City of Winnipeg
Water and Sewer Utilities
Public Utilities Board Hearing

December 19 and 20, 2011

Winnipeg

Agenda

- Introduction of City Panel
- Overview of Operations – Moira Geer, CA
- Fund Accounting – Moira Geer, CA
- Capital – Geoffrey Patton, P. Eng.
- Legislation and Compliance – Kelly Kjartanson, P. Eng.
- Combined Sewer Systems – Cynthia Wiebe, P. Eng.
- Nitrogen – Arnold Permut, P. Eng
- Integration of Processes – Geoffrey Patton, P. Eng.
- Disconnection/Reconnection – Wanda Burns, CA
- Conservation Promotion – Duane Griffin, P. Eng.
- Agreements with Neighbouring Municipalities for City Services – Moira Geer, CA

Winnipeg

Water and Waste Department

Vision

Excellence in environmental services

Mission

Serving the community by providing and continually improving drinking water, wastewater, land drainage, and solid waste services to the citizens of Winnipeg

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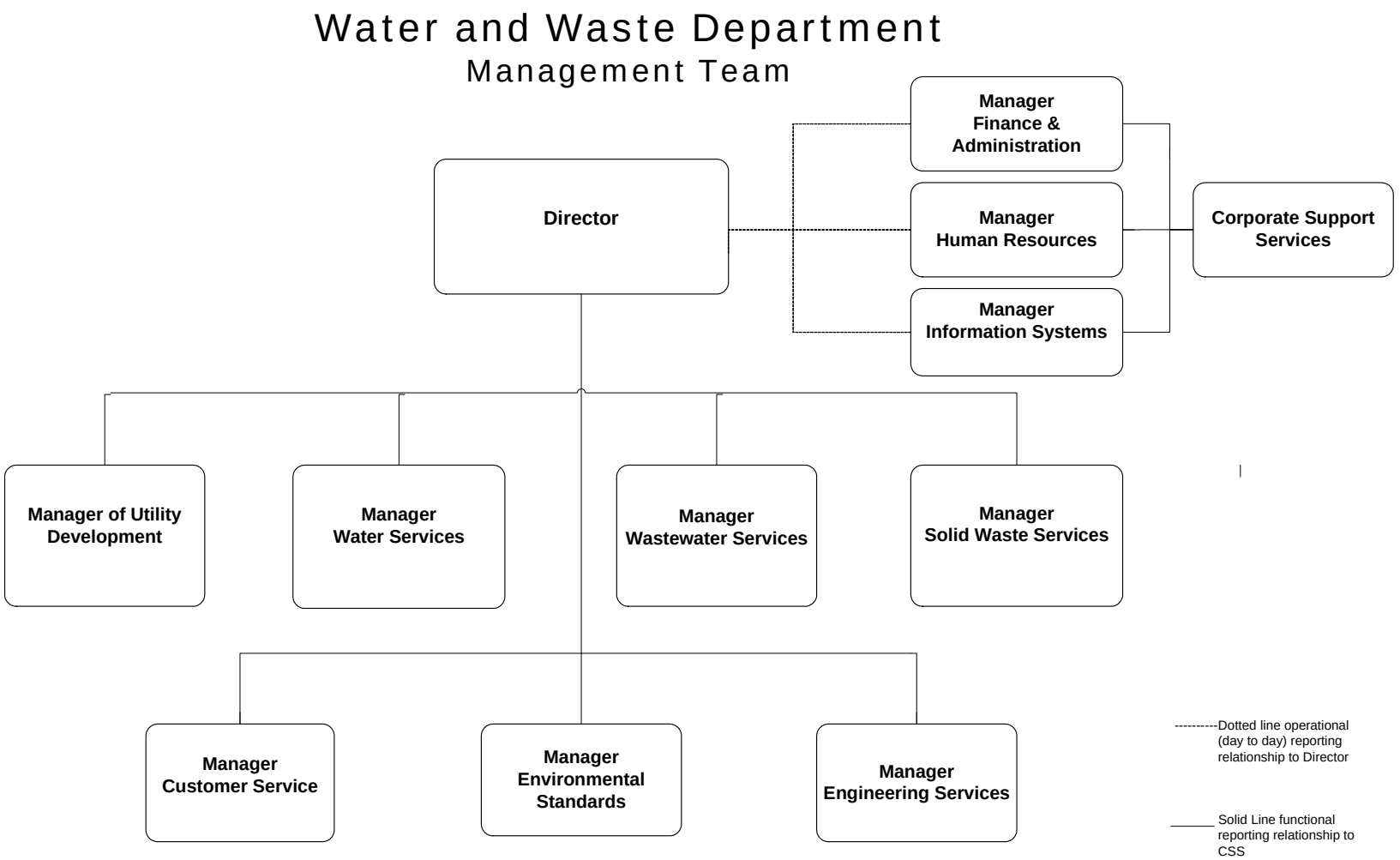
Organization Structure



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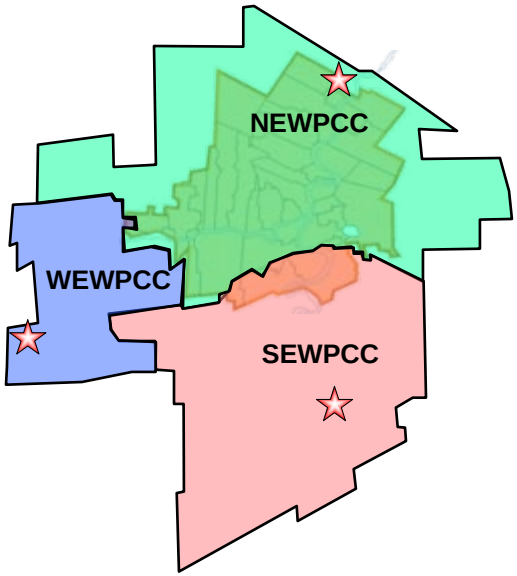
Sewage Treatment Plants



	North End Plant	South End Plant	West End Plant
			
Population Served	393,000	186,000	85,000
Average Dry Weather Flow Recorded (ML/d)	160	46	24
Average Dry Weather Flow Design Capacities (ML/d)	302	59	32

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Sewer System Infrastructure

- 3 sewage treatment plants
- 2,346 kilometres of sewer mains
- 1,783 kilometres of land drainage sewers
- 119 kilometres of interceptor sewers
- 115 wastewater and land drainage pumping stations
- 71 stormwater retention basins
- 117 kilometres of primary dike

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Staffing

Sewer Utility	
Wastewater Services	237
Finance	48
Engineering	48
Environmental Standards	26
Customer Services	18
Information Technology	8
Human Resources	10
Total	394

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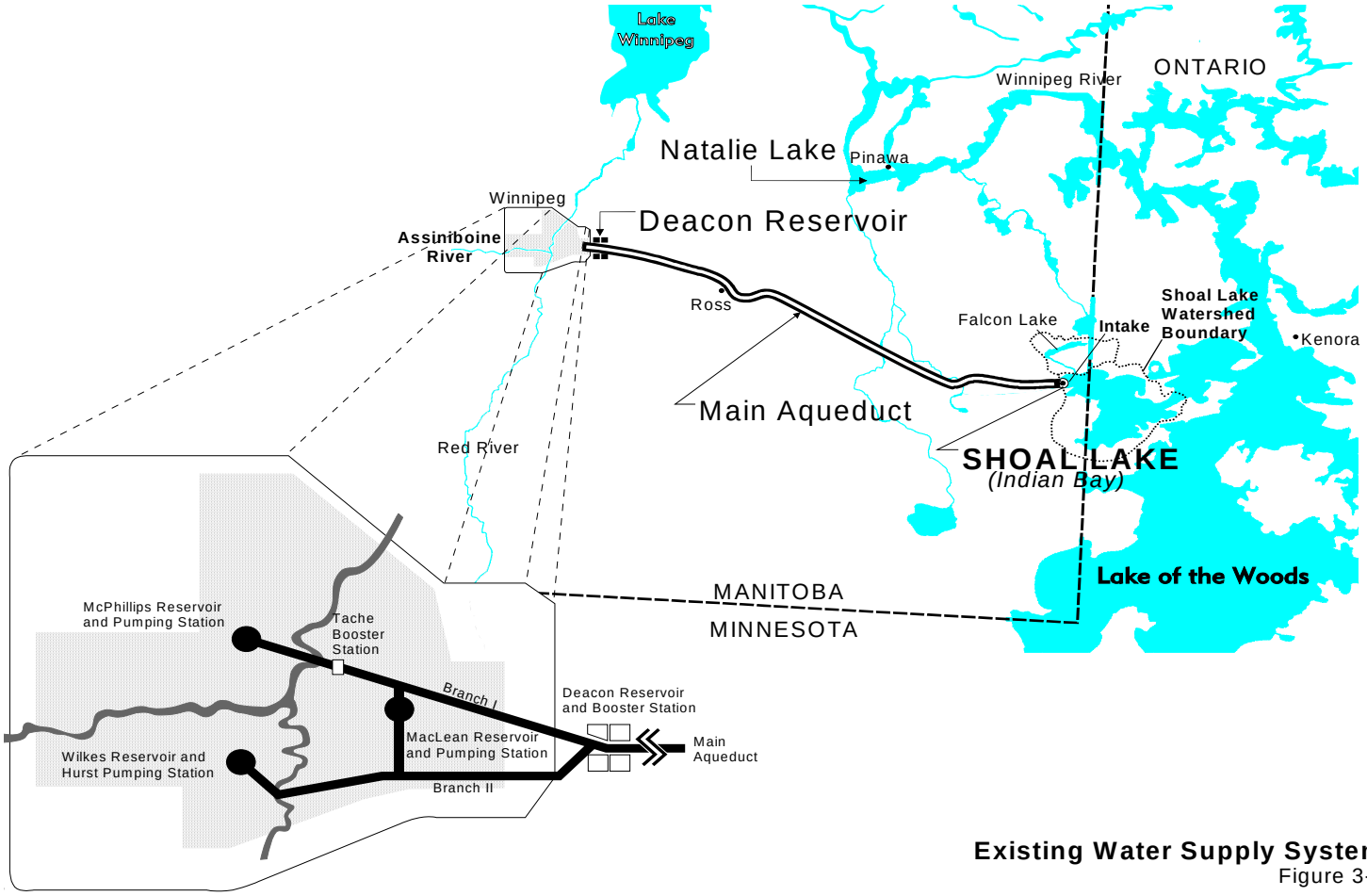
Water Operations Background



Existing Water Supply System
Figure 3-1

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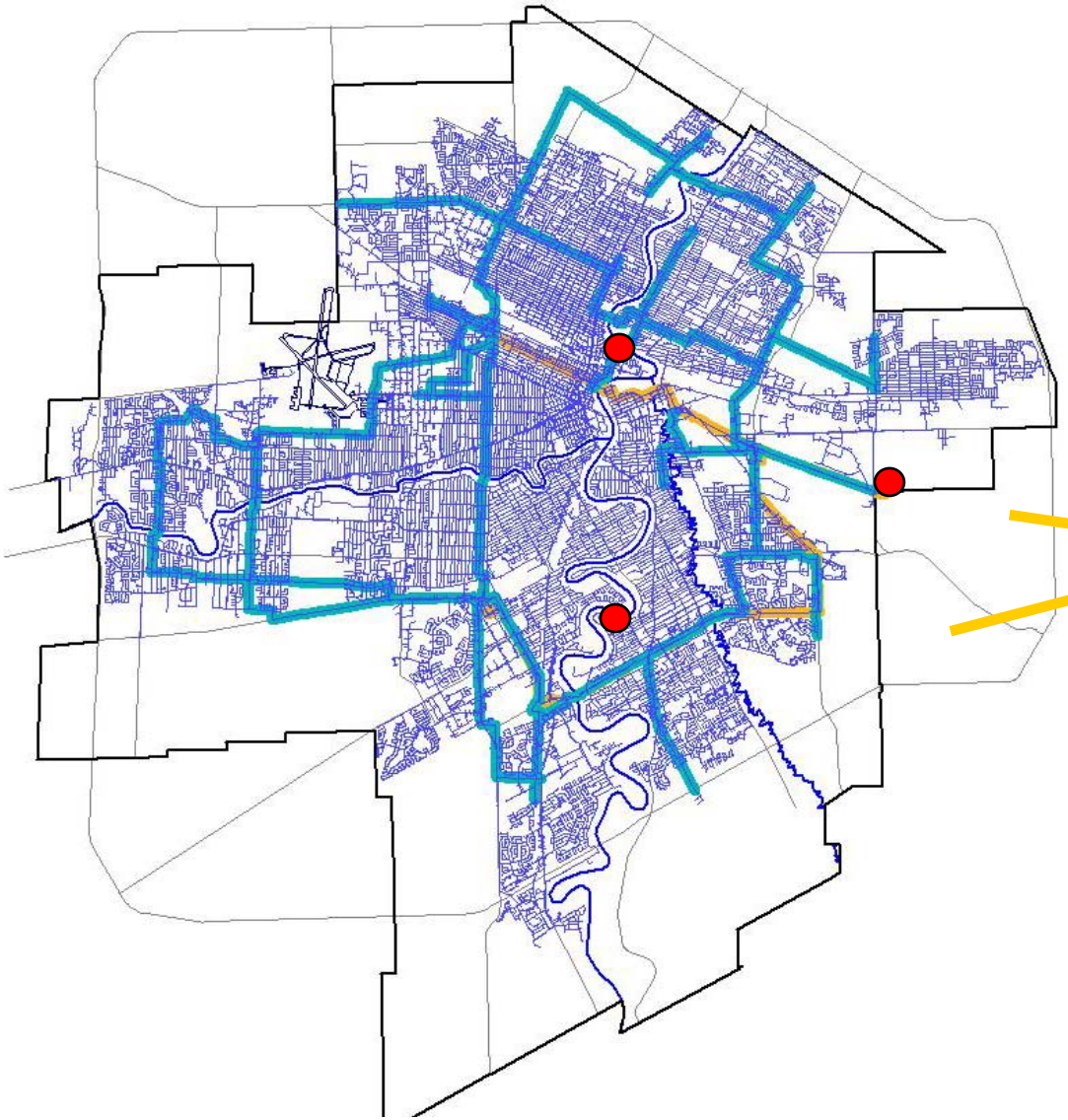
Water Supply and Distribution



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Water System Infrastructure

- State-of-the-art drinking water treatment plant
- 5 water pumping and booster stations
- 194,530 water meters
- 1,850 kilometres of water service lines
- 2,543 kilometres of water mains
- 150 kilometres of feeder mains
- 157 kilometres of aqueduct
- 44 kilometres of branch aqueduct

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Drinking Water Treatment Plant

State-of-the-art, modern facility designed for performance, safety and environmental sustainability

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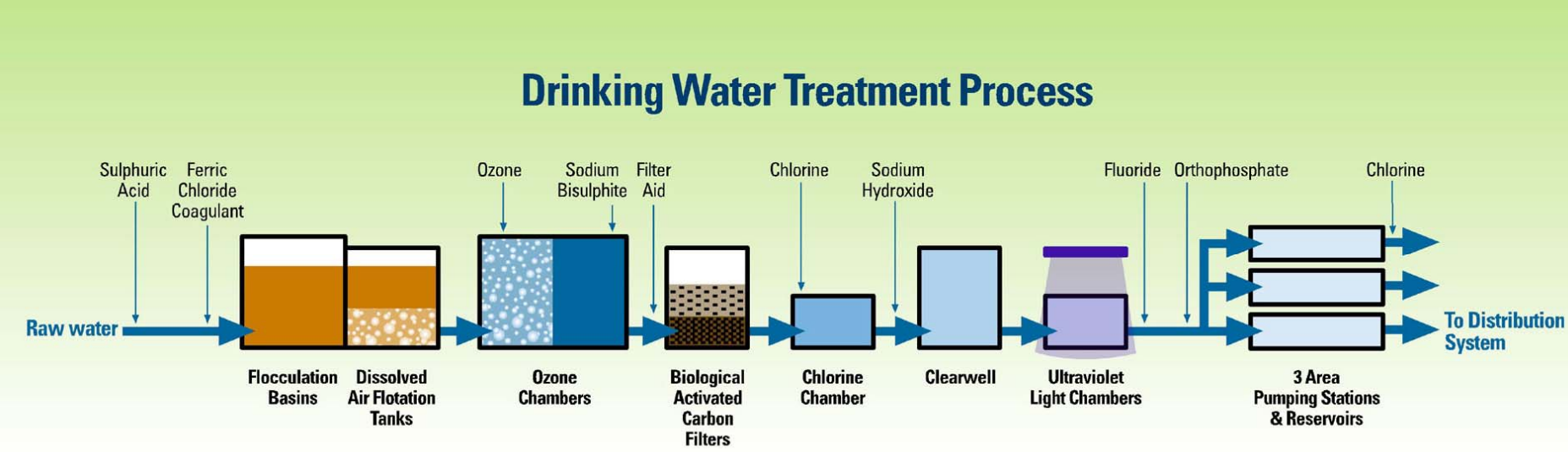
Drinking Water Treatment Plant



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Drinking Water Treatment Plant Virtual Tour

- Posted on our website
- Illustrates our water treatment program from Shoal Lake to your tap

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Water Staffing

Water Utility	
Water Services	278
Finance	58
Engineering	42
Environmental Standards	9
Customer Services	19
Information Technology	9
Human Resources	12
Total	427

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Fund Accounting

- Water Utility Fund (operations + capital)
- Sewer Utility Fund (operations + capital)
- Water Main Renewal Reserve
- Aqueduct Rehab Reserve (to be closed end of 2011)
- Sewer System Rehab Reserve
- Environmental Projects Reserve

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2011 Capital Budget Summary

Geoffrey Patton P. Eng
Asset Management Engineer

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Capital Budget By Fund

6 year Budget

Fund ($ in thousands)	2011 Budget	2011-2016 6 Yr Total Budget
Land Drainage and Flood Control	6,098	81,869
Waterworks System Fund	27,570	171,535
Sewage Disposal System Fund	47,590	905,740
Total	81,258	1,159,144

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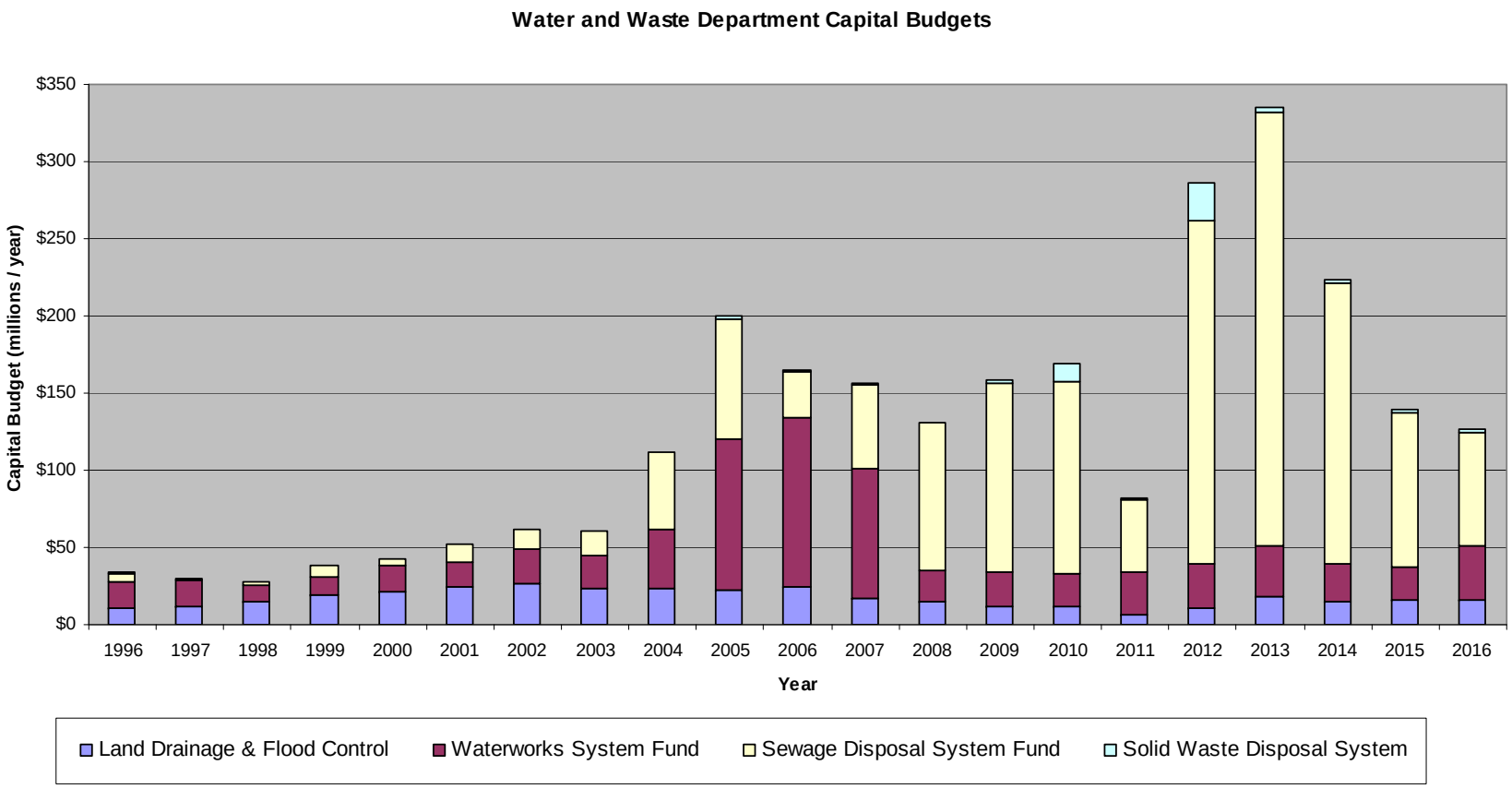
Capital Budget 1996-2016



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Waterworks System Fund

Major Projects
2011-2016

Capital Budget 2011 to 2016 ($ in thousands)	6 Yr Total
Watermain Renewals	92,500
Water Treatment Plant Upgrading	10,000
Waverley West Feedermain	6,800
Tache Booster Pumping Station	5,300
Water Supervisory Control and Data Acquisition (SCADA) Upgrade	4,700
Feedermain Condition Assessment and Rehabilitation	4,500
Water Supply Valve Installation/Replacement Program	4,500
Regional Pumping Stations Reliability Upgrades	4,000
Shoal Lake Aqueduct Asset Preservation	4,000
Ultraviolet Light Disinfection Upgrade/Rehabilitation	4,000
Saskatchewan Avenue Watermain	3,900
Total	**144,200**
Total 6 Yr Water Works System Budget	171,535
Percent of Total Budget	84%

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Sewage Disposal System Fund

Major Projects
2011-2016

Capital Budget 2011 to 2016 ($ in thousands)	6 Yr Total
Nutrient Removal - NEWPCC	365,000
Biosolids - Alternative Disposal Delivery and Management System	150,000
Sewer Renewal	90,000
Combined Sewer Overflow (CSO) Management Strategy and Miscellaneous Mitigation	87,100
Primary Clarifier Covers - NEWPCC	25,500
Upgrading External Power Supply - NEWPCC	25,000
Water Pollution Control Centre Reliability Upgrades	20,000
Grit Handling Upgrades - NEWPCC	18,900
New Discharge Chamber - NEWPCC	15,000
Raw Sewage Pump Replacement - NEWPCC	14,750
New Surgewell - NEWPCC	13,000
Total	**824,250**
Total 6 Yr Sewage Disposal System Budget	905,740
Percent of Total Budget	91%

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Land Drainage and Flood Control

Major Projects
2011-2016

Capital Budget 2011 to 2016 ($ in thousands)	6 Yr Total
Combined Sewer Flood Relief	45,000
Outfall Rehabilitation	8,508
Primary Dike Upgrading	6,386
Flood Pumping Station Rehabilitation	6,000
Land Drainage and Combined Sewers Outfall Gate Structures	5,450
Total	**71,344**

Total 6 Yr Land Drainage and Flood Control Budget	81,869
Percent of Total Budget	87%

Regulatory/Compliance Framework for the City of Winnipeg Water and Wastewater Utilities

Kelly Kjartanson, M.Sc., P.Eng.

Manager of Environmental Standards

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Agenda

- Overview of regulatory/compliance framework
- Provincial legislation, regulations and licences
- Federal requirements
- Winnipeg Water and Sewer By-laws
- Compliance submissions for the Province and Canada
- Additional compliance related matters
- Performance of utilities respecting regulatory requirements
- Summary

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Overview of Regulatory Framework

Provincial Legislation, Regulations and Licences – Wastewater Utility

- Environment Act
  - Biosolids Licence #1089 ERR
  - West End Sewage Treatment Plant Licence #2669 ERR
  - North End Sewage Treatment Plant Licence #2684 RRR
  - South End Sewage Treatment Plant Licence #2716 R
  - Water and Wastewater Facility Operators Regulation 77/2003
- Water Protection Act
  - Nutrient Management Regulation
- Bill 46 “Save Lake Winnipeg Act”

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Provincial Legislation, Regulations and Licences – Water Utility

- Drinking Water Safety Act
  - Drinking Water Safety Regulation 40/2007
  - Drinking Water Quality Standards Regulation 41/2007
  - Operating Licence PWS-09-412 RR
- Environment Act
  - Water and Wastewater Facility Operators Regulation 77/2003

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Federal Requirements
Wastewater Utility

- Canadian Environmental Protection Act
  - National Pollutant Release Inventory
  - Greenhouse Gas Emissions Reporting
- Fisheries Act
  - Wastewater Systems Effluent Regulations (proposed)

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Federal Requirements
Water Utility

- Federal, Provincial, Territorial Guidelines for Canadian Drinking Water Quality
- Canadian Environmental Protection Act
  - National Pollutant Release Inventory
  - Greenhouse Gas Emissions Reporting

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Winnipeg By-laws

Winnipeg Sewer By-law

- Current version effective January 1, 2011 (No. 92/2010)
  - new by-law
  - includes many topical improvements including Pollution Prevention Planning requirements (January 1, 2012)
  - actively enforced by departmental staff
- Lays out requirements to administer wastewater utility and protect public health and the environment
- Earlier versions effective 1988, 1998

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Winnipeg Water Works By-Law

- Current version effective October 1, 1973 (No. 504/73)
  - actively enforced by departmental staff
  - undergoing a complete review and rewrite
- Lays out requirements to administer water utility and ensure public health is protected
- Amendments routinely made to keep by-law up-to-date (e.g., backflow prevention requirements)

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Compliance Submissions

Compliance Submissions for the Province Wastewater Utility

- Monthly monitoring compliance submissions
- Yearly submission of Schedule A (priority pollutants) and trout toxicity test results
- Yearly submission of Wastewater Hauler Reports
- Yearly submission of Biosolids Report
- Immediate notification/reports of any wastewater spills

City of Winnipeg
Water and Waste Department
West End Water Pollution Control Centre Monitoring Data

December 2010

Date	Raw Sewage	Final Effluent 24 Hour Composite									Final Effluent Grab Sample			
	Daily Flow	TSS	cBOD5	Ammonia		Ortho Phosphorus	Total Phosphorus		Total Nitrogen		Temp.	pH	Fecal Coliform	E.Coli
	ML	(mg/L)	(mg/L)	(mg/L-N)	(kg NH3-N/day)	(mg/L-P)	(mg/L-P)	(mg/L-P)*	(mg/L-N)	(mg/L-N)*	(°C)	(units)	MPN/100 mL	
1-Dec-10	25.8	4	2	4.18	108	0.44	0.6	0.6	8	7	1	7.99	43	43
2-Dec-10	26.0	4	2	4.17	108	0.48	0.5	0.6	8	7	1	7.86	43	43
3-Dec-10	27.0	5	2	4.41	119	0.49	0.6	0.6	8	7	1	8.01	9	9
4-Dec-10	27.9	6	nr	4.37	122	0.51	0.7	0.6	7	7	1	7.93	93	23
5-Dec-10	28.7	5	nr	4.51	130	0.56	0.7	0.6	6	7	1	7.93	93	93
6-Dec-10	27.4	4	nr	4.88	133	0.59	0.6	0.6	8	7	1	7.85	93	93
7-Dec-10	26.9	5	2	5.06	136	0.36	0.6	0.6	8	7	1	7.82	430	430
8-Dec-10	27.0	4	2	5.34	144	0.68	0.9	0.6	8	7	1	7.76	430	430
9-Dec-10	27.1	4	<2	5.22	142	0.78	0.9	0.6	9	7	1	7.67	230	230
10-Dec-10	27.1	12	3	5.57	151	0.76	1.0	0.6	9	7	1	7.67	430	150
11-Dec-10	28.0	8	2	5.68	159	0.81	1.1	0.6	10	7	1	7.68	430	150
12-Dec-10	28.5	6	nr	5.68	162	0.86	1.1	0.6	8	7	1	7.67	430	430
13-Dec-10	27.3	4	nr	6.11	167	0.91	1.3	0.6	10	8	0	7.69	230	230
14-Dec-10	26.9	5	3	6.47	174	0.99	1.4	0.7	10	8	1	7.64	2,300	2,300
15-Dec-10	26.7	6	3	6.58	175	1.04	1.2	0.7	11	8	1	7.44	930	430
16-Dec-10	26.5	9	3	6.72	178	1.08	1.3	0.7	11	8	1	7.62	430	430
17-Dec-10	26.4	7	nr	6.96	184	1.12	1.4	0.8	10	8	1	7.65	1,500	1,500
18-Dec-10	27.2	6	nr	7.35	200	1.20	1.5	0.8	11	8	1	7.56	2,300	2,300
19-Dec-10	27.8	7	3	7.14	198	1.26	1.5	0.8	10	8	1	7.58	2,300	2,300
20-Dec-10	26.3	7	4	7.22	190	1.24	1.6	0.9	10	8	1	7.52	230	230
21-Dec-10	25.4	8	4	6.72	171	1.24	1.5	0.9	10	9	1	7.60	2,100	2,100
22-Dec-10	25.4	8	4	7.16	182	1.30	1.5	0.9	11	9	1	7.46	2,400	2,400
23-Dec-10	25.6	7	5	6.88	176	1.32	1.7	1.0	10	9	0	7.46	2,300	2,300
24-Dec-10	26.2	5	7	7.14	187	1.39	1.8	1.0	10	9	1	7.52	4,300	2,300
25-Dec-10	23.6	<4	3	6.86	162	1.42	1.8	1.1	10	9	0	7.51	1,500	1,500
26-Dec-10	23.9	6	2	7.03	168	1.50	1.7	1.1	10	9	1	7.45	2,300	2,300
27-Dec-10	24.5	6	3	6.74	165	1.38	1.7	1.1	10	9	1	7.48	2,300	2,300
28-Dec-10	24.2	5	5	6.61	160	1.35	1.7	1.2	10	9	0	7.38	2,300	930
29-Dec-10	23.9	6	5	6.85	164	1.38	1.7	1.2	9	9	1	7.65	230	230
30-Dec-10	24.2	8	4	6.54	158	1.47	1.8	1.2	10	9	1	7.40	430	430
31-Dec-10	24.8	6	5	6.20	154	1.34	1.8	1.3	11	10	1	7.44	230	93
Max:	28.7													
Min:	23.6													
Average:	26.3	6	3	6	159	1.01	1.3		9		1	7.64		
Geo.Mean:													496	399

Notes:
(1) * = 30 day rolling average
(2) Effluent ammonia load based upon Raw Sewage flows and Final Cell NH3-N concentrations
(3) nr - not recorded or no result; na - not analyzed; ns - no sample
(4) Final Effluent flow data unavailable
(5) Where < values are reported 50% of the MDL is used for calculated results
(6) Licence No. 2669 E RR
(7) Total Nitrogen results are calculated from TKN and nitrate values.

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Water and Waste Department • Service des eaux et des déchets

ENVIRONMENT ACT LICENCE #1089E RR

SOLIDS DEWATERING, TEMPORARY BIOSOLIDS STORAGE and APPLICATION TO AGRICULTURAL LAND

2010

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Compliance Submissions for the Province Water Utility

- Weekly distribution system chlorine residuals
- Monthly monitoring compliance submissions
- Monthly fluoride report submission
- Quarterly trihalomethanes results submission
- Annual Lead Report
- Annual Water Quality Report
- Corrective Action Reports submitted as required

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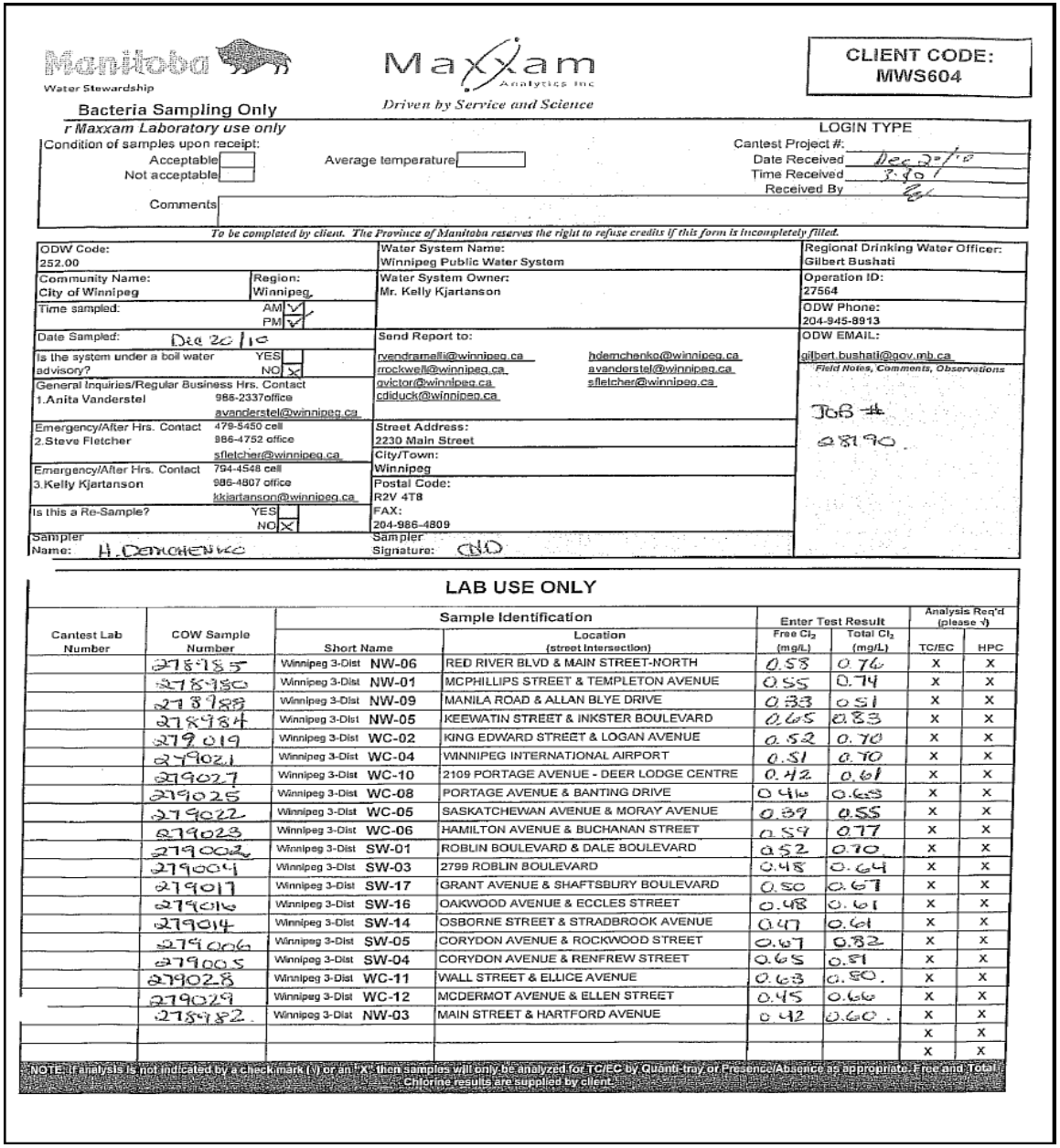

Manitoba Water Stewardship

Maxxam Analytics Inc

Driven by Service and Science

CLIENT CODE: MWS604

Bacteria Sampling Only

r Maxxam Laboratory use only

Condition of samples upon receipt:
Acceptable ☐
Not acceptable ☐
Average temperature ☐

Comments

LOGIN TYPE
Cantest Project #:
Date Received: Dec 20/10
Time Received: 3:40
Received By:

To be completed by client. The Province of Manitoba reserves the right to refuse credits if this form is incompletely filled.

ODW Code: 252.00	Water System Name: Winnipeg Public Water System	Regional Drinking Water Officer: Gilbert Bushati
Community Name: City of Winnipeg / Region: Winnipeg	Water System Owner: Mr. Kelly Kjartanson	Operation ID: 27564
Time sampled: AM ☑ PM ☑		ODW Phone: 204-945-8913
Date Sampled: Dec 20/10	Send Report to: rvendramelli@winnipeg.ca, rrockwell@winnipeg.ca, gvictor@winnipeg.ca, cdiduck@winnipeg.ca, hdemchenko@winnipeg.ca, avanderstel@winnipeg.ca, sfletcher@winnipeg.ca	ODW EMAIL: gilbert.bushati@gov.mb.ca
Is the system under a boil water advisory? YES ☐ NO ☒		*Field Notes, Comments, Observations*
General Inquiries/Regular Business Hrs. Contact 1.Anita Vanderstel 986-2337office avanderstel@winnipeg.ca		JOB # 28190
Emergency/After Hrs. Contact 2.Steve Fletcher 479-5450 cell 986-4752 office sfletcher@winnipeg.ca	Street Address: 2230 Main Street	
Emergency/After Hrs. Contact 3.Kelly Kjartanson 794-4548 cell 986-4807 office kkjartanson@winnipeg.ca	City/Town: Winnipeg	
Is this a Re-Sample? YES ☐ NO ☒	Postal Code: R2V 4T8	
	FAX: 204-986-4809	
Sampler Name: H. DEMCHENKO	Sampler Signature: HD	

LAB USE ONLY

Cantest Lab Number	COW Sample Number	Sample Identification: Short Name	Sample Identification: Location (street intersection)	Enter Test Result: Free Cl_2 (mg/L)	Enter Test Result: Total Cl_2 (mg/L)	Analysis Req'd (please √): TC/EC	Analysis Req'd (please √): HPC
	278985	Winnipeg 3-Dist NW-06	RED RIVER BLVD & MAIN STREET-NORTH	0.58	0.76	X	X
	278980	Winnipeg 3-Dist NW-01	MCPHILLIPS STREET & TEMPLETON AVENUE	0.55	0.74	X	X
	278989	Winnipeg 3-Dist NW-09	MANILA ROAD & ALLAN BLYE DRIVE	0.33	0.51	X	X
	278984	Winnipeg 3-Dist NW-05	KEEWATIN STREET & INKSTER BOULEVARD	0.65	0.83	X	X
	279019	Winnipeg 3-Dist WC-02	KING EDWARD STREET & LOGAN AVENUE	0.52	0.70	X	X
	279021	Winnipeg 3-Dist WC-04	WINNIPEG INTERNATIONAL AIRPORT	0.51	0.70	X	X
	279027	Winnipeg 3-Dist WC-10	2109 PORTAGE AVENUE - DEER LODGE CENTRE	0.42	0.61	X	X
	279025	Winnipeg 3-Dist WC-08	PORTAGE AVENUE & BANTING DRIVE	0.41u	0.63	X	X
	279022	Winnipeg 3-Dist WC-05	SASKATCHEWAN AVENUE & MORAY AVENUE	0.39	0.55	X	X
	279023	Winnipeg 3-Dist WC-06	HAMILTON AVENUE & BUCHANAN STREET	0.59	0.77	X	X
	279002	Winnipeg 3-Dist SW-01	ROBLIN BOULEVARD & DALE BOULEVARD	0.52	0.70	X	X
	279004	Winnipeg 3-Dist SW-03	2799 ROBLIN BOULEVARD	0.48	0.64	X	X
	279017	Winnipeg 3-Dist SW-17	GRANT AVENUE & SHAFTSBURY BOULEVARD	0.50	0.67	X	X
	279016	Winnipeg 3-Dist SW-16	OAKWOOD AVENUE & ECCLES STREET	0.48	0.61	X	X
	279014	Winnipeg 3-Dist SW-14	OSBORNE STREET & STRADBROOK AVENUE	0.47	0.61	X	X
	279006	Winnipeg 3-Dist SW-05	CORYDON AVENUE & ROCKWOOD STREET	0.67	0.82	X	X
	279005	Winnipeg 3-Dist SW-04	CORYDON AVENUE & RENFREW STREET	0.65	0.81	X	X
	279028	Winnipeg 3-Dist WC-11	WALL STREET & ELLICE AVENUE	0.63	0.80	X	X
	279029	Winnipeg 3-Dist WC-12	MCDERMOT AVENUE & ELLEN STREET	0.45	0.66	X	X
	278982	Winnipeg 3-Dist NW-03	MAIN STREET & HARTFORD AVENUE	0.42	0.60	X	X
						X	X
						X	X

NOTE: If analysis is not indicated by a checkmark (√) or an "X" then samples will only be analyzed for TC/EC by Quanti-tray or Presence/Absence as appropriate. Free and Total Chlorine results are supplied by client.

Winnipeg

Winnipeg

CITY OF WINNIPEG
WATER AND WATER DEPARTMENT
WATER SERVICES DIVISION

Water System Code: 252.00
License Number: PWS-09-412R

WATER TREATMENT PLANT TURBIDITY ON-LINE SAMPLING REPORT

December 2010	Turbidity (NTU)																
Date	Raw	Filter #1		Filter #2		Filter #3		Filter #4		Filter #5		Filter #6		Filter #7		Filter #8	
	Avg	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max	Avg	Max
12/1/2010	1.29	0.17	0.23	0.11	0.25	OL	OL	0.12	0.16	OL	OL	0.08	0.13	0.06	0.18	0.04	0.16
12/2/2010	1.28	0.18	0.28	0.12	0.20	0.06	0.26	OL	OL	OL	OL	0.10	0.20	0.07	0.16	0.05	0.19
12/3/2010	0.99	0.13	0.27	0.08	0.13	0.11	0.26	OL	OL	OL	OL	0.06	0.24	0.02	0.07	0.01	0.09
12/4/2010	0.93	0.14	0.23	0.08	0.25	0.12	0.25	OL	OL	OL	OL	0.06	0.19	0.02	0.10	0.01	0.08
12/5/2010	0.97	0.15	0.25	0.09	0.22	0.13	0.20	OL	OL	OL	OL	0.06	0.13	0.03	0.09	0.01	0.05
12/6/2010	0.90	0.17	0.24	0.14	0.19	0.17	0.20	OL	OL	OL	OL	0.11	0.24	0.07	0.21	0.05	0.15
12/7/2010	0.99	0.18	0.31	0.12	0.22	0.17	0.25	OL	OL	OL	OL	0.10	0.19	0.07	0.11	0.06	0.18
12/8/2010	0.91	0.20	0.25	0.12	0.25	0.17	0.27	OL	OL	OL	OL	0.11	0.23	0.08	0.17	0.06	0.24
12/9/2010	0.96	0.17	0.30	0.13	0.24	0.16	0.27	OL	OL	OL	OL	0.13	0.30	0.11	0.25	0.09	0.17
12/10/2010	1.19	0.13	0.29	0.10	0.24	0.13	0.24	OL	OL	OL	OL	0.11	0.27	0.08	0.21	0.07	0.23
12/11/2010	1.23	0.14	0.27	0.12	0.28	0.15	0.25	OL	OL	OL	OL	0.14	0.18	0.10	0.26	0.09	0.27
12/12/2010	1.24	0.14	0.41	0.12	0.17	0.15	0.27	OL	OL	OL	OL	0.14	0.28	0.09	0.23	0.08	0.24
12/13/2010	1.19	0.10	0.23	0.07	0.22	0.11	0.19	OL	OL	OL	OL	0.09	0.20	0.05	0.21	0.04	0.18
12/14/2010	1.43	0.07	0.29	0.10	0.31	0.07	0.43	OL	OL	OL	OL	0.05	0.25	0.05	0.24	0.04	0.20
12/15/2010	1.09	0.16	0.29	0.12	0.16	0.10	0.20	0.08	0.24	OL	OL	0.12	0.18	0.08	0.18	0.07	0.20
12/16/2010	1.09	0.17	0.29	0.15	0.29	OL	OL	0.14	0.27	OL	OL	0.12	0.25	0.06	0.09	0.07	0.25
12/17/2010	1.07	0.11	0.32	0.09	0.29	OL	OL	0.10	0.29	0.03	0.30	0.09	0.29	OL	OL	0.04	0.23
12/18/2010	1.02	0.16	0.29	0.13	0.23	OL	OL	0.13	0.29	0.10	0.20	0.11	0.26	OL	OL	0.07	0.12
12/19/2010	0.99	0.16	0.27	0.13	0.27	OL	OL	0.14	0.25	0.10	0.14	0.12	0.23	OL	OL	0.07	0.21
12/20/2010	1.00	0.05	0.16	0.05	0.16	0.05	0.25	0.08	0.18	0.07	0.20	0.07	0.25	0.01	0.39	0.04	0.22
12/21/2010	0.98	OL	OL	OL	OL	0.16	0.25	0.13	0.24	0.12	0.24	0.12	0.18	0.05	0.09	0.06	0.20
12/22/2010	0.97	0.03	0.29	0.03	0.20	0.10	0.20	0.08	0.29	0.03	0.14	0.06	0.22	0.04	0.21	0.04	0.17
12/23/2010	0.91	0.18	0.26	0.14	0.29	0.17	0.29	0.13	0.16	0.02	0.34	0.10	0.24	0.05	0.10	0.07	0.11
12/24/2010	0.88	0.17	0.28	0.15	0.27	0.17	0.27	0.15	0.28	0.21	0.25	0.13	0.17	0.07	0.22	0.06	0.28
12/25/2010	0.85	0.15	0.21	0.16	0.19	0.21	0.24	0.16	0.27	0.20	0.28	0.13	0.24	0.07	0.23	0.09	0.11
12/26/2010	0.84	0.21	0.29	0.17	0.29	0.20	0.29	0.17	0.22	0.16	0.25	0.13	0.29	0.07	0.12	0.10	0.28
12/27/2010	0.81	0.19	0.28	0.16	0.38	0.21	0.25	0.17	0.28	0.21	0.28	0.14	0.17	0.09	0.21	0.09	0.26
12/28/2010	0.78	0.15	0.23	0.12	0.22	0.17	0.28	0.12	0.20	0.15	0.23	0.11	0.25	0.03	0.10	0.08	0.18
12/29/2010	0.76	0.14	0.27	0.10	0.22	0.15	0.17	0.12	0.25	0.18	0.25	0.10	0.12	0.04	0.14	0.04	0.19
12/30/2010	0.75	0.13	0.16	0.11	0.14	0.10	0.23	0.09	0.26	0.16	0.24	0.08	0.21	0.03	0.16	0.06	0.10
12/31/2010	0.74	0.15	0.28	0.11	0.25	0.10	0.24	0.13	0.18	0.17	0.19	0.08	0.12	0.04	0.07	0.06	0.16

Total Number of Measurements Taken, A:	199305	203056	169123	82130	93362	219241	195962	217610
Turbidity Standard for Monitoring Location (NTU):	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Number of Measurements	199172	203030	169075	82130	93358	219237	195960	217610
Compliance with Turbidity Standard, C = B/A x 100%:	99.9333	99.9872	99.97162	100	99.99572	99.99818	99.99898	100

OL: Off Line

File Path: N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\Turbidity\2010\12-2010

Submitted By (Print): D.Sulymka Signature: Original signed by D.Sulymka

Winnipeg

Winnipeg

CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT
ENVIRONMENTAL STANDARDS DIVISION

WATER TREATMENT PLANT CHLORINE GRAB SAMPLING REPORT

Water System Code: 252.00 Licence No. PWS-09-412R	Deacon Booster Pumping Station Branch 1		Deacon Booster Pumping Station Branch 2	
Date	Free Chlorine (mg/L)	Total Chlorine (mg/L)	Free Chlorine (mg/L)	Total Chlorine (mg/L)
01-Dec-2010	1.10	1.37	1.06	1.25
02-Dec-2010	1.03	1.31	1.13	1.29
03-Dec-2010	0.84	1.07	0.90	1.04
04-Dec-2010	NS	NS	NS	NS
05-Dec-2010	NS	NS	NS	NS
06-Dec-2010	0.94	1.07	0.93	1.06
07-Dec-2010	1.01	1.19	1.04	1.24
08-Dec-2010	0.98	1.18	1.00	1.23
09-Dec-2010	1.11	1.35	1.10	1.31
10-Dec-2010	1.12	1.31	1.08	1.37
11-Dec-2010	NS	NS	NS	NS
12-Dec-2010	NS	NS	NS	NS
13-Dec-2010	1.02	1.25	1.12	1.35
14-Dec-2010	OL	OL	OL	OL
15-Dec-2010	1.25	1.58	1.26	1.61
16-Dec-2010	1.28	1.49	1.33	1.55
17-Dec-2010	OL	OL	OL	OL
18-Dec-2010	NS	NS	NS	NS
19-Dec-2010	NS	NS	NS	NS
20-Dec-2010	OL	OL	OL	OL
21-Dec-2010	1.00	1.24	1.03	1.23
22-Dec-2010	OL	OL	OL	OL
23-Dec-2010	1.12	1.34	1.07	1.30
24-Dec-2010	1.07	1.33	1.03	1.29
25-Dec-2010	NS	NS	NS	NS
26-Dec-2010	NS	NS	NS	NS
27-Dec-2010	NS	NS	NS	NS
28-Dec-2010	NS	NS	NS	NS
29-Dec-2010	0.98	1.21	0.97	1.19
30-Dec-2010	0.84	1.05	0.85	1.05
31-Dec-2010	0.91	1.14	0.92	1.13
Total number of measurements taken, A:	17		17	
Chlorine Standard for Monitoring Location (mg/L):	0.50		0.50	
Number of measurements meeting standard, B:	17		17	
Compliance with Chlorine Standard, C= B/A X 100%:	100%		100%	

NS: No Sample NA: Not Analyzed OL: Off-Line

Comments:
The Water Treatment Plant was shutdown on December 14, 17, 20 and 22 for maintenance.
Samples were not collected on December 27 and 28 due to these days being holidays.

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File: WQR3

Report Compiled By: J. Jones

Approved in LIMS By: S. Fletcher

Date Approved: 6-Jan-11

Winnipeg

CITY OF WINNIPEG
Water Waste Department
Water Services Division

UV Monitoring Report – Monthly

Water System Code: 252.00
License Number: PWS-09-412 R

Report Period: December 2010

Date	UVR-D100A Water Volume [ML]				UVR-D200A Water Volume [ML]				UVR-D300A Water Volume [ML]				UVR-D400A Water Volume [ML]				UVR-D500A Water Volume [ML]				UVR-D600A Water Volume [ML]				Total Water Volume [ML]				% Volume Treated To Dose
	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total	Untreated	Below	To	Total	
12/1/2010	0.00	0.00	61.41	61.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	36.82	37.10	0.00	0.00	48.48	48.48	0.00	0.00	16.98	16.98	0.00	0.29	163.68	163.97	99.8
12/2/2010	0.00	0.00	67.10	67.10	0.00	0.00	5.51	5.51	0.00	0.00	0.00	0.00	0.11	0.57	42.56	43.24	0.00	0.00	55.24	55.24	0.00	0.00	23.35	23.35	0.11	0.57	193.76	194.44	99.6
12/3/2010	0.00	0.00	69.10	69.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.34	68.34	0.00	0.00	71.18	71.18	0.00	0.00	0.00	0.00	0.00	0.00	208.62	208.62	100.0
12/4/2010	0.00	0.00	73.87	73.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78.70	78.70	0.00	0.00	77.97	77.97	0.00	0.00	0.00	0.00	0.00	0.00	230.54	230.54	100.0
12/5/2010	0.00	0.00	69.46	69.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.55	73.55	0.00	0.00	72.62	72.62	0.00	0.00	0.00	0.00	0.00	0.00	215.63	215.63	100.0
12/6/2010	0.00	0.00	65.59	65.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	69.32	69.32	0.00	0.00	67.14	67.14	0.00	0.00	0.00	0.00	0.00	0.00	202.05	202.05	100.0
12/7/2010	0.00	0.00	70.44	70.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.01	75.01	0.00	0.00	74.39	74.39	0.00	0.00	0.00	0.00	0.00	0.00	219.84	219.84	100.0
12/8/2010	0.00	0.00	69.80	69.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74.36	74.36	0.00	0.00	73.35	73.35	0.00	0.00	0.00	0.00	0.00	0.00	217.51	217.51	100.0
12/9/2010	0.00	0.00	69.31	69.31	0.00	0.00	14.49	14.49	0.00	0.00	0.00	0.00	0.00	0.15	70.58	70.74	0.00	0.00	48.69	48.69	0.00	0.15	21.44	21.60	0.00	0.31	224.52	224.83	99.9
12/10/2010	0.00	0.00	75.71	75.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.70	72.70	0.00	0.00	25.34	25.34	0.00	0.00	51.83	51.83	0.00	0.00	225.57	225.57	100.0
12/11/2010	0.00	0.00	85.01	85.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.90	64.90	0.00	0.00	84.99	84.99	0.00	0.00	0.00	0.00	0.00	0.00	234.90	234.90	100.0
12/12/2010	0.00	0.00	85.02	85.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.64	64.64	0.00	0.00	85.00	85.00	0.00	0.00	0.00	0.00	0.00	0.00	234.66	234.66	100.0
12/13/2010	0.00	0.00	85.02	85.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.11	66.11	0.00	0.00	85.00	85.00	0.00	0.00	0.00	0.00	0.00	0.00	236.13	236.13	100.0
12/14/2010	0.02	0.00	22.92	22.94	0.00	0.00	12.51	12.51	0.00	0.00	0.00	0.00	0.01	0.04	29.17	29.21	0.19	0.00	33.11	33.30	0.00	0.00	0.00	0.00	0.22	0.04	97.72	97.98	99.7
12/15/2010	0.00	0.00	0.00	0.00	0.00	0.00	65.36	65.36	0.00	0.00	0.00	0.00	0.00	0.00	55.38	55.38	0.00	0.00	56.84	56.84	0.00	0.00	0.00	0.00	0.00	0.00	177.58	177.58	100.0
12/16/2010	0.00	0.00	0.00	0.00	0.00	0.00	62.94	62.94	0.00	0.00	0.00	0.00	0.00	0.00	67.78	67.78	0.00	0.00	65.88	65.88	0.00	0.00	0.00	0.00	0.00	0.00	196.60	196.60	100.0
12/17/2010	0.00	0.00	22.69	22.69	0.14	0.03	20.43	20.59	0.00	0.00	0.00	0.00	0.00	0.00	27.75	27.75	0.01	0.00	36.95	36.96	0.00	0.00	31.93	31.93	0.15	0.03	139.74	139.92	99.9
12/18/2010	0.00	0.00	72.46	72.46	0.42	0.33	36.72	37.48	0.00	0.00	0.00	0.00	0.00	0.25	0.39	0.65	0.00	0.00	62.92	62.92	0.00	0.00	61.28	61.28	0.43	0.59	233.77	234.78	99.6
12/19/2010	0.00	0.00	57.57	57.57	0.00	0.76	82.18	82.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.34	53.34	0.00	0.00	50.20	50.20	0.00	0.76	243.30	244.06	99.7
12/20/2010	0.06	0.00	37.76	37.82	0.21	1.13	29.35	30.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.46	32.46	0.04	0.48	29.09	29.61	0.32	1.60	128.66	130.58	98.5
12/21/2010	0.00	0.00	39.66	39.66	2.45	0.21	66.26	68.93	0.00	0.00	19.77	19.77	0.00	0.00	0.00	0.00	0.00	0.00	40.04	40.04	0.00	0.05	60.67	60.72	2.45	0.26	226.39	229.11	98.8
12/22/2010	0.07	0.00	28.55	28.62	0.00	0.00	9.00	9.00	0.00	0.00	33.61	33.61	0.00	0.00	0.00	0.00	0.01	0.00	33.48	33.49	0.00	0.00	8.56	8.56	0.08	0.00	113.20	113.28	99.9
12/23/2010	0.00	0.00	73.99	73.99	0.04	0.06	2.80	2.90	0.00	0.00	51.30	51.30	0.00	0.00	0.00	0.00	0.00	0.00	77.24	77.24	0.00	0.00	0.00	0.01	0.04	0.06	205.34	205.43	100.0
12/24/2010	0.00	0.00	83.67	83.67	0.00	0.00	0.00	0.00	0.00	0.00	63.70	63.70	0.00	0.00	0.00	0.00	0.00	0.00	46.56	46.56	0.02	0.04	24.86	24.92	0.02	0.04	218.79	218.85	100.0
12/25/2010	0.00	0.00	84.96	84.96	0.00	0.00	0.00	0.00	0.00	0.00	60.31	60.31	0.00	0.00	0.00	0.00	0.00	0.00	75.07	75.07	0.00	0.00	0.00	0.00	0.00	0.00	220.35	220.35	100.0
12/26/2010	0.00	0.00	77.20	77.20	0.00	0.00	0.00	0.00	0.00	0.00	62.04	62.04	0.00	0.00	0.00	0.00	0.00	0.00	71.96	71.96	0.00	0.00	0.00	0.00	0.00	0.00	211.21	211.21	100.0
12/27/2010	0.00	0.00	62.55	62.55	0.00	0.00	0.00	0.00	0.00	0.00	68.87	68.87	0.00	0.00	0.00	0.00	0.00	0.00	71.05	71.05	0.00	0.00	0.00	0.00	0.00	0.00	202.46	202.46	100.0
12/28/2010	0.00	0.00	58.74	58.74	0.00	0.00	0.00	0.00	0.00	0.00	66.97	66.97	0.00	0.00	0.00	0.00	0.00	0.00	69.04	69.04	0.00	0.00	0.00	0.00	0.00	0.00	194.75	194.75	100.0
12/29/2010	0.00	0.00	58.69	58.69	0.00	0.00	0.00	0.00	0.00	0.00	67.06	67.06	0.00	0.00	0.00	0.00	0.00	0.00	69.06	69.06	0.00	0.00	0.00	0.00	0.00	0.00	194.81	194.81	100.0
12/30/2010	0.00	0.00	58.73	58.73	0.00	0.00	0.00	0.00	0.00	0.00	67.03	67.03	0.00	0.00	0.00	0.00	0.00	0.00	69.03	69.03	0.00	0.00	0.00	0.00	0.00	0.00	194.79	194.79	100.0
12/31/2010	0.00	0.00	58.18	58.18	0.00	0.00	0.00	0.00	0.00	0.00	66.37	66.37	0.00	0.00	0.00	0.00	0.00	0.00	68.29	68.29	0.00	0.00	0.00	0.00	0.00	0.00	192.83	192.83	100.0
Total [ML]:	**0.16**	**0.00**	**1845.17**	**1845.33**	**3.26**	**2.52**	**407.56**	**413.34**	**0.00**	**0.00**	**627.03**	**627.03**	**0.13**	**1.30**	**1038.05**	**1039.48**	**0.22**	**0.00**	**1901.69**	**1901.91**	**0.07**	**0.72**	**380.19**	**380.97**	**3.84**	**4.53**	**6199.69**	**6208.06**	

Report Created: Tuesday, January 04, 2011

Water Volume [%]:

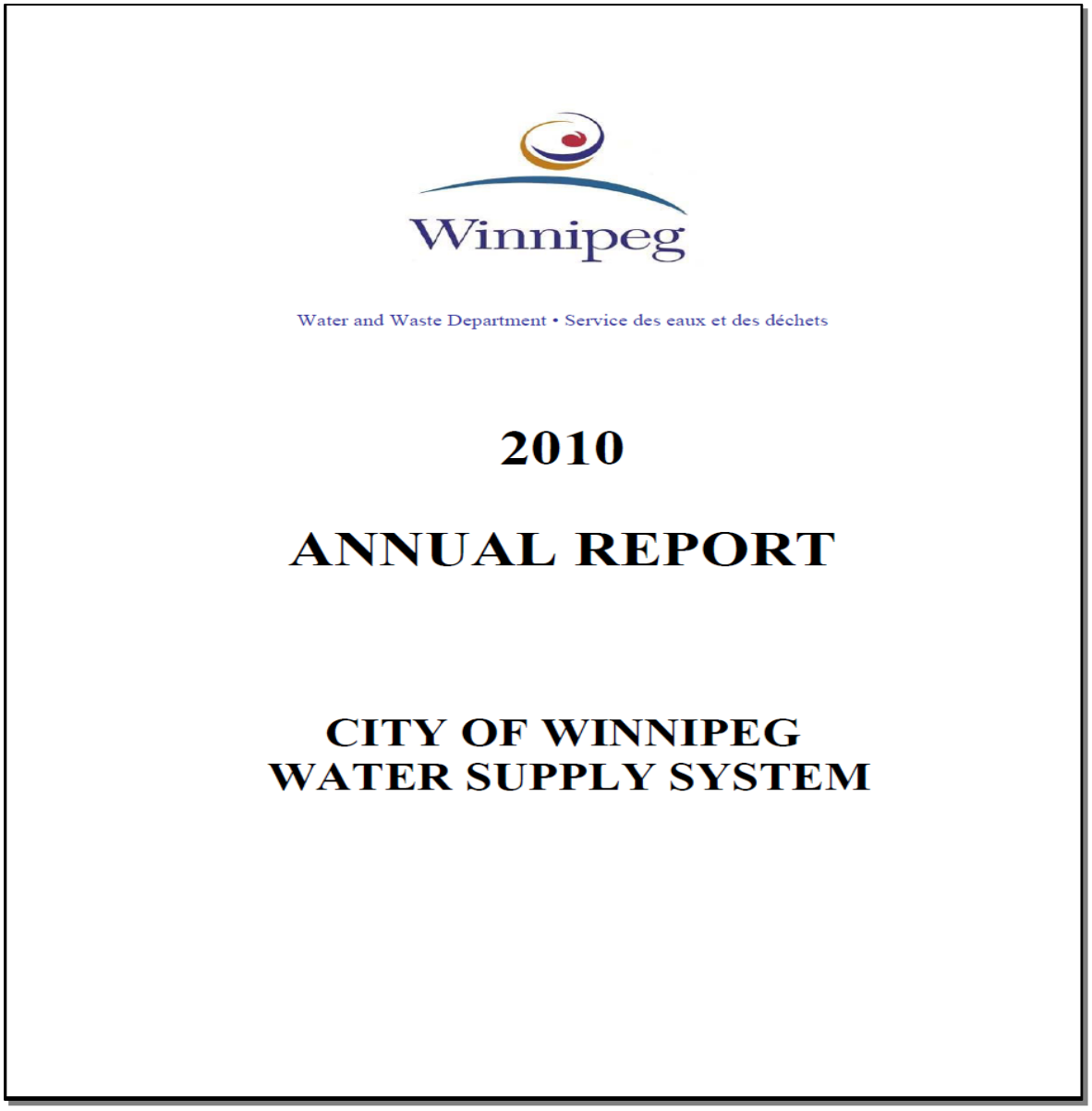
Untreated	0.1%
Below Dose	0.1%
To Dose	99.9%

N:\Water Treatment Branch\Administration\Reports\Regulatory Submissions\UV\2010\12-2010

Notes: 1. UV Comparative Dose: 18.1 mj/cm2

Submitted By (Print): Doug Sulymka

Original Signed By: Doug Sulymka


Winnipeg
Water and Waste Department • Service des eaux et des déchets
2010
ANNUAL REPORT
CITY OF WINNIPEG
WATER SUPPLY SYSTEM

Winnipeg

Winnipeg

Water and Waste Department • Service des eaux et des déchets

Monday, December 6, 2010

Our Incident/Report: 28-2010
LIMS Reference No: 28038

Mr. Gilbert Bushati
Senior Drinking Water Officer
Manitoba Water Stewardship, Office of Drinking Water
1007 Century Street
Winnipeg MB R3H 0W4

RE: CORRECTIVE ACTION REPORT

WATER SYSTEM	Winnipeg Public Water System
WATER SYSTEM CODE	252.00
LOCATION OF NON-COMPLIANT INCIDENT	**Winnipeg 3-Dist NE-06**
OPERATOR IN CHARGE	NA
INCIDENT REPORTED BY	Steve Fletcher, Supervisor of Analytical Services Branch
TYPE OF NON-COMPLIANT INCIDENT	Low positive Total Coliform (<10 CFU/100mL), 3 MR 41/2007
INCIDENT DATE	November 29, 2010
DESCRIPTION OF CORRECTIVE ACTIONS	AS SOON AS POSSIBLE: Re-sampled original location, also tested for turbidity, free/total chlorine, temperature and contacted the ODW.
TEST RESULTS	See Attached

NOTES/COMMENTS:
1. All microbiological tests performed by contract laboratory.
2. UP/DOWN STREAM testing performed when EC is >0 /100mL, TC is >10 /100mL or when resample/consecutive sample is positive for EC or TC or as directed by the Manager of Environmental Standards Division or the Office of Drinking Water
3. INITIAL chlorine, turbidity and temperature only tested at the required 39 sample locations.
4. NR-No Result due to laboratory/analyst error.

EMERGENCY REPORTING IS REQUIRED WHERE A POTENTIAL HEALTH RISK IS INVOLVED. FOLLOW THE INSTRUCTIONS OF YOUR DRINKING WATER OFFICER ON SITUATIONS REQUIRING IMMEDIATE REPORTING

DISTRIBUTION
FORWARD THE ORIGINAL TO THE DRINKING WATER OFFICER WITH THE MONTHLY COMPLIANCE SUBMISSIONS.

Contact the Drinking Water Officer for any comments, questions or concerns

REFERENCE: ODW-RF-016

Winnipeg

Compliance Submissions for Canada

- National Pollutant Release Inventory
  - annual submission respecting applicable water and wastewater facilities
- Greenhouse Gas Emissions Reporting
  - annual submission respecting applicable water and wastewater facilities

Winnipeg

Additional Voluntary Compliance Efforts

- Certification of Water and Wastewater Operators
  - conducted internal audit of compliance with Provincial regulation in 2010
- Provide Winnipeg Regional Health Authority with monthly Water Quality Reports
- Provide Provincial regulators with annual Water Main Cleaning Program Water Quality Monitoring Summary Report
- Monitoring of rivers and small streams
- Sanitary surveys of Shoal Lake

Winnipeg

Winnipeg

Operators Certification Audit Review

Audit of Compliance with Water and Wastewater Facility Operators Regulation 77/2003

Renée Grosselle, B. Sc.
Supervisor of Compliance Reporting Branch

Kelly Kjartanson, M. Sc., P. Eng.
Manager of Environmental Standards Division

April 2010

Winnipeg

CITY OF WINNIPEG
WATER AND WASTE DEPARTMENT
ENVIRONMENTAL STANDARDS DIVISION

MONTHLY WATER QUALITY REPORT

Date: December 2010

WATER SUPPLY SYSTEM MONITORING			INTAKE (RAW)	CELL 2/4 AQUEDUCT @ DEACON	WATER TREATMENT PLANT - RAW	WATER TREATMENT PLANT - CLEARWELL	WATER TREATMENT PLANT - DBPS BRANCH 1	WATER TREATMENT PLANT - DBPS BRANCH 2	BRANCH 1 @ FEED BLDG.	BRANCH 2 @ FEED BLDG.	OUTLET BRANCH 1 @ McPHILLIPS	OUTLET BRANCH 2 @ HURST	MacLEAN STATION DISCHARGE	HURST STATION DISCHARGE	McPHILLIPS STATION DISCHARGE
CHLORINE GETPOINT	mg/L	current	3.5/3.0/2.5			1.50/1.40							1.0	1.0	1.0
FREE CHLORINE RESIDUAL	mg/L	mean		<0.02	<0.02	1.26	0.98	1.01			0.76	0.77	0.80	0.73	0.81
TOTAL CHLORINE RESIDUAL	mg/L	mean		<0.02	0.02	1.54	1.20	1.21			0.89	0.98	0.99	0.97	1.00
TURBIDITY	ntu	mean	0.98	1.04	1.06	0.25	0.21	0.22			0.25	0.31	0.28	0.27	0.27
FLUORIDE (SETPOINT = 0.85)	mg/L	mean							0.80	0.85	0.82	0.84			
o-PHOSPHORUS (SETPOINT = 2.00)	mg/L	mean							1.94	1.99	1.93	2.00	1.95	2.01	2.02
PHYTOPLANKTON COUNT	cells/mL	mean	14,650	8,200	14,000	<100	<100	<100							
TEMPERATURE	°C	mean		3.5	1.8	2.9	2.3	2.2			2.4	2.3	2.7	2.5	2.7
THRESHOLD ODOUR AT 60°C	ton	mean	75M/F	80GR	80M/F	30M	30M	30M			40M	35M	40M	40M	40M
pH	units	mean	7.84		7.81	8.11	7.82	7.82					7.47	7.54	7.52
CHLOROPHYLL A	mg/L	mean	11.5	5.8							<1	<1	<1	<1	<1
UV TRANSMITTANCE (FILTERED)	%	mean			74.4	94.0	94.0	93.9							
UV TRANSMITTANCE (UNFILTERED)	%	mean			71.9	92.3	92.6	92.3							
TOTAL THM	ug/L	current	<0.5	<0.5	0.8	4.7	4.9	4.6			9.7	6.2	10.9	9.0	13.2
TOTAL HAA	ug/L	current	<5	<5	<5	<5	<5	<5			6.7	7.3	13.7	12.6	17.2
SOLUBLE IRON	mg/L	mean			0.05	0.12	0.11	0.11							
SOLUBLE SODIUM	mg/L	mean			2.0	35.1	33.5	33.6							

		INTAKE (RAW)	CELL 1 PRECHLOR	CELL 3 PRECHLOR	WATER TREATMENT PLANT - RAW	WATER TREATMENT PLANT - DBPS BRANCH 1	WATER TREATMENT PLANT - DBPS BRANCH 2	HURST STATION DISCHARGE	McPHILLIPS STATION DISCHARGE
DATE SAMPLED		Dec-06	Dec-06	Dec-06	Dec-29		Dec-29		
GIARDIA (VIABLE)	cysts/100L	<1	<1	OL					
GIARDIA (NON-VIABLE)	cysts/100L	<1	<1	OL					
CRYPTOSPORIDIUM (VIABLE)	oocysts/100L	<1	<1	OL					
CRYPTOSPORIDIUM (NON-VIABLE)	oocysts/100L	<1	<1	OL					
IPMP	ng/L				<0.5		<0.5		
IBMP	ng/L				<0.5		<0.5		
MIB	ng/L				<1.8		<1.5		
246TCA	ng/L				<1.2		<1.2		
236TCA	ng/L				<0.8		<0.8		
GEOSMIN	ng/L				<0.8		<0.5		
345TCV	ng/L				<0.5		<0.5		
MICROCYSTIN LR	ug/L				<0.2		<0.2		

BACTERIOLOGICAL MONITORING SUMMARY

	TOTAL COLIFORM colonies/100mL			ESCHERICHIA COLIFORM colonies/100mL			HETEROTROPHIC PLATE COUNT colonies/mL		
	No. of samples	No. of Positives	% Positives	No. of samples	No. of Positives	% Positives	No. of samples	No. >500	% Positives
WATER TREATMENT PLANT - CLEARWELL	4	0	0.0	4	0	0.00	4	0	0.0
WATER TREATMENT PLANT - DBPS BRANCH 1	4	0	0.0	4	0	0.00	4	0	0.0
WATER TREATMENT PLANT - DBPS BRANCH 2	4	0	0.0	4	0	0.00	4	0	0.0
MacLEAN STATION DISCHARGE	4	0	0.0	4	0	0.00	4	0	0.0
HURST STATION DISCHARGE	4	0	0.0	4	0	0.00	4	0	0.0
McPHILLIPS STATION DISCHARGE	4	0	0.0	4	0	0.00	4	0	0.0
DISTRIBUTION SYSTEM (60 locations)	228	0	0.0	228	0	0.00	228	0	0.0

Note: Total Coliform and E. Coli, Maximum Acceptable Limit is <1 coliform per 100 mL.

DISTRIBUTION SYSTEM MONITORING SUMMARY (39 LOCATIONS SURVEYED)

		MEAN	MINIMUM	MAXIMUM
FREE CHLORINE RESIDUAL	mg/L	0.56	0.20	0.83
TOTAL CHLORINE RESIDUAL	mg/L	0.76	0.39	1.04
TEMPERATURE	°C	8.4	4.3	14.7
TURBIDITY	ntu	0.29	0.19	0.70
FLUORIDE	mg/L	0.83	0.81	0.86
o-PHOSPHORUS	mg/L	1.94	1.86	2.01

COMMENTS:

DISTRIBUTION SYSTEM WATER QUALITY 311 COMPLAINTS/INQUIRIES SUMMARY

TYPE	TOTAL REQUESTS
WATER QUALITY INFORMATION REQUEST OR INQUIRY	7
WATER QUALITY LEAD TESTING REQUIRED	0
WATER QUALITY ODOUR - NON EMERGENCY	11
WATER QUALITY ODOUR - EMERGENCY AFTER HOURS	2
WATER QUALITY ODOUR - EMERGENCY REGULAR HOURS	2
WATER QUALITY SEDIMENT/DISCOLOR - NON EMERGENCY	0
WATER QUALITY SEDIMENT/DISCOLOR - EMERGENCY AFTER HOURS	0
WATER QUALITY SEDIMENT/DISCOLOR - EMERGENCY REGULAR HOURS	1
GRAND TOTAL	23

REPORT COMPILED BY: J. Jones

APPROVED IN LIMS BY: S. Fletcher/G. Levesque

DATE APPROVED: 18-Jan-10

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FILE: WQR3

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Winnipeg

Water and Waste Department

Environmental Standards Division

2010 Water Main Cleaning Program

Water Quality Monitoring Summary Report

December 2010

City of Winnipeg
Water and Waste Department

2011 RIVERS SURVEY MONITORING REPORT

Survey Date[1]:	May 11, 2011	Assiniboine River Sampling Locations				Red River Sampling Locations					
Parameter	**Unit**	HEADINGLY BRIDGE	WEST PERIMETER BRIDGE	ASSINIBOINE PARK FOOT BRIDGE	MAIN STREET BRIDGE	SOUTH FLOODWAY CONTROL[4]	FORT GARRY BRIDGE	NORWOOD BRIDGE	REDWOOD BRIDGE	NORTH PERIMETER BRIDGE	LOCKPORT BRIDGE
Temperature	°C	12.3	NS	12.3	12.2	NS	13.2	13.4	12.9	12.6	13.0
Dissolved Oxygen	mg/L	9.9	NS	10.1	10.1	NS	10.4	10.2	10.3	10.5	10.1
Oxygen Saturation[2]	%	93	NS	95	94	NS	100	98	98	99	96
pH	units	8.14	NS	8.16	8.15	NS	8.24	8.24	8.21	8.23	8.19
Total Solids	mg/L	736	NS	740	732	NS	560	552	608	600	484
Total Suspended Solids	mg/L	250	NS	240	244	NS	66	72	132	132	122
Turbidity	n.t.u.	128	NS	125	153	NS	49.0	52.0	92.4	90.3	93.9
Total Organic Carbon	mg/L	13	NS	14	13	NS	12	12	13	13	13
Chlorophyll a	ug/L	7	NS	7	9	NS	14	14	14	7	28
Ammonia Nitrogen	mg/L N	0.018	NS	<0.003	0.014	NS	0.034	0.046	0.045	0.110	0.104
Nitrate Nitrogen	mg/L N	0.439	NS	0.433	0.440	NS	0.530	0.557	0.532	0.540	0.562
Total Kjeldahl Nitrogen	mg/L N	<2.0	NS	<2.0	<2.0	NS	<2.0	<2.0	<2.0	<2.0	<2.0
Total Nitrogen[2]	mg/L N	<2.0	NS	<2.0	<2.0	NS	<2.0	<2.0	<2.0	<2.0	<2.0
Soluble Phosphorus	mg/L P	0.06	NS	0.06	0.06	NS	0.11	0.12	0.10	0.11	0.11
Total Phosphorus	mg/L P	<0.30	NS	0.40	0.30	NS	<0.30	<0.30	0.30	0.30	<0.30
Escherichia Coliform[3]	colonies/100 mL	4	NS	93	15	NS	20	230	43	230	43
Fecal Coliform[3]	colonies/100 mL	9	NS	93	15	NS	20	430	43	230	43

Weather Conditions during monitoring: Winds NW at 33 km/hr with 100% cloud cover. Average air temperature during survey at 5°C.

Notes:
1) LIMS Reference No: 29405
2) Calculated values
3) Analyzed by contract laboratory.
4) Red River elevation at South Floodway Control Gates: 746.9 ft
5) There are no samples at the West Perimeter Bridge or the South Floodway Control Gates due to construction.

Report Compiled By: J. Jones
Compliance Reporting Technician

Approved in LIMS By: S. Fletcher
Supervisor of Analytical Services

Date Approved: 30-May-11

File No: 040-14-09-03-00

12/6/2011

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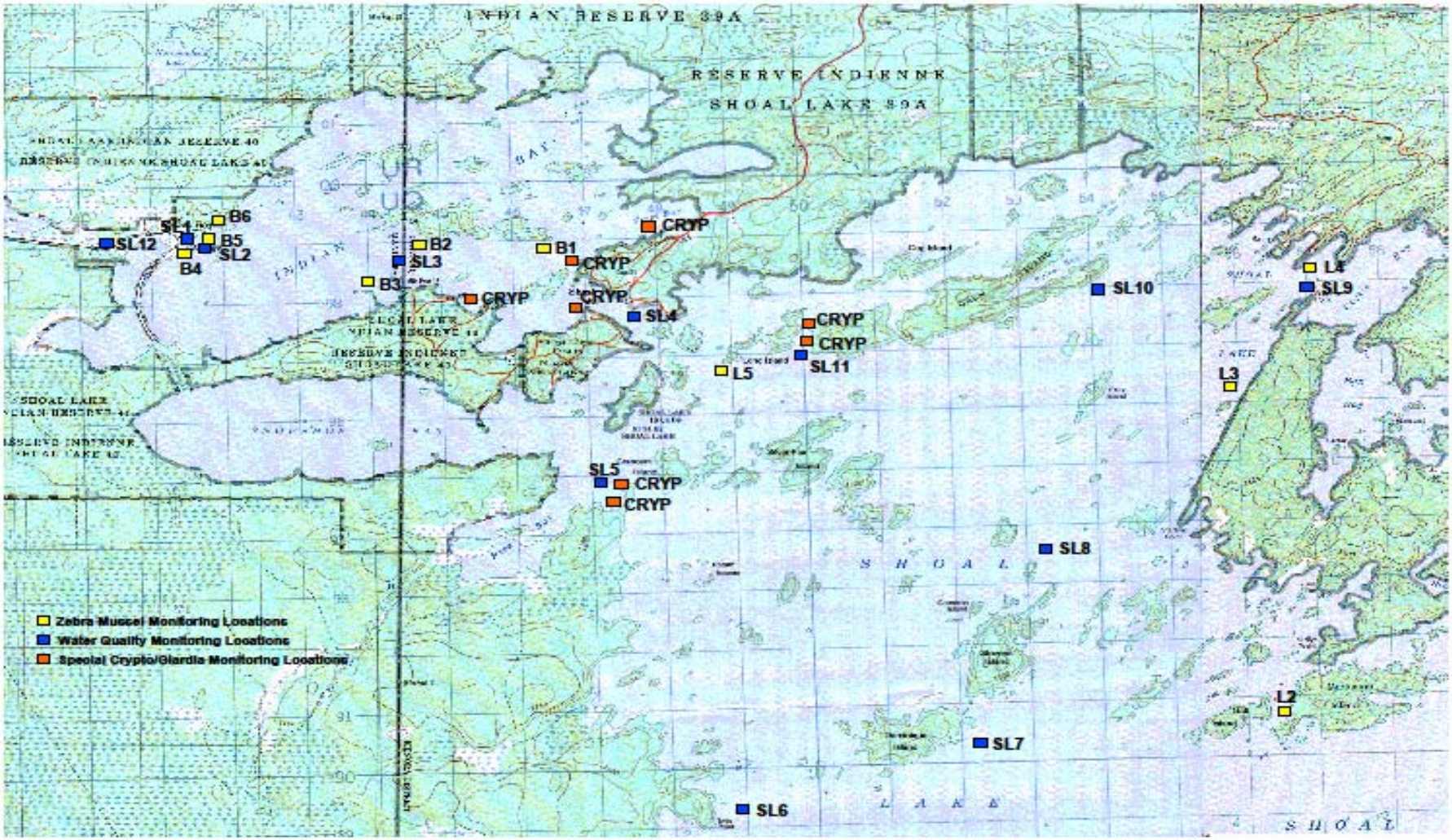
INDIAN RESERVE 39A
RESERVE INDIENNE
SHOAL LAKE 39A
B6
SL1
SL12
B5
SL2
B4
B2
SL3
B3
B1
CRYP
SL4
SL10
L4
SL9
L5
SL11
L3
SL5
SL8
L2
SL7
SL6
Zebra Mussel Monitoring Locations
Water Quality Monitoring Locations
Special Crypto/Giardia Monitoring Locations

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Performance of Utilities Respecting Regulatory/ Licence Requirements

Performance of Water Utility

- Office of Drinking Water 2010 Annual Audit Report found 100% compliance in all categories
- No warnings issued or charges laid
- Water Utility continues to be in compliance with licence, regulations and guidelines

Winnipeg

Performance of Wastewater Utility

- Wastewater Utility generally in compliance with licences and regulations
- No warnings issued or charges laid
- Some non-compliance on daily limits under discussion with MB Conservation
- South End Sewage Treatment Plant process upset in October/November 2011

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Summary for Water and Wastewater Utilities

Summary
Water and Wastewater Utilities

- Manage a myriad of Federal and Provincial requirements in legislation, regulation, licence and guideline format
- Sample, monitor, and test utility infrastructure more than required; City lab accredited by CALA
- Submit compliance reports on a weekly, monthly, quarterly and annual basis to both levels of government as required
- Practice internal due diligence through discussion of monthly compliance reports by Department Management Team

Winnipeg

Summary
Water and Wastewater Utilities (cont'd)

- Practice external due diligence with biannual wastewater compliance meetings with Provincial staff; water compliance meetings usually held annually
- Update and enforce by-laws (Water Works and Sewer) to protect public health, safety and the environment
- Comply with regulatory and licence requirements
- Provide most compliance information on the Winnipeg website in the spirit of transparency

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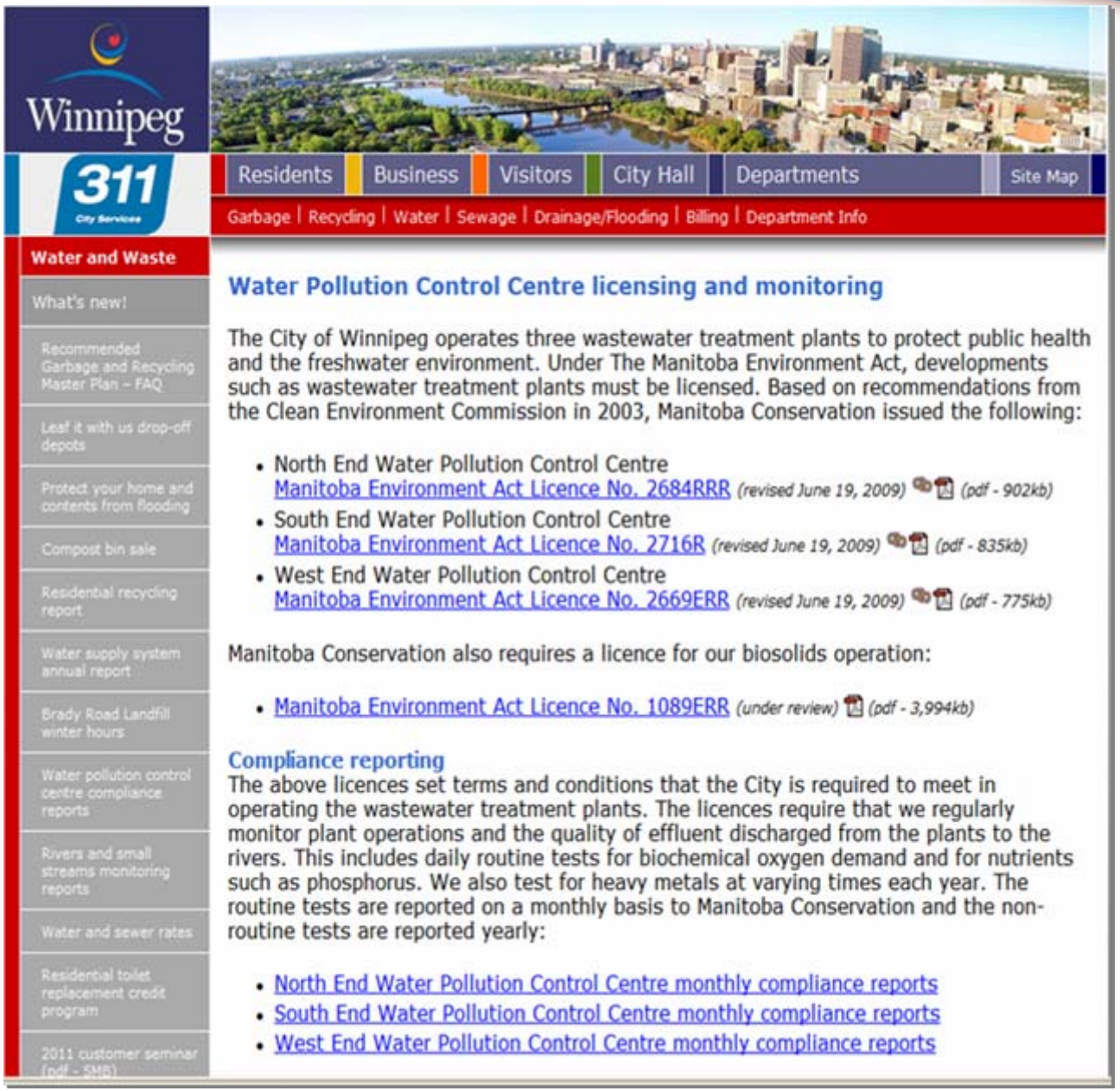

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311 City Services

Residents | Business | Visitors | City Hall | Departments | Site Map

Garbage | Recycling | Water | Sewage | Drainage/Flooding | Billing | Department Info

Water and Waste

- What's new!
- Recommended Garbage and Recycling Master Plan – FAQ
- Leaf it with us drop-off depots
- Protect your home and contents from flooding
- Compost bin sale
- Residential recycling report
- Water supply system annual report
- Brady Road Landfill winter hours
- Water pollution control centre compliance reports
- Rivers and small streams monitoring reports
- Water and sewer rates
- Residential toilet replacement credit program
- 2011 customer seminar (pdf - 5MB)

Water Pollution Control Centre licensing and monitoring

The City of Winnipeg operates three wastewater treatment plants to protect public health and the freshwater environment. Under The Manitoba Environment Act, developments such as wastewater treatment plants must be licensed. Based on recommendations from the Clean Environment Commission in 2003, Manitoba Conservation issued the following:

- North End Water Pollution Control Centre
  Manitoba Environment Act Licence No. 2684RRR *(revised June 19, 2009)* *(pdf - 902kb)*
- South End Water Pollution Control Centre
  Manitoba Environment Act Licence No. 2716R *(revised June 19, 2009)* *(pdf - 835kb)*
- West End Water Pollution Control Centre
  Manitoba Environment Act Licence No. 2669ERR *(revised June 19, 2009)* *(pdf - 775kb)*

Manitoba Conservation also requires a licence for our biosolids operation:

- Manitoba Environment Act Licence No. 1089ERR *(under review)* *(pdf - 3,994kb)*

Compliance reporting

The above licences set terms and conditions that the City is required to meet in operating the wastewater treatment plants. The licences require that we regularly monitor plant operations and the quality of effluent discharged from the plants to the rivers. This includes daily routine tests for biochemical oxygen demand and for nutrients such as phosphorus. We also test for heavy metals at varying times each year. The routine tests are reported on a monthly basis to Manitoba Conservation and the non-routine tests are reported yearly:

- North End Water Pollution Control Centre monthly compliance reports
- South End Water Pollution Control Centre monthly compliance reports
- West End Water Pollution Control Centre monthly compliance reports

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2011 customer seminar (pdf - 5MB)
Water quality test results
We test Winnipeg drinking water to ensure compliance with our Operating Licence, the regulations and Guidelines for Canadian Drinking Water Quality. These guidelines apply to treated water only, that is, fresh water that people consume from a cold water tap. Therefore, the majority of the guidelines do not apply to the tests we take on the raw water at Shoal Lake and the Water Treatment Plant because Winnipeg residents don't consume the water directly from either of these locations. The exception is the test results for herbicides, pesticides and PCBs at the Water Treatment Plant raw. The guidelines apply to treated water but we test the water at the Water Treatment Plant raw because the water distribution system downstream from this point is a closed system that should prevent the water from being contaminated by these chemicals. If you would like more information on water quality, visit Health Canada.
2010 test results are provided for:
Shoal Lake
Water Treatment Plant raw
Water Treatment Plant treated
Winnipeg distribution system
The historical reports below include test results for Deacon Reservoir because, before the Water Treatment Plant was built, sampling was done at the Deacon Reservoir outlet.
2009 test results:

Combined Sewer Wastewater Collection System

Cynthia Wiebe, P.Eng.
Wastewater Collections Planning Engineer

Winnipeg

Outline

- Wastewater Collection System
- Regulatory Information
- Combined Sewer Overflow Project Updates
- Development of a Long-Term Combined Sewer Overflow Program

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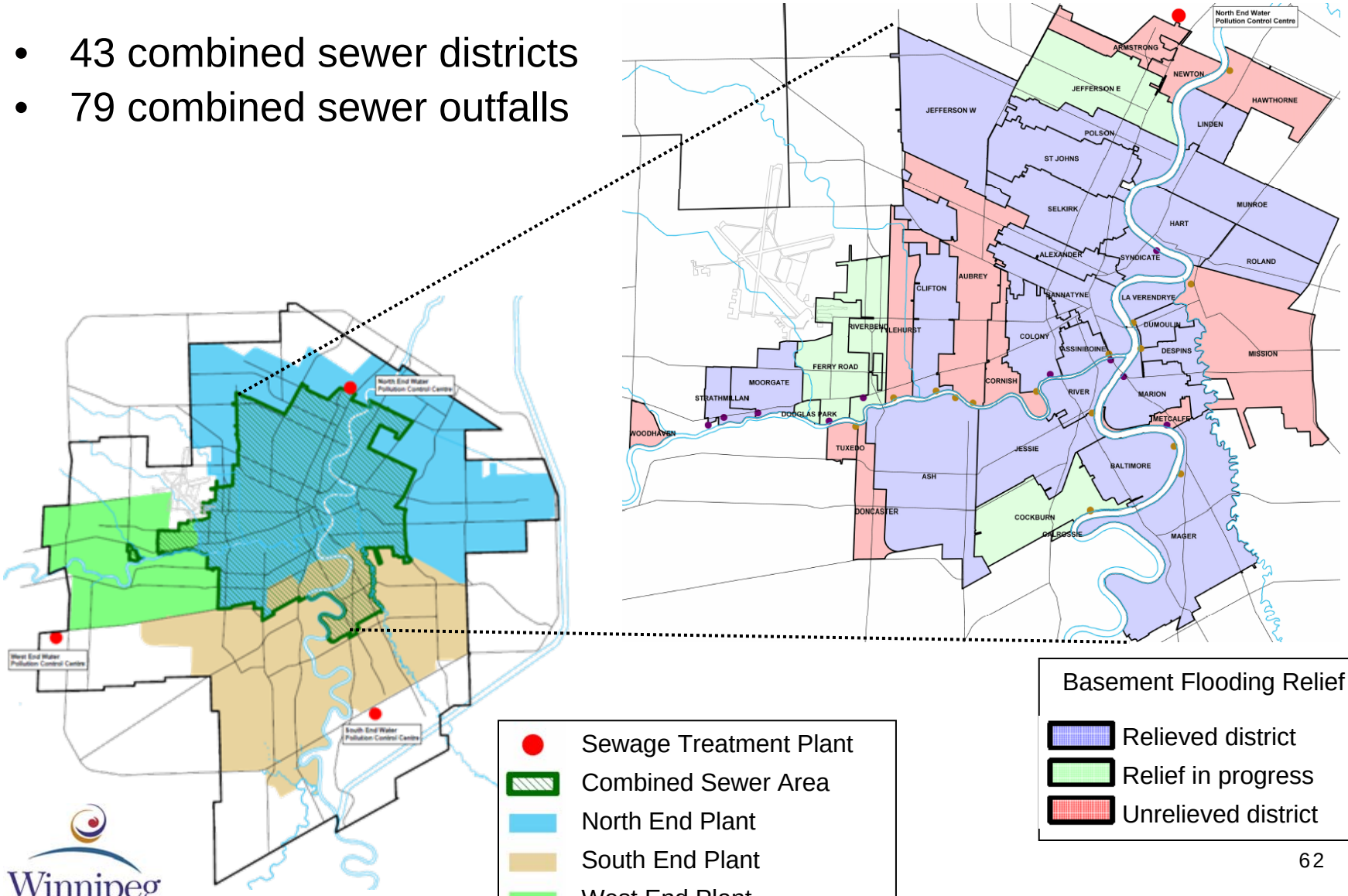
Wastewater Collection System

Wastewater Collection System

- 43 combined sewer districts
- 79 combined sewer outfalls



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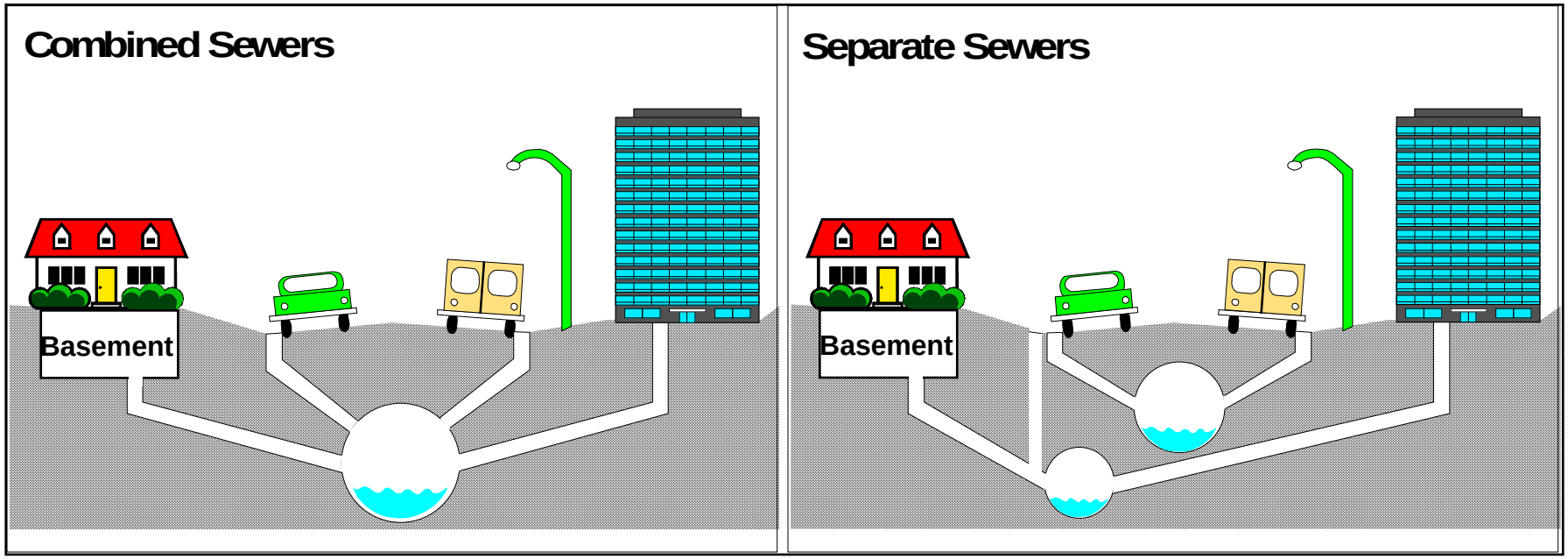
Wastewater Sewer Types

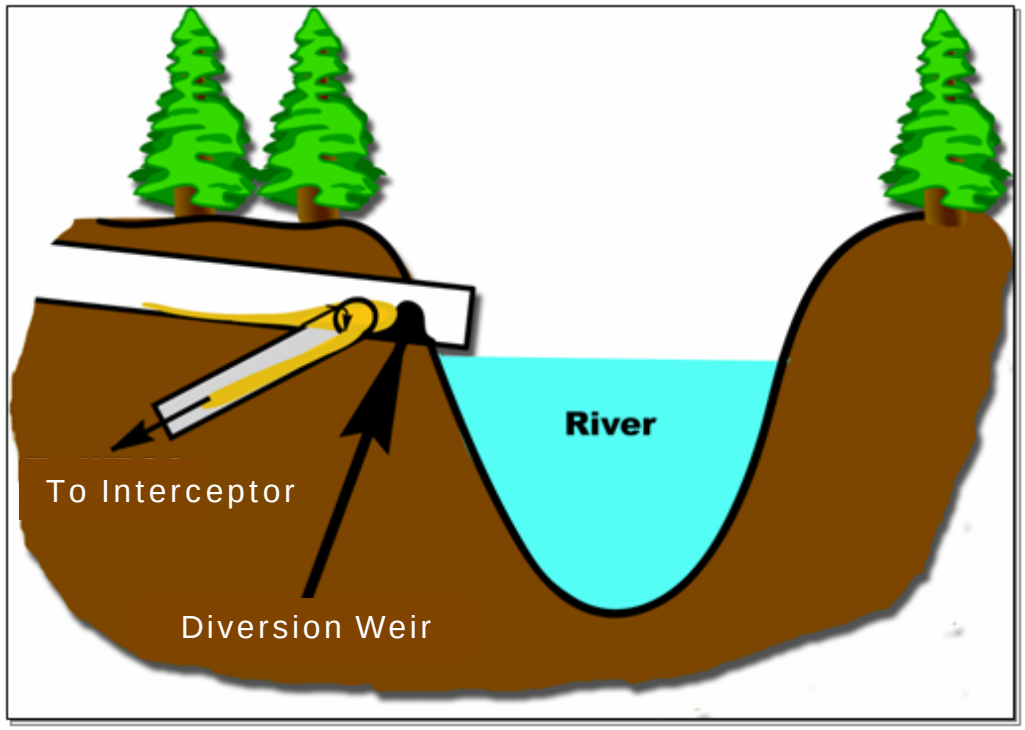


- Older parts of the city (pre-1960) have combined sewers
  - approximately 27% of the city
- During dry weather, all wastewater is treated
- During wet weather, both systems have the potential for basement flooding
- Combined systems can experience overflows

Winnipeg

Combined Sewer Overflows

- Response to wet weather – protects citizens from basement flooding
- On average, overflows occur about 22 times/year
- Dilute mixture of sewage and rainwater
- Major impact is a temporary increase in fecal coliform levels
- Typically only 1% of the total annual sewage is lost to overflows



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Regulatory Information

Background

- Clean Environment Commission (CEC) hearings held in 1991 and 1992 to better understand the use of the rivers in the Winnipeg area
- As a result, CEC recommended that the City investigate the impacts of CSOs on river water quality
- In response, the City began a Combined Sewer Overflow Management Strategy Study in 1994
  - focused on conceptual level controls
  - provided a good resource and foundation for future spending and planning

Winnipeg

Background

- CEC hearings held in 2003 on the continued operation and future development of the wastewater collection and treatment systems
- Recommendations:
    1. Combined sewer overflows
        - develop a plan to reduce CSOs within 20 - 25 years
        - reduce CSOs through operational and capital projects
    2. Public notification system
        - implement a system to inform the public whenever there is a release of raw sewage to the local rivers

Winnipeg

Provincial Regulation Status

- Awaiting a CSO licence from Provincial regulators
- Had preliminary discussions with Manitoba Conservation
  - indication is that the licence will be coming shortly
- Goal is to work collaboratively with regulators
  - achieve a risk-based approach to CSO control
  - develop methods to evaluate CSO mitigation and licence compliance

Winnipeg

Federal Guidelines

- Canada-wide strategy for managing municipal wastewater effluent endorsed in 2009
- Goal is to minimize the impact of CSOs on our rivers and Lake Winnipeg by meeting the national standards
  - no increase in CSO frequency due to development
  - no dry weather overflows, except during spring thaw and emergencies
  - remove floatable materials where possible
- Province may determine additional objectives

Winnipeg

CSO Project Update

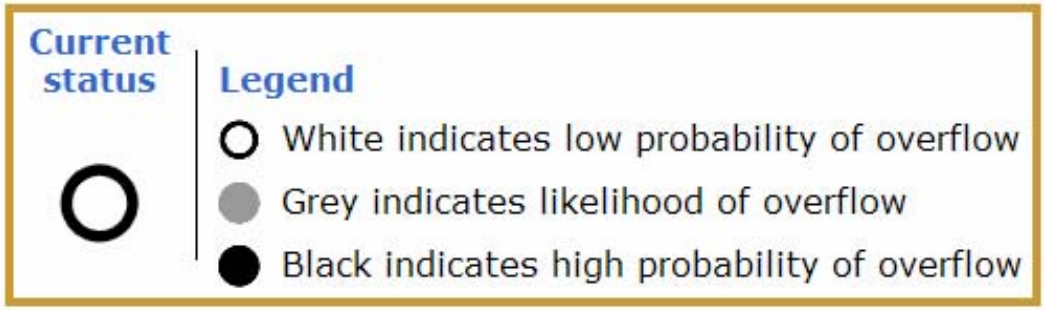
Improvements to Date

- Identifying and reducing dry weather overflows through system upgrades
  - upgrading pumps, raising weirs, replacing pipes
- Identifying and removing large flows into the sewer system (e.g., ditches connecting to the sewer system)
- Using high level sewer warning alarms at overflow locations to provide time for crews to respond and prevent overflows where possible
- Enhancing computer system for monitoring sewer infrastructure (e.g., alarms, pumps, flows)

Winnipeg

Public Notification System

Sewer overflow information system



winnipeg.ca/waterandwaste/sewage/overflow/present.stm

- Reports on the likelihood of an overflow event based on the number of high level alarms being received at the control centre
- Indicates only that an overflow is imminent, but not necessarily that an actual overflow is occurring

Winnipeg

CSO Related Capital Projects / Initiatives

- Work to date to reduce CSOs
  - CSO Outfall Monitoring Program
  - Pilot Stormwater Retention Tank
  - Combined Sewer Separation Projects
  - Low-Impact Development Standards
  - Combined Sewer Relief Studies
  - Interceptor and collection system sewer flow monitoring
  - Combined sewer renewals and replacements
  - Lift station improvements and capacity upgrades

Winnipeg

Development of a Long-Term CSO Program

CSO Master Plan

- 2002 CSO study outlines various CSO strategies
  - $450 million to $1.5 billion (2002 dollars)
- CSO Master Plan objectives include:
  - review and update the 2002 CSO Management Study
  - create a city-wide hydraulic computer sewer model
  - recommend a long-term plan to reduce CSOs
- Issued a Request for Qualifications in December 2011 for the Development of a CSO Master Plan
  - shortlist qualified consultants for the proposal phase
  - will build on the foundation set by the 2002 study and knowledge gained through recent capital projects
- Is expected to take 3 to 5 years to complete

Winnipeg

Summary

- Committed to improving our sewer infrastructure and decreasing the impact of CSOs on our rivers and Lake Winnipeg
  - continue to carry out capital projects and operational improvements to reduce CSOs
  - develop a long-term plan to address CSOs
- Dedicated to working with Provincial regulators to create a sustainable risk-based approach to CSO control

Winnipeg

Bill 46 and Total Nitrogen Removal

Arnold Permut M.Sc., P.Eng
Wastewater Planning Engineer

Winnipeg

Outline

- Background
- Overview – Wastewater Treatment
- Bill 46 – Treatment Requirements
- Total Nitrogen Removal
- Science and Experience – Total Nitrogen Removal
- Cost of Total Nitrogen Removal
- City Recommendation
- Summary

Winnipeg

Background

- 2003 Clean Environment Commission (CEC) report recommended that the City reduce the following in wastewater treatment plant discharges based on a 30-day rolling average:

  phosphorous - 1.0 milligrams per litre

  total nitrogen - 15 milligrams per litre

- In January 2008, City responded to the Province:
  - advised that we will comply with the licence requirement for control of ammonia once the North End Sewage Treatment Plant is upgraded, and
  - requested the requirement for total nitrogen removal be removed from our licence

Winnipeg

Background (cont'd)

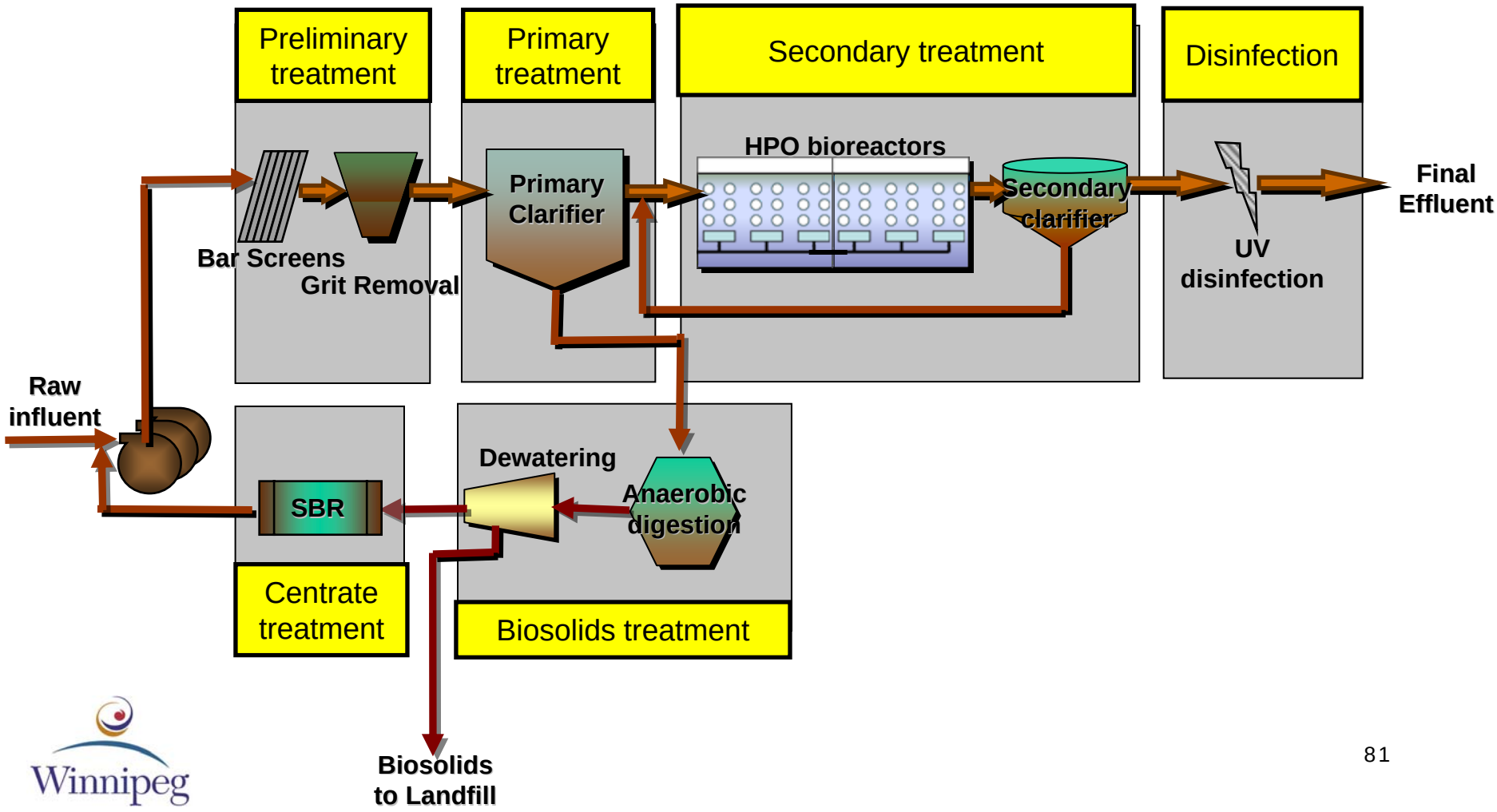
- September 2008, Minister of Conservation ordered the CEC to investigate nutrient (nitrogen and phosphorus) reduction and ammonia (a form of nitrogen) treatment at Winnipeg's sewage treatment plants
- March 2009, CEC report reaffirmed the 30-day rolling average limits:

  phosphorus discharges - 1.0 milligrams per litre

  nitrogen discharges - 15 milligrams per litre

Winnipeg

Wastewater Treatment at the North End Sewage Treatment Plant



Bill 46 Treatment Requirements North End Treatment Plant Only

- Phosphorus
  - treat to required limit using biological processes only (no chemical treatment)
- Reuse of phosphorus
  - support this and continue to evaluate new, cost effective technologies
  - biosolids composting trial will turn 20% of wastewater solids into reusable compost; submitting a plan to Manitoba Conservation seeking alterations to the existing Biosolids Licence
  - may recover phosphorus in a form that can be used in the manufacture of commercial fertilizer

Winnipeg

Bill 46 Treatment Requirements
All Sewage Treatment Plants

- City does not concur with the proposed ammonia **daily** limit requirement (varies by month and by plant)
  - considerable cost for no demonstrable benefit
  - overdesign of treatment plants for wet weather flows
  - continuing our discussions with Province regarding limit

Winnipeg

Total Nitrogen Removal
Two Step Process

- Step 1: Ammonia (NH_3) is converted to nitrate (NO_3):

$$NH_3 + O_2 \rightarrow NO_3$$

- Step 2: Nitrate is converted to nitrogen gas

$$NO_3 + \text{carbon} \rightarrow N_{2(g)}$$

- Current licence states that North End Sewage Treatment Plant, as of December 31, 2014, must not discharge effluent in which "the concentration of total nitrogen of the effluent is in excess of 15 milligrams per litre as determined by the 30-day rolling average" (i.e., monthly average)

Winnipeg

Scientific Evidence Does Not Support a Total Nitrogen Limit

- Some forms of algae can convert nitrogen gas in the atmosphere into a nutrient (nitrogen fixers)
- Total nitrogen removal will limit green algae, but then gives nitrogen-fixing algae (i.e., blue-green algae) a competitive advantage
- Blue-green algae (cyanobacteria) do not need nitrogen from water - takes it from the air as needed

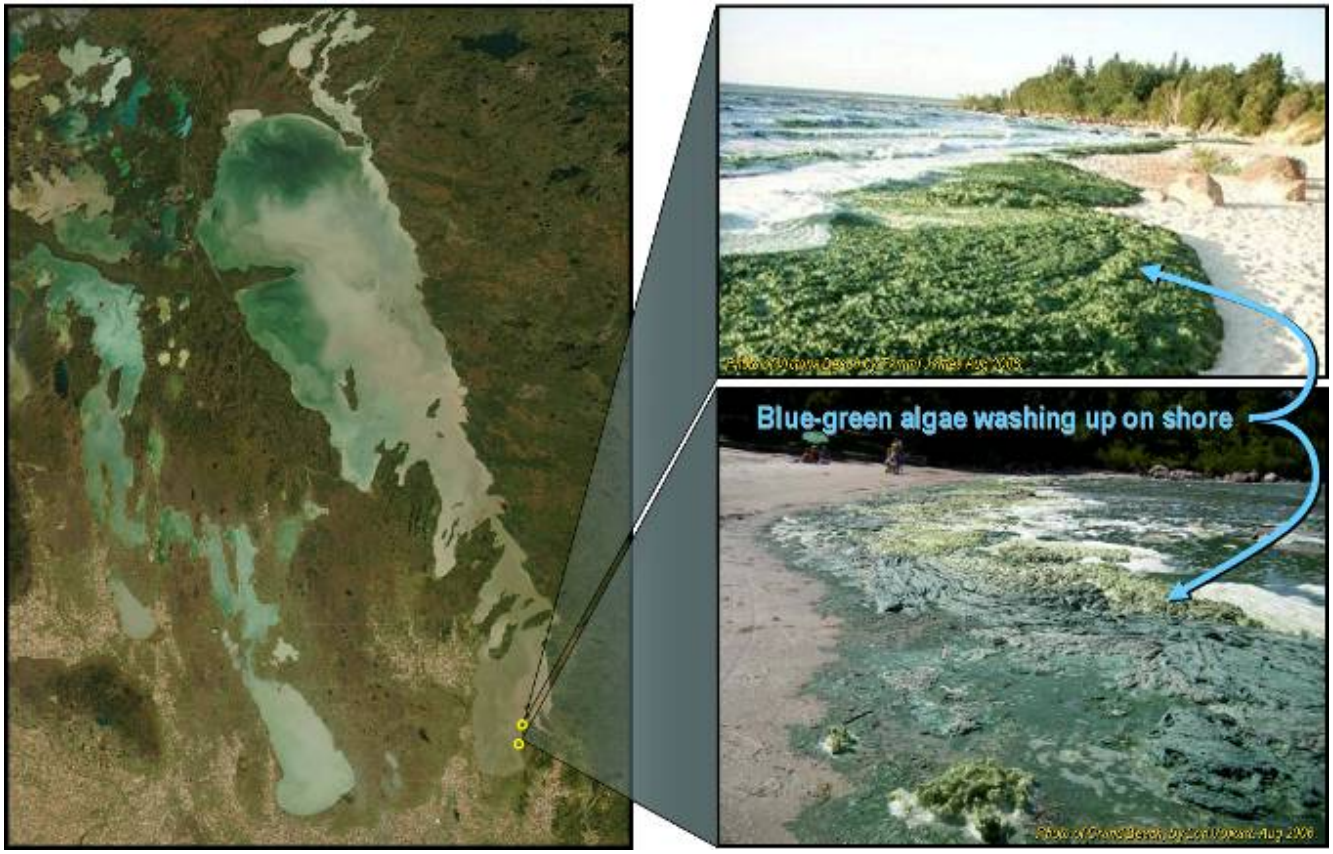
Winnipeg

Scientific Evidence Does Not Support a Total Nitrogen Limit (cont'd)

- Blue-green algae are harmful to humans and animals since they produce the following toxins:
  - neurotoxins (cause damage to nerves and nerve tissue)
  - hepatoxins (cause damage to the liver)
  - endotoxins (cause excessive internal bleeding; severe diarrhea; fever; affects resistance to bacterial infections)

Winnipeg

Nitrate Removal Not Beneficial to Lake Winnipeg



Explosive algae growth is by N-fixers

(Dr. D Shindler's conclusions, verified by Dr. H Kling)

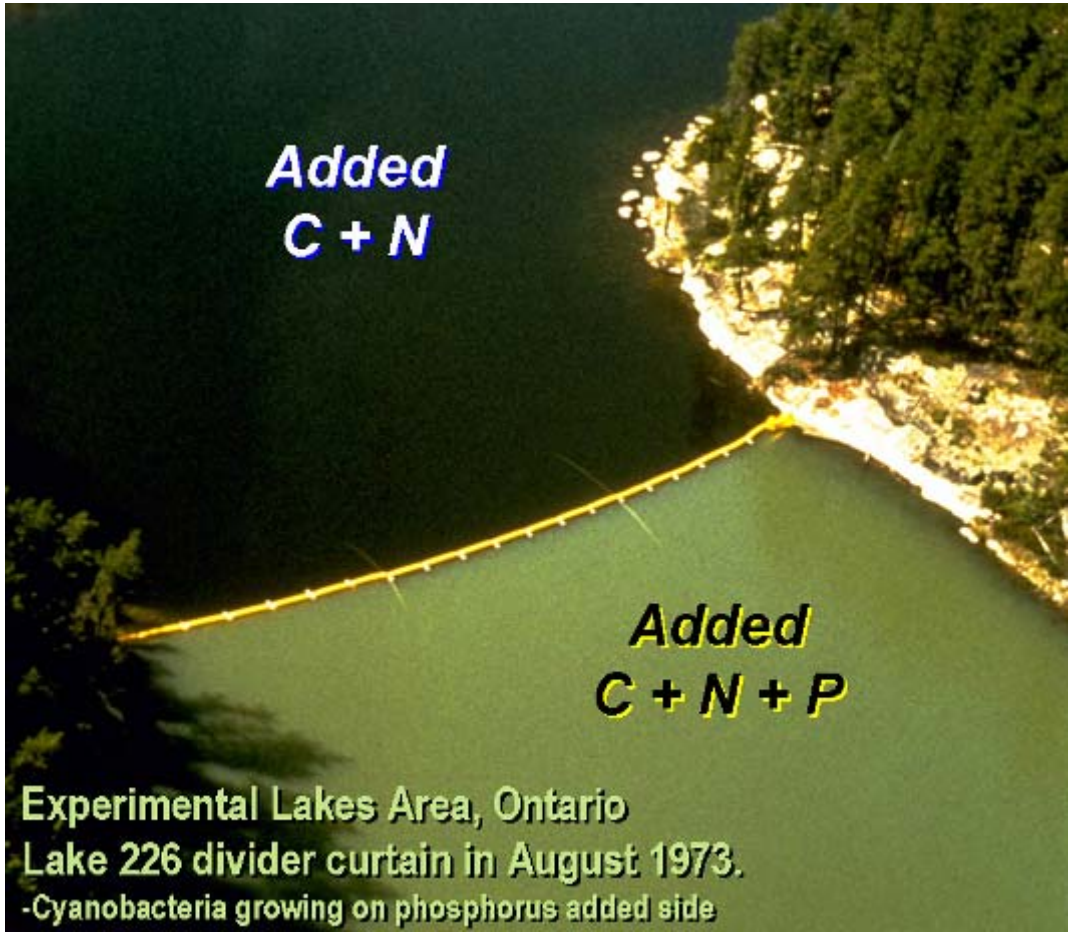
63 prominent scientists wrote to the Manitoba Clean Environment Commission.

"Removing nitrogen will at best do nothing, and at worst, increase the dominance of the filamentous nitrogen-fixing cyanobacteria."

Winnipeg

Research Proves Phosphorus is Key Nutrient

- Whole lake experiment to understand the algal response to carbon (C), nitrogen (N) and phosphorus (P) additions
- Phytoplankton (algae) growth limited by P supply
- Controlling N input to lakes may adversely affect water quality
- Low nitrogen conditions favour blue-green algae (cyanobacteria)



Source: David W. Schindler, 1977 SCIENCE, VOL. 195, p260-262

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Science Supports

- Phosphorus is the key element in eutrophic lakes (rich in nutrients, supporting a dense plant population, but depriving animal life of oxygen)
  - remove aggressively
- Total nitrogen removal will not benefit Lake Winnipeg
  - may result in detrimental outcome
- Not implementing a total nitrogen limit helps green algae compete against harmful blue-green algae, minimizing harm caused by blue-green algae

Winnipeg

Real World Experience

- Toronto wastewater treatment system
  - serves 2.6 million people
  - discharges to Lake Ontario & Don River
  - only removes phosphorus (no nitrogen removal)
- The Great Lakes have recovered from eutrophication
  - other cities discharging to the Great Lakes remove phosphorous only
  - total nitrogen removal was not a significant factor in Great Lakes recovery

Winnipeg

Cost of Total Nitrogen Removal

- Financial cost
  - increases size and operating cost of facilities
  - larger sewage treatment plants (North End and South End) would be required
- Environmental cost
  - increased carbon footprint (carbon source required for nitrate removal)
  - increased energy requirements to operate

Winnipeg

City Recommendation

- Focus resources on phosphorus reduction and phosphorus reuse as supported by scientific studies and practical experience elsewhere (i.e., Toronto and Lake Ontario, other Great Lakes)

Summary

- Dedicated to improving both our sewer infrastructure and our sewage treatment program to help protect the quality of water in the Red River, Assiniboine River and Lake Winnipeg
- Plan to remove phosphorus to limits in Bill 46
- Continue to explore sustainable, practical reuse of nutrients
  - compost, phosphorus-based fertilizer

Winnipeg

Summary (cont'd)

- Based on our vision statement, "excellence in environmental services", we do not support the total nitrogen limit in Bill 46 / North End Sewage Treatment Plant licence
  - gives harmful blue-green algae a competitive advantage in Lake Winnipeg
  - increased financial and environmental cost
  - eliminating a total nitrogen limit provides greater protection to the environment and public and animal health
- Continuing discussions with the Province regarding ammonia and nitrogen limits

Winnipeg

Asset Management - Integration of Management Processes

Geoffrey Patton P. Eng.
Asset Management Engineer

Winnipeg

Definition of Asset Management

"An integrated set of processes to minimize the lifecycle costs of owning, operating, and maintaining assets, at an acceptable level of risk, while continuously delivering established levels of service."

References:

- *Implementing Asset Management: A Practical Guide (AMWA, NACWA, WEF)*
- *City of Winnipeg Draft Comprehensive Asset Management Administrative Standard*

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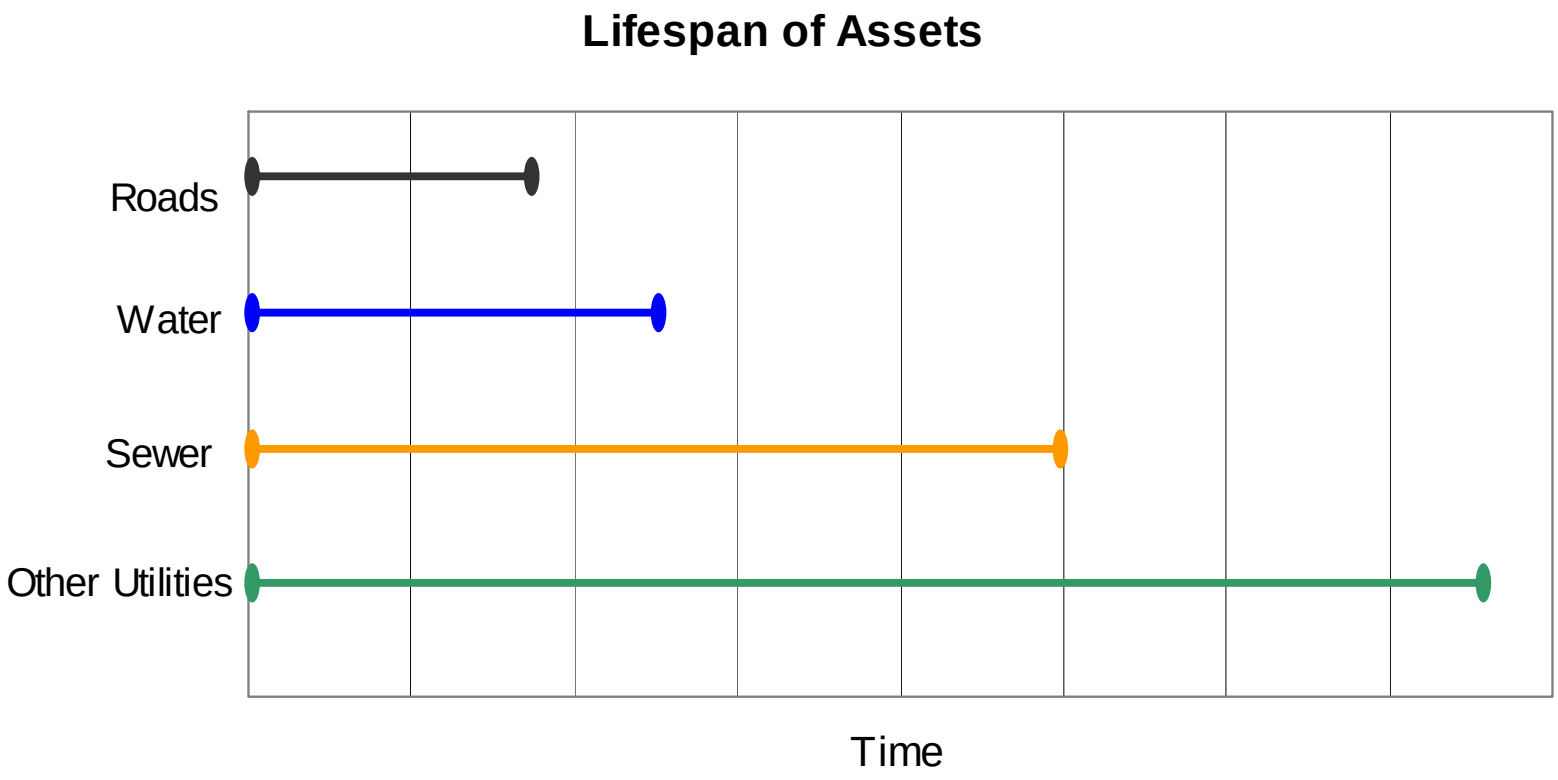
Drivers of Asset Management

- Aging infrastructure
- Public demands for high level of service
- Regulations
- Population growth or decline
- Liability / risk management
- Limited financial resources
- Increased accountability

Winnipeg

Challenges of Differing Asset Service Life



Road Right of Way

Winnipeg

Coordination between Street and Underground Renewal Programs

- Proposed project locations exchanged using spatially enabled databases
- Renewal budget limitations discussed in advance
- Challenges
  - change in street renewal treatment
  - cancellation of projects

Winnipeg

Underground Structures Committee

- Established in 1974
- City Departments
  - Public Works, Water and Waste, Property Planning and Development, Corporate Support Services
- Manitoba Hydro, MTS Allstream, AT&T Canada
- Formulate and adopt standard locations for future underground construction by utilities
- Coordinate construction on or under streets
- Records of structures within the right of way

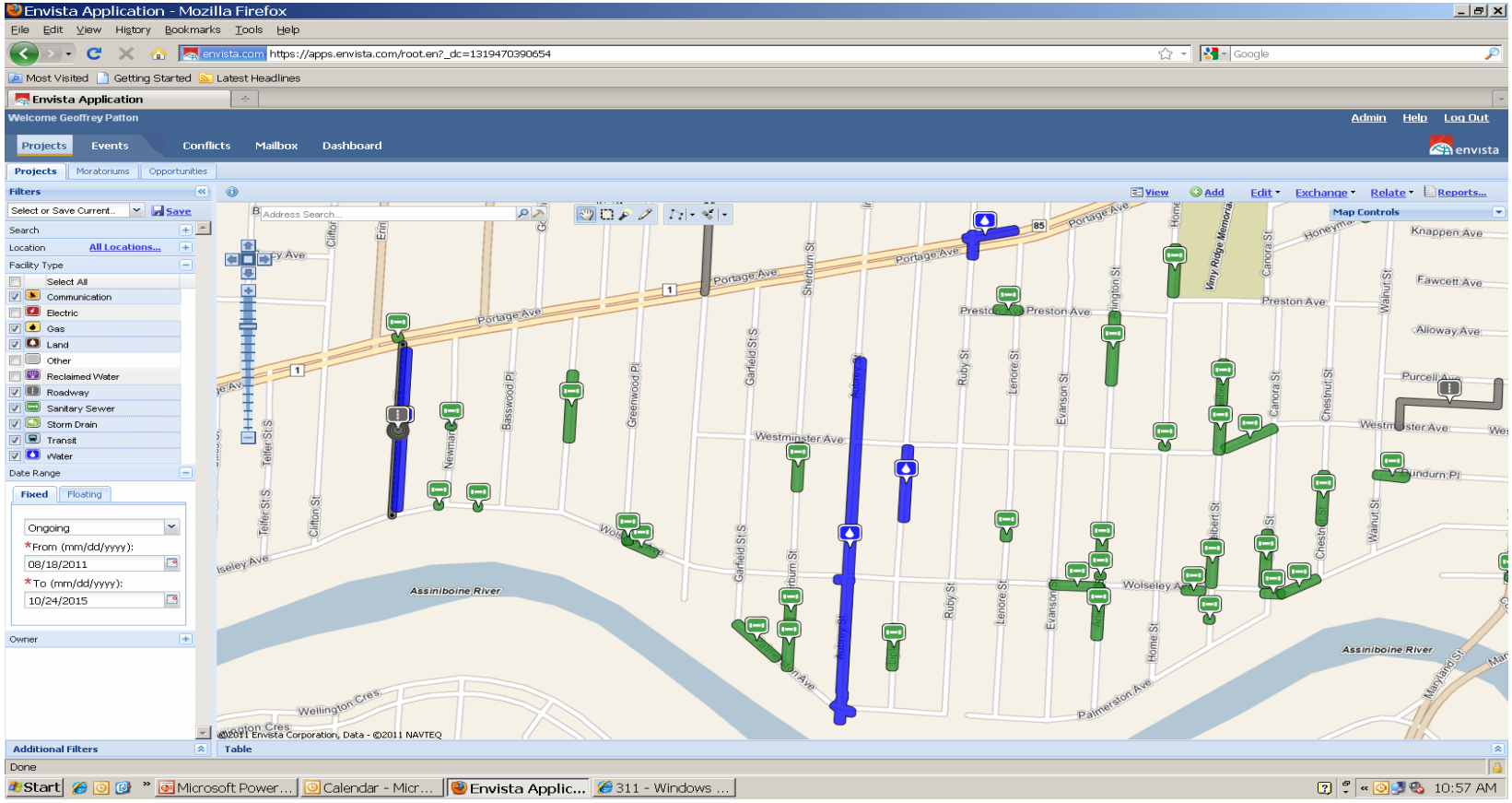
Winnipeg

Envista

- Web-based infrastructure coordination tool to identify project conflicts and opportunities
- Used by Underground Structures Committee for project location communication and coordination
- Use started in 2010
- www.envista.com

Winnipeg

Envista



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Benefits of Asset Management

- Provides better and consistent levels of service
- Reduces total cost of asset ownership
- Reduces and manages risk
- Improved communication/coordination
- Improves information transfer and knowledge retention

Winnipeg

Water Services
Disconnection / Reconnection

Wanda Burns, C.A.
Assistant Controller, Revenue

Winnipeg

Disconnection Policies

- Disconnection
  - turning off the water to a property to obtain payment for overdue water accounts failing all other attempts to collect
- Adding unpaid water and sewer charges to the property tax bill
  - authorized under the City of Winnipeg Charter Act (section 210 (4)(c)(iii))
- Property owners and tenants are treated equally
  - landlords advised of overdue balances
  - landlords required to approve a tenant's payment arrangements

Winnipeg

Disconnection Procedures

- A minimum of 70 days between the bill date and disconnection
  - reminder notice mailed 40 days after bill date
  - turn off notice mailed 60 days after bill date
  - contact by phone 60 - 70 days after bill date
- Review account and property information to identify any reason the water should not be disconnected

Winnipeg

Disconnection Procedures (cont'd)

- Disconnections
  - ensure customer has a same day payment option on the day after disconnection
- Following disconnection
  - revisit property if customer does not contact us 30 days after disconnection
  - advise health inspectors if property is occupied and residents require assistance

Winnipeg

Reconnection Policies

- Reconnect water service only after full payment, including a reconnection fee
- If customer is reconnected based on payment arrangements, water service is subject to immediate disconnection if arrangements are not kept

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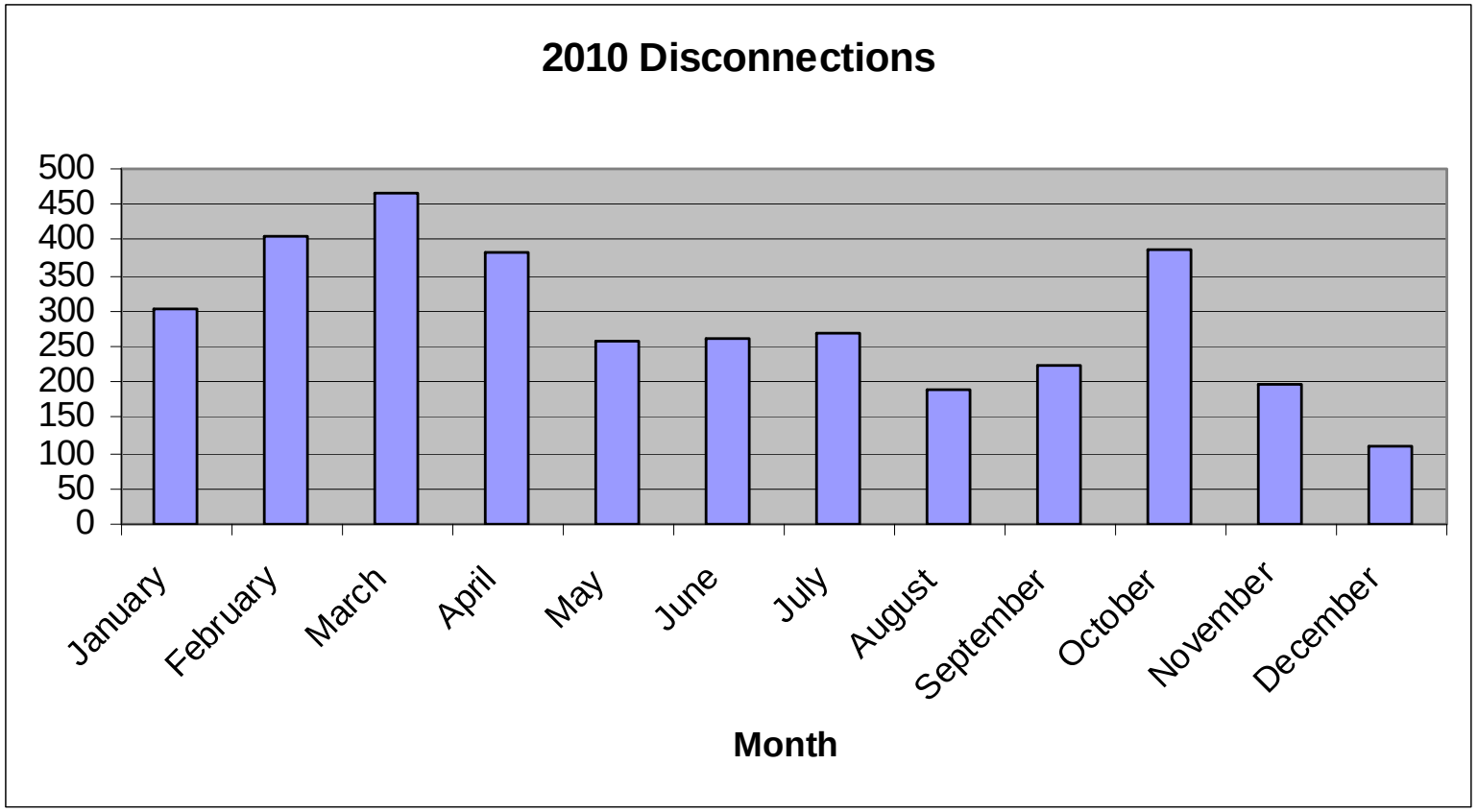
Disconnection Statistics



Water Conservation Promotion

Duane Griffin, P. Eng.
A/Water Planning & Project Delivery Branch Head

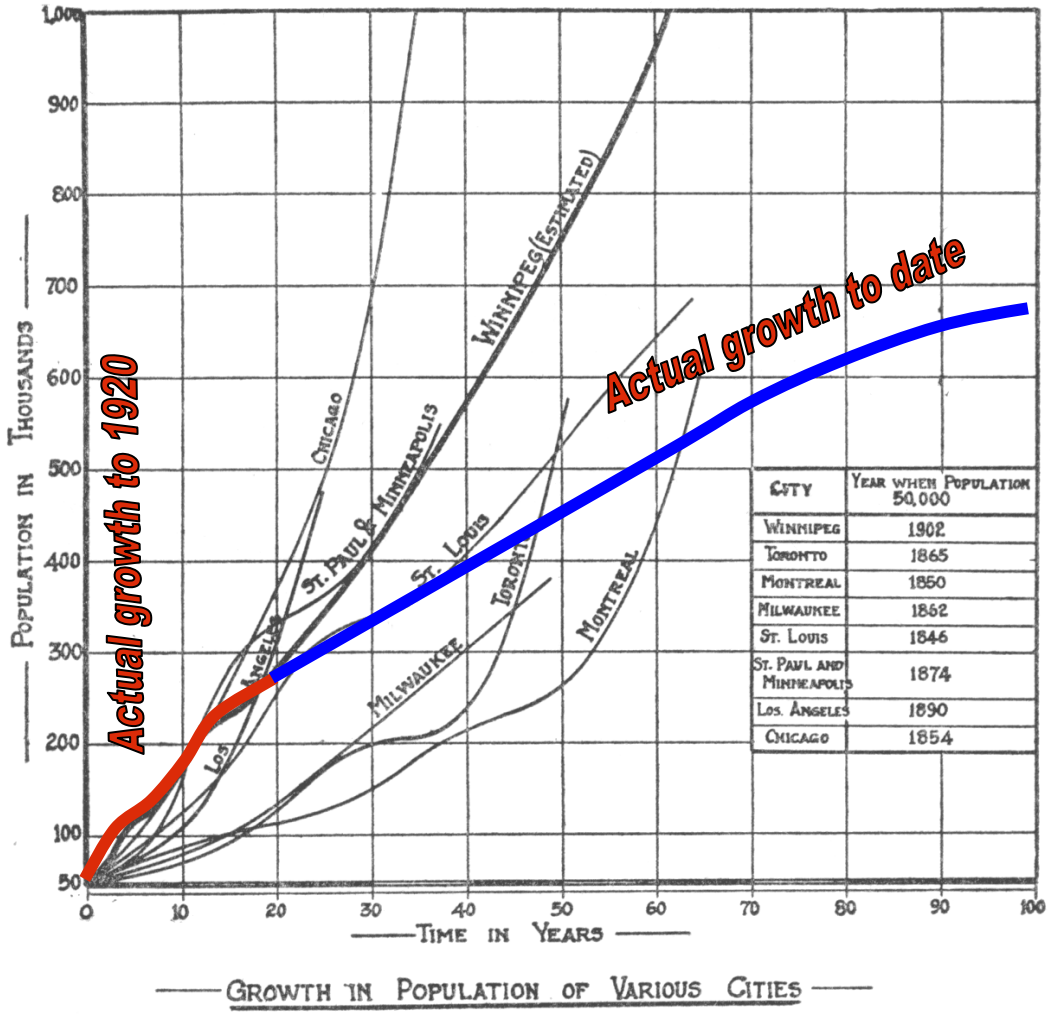
Winnipeg

Winnipeg was Booming at the Onset of this Century

"CHICAGO of the NORTH"

Population

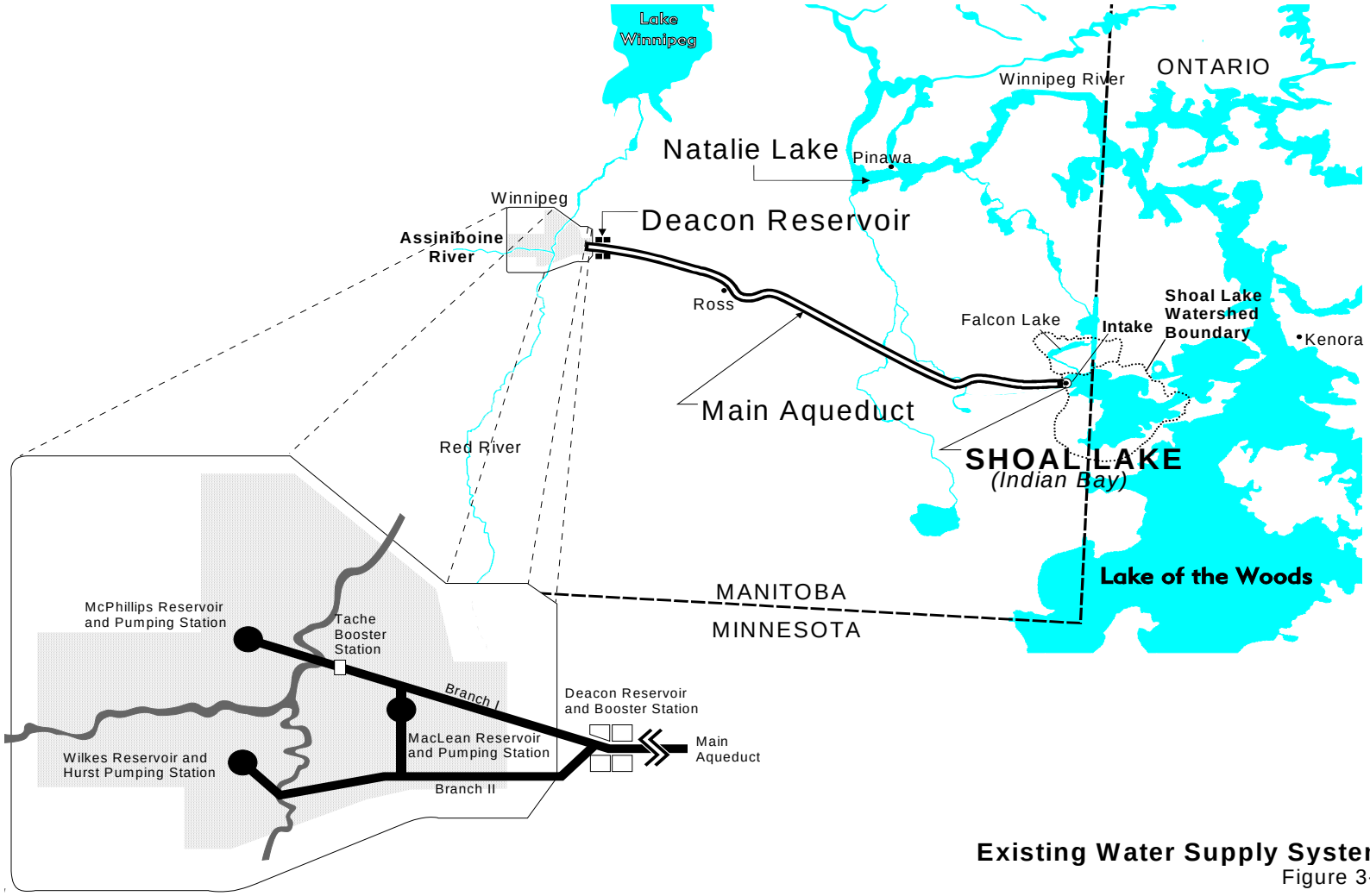
- 1874 - 1,869
- 1890 - 23,000
- 1902 - 50,000
- 1910 - 132,720
- 1913 - 215,000
- 1920 - 250,000



Growth in Population of Various Cities

Winnipeg

Our Water Supply



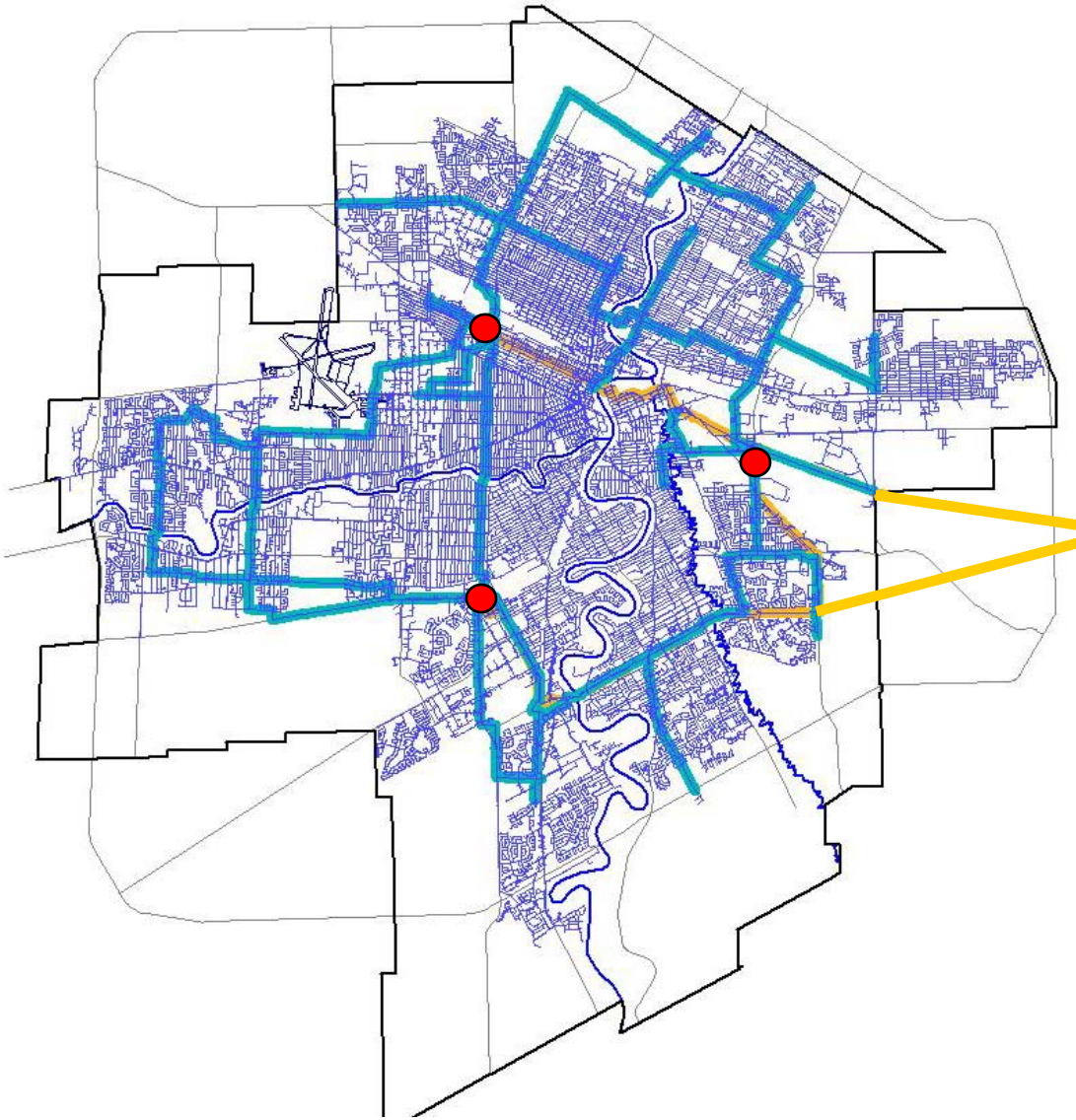
Existing Water Supply System
Figure 3-1

Winnipeg

Water Supply and Distribution

Aqueduct capacity 385 million litres per day

Water treatment plant capacity 400 million litres per day



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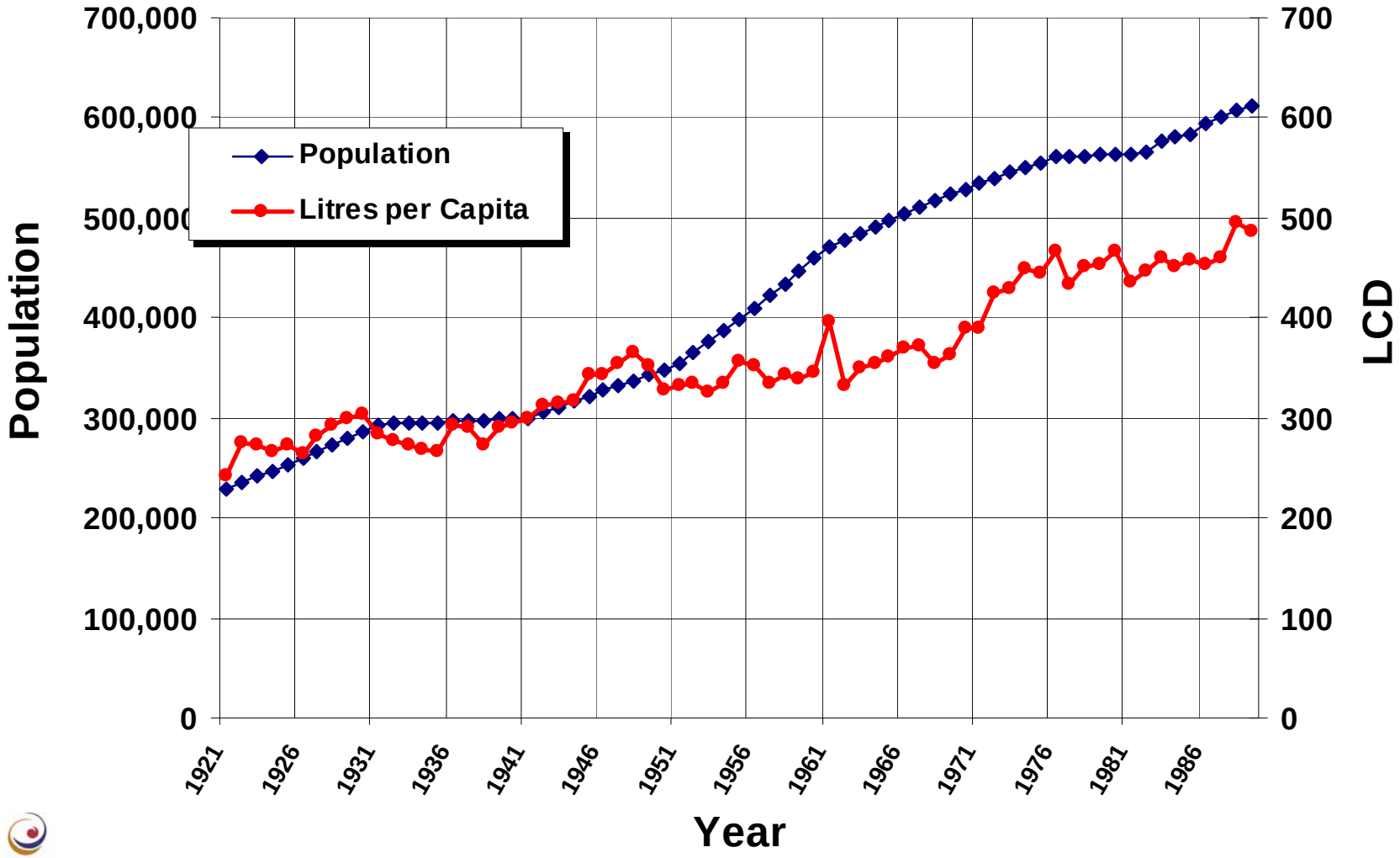
Winnipeg Historical Water Demand



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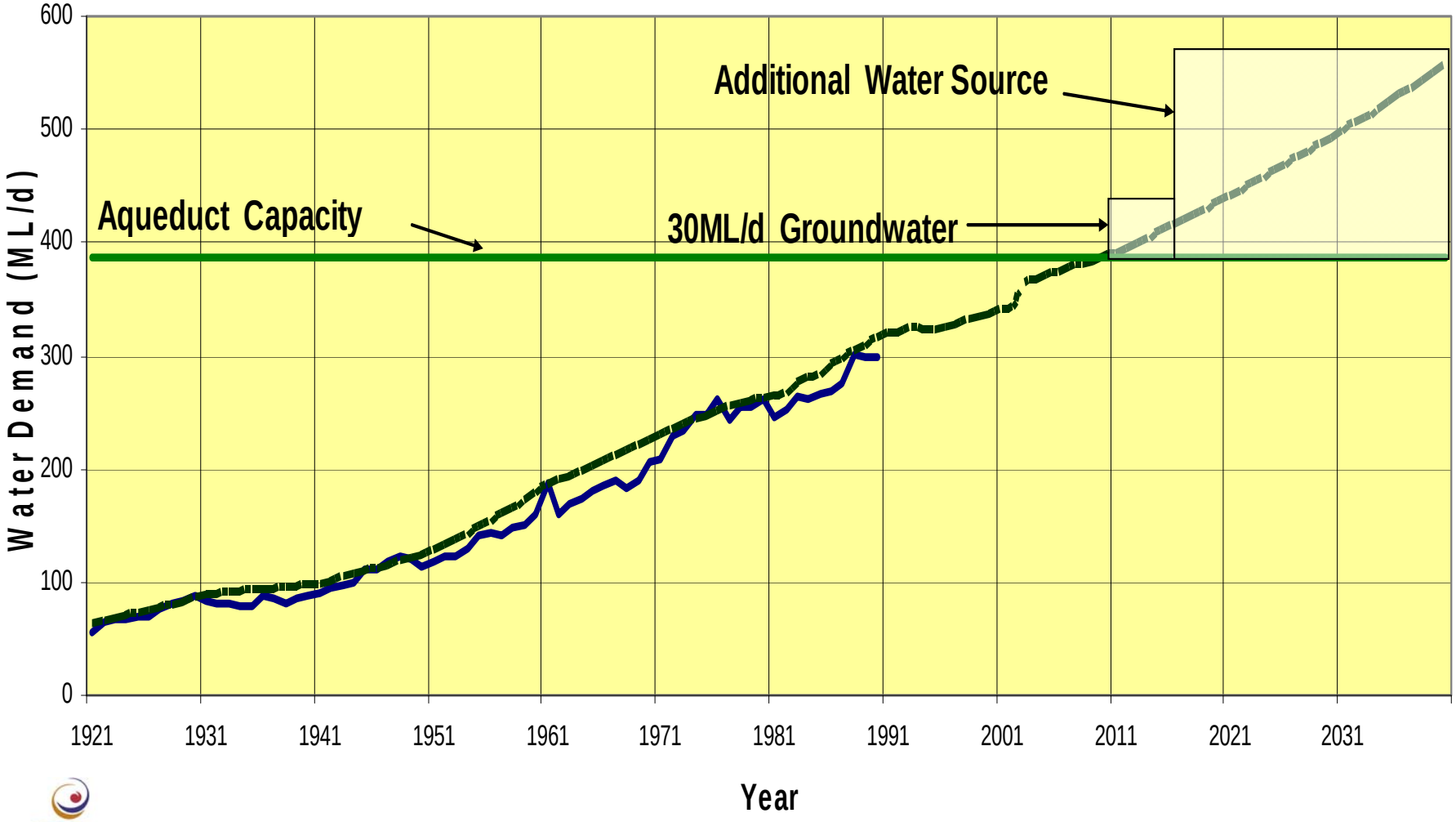
Previous Per Capita Projection



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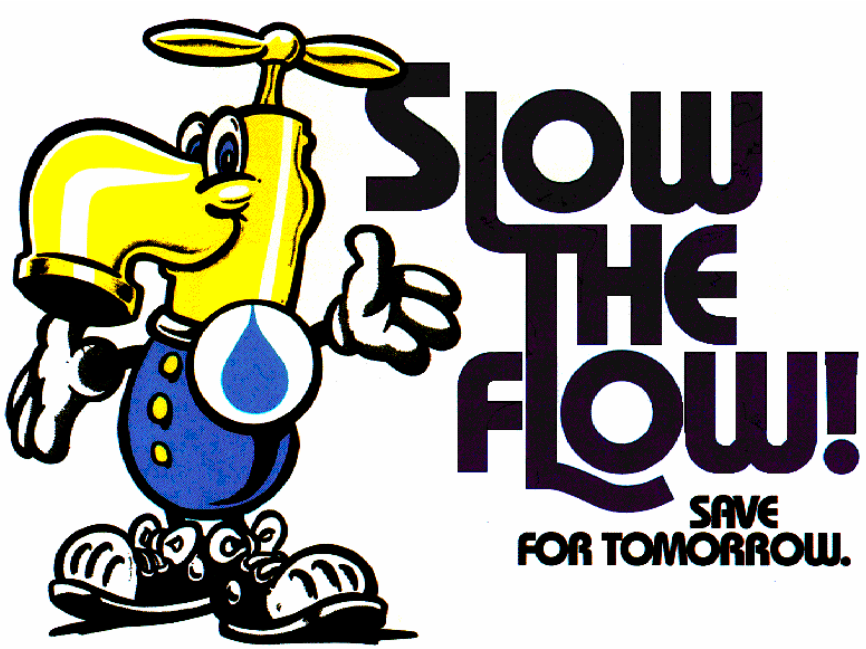
Water Conservation Program Mission

"To increase water use efficiency in Winnipeg without negatively impacting the quality of life enjoyed by Winnipeggers, to defer expansions to the water supply system."



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Water Conservation Research

- 1994: The City of Winnipeg Water Supply Plan
- 1994: The City of Winnipeg in partnership with FortWhyte Alive in Water Efficient Landscaping
- 1994: The City of Winnipeg Water Conservation Database and Waterfront Website
- 1994: The City of Winnipeg Water Conservation Pilot Retrofit Program and Report
- 1994: The City of Winnipeg Pilot Toilet Rebate Program

Winnipeg

Water Conservation Research

- 1995: Industrial Water Consumption Customer Survey
- 1996: The City of Winnipeg in partnership with FortWhyte Alive in the Youth Education Program
- 1997: The City of Winnipeg Water Demand Evaluation and Projection Report
- 2009: Residential Toilet Replacement Credit Program
  - 2009 - 981 credits approved
  - 2010 - 2722 credits approved
  - 2011 - 4166 credits (budget maximum)

Winnipeg

Industrial Water Consumption Customer Survey Trend Came True! (1995)

Of the 28 businesses surveyed:

- 95% noted the reason for conserving water is financial savings
- 80% indicated a willingness to share ideas with other industries either through a group forum or through written correspondence
- 80% practice energy conservation and/or recycling
- 77% expect their water consumption to decrease or remain the same in the next 5 – 10 years
- 70% have a committee or individual which/who is responsible for implemented changes in the workplace
- 70% practice improvement initiatives
- 55% practice water conservation
- 50% have conducted a water audit

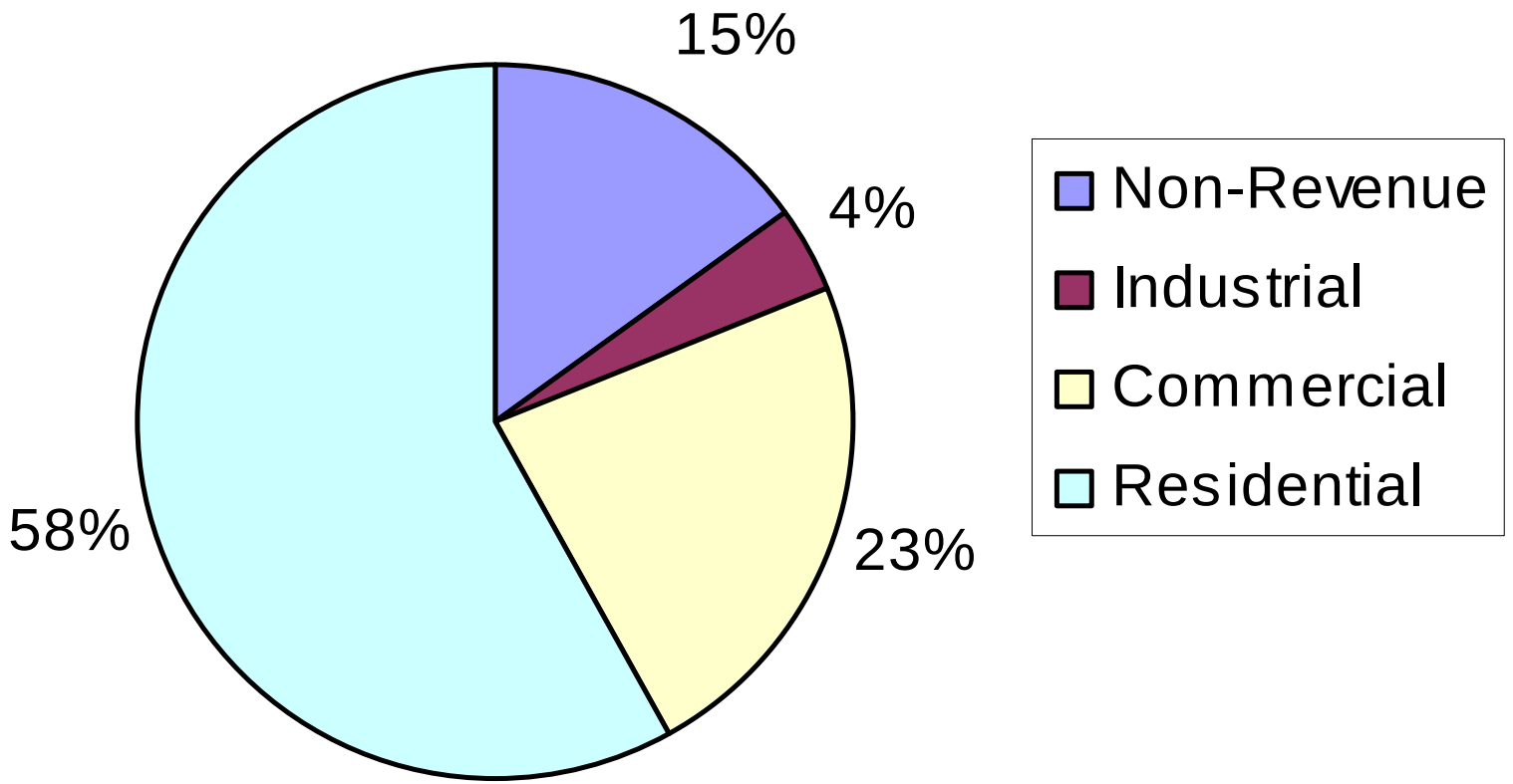
Winnipeg

Slow the Flow Youth Education (1996)

- Partnered with FortWhyte Alive to deliver the Slow the Flow Water Education Program
- Program goals are:
  - develop a general awareness of water conservation
  - create life-long water conservationists – the decision makers of the future
  - enhance existing core subjects with relevant lifestyle information

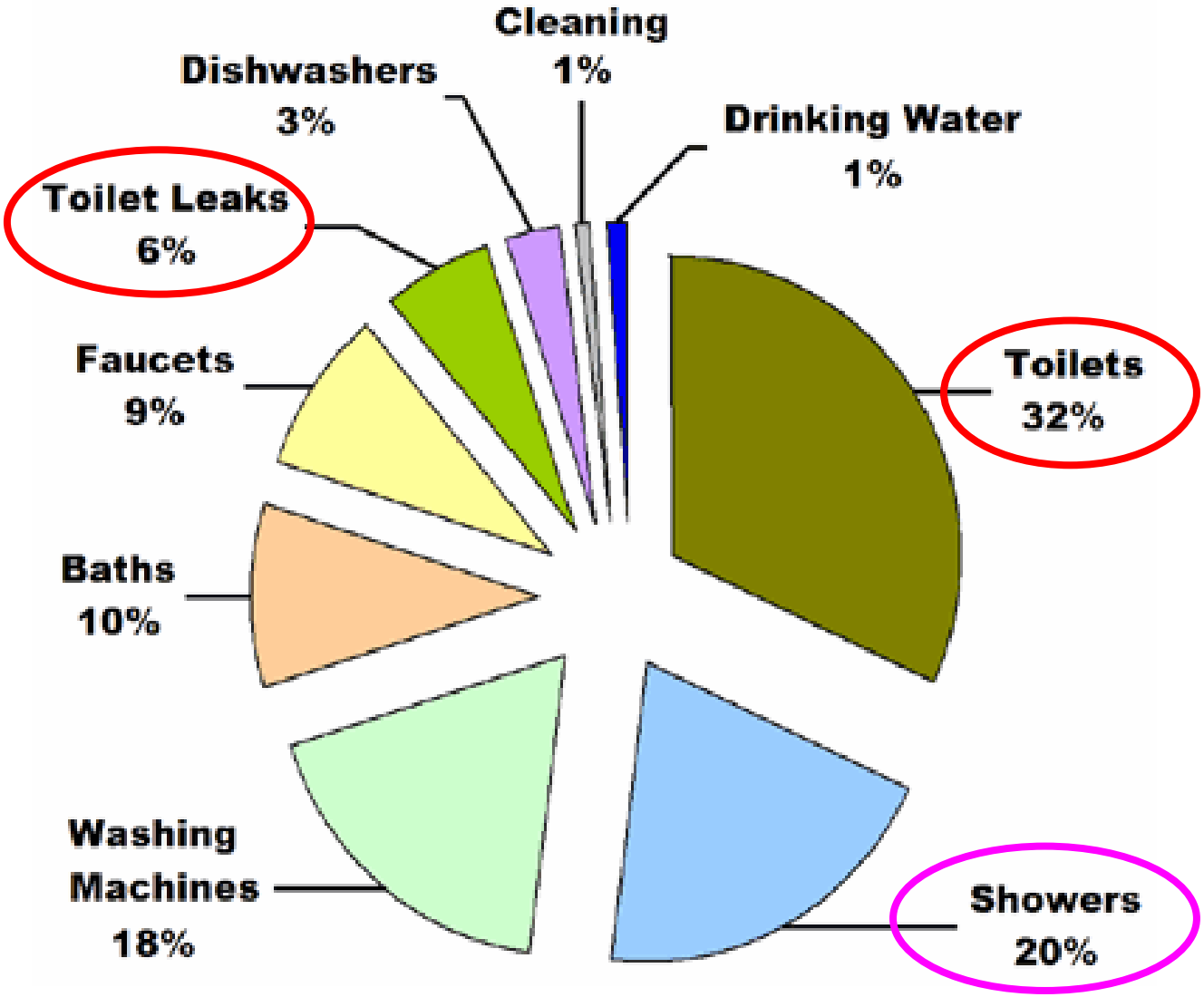
Winnipeg

City of Winnipeg - Water Usage by User Group (2010)



Winnipeg

Winnipeg residential indoor water use



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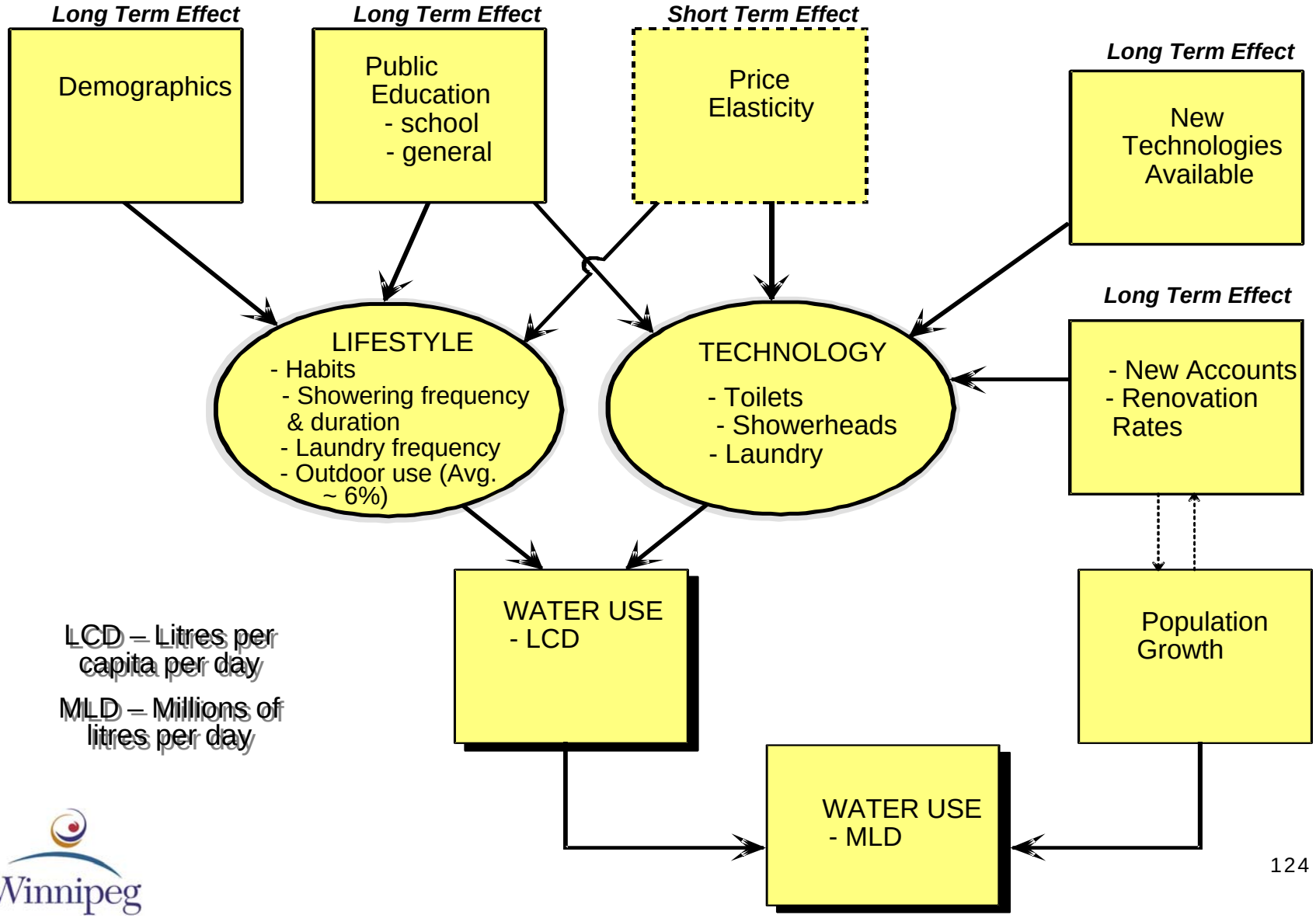
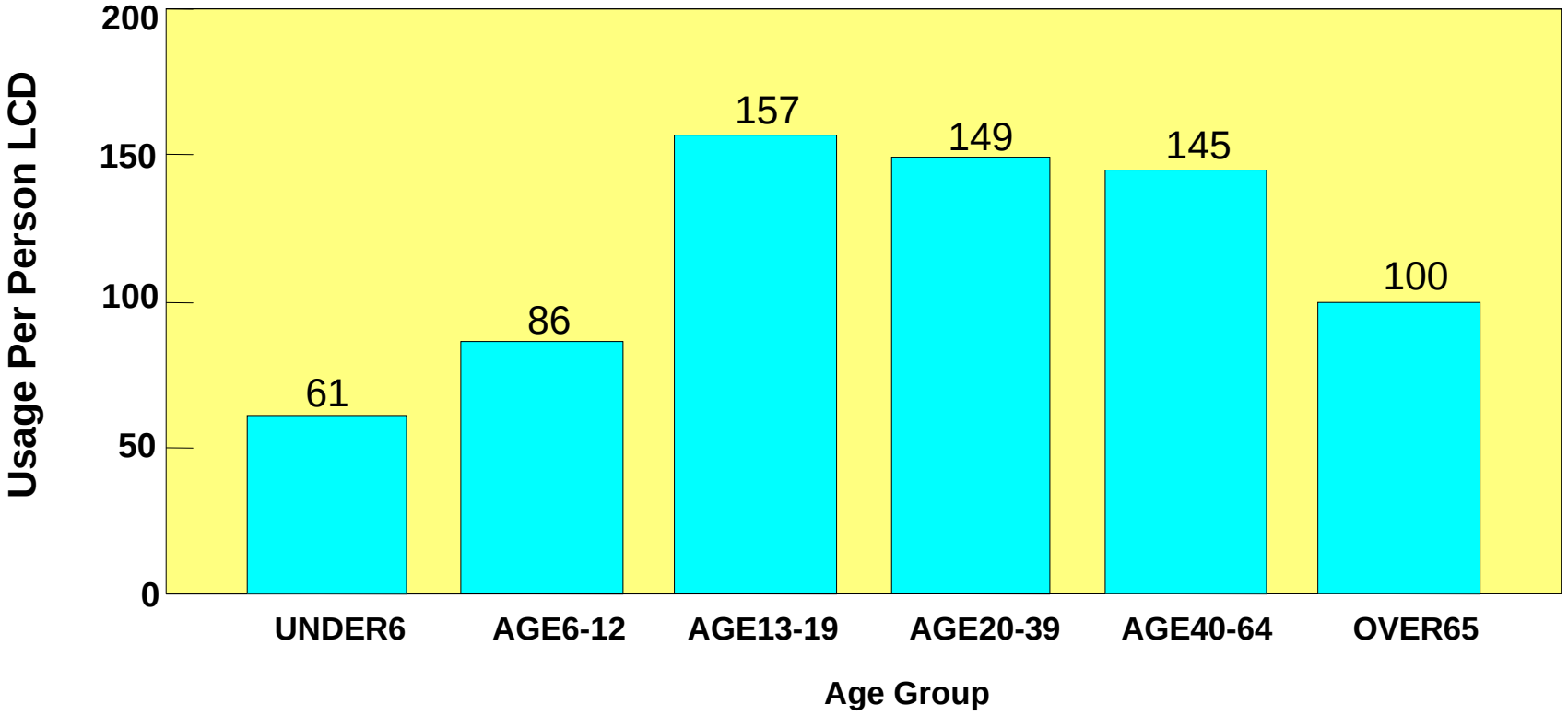
Factors Affecting Residential Water Use Projections



LCD – Litres per capita per day

MLD – Millions of litres per day

Usage Per Person in Age Group



Base Usage Per House = 221 Litres/Home/Day

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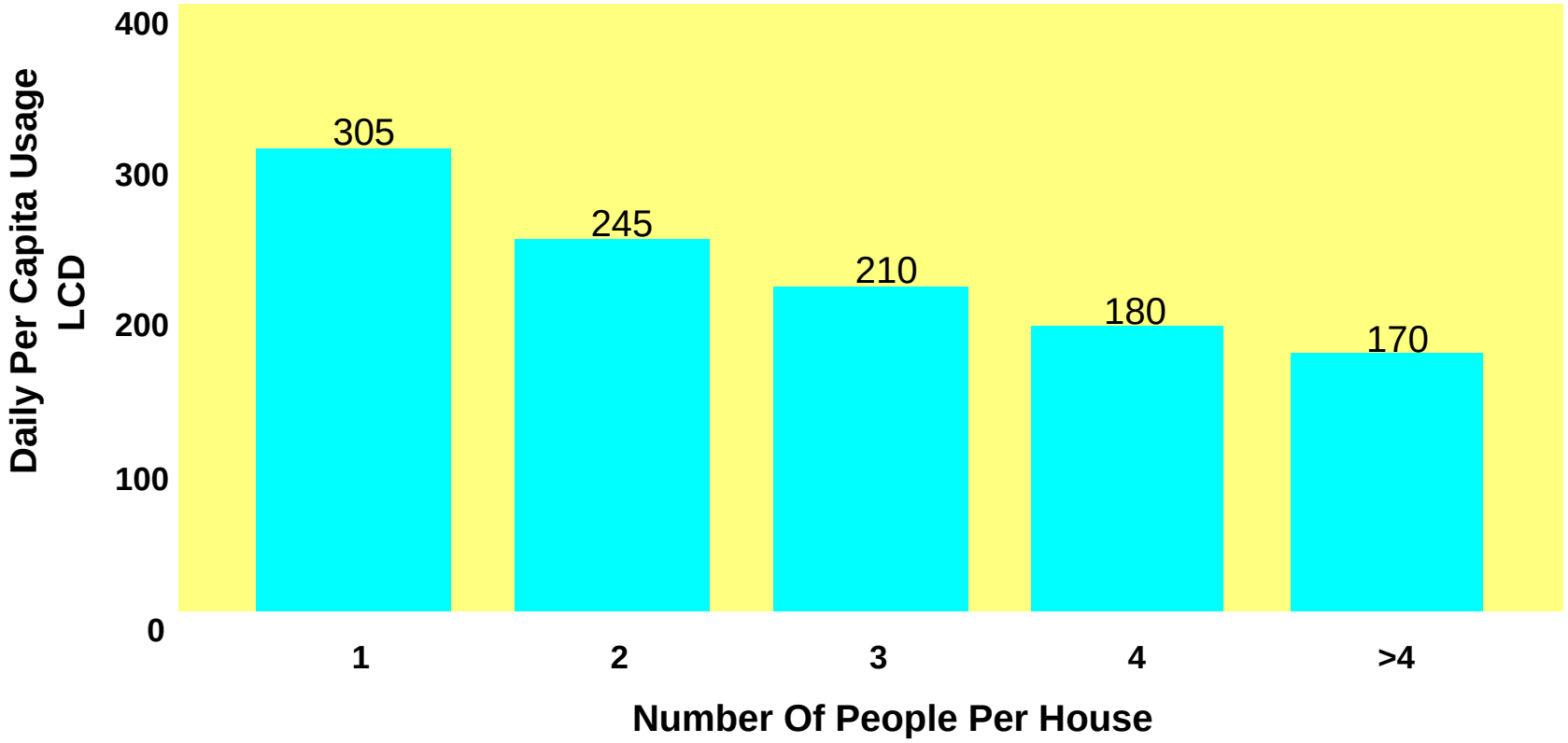
Per Capita Usage with Varying People



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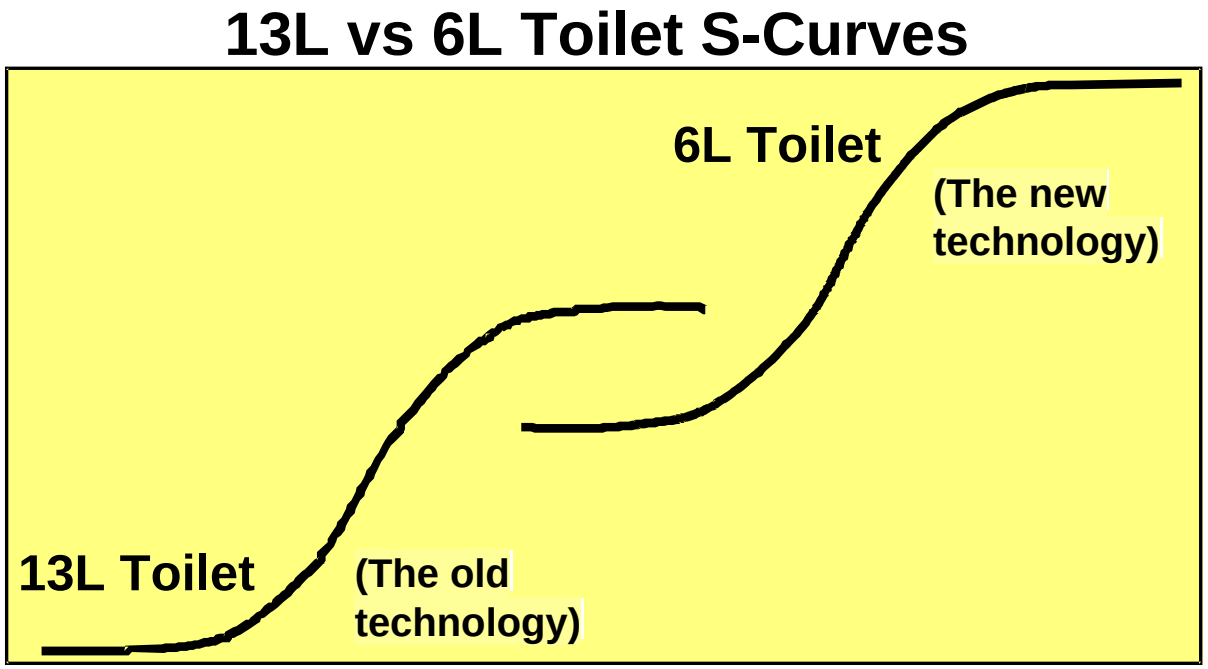
Market Change due to Technology Acceptance



Overlapping S-Curves of 13L and 6L toilets (c)

Source: Harry S. Dent Jr. The Great Boom Ahead 1993

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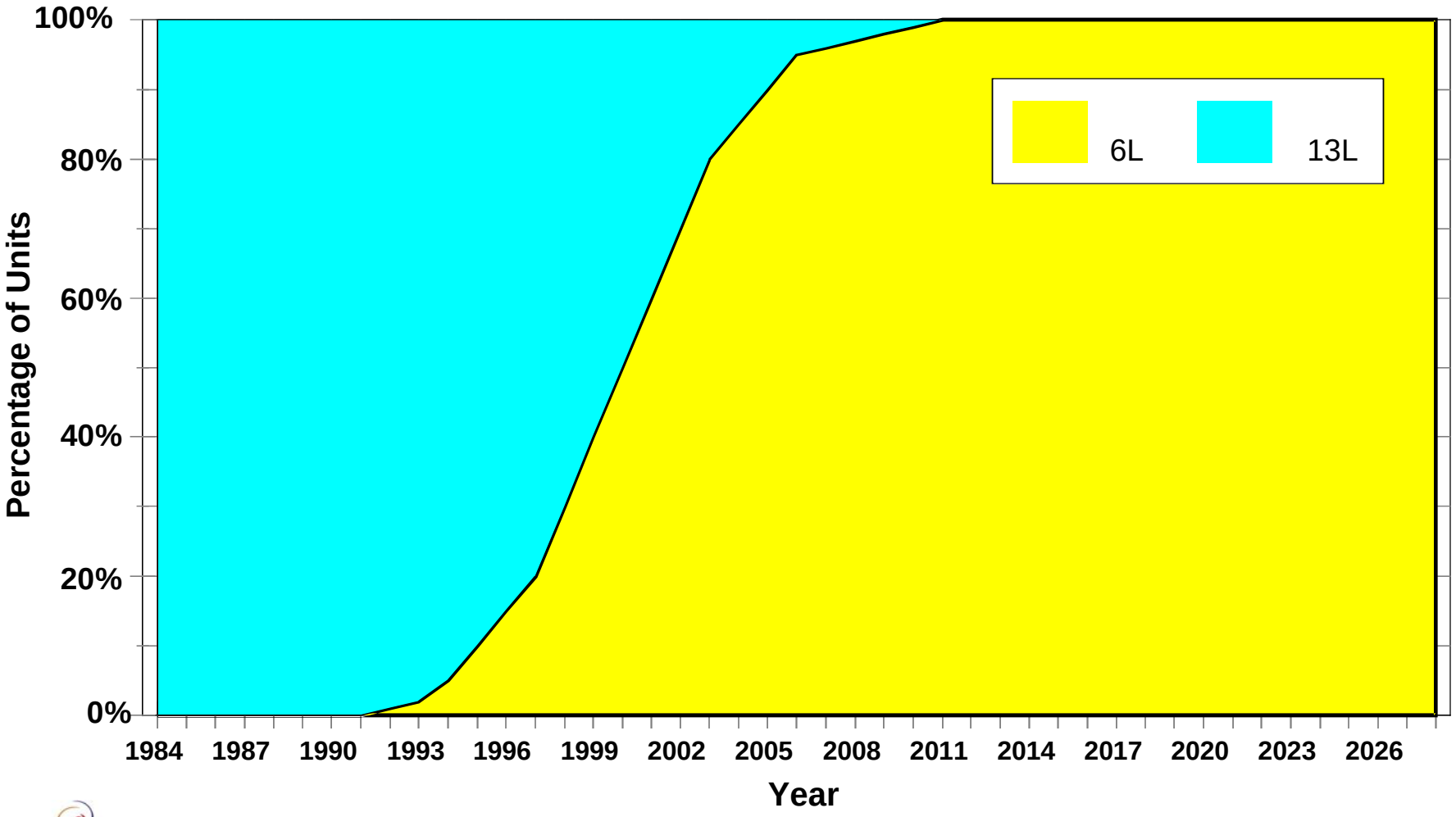
Toilet Sales By Type in Winnipeg



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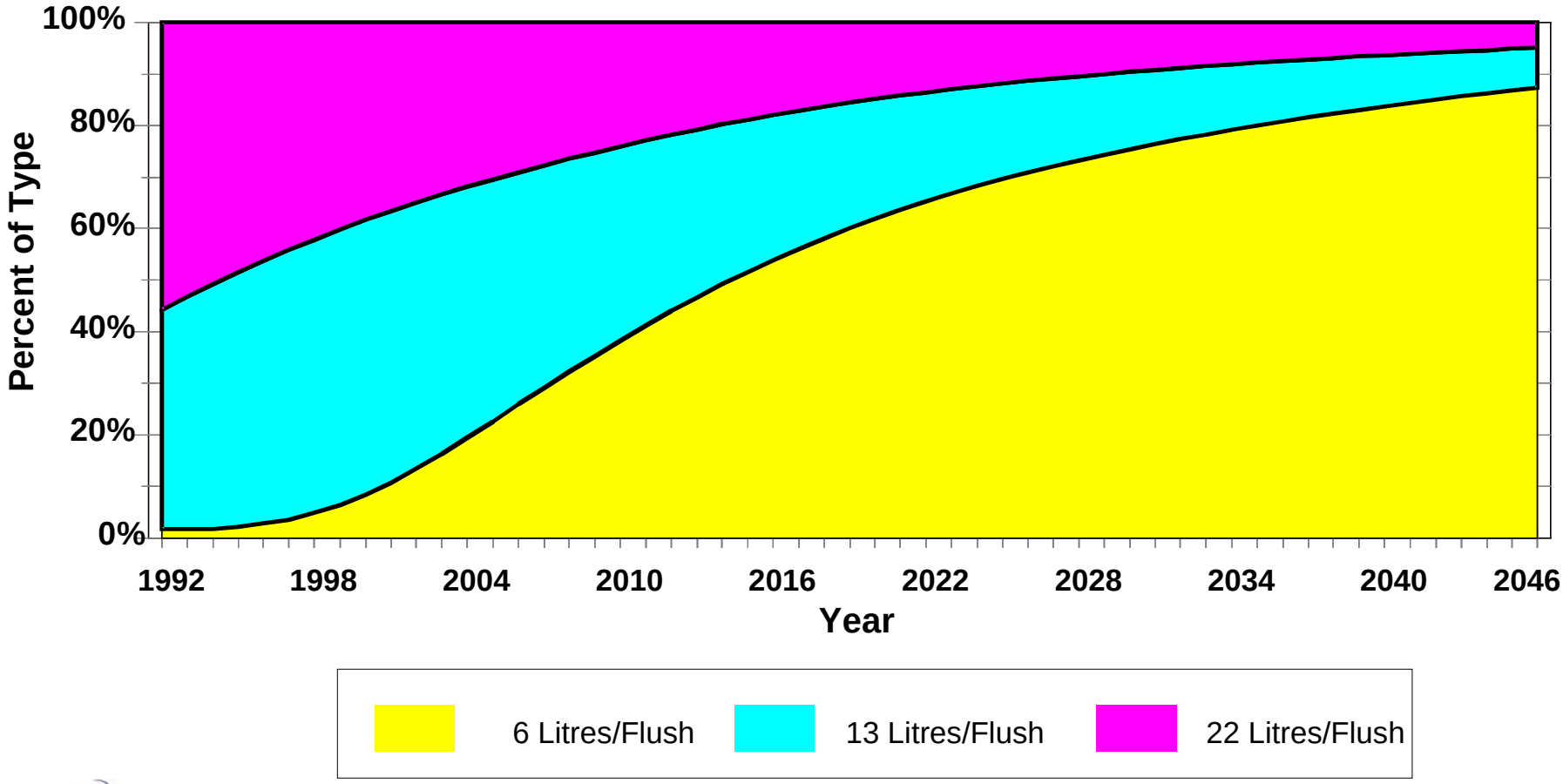
Transition in Toilets Used

(4% Renovation Rate)



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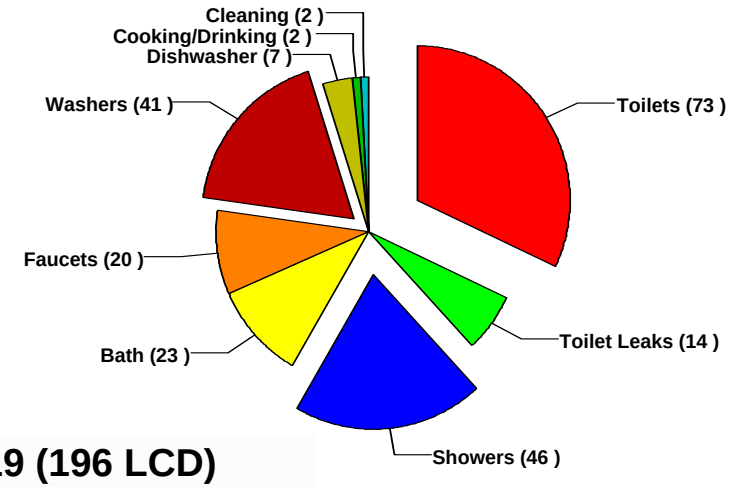
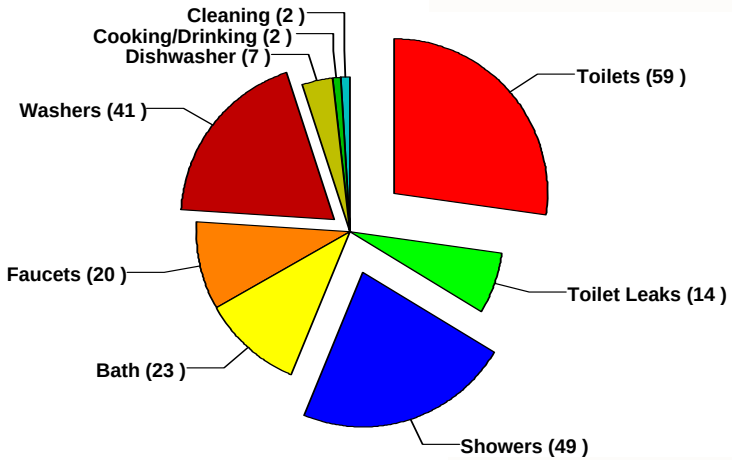
Residential Indoor Water Use

Effects of Technology Change

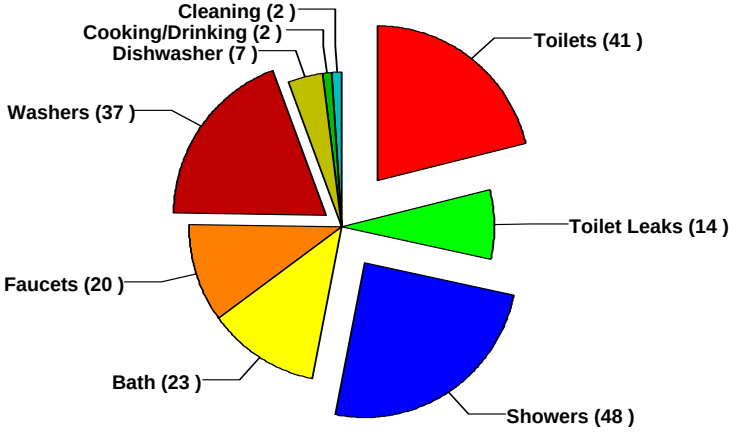
1992 (228 LCD)



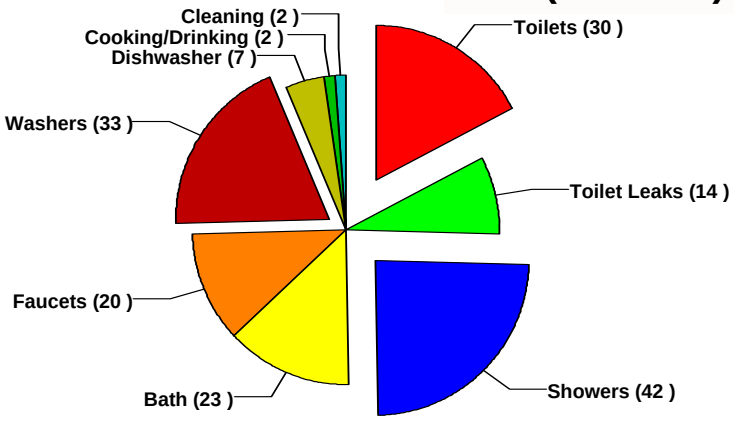
2004 (217 LCD)



2019 (196 LCD)



2046 (174 LCD)



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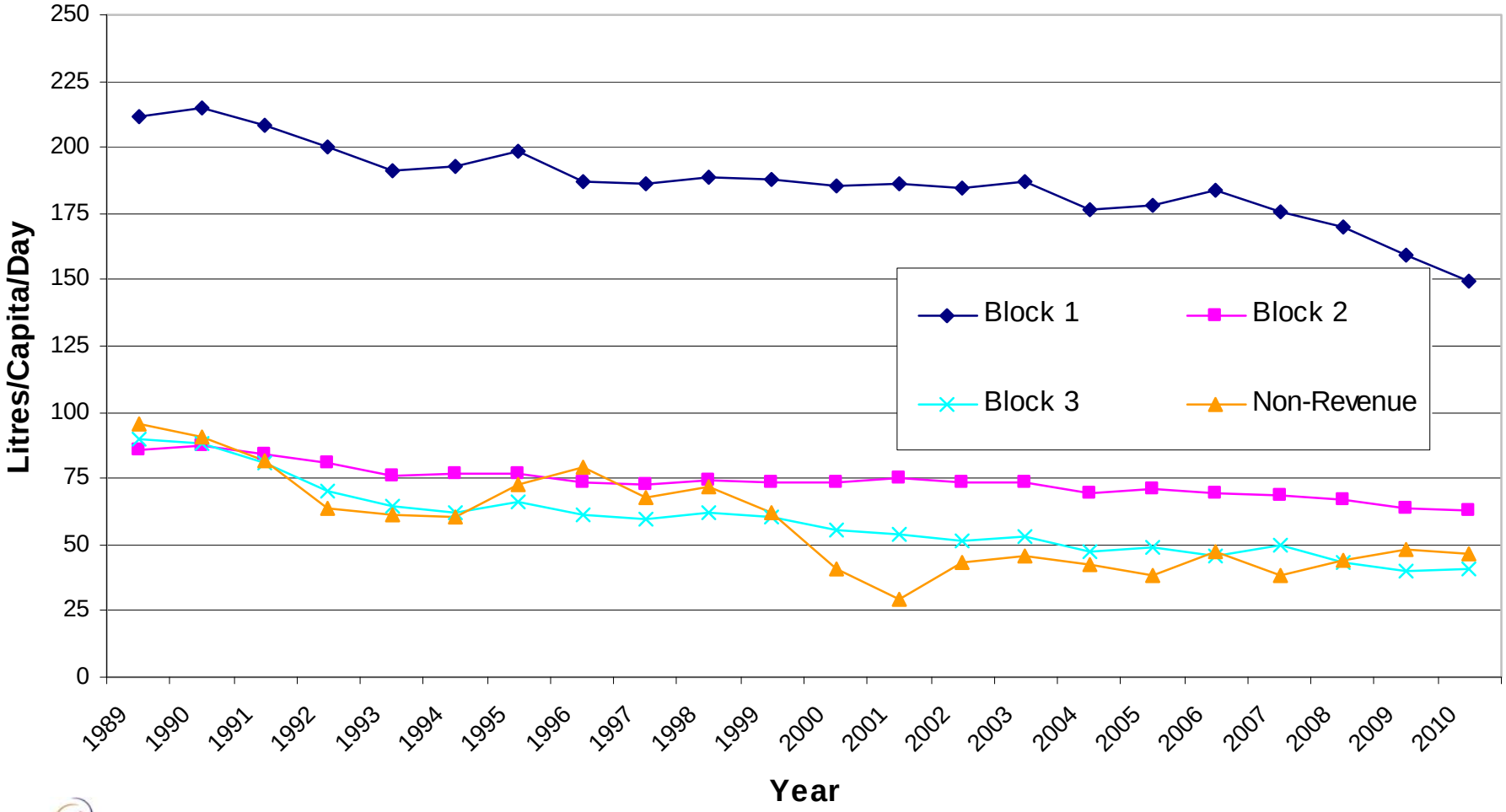
Billed Water Consumption By Block (1989 - 2010)



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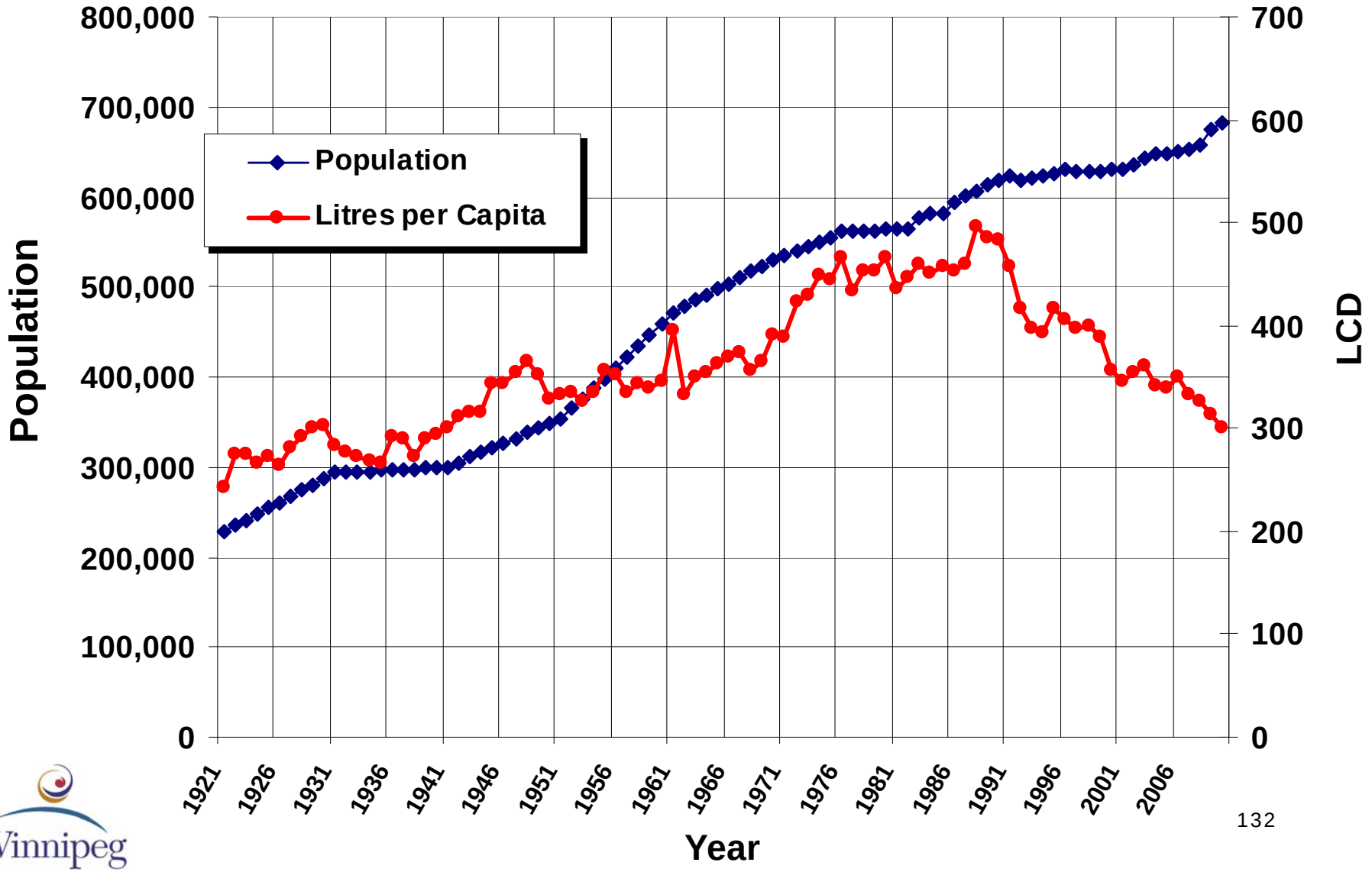
Winnipeg Historical Water Demand



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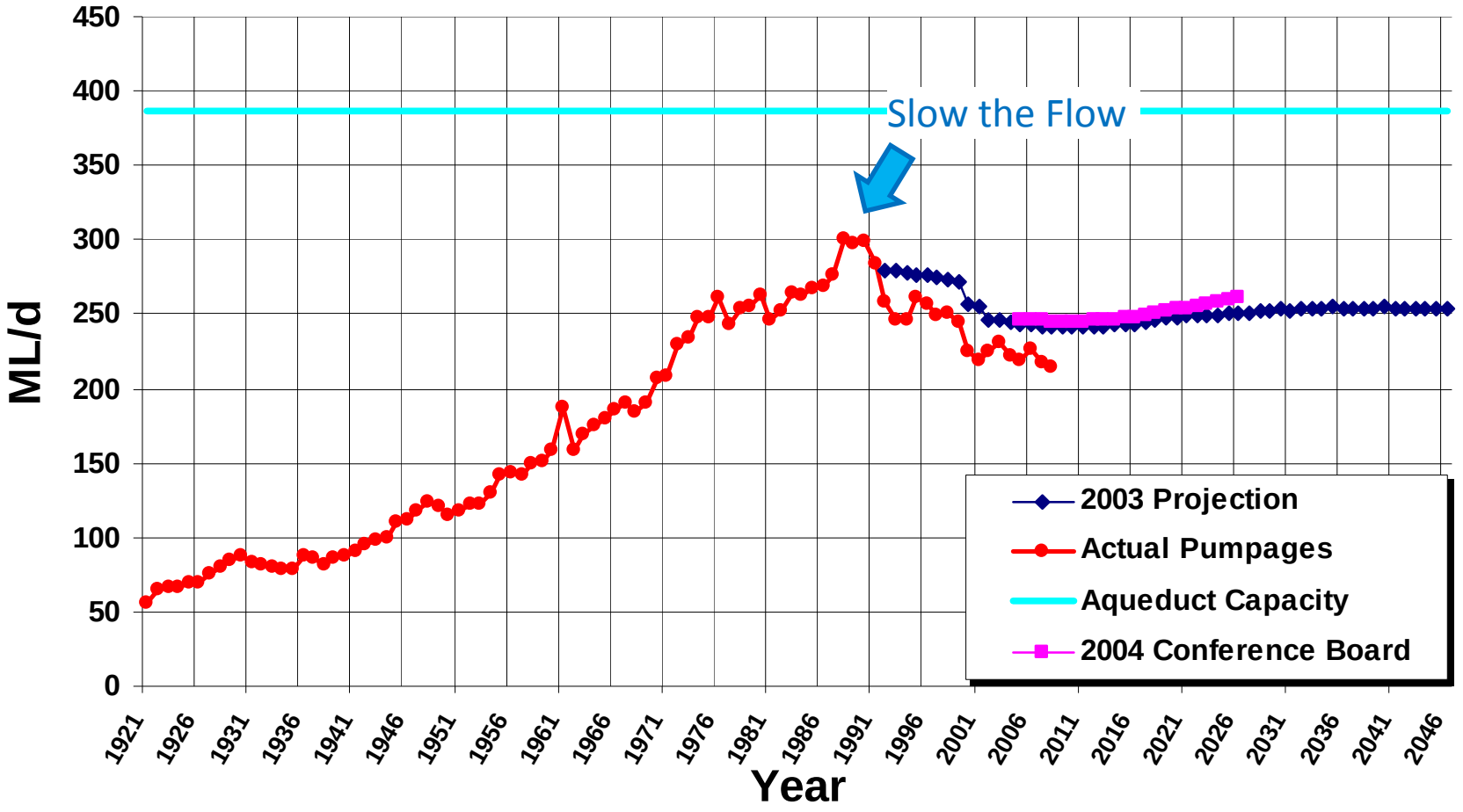
Water Demand Projections



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What Does This Mean?

- Residential, commercial and industrial customers using less water today than in 1990
- Trend is toward more water efficient fixtures
- Don’t require another aqueduct
- Water treatment plant capacity has been reduced
- Expansion of in-town reservoirs have been deferred

Winnipeg

Agreements with Neighbouring Municipalities for City Services

Moira Geer, CA

Winnipeg

Rural Municipality of East St. Paul

- For City water, sewer and land drainage services
- Since 1976
- Frontage levies and hydrant charged to municipality
- Water and sewer services billed directly to property owners

Winnipeg

Service-Sharing with Other Neighbouring Municipalities

- On December 14, 2011, City Council:
  - approved Basic Terms for Service Sharing Agreements for the Provision of Water and Sewer Services to Neighbouring Municipalities
  - authorized the City's Chief Administrative Officer to negotiate and finalize service sharing agreement with the Municipality of West St. Paul
  - passed a resolution requiring all future negotiated service sharing agreements or amended service sharing agreements to be approved by City Council