service Areas, 2009 and Projected 2011 Serviced Population

Service Area Name	2009 Serviced Population	2011 Planning Forecasts	2009 vs. 2011 Population
	Residential	Residential	%
Mount Albert	3,992	5,828	68%
Schomberg	2,048	2,305	89%
Kleinberg	2,956	5,433	54%
Total Stand-alone	8,996	13,566	66%

The estimated sanitary serviced populations in the stand-alone systems by year end 2009 are within the 2011 planning forecasts utilized by the 2009 Water and Wastewater Master Plan Update.

Also as seen below in Table 5-6, the measured 2009 average daily wastewater flows to the stand-alone system treatment plants are within the capacities of the treatment plants. The Kleinburg wastewater treatment plant is being upgraded in 2011 to a capacity of 2.874 MLD.

Table 5-6 Stand-alone Service Areas, 2009 Average Daily Wastewater Flows vs. Treatment Plant Capacity

Service Area Name	2009 Average Daily Flow	2009 Treatment Plant Capacity	Flow vs. Capacity
	MLD	MLD	%
Mount Albert	1.149	2.043	56%
Schomberg	0.693	2.055	34%
Kleinberg	1.118	1.205	93%

5.4 Status of Wastewater Infrastructure Projects

In order to verify that capacity remains available in the each of the Regional sanitary service areas, not only is it necessary to compare the existing populations with the forecast populations used in the wastewater computer model, it is also necessary to confirm that all of the infrastructure assumed to be in place are progressing and will be in place as planned. The table below lists all of the sanitary infrastructure recommended by the 2009 Water and Wastewater Master Plan Update to be in place between 2009 and 2011 and the current status of the projects. None of these projects were complete as of November 2009 when the 2009 Water and Wastewater Master Plan Update was finished.

Table 5-7 Comparison of the 2009 Water & Wastewater Master Plan Update Recommended Wastewater Project Schedule with the Current Project Status (2006-2011)

Project Name	Master Plan Recommended Completion	Current Expected Completion
Temporary Flow Control System for YDSS	2006-2011	2010
Duffin Creek WPCP Stage 3 Expansion ¹	2006-2011	2010
King City Collection System	2006-2011	2009
West Rainbow Creek Trunk Sewer	2006-2011	2010
YDSS Overflow Security	2006-2011	2015
Leslie Street Pumping Station Upgrade	2006-2011	2012
Peel Shared Works	2006-2011	2011/ongoing
Lagoon Decommissioning Studies	2006-2011	2013
Joe Dales Forcemain and Pumping Station Upgrade	2006-2011	2011
Kleinburg WPCP Expansion	2006-2011	2011
Nobleton WPCP and Collection System	2006-2011	2010
Duffin Creek WPCP Stage 3 Pumping Station	2006-2011	2013
Keswick WPCP Expansion	2006-2011	2012

¹ Liquids treatment train component only

Explanations for Schedule Differences

The YDSS Overflow Security project is aimed at decreasing the risk of overflows at Regional pumping stations and it is now expected to be delayed by four years. This will only impact overflow security and not available capacity. The Leslie Street Pumping Station Upgrade has a one year delay. This project is being implemented as soon as possible. The Peel Shared Works include improvements to the Peel Region collection and treatment system. The Region’s 2010 10-year Capital Plan has expenditures for this project every year out to 2019. The timeframe for the Peel Shared Works stated in the 2009 Water and Wastewater Master Plan Update is 2006-2011, however it is recognized that works are required beyond 2011. The Lagoon Decommissioning Studies project only involves decommissioning infrastructure, which will not impact available servicing capacity. Regarding the Duffin Creek WPCP Stage 3 Pumping Station, a recent study has revealed that this pumping station is not required until 2013. The Keswick WPCP Expansion only involves a one year delay. This should not be a concern since population growth in Keswick and the Willowbeach/Lakeshore community will be managed through servicing allocation, which is tied to completion of this infrastructure.

Chapter 6

Summary of Servicing Demand and Capacity Assessment

The purpose of the Water and Wastewater Supply and Demand Monitoring Report is to monitor the current water and wastewater system demands versus the available servicing capacity on a community/service area basis in York Region. To accomplish this, a comparison is made between the measured 2009 water and wastewater demands and the projected 2011 demands. Since the 2009 Water and Wastewater Master Plan Update used the projected 2011 demands to size Regional infrastructure for 2011, any significant deviations between the measured 2009 and projected 2011 demands were noted and evaluated in this report. Also, infrastructure projects needed to service 2011 population forecasts, if delayed, were documented and evaluated, since these projects could affect available servicing capacity. Additionally, measured flow data, where available, was compared to water supply and wastewater treatment capacities.

Summary of Supply and Demand Monitoring: Water

Generally no water supply constraints on the York Water System (YWS) although some areas require further investigation

The residential serviced population for the York Water System (YWS), including the Yonge Street Aquifer System, is approximately 937,000 by end of year 2009. This figure is within the projections utilized by the 2009 Water and Wastewater Master Plan Update. Generally, no future water supply issues are anticipated, although the populations in a few pressure districts are building out faster than anticipated. In particular, Vaughan Pressure District 9 and Stouffville Zone 2 have been flagged for further investigation by Regional staff in consultation with local municipal staff and will be reported on in the next monitoring report. Measured 2009 maximum day demand from the Toronto water supply system was within the agreement limits. Measured 2009 maximum day demand from the Peel water supply system was approximately 20% beyond the agreement limits. However, no issues are anticipated as York's water demands can be managed within the Toronto and Peel Region agreement limits. The current progress of the Region's capital plan generally matches the system demands on the YWS up to 2011. The 2009 Water and Wastewater Master Plan Update has examined the longer term demand situation and made appropriate recommendations regarding infrastructure requirements and timing.

No water supply constraints in the stand-alone water systems

The residential serviced population reached by the end of the year 2009 in the communities with stand-alone water systems (including the Town of Georgina) is approximately 56,000 and is within the corresponding planning forecasts used by the 2009 Water and Wastewater Master Plan Update. Measured 2009 maximum day demand in some of the stand-alone water supply systems was beyond the available firm capacity. However, upgrades in these communities will be completed this year to rectify the

problems and a project to upgrade the water supply system in Ansnorveldt is expected to commence this year as part of the Region's rehabilitation program. The 2009 Water and Wastewater Master Plan Update has examined the longer term demand situation and made appropriate recommendations regarding infrastructure requirements and timing.

Summary of Supply and Demand Monitoring: Wastewater

Generally no wastewater servicing constraints on the York-Durham Sewage System (YDSS) although some areas require further investigation

The Region has committed to servicing 970,000 residential persons on the York-Durham Sewage System (YDSS) by the end of 2010. This figure is based on the capacity available at the Duffin Creek Water Pollution Control Plant (WPCP) for flows from York Region and the allowable flows to Peel Region. At end of year 2009, the residential population on the YDSS, including Peel diversion has reached approximately 926,000 persons. This figure is within the 2011 projections utilized by the 2009 Water and Wastewater Master Plan Update. Measured 2009 average day sanitary flow from York Region to the Duffin Creek treatment plant is within the plant's rated capacity. Measured 2009 average day sanitary flow from York Region to Peel Region is within the agreement limits. Generally no future sanitary capacity issues are anticipated, although the populations in a few service areas are building out faster than forecasted. The Newmarket and Thornhill service areas have been flagged for further investigation by Regional staff in consultation with local municipal staff and will be reported on in the next monitoring report. The current progress of the Region's capital plan generally matches the wastewater demands on the YDSS up to 2011. The 2009 Water and Wastewater Master Plan Update has examined the longer term demand situation and made appropriate recommendations regarding infrastructure requirements and timing.

No sanitary servicing constraints in the stand-alone wastewater systems

The residential serviced population reached by the end of the year 2009 in the communities with stand-alone wastewater systems (including the Town of Georgina) is approximately 45,000 and is within the corresponding planning forecasts used by the 2009 Water and Wastewater Master Plan Update. Measured 2009 average day sanitary flows from the stand-alone wastewater systems are within the rated capacities of the respective treatment plants. The current progress of the Region's capital plan generally matches the system demands up to 2011. The 2009 Water and Wastewater Master Plan Update has examined the longer term demand situation and made appropriate recommendations regarding infrastructure requirements and timing.

Conclusion

The 2010 Supply and Demand Monitoring Report has revealed that the 2009 year end residential populations relying on the York Water System (YWS), York-Durham Sewage System (YDSS) and the stand-alone water and wastewater systems (including the Town of Georgina) are within the corresponding 2011 planning forecasts used by the 2009 Water and Wastewater Master Plan Update. However, residential populations in a few water pressure districts and sanitary service areas on the YWS and YDSS are building out faster than anticipated. These service areas will be further investigated by Regional staff in consultation with local municipal staff and will be reported on in the next monitoring report. The information will assist the Environmental Services Department in the timing of their projects. The current progress of the Region's capital plan generally matches water and wastewater demands up to 2011. The 2009 maximum day water demands and average day sanitary flows measured at the treatment plants are generally within allowable levels.

REFERENCES

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4. York Durham Sewage System Master Plan Update Class Environmental Assessment (Mac Viro and Earth Tech), 2002
5. York Region Long Term Water Project Master Plan Update (United Utilities Canada Limited), April 2004
6. York Region Water and Wastewater Supply and Demand Monitoring Report, November 2005
7. York Region Water and Wastewater Supply and Demand Monitoring Report, September 2007
8. York Region Water and Wastewater Master Plan Update (Genivar Inc., XCG Consultants Ltd.), November 2009