TOWN OF PONOKA

MASTER SERVICING STUDY



Prepared by:



November 2005 Final Report TP03



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EXECUTIVE SUMMARY 2004 MASTER SERVICING STUDY

The **objective** of this study is to evaluate both existing infrastructure, as well as infrastructure needed to service future growth in the Town of Ponoka. The study area was extended approximately 800m outside the new 2004 Town boundaries. This accommodation is good for future servicing planning and will assist in the development of an Inter Municipal Development Plan with Ponoka County.

The Town of Ponoka **growth rate** over the last three census years has been in the order of 1.5%. An estimated population of 7,200 would be reached in 2006, 10,500 by 2031 and 15,250 by 2056.

An **area concept plan** was prepared to forecast the type of growth and expected population. If fully developed, the existing Town boundaries would yield a population close to 14,000 people. By also including lands within the study area, the expected population would be nearly 25,000 people. It is estimated that with 1.5% growth rate, it would be 2046 before development will be started in the area outside the Towns current boundaries.

The **existing Water Supply Wells** will become dormant when the Town connects to the North Water Use Regional Supply System. It would be advantageous to keep the wells for a large Industrial user who would treat their own water rather than use Regional Supply allocations. The Reservoir and Well system at Central Plant should be kept for the Municipalities use alone and could be set up for an off sales bulk water depot.



The **Regional Supply System** is forecasted to come on stream in 2006. The North Red Deer Water Services Commission have allocated two connection points being the New 39 Ave. (Reservoir/Pump house and the East Hill) to fill Lucas Heights, reservoir water will have to be boosted from the 39 Ave. Reservoir via the existing raw water well line. The Regional system will be supplying peak day design flows. In 2006, they could supply up to 5,292 cu.m./day. Estimated peak summer day consumption in 2006 will be 3174 cu.m. Allocation increases will occur in 2011, 2021, and 2028 to a maximum peak day of 8389 cu.m./day which represents a peak day for over 12,000 people.

Water Storage is more than adequate to a population of 9000 people. Additional storage capacity needs to be constructed on the East Hill and expansion of the 39 Ave. Reservoir would carry the Town well into the future. Extra storage capacity needs to be considered to cover supply during periods when the Regional System is down for more than 24 hours.

Water Distribution System is in very good position to supply fire flows throughout the Town and to future developments.

The **Water Pumping Facilities** in need of upgrading over the next several years are the East Hill Booster Pump house and the pumps in the Lucas Heights Pump House. Evaluation needs to be done involving the Regional System connecting directly to the East Hill Reservoir and its impacts.



A computer model evaluated the **Main Sanitary Sewer Trunk** system and the following three areas of concern were identified:

- The main 450 mm trunk line on 46 Street from 57 Avenue to the Sewage Treatment Facility is reaching 75% capacity. Future development will push it to maximum. Infiltration from summer storms is already causing surcharging.
- 2. At the Hwy 53-Hwy 2A junction where the SW Industrial Subdivision and Hwy 2A east Commercial (Extra Foods), meets the northwest leg from NW/NE 5 developments east of Hwy 2A on the north side of Hwy 53, there is a lack of capacity.
- 3. Summer infiltration into the system from house sump pumps, roof leaders and surface entrance at the manholes.

The two (2) **Main Lift Stations** have been recently upgraded. The stations can accommodate flow measurement, however it will need a Milltronic range finders and controls in order to support future development. Lift Station "A" on 57 Avenue, Westside of the Battle River has the potential to handle all the Westside flow, including future development. To take pressure off the 46th Street trunk main, (eastside of the Battle River) the existing force main can be extended to the sewage treatment facility. The 450mm trunk line would then have excess capacity to handle all the eastside development.

The **Waste Water Treatment** Facility was upgraded in 2001 / 2002. An aerated system was installed in the old facultative cell and three smaller cells were created. The aerated ponds have an average day design capacity of 3,500 cu.m., which will service a population of 7,300 people. The front-end



anaerobic cells and storage ponds can handle a population of 16,000 and 10,000 people respectively. The aerated system will require upgrading in the next couple of years. These upgrades can be incorporated into alleviating the following constraints identified in the report.

- Protection on the west side along the river of the existing Anaerobic and new Aerated ponds from the 1:100 year Battle River flood.
- Extension of the Lift Station A force from 57 Ave. to the lagoon.
- Development of a second aeration pond system directly west of upper storage 3 to meet increased flows and treatment needs. This work will be needed within the next few years.
- The extension of the Lift Station A force main would leave the 46th Street trunk main from 57th Avenue to the lagoon fully available to all east side flows. The capability exists that the recently completed aerated pond would be able to treat only eastside flow (estimated at less than 1,000 cu.m. per day).

The existing Town of Ponoka **Storm Water Management System** is capable of handling a 1:5 year storm or greater and has the capability with short term ponding to take higher frequency occurrences as seen in 1999 or early 1990's.



To accommodate future development, there will need to be attention given to development of adequate storm ponds and outlets. The areas identified in the report are:

- To service the SW8 the large wetland and permanent water body in south of section 7 and north half of section 6 needs a control structure. The outlet for the pond is south, across Hwy 53 to the Battle River. Some modification could be made on the outlet to route water into the Burnco development, a storm water management plan needs to be prepared for approval by Alberta Environment.
- A storm pond south of 48th Avenue west of Wendy's/Tim Horton's site needs to be developed to accommodate flows out of the NW5.
- A storm pond at the Golf course and a combination open channel and outlet pipe across the course and Alberta Hospital road to the Battle River is needed to service future developments in NE32 and SE32.
- East Hill drainage outlet needs to be developed for future development in West 1/2 of section 3. Potential exists to outlet SW3 into the Golf course system.

The **Transportation Plan** to service the Town of Ponoka is a very good network. 57th Avenue will become an Undivided Arterial Road, servicing the new developments west of Hwy 2A. The 57th Avenue, 53rd Avenue, at Hwy 2A corridor needs to be examined for future intersection treatment. On the west perimeter, 67th Street provides the north south arterial link from Hwy 53 to 57 Ave. Consideration may be given to shifting it east to 66th Street through the developments to offset cost sharing. A new collector extending



south of 50 St. and connecting to Hwy 2A would be developed south of the Stampede grounds lands. This new road would provide an alternative access to the downtown area. On the East Hill, a new collector would develop off 42nd Street and 35 St., south across Hwy 53 and into NE32 and SE32.

The primary highway corridor of Hwy 2A and Hwy 53 needs to be developed into a divided urban arterial road. Improvements can start and radiate out of the Hwy 53, Hwy 2A intersection. A Traffic Study needs to be done to justify grant application to Alberta Transportation.

An overall **Trail and Park System Plan** has been developed. The proposed trail network when completed, would provide a 12.0 km bike, pedestrian parkway system linking the Battle River Valley to the natural watercourse wetland system to the west and wooded park areas in SW8. The plan incorporates the recent proposals by Burnco Rock Products Ltd., to develop a permanent water body, out of the reclaimed gravel operation in NW36.



1 INTRODUCTION

The Town of Ponoka commissioned Tagish Engineering Ltd in October 2003, to provide a Master Servicing Study on the Town's Municipal Infrastructure, and prepare recommended Off Site Levies to help recover costs incurred by the Town in Pre-constructing Infrastructure to facilitate future development.

1.1 TERMS OF REFERENCE

Incorporating past upgrades, the infrastructure system is to be assessed to evaluate long-term financial requirements. The study will also determine the impacts and changes in servicing needs to meet the continued pressure to service new development areas. The evaluation will also present a servicing footprint needed to meet replacement of aging infrastructure, and upgrades to accommodate future and new growth area needs.

The cost of the servicing requirements would then be developed into a budget model to better assess financial forecasting and to determine how to recover these costs. The budget model would also be used to establish necessary future debenture borrowing; offsite levies and assist in applying for grant funding to construct the infrastructure and upgrade of existing aging systems, to meet future servicing needs.

1.2 PURPOSE OF THE STUDY

This report is prepared to assess the infrastructure needs for the Town of Ponoka within the existing Town boundary areas, and into future annexation growth areas. This report will identify the requirements impacting the Town of Ponoka as it develops within, and outside of its current boundaries. This



assessment will also provide the background support for an Inter Municipal Development Plan with Ponoka County.

The purpose of the study is to evaluate and plan for the necessary infrastructure needed to service the steady growth in the Town of Ponoka. In the past ten years, major infrastructure has already been completed, such as the 39 Avenue Reservoir, major trunk waterline looping and, sewage treatment facility upgrades. The Master Servicing Study will provide a longrange infrastructure planning vision and, evaluate past works to ensure they will provide components for servicing the future.

1.3 OBJECTIVE

The primary objectives of the study is to:

- Evaluate the existing infrastructure and establish its level of serviceability in serving the existing Town, along with long term needs
- Develop a long term vision to the future growth direction for the Town
- Identify the impacts future growth will have on the existing Infrastructure System
- Identify Infrastructure the Town of Ponoka requires to develop in order to facilitate growth
- Determine costs that would be needed for Infrastructure for long-term budget and cost recovery



- Evaluate the condition of the existing infrastructure and establish requirements to bring it to a serviceability standard to meet the Town of Ponoka population horizon levels of 10,000 and 15,000 people
- Establish a database of the existing infrastructure that determines the capabilities of the system using computer modeling. Any new development or upgrading would then be added to the system model. Continually calibrating the model such as measuring pressures and flows will always keep it current
- Provide a footprint of future infrastructure network needed to service future developments as they come on-line so that the developer can see their responsibilities for construction of future improvements
- Establish scheduling of when infrastructure expansion will be needed to meet population horizon levels

1.4 STUDY AREA

The following Figure 1.1. presents the Study Area. The existing Town Boundaries are shown in a Black dashed line, and includes recent annexations in:

- SW32 42 25 W4
- SW8 43 25 W4
- NE6 43 26 W4
- NE36 42 26 W4



Within the Town Boundaries there are six (6) quarters that are undeveloped and five (5) quarters under partial development.

The red dashed line shows the Study Area, which is approximately 800m (half mile) outside the new Town boundaries. There are nineteen (19) quarters or portions of, that which will be assessed. The study area is limited in some quarter sections to the portion shown within the designated boundaries (Red dashed line).

1.5 SUPPORT REPORTS AND STUDIES

Over the past 15 years, there have been several engineering, planning reports, feasibility studies and concept plans completed for the Town of Ponoka. These reports have outlined potential growth and infrastructure development needed to support internal development and future growth areas.

A complete list of all reports that have provided information in the preparation of the Master Servicing Study are compiled and presented in a support document, with the final report.

The objective was to take the recommendations and direction from these reports and studies and mould this report into one complete Master Servicing Study.

1.6 SITE RECONNAISSANCE

To make a proper assessment of the serviceability of vacant lands, good contour mapping was required.







The study area was flown and mapped to produce 0.5m contour intervals. The topographic mapping was the basis for assessing the feasibility of the main infrastructure such as sewer, storm drainage and water distribution.

The study area was inspected to identify features and constraint. Each of the major infrastructure facilities was inspected and separate inspection fact sheets for each infrastructure were prepared. This information was used in compilation of the report data.

1.7 ACKNOWLEDGEMENTS

Tagish Engineering Ltd would like to thank the Administrative, Public Works, Water Works and Electrical staff of the Town of Ponoka, for providing historical data, background comments, and their visions of how they see the Town would develop in the future.

We would also like to thank the Mayor and Council for their input and vision from a public prospective of how they see the Town of Ponoka would facilitate growth and its direction.

Compiled from this study will be large wall sized maps (four A1 drawings in one) of the overall water, sewer, storm, contour mapping and aerial mosaic of the Study Area. A complete set will be included with this report.

1.8 GLOSSARY OF TERMS AND ABBREVIATIONS

The following Table 1.1 presents a glossary of terms and abbreviations used in this report.



Table 1.1 - Abbreviations

ABBREVIATION	MEANING
m	Metre
ac	Acre
ha	Hectare
D.U.	Single Family Dwelling Unit
Igpd	Imperial Gallons per day
M ³	Cubic meters
Lpd	Litres per day
Cu.m/day	Cubic meters per day
CBOD	Chemical Biological Oxygen Demand



2 GROWTH RATE

2.1 BACKGROUND TO GROWTH

The Town of Ponoka is located in the greater Red Deer, Wetaskiwin, and Edmonton Trading and Employment area. Major employers, such as the Alberta Hospital, do exist in Ponoka. Historically, the past 10 years has shown an annual average development of 35 to 40 lots per year. This results in an average 4 to 5 ha (10 to 12.5 ac.) per year being developed.

The Town of Ponoka is situated adjacent to Hwy 2, and directly on Primary Highway corridor 2A and Hwy 53. Good north south and east west access is available into the Town of Ponoka. High potential for increased growth exists for the Town as the result of:

- Availability of adequate water from the North Red Deer Water Service commission.
- Ability to increase their sewage treatment capacity
- Availability of a good undeveloped land base.

Because of these capabilities, higher growth rate scenarios are included to accommodate the probability of the impacts if a major Industrial/Commercial development came to Ponoka.

2.2 PURPOSE OF PROJECTING GROWTH RATES

It is necessary for an Infrastructure Master Servicing Study to examine past and projected growth rates to determine:

• Future water supply and consumptive needs



- Water storage requirements
- Sewage treatment upgrades to meet growth
- Peaking factors and to be able to assess existing trunk water and sewer mains to determine, if they are capable of handling flows to or from future growth areas, while accommodating existing.

2.3 POPULATION GROWTH RATES

Population projections were made based on the last three census years, yielding a growth rate of 1.0%. Table 2.1 shows the population projections, made for 1.5%, 2.0%, 2.5%, and 3.0%. The following Figure 2.1 and Figure 2.2 shows these projections in graphical form. Figure 2.1 presents a shorter time span than Figure 2.2.

The Master Servicing Study is based on population horizon limits. Based on a population of 6,500 (+), it is good practise to have in place the necessary planning and be constructing infrastructure to meet a horizon level of at least double the population, that being in the 12,500 to 13,000 range. The second indicator that governs level of design population is projecting the population growth capability that would be derived if all the undeveloped land within the Town boundaries where developed. In Section 3.0, it is estimated that the population would increased by on additional 6000 people if the Town is fully developed within its present boundaries, producing an estimated population of 12,500 people.



Town of Ponoka

Table 2.1 Population Projections

Year	Previous Population and		Previous Population and		Previous Population and		Population with				
		1.0% Population Growth Rate	1.5% Growth Rate	2% Growth Rate	2.5% Growth Rate	3% Growth Rate	4% Growth Rate				
1986	* 5473										
1991	*	5861									
1996		6149									
2001		6330	6330	6330	6330	6330	6330				
2006		6653	6819	6989	7162	7338	7701				
2011		6992	7346	7716	8103	8507	9370				
2016		7349	7914	8519	9168	9862	11400				
2021		7724	8526	9406	10372	11433	13870				
2026		8118	9184	10385	11735	13254	16875				
2031		8532	9894	11466	13278	15365	20531				
2036		8967	10659	12659	15022	17812	24979				
2041		9425	11483	13977	16996	20649	30390				
2046		9905	12370	15432	19230	23938	36975				
2051		10411	13326	17038	21757	27750	44985				
2056		10942	14356	18811	24616	32170	54732				
2061		11500	15466	20769	27851	37294	66589				

* Canada Census Recorded Population

Figure 2.1

Town of Ponoka - Projected Population Estimates



Figure 2.2

Town of Ponoka - Projected Population Estimates



Based on Table 2.1, a population of 12,500 would be reached in the following years:

1.0% - 20701.5% - 20472.0% - 20363.0% - 20244.0% - 2018

The major infrastructure facilities such as water supply, water distribution, pumping, water storage reservoirs, sewage treatment facility, and sewage pumping facilities need to be capable of meeting 12,500 population requirements and be easily expandable or upgraded.

2.4 PROJECTED FUTURE GROWTH RATE

It is anticipated the Town of Ponoka will sustain its 1.0% growth rate and easily achieve a 1.5% to 2.0% growth rate in the near future. We have used a 1.5% level of growth to project development growth needs for future developments. It provides a factor of safety for forecasting future infrastructure needs.

However, as shown on Table 2.1, if the growth rate increased to 2.0% or 3.0% the horizon limit quickly changes. Industrial or a big box retail store can change the growth rate immensely.

2.5 RECOMMENDED DESIGN HORIZON LEVELS

It is recommended that the existing infrastructure and servicing needs be developed to meet a 1.5% growth, and be capable in all areas to meet a future design population of 12,500 people. As well as presented in Section 3, a population of 12,500 represents the population generated if the existing Town boundaries were fully developed.





3 EXPECTATIONS OF GROWTH

To be able to assess the impacts future development will have on existing Infrastructure and when upgrades are needed to accommodate new development, a future Area Concept Plan has to be developed. This section provides a vision of how the Town of Ponoka will develop in the future. This concept plan includes the existing land use presently in the General Municipal Plan within the Town boundaries, and future land use expectations.

Growth in Ponoka will occur from three areas within the Study Area:

- Undeveloped land available within the existing Town boundaries
- Undeveloped land that the Town would naturally develop into in the next phase of Annexation
- Long-term development areas within the Study Area, but outside of the Town boundaries.

It is important to look at long-term growth areas that will help facilitate infrastructure planning to potentially enable servicing these areas when it occurs.

This assessment recognizes the May 17, 2004 annexation of lands from Ponoka County.



3.1 CONCEPTUAL LAND USE PLAN

Figure 3.1, presented on the next page, is a vision of the expected land use within the existing and future growth areas of the Study Area. Also presented are the existing and proposed arterial and collector road networks, and natural open spaces.

In Summary:

- Future residential development is assigned to the South East, North West, and North quadrants
- High density is more centrally located to the Central Business District along 50th Street and Highway 2A
- Industrial/Manufacturing is in the South and West quadrant
- Highway Commercial is in a corridor along Hwy 2A and Hwy 53 west towards Hwy 2
- There is an extensive looped trail system showing an open space corridor system utilizing the River and natural watercourse, wetlands, treed parkway and areas naturally available from developments for Municipal Reserve, school dedications and park space
- A fully developed area concept plan would generate an additional 15,224 people over and above the existing population, and 1,076 acres of Hwy Commercial/Industrial/Manufacturing.





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LEGEND:



RESIDENTIAL
PUBLIC / INSTITUTIONAL
COMMERCIAL
INDUSTRIAL / MANUFACTURING
HIGH DENSITY RESIDENTIAL
OPEN SPACE
PUBLIC UTILITY
ESTATE ACREAGE
DIRECT CONTROL
FLOOD PLAIN (1:100 YEAR)
 ARTERIAL ROADS
COLLECTOR ROADS
STUDY BOUNDARY
 EXISTING TOWN BOUNDARY



Tagish Engineering Ltd.

Environmental • Municipal • Water Resources • Land Development G4, 5550 - 45 Street, RED DEER, AB (403) 346 - 7710 Fax (403) 341 - 4909

TOWN OF PONOKA AREA CONCEPT PLAN FIGURE 3.1

NOVEMBER 2005

Image: Control of the second	GR	OWTH BY DEV	ELOPMEN	<u>NT</u>				
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Original 2.2 5 High Density Residential 24 2 62 8.1 20 Commercial 16 4 0 SE 9 2.9 7 Single Family 23 1 59 NE 6 46.3 114 Single Family 370 1 945 9.0 22 Commercial 18 4 0 NW 5 23.2 57 Single Family 186 1 473 6.4 16 Commercial 13 4 0 0 SW 6.4 16 Commercial 23 4 0 SW 10.0 27 Commercial 23 4 0 SW 5 11.0 27 Commercial 10.0 5 0 NW31 5.9 15 Industrial 12 0 0 NW31 5.9 15 Industrial 26 <td></td> <td>SW 9</td> <td>57</td> <td>14</td> <td>Single Family</td> <td>46</td> <td>1</td> <td>116</td>		SW 9	57	14	Single Family	46	1	116
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NE 6 46.3 114 Single Family 370 1 945 NW 5 23.2 57 Single Family 186 1 473 NW 5 23.2 57 Single Family 186 1 473 SW 6.4 16 Commercial 13 4 0 SW - - - - - - - SW - - - - - - - - SW 5 11.0 27 Commercial 23 4 0 - SW 5 11.0 27 Commercial 122 0 - NE 36 55.0 136 Industrial 110 5 0 -		SE 9	2.9	7	Single Family	23	1	59
Image Image <th< td=""><td></td><td>NE 6</td><td>46.3</td><td>114</td><td>Single Family</td><td>370</td><td>1</td><td>945</td></th<>		NE 6	46.3	114	Single Family	370	1	945
NW 5 23.2 57 Single Family 186 1 473 6.4 16 Commercial 13 4 0 SW			9.0	22	Commercial	18	4	0
6.4 16 Commercial 13 4 0 SW SE 6 11.7 29 Commercial 23 4 0 SW 5 11.0 27 Commercial 87 5 0 SW 5 11.0 27 Commercial 22 0 NE 36 55.0 136 Industrial 110 5 0 NW31 5.9 15 Industrial 12 0 0 NE 31 13.0 32 Industrial 12 0 0 NE 1347 124 0 SW 3 17.0 42 Single Family 49 124 1347 SW 3 17.0 42 Single Family 19 151 1347 SW 3 17.0 42 Single Family 59 151 1347 SW 32 0.0 0 Institutional 0 7 0 <t< td=""><td></td><td>NW 5</td><td>23.2</td><td>57</td><td>Single Family</td><td>186</td><td>1</td><td>473</td></t<>		NW 5	23.2	57	Single Family	186	1	473
SW SE 6 11.7 29 Commercial 23 4 0 43.3 107 Industrial 87 5 0 SW 5 11.0 27 Commercial 22 0 NE 36 55.0 136 Industrial 110 5 0 NW31 5.9 15 Industrial 12 0 0 NE 31 13.0 32 Industrial 26 5 0 NE SW 3 17.0 42 Single Family 49 124 SW3 17.0 42 Single Family 136 1 347 SE SW3 7.4 18 Single Family 59 151 SW 32 0.0 0 Institutional 0 7 0 NE 32 55.8 138 Single Family 446 1 1138 SW 32			6.4	16	Commercial	13	4	0
SE 6 11.7 29 Commercial 23 4 0 W 43.3 107 Industrial 87 5 0 SW 5 11.0 27 Commercial 22 0 NE 36 55.0 136 Industrial 110 5 0 NW31 5.9 15 Industrial 12 0 0 NE 31 13.0 32 Industrial 26 5 0 NE 13.0 32 Industrial 26 5 0 NE 110 5 0 0 0 SE 1347 1347 1347 151 SW 3 17.0 42 Single Family 136 1 347 SE 151 151 SW 32 0.0 0 Institutional 0 7 0 V82	SW							
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SW 5 11.0 27 Commercial 22 0 NE 36 55.0 136 Industrial 110 5 0 NW31 5.9 15 Industrial 12 0 NE 31 13.0 32 Industrial 26 5 0 NE - - - - - - SE 4 6.1 15 Single Family 49 124 - SW 3 17.0 42 Single Family 136 1 347 SE - - - - - - - SW 3 7.4 18 Single Family 59 151 - SW 32 0.0 0 Institutional 0 7 0 - NE 32 55.8 138 Single Family 446 1 1138 -			43.3	107	Industrial	87	5	0
NE 36 55.0 136 Industrial 110 5 0 NW31 5.9 15 Industrial 12 0 NE 31 13.0 32 Industrial 26 5 0 NE		SW 5	11.0	27	Commercial	22		0
NW31 5.9 15 Industrial 12 0 NE 31 13.0 32 Industrial 26 5 0 NE Image: Constraint of the second secon		NE 36	55.0	136	Industrial	110	5	0
NE 31 13.0 32 Industrial 26 5 0 NE Image: Second Secon		NW31	5.9	15	Industrial	12		0
NE SE 4 6.1 15 Single Family 49 124 SW 3 17.0 42 Single Family 136 1 347 SE Image: SW 3 7.4 18 Single Family 59 151 SW 32 0.0 0 Institutional 0 7 0 NE 32 55.8 138 Single Family 446 1 1138 NE 32 55.8 138 Single Family 446 1 1138 Total 437.7 1081 2470 5651 5651 Lot yield and population determined by: 1 1 10 10 10 Single Family - 8 lots per Ha - 2.55 people per lot 1 1 10 10 10 10 Single Family - 8 lots per Ha - 2.55 people per lot 1 1 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 <td></td> <td>NE 31</td> <td>13.0</td> <td>32</td> <td>Industrial</td> <td>26</td> <td>5</td> <td>0</td>		NE 31	13.0	32	Industrial	26	5	0
SE 4 6.1 15 Single Family 49 124 SW 3 17.0 42 Single Family 136 1 347 SE Image: Constraint of the state of the stat	NE							
SW 3 17.0 42 Single Family 136 1 347 SE Image: Constraint of the stress of		SE 4	6.1	15	Single Family	49		124
SE SW3 7.4 18 Single Family 59 151 SW 32 0.0 0 Institutional 0 7 0 NE 32 55.8 138 Single Family 446 1 1138 - 3.4 8 Commercial 7 7 0 - Total 437.7 1081 2470 5651 - - - - - - - Lot yield and population determined by: - - - - - 1 Single Family - 8 lots per Ha - 2.55 people per lot - - - - - 2 Single Family (High Density) - 11 lots per Ha - 2.55 people per lot - - - - - - 3 Condo Unit/Manufactured Home - 11 units per Ha - 2.4 people per lot -		SW 3	17.0	42	Single Family	136	1	347
SW3 7.4 18 Single Family 59 151 SW 32 0.0 0 Institutional 0 7 0 NE 32 55.8 138 Single Family 446 1 1138 Total 3.4 8 Commercial 7 7 0 Total 437.7 1081 2470 5651 Lot yield and population determined by: 1 1 1 Lot yield and population determined by: 1 1 1 Single Family – 8 lots per Ha – 2.55 people per lot 1 1 1 Scondo Unit/Manufactured Home – 11 units per Ha – 2.4 people per lot 1 1 1 Scondo Unit/Manufactured Home – 11 units per Ha – 2.4 people per lot 1 1 1 4 Highway Commercial – 2 units per Ha – 5.5 SFU equiv per Unit 1 1 1 1 5 Light Industrial – 2 units per Ha – 5.5 SFU equiv per Unit 1 5 1 1 1 6 Seasonal Recreation – 4.2 units per Ha – 2.55 people per unit – 2.6 SEU equiv per Ha 1 1 1 1	SE							
SW 32 0.0 0 Institutional 0 7 0 NE 3255.8138Single Family446111383.48Commercial77 0 Total 437.7108124705651Lot yield and population determined by:1Single Family - 8 lots per Ha - 2.55 people per lot		SW3	7.4	18	Single Family	59	7	151
NE 3255.8138Single Family44611383.48Commercial770Total437.7108124705651Lot yield and population determined by:1 Single Family – 8 lots per Ha – 2.55 people per lot2 Single Family – 8 lots per Ha – 2.55 people per lot13 Condo Unit/Manufactured Home – 11 units per Ha – 2.4 people per lot4 Highway Commercial – 2 units per Ha – 5.5 SFU equiv per Unit5 Light Industrial – 2 units per Ha – 5.5 SFU equiv per Unit6 Seasonal Recreation – 4.2 units per Ha – 2.55 people per unit - 2.6 SFU equiv per Ha		SW 32	0.0	0	Institutional	0	1	0
3.48Commercial770Total437.7108124705651Lot yield and population determined by:11111 Single Family – 8 lots per Ha – 2.55 people per lot1112 Single Family (High Density) – 11 lots per Ha – 2.55 people per lot113 Condo Unit/Manufactured Home – 11 units per Ha – 2.4 people per lot14 Highway Commercial – 2 units per Ha – 5.5 SFU equiv per Unit15 Light Industrial – 2 units per Ha – 5.5 SFU equiv per Unit16 Seasonal Recreation – 4.2 units per Ha – 2.55 people per unit - 2.6 SFU equiv per Ha		NE 32	55.8	138	Single Family	446	7	1138
Total 437.7 1081 2470 5651 Lot yield and population determined by: Image: Constraint of the second s			3.4	8	Commercial	7	1	0
Lot yield and population determined by: Image: Constraint of the second sec		Total	437.7	1081		2470		5651
1 Single Family – 8 lots per Ha – 2.55 people per lot 2 Single Family (High Density) – 11 lots per Ha – 2.55 people per lot 3 Condo Unit/Manufactured Home – 11 units per Ha – 2.4 people per lot 4 Highway Commercial – 2 units per Ha – 5.5 SFU equiv per Unit 5 Light Industrial – 2 units per Ha – 5.5 SFU equiv per Unit 6 Seasonal Recreation – 4.2 units per Ha – 2.55 people per unit - 2.6 SFU equiv per Ha		L at viold and	Inonulatio	n determi	and by			
2 Single Family – 8 folls per Ha – 2.55 people per lot 2 2 Single Family (High Density) – 11 lots per Ha – 2.55 people per lot 3 3 Condo Unit/Manufactured Home – 11 units per Ha – 2.4 people per lot 4 4 Highway Commercial – 2 units per Ha – 5.5 SFU equiv per Unit 5 5 Light Industrial – 2 units per Ha – 5.5 SFU equiv per Unit 6 6 Seasonal Recreation – 4.2 units per Ha – 2.55 people per unit - 2.6 SFU equiv per Ha					2.55 poople por let			
2 Single Family (Fight Density) = 11 lots per Ha = 2.55 people per lot 3 Condo Unit/Manufactured Home = 11 units per Ha = 2.4 people per lot 4 Highway Commercial = 2 units per Ha = 5.5 SFU equiv per Unit 5 Light Industrial = 2 units per Ha = 5.5 SFU equiv per Unit 6 Seasonal Recreation = 4.2 units per Ha = 2.55 people per unit = 2.6 SFU equiv per Ha		2 Single Fair	nily – o iu nily (Lliab	ls per na -		o por lot		
4 Highway Commercial – 2 units per Ha – 5.5 SFU equiv per Unit 5 Light Industrial – 2 units per Ha – 5.5 SFU equiv per Unit 6 Seasonal Recreation – 4.2 units per Ha – 2.55 people per unit - 2.6 SFU equiv per Ha		2 Single Fail	illy (⊓lgit t/Manufac	Density) -	-11 los per Ha -2.55 peopr	e per ioi conto nor lo	+	
5 Light Industrial – 2 units per Ha – 5.5 SFU equiv per Unit 6 Seasonal Recreation – 4.2 units per Ha – 2.55 people per unit - 2.6 SFU equiv per Ha		4 Highway C	ommerci	al 2 unite	$r_{1} = 11$ units per Ha = 2.4 per Ha = 5.5 SELL equiv per	c Unit		
6 Seasonal Recreation – 4.2 units per Ha – 2.55 people per unit - 2.6 SFU equiv per Ha		5 Light Indus	trial _ ? ·	nits ner ⊔	a = 5.5 SELL equiv per Unit			
\Box UCABULAL COLORIUL = 7.2 ULUB UCLUA = 2.33 UCUUC UCLUH = 2.0 OLU CUUV UCLUA		6 Seasonal E	Recreation	n = 4.2 un	a = 0.0 of 0 equiviper 01111 its ner Ha = 2.55 neonle ner	unit - 26 SI	Ellequiv pe	r Ha
7 Country Estates – 1 25 lots per Ha – 2 55 people per lot		7 Country Fe	states – 1	25 lots ne	r Ha – 2.55 people per lot			

3.2 MAJOR UNDEVELOPED LAND AREAS WITHIN STUDY BOUNDARIES

All of the potential undeveloped land areas have been assessed to determine possible use, lot yield and population

- Table 3.1 summarizes all the "Major Undeveloped Land Areas Within Study Boundaries"
- The lot yield and population determination are shown in the legend at the bottom of table 3.1. Lot densities were determined from existing land development areas (i.e. Meadowlands Estates) and comparative trends in Central Alberta.
- The lot yield in Dwelling Units for each development parcel is utilized in projecting water use and sewage flows.

3.3 FUTURE GROWTH DEVELOPMENT

Figure 3.2 has been prepared to show an estimated anticipated staged growth development scenario that is envisioned for infill of undeveloped land within the Town boundaries. The areas most probable to develop in the next twelve (12) years or by 2016 are shown first (in red); followed by the next ten (10) years (2026) in yellow; and so forth to 2046. The development spans, coincide with the national census periods.

Table 3.2 provides the support for each growth span and generates probable population growth.



GR	OWTH BY DEV	/ELOPME	<u>TI</u>				
				Table 3.2			
			Major	Undeveloped Land Areas, Wi	thin Town F	Poundariaa	
			Wajor	Undeveloped Land Areas -wi		Soundaries	
SECTOR	LOCATION	AF	REA	LOT YIE	LD		POPULATION
		(ha)	(ac)	Potential Zoning	Unsubdivid	led Lot Yield	
NW							
	SW 8	57.0	141	Single Family	456	1	1163
	SE 8	14.6	36	Single Family	117	1	298
		7.7	19	High Density Residential	85	2	216
	SW 9	5.7	14	Single Family	46	1	116
		2.2	5	High Density Residential	24	2	62
		8.1	20	Commercial	16	4	0
	SE 9	2.9	7	Single Family	23	1	59
	NE 6	46.3	114	Single Family	370	1	945
		9.0	22	Commercial	18	4	0
	NW 5	23.2	57	Single Family	186	1	473
		6.4	16	Commercial	13	4	0
SW							
	SE 6	11.7	29	Commercial	23	4	0
		43.3	107	Industrial	87	5	0
	SW 5	11.0	27	Commercial	22		0
	NE 36	55.0	136	Industrial	110	5	0
	NE 31	13.0	32	Industrial	26	5	0
NE							
	SE 4	6.1	15	Single Family	49		124
SE						7	
	SW 32	0.0	0	Institutional	0	1	0
	NE 32	55.8	138	Single Family	446	7	1138
	T (1	3.4	8	Commercial	7	1	0
	Total	382.4	944		2123		4594
						1	•

GROWTH BY DEVELOPMENT							
				Table 3.2			
	T	Major	Undevelop	ed Land Areas -Outside To	own Boundar	ies	
SECTOR	LOCATION			LOI Y	(IELD		POPULATION
		(na)	(ac)	Potential Zoning	Unsubalvia	ed Lot Yield	
IN VV		15	27	Single Femily	120	1	206
	1100 9	15	27	High Density Pesidential	00	2	252
		14.3	35	Commercial	29	<u> </u>	0
		64	16	Commercial	13	4	0
sw		0.1	10	Commonola	10		
•••	NW31	5.9	15	Industrial	12		0
NE							
	SW 3	17	42	Single Family	136	1	347
SE				v ,			
	SW3	7.4	18	Single Family	59	1	151
	Total	75	185		468		1056





The following is a summary of the vision of growth for Ponoka:

- 2004 to 2016
 - Continued residential growth in the North West and South East sectors.
 - SE8 Meadowlark Estates
 - Starting into SW8 continued growth out of Meadowlark
 - Infill of higher density in SW9 & SE9
 - Infill and re-development in NW5
 - Start of development NE 32 on East Hill south of Hwy 53
 - Infill in SE4
 - Continued Industrial/Manufacturing and Hwy Commercial
 - NE36 Industrial north east 20 acres
 - NW 5 Hwy Commercial
 - SW 9 Hwy Commercial
 - SE 6 Hwy Commercial

This would generate an estimated 1,407 people. Based on 2001 census population of 6,330 the projected population in 2016 would be 7,737 people.

• 2016 to 2026





- Estimated Residential Growth Areas
 - Continued development into SE8, SW8, NW5 and SE4
 - Further development in the NE32
- High Density Development
 - Infilling in NW9 and SW9
- Hwy Commercial
 - Into NE6, NE36, and NE32
 - Re-development in SW5 along Hwy 2A
- Light Industrial/Industrial
 - More into NE36

The above development would generate an estimated increase in population of 1,459. Population of Ponoka estimated at 9,196.

- 2026 to 2036
 - Residential
 - SW8
 - NE32
 - Annexation of the NE9, NW9, NE8 would have to occur to allow development north of the Town boundaries in:



- NW9
- NE9

This would generate an estimated 1,329 people. Population estimated at 10,525.

- 2036 to 2056
 - Residential development would be generally completed in SW8, NE32 and, begin progressing into NE6
 - Continued development across the NW9, NE8.
 - If Annexation took place then development would begin to occur in:
 - SW3, NW3 and SE32

This would develop another 4,539 people and bring the population to 15,064 in 2056.

3.4 CONCLUSIONS

If the existing Town boundaries were completely developed as per the Area Concept Plan, an estimated population of 12,275 would be achieved, or double present day population. It would take Forty-Three (43) years to achieve this with a 1.5% growth rate.





The remaining lands in the Study Area outside of the Town boundaries, when developed would generate another 11,467 people, bringing the Town population to 23,742 or approaching the 25,000 horizon limit.




4 STUDY DESIGN BASE

To evaluate the Infrastructure, a design basis needs to be established. The following are the relevant design criteria used to forecast future growth and evaluate the infrastructure needs of the Town of Ponoka. This section also forms criteria for determining off site levy and road boundary costs.

4.1 **DESIGN POPULATION**

This report will identify necessary infrastructure to meet a 1.5% growth rate. Using this rate, the following milestone populations will be reached:

- 10,000 2031 25 Years
- o 15,000 2056 56 Years

4.2 DEVELOPMENT DENSITY

- Gross developable area is considered to be, all available developable land less only Environmental Reserve. Gross area includes M.R., roadways, parks, and school dedication.
- Light Industrial lot equivalent to 8.0 Dwelling Unit per ha for assessments of water consumption and sewage flow generation.
- A single-family dwelling unit (D.U.) or equivalent number of D.U. is used as a basis for determining Density. The equivalencies to a D.U. are as follows:



• Equivalencies

Duplex Lot	2 dwelling unit
Townhouse Unit	1 dwelling unit
Condo Unit	1 dwelling unit
Triplex	3 dwelling unit
Fourplex	4 dwelling unit
Apartment Bldg.	0.5 dwelling unit per suite

• Single Family Dwelling Unit

- There are 2.55 people per dwelling unit based on census population divided by the number of existing subdivided lots
- There are approximately 8.0 lots per hectare for single family and approximately 11.0 lots per hectare for high density single family
- The average per capita water consumption is 0.286 m³ per day or 63 igpd
- Water Consumption equals 0.73m³ D.U. per day, or 161 imperial gallons per day (igpd)

• Light Industrial

• Average water consumption is 1.6m³ or 352 igpd per lot



- Industrial lot is equivalent to 8.0 D.U. per ha.
- 2.0 Industrial lots per gross ha.

• Highway Commercial

- Average water consumption is 6.9m³ or 1518 igpd per lot
- Highway Commercial lot equivalent is 9.5 residential lots per ha.

4.3 EXISTING WATER CONSUMPTION TRENDS

The following water consumption trends were determined from the Town's bulk treated water meter summaries (see Appendix B in supporting technical data collected during this study) from 2001 to 2003 for a population of 6,330 people.

- Average yearly water consumption per capita is 140.2 m³
 - 384.1 Lpd (Litres per day)
 - 84.5 igpd (Imperial gallons per day)
 - 2,431 cu.m/day average day for 6,330 people
- Average summer day residential consumption
 - 451.0 Lpd
 - 99.2 igpd
 - 2,855 cu.m./day for 6,330 people



- Peak summer seasonal consumption equated to permanent population of 6,330
 - 515 Lpd
 - 113 igpd
 - 3,260 cu.m./day for 6,330 people

4.4 EXISTING SANITARY SEWER FLOWS TRENDS

The Sanitary Sewer Flow records were examined in detail to establish criteria on how to model the trunk main system. The following are the trends and flows that were extrapolated based on a population of 6,330 people:

- Average yearly sewer flows generated per capita is 174.0m³ from 1996 to 2002
 - 476.7 Lpd
 - 105 igpd
- Average Winter Flow November to April (inclusive)
 - Average day 2,515m³
- Average Summer Flow May to October (inclusive)
 - Average day 3,495m³
 - Peak summer day 4,285m³





- Estimated Infiltration Flow April to August
 - Average day $-700m^3$ to $1,000m^3$ per day
- Estimated Required Treated Effluent Winter total storage
 - Serving population 7,030 450,000 cu.m.
 - Serving population 10,000 650,000 cu.m.
 - Serving population 14,000 900,000 cu.m.
- Estimated Required Treated Effluent Summer total storage
 - Serving population 7,030 535,000 cu.m.
 - Serving population 10,000 760,000 cu.m.
 - Serving population 14,000 1,065,000 cu.m.



4.5 ROADWAY CATEGORY DESCRIPTIONS

The following is the Town of Ponoka Roadway Standards

- Undivided Arterial
 - Right of way width 24.0m
 - Travel Lane width 4.0m
 - Asphalt width 4.5m
 - Curb width 0.5m
 - No parking lane
- Residential Collector
 - Right of way width 20.0m
 - Travel Lane width 3.7m
 - Asphalt width 12.0m
 - Curb width 0.25m
 - Parking Lane width 2.4m
- Local Residential
 - Right of way width 20.0m
 - Asphalt width 11.0m



- Curb width 0.25m
- Industrial
 - Right of way width 24.0m
 - Asphalt width 13.5m
 - Curb width 0.50m
- Primary Highways
 - Right of Way 30.0 (min)
 - Asphalt Width 15.0 (min)
 - Curb 0.50
 - Shoulder rural Section 2.5m.



5 WATER SYSTEM

This section examines the Water System Infrastructure for the Town of Ponoka.

The water system is comprised of a number of infrastructure components.

These components cover the areas of:

- Water Supply
 - Well Collection System
 - Regional Supply
- Water Storage
- Pumping System to Distribution
- Distribution System to Supply Consumptive and Fire Flow needs.

Assessments were made from existing records of the water consumptive needs to determine future requirements for water supply and storage.

A computer model of the distribution system was compiled using Haestads Watercad Program. This model helps to assess the capability of the existing system and future needs to meet long-term development. The model also provides information on pressure, pumping and storage needs.



5.1 WATER SUPPLY, STORAGE AND PUMPING INFRASTRUCTURE

Figure 5.1 presents the primary water supply, storage and pumping infrastructure. Before examining each segment, the following is an overview of the Town of Ponoka Infrastructure that supplies water to the people.

5.1.1 Operating System

The Town of Ponoka is situated in the Battle River Valley. As a result, there is varying water pressure through the system and the two pressure zones. As shown on Figure 5.1, all of the west side and north side of the Battle River Valley, and a portion of the East Hill to 44 and 43 Street areas are influenced by both the Lucas Heights Reservoir (located on 63 Street and 57 Avenue) and the new 39 Ave Reservoir and Pump house. The second pressure zone exists on the upper portion of East Hill and stretches south of Highway 53. A small 900 cu.m. reservoir, and booster pumping station provides pressure service to the higher elevations of the East Hill.

5.1.2 Water Storage Reservoirs and Pumping System

There are four (4) water storage reservoirs situated within the system at the following: Central, 39 Riverside. Lucas Heights, Ave, and Three (3) are located in Zone 1, on the west side of the Battle River Valley and One (1) in Zone 2 on the east side of the River, in Riverside. One of the Zone 1 reservoirs was recently constructed in 2003. A new 4,600 cu.m. (1.0 million gallon) reservoir in the South East Industrial Area, at 67 Street and south of 39 Avenue was built to increase pumping and fire flow capabilities to the downtown and North East Industrial area. Reservoir and pumping facilities at Lucas Heights, Central, and Riverside supply treated water to



the distribution system. Excess water off the Lucas Heights system presently fills the new 39 Avenue Reservoir. Booster pumps running on variable speed drivers provide equalization pressure and flows during peak times to the system.

There is a small 225 cu.m. (50,000 gal) reservoir at Central that collects water from four local wells treats the water and distributes it into the grid.

The Regional System will connect to the 39th Avenue Reservoir and the Riverside Reservoir (see figure 5.1). Since the wells will no longer be utilized, a portion of the Well #12 well Raw water supply line, from the corner of 39 Avenue west to 67th Street to Lucas Heights Reservoir can become a dedicated line used to fill the Lucas Heights Reservoir.

A second Regional Connection, as shown on Figure 5.1 will be made to the Riverside Reservoir.

5.2 WATER SUPPLY SYSTEM

Water supply is critical to the future development of the community. All new subdivision developments require Alberta Environment approvals. As a requirement of Alberta Environment, the Town of Ponoka must show it has the capability of supplying adequate water to meet the new development needs.

5.2.1 Existing Groundwater System

The Town of Ponoka has nine (9) ground water supply wells. The following Figure 5.1 presents the location of the facilities.



5.5 CONCLUSIONS

The existing storage system is capable of meeting the needs of a population of 8,000 based on having one peak day storage being available.

In zone 1 (west of the River), there are expansion capabilities at the new 39th Avenue Reservoir site. As well, a new reservoir on the East Hill (south east of the existing Riverside Reservoir) will be needed to service future residential development, minimum size of 5,000 cu.m. Demand is not seen until after 2016 or later depending on growth rate.

It is quite possible the Regional System will require an in line storage facility to service clients north of Ponoka in the future, and could become a combined facility on the East Hill. Central Plant and Well collection system should be kept operational to be used for Municipal Needs, bulk water sales, recreation and parks. With the development of a regional water supply system, the Town will be in a much better position in meeting the demands of high quality water.

The following conclusions were also drawn:

- The well system is capable of supplying the system with water until delivery of the Regional Water is available.
- The Riverside and the Lucas Heights booster pumping stations should be upgraded to variable speed pumps.
- Licensed allocation for Wells 9, 12 and 14 should be kept for a high water use industrial client.







- Wells 1, 4, 5 and 6 feed to the Central Plant and produce on average, 16.3 lps or 215 igpm. These Wells feed into a small 225 cu.m. (50,000 gal) reservoir located at 53 Avenue and 53 Street. The water quality from Well #1 is quite good. The other wells need treatment for iron and manganese. The Central Plant combines all the well water, aerates and filters the water for Iron and Manganese, Chlorinates and fluoridates the water and pumps into the distribution system, which augments supply into the central section of the distribution system.
- Wells 9 and 12 are connected by a dedicated line raw water supply from Well 9 in SW5, to the Lucas Heights Water Treatment Plant in northwest corner of SE8. Well #9 is located in the SW5. The length of the line is approximately 4,500 m. It is 200mm (8 inch) from Well #12 to Well #9, and 150mm from Well #9 to the Lucas Heights Water Treatment Plant.
- In the future, Well #14, which in not currently connected, will be connected by a dedicated line to the Lucas Heights Water Treatment Plant.
- Well #11 is located immediately north of the Lucas Heights Water Treatment Plant site and, feeds directly into the plant.
- Water from Well 9, 11, and 12 (and in the future #14) are treated at the Lucas Heights Plant using aeration, lime softening, re-carbonation and filtration.
- Well #8 is located at the Lucas Height Reservoir, and feeds separately into the reservoir during emergency high demand periods. Due to pour





quality and high hardness it is used only during peak demands and produces 7.5 lps (100 igpm).

- Well #14 has been recently constructed in NW35. It is not connected and requires a dedicated line be built to Well #12 supply line. It will provide approximately 7.5 lps or more during peak periods.
- The Town has an annual licensed allocation for 1,647,500 cu.m. in 2003, with water rationing the total consumptive use was 983,000 cu.m. The Wells are not capable of producing to the allocation because of falling water tables in the area. The water quality is poor requiring treatment.
- It is hard to estimate what population the existing Groundwater Well ٠ System would service. However it is known that;
 - At both current capacity and water levels the system can barely service today's population of 6,330 people
 - Peak summer demands are controlled with water rationing
 - Treatment Plant capacity is less than the well pumping yield, and would have to be upgraded to meet peak day pumping demand. Shortages of supply result in the summer because of the limitation of production at the Water Treatment Plant.
- Water treatment of Wells 9, 11, 12 is necessary to remove taste and Hydrogen Sulphate.
- The present system could not supply a major industrial developer, if someone came to Ponoka and needed high quantities of water. It would





be advantageous to keep the main producing wells and their licensed allocation (or a portion of) for this purpose. Also, the wells and system could be utilized for Municipal uses, i.e. street cleaning, bulk water sales and recreation uses. The central plant and well collection system would be well suited for this.

• There appears to be a relatively high loss of water through the water treatment process between total raw water influent flow and treated water flow. This back wash water is being discharged to the sewer system.

5.2.2 Regional Supply

- The whole dimension of water supply will change when the Regional System comes on stream. It will provide a high quality and consistent supply of water.
- With the stable supply, the Town is capable of meeting future growth.
- The Well Collection System will become dormant once the North Red Deer Water Services Commission Supply line reaches Ponoka in 2006.
- The Town is to receive two (2) connections to their existing system. The Easterly connection will be to the Riverside Reservoir and the Westside being the 39th Avenue Reservoir.
- The supply line will enter Ponoka 800m west of the Alberta Hospital road in the SE 31 42-25-4. At that point two connections will be provided to the Town of Ponoka. One lateral will go west to connect to the new 39





Ave and 76 St Reservoir. The second will proceed east and north and tie into the Riverside Reservoir on the east side of the Town.

- The Regional System will have sufficient pressure off its line to directly fill the two operating reservoirs, a Scada System on the Regional System will monitor the reservoir levels at these two reservoirs and turn on a shut off supply. During filling of the 39th Avenue Reservoir the Lucas Heights Reservoir would be normally filled via a booster pump off the 39th Avenue Reservoir. Through valving and connection piping, it may be possible to utilize the excess pressure at the 39th Avenue Reservoir to fill the Lucas Heights Reservoir. In time when this supply line is not filling Lucas Heights Reservoir could be filled via the booster pump.
- The Regional System initially is scheduled to supply the following peak day flows based on their peaking factor of 1.8. The estimated peak day flow based off consumptive flow data is also presented. There is a significant margin of safety available to facilitate Industrial Growth.

2006 – 5292 cu.m./day	Estimated Peak Day 3426 cu.m./day
2011 – 5701 cu.m./day	Estimated Peak Day 3600 cu.m./day
2021 – 6613 cu.m./day	Estimated Peak Day 4000 cu.m/day
2028 – 8389 cu.m./day	Estimated Peak Day 4300 cu.m./day

Design delivery pressure at Ponoka is expected to be:

• 39th Avenue Reservoir – Elevation 855m





- Reservoir water level approximate Elevation 812.5m, Pressure 60 psi
- Riverside Reservoir Elevation 864m
- Reservoir water level elevation approximately 845m, Pressure 27 psi

5.3 WATER STORAGE

A detailed assessment was made of the storage requirements needed by the Town of Ponoka.

5.3.1 Existing Reservoir System

The Town of Ponoka presently has four reservoirs:

•	Lucas Heights	4,600 cu.m.
•	Central	225 cu.m.
•	Riverside	900 cu.m. + 20 psi
•	39 th Avenue	4,600 cu.m+ 70 psi

10,325 cu.m.

A previous study by UMA dated July 2000 recommended that fire storage be set at 3,150m3/day or 13,125 l/min for a 4-hour duration fire.

The Regional Water users are using a peak day to an average day factor of 1.8 times the average day. The average day is based on the average of yearly consumption. The average yearly consumption capita is 140 cu.m./year or 384 l per/day.





The UMA Water Storage (July 2000) Report recommends extra storage be added to account for days where peak demands exceed supply from the Regional System. For the purpose of this report it is assumed that the regional system will provide a peak day flow rate as previous described.

Alberta Environment requires 1 - day peak storage. Therefore, Tagish Engineering has used the same criteria in calculating required storage. Additional day storage provides protection if the Regional supply went down.



5.3.2 Future Storage Requirements

Table 5.1 shows storage requirements for future population levels at a slightly higher growth rate of 1.5%.

	2006	2011	2021	2028	2041
Population	6,819	7,346	8,526	9,322	11,500
*Average Day	2,618	2,821	3,274	3,580	4,415
*Peak Day	4,713	5,077	5,893	6,443	7,947
Α	3,150	3,150	3,150	3,150	3,150
В	1,178	1,269	1,473	1,610	1,988
С	392	423	491	537	662
TOTAL	4,720	4,842	5,114	5,297	5,800
Available					
Storage	10,100	10,100	14,600	14,600	14,600
Peak Day					
Storage					
Required	9,433	9,919	11,007	11,740	13,747
NET	+667	+181	3,593	2,860	853
Regular Supply	5,292	5,701	6,613	8,389	8,389
Reserve	5,959	5,802	10,206	11,249	9,242

Table 5.1 – Water Storage Requirements

Average Day = Population x 0.384 cu.m./person

Peak Day = 1.8 x Average Day using the Commissions peaking factor

A = Industrial Fire Flow Storage

B = 25% of Peak Day for added Fire Flow Storage

C = 15% of Average Day for additional Fire Flow Storage

Available Storage = Storage capacity in system (Central Plant not included) Peak Day Storage Regular = A + B + C + Peak Day



NET = Difference between Storage and Peak Day Storage Required
Regional Supply = Peak Day Available supply
Reserve = NET Available storage plus regional supply flow for 1 day
Between 2016 and 2021, East Hills Reservoir needs to be built

5.4 PUMPING SYSTEM TO DISTRIBUTION

5.4.1 Existing System

A new pumping station has been recently constructed at the 39th Avenue Reservoir to augment fire flows and pressure. Additionally, existing pumping systems are located at the Lucas Height and Riverside to boost water to the reservoir. The Riverside Booster Pump Facility requires upgrading to facilitate future growth in the upper pressure zone 2.

5.4.2 Future Servicing

- The existing system is capable of handling future servicing needs in the Study Area.
- The computer analysis shows a low-pressure zone during a fire flow situation when the NW is fully developed above contour elevation 829.5m. A dedicated trunk line to the area is needed with a separate fire booster pumping facility at Lucas Heights reservoir.
- In Zone 2, at Riverside Booster Station, variable speed pumps are needed to supply proper pressure and deliver residential fire flows. A standby power system is required to protect the system.





5.4.3 Distribution System

Figure 5.2 presents the Water Distribution System.

The Town is completing the installation of 300 mm trunk main looping in 2004 from the 39th Avenue Reservoir to 54th Avenue and 50th Street. A computer model of the existing and the trunk feeder main system for the Study area was completed, and the following conclusions were drawn.

- 300mm upgrades and installations were made in the following areas:
 - \circ In 2002 54th Avenue north of 50th Street to 53rd Street
 - In 2003 39th Avenue and 67th Street area leading out of the new reservoir

The model shows good distribution throughout the Town with the storage, pumping system and looped distribution system. All future main and connections should be constructed as part of new developments.





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6 SANITARY SEWER SYSTEM

The sanitary sewer system comprises of the following infrastructure:

- Gravity Collection System
- Lift Station and Force Mains
- Future Trunk System to Service the New Growth Area

6.1 EXISTING SYSTEM ASSESSMENT

6.1.1 Gravity Collection System

Tagish Engineering has compiled the Main Gravity Trunk Sewer System and shown it on Figure 6.1.

- Larger Mains 400 mm and over are shown in blue
- Mains 300mm or smaller are shown in green

The network was then entered into XPSWMM (EPA Modeling Program). All elevations of inverts, and sizes are input. Nodes or zones based off the number of single family lots or equivalent where then input. The program then generates depth of flow, capacity of system velocities and cumulative flow. From this Tagish Engineering determined the capability of each pipe in the system. Modelling was done under an average day flow including average day infiltration.



From our Modeling, the following capacity concerns were identified:

- The Main trunk line from Lift Station A force main entry point at 57 Ave. and 46 St. to the Sewage Treatment Lagoon is the first concern. It is operating at 75% capacity when Lift Station A is pumping during normal infiltration periods
- With Lift Station A pumping into the gravity line at 46 Street, insufficient capacity is available to service future development areas within the Town boundaries such as SW8, SE6, NE32 and SE32
- 3. Capacity of the 300mm outlet junction from SW Industrial, Hwy Commercial around Extra Foods joining the 400mm line along north side Hwy 53 and the west leg across Hwy 53 servicing flow from northwest guardant of Town is another concern. Highway commercial and industrial volumes need to be measured to determine actual generations compared to Alberta Environment design flow guidelines.
- 4. Infiltration into the overall system and possibly high back wash flows from the water treatment plant presents another problem.

Because of suspected low flows from the light industrial west of Hwy 2A, the model shows sufficient capacity to allow the future development in NE36 to be routed through the existing system.





6.1.2 Lift Stations and Force Mains

The existing system has two collect system lift stations;

- \circ Lift Station A on 49th Street and 57th Avenue
- Lift Station B on 38th Avenue Close west of 46th Street

These two lift stations have recently been renovated with new control systems. In Appendix A, an infrastructure assessment report was compiled for each lift station. It was found that:

- Both have standby power, Alpin Systems and automatic transfer switches
- No flow measurement taken at either station. Hours of running time recorded
- Each station has wet well level controller and pump run time
- Good capability exists for flow monitoring from each station and remote monitoring (SCADA).
- Force Mains
 - Lift Station A has a 300 mm (12 inch) force main that crosses the Battle River to 46 Street Trunk Main
 - Lift Station B has a 200 mm (8 inch) force main that crosses Hwy
 53 and pumps effluent to 48 Avenue and 43 Street. The station



is located on the south side of Hwy 53, west of 46 Street (Alberta Hospital Road).

6.1.3 Future Trunk System to Service Study Area

A sewer assessment was done using XPSWMM Sewer Modeling program (Figure 6.2). The existing system is capable of handling the future growth in the following manner:

- SW8/NW5 a trunk main out of these two quarters can be linked into the existing gravity line crossing Hwy 2A on the north side of Hwy 53.
 With care a gravity line will service most, if not all of SW8.
- NE36 Industrial Areas. A portion of the north 40 acres can be serviced with gravity sewer into the 39th Avenue and 66 Street sewer trunk main.
- NE36/NW31 A large portion of the southerly portion NE36 and NW31 would need to be serviced with a common lift station as shown on Figure 6.2. A temporary lift can be made at the south edge of the first 40 acres of development in the NE corner.

Most if not all the South East Development and top of the East Hill can be carried by gravity into the Riverside area. Lower contour interval would have to be routed into Lift Station B. All North boundary developments (outside Town boundaries) in NE9, NW9, NE8, and NW8, can be serviced by a gravity sewer through these quarters and a siphon across the River to the sewage lagoons. The sewer will be deeper in the 6 to 8 m depth for a section of line in NW9. A portion of the NE6, SE7 will require lift stations to service the area. N1/2 of NE6 will be going to the North Boundary Gravity System





through NE8. The south portion of NE6 would cross Hwy 53 and into the SE6 system.

6.2 CONCLUSIONS

6.2.1 Collection Mains

The 300mm gravity trunk line junction at 47th Avenue Crescent and Hwy 53 coming from Extra Foods area (south leg and co-op Gas Bar) Hwy 2A needs to be flow monitored to fully assess if a capacity problem exists to handle future development. Also, the 46th Street gravity line from 57th Avenue to the Wastewater treatment Plant will have more than sufficient capacity to handle all east side development if lift station A force main is extended to the lagoon.

6.2.2 Lift Stations

Both lift stations are in good condition. Pumping systems could be upgraded to handle future increased flows

- Lift station A force main can be extended to the sewage lagoon. This will free capacity in the gravity trunk main to accommodate all future development in the SE area, NW and SW areas
- Miltonic range finder level control could be installed in the lift stations for flow control. This would link pump run time, and pump capacity to provide daily flows.
- A flow-monitoring program is needed throughout the Town at approximately 5 sites, to determine impacts of infiltrators and establish



actual flow rates out of the SW Industrial area. To enable calibrations of models.

• Upgrade flow meter at lagoon to be able to collect hourly data (To conform diurnal curve) to more accurately calibrate model.





7 WASTE WATER TREATMENT FACILITY

The Town of Ponoka Waste Water Treatment Facility is located north east of the Town in the NE10. The facility covers approximately 85 ha (210 acres). The Town owns most of the NE10 and a portion of the adjoining quarter to the north (SE15).

7.1 EXISTING SYSTEM

The Town recently changed their treatment process, from a Conventional Waste Water Stabilization Pond with four anaerobic cells, one natural facultative cell and three storage cells located in N1/2 10-43-25W4, to an Aerated Secondary Treatment Cell replacing the Natural Facultative cell. This system still facilitated twice annual discharge.

The facility has to maintain the following treatment guidelines prior, to discharge to the storage cell.

 Less that 25 mg/l monthly arithmetic mean of weekly CBOD samples.

7.2 SYSTEM UPGRADE

The proposed upgrade as shown on Figure 7.1 involved:

- o Utilization of four anaerobic ponds for initial settlement
- Three sub aerated ponds in the old facultative pond (cell #4)
 were created with a liquid depth of 1.52m



- An on site hose bubble aeration system (similar to Nelson Environmental System) was installed in all three cells and two 60 hp blowers
- Design flow for 30-day retention at an average daily flow 3,500 cu.m. /day

The initial design indicated that the system was capable of handling a design population of 7,220 people, and projected to be reached in 2006. At that time additional aeration piping would need to be added and the running of the second blower. The Treatment capability of the facility from the test results will be a factor, in determining when additional aeration will be needed. For example, when CBOD exceeds the average weekly limits during spring and summer months, it indicates the aeration facility is not handling the loading.

7.3 STORAGE PONDS

- Existing storage capacity is 695,000 cu.m.
 - Winter requires a minimum 6 months 185 days storage using
 0.38 cu.m. per capita/day winter flows
 - Ponds will be at capacity when daily winter flows are at 3,750 cu.m. /day. Estimated population 10,000 people projected in 2028.
 - Summer storage is 4.5 months between May and October's 3week discharge period of treated effluent from the storage cells.







- Population Storage ponds are capable of servicing a population of 10,000 people, including summer infiltration
- Additional storage of 350,000 cu.m. will be needed to meet a population horizon level of 15,000 people

7.4 OPERATIONAL CONSTRAINTS

From our review of the sewage treatment facility, the following are operational constraints in the system, which have been identified. Figure 7.2 presents the treatment facility layout and identifies the different cell numbers.

7.4.1 Battle River 1:100 Flood

The treatment facility comprising of the anaerobic four cells 5, 6, 7, and 8. Three aerated cells 4a, 4b and 4c. are all within the 1:100 Battle River flood zone.

- Existing top of Berm along the river front average 803.3m
- Estimated 1:100 flood level is 803.83m
- Minimum recommended top of berm elevation of 804.33 with a minimum of 0.5m free board.
- Recommend top of berms is 804.50 m for anaerobic Cell 8 because it is exposed to the River in the S.W. corner.





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Environmental Municipal Water Resources Land Development G4, 5550 - 45 Street, RED DEER, AB (403) 346 - 7710 Fax (403) 341 - 4909 E-mall tagIsh@tagIsh-engIneering.com TOWN OF PONOKA PROPOSED SEWAGE TREATMENT EXPANSION (ALT. 1) FIGURE 7.2 The existing berm from Cell 1 to the south end of Cell 8 should match and be raised to 804.5 above existing height with 3:1 side slopes.

7.4.2 Cell #9

Cell 9, west of Cell 4a and Cell 8, is not utilized for storage but is used for a lay down area for sludge drying when the anaerobic cells 5, 6, 7, and 8 are cleaned out. This cell should be decommissioned by removal of the berms and utilizing the material for raising berms and side sloping to Cell 4, 6, and 8. It would remove the obstruction in the flood plain and let the Battle River flow past the facility without any interference or change in the direction of the flow.

A smaller area in the SE corner of Cell 9 could be created for a sludge drying bed. This is the preferred site, adjacent to the aerobic cells. It will need to be reviewed with Alberta Environment, being within the flood plain.

7.4.3 Water Quality Treatment to Storage Ponds

The Town of Ponoka's License to Operate states that the "average monthly" means of the weekly samples for CBOD is to be at or less than 25mg/l." Review of test results from April 2003 to March 2004 showed CBOD average monthly mean to be greater than 25mg/l for January, February and March. The other months in that period were in compliance.

 Suspended Solid Results, although not a compliance parameter should also be 25mg/l or less. This level was exceeded eight out of the twelve months.


7.4.4 Liquid Depth of Aerated Pond

The aeration system in Cell 4a, 4b, and 4c is operating in 1.5m of liquid depth. This is shallower than desired for efficient oxygen transfer. Ideally 3.0 to 5.0m depth creates better oxygen transfer

Raising the berm height to meet the 1:100 flood level could be incorporated into Cell 4a, 4b and 4c berms, increasing the operating depth by 1.2m to 1.5m and to help increase oxygen transfer. It would require the installation of a Venturi aeration lift pump at the outlet of the anaerobic ponds. The air supply lines in Cell 4a, b, and c would have to be either raised, or buried and the cross berms raised to maintain circulation.

7.4.5 Riverside Trunk Main – 46 Street to Lagoon

The 450mm trunk line from 57 Avenue and 46 Street to the Sewage Treatment Facility is reaching 75% capacity. During high infiltration rainstorms, this main reaches its capacity.

Lift station A can handle all the flow from the west side of the River, including future new developments. It has been recently upgraded and has the capacity of handling the flows west of the river. Pressure can be taken off the 450mm gravity line by extending the force main from 57 Avenue and 46 Street to the sewage treatment facility, thus leaving the 450 mm main available to handle only flows from Riverside and future East Hills area.



7.4.6 Blower Noise Attenuation

Complaints in the past have been made regarding excessive noise coming off the area where the blower units, manifold header and distribution airlines are located. Some work has been done on the manifold units, but depending on weather and atmospheric conditions, there is still a noise level

Alberta Environmental licence to operate requires that a minimum of 0.5 watts/cu.m. aeration shall be maintained throughout all aerated cells. This minimum level converts to a requirement of a need for a 75 hp blower unit.

Two 60 hp blower units were installed. One unit runs continuously. The design calculations were based on oxygen transfer, which is another acceptable design method, supporting the 60 HP units.

Continued monitoring and adjustments are being made to address the concerns.

7.4.7 Air Infusion Line

The air infusion lines for the aerated pond were site manufactured. The lines were made from standard 32 mm polyethylene pressure pipe and holes drilled at some intervals (i.e. 450 mm) on the top. Stainless steel cables were strapped to the pipe to provide sufficient weight to sink the lines. In comparison, the Nelson Environmental Manufactured line has thin slots that provide diffusion of the air and has a polyethylene sleeve with a lead weighted center.

A number of the lines have already shifted, especially off the bank where the airline header was installed. The line appears to have been pulled towards



the bank, making an S shaped pattern. This may have been as a result of ice movement. In spring, the ice also pulls the lines off the headers requiring annual maintenance to reinstall.

7.4.8 New Treatment Facility Alternatives

7.4.8.2 Alternative One

The capability exists to take the proposed force main from Lift Station A directly to a new complete mix, aeration pond system and bypass the existing lower anaerobic (Cell 5, 6, 7, and 8), aerated system (Cell 4a, 4b, 4c). See Figure 7.2. This would reduce the flow and loading to the existing treatment system (Cell 4 to 8 inclusive) and let the Riverside and future East Hill flows utilize the 450 mm trunk line and existing treatment facility.

The force main extension would then discharge directly into a new aerated complete mix pond and an intense aerated pond, both with a liquid depth of 5.0m.

Two sites are shown on Figure 7.3



- **Site One:** Exists west of Cell 3 and would require acquisition of some land out of NE10.
- Site Two: Exists south of Cell 2. It would require a 300m separation to the residence in the SE corner of the quarter but is situated on land owned by the Town.

7.4.8.2 Alternative Two

Presented on Figure 7.3 is an alternative utilizing the existing system as follows:

- The eastside gravity main and the future Lift Station A force main would discharge into anaerobic Cell 7 and 8. These cells would be utilized to remove all solids.
- To protect the Treatment Facility from this 1:100 Battle River flood the berms on the Riverside of Cell 4a, 4b, 4c, portion of 6 and Cell 8 will be raised 1.2m to 1.5m.
- Convert Cell 5 and 6 into a single cell removing the middle berm. Add aeration and convert to a complete mix cell (Cell 5)
- Raise berms interfacing Cell 4a and 4b with Cell 5 to increase operating depth of Cell 4.
- Raise cross berms in Cell 4a, 4b, and 4c.
- Utilizing a Venturi pump(s) to circulate, aerate and transferring flows from Cell 5 into 4a. The venture pump(s) not only will





ANAEROBIC CELLS - 3.0m DEPTH CELLS 7 & 8 15100cum COMPLETE MIX CELLS - 4.8m DEPTH CELL 6: 19000cum AERATED CELLS - 5.0m DEPTH CELL 14: 146000cum CELL 4A,4B,& 4C: 210000cum

STORAGE •3.0m. DEPTH (Cubic Metres)

CELL 1:	230000
CELL 2:	124000
CELL 3:	341200
CELL 12(NEW):	320000
TOTAL:	1015200

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TOWN OF PONOKA

ALTERNATE 2 SEWAGE TREATMENT FACILITY FIGURE 7.3

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transfer effluent but will also inject air into the flow being transferred to Cell 4a.

- An emergency overflow gravity line would be also constructed from Cell 5 to the Cell 4c outlet Lift Station. This line would be used for high flows and power failures.
- The existing aeration system in Cell 4a, 4b, and 4c would be utilized.
- Options exist in utilizing the Blower lines for aeration in Cell 5 if noise concerns are overcome.
- Existing Lift Station between Cell 4c and Cell 2 would be utilized to transfer treated effluent up to Cell 2 and 3.
- Long term or if a major industrial user comes on stream an additional aeration pond (Cell 14) could be built south of Cell 2. The lift station would pump into Cell 14, rather than Cell 2, to accommodate increased B.O.D. loading.
- The Lift Station A force main could be directed to Cell 14 but a bar screen would be needed to remove effluent solids before discharging then Venturi aerator pumps could be utilized. These pumps are lower in horsepower, deliver more air, and circulate.



7.5 CONCLUSIONS

The infrastructure assessment of the existing facility is as follows:

Aerated system is a benefit in allowing the Town to maintain twice-annual discharge, thus reducing storage requirements

- Berms on Cell 4a, 4b, 4c. Cell 6 and 8 need to be raised on the Battle River side to protect against the 1:100 floods.
- Anaerobic ponds can service a population of 16,000.
- The present aerated system is good for a population of 7200. The average peak day flow presently is at 2700 cu.m per day for Cell 4 or 75% of the design flow of 3500 cu.m per day.
- Upgrades will be needed to meet population of 10,000 to 15,000 people.
- Storage ponds will service population of 10,000 with twice the annual discharge
- To meet flows for a population of 15,000, another 350,00 cu.m. storage pond will have to be constructed



7.6 **RECOMMENDATIONS**

The assessment conducted under the Master Servicing Study requires further study in 2005/2006 to confirm the Conclusions and Recommendations and to develop the most economical long-term strategy for the facility.

- If growth continues at the 1.0 to 1.5% level the existing system could be modified in stages until flow rates necessitate major upgrades. Alternative 2 can be phased and utilize the existing infrastructure to the maximum.
- The critical points that need to watched for are as follows:
 - 1. When water quality levels in Cell 4a begin to continually exceed the limits, Cell 4 aeration system needs to be upgraded.
 - 2. When the 450 mm gravity line from 57 Ave. & 46 ST to the Lagoon begins surcharging, the Lift Station A force main has to be extended to Treatment Facility.
 - The Treatment Facility along the Battle River needs to be protected for the 1:100 floods. Cell 4, 5, 6, and 8, berms should also be raised in preparation of modifications as per alternative 2.



8 WATER MANAGEMENT

The Battle River is the primary dominant physical feature that controls the topography and provides the drainage outlet for storm water runoff in the Town of Ponoka. The river flows from the west at the south edge of the Town and turns to the northeast at the NE31. A large wetlands and permanent water body, which is located west of the Town and north of Highway 53, on the North half of sections 6 and the South half of section 7, is the other dominant physical feature. The permanent water body is the drainage outlet for the northwest corner of the study area and has runoff coming to it from section 8. This outlet watercourse flows south of the Battle River through the SW6 and NE35.

Slopes along the east bank of the river vary from 2% to 5%. Slopes on the west side of the river vary from less than 0.5% to 1.5%. Soil textures are well-drained sandy loam to loam. Lands immediately adjacent to the river are underlain with gravels as evidenced by the current and past gravel pits.

Runoff flows from the Town site travel towards the river from both sides, mostly overland with some underground piping and some drainage ditches. Figure 8.1 shows the network of drainage structures presently in use within the Town boundary. Figure 8.2 shows the drainage basins of both the Town and the future development areas outside the Town boundary.

8.1 EXISTING SYSTEM ASSESSMENT

A model of the existing system using XP SWMM has been created with all known storm manholes and pipes entered into it. The system drains partly





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by way of roadside ditches and the data for this part of the system was not available without detailed field surveys. Therefore, the model of the existing system cannot be run. The new development areas will not drain through the existing town storm system with the exception of parts of NE8 and NW9. The basin covering parts of NE8 and NW9 drains south to 57 Avenue and into the existing system. Future development will have to reduce their runoff flow to pre-development rates, which should have little impact on the existing system. There is both underground piping and an overland route for surface water to follow.

8.2 STORM RUNOFF REQUIREMENTS

Figure 8.1 shows storm water retention for all the future development areas. Detailed hydrologic analysis was completed for every section of land and allowable runoff rates calculated. A topographic map showing the development or study area is presenting drainage boundaries. These are shown in a separate supporting document in Appendix 3. Attached, Table 8.1 is a summary of all the Storm Runoff Analysis done on each undeveloped quarter section. It presents a good guideline as to the storm water storage and acceptable runoff rates out of the development area.

8.3 FUTURE DEVELOPMENT REQUIREMENTS

The areas that will require attention as development occurs are as follows:

 SW7 and SE7 – Develop a watershed plan for the existing wetland permanent water area. This area will act as a storm attenuation area for the development to the east in SW8, NW8, NE8 and SW Section 7 and a portion of NE6.



	DEV. AREA	PRE	POST	AREA	DEPTH	a	VOLUME	σ	UNIT STORAGE
	ha	cms	cms	ha	E	cms	cu.m.	l/s/ha	cu.m/ha
SW3-1 -	17.42	0.87	1.75	8.0	0.63	0.85	4,725	49.9	271
SW3-2	23.18	1.12	2.26	0.8	0.75	1.13	6,000	48.3	259
SW3-3	36.6	1.36	2.76	1.2	0.83	1.33	9,960	37.2	272
NW3	65	3.00	6.07	2.0	0.91	3.12	18,200	46.2	280
NW5	46.6	1.94	3.58	1.5	0.89	1.89	13,350	41.6	286
NE6	65	1.99	4.05	2.2	0.82	2.06	18,040	30.6	278
NW6	65	1.99	4.05	2.2	0.82	2.06	18,040	30.6	278
SE6	65	2.10	4.28	2.0	0.9	2.15	18,000	32.3	277
SW6	65	2.10	4.28	2.0	0.9	2.15	18,000	32.3	277
SE7	65	2.10	4.28	2.0	0.9	2.15	18,000	32.3	277
SW7	65	2.10	4.28	2.0	0.9	2.15	18,000	32.3	277
NE8	65	1.99	4.06	2.2	0.82	2.06	18,040	30.6	278
SW8-pond	35	1.06	2.56	1.4	0.71	1.05	9,940	30.3	284
NW8	65	1.99	4.06	2.2	0.82	2.06	18,040	30.6	278
NE9	65	1.63	3.34	1.8	0.95	1.68	17,100	25.1	263
6MN	65	1.99	4.06	2.2	0.82	2.06	18,040	30.6	278
SW10	65	2.41	4.91	2.0	0.9	2.41	18,000	37.1	277
NE31	65	1.63	3.34	1.8	0.95	1.68	17,100	25.1	263
NW31	65	1.63	3.34	1.8	0.95	1.68	17,100	25.1	263
NE32	65	3.18	6.41	2.0	0.96	3.08	19,200	48.9	295
SE32	65	3.18	6.41	2.0	0.96	3.08	19,200	48.9	295
NE36	65	1.63	3.34	1.8	0.95	1.68	17,100	25.1	263
NW36	65	1.63	3.34	1.8	0.95	1.68	17,100	25.1	263
							AVERAGE	32.2	276.4
COLUMN EXP	LANATIONS								
F	- BOUNDARY L	ANDS QUAF	RTER-SECT	TON NUMB	ERS				
7	- DEVELOPABL	E AREA (HE	ECTARES)						
e	- PRE DEVELO	PMENT PEA	K RUNOFF	FOR 1:100	YEAR STO	RM EVEN	IT(CUBIC MET	TERS/SECC	(DND)
4	- POST DEVEL	OPMENT PE	AK RUNOF	F FOR 1:10	D YEAR ST	ORM EVE	INT ASSUMING	3 50% ARE	A IS IMPERVIOUS
2	- MODELED ST	ORM POND	AREA(HEC	TARES)					
9	- MODELED ST	ORM POND	DEPTH (M	ETERS)					
2	- MODELED ST	ORM POND	PEAK DIS(CHARGE F(DR POST D	EVELOPA	AENT CONDITI	SNO	
0	- MODELED ST	TORM POND	PEAK VOL	UME (CUB	IC METERS	(0			
Ø	- UNIT DISCHA	RGE (LITER	S/SECOND	<i>IHECTARE</i>	(
10	- UNIT STORA	GE (CUBIC	METERS/HI	ECTARE)					

TABLE 8.1

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- Section 6 Improvements to the existing drainage outlet across the W1/2 of 6 to the Battle River. This is the outlet to a large wetland permanent water body area on the north boundary of Section 6 that will be utilized as a storm pond.
- NE36 1:100 overland drainage channel has been started to outlet to the Battle River. An incorporation of possible storm water in SW5 needs to be examined.
- NW5 and SW5 Create detention storage for the new developments in a triangular parcel in the SW5 between 48th Avenue and Hwy 53. This pond will attenuate the flows from NW5 developments to allow the downstream pipe system along Hwy 53 to handle the pre-development flow. In the existing industrial subdivision in SW5, a 1:100 outlet has to be developed from the intersection of 42nd Avenue and 64th Street. It is proposed that an overland 1:100 drainage route be developed along 64th Avenue south to 39th Avenue.
- NE32/SE32 Develop an adequate outlet in cooperation with the Golf Course. An open channel and piped out fall from a storm pond will be needed across the Golf Club property to 46th Street (Alberta Hospital road), and outlet into the River lowlands and old meanders. The Golf Club will utilize the runoff water to fill storage ponds for the irrigation system.
- SW3 Develop an adequate outlet along the east boundary of the Town site to accommodate discharge from three drainage basin ponds. Two ponds in the southwest and north west of the quarter against 38th Street



could be developed. The south westerly pond could be tied to the underground pipe system along Hwy 53.

 West part of NW9 – Create detention storage for new development. This basin will require a new outlet eastward that crosses Hwy 2A, and to the Battle River. Any new development north of the existing Town boundaries have to be controlled to the pre-development rate and discharged into this system.

8.4 **RECOMMENDATIONS**

The initial recommended control rates of flow, and storm pond locations are prepared for each undeveloped quarter section and provided in the backup Appendices of this report. Table 8.1 summarized the findings and provides a good overview of storm water detention requirements.

It is recommended that a Master Drainage Plan be prepared that encompasses the existing and future Town basins.

The computer model of the system has been constructed, but the existing as-built data is missing critical vertical information such as inverts, location of catch basins, short term retention storage capabilities in the system and, open channel capacities and storm retention pond sizes (constructed or natural).

Initially four areas need further investigation and the development of a more detailed Water Management to facilitate pending and future developments should be compiled.





These areas are:

- SW Industrial Area covering the SW5, SE6 (existing industrial) and the pending development in NE36.
- NW5 development drains into a future storm pond between 48 Avenue and Hwy 53. The pond outlets into an existing pipe system eastward along Hwy 53 into SE5 and then south to the Battle River via an open channel.
- NE32 and SE32 outletting into the Golf Course retention pond system and outletting to the Battle River.
- The drainage basin on the west side of the Town boundaries that will provide an adequate outlet for the SW8, into a wetlands, permanent water body in the SE7, NW6, NE6, and SW7. A water management plan needs to include the development of the outletting watercourse through the NW6, SW6 and into NE35 and a possible diversion into NW26 (Burnco).



9 TRANSPORTATION

An overall transportation concept plan has been prepared and presented in Figure 9.1. This plan presents the overall concepts regarding all Primary Highways, Undivided Arterial Roadways, and Major Collector Roadways and the interaction between each to create traffic access within the study area.

9.1 EXISTING

9.1.1 **Primary Highways**

- Primary Highways are shown in red dashed line on Figure 9.1
- Highway 53
 - Current East West corridor access to the Town of Ponoka.

There is currently a Functional Study being done on Hwy 53 from Hwy 2A to SH 815 for Alberta Transportation by ISL Consulting regarding access along the highway within the town. The results from the study are incorporated in Figure 9.1.

• Highway 2A

The North South corridor access to the Town of Ponoka is from Highway 2A. Alberta Transportation currently has a Functional Plan prepared regarding Highway 2A. That information is incorporated into Figure 9.1.



9.1.2 Undivided Arterial Roadways (UAR)

The Arterial road network provides a wider width and stronger structure to carry higher volumes of traffic and forms the integral component of the Truck route system. The following are identified UAR and coloured green.

• 50th Street

50th Street is used to access the downtown area from Highway 53 and Highway 2A.

• 57th Avenue

Currently an east west arterial road with no traffic lights at Hwy 2A, it is proposed that on 57th Ave., a rail crossing east of 50th Street be implemented. This would better facilitate access out of the North East Industrial Park east of the Rail line. 49th Street could be closed near the south end of 53 and make all traffic exit on 57 Avenue.

• 53rd Avenue

This links 50th Avenue on the East Hill to 53rd Avenue via a river crossing (bridge). It is proposed to realign the portion of road from 53 Avenue and the CPR Railway crossing east of 50th Street to 46 Street and 50th Avenue and construct a new river crossing.





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LEGEND: PRIMARY HIGHWAYS MAJOR COLLECTORS

EXISTING INTERSECTION TRAFFIC LIGHT

PROPOSED INTERSECTION TRAFFIC LIGHT

FOUR WAY STOP

PROPOSED RAIL CROSSING SITE

NEW BRIDGE LOCATION

TWP 43 TWP 42

Tagish Engineering Ltd.

 Environmental
 Municipal
 Water
 Resources
 Land
 Development

 G4, 5550 - 45
 Street,
 RED
 DEER, AB (403)
 348 - 7710
 Fax
 (403)
 341 - 4909

TOWN OF PONOKA TRANSPORTATION NETWORK FIGURE 9.1

NOVEMBER 2005



- 48th Avenue
- 48th Avenue runs from 50th Street to Hwy 2A, and links into a major collector going west on 50th Avenue. It would be realigned to create a better East West collector north of Hwy 53 behind the Highway Commercial.
- 46th Street

This is a major north south route on the east side of the River. It links to Alberta Hospital in the south to the rural area to the northeast and the areas transfer station.

A portion north of Hwy 53 to 50 Avenue is shown as a Major Collector because it passes through a residential area and there is a sharper corner north of Hwy 53, where 45th Avenue turns north on to 46 Street, which slows down the flow.

- *Hwy 53*
 - Two new arterial road intersections will be created.

On the East Hill, existing County road will shift slightly west to create a new road alignment along the present east town boundary. This road will link into 50th Avenue and the new river crossing to 53 Avenue and 50th Street.

67th Street will become the major north south arterial road on the west side of the Town. 39th Avenue west of Hwy 2A will provide access out of the southwest Industrial Park.



9.1.3 Major Collector Roadways

Major collectors are shown in blue and link into the UAR. A number of these roads that are recognized under this classification are present within the town. These roads are to provide traffic movement and land access.

A major collector will be created south of 39th Avenue and will be labelled 36th Avenue. It starts in SE36 Industrial Park (west of Hwy 2A) and parallels the River linking into 50th Street at Hwy 53 and will extend into the downtown and Hwy 2A via 50 St.

9.2 FUTURE

9.2.1 **Primary Highways**

9.2.2 Hwy 53

There are no plans on changing the use of this Highway. Access on the East Hill off 43, 45 and 45A Streets and laneway between these streets will be closed to Hwy 53, to reduce the number of accesses into Hwy 53. Also, access will be limited to a 400m separation where possible.

9.2.3 Hwy 2A

In the future the 57^{th} Avenue, 53^{rd} Avenue areas need to be examined for intersection treatment in the 53^{rd} to 57^{th} Avenue corridor.

Intersection improvements at 39th Avenue and future 36th Avenue will need to be done when warranted. 39th Avenue will be first with the development of the new Industrial area south of 39th Avenue off 66th Street.



9.3 UNDIVIDED ARTERIAL ROADWAYS

Additional Arterial roadways are required as the Town of Ponoka continues to increase in population and these roads are used to handle a large flow of traffic.

• Figure 9.1 shows the proposed arterial roadway locations

9.4 MAJOR COLLECTOR ROADWAYS

• Figure 9.1 shows the proposed collector roadway locations.

These roadways are used to handle the flows from land developments and direct them to the arterial roadways. The proposed road network shown on Figure 9.1 is the basis for the location of the proposed underground infrastructure.

The proposed improvements that are suggested would have to be implemented, as development would require. This future road network would be developer driven, therefore requiring the developers to contribute financially.

9.5 DANGEROUS GOODS ROUTES

 Figure 9.2 presents the Dangerous Goods Routes throughout the Town.

The primary Highways (2A and 53) are the bases of the network. 67th Street south of Hwy 53 through the Industrial area would link to 36 Avenue east boundary and 50th Street. 49th Street northbound out the north Industrial completes the routes.



9.6 CONCLUSIONS

The Town of Ponoka has a good road network system. As development occurs, the developments must contribute to the extension of the roadway network.

The proposed roadway network must be designed to handle all future traffic volumes. 57th Avenue appears natural to develop into a Major east west collector and a new access out of the North East Industrial Park. Lights at 57th Avenue and Hwy 2A would be required in the future.





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LEGEND: DANGEROUS GOODS ROUTES



PROPOSED RAIL CROSSING SITE

TWP 43 TWP 42

Tagish Engineering Ltd.

Environmental • Municipal • Water Resources • Land Development G4, 5550 - 45 Street, RED DEER, AB (403) 348 - 7710 Fax (403) 341 - 4909

TOWN OF PONOKA DANGEROUS GOODS ROUTES FIGURE 9.2

NOVEMBER 2005

10 SUPPORT UTILITIES

10.1 REFERRAL REQUEST

Support utilities encompasses, gas, electrical, telephone, cable television, and emergency services.

- The base plan has been circulated to the Town of Ponoka Electrical Department.
- Atco Gas, Telus and Cable Television were circulated with the overall road network plan.
- Area Concept Plan has been sent to Emergency Services Department who will examine for long term facility placement.

The objective is for these providers to review and identify any major utility corridors or placements they may require in the future, and alert them to future needs.

10.2 REFERRAL RESPONSE

The respective agencies did not see anything restricting in their future servicing. They were pleased to see an overall future servicing, road network plan to give them a feed of the direction of growth.

10.3 CONCLUSIONS

A good development concept plan needs to be finalized upon completion of this report and referred back to the agencies for future planning considerations, including project densities of the area to be developed. This





plan would then be taken forward as the initial draft for the Inter Municipal Development Plan.





11 TRAIL AND PARK SYSTEMS

11.1 BACKGROUND

Figure 11.1 provides a long-term vision for the future open space and park system. This plan has been circulated to Parks and Recreation. The basis of this open space trail system is to utilize the River Valley as a focal area and to have a complete bike and walking circuit.

Major road corridors can be utilized by having wider R.O.W. to accommodate trails. Utility (electrical especially) corridors can be utilized for trails, and do not necessarily have to follow the road network providing access through quieter areas. This plan can be incorporated into future Inter-municipal and or Provincial Trails.

11.2 ASSESSMENT REVIEW

The proposed plan incorporated the Burnco proposal for reclamation of their pits in NW36 and the creation of a large permanent water body, marshland area; that could also accommodate other uses.

The river fronting portion of NW31 and NE31 are identified and are to be coupled with a campground, RV development, integrated trails, open space and natural areas.

In the north west section, a large water body in Section 7 will be an integral part of the storm water outlet system for the quarters adjoining it to the east (west half of section 8, NE6). The outlet waters to the south could be routed





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OPEN SPACE
FLOOD PLAIN (1:100 YEAR)
 ARTERIAL ROADS
EXISTING TRAILS
PROPOSED TRAILS
 BOUNDARY



out of SW6 and into the Burnco wetlands/open water area in NW36 and provide better flows to the permanent water.

More input is needed to develop more cross trails from the river area through developments to the northwest.

11.3 CONCLUSIONS

The concept proposed is very functional and would require development of a good plan to ensure lands are acquired as development proceeds.





12 RECOVERABLE COST RECOMMENDATIONS

The servicing costs will provide a basis to determine offsite levies Table 3.2 is utilized to determine benefiting areas. Provided levies can only be applied to areas within the Town boundaries. Areas outside can have identifiable "Service Connection Fees".

Tagish Engineering Ltd would recommend that the extent of levy application be limited to those areas outlined on Figure 3.2 within the Town of Ponoka boundaries and applied to those areas, otherwise the cost becomes too diluted. Grants are deducted off the costs before calculating benefited costs. Boundary road costs apply to a common road that will need to be upgraded in the future to service the adjoining development. Access points to Hwy 53, especially in the East Hills area will also benefit NE and SE32, and SW3.

12.1 INFRASTRUCTURE COST ESTIMATES

The following are the identifiable improvements and costs for each Infrastructure System evaluated either "Previously Constructed" or that will have to be constructed to service "Future Development". Estimate of Grants are made where applicable to determine Net Cost to Future Development.

Note: Benefiting areas shown in cross-reference to Off-Site Levy Report.



12.2 WATER INFRASTRUCTURE

12.2.1 Previously Completed Improvements

The Master Servicing Study has identified previously completed water supply, treatment and, distribution system improvements completed in the last 5 years that were built to benefit development and improve serviceability to the existing and future developed areas. These improvements are summarized in Table 12.2.1

Table 12.2.1 - Previously Completed	Water Improvements
-------------------------------------	--------------------

IMPROVEMENT	COST
39 th Avenue Reservoir and Booster Pump Station	\$ 1,269,100
2004 Trunk Main and Installations	\$ 1,343,200
2003 Trunk Main and Installations	\$ 224,400
Total Previously Completed Water Improvement	s \$ 2,836,700

The Master Servicing Study has identified the following future improvements needed to serve the future development areas within the Town Boundaries. Table 12.2.2 presents the individual future improvements to each improvement group.



Table 12.2.2 - Future Water

IMPROVEMENT	COST
Supply	\$ 0
Storage Reservoirs	\$ 910,000
Pumping	\$ 100,000
Distribution	\$ 350,000
Operations	\$ 445,000
Total Future Water	\$ 1,805,000

The following Tables 12.2.3 and 12.2.4 provide more detail description of appropriated cost identified for "Previously Completed" and "Future Water" Infrastructure Improvements.

 Table 12.2.3 Previously Completed Water Improvements

		ESTIN	IATED	NET COST
		COST	GRANTS	
SUPPLY STORAGE	 1. Outstanding recoverables on existing well supply and collection system Improvements have been paid for from utility rates, reserves, capital budgets, and grants over the previous years. 1. Outstanding recoverables on: 	\$ 0.00	\$ 0.00	\$ 0.00
RESERVOIRS				
	Lucas Heights Reservoir	\$ 0.00	\$ 0.00	\$ 0.00
	Central Plant	\$ 0.00	\$ 0.00	\$ 0.00
	East Hills Reservoir	\$ 0.00	\$ 0.00	\$ 0.00



Master Servicing Study 2004

	2. 39th Avenue R	eservoir - SW			
	Industrial areas				
	Pumping station and	d 400 mm/300			
	mm Main Extensions	5	\$ 2,275,500	\$1,006,400	\$1,269,100
PUMPING					
Distribution	1. Trunk Main Distrit	oution			
	Installations				
	Installed in 2004		\$1,343,200	\$ 0.00	\$1,343,200
	Installed in 2003 46	Ave, 65 Street			
	to 67 Street		\$ 224,400	\$ 0.00	\$ 224,400
	TOTAL	PREVIOUSLY			
	COMPLETED IMPR	OVEMENTS	\$3,843,000	\$1,006,400	\$2,836,700
OVERSIZING	Laebon SE8 300 mr	n – 250 mm	\$ 17,260		
	57 Avenue Over sizi	ng to SW8	\$ 25,800		

Table 12.2.4 Future Water in 2004 Dollars

		ESTII	MATED	NET COST
		COST	GRANTS OR RECOVERABLES	
SUPPLY	1. Lucas Heights Supply from Industrial Reservoir			
	a) Regional Bypass Connection valve chamber	\$ 0	\$ 0	\$ 0
	 b) 39 Avenue Reservoir connection to 200mm Well #12 line and valve 150m 	\$ 0	\$ 0	\$ 0
	c) Booster Pump V.F.D.	\$ 0	\$ 0	\$ 0
	d) Well #9 line to Lucas Reservoir Connection	\$0	\$ 0	\$ 0
	TOTAL	\$ 0	\$ 0	\$ 0



Master Servicing Study 2004

STORAGE RESERVOIRS	1. East Hills future 5,000 cu.m. Reservoir	\$2, 000,000	\$800,000	\$1,200,000
	2. 38 Street to east W.L. Connection.	\$250,000	\$100,000	\$150,000
	TOTAL	\$2,250,000	\$ 900,000	\$1,350,000
PUMPING	1. Modify Riverside booster			
	bypass zone 2 to zone 1	\$ 60,000	\$ O	\$60,000
	2. Lucas Booster & PRV Station	\$ 40,000	\$ 0	\$40,000
	TOTAL	\$ 100,000	\$ 0	\$ 100,000
DISTRIBUTION	 Phase 3, Trunk Main Upgrades 	\$350,000	\$ 0.00	\$ 350,000
	TOTAL	\$ 350,000	\$ 0.00	\$350,000
OPERATIONS	 Decommission Lucas Heights Water Treatment plant 	\$ 200,000	\$ 0	\$ 200,000
	2. Modify Central Plant for back-up and bulk sales	\$ 60,000	\$ 0	\$ 60,000
	3. Modify Well 12 and 9 supply line for backup	\$ 5,000	\$ 0	\$ 5,000
	4. Decommission Wells 8 and 11	\$ 10,000	\$ 0	\$ 10,000
	5. SCADA System Radio Path – base SW, Tower	\$ 80,000	0	\$ 80,000
	- 3 sites	\$ 90,000	0	\$ 90,000
	TOTAL	\$ 445,000	\$ 0	\$ 445,000
Total Future Water in 2004 Dollars		\$3,145,000	\$900,000	\$2,245,000



12.3 SANITARY SEWER INFRASTRUCTURE

12.3.1 Previously Completed Improvements

The Master Servicing study has identified previously completed sanitary sewer infrastructure, completed in the last 5 years that were built to benefit development and improve serviceability to the existing and future developed areas.

	Table 12.3.1 Previou	sly Completed Sa	nitary Sewer	Improvements
--	----------------------	------------------	--------------	--------------

IMPROVEMENT	COST
Lift Station B	\$308,237

Similar to water the following future sanitary sewer infrastructure improvements have been identified in the Master Servicing Study to service future development areas within the Town Boundaries.

Table 12.3.2 Future Sanitary Sewer

IMPROVEMENT	COST
Lift Station A & B Upgrade	\$490,000
Force Main	\$576,000
Collection System	\$ 1,000,000
Total Future Sanitary Sewer	\$ 2,066,000





The following Tables 12.3.3 and 12.3.4 provide more detail description of appropriated cost identified for "Previously Completed" and "Future Sanitary Sewer" infrastructure improvements.

Table 12.3.3

PREVIOUSLY COMPLETED SANITARY SEWER				
		ESTIMATED		NET COST
		COST	GRANTS OR RECOVERABLES	
LIFT STATIONS	Lift Station A Upgrades			
	And			
	Lift Station B Upgrades	\$ 716,683	\$ 410,446	\$ 308,237


		ESTIMATED		NET COST	
		COST	GRANTS or Recoverables		
Lift Station	Lift Station A				
	Pump Upgrades and electrical	\$ 75,000	\$0	\$ 75,000	
	Milltronic Level/Flow monitoring control system	\$ 15,000	\$0	\$15,000	
	SCADA	\$ 35,000	\$0	\$35,000	
	Lift Station B				
	Pump Upgrades	\$ 15,000	\$0	\$ 15,000	
	Milltronic Level/Flow monitoring control system	\$ 15,000	\$0	\$ 15,000	
	SCADA	\$ 35,000	\$0	\$ 35,000	
	Lift Station C				
	Service NW 31, NE31	\$300,000	\$0	\$300,000	
	TOTAL	\$490,000	\$ 0	\$490,000	
Force Mains	Lift Station A				
	57 Avenue to Sewage Lagoon 1600m	\$460,000	\$ 184,000	\$ 226,000	
	Lift Station B	\$300,000	\$0	\$300,000	
	TOTAL	\$760,00	\$184,000	\$576,000	



Master Servicing Study 2004

Collection System	Gravity Line Upgrades			
	63 St. lane south of Hwy 53, MH 10031 to 10029			
		\$ 15,000	\$0	\$15,000
	62 Street South 48 Avenue to Hwy 53, MH 10029 to 11102	\$ 225,000	\$0	\$ 225,000
	36 Ave - 44 St. to 46 St. MH			
	5004 to MH 5205	\$ 360,000	\$ O	\$360,000
	50 A St., 57 Ave. to 60 Ave.	\$265,000	\$ 0	\$265,000
	TOTAL	\$1,000,000	\$ 0	\$1,000,000
	Total Future Sanitary	\$2,250,000	\$184,000	\$2,066,000

12.4 SEWAGE TREATMENT FACILITIES

12.4.1 Previously Completed Sewage Treatment Facility Improvements

The Master Servicing study has identified previously completed Sewage Treatment infrastructure improvements to bring the existing and future development areas to an approved serviceability level.

 Table 12.4.1 Previously Completed Sewage Treatment Facility Improvements

IMPROVEMENT	COST
2001 System Upgrades	\$ 629,187
Total Previously Completed Sewage Treatment Facility Improvements	\$ 629,187



Table 12.4.2 presents future sewage treatment facility infrastructure needed to meet future development.

Table 12.4.2 Future Sewage	Treatment Facilities
----------------------------	-----------------------------

IMPROVEMENT	COST
1:100 River Protection & Design Report	\$ 256,800
Decommission Cell 9 & Sludge Bed	\$ 132,600
Upgraded Aeration System	\$ 816,000
Future Storage Pond	\$ 240,000
Total Future Sewage Treatment Facilities	\$1,445,400

The following Tables 12.4.3 and 12.4.4 provide more detail description of appropriated cost identified for "Previously Completed" and "Future Storm Water" infrastructure improvements.

Table 12.4.3 Previously Completed Sewage Treatment Fa	acility
---	---------

		ESTIMATED		NET COST
		COST	GRANTS	
SEWAGE TREATMENT	2001 System Upgrades, which includes:	\$ 999,412	\$ 370,225	\$ 629,187
	Aeration System			
	Blower House Assembly			
	Cell 4 Berms			
	Lagoon Lift Station			
Total previe Treatment Fa	ously completed Sewage acility	\$ 999,412	\$ 370,225	\$ 629,187



Table 12.4.4 Future Sewer Treatment Facility

	ESTIM	NET COST	
	COST	GRANTS	
1:100 Battle River Flood Design Report	\$ 30,000	\$ 12,000	\$ 18,000
800m raise Cell 4 and Cell 8 –1.0m	\$398,000	\$159,200	\$238,800
Decommission Cell 9 & Sludge Bed			
Cell 9 Berm Removal	\$206,000	\$82,400	\$123,600
Sludge Drying Bed	\$15,000	\$6,000	\$9,000
Upgrade Aeration System			
Force Main to Sewage Treatment	\$150,000	\$ 60,000	\$90,000
Complete Mix Cell	\$245,000	\$ 98,000	\$ 147,000
Complete Mix Cell Aeration	\$150,000	\$ 60,000	\$ 90,000
Aerated Cell Site 2	\$750,000	\$ 300,000	\$450,000
Move Blower Units & Electrical	\$65,000	\$26,000	\$39,000
Future Storage Pond	\$400,000	\$160,000	\$240,000
Total Future Sewer Treatment Facility	\$2,409,000	\$ 963,600	\$ 1,445,400



12.5 STORM WATER INFRASTRUCTURE

12.5.1 Previously Completed Storm Water

The Master Servicing study has identified previously completed storm sewer infrastructure completed in the last 5 years that were built to benefit development and improve serviceability to the existing and future development areas with the Town Boundaries.

IMPROVEMENT	COST
NW Sector	\$ 1,290,942
SW Sector	\$ 33,000
SE Sector	0
NE Sector	0
Total Previously Completed Storm Water Improvements	\$1,323,942



The following Table 12.5.2 outlines future storm sewer facilities, that will have to be constructed by the Town of Ponoka to provide adequate outlet or storm detention for future development areas.

IMPROVEMENT	COST
NW Sector	\$450,000
SW Sector	\$662,000
SE Sector	\$1,060,000
NE Sector	\$120,000
Total Future Storm	\$2,292,000



The following Tables 12.5.3 and 12.5.4 provide more detail description of appropriated cost identified for "Previously Completed" and "Future Storm Water" infrastructure improvements.

SECT	CTION ESTIMATED		TED	NET COST	
			COST	GRANT	
NW	SW9	Storm drainage works constructed along Hwy 2A in 2004			
		EAST SIDE	\$ 255,000	\$ 60,000	\$ 195,000
		WEST SIDE	\$ 300,000	\$ 12,000	\$ 288,000
	NW5	East of 63 Street West Ponoka Storm Extension	\$ 185,500	\$0.00	\$ 185,500
		64 Street Extension North of 52 Avenue	\$ 117,542	\$0.00	\$ 117,542
		Storm Extension West of 63 Street in NW5	\$ 313,699	\$0.00	\$ 313,699
	SE8	Previously constructed works benefiting NE8			
		Pond	\$ 134,931	\$0.00	\$ 134,931
		Storm Line	\$ 74,270	\$0.00	\$ 74,270
		TOTAL NW SECTOR	\$1,380,942	\$ 72,000	\$1,308,942
SW	NE36	Drainage channel works constructed in 2003	\$ 33,000	\$ 0.00	\$ 33,000
		TOTAL SW SECTOR	\$33,000		\$ 33,000



Master Servicing Study 2004

Table	12.5.4	Future	Storm	Water
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		ESTIMATED		NET COST
		COST	GRANT	
Northwest	Sector		1	
SW5	Storm Pond between 48 St. and Hwy 53, Land & Improvement	\$200,000	\$0	\$200,000
NW8	Storm Water Management Report	\$25,000	\$0	\$25,000
SE7 / NW6	Outlet Improvements	\$150,000	\$0	\$150,000
SW6	Gabion Rock Control	\$75,000	\$0	\$75,000
	Total Northwest Sector	\$450,000		\$450,000
Southwest	Sector			
SE6	a) 39 Ave - 66 St. to West 67 St. IMP	\$245,000	\$0	\$245,000
	b) Divert 67 St. flow south from 42 Ave. to 39 Ave.	\$25,000	\$0	\$25,000
NE36	39 Ave. to Battle River	\$200.000	\$0 \$0	\$200.000
SW6 / NW36	Outlet and diversion NW Storm Water Management Plan Land	\$192,000	\$0	\$192,000
	Total Southwest Sector	\$ 662,000	\$0	\$ 662,000
Northeast S	Sector			
SW3	Pipe works along 38 ST to Hwy 53	\$120,000	\$0	\$120,000
	Total Northeast Sector			\$120,000
Southeast S	Sector			• • •
NE32/ NW32-SE	Storm / Driving pond Outlet works from Golf Course to Battle River	\$1,060,000	\$0	\$1,060,000
	Total Southeast Sector			\$1,060,000
	TOTAL FUTURE STORM			\$2,292,000





12 RECOVERABLE COST RECOMMENDATIONS

The servicing costs will provide a basis to determine offsite levies Table 3.2 is utilized to determine benefiting areas. Provided levies can only be applied to areas within the Town boundaries. Areas outside can have identifiable "Service Connection Fees".

Tagish Engineering Ltd would recommend that the extent of levy application be limited to those areas outlined on Figure 3.2 within the Town of Ponoka boundaries and applied to those areas, otherwise the cost becomes too diluted. Grants are deducted off the costs before calculating benefited costs. Boundary road costs apply to a common road that will need to be upgraded in the future to service the adjoining development. Access points to Hwy 53, especially in the East Hills area will also benefit NE and SE32, and SW3.

12.1 INFRASTRUCTURE COST ESTIMATES

The following are the identifiable improvements and costs for each Infrastructure System evaluated either "Previously Constructed" or that will have to be constructed to service "Future Development". Estimate of Grants are made where applicable to determine Net Cost to Future Development.

Note: Benefiting areas shown in cross-reference to Off-Site Levy Report.



12.2 WATER INFRASTRUCTURE

12.2.1 Previously Completed Improvements

The Master Servicing Study has identified previously completed water supply, treatment and, distribution system improvements completed in the last 5 years that were built to benefit development and improve serviceability to the existing and future developed areas. These improvements are summarized in Table 12.2.1

Table 12.2.1 - Previously Completed	Water Improvements
-------------------------------------	--------------------

IMPROVEMENT	COST
39 th Avenue Reservoir and Booster Pump Station	\$ 1,269,100
2004 Trunk Main and Installations	\$ 1,343,200
2003 Trunk Main and Installations	\$ 224,400
Total Previously Completed Water Improvement	s \$ 2,836,700

The Master Servicing Study has identified the following future improvements needed to serve the future development areas within the Town Boundaries. Table 12.2.2 presents the individual future improvements to each improvement group.



Table 12.2.2 - Future Water

IMPROVEMENT	COST
Supply	\$ 0
Storage Reservoirs	\$ 910,000
Pumping	\$ 100,000
Distribution	\$ 350,000
Operations	\$ 445,000
Total Future Water	\$ 1,805,000

The following Tables 12.2.3 and 12.2.4 provide more detail description of appropriated cost identified for "Previously Completed" and "Future Water" Infrastructure Improvements.

 Table 12.2.3 Previously Completed Water Improvements

		ESTIMATED		NET COST
		COST	GRANTS	
SUPPLY	 1. Outstanding recoverables on existing well supply and collection system Improvements have been paid for from utility rates, reserves, capital budgets, and grants over the previous years. 1. Outstanding recoverables on: 	\$ 0.00	\$ 0.00	\$ 0.00
RESERVOIRS				
	Lucas Heights Reservoir	\$ 0.00	\$ 0.00	\$ 0.00
	Central Plant	\$ 0.00	\$ 0.00	\$ 0.00
	East Hills Reservoir	\$ 0.00	\$ 0.00	\$ 0.00



Master Servicing Study 2004

	2. 39th Avenue Reservoir -	SW		
	Industrial areas			
	Pumping station and 400 mm	/300		
	mm Main Extensions	\$ 2,275,500	\$1,006,400	\$1,269,100
PUMPING				
Distribution	1. Trunk Main Distribution			
	Installations			
	Installed in 2004	\$1,343,200	\$ 0.00	\$1,343,200
	Installed in 2003 46 Ave, 65 S	treet		
	to 67 Street	\$ 224,400	\$ 0.00	\$ 224,400
	TOTAL PREVIOU	JSLY		
	COMPLETED IMPROVEMENT	S \$3,843,000	\$1,006,400	\$2,836,700
OVERSIZING	Laebon SE8 300 mm - 250 m	m \$ 17,260		
	57 Avenue Over sizing to SW8	\$ 25,800		

Table 12.2.4 Future Water in 2004 Dollars

		ESTIMATED		NET COST
		COST	GRANTS OR RECOVERABLES	
SUPPLY	1. Lucas Heights Supply from Industrial Reservoir			
	a) Regional Bypass Connection valve chamber	\$ 0	\$ 0	\$ 0
	b) 39 Avenue Reservoir connection to 200mm Well #12 line and valve 150m	\$ 0	\$ 0	\$ O
	c) Booster Pump V.F.D.	\$ 0	\$ 0	\$ 0
	d) Well #9 line to Lucas Reservoir Connection	\$0	\$ 0	\$ 0
	TOTAL	\$ 0	\$ 0	\$ 0



Master Servicing Study 2004

STORAGE RESERVOIRS	1. East Hills future 5,000 cu.m. Reservoir	\$2, 000,000	\$800,000	\$1,200,000
	2. 38 Street to east W.L. Connection.	\$250,000	\$100,000	\$150,000
	TOTAL	\$2,250,000	\$ 900,000	\$1,350,000
PUMPING	1. Modify Riverside booster			
	bypass zone 2 to zone 1	\$ 60,000	\$ O	\$60,000
	2. Lucas Booster & PRV Station	\$ 40,000	\$ 0	\$40,000
	TOTAL	\$ 100,000	\$ 0	\$ 100,000
DISTRIBUTION	 Phase 3, Trunk Main Upgrades 	\$350,000	\$ 0.00	\$ 350,000
	TOTAL	\$ 350,000	\$ 0.00	\$350,000
OPERATIONS	 Decommission Lucas Heights Water Treatment plant 	\$ 200,000	\$ 0	\$ 200,000
	2. Modify Central Plant for back-up and bulk sales	\$ 60,000	\$ 0	\$ 60,000
	3. Modify Well 12 and 9 supply line for backup	\$ 5,000	\$ 0	\$ 5,000
	4. Decommission Wells 8 and 11	\$ 10,000	\$ 0	\$ 10,000
	5. SCADA System Radio Path – base SW, Tower	\$ 80,000	0	\$ 80,000
	- 3 sites	\$ 90,000	0	\$ 90,000
	TOTAL	\$ 445,000	\$ 0	\$ 445,000
Total Future Water in 2004 Dollars		\$3,145,000	\$900,000	\$2,245,000



12.3 SANITARY SEWER INFRASTRUCTURE

12.3.1 Previously Completed Improvements

The Master Servicing study has identified previously completed sanitary sewer infrastructure, completed in the last 5 years that were built to benefit development and improve serviceability to the existing and future developed areas.

	Table 12.3.1 Previou	sly Completed Sa	nitary Sewer	Improvements
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IMPROVEMENT	COST
Lift Station B	\$308,237

Similar to water the following future sanitary sewer infrastructure improvements have been identified in the Master Servicing Study to service future development areas within the Town Boundaries.

Table 12.3.2 Future Sanitary Sewer

IMPROVEMENT	COST
Lift Station A & B Upgrade	\$490,000
Force Main	\$576,000
Collection System	\$ 1,000,000
Total Future Sanitary Sewer	\$ 2,066,000





The following Tables 12.3.3 and 12.3.4 provide more detail description of appropriated cost identified for "Previously Completed" and "Future Sanitary Sewer" infrastructure improvements.

Table 12.3.3

PREVIOUSLY COMPLETED SANITARY SEWER				
		ESTIMATED		NET COST
		COST	GRANTS OR RECOVERABLES	
LIFT STATIONS	Lift Station A Upgrades			
	And			
	Lift Station B Upgrades	\$ 716,683	\$ 410,446	\$ 308,237



		ESTIMATED		NET COST	
		COST	GRANTS or Recoverables		
Lift Station	Lift Station A				
	Pump Upgrades and electrical	\$ 75,000	\$0	\$ 75,000	
	Milltronic Level/Flow monitoring control system	\$ 15,000	\$0	\$15,000	
	SCADA	\$ 35,000	\$0	\$35,000	
	Lift Station B				
	Pump Upgrades	\$ 15,000	\$0	\$ 15,000	
	Milltronic Level/Flow monitoring control system	\$ 15,000	\$0	\$ 15,000	
	SCADA	\$ 35,000	\$0	\$ 35,000	
	Lift Station C				
	Service NW 31, NE31	\$300,000	\$0	\$300,000	
	TOTAL	\$490,000	\$ 0	\$490,000	
Force Mains	Lift Station A				
	57 Avenue to Sewage Lagoon 1600m	\$460,000	\$ 184,000	\$ 226,000	
	Lift Station B	\$300,000	\$0	\$300,000	
	TOTAL	\$760,00	\$184,000	\$576,000	



Master Servicing Study 2004

Collection System	Gravity Line Upgrades			
	63 St. lane south of Hwy 53, MH 10031 to 10029			
		\$ 15,000	\$0	\$15,000
	62 Street South 48 Avenue to Hwy 53, MH 10029 to 11102	\$ 225,000	\$0	\$ 225,000
	36 Ave - 44 St. to 46 St. MH			
	5004 to MH 5205	\$ 360,000	\$ O	\$360,000
	50 A St., 57 Ave. to 60 Ave.	\$265,000	\$ 0	\$265,000
	TOTAL	\$1,000,000	\$ 0	\$1,000,000
	Total Future Sanitary	\$2,250,000	\$184,000	\$2,066,000

12.4 SEWAGE TREATMENT FACILITIES

12.4.1 Previously Completed Sewage Treatment Facility Improvements

The Master Servicing study has identified previously completed Sewage Treatment infrastructure improvements to bring the existing and future development areas to an approved serviceability level.

 Table 12.4.1 Previously Completed Sewage Treatment Facility Improvements

IMPROVEMENT	COST
2001 System Upgrades	\$ 629,187
Total Previously Completed Sewage Treatment Facility Improvements	\$ 629,187



Table 12.4.2 presents future sewage treatment facility infrastructure needed to meet future development.

Table 12.4.2 Future Sewage	Treatment Facilities
----------------------------	-----------------------------

IMPROVEMENT	COST
1:100 River Protection & Design Report	\$ 256,800
Decommission Cell 9 & Sludge Bed	\$ 132,600
Upgraded Aeration System	\$ 816,000
Future Storage Pond	\$ 240,000
Total Future Sewage Treatment Facilities	\$1,445,400

The following Tables 12.4.3 and 12.4.4 provide more detail description of appropriated cost identified for "Previously Completed" and "Future Storm Water" infrastructure improvements.

Table 12.4.3 Previously Completed Sewage Treatment Fa	acility
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		ESTIMATED		NET COST
		COST	GRANTS	
SEWAGE TREATMENT	2001 System Upgrades, which includes:	\$ 999,412	\$ 370,225	\$ 629,187
	Aeration System			
	Blower House Assembly			
	Cell 4 Berms			
	Lagoon Lift Station			
Total previe Treatment Fa	ously completed Sewage acility	\$ 999,412	\$ 370,225	\$ 629,187



Table 12.4.4 Future Sewer Treatment Facility

	ESTIM	NET COST			
	COST	GRANTS			
1:100 Battle River Flood Design Report	\$ 30,000	\$ 12,000	\$ 18,000		
800m raise Cell 4 and Cell 8 –1.0m	\$398,000	\$159,200	\$238,800		
Decommission Cell 9 & Sludge Bed					
Cell 9 Berm Removal	\$206,000	\$82,400	\$123,600		
Sludge Drying Bed	\$15,000	\$6,000	\$9,000		
Upgrade Aeration System					
Force Main to Sewage Treatment	\$150,000	\$ 60,000	\$90,000		
Complete Mix Cell	\$245,000	\$ 98,000	\$ 147,000		
Complete Mix Cell Aeration	\$150,000	\$ 60,000	\$ 90,000		
Aerated Cell Site 2	\$750,000	\$ 300,000	\$450,000		
Move Blower Units & Electrical	\$65,000	\$26,000	\$39,000		
Future Storage Pond	\$400,000	\$160,000	\$240,000		
Total Future Sewer Treatment Facility	\$2,409,000	\$ 963,600	\$ 1,445,400		



12.5 STORM WATER INFRASTRUCTURE

12.5.1 Previously Completed Storm Water

The Master Servicing study has identified previously completed storm sewer infrastructure completed in the last 5 years that were built to benefit development and improve serviceability to the existing and future development areas with the Town Boundaries.

IMPROVEMENT	COST
NW Sector	\$ 1,290,942
SW Sector	\$ 33,000
SE Sector	0
NE Sector	0
Total Previously Completed Storm Water Improvements	\$1,323,942



The following Table 12.5.2 outlines future storm sewer facilities, that will have to be constructed by the Town of Ponoka to provide adequate outlet or storm detention for future development areas.

IMPROVEMENT	COST
NW Sector	\$450,000
SW Sector	\$662,000
SE Sector	\$1,060,000
NE Sector	\$120,000
Total Future Storm	\$2,292,000



The following Tables 12.5.3 and 12.5.4 provide more detail description of appropriated cost identified for "Previously Completed" and "Future Storm Water" infrastructure improvements.

SECTION		ESTIMA	TED	NET COST	
			COST	GRANT	
NW	SW9	Storm drainage works constructed along Hwy 2A in 2004			
		EAST SIDE	\$ 255,000	\$ 60,000	\$ 195,000
		WEST SIDE	\$ 300,000	\$ 12,000	\$ 288,000
	NW5	East of 63 Street West Ponoka Storm Extension	\$ 185,500	\$0.00	\$ 185,500
		64 Street Extension North of 52 Avenue	\$ 117,542	\$0.00	\$ 117,542
		Storm Extension West of 63 Street in NW5	\$ 313,699	\$0.00	\$ 313,699
	SE8	Previously constructed works benefiting NE8			
		Pond	\$ 134,931	\$0.00	\$ 134,931
		Storm Line	\$ 74,270	\$0.00	\$ 74,270
		TOTAL NW SECTOR	\$1,380,942	\$ 72,000	\$1,308,942
SW	NE36	Drainage channel works constructed in 2003	\$ 33,000	\$ 0.00	\$ 33,000
		TOTAL SW SECTOR	\$33,000		\$ 33,000



12.6 TRANSPORTATION

The Master Servicing Study identifies boundary or arterial roads infrastructure needed to service future development areas. The following are identifiable infrastructure. The following is a list of potential projects to review.

Table 12.6.1 Transportation

Improvement	Benefiting Areas	Cost			
HWY 2A	Alberta Transportation Cost Shared	\$4,350,000			
HWY 53	Alberta Transportation Cost Shared	\$3,300,000			
Collective Roads		\$9,040,000			
Total Future Transportation		\$16,390,000			



12.6 TRANSPORTATION

The Master Servicing Study identifies boundary or arterial roads infrastructure needed to service future development areas. The following are identifiable infrastructure. The following is a list of potential projects to review.

Table 12.6.1 Transportation

Improvement	Benefiting Areas	Cost			
HWY 2A	Alberta Transportation Cost Shared	\$4,350,000			
HWY 53	Alberta Transportation Cost Shared	\$3,300,000			
Collective Roads		\$9,040,000			
Total Future Transportation		\$16,390,000			



The following is a list of future transportation projects to be constructed that the Town of Ponoka will encounter to meet future servicing needs to new developments.

Table	12.6.2	Future	Transportation
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	ESTIM	NET COST	
	COST	GRANT	
COLLECTOR ROADS			
39 Avenue – Hwy 2A to 250m West of 67 Street	\$1,200,000	\$0	\$1,200,000
48 Avenue – 60 Street to 63 Street	\$600,000	\$0	\$600,000
46 Street – 38 Avenue to 39 Avenue	\$300,000	\$0	\$300,000
57 Avenue – Hwy 2A to 63 Street	\$990,000	\$0	\$990,000
River Realignment	\$200,000	\$0	\$200,000
50 Avenue River Crossing	\$2,200,000	\$0	\$2,200,000
57 Avenue – 63 Street and 67 Street – 700m	\$770,000	\$0	\$770,000
57 Avenue – Rail Crossing	\$320,000	\$0	\$320,000
57 Avenue – 50 Street to Hwy 2A	\$660,000	\$0	\$660,000
50 Street – 56 Avenue to Hwy 2A	\$1,800,000	\$0	\$1,800,000
HIGHWAY 2A			
44 Avenue to Hwy 53	\$500,000	\$500,000	\$0
Hwy 53 to 50 Avenue	\$900,000	\$900,000	\$0
44 Avenue to 39 Avenue	\$900,000	\$900,000	\$0
50 Avenue to 58 Avenue	\$1,500,000	\$1,500,000	\$0
58 Avenue to 61 Avenue	\$550,000	\$550,000	\$0
HIGHWAY 53			
Hwy 2A to 67 Street	\$1,500,000	\$1,500,000	\$0
46 Street to 42 Street	\$900,000	\$900,000	\$0
42 Street to 38 Street	\$600,000	\$600,000	\$0
Transportation Infrastructure Total	\$16,390,000	\$7,350,000	\$9,040,000



12.7 PROPOSED LONG TERM CAPITAL BUDGETS

The following Tables 12.7.1 thru 12.7.6 represent the proposed Long-term Capital Budgets for the Town of Ponoka. This information summaries the cost presented in this section and provides more detail regarding each item.



Town of Ponoka Long Term Capital Budget Water Improvements

WATER				Pop	oulation=630	0 to 7300						Population:	=7300 to 790	00	
Infrastructure Improvements	Reason for Proposed Improvements	Cost Estimate (\$2005)	To Be Constructed in 2005	Proposed 2006	Proposed 2007	Proposed 2008	Proposed 2009	Proposed 2010	Proposed 2011	Proposed 2012	Proposed 2013	Proposed 2014	Proposed 2015	Proposed 2016	TOTAL COST ESTIMATE
PUMPING															
Lucas Reservoir Pumping Station	V.F.D. and Larger Pumps	\$40,000		\$40,000											\$40,000
Riverside Booster and PRV Station	Modifications Regional	\$60,000		\$60,000											\$60,000
DISTRIBUTION															
50A Street															
51 ave - 52 st to 54 st	W.L. Costs under Local SIP														
57 st - 54 ave to 57 ave	W.L. Costs under Local SIP														
56 st - 54 ave to 57 ave	W.L. Costs under Local SIP														
55 st - 54 ave to 57 ave	W.L. Costs under Local SIP														
RESERVOIR															
East Hills	Future 4,600 Cu.m Reservoir	\$2,000,000							\$900,000	\$900,000	\$200,000				\$2,000,000
38 St to East Hills Water Line	Connect Existing to														
connection	future	\$250,000								\$250,000					\$250,000
OPERATIONAL															
Lucas Heights WTP	Decommission & Grade Site	\$400.000			\$50,000	\$150.000	\$200.000								\$400.000
Central Plant	Modify to Bulk & Off sales	<i><i><i>q</i></i>,</i>			400,000	+200/000	+=00/000								+
	site	\$60,000			\$60,000										\$60,000
Decommission Wells 12 and 9															
	Take out 12 & Standby 9	\$30,000			\$30,000										\$30,000
Decommission Wells 8 and 11	Take out of service	\$30,000			\$30,000										\$30,000
New SCADA System		±00.000					±00.000								±00.000
	System	\$80,000					\$80,000								\$80,000
SCADA Siles	connect 5 additional	¢90 000						¢90 000							¢90.000
Decommission Test and Observation	5105	\$50,000						\$50,000							\$50,000
Wells	6 Sites	\$30,000			\$30,000										\$30,000
WATER INFRASTRUCTURE TOTAL		\$3,070,000	\$0	\$100,000	\$200,000	\$150,000	\$280,000	\$90,000	\$900,000	\$1,150,000	\$200,000	\$0	\$0	\$0	\$3,070,000

Town of Ponoka Long Term Capital Budget Sanitary Sewer Improvements

SANITARY AND SEWAGE TREATME	NT														
			Population=63			300 to 7300				Por	opulation=7300 to 790(
Infrastructure Improvements	Reason for Proposed Improvements	Cost Estimate (\$2005)	To Be Constructed in 2005	Proposed 2006	Proposed 2007	Proposed 2008	Proposed 2009	Proposed 2010	Proposed 2011	Proposed 2012	Proposed 2013	Proposed 2014	Proposed 2015	Proposed 2016	Total Cost Estimate
50A Street - 57 Avenue to 60 Avenue	Collection of lines & tie into														
530m of 200mm to 375m	main Trunk line on 58 Avenue	\$265,000		\$265,000											\$265,000
63 Street Lane - Hwy 53 Crossing MH 10031 to MH 10029 Length 180m	Increase capacity out of industrial area	\$150,000		\$150,000											\$150,000
62st south of 48 ave to Hwy 53 and east across Hwy 2A (Descon 11/2001) MH 11102 to 10029 Length	Upgrade when West half of Sec 8 is serviced.														
275m		\$225,000					\$225,000								\$225,000
36 Avenue - 44 Street to 46 st Length 491m MH 5004 to MH5205	Golf Course Storm pond Outlet	+260.000						+260,000							+260.000
		\$360,000						\$360,000							\$360,000
LIFT STATION UPGRADE	To accommodate pumping														
	to Lagoon	\$125,000							\$125,000						\$125,000
Lift B - Elec, level, meter, SCADA		\$65,000				\$65,000									\$65,000
Lift C - 54 Street to 36 Avenue	Rodeo	\$300,000								\$300,000					\$300,000
LIFT STATION FORCE MAINS															
Lift A - 57 Avenue/46 Street to Lagoon Length 1512m	lagoon	\$460,000							\$460,000						\$460,000
Lift C - to Lift B	Provide service to N1/2 31	\$300,000									\$300,000				\$300,000
SEWAGE IREATMENT		\$30,000		\$20,000											\$20,000
1:100 River protection	Raise cell 4 & 8 Berms	\$398.000		\$20,000	\$398.000										\$398.000
Decommission Cell 9 & Sludge Bed	Remove Cell 9, Sludge Bed	\$221,000			4000,000	\$221,000									\$221,000
Upgrade Aeration System		\$1,360,000					\$375,000	\$335,000				\$325,000	\$325,000		\$1,360,000
Future storage pond		\$400,000												\$400,000	\$400,000
CCTV & Elushing System	Inspect lines for repairs	\$100.000		\$100.000											\$100.000
Cerv & Hushing System		\$100,000		\$100,000											\$100,000
39ave and 67 st Length 270 m	Sevice Industrial Park	\$100,000	\$100,000												\$100,000
SANITARY INFRASTRUCTURE TOTAL		\$4,859.000	\$100.000	\$535.000	\$398.000	\$286.000	\$600.000	\$695.000	\$585.000	\$300.000	\$300.000	\$325.000	\$325.000	\$400.000	\$4,849.000

Town of Ponoka Long Term Capital Budget Storm Improvements

STORM	Population=6300 to 7300							Popula	tion=7300 t	o 7900					
Infrastructure Improvements	Reason for Proposed Improvements	Cost Estimate (\$2005)	To Be Constructed in 2005	Proposed 2006	Proposed 2007	Proposed 2008	Proposed 2009	Proposed 2010	Proposed 2011	Proposed 2012	Proposed 2013	Proposed 2014	Proposed 2015	Proposed 2016	Total Cost Estimate
NORTH WEST SECTOR															
SW5 - Storm pond between 48 &	Improv.	\$200,000	\$10,000	\$10,000	\$180,000										\$200,000
NW Storm Water Management Plan															
in SW8, SE7, NW6 Length 2500m															
NW 6 Outlet Control Structure	Adequate storm outlet	\$175,000 \$75,000		\$25,000		\$150,000	\$75,000								\$175,000 \$75,000
		¥75,000					\$75,000								\$75,000
SOUTH WEST															
SE6 - 39th Ave - 66 St. to west 67 Street	Accommodate Drainage in 42 Ave/64 Street	\$245.000	\$45,000	\$200.000											\$245.000
NE36 - 39 Avenue to Battle River	channel	\$110,000	+ ,	\$110,000											\$110,000
	Ponoka Cty Lot 1 Channel	\$90,000	\$90,000												
SE6 - Regrade outlet & pond/ west 67 Street	Divert flow from 42 Ave & 67 Street to 39 Ave/Reservoir	\$25,000	\$25,000												\$25,000
SW6/NW36 - Outlet NW Storm WMP	Land & channelization														
	NW 26 diversion in DOW - C	\$117,000		\$17,000		\$100,000	+75.000								\$117,000
	NW 36 diversion in ROW - S	\$75,000					\$75,000								\$75,000
NORTH EAST															
SW3 - 38 St/42 Ave. to Hwy 53	Service 38 Street Exist & Future Storm	\$120,000										\$120,000			\$120,000
SOUTH EAST															
NE32/NW32 - Storm Water															
Management Plan N 1/2 32	Driving range pond	\$700,000							\$280.000	\$350,000	\$350,000				\$700,000
	46 st to Battle River	\$80,000						\$80,000	\$200,000						
															-
STORM INFRASTRUCTURE TOTAL		\$2,292,000	\$170,000	\$362,000	\$180,000	\$250,000	\$150,000	\$80,000	\$280,000	\$350,000	\$350,000	\$120,000	\$0	\$0	\$1,842,000

Town of Ponoka Long Term Capital Budget Transportation Improvements

TRANSPORTATION					Population	=6300 to 7300					Population=	7300 to 7900			
Infrastructure Improvements	Reason for Proposed Improvements	Cost Estimate (\$2005)	To be Constructed in 2005	Proposed 2006	Proposed 2007	Proposed 2008	Proposed 2009	Proposed 2010	Proposed 2011	Proposed 2012	Proposed 2013	Proposed 2014	Proposed 2015	Proposed 2016	Total Cost Estimate
COLLECTOR ROADS															
39 Avenue - Hwy 2A to 250m West of	600m	\$1,200,000		\$1,200,000											\$1,200,000
48 Avenue - 60 Street to 63 Street	300m	\$600,000		\$300,000	\$300,000										\$600,000
46 Street - 38 Avenue to 39 Avenue	Acquisition	\$300,000			\$300,000										\$300,000
57 Avenue - Hwy 2A to 63 Street	900m -	\$990,000			\$990,000										\$990,000
River realignment		\$200,000				\$200,000									\$200,000
50 Avenue River Crossing	Bridge, approvals, land	\$2,200,000			\$150,000	\$1,580,000	\$470,000								\$2,200,000
57 Avenue - 63 Street and 67 Street -	700m	\$770,000					\$770,000								\$770,000
57 Avenue - Rail Crossing	Signals and barriers	\$320,000						\$320,000							\$320,000
57 Avenue - 50 Street to Hwy 2A	600m	\$660,000						\$660,000							\$660,000
50 Street - 56 Avenue to Hwy 2A	1200m -	\$1,800,000						. ,	\$900,000	\$900,000					\$1,800,000
HIGHWAY 2A															\$0
															\$0
44 Ave to Hwy. 53	Included	\$500,000									\$500,000				\$500,000
Hwy 53 to 50 Ave	Included	\$900,000									\$900,000				\$900,000
44 Ave to 39 Ave	Included	\$900,000										\$900,000			\$900,000
50 Ave to 58 Ave	Included	\$1,500,000										. ,	\$1,500,000		\$1,500,000
58 Ave to 61 Ave	Included	\$550,000										\$550,000			\$550,000
HIGHWAY 53															
Hwy 2A to 67 St	Included	\$1,500,000												\$1,500,000	\$1,500,000
46 St to 42 St	Included	\$900,000							\$900,000						\$900,000
42 St to 38 St	Included	\$600,000								\$600,000					\$600,000
TRANSPORTATION INFRASTRUCTURE TOTAL		\$16,390,000	\$0	\$1,500,000	\$1,740,000	\$1,780,000	\$1,240,000	\$980,000	\$1,800,000	\$1,500,000	\$1,400,000	\$1,450,000	\$1,500,000	\$1,500,000	\$16,390,000

Town of Ponoka Long Term Capital Budget Local Improvements

LOCAL IMPROVEMENTS					Population-	6300 to 7300					Populati
Infrastructure Improvements	Reason for Proposed Improvements	Cost Estimate (\$2005)	Constructed in 2005	Proposed 2006	Proposed 2007	Proposed 2008	Proposed 2009	Proposed 2010	Proposed 2011	Proposed 2012	Propo 201
50 Ave - 52 St to 54 St	Full Street & WL &U/G rest.	\$600,000		\$600,000							
51 Ave - 52 St to 54 St	Full Street & WL &U/G rest.	\$600,000			\$600,000						
57 St - 54 Ave to 57 Ave	Full Street & WL &U/G rest.	\$650,000				\$650,000					
56 St - 54 Ave to 57 Ave	Full Street & WL &U/G rest.	\$650,000					\$650,000				_
55 St - 54 Ave to 57 Ave	Full Street & WL &U/G rest.	\$650,000						\$650,000			
57 St - 54 Ave to 57 Ave	Full Street & WL &U/G rest.	\$650,000							\$650,000		
54 Ave -54st to 57 st	Full Street & WL &U/G rest.	\$750,000								\$750,000	
58 St - 54 Ave to 57 Ave	Full Street & WL &U/G rest.	\$750,000									\$750,
59 St - 54 Ave to 57 Ave	Full Street & WL &U/G rest.	\$750,000									
60 St - 54 Ave to 57 Ave	Full Street & WL &U/G rest.	\$750,000									
61 St - 54 Ave to 57 Ave	Full Street & WL &U/G rest.	\$750,000									
54 Ave -58st to 61 st	Full Street & WL &U/G rest.	\$800,000									
											_
											-
											-
											-
											_
											-
											-
LOCAL IMPROVEMENT TOTAL		\$8,350,000	\$0	\$600,000	\$600,000	\$650,000	\$650,000	\$650,000	\$650,000	\$750,000	\$750

on=7	300 to 7900				
sed 3	Proposed 2014	Proposed 2015	Proposed 2016	Proposed 2017	Total Cost Estimate
•					
					\$600,000
					\$600,000
					\$650,000
					\$650,000
					\$650,000
					\$650,000
					\$750,000
000					\$750,000
	\$750,000				\$750,000
		\$750,000			\$750,000
			\$750,000		\$750,000
				\$800,000	\$800,000
000	\$750,000	\$750,000	\$750,000	\$800,000	\$8 350 000

		Population=6300 to 7300							Рор	ulation=7300 to 2				
SUMMARY	Cost Estimate	Constructed in	Proposed	Proposed	Proposed	Proposed								
	(\$2005)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
WATER INFRASTRUCTURE TOTAL	\$3,070,000	\$0	\$100,000	\$200,000	\$150,000	\$280,000	\$90,000	\$900,000	\$1,150,000	\$200,000	\$0	\$0	\$0	
SANITARY INFRASTRUCTURE TOT	\$4,859,000	\$100,000	\$535,000	\$398,000	\$286,000	\$600,000	\$695,000	\$585,000	\$300,000	\$300,000	\$325,000	\$325,000	\$400,000	
STORM INFRASTRUCTURE TOTAL	\$2,292,000	\$170,000	\$362,000	\$180,000	\$250,000	\$150,000	\$80,000	\$280,000	\$350,000	\$350,000	\$120,000	\$0	\$0	
TRANSPORTATION INFRASTRUCTU	\$16,390,000	\$0	\$1,500,000	\$1,740,000	\$1,780,000	\$1,240,000	\$980,000	\$1,800,000	\$1,500,000	\$1,400,000	\$1,450,000	\$1,500,000	\$1,500,000	
LOCAL IMPROVEMENT TOTAL	\$8,350,000	\$0	\$600,000	\$600,000	\$650,000	\$650,000	\$650,000	\$650,000	\$750,000	\$750,000	\$750,000	\$750,000	\$750,000	
TOTAL ESTIMATED COST	\$34,961,000	\$270,000	\$3,097,000	\$3,118,000	\$3,116,000	\$2,920,000	\$2,495,000	\$4,215,000	\$4,050,000	\$3,000,000	\$2,645,000	\$2,575,000	\$2,650,000	\$34,151,000