

CAPITAL FUND - 2013 Capital Projects

	2011 Budget (\$000's)	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
General Government							
Administration							
Communication and Outreach Plan	40	38	40	40	40	40	40
Stores - Shelving	-	-	-	-	12	-	-
	40	38	40	40	52	40	40
Community Capacity Building Fund (CCBF)							
911 - Emergency Services	-	13	-	-	-	-	-
	-	13	-	-	-	-	-

CAPITAL FUND - 2013 Capital Projects

	2011 Budget (\$000's)	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
Information Technology							
Network Upgrades	25	26	25	28	25	25	25
GIS Enhancements	50	62	50	50	50	50	50
Server Replacement	25	25	25	25	25	25	25
Mobile Inspections	20	13	-	-	-	-	-
Phone System Replacement	-	6	-	-	-	-	-
Online Permit Tracking	-	-	-	20	-	-	-
Desktop Telephone Replacement	-	-	-	-	10	-	-
Satellite Imagery	-	-	-	-	75	-	85
Communication Infrastructure	481	433	150	1,411	225	25	25
Payment Card Industry Compliance	50	62	-	-	-	-	-
Security Cameras	50	48	20	20	20	20	20
Voice Radio Support Equipment	-	-	-	75	-	-	-
Secondary Site & Data Replication	20	20	20	20	50	20	10
Laptops For Patrol Vehicles	35	38	-	-	-	-	-
Library Public Access Expansion / Stations	25	6	-	15	-	-	-
MED In-Car Cameras	35	35	-	-	-	40	-
MED Web Applications	20	12	-	8	-	-	-
Website Enhancement	15	11	15	15	15	15	15
Website Redesign	-	-	-	-	35	-	-
Server Room Upgrades	-	-	-	-	25	-	-
Citrix Expansion	-	1	-	-	-	-	-
Exchange & Office 2007	-	-	-	10	-	-	-
Asset Management	-	46	50	50	-	-	-
Core Switch Upgrades	-	-	-	-	-	25	35
Core Router Updates	20	24	-	-	-	-	-

(cont'd...)



CAPITAL FUND - 2013 Capital Projects

	2011 Budget (\$000's)	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
Information Technology (cont'd)							
Citizen Request Management System	75	-	-	-	-	-	-
Webcasting	20	-	-	-	-	-	-
Email Management	40	-	-	-	-	-	-
Inventory Bar Coding	25	-	-	25	-	-	-
Virtualization	-	-	40	40	40	40	30
Layer Three Access Switches	-	-	20	20	-	-	-
One- Stop Shopping	-	-	20	20	200	25	-
Wireless Authentication/ Authorization	-	-	25	25	-	-	-
Document Management	-	-	-	-	25	175	-
Mapping	-	-	-	-	27	20	-
Key Fobs	-	-	-	-	150	-	-
Wireless Standardization	-	-	-	-	20	-	-
Meeting Automation	-	-	100	-	-	-	-
Development and Building Permit Automation	-	-	75	75	50	-	-
Human Resources System Automation	-	-	100	-	-	-	-
Status Keeping Software	-	-	35	35	-	-	-
Automatic Vehicle Location	-	-	-	-	325	-	-
Electronic Signs	-	-	-	-	120	-	-
Smart Boards	-	-	-	-	25	-	-
GeoWare Standardization	-	-	-	-	20	-	-
OptiView Tablet	-	-	-	-	25	-	-
Multifunction Devices and Printers	-	-	-	-	50	50	50
Social Media	-	-	-	-	15	15	15
Automated Ticket Writer	-	-	-	-	-	40	-
Digital Signatures	-	-	-	-	-	30	-
Client Access Management	-	-	-	-	-	25	-
	1,031	865	770	1,987	1,647	665	385

CAPITAL FUND - 2013 Capital Projects

		2013 Budget Recommended (\$000s)	Formula Funding (\$000s)	IT Reserve (\$000s)	MACA Capital Grant (\$000s)
General Government	Page #				
Communication and Outreach Plan	205	40	40		
Stores - Shelving	207	12	12		
		52	52	-	-
Information Technology					
Network Upgrades	208	25		25	
GIS Enhancements	209	50		50	
Server Replacement	210	25		25	
Desktop Telephone Replacement	211	10		10	
Satellite Imagery	212	75			75
Communication Infrastructure	213	225	225		
Security Cameras	214	20		20	
Secondary Site & Data Replication	215	50		50	
Website Enhancements	216	15		15	
Website Redesign	217	35		35	
Server Room Upgrades	218	25		25	
Virtualization	219	40		40	
One-Stop Shopping	220	200			200
Document Management	222	25		25	
Mapping	223	27		27	
Key Fobs	224	150			150
Wireless Standardization	225	20		20	
Development and Building Permit Automation	226	50			50
Automatic Vehicle Location	227	325			325
Electronic Signs	228	120			120
Smart Boards	229	25	25		
GeoWare Standardization	230	20	20		
OptiView Tablet	231	25	25		
Multifunction Devices and Printers	234	50	50		
Social Media	235	15	15		
		1,647	360	367	920
Subtotal		1,699	412	367	920



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT COMMUNICATIONS AND ECONOMIC DEVELOPMENT

DIVISION ECONOMIC DEVELOPMENT

PROJECT Communications & Outreach Plan

COST

2013	\$40,000
2014	\$40,000
2015	\$40,000

STATUS Ongoing

DESCRIPTION This program is designed to respond to opportunities for growth in the tourism development and marketing sectors. Addressing the lack of tourism product and the provision of tourism support services is an NWT priority.

Whenever possible, this program utilizes partnerships and shared funding arrangements with NWT Tourism, Northern Frontier Visitors Association, Government of the Northwest Territories, federal government, and representative private sector groups to advance tourism initiatives.

This funding has been in place on an ongoing basis since 2006.

Specific opportunities for 2013 and beyond include, but are not limited to:

As a priority, the department will engage the local creative talent in the marketing and re-branding of the City of Yellowknife. The Department will prioritize local and regional opportunities for working with groups, agencies and individuals in pursuing this new approach. This includes local, national and international marketing through new media. The Department will be undertaking a review of all current marketing initiatives and develop a new approach to marketing and engagement.

Specifically, the department will develop actions regarding:

- Media engagement
- Advertising
- Promotional items
- Conference sponsorships
- Community and neighbourhood engagement
- Committee structures and task forces
- Branding
- Review of all publications (tourism and economic development)

In addition to this new strategy and engagement opportunity, the City will continue to review and, where appropriate, engage in:

Celebration of the Deh Cho Travel Connection – Diamonds in the Rough Passport Program’s sixth anniversary. The program is a scenic touring route that links the Alaska, Mackenzie and Liard highways, with side trips through Fort Smith, Wrigley and Yellowknife. Visitors with a fully stamped passport are eligible to win a Government Certified Canadian Diamond™ that was mined, cut and polished in the NWT.

Working with NWT Tourism and the private sector to develop marketing materials and partnerships for showcasing Yellowknife, specifically, as a destination.

Participation in research and promotional activities related to Canadian capital cities’ involvement in Canada 150: Connecting Canadians and Celebrating Canada. The celebration of Canada’s 150th birthday takes place in 2017. The Canadian Capital Cities Organization (CCCO) is considering promotional opportunities for capital cities leading up to and including the 2017 celebration.

Annual purchase of street banners. Banner themes include Yellowknife icons, National Capital Commission

and CCCO celebrations. These banners are used for festivals and special events, and typically displayed in the City Hall/Somba K'e Civic Plaza area, and along Wiley Road, Franklin Avenue and Old Airport Road. More suitable placement of banners and potential purchase of banners by individuals will be reviewed during this budget year.

Ongoing project oriented partnership funding to upgrade, repair and enhance city focused/themed displays and messages at the Northern Frontier Visitors Centre (exterior and interior).

This project works toward City Council's Goals #2¹ and #3².

O&M IMPACT Minor – Will be addressed with existing resources.

¹ Enhancing Our Built Environment

² Building Social Capital (Community Engagement)



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION PROCUREMENT

PROJECT Shelving

COST \$12,000

STATUS New

PHASE 1 of 1

DESCRIPTION New shelving is requested in the Stores/Warehouse area. Requests to add items to inventory have risen and are expected to increase in the future. The additional shelving requested will ensure that there is adequate shelving space available for all user departments now and into the future, without requiring more building space than is currently available in the City warehouse.

This project works toward City Council's Goal #2.3¹.

O&M IMPACT None.

¹ Develop smart and sustainable approaches to energy, water and sewer, waste management, and building systems.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Network Upgrades

COST
 2013 \$25,000
 2014 \$25,000
 2015 \$25,000

STATUS Replacement

PHASE Ongoing

DESCRIPTION The City's Information Technology infrastructure is essential for effective service delivery, and the network that provides connectivity among its diverse computers, servers, printers, cameras, and mobile devices is vital to the City's operations.

As employee and stakeholder demands and reliance on the network continue to grow, it is critical that network capacity and reliability keep pace through regular ongoing enhancements. This incremental approach has proven highly effective in recent years as it minimizes service disruptions, enables the exploitation of technological improvements, and maximizes the City's return on its investments.

This initiative will continue the organization's ongoing network enhancements and improve redundancy, security, and capacity, with a specific emphasis on integrated monitoring and reporting to provide proactive and predictive management. This enhanced foundation will protect the City's existing network availability and ensure the network is well-situated to meet current and future demands.

2013 work will complete the standardization of gateway network devices at all facilities, giving each facility a layer -3 network separation to provide improved security, network efficiency and speed of access to local resources. All sites will be upgraded with power-over-ethernet (POE) capability, which provides great flexibility and scalability for installing new devices such as security cameras, card readers and other POE-capable devices. All sites will also be brought up to consistent standards for secure device enclosures, cable management, and documentation.

2014 will see the acquisition of network devices for anticipated network expansion and improvements for sites such as the new Pumphouse, the Library, and the Fieldhouse. As well, the network device refresh cycle will continue and units installed in 2007 and 2008 will be upgraded.

2015 will continue the device refresh cycle for units installed in 2008 and 2009.

This project works toward City Council's Goals #1¹ and #4² and Objectives #1.4³ and #4.4⁴.

O&M IMPACT

This project does not directly impact O&M expenditures. However, if network maintenance and enhancements are diminished, the network will soon be unable to meet the increasing demands being placed on it. Resulting service delays, interruptions, and outages will negatively impact staff productivity throughout the organization and severely limit the organization's ability to provide citizen services.

-
- 1 Affordability
 - 2 Continuous Improvement.
 - 3 Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - 4 Be a leader in innovation.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES
DIVISION INFORMATION TECHNOLOGY
PROJECT GIS Enhancements
COST 2013 \$50,000
 2014 \$50,000
 2015 \$50,000
STATUS Replacement
PHASE Ongoing

DESCRIPTION cityExplorer – the City’s geographic information system – has proven to be a powerful and popular tool for both staff and citizens. It provides intuitive, single window access to diverse data from across the organization and is a dynamic, evolving entity that can continue to grow and expand in response to user requirements; its features and capabilities are limited only by its stakeholders’ imaginations.

In order to maintain and grow the value of this system, the data must be current, accurate and relevant. This requires an ongoing investment of both people and financial resources. Likewise, expenditures are necessary to ensure the system will progress toward its potential and remain responsive to its users.

To achieve this, the Information Technology Division has developed a strategy of sustained investment in the system, its data and its capabilities. It has also established an EGIS Technical Advisory Committee to review progress and identify and set priorities for future developments.

This project reflects the requirement for the regular, predictable expenditures that are essential to ensure the upkeep and growth of cityExplorer.

Enhancements identified for 2013 include the final migration and implementation of the ArcGIS Server platform. This will introduce major technical advancements in the ESRI platform that underlies cityExplorer, and provide the basis for more powerful tools and increasingly sophisticated features. As well, another assessment will be undertaken to solicit input and direction from staff and stakeholders.

Plans for 2013 and 2014 include Asset Management integrations; enhanced document management, CAD, and record drawing integration; and improved online data editing capabilities.

This project works toward City Council’s Goals #1¹, #3² and #4³, Objectives #1.4⁴, #3.3⁵, #3.4⁶ and #4.4⁷, and Actions 4(a)⁸ and 4(b)⁹.

O&M IMPACT

This project does not directly impact O&M expenditures, but does enable City staff to work more efficiently and provide improved services.

-
- 1 Affordability.
 - 2 Building Social Capital (Community Engagement).
 - 3 Continuous Improvement.
 - 4 Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - 5 Improve community participation and volunteerism opportunities.
 - 6 Promote heritage, culture, arts and other unique characteristics of Yellowknife to honour our past and preserve/showcase our history and cultural diversity.
 - 7 Be a leader in innovation.
 - 8 Develop a Customer Service Culture.
 - 9 Lead in Innovation and Best Practices.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	CORPORATE SERVICES
DIVISION	INFORMATION TECHNOLOGY
PROJECT	Server Replacement
COST	2013 \$25,000 2014 \$25,000 2015 \$25,000
STATUS	Replacement
PHASE	Ongoing
DESCRIPTION	<p>The Information Technology Division maintains numerous servers to support a wide range of services to citizens and staff. These computers are essential to the operations of the City and it is crucial that the City's investment in this equipment be adequately protected and leveraged.</p> <p>In recent years, significant progress has been made in standardizing the server platform and reducing the diversity and complexity involved in supporting and maintaining the servers. This has enabled the Information Technology Division to establish a solid server fleet that can be supported and maintained in an effective manner.</p> <p>It has also been recognized that this equipment has a limited lifespan that necessitates regular replacement cycles. Thus the Information Technology Division has also developed an effective strategy for replacing and redeploying servers to obtain maximum benefit to the City. This strategy is continually evolving to make the most of technological advances and to attain more efficient and greener service delivery.</p>

In 2013, the two network attached storage (NAS) servers will be replaced. These store backup jobs, client profiles and shared documents used by all departments. However, they are at the end-of-life stage and are no longer covered by warranty.

It is essential that these standards and the replacement strategy be maintained to ensure the performance and reliability demands of staff and citizens can continue to be met. This requires sustained investment in the server fleet, with the goal of regular, predictable expenditures. This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Actions 4(a)⁵ and 4(b)⁶.

O&M IMPACT

This project does not directly impact O&M expenditures; however, if regular refreshes are not sustained, there will be increased equipment failure rates and degraded system performance levels, both of which will negatively impact productivity. In the event of a server failure, there could be service interruptions to both staff and citizens.

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- ¹ Affordability.
 - ² Continuous Improvement.
 - ³ Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - ⁴ Be a leader in innovation.
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CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Desktop Telephone Replacement

COST \$10,000

STATUS Replacement

PHASE 1 of 1

DESCRIPTION Many of the City's desktop telephones are nearing the end of their life expectancies, and the Information Technology Division is noticing an increasing failure rate. Therefore it is recommended that the City plan to replace the approximately 30 remaining Toshiba units in 2013.

This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Action 4(b)⁵.

O&M IMPACT Desk set replacements are currently funded on an as-needed basis from the O&M budget allocation. Therefore, replacing these end-of-life units as a coordinated initiative will reduce the O&M requirements needed to purchase new ones on an ad hoc basis.

¹ Affordability.

² Continuous Improvement.

³ Emphasize fairness and transparency in financial decisions, program delivery and land assembly.

⁴ Be a leader in innovation.

⁵ Lead in Innovation and Best Practices.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Satellite Imagery

COST 2013 \$75,000
2015 \$85,000

STATUS Replacement

PHASE Ongoing

DESCRIPTION Orthophotos – digital aerial photographs with uniform scale and minimal distortion – are an important part of a geographic information system (GIS) because they provide an accurate representation of the earth's surface.

In 2006, the City began acquiring high resolution colour digital orthophotography and incorporating it into cityExplorer. It provides the base mapping for the City's database, and its high spatial accuracy and resolution have made it a powerful and popular tool for both staff and citizens. For example, planners and engineers often use the imagery for planning the locations and scope of new construction and improvement projects, and taxation and assessment staff refer to the imagery to verify the existence of specific property improvements and developments. This will be particularly important in 2013 as the City undergoes a general reassessment. As well, the layer is often used for creating a variety of new information layers, and to help keep existing layers current and accurate.

To keep the imagery relevant and to provide a consistent visual legacy of the city, it is important to maintain these imagery acquisitions at frequent and regular intervals.

Therefore, acquisitions are scheduled for a regular renewal. In order to make this more affordable, the Information Technology Division has partnered with the Airports Division of the GNWT to coordinate joint imagery collection and thus share costs.

This project works toward City Council's Goals #1¹, #3² and #4³, Objectives #1.4⁴, #3.3⁵, #3.4⁶ and #4.4⁷, and Actions 4(a)⁸ and 4(b)⁹.

O&M IMPACT

This project does not directly impact O&M expenditures, but does enable City staff to work more efficiently and provide improved services.

-
- 1 Affordability.
 - 2 Building Social Capital (Community Engagement).
 - 3 Continuous Improvement.
 - 4 Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - 5 Improve community participation and volunteerism opportunities.
 - 6 Promote heritage, culture, arts and other unique characteristics of Yellowknife to honour our past and preserve/showcase our history and cultural diversity.
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 - 9 Lead in Innovation and Best Practices.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Communications Infrastructure

COST 2013 \$225,000

STATUS Replacement

PHASE 4 of 4

DESCRIPTION The City's radio communications infrastructure was replaced in 2012 with a redundant backhaul solution that provides a robust and reliable communications solution to protect the City's employees, citizens and property.

The next step is to add mobile data capacity to support a wide range of potential applications, including automatic vehicle location, automated meter reading, remote monitoring, and in-the-field access to centrally stored data.

The original intent was to deploy this functionality as part of the project implementation. However this enhancement had to be deferred due to higher than anticipated build costs arising from the need to outsource project management and ongoing project delays.

This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Action 4(b)⁵.

O&M IMPACT It is expected that these new applications will introduce process efficiencies and subsequently reduce O&M costs in the impacted areas.

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- ¹ Affordability.
 - ² Continuous Improvement.
 - ³ Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - ⁴ Be a leader in innovation.
 - ⁵ Lead in Innovation and Best Practices.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	CORPORATE SERVICES
DIVISION	INFORMATION TECHNOLOGY
PROJECT	Security Cameras
COST	2013 \$20,000 2014 \$20,000 2015 \$20,000
STATUS	Replacement
PHASE	Ongoing
DESCRIPTION	<p>The City's security camera infrastructure has expanded drastically over the last several years to meet the organization's need for improved site security. The system has aided the RCMP in many investigations and has proven to be a valuable tool in deterring crime and abuse and protecting staff, citizens, and property.</p> <p>The Information Technology Division currently manages approximately 50 Axis IP security cameras and the associated backend infrastructure required for analyzing, processing, and storing camera footage. If the current demand for increased facility security and safety continues, an additional 20 cameras will be added to the system over the next three years. As well, parts of the infrastructure will reach their end of life during this time period, necessitating timely replacements.</p> <p>In 2013, the cameras at the Multiplex will be replaced. Many are approaching the eight- to ten-year-old mark and are becoming problematic, and the poor resolution provided by this dated technology makes it hard to identify individuals after an event has taken place. As well, additional cameras will be installed at City Hall to ensure coverage of all entry and exit points.</p>

2013 plans also call for the installation of additional cameras at the Fieldhouse. Original specifications called for 14 security cameras to monitor the facility, but to date only six have been installed. These installations will include two Pan Tilt Zoom (PTZ) cameras over both fields. In 2014 the remainder of the Fieldhouse cameras will be installed, and cameras will be deployed at the Ruth Inch Memorial Pool, the Fire Hall, and the Yellowknife Community Arena. As well, storage and server infrastructure will be upgraded.

By 2015, the cameras at the Garage, Library, and Baling Facility will have reached the end of their useful life and will be replaced.

This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Action 4(b)⁵.

O&M IMPACT

There will be minor increases in software maintenance costs as additional licensing is obtained; however, if regular refreshes are not maintained, outages could escalate security risks and increase troubleshooting and support time and repair costs.

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- 1 Affordability.
 - 2 Continuous Improvement.
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CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Secondary Site and Data Replication

COST

2013	\$50,000
2014	\$20,000
2015	\$10,000

STATUS Replacement

PHASE Ongoing

DESCRIPTION The City currently houses the entire IT infrastructure required to run City services at one location: City Hall. If this location becomes compromised due to a security breach, disaster or fire, the organization will not be able to conduct business as it does today. To mitigate this risk, the IT Division has been establishing a secondary site that can run essential services in the event that the primary site becomes unavailable for any reason.

In 2013, facility preparations will be completed with the addition of a sound-proof wall and the installation of an appropriate air conditioning system. A new IBM Blade Center will be installed at the secondary site, and the existing ds4300 Storage Area Network (SAN) will be installed and configured. As well, several IBM blades will be purchased, virtualized, and configured to run essential services, and an IBM server rack will be acquired to house new equipment.

In 2014, additional blade servers will be purchased for use in the City's primary Blade Center. The replaced blades will then be moved to the secondary site for improved performance of essential services. Networking components will also to be upgraded to improve overall performance.

In 2015, the DS4300 SAN will be ten years old and past the end of its useful life. It will be replaced with a model similar to the DS3500 SAN at City Hall to provide improved performance of services and additional storage space for services.

Continued, incremental enhancements of this secondary site will be crucial to maintaining an increasingly functional off-site data centre capable of resuming and sustaining operations in a timely fashion, should the need arise.

This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Action 4(b)⁵.

O&M IMPACT

This expenditure will not directly impact O&M but will significantly decrease the City's risk exposure.

¹ Affordability.

² Continuous Improvement.

³ Emphasize fairness and transparency in financial decisions, program delivery and land assembly.

⁴ Be a leader in innovation.

⁵ Lead in Innovation and Best Practices.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Website Enhancements

COST

2013	\$15,000
2014	\$15,000
2015	\$15,000

STATUS Replacement

PHASE Ongoing

DESCRIPTION The City's website is an established component of the organization's communication and engagement strategies, and technological advances and expanding expectations are creating opportunities for more effective and efficient uses of this tool.

The site was redesigned in 2009 to update its look and feel, organize content more intuitively, and incorporate new technologies and techniques to improve its functionality. Enhancements made in 2010 and 2011 built on this foundation and were well received by both internal and external clients.

Ongoing enhancements are essential to the viability and growth of the City's website, and these require sustained and predictable investments. By allocating funds for continuous improvement, the City can exploit new technologies to more effectively and efficiently provide improved information and services to its clients.

In 2013, the goal will be to enhance the user's interactive experience. Citizens will be able to sign up to receive email, text, or phone reminders and alerts about various City operations such as garbage pick-up, council publications such as the Capital Update will be introduced, and a smart phone application to provide

ready access to City event information will be developed. As well, Google Webmaster Tools will be implemented: the Language Translator tool will make the City's website content available in over 60 languages, the Search Engine Optimization feature will be used to improve the City's search rankings, and the AdWords capabilities will help the City target its offerings locally, nationally, and internationally.

2014 and 2015 work and investments will continue to build on this core development.

This project works toward City Council's Goals #1¹, #3² and #4³, Objectives #1.4⁴, #3.3⁵, #3.4⁶ and #4.4⁷, and Actions 4(a)⁸ and 4(b)⁹.

O&M IMPACT

This project may result in a small increase in software maintenance costs but it enables City staff to work more efficiently, communicate more effectively, and provide improved services.

-
- ¹ Affordability.
 - ² Building Social Capital (Community Engagement).
 - ³ Continuous Improvement.
 - ⁴ Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - ⁵ Improve community participation and volunteerism opportunities.
 - ⁶ Promote heritage, culture, arts and other unique characteristics of Yellowknife to honour our past and preserve/showcase our history and cultural diversity.
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CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Website Redesign

COST \$35,000

STATUS Replacement

PHASE 1 of 1

DESCRIPTION The last major overhaul to the City's website was done in 2009. Since that time, technology and citizen expectations have changed significantly. Therefore it is appropriate to review the current website functionality and services vis-à-vis current service expectations and technological capabilities and implement appropriate changes and enhancements to ensure the City is providing the best possible services.

This project will create a Responsive Web Design (RWD). RWD allows for one website for all platforms (smart phones, tablets and desktops), rather than the current paradigm that requires a separate site for each platform, and is therefore the most cost-efficient way of moving forward.

This project works toward City Council's Goal #4¹, Objectives #1.4² and #4.4³, and Action 4(b)⁴.

O&M IMPACT This project will not have a direct impact on the O&M budget, but it will improve the City's communication capabilities and create a richer and more interactive experience for the organization's website visitors.

-
- ¹ Continuous Improvement.
 - ² Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - ³ Be a leader in innovation.
 - ⁴ Lead in Innovation and Best Practices.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Server Room Upgrades

COST \$25,000

STATUS New

PHASE 1 of 1

DESCRIPTION A significant portion of the City's information technology infrastructure is housed in its server room. As the City's dependence on technology increases, so do the demands on this room, particularly in terms of power, cooling, and monitoring requirements.

In 2013, a four-post rack with an embedded KVM-capable monitor and keyboard will be installed to provide secure and functional mounting of server hardware. This will augment the current shelving and replace the existing counter with rack storage, which allows for proper air flow and equipment cooling, provides easy access for maintenance and configurations, and creates efficient scalability for new demands.

Improvements will also be made to advance the server room environment toward a "clean" room. These include installing an air purifier to remove dust and other contaminants, removing all cabinets and storage to improve air flow and environmental cleanliness, and consolidating tools into one centralized tool chest with a retractable task counter to streamline access and provide an appropriate work space.

As well, to facilitate order and augment succession planning, cable management will be finalized by organizing and remounting the analog line feeds in the server room and adjacent telecommunications room.

This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Action 4(b)⁵.

O&M IMPACT There will be no direct impact on O&M expenditures.

-
- 1 Affordability.
 - 2 Continuous Improvement.
 - 3 Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - 4 Be a leader in innovation.
 - 5 Lead in Innovation and Best Practices.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES
DIVISION INFORMATION TECHNOLOGY
PROJECT Virtualization
COST 2013 \$40,000
2014 \$40,000
2015 \$30,000
STATUS New
PHASE 2 of 4

DESCRIPTION The Information Technology Division maintains numerous servers and computers to support a wide range of services to citizens and staff. It is continually assessing technologies and opportunities for improving the performance of this infrastructure to support more efficient and effective delivery of services.

In 2009, the Division began to explore the potential for virtualization within the City's infrastructure. This technology creates an additional layer that separates the logical and physical levels and thus makes it possible to create multiple logical servers or desktops on a single physical server. This increasingly centralized paradigm means resources can be concentrated: several small servers can be replaced by one larger server, thereby more fully utilizing the resources of that single box, reducing space, power consumption, and cooling requirements, and streamlining support efforts.

The Division identified numerous opportunities where the technology could improve reliability, boost flexibility, and reduce support demands, and in 2011 implemented some server virtualization as a proof-of-concept. Based on the success of this initiative, further server virtualization was deployed and virtual desktops were rolled out to selected clients in 2012.

Virtualization has proven to be a good fit for the City, and the Information Technology Division will continue to exploit it as appropriate. This will require shifting computing power and data storage investments from a distributed model to a more centralized approach. It will also be necessary to invest in appropriate tools and support to ensure the centralized services are properly configured for the City's needs and remain highly available for clients.

To this end, it is anticipated that 24x7 technical support for the associated software (XenDesktop, XenServer, and XenApp) and hardware (NetScaler) will be purchased in each of the upcoming years. In 2013 purchases will include a second NetScaler to establish redundancy and additional Microsoft Terminal Services licenses to accommodate increased demand. Two more servers will be added in 2014 to keep pace with expanding demands and requirements. 2015 acquisitions will be planned to ensure that further increased demand and upgrade requirements are met.

This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Action 4(b)⁵.

O&M IMPACT

This project will not directly impact O&M, but will enable staff to provide more efficient and effective service and support.

-
- 1 Affordability.
 - 2 Continuous Improvement.
 - 3 Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - 4 Be a leader in innovation.
 - 5 Lead in Innovation and Best Practices.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT One-Stop Shopping

COST 2013 \$200,000
2014 \$25,000

STATUS New

PHASE 1 of 2

DESCRIPTION The One-Stop Shopping renovations will enable the City to build on the improved customer service levels achieved when the initiative was introduced, and to benefit from further operational efficiencies.

The renovations will require a corresponding investment in Information Technology infrastructure to accommodate revised space layouts and support new job responsibilities.

Currently identified requirements include:

- four complete Customer Service Representative workstations, each equipped with dual monitors, a PIN pad, cash drawer, receipt printer, label printer, UPS, Microsoft Office, DM, Class POS, Payment Processor, Program Registration, Facility Booking, CityWorks, CityView, and CTX Attendant
- a Customer Service Representative Supervisor workstation, equipped with dual monitors, label printer, UPS, Microsoft Office, DM, Class POS, Payment Processor, Program Registration, Facility Booking, CityWorks, and CityView
- three Client Room workstations, each equipped with a monitor, colour printer, UPS, and XenDesktop

- one Side Counter workstation equipped with a monitor, camera, card printer, UPS, and Class
- two Kiosk workstations, each equipped with a monitor and Useful, and one shared printer
- two large monitors with MagicInfo Pro software, to be mounted on the bulkhead above the Customer Service Representative workspace
- one shared print and mail station consisting of a colour-capable multi-function device, a postage machine, and a UPS
- security cameras for each Client Room and a minimum of ten other cameras in strategic locations
- telephones and headsets for each Customer Service Representative and the Customer Service Representative Supervisor, and a telephone for each Client Room
- a controlled gate to limit access to the Client Rooms
- new strike hardware and wiring for the external doors
- a Smart Board and conference phone for the upstairs boardroom
- projectors, screens, webcasting equipment, and a sound system and conference phone for Council Chambers
- adequate electrical plugs, telephone jacks, and network drops to meet current and anticipated needs
- expanded network equipment in the server room and phone room to accommodate increased port density requirements generated by the additional equipment.



This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Actions 4(a)⁵ and 4(b)⁶.

O&M IMPACT These changes will not directly impact O&M expenditures, but will enable changes that will reduce operational costs and improve customer service levels.

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- 1 Affordability.
 - 2 Continuous Improvement.
 - 3 Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - 4 Be a leader in innovation.
 - 5 Develop a Customer Service Culture.
 - 6 Lead in Innovation and Best Practices.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Document Management

COST 2013 \$25,000
2014 \$175,000

STATUS Replacement

PHASE 1 of 2

DESCRIPTION The City adopted electronic document management in 1998. The initiative, led by the City Clerk, saw the deployment of the then-state-of-the-art Hummingbird DOCS application. Since that time, the product has been re-branded several times and the City has moved along the prescribed upgrade paths to the eDOCS suite currently in use.

In 2012 the City discovered that the vendor is no longer enhancing the eDOCS product and is encouraging customers to migrate to their ECM Suite. Preliminary investigations determined that this move will cost at least \$200,000 in software licensing and consulting fees. Given this substantive cost relative to low levels of staff and administration commitment to the application and the abundance of similar products now available, the Information Technology Division recommends that the City reassess its document and record management requirements, especially as they pertain to email, and review current market offerings to determine if there is a solution more suited to the City's needs.

To ensure a thorough and unbiased evaluation of the City's requirements, an outside consultant will be contracted to conduct the review in 2013, with the intent of researching and evaluating potential solutions and selecting the most suitable one for implementation in 2014.

This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Action 4(b)⁵.

O&M IMPACT

There should not be a direct impact on O&M as it is anticipated that any annual software maintenance fees associated with the selected solution will be comparable to those currently paid for the eDOCS product. If there is corporate-wide buy-in for the new solution, the organization could realize significant operational efficiencies as an increasing proportion of the City's documents will be stored in one central location and search times should be reduced. Furthermore, if there is continued support for scanning historical documents and discarding paper copies, the City could reduce its paper handling and storage costs.

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- 1 Affordability.
 - 2 Continuous Improvement.
 - 3 Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - 4 Be a leader in innovation.
 - 5 Lead in Innovation and Best Practices.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Mapping

COST 2013 \$27,000
2014 \$20,000

STATUS New

PHASE 1 of 2

DESCRIPTION The City's Geographic Information System (GIS) data must be constantly expanded, updated, and maintained so that stakeholders can take full advantage of the infrastructure and have access to the best available data to support decision making processes.

Existing City staff resources have traditionally been utilized to build and maintain data holdings. However there is now a need for a concerted effort to tackle some of the backlog and focus on adding important data to the GIS. Therefore, a special project is proposed to use summer student resources to capture and process additional data.

A lot of City assets have yet to be reflected in the GIS. This project aims to capture datasets pertaining to trees, signs, flags, sports fields, playground structures, liftstation and pumphouse equipment, pumps, culverts, ditches and traffic lights so that the information can be integrated into City maps, cityExplorer, and the City's asset management tool, CityWorks.

As well, the City has a collection of aerial photography that has never been digitized. This project will scan and geo-reference these resources so they can be incorporated into the City's electronic data infrastructure.

This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Action 4(b)⁵.

O&M IMPACT

This project will not directly impact O&M expenditures; however, it is anticipated that the availability of additional data will improve decision-making processes and enable more efficient and effective outcomes.

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- ¹ Affordability.
 - ² Continuous Improvement.
 - ³ Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - ⁴ Be a leader in innovation.
 - ⁵ Lead in Innovation and Best Practices.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Key Fobs

COST \$150,000

STATUS New

PHASE 1 of 1

DESCRIPTION In 2012, the main external doors at City Hall were switched from conventional key access to an electronic key fob system. This improved City Hall security and simplified key management, as access is now controlled centrally by software, eliminating the need to sign out keys to new employees, retrieve keys from former employees, and task staff with locking and unlocking doors.

Based on the success of this pilot, there is now demand for widespread adoption at other City facilities. This project will upgrade the backend software to provide additional capacity, install the necessary hardware on strategic doors at the Fire Hall, Multiplex, Fieldhouse, and Pool, and supply appropriate staff members with key fobs.

The expanded system will be administered centrally, utilizing software that allows open and close scheduling to be defined months – or even years – at a time, thus eliminating the need for staff at each facility to lock and unlock doors on a daily basis. The software also makes it possible to program unique access combinations for each staff member, reducing the requirement for individuals to carry multiple keys, and to quickly and securely deny access once a staff member leaves the City's employ.

This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Action 4(b)⁵.

O&M IMPACT

This project will not directly impact O&M expenditures, however it will improve security at the various sites and reduce administrative overhead.

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- 1 Affordability.
 - 2 Continuous Improvement.
 - 3 Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - 4 Be a leader in innovation.
 - 5 Lead in Innovation and Best Practices.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Wireless Standardization

COST \$20,000

STATUS Replacement

PHASE 1 of 1

DESCRIPTION The City's network undergoes regular, incremental improvements to sustain its functionality. This strategy has proven to be an effective way to grow and expand the network to meet increasing demands and expectations. There remains, however, the occasional need for a more significant investment to enhance the infrastructure and thus it is recommended that in 2013 the City upgrade its wireless access points and bridges to address impending end-of-life scenarios, and to standardize the equipment across locations.

In recent years, as clients became more mobile and public access demands increased, the City's wireless infrastructure grew in an ad hoc manner with hardware acquisitions and deployments driven by on-demand location and client needs. As well, wireless backbones came to be used to provide redundant connectivity to various City facilities. To reduce administration costs and efficiently provide services, however, it is necessary to implement consistent, modern hardware with unified management, scalability, and robust features.

This project will consolidate wireless access points and bridges under the Cisco Wireless Control Server and Wireless LAN Controller management appliances.

Beginning with the Library, which currently has three access points of differing models and capability, hardware will be standardized and made uniform across each facility. This standardization will improve security, simplify device management, facilitate efficient system software upgrades and configuration changes, improve network visibility, and support cost-efficient network expansion.

This enhanced foundation will protect the City's existing investment in its network, and ensure the network is able to meet current and future demands.

This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Action 4(b)⁵.

O&M IMPACT

This project will not impact the O&M budget; however, if the upgrade and standardization are not undertaken, management efforts will increase and network reliability could be compromised.

¹ Affordability.

² Continuous Improvement.

³ Emphasize fairness and transparency in financial decisions, program delivery and land assembly.

⁴ Be a leader in innovation.

⁵ Lead in Innovation and Best Practices.

DEPARTMENT	CORPORATE SERVICES
DIVISION	INFORMATION TECHNOLOGY
PROJECT	Development and Building Permit Automation
COST	\$50,000
STATUS	Replacement
PHASE	2 of 2
DESCRIPTION	<p>The City's Planning and Development Department is seeking to automate the development and building permit process through the acquisition and deployment of plan review software. The software allows for applicants to electronically submit and pay for applications from home or work. The initiative reflects an increasing trend amongst municipalities toward automation of plan review to realize efficiencies, minimize paper waste, reduce physical file storage, and improve customer service.</p> <p>The Department issues approximately 1,700 permits per year related to development and building applications. The current paper review process is cumbersome and inefficient as most permit applications require multiple paper plan submissions and reviews prior to approval. The paper review process prevents departments and external parties from reviewing and sharing comments concurrently and does not allow plan amendments and comments to be adequately tracked. Plan review software allows for the sharing of plans amongst various municipal divisions (i.e. Planning and Lands, Building Inspections, Fire Division, and Engineering) so that the review process can be streamlined and more interactive.</p>

The Department has run out of filing room space for planning and building files and is currently paying to store plans offsite which adds both a financial and an administrative expense. The software allows plans to be stored digitally and viewed by staff members at their workstations to answer public enquiries and forward drawings via email. Customer service representatives will be better able to access the status of a permit review from the front counters, and the software will be integrated with existing financial software to support online payments and with the GIS to make information more readily available for staff and the public via cityExplorer. Implementing this software is essential to realizing the City's vision of one-stop shopping where service delivery to the public is streamlined and enhanced.

The City's Planning and Development Department tendered the Development and Building Permit Automation software in 2012 and awarded the project to CityView. The configuration of the software commenced in the third quarter of 2012 and is scheduled for completion in the first quarter of 2013. A total of \$75,000 was allocated in 2012 with the remaining \$50,000 allocated in 2013 to complete the project.

This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Action 4(b)⁵.

O&M IMPACT

This project will increase software maintenance costs by approximately 20% of the software acquisition costs. However, it will also reduce paper and storage costs, and realize operational efficiencies.

¹ Affordability.
² Continuous Improvement.
³ Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
⁴ Be a leader in innovation.
⁵ Lead in Innovation and Best Practices.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Automatic Vehicle Location

COST \$325,000

STATUS New

PHASE 1 of 1

DESCRIPTION Automatic vehicle locating (AVL) is a powerful tool for managing fleets, including service vehicles, emergency vehicles, construction equipment, and public transport vehicles. With the help of a GPS and on-board engine control module reader, real-time data identify where the vehicles are located and provide engine diagnostics.

AVL will increase the productivity and safety of the City's fleet and workers, as it will show where vehicles are at all times, and provide data to minimize wasted and vehicle-down time. As well, the City will be able to reduce its fleet labor costs by capturing accurate work hours based on when a vehicle or piece of equipment arrives at a job site and when it leaves.

The City will also be able to control fuel costs by monitoring and controlling vehicle idling and high speeds, and improving routing to the job sites to eliminate unnecessary travel.

As well, the City will be able to use AVL capabilities to increase fleet security and worker safety. Knowing when a vehicle moves during non-working hours will aid in the fast recovery of stolen equipment and reduce unauthorized fleet vehicle use. As well the system will be able to track unsafe practices such as speeding or failing to wear seat belts.

An AVL solution will also help manage vehicle maintenance, as the technology can report on key indicators such as mileage and oil and fluid levels.

This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Action 4(b)⁵.

O&M IMPACT

There will be annual software maintenance costs equal to approximately 20% of the software acquisition costs.

¹ Affordability.

² Continuous Improvement.

³ Emphasize fairness and transparency in financial decisions, program delivery and land assembly.

⁴ Be a leader in innovation.

⁵ Lead in Innovation and Best Practices.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Electronic Signs

COST \$120,000

STATUS Replacement

PHASE 1 of 1

DESCRIPTION The City operates three large scale electronic signs located at the Multiplex, the Fire Hall, and the Yellowknife Community Arena. Each was acquired under a sponsorship program. A fourth sign, also sponsored, will be deployed shortly at the Fieldhouse.

These signs are a key component of the organization's communications efforts and provide a convenient way to disseminate information to citizens traveling in the city's south end. However, because the existing equipment is nearing the end of its useful life, is becoming increasingly difficult and costly to maintain, and does not provide the breadth of options and features available in newer versions, it is recommended that these units be replaced.

Furthermore, as the signs are concentrated in a small geographic area, they do not reach citizens who frequent other areas of town, such as downtown or Old Town. It is therefore recommended that the City acquire an additional new sign for potential deployment in a more centralized location.

Double-sided signs will be appropriate at the Fieldhouse, Yellowknife Community Arena, and the new location, at a cost of approximately \$30,000 each. Single-sided signs will be suitable for the Multiplex and Fire Hall, at a cost of approximately \$20,000 each.

This project works toward City Council's Goals #3¹ and #4², Objectives #4.4³, and Action 4(b)⁴.

O&M IMPACT

This project will not directly impact O&M expenditures. However, it is anticipated that the management and maintenance of the new signs will require significantly fewer resources than are now required to support the existing signs.

-
- 1 Building Social Capital
 - 2 Continuous Improvement
 - 3 Be a leader in innovation.
 - 4 Lead in Innovation and Best Practices.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	CORPORATE SERVICES
DIVISION	INFORMATION TECHNOLOGY
PROJECT	Smart Boards
COST	\$25,000
STATUS	New
PHASE	1 of 1
DESCRIPTION	<p>The Public Works Department has requested two Smart Boards.</p> <p>These devices can be great tools in meetings, whether it be internal City meetings or meetings with public groups. Staff will have the ability to retrieve relevant documents from the network and will be able to pull up drawing sets and provide comments directly on the drawings as meetings progress. It will also provide the ability to use one of our most useful tools, cityExplorer. Staff could pull up a map of a specific area in question, water and sewer infrastructure, or parks and recreation facilities could be highlighted, and measurements can be estimated. These devices will enable staff to better communicate in meetings by providing interactive visual aids and the ability to save comments or questions that arise from such meetings.</p> <p>The SMART Board 885ixe is the recommended model. It is a fully integrated, appliance-based system designed for environments with no requirement for an in-room computer. Meeting notes can be saved anytime to a network location or a USB flash drive, or distributed via e-mail. The system does not keep any residual data, thus preventing anyone from accessing confidential information from previous meetings.</p>

Additionally, meeting participants are not required to log on to the system under personal credentials, and the system is immune to spyware and malware.

This project works toward City Council's Goal #4¹, Objective #4.4², and Action #4(b)³.

O&M IMPACT This project will not impact the O&M budget.

¹ Continuous Improvement
² Be a leader in innovation.
³ Lead in Innovation and best practices.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	CORPORATE SERVICES
DIVISION	INFORMATION TECHNOLOGY
PROJECT	GeoWare Standardization
COST	\$20,000
STATUS	New
PHASE	1 of 1
DESCRIPTION	<p>GeoWare has proven to be a robust, powerful, and versatile tool for managing many functions at the Baling Facility.</p> <p>The application currently runs on Unix servers and utilizes an Oracle database. Even though these platforms are not consistent with City standards, the solution was implemented because it provided the best functionality.</p> <p>The vendor now supports the application running on the Windows operating system with a Microsoft SQL database, both of which conform to City standards. As well, the original hardware is due for replacement.</p> <p>These factors present an ideal opportunity to port the application to the Windows/SQL environment. This will reduce overhead and support efforts as the platforms are consistent with other applications in use throughout the organization. Furthermore, because the database will become part of the existing SQL cluster and the server will be virtualized on existing hardware, the migration will eliminate the need for the two servers currently used for GeoWare.</p>

O&M IMPACT

This project works toward City Council's Goal #4¹, Objectives #1.4² and #4.4³, and Action 4(b)⁴.

This project will eliminate the need to replace and maintain two physical servers.

-
- ¹ Continuous Improvement.
 - ² Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - ³ Be a leader in innovation.
 - ⁴ Lead in Innovation and Best Practices.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT OptiView Tablet

COST \$25,000

STATUS New

PHASE 1 of 1

DESCRIPTION The City's information technology network infrastructure is a "hub and spoke" model with City Hall as the hub and spokes to 11 other physical facilities. Five City facilities also provide wireless services to employees and the public. The network backbone from hub to clients across the city consists of Ethernet, fiber, microwave and 802.11 wireless infrastructures. With the physical scope, complexity and criticality of network services a robust real time and predictive tool is required for network management. The solution must provide views of current network activity, bottlenecks, trouble spots and potential or active malicious activity. Using such a tool provides the capability to adequately plan network growth, optimize existing infrastructure, efficiently allocate resources, and immediately identify active trouble areas or security issues.

Fluke Networks is the recognized industry leader for enterprise class network monitoring, analysis and remediation tools. The Optiview XG Network Analysis Tablet is the desired standard for enterprises with large heterogeneous networks requiring efficiency, flexibility, reliability and high availability for optimal client service. It is recommended that the City acquire this product as an all-in-one-tool that gives a complete network view along with troubleshooting capability.

This tool:

- can be used by the City's network analyst and frontline support staff;
- integrates the latest wired and wireless tools providing the ability to connect, analyze and solve network and application problems anywhere on the network;
- displays the network through customizable dashboards;
- provides automated analyses of the throughput "on-the-wire" and "in-the-air";
- ensures line-rate packet capture up to 10 Gbps when troubleshooting difficult applications;
- identifies the exact path taken by an application using path and infrastructure analysis, to quickly resolve application performance issues;
- allows visibility in intermittent problems by collecting granular data rather than aggregated data collected by monitoring systems;
- enables proactive analysis by analyzing information before problems arise;
- performs application-centric analyses with a high level view of the applications on the network with easy drill-down capability;
- automatically detects problems in the network and suggests resolution procedures;
- provides a real-time discovery engine and identifies and tracks devices and access points;
- enables wireless environment analyses using AirMagnet WiFi Analyzer, Spectrum XT, Survey and Planning tools;
- provides out-of-the-box and customizable reports;
- automatically scans for errors in the network infrastructure;
- monitors all the interfaces along an application path and provides packet loss, delay and response time at each device.

- uses a combination of layer-2 and layer-3 trace routes to identify the entire network path between the application client and the application server, speeding problem isolation;
- captures traffic around any application error message, and identifies illicit use of the network via words, phrases, or file names;
- identifies and tracks applications that are not allowed on the network, such as streaming media that may consume expensive bandwidth, or P2P traffic that may pose a security risk;
- begins to discover, identify and classify devices on the network as soon as it is connected. It categorizes devices by type: interconnect (routers, switches), servers, hypervisors, virtual machines, printers, SNMPagents, VoIP devices, wireless devices, and other hosts. Additionally, it classifies networks by IPv4 and IPv6 subnets, VLANs, NetBIOSdomains and IPX networks, and wireless networks, together with host membership within each classification.

Real-life scenarios where this tool will be of practical benefit include:

- Application performance problem – A client at the Public Works garage reports very slow performance when using Great Plains. The path from the client workstation to the Great Plains server crosses multiple devices: workstation, local access switch, facility gateway switch, fiber backbone, City Hall demarcation/entry distribution switch, core switch, server blade center integrated switch, database, and application server. The tablet device will “walk” the path between the two endpoints and report on each device and port that is crossed, analyze the findings, and present results with the identified problem areas and recommended solutions.
- Expanded network requirements – The Fieldhouse requires multiple security cameras installed. The tablet device will be used to analyze the current bandwidth ability, then generate actual data simulations to test the capacity and recommend upgrades if needed.
- Wireless access deployment – The Library requires an upgrade of their wireless infrastructure to provide uniform access, managed coverage, transparent radio strength, and client identification. Tablet wireless tools will be used to draw a map using the actual floor plan and facility contents, analyze the space, and recommend access point and antennae models and optimal placement locations. In the event of rogue clients, the tablet will use access point triangulation to pinpoint the location of the client and activities taking place.
- Internet usage spike – Bandwidth is being used at a higher than normal rate. The tablet will be used to identify and locate high bandwidth consumers and applications using bandwidth, and identify unauthorized devices that may be consuming bandwidth.
- Core access optimization – The tablet will be used to analyze all paths, from within City Hall and from any facility, to core servers. Reports will be generated identifying bottlenecks and optimization opportunities.
- Rogue device detection – The tablet will identify and classify all devices accessing the network from all locations, providing a comprehensive enterprise view of attached devices and pinpointing unauthorized devices or applications.
- Network health and improvements – The table tools will provide an enterprise level analysis of the City’s network across all sites, and generate reports and recommendations for optimization of existing infrastructure to fully exploit current investments.



- Inconsistent performance - Intermittent network issues are experienced by a client but the issue cannot be replicated on demand, making identification of the root cause difficult. The tablet will stress test the network, analyze all nodes, and monitor all activity until the problem recurs. The device will also log activity, report on problems, and identify remediation methods.

This project works toward City Council's Goal #4¹, Objectives #1.4² and #4.4³, and Action 4(b)⁴.

O&M IMPACT This project will not have a direct impact on the O&M budget, but it will enable IT staff to manage and troubleshoot network issues more efficiently.

-
- 1 Continuous Improvement.
 - 2 Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - 3 Be a leader in innovation.
 - 4 Lead in Innovation and Best Practices.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	CORPORATE SERVICES
DIVISION	INFORMATION TECHNOLOGY
PROJECT	Multifunction Devices and Printers
COST	2013 \$50,000 2014 \$50,000 2015 \$50,000
STATUS	Replacement
PHASE	Ongoing
DESCRIPTION	<p>Printers have traditionally been an important component of the City's information technology infrastructure. Although the organization is steadily reducing its reliance on paper, there remains a requirement for effective preparation of hard copies to serve specific requirements. As well, there is a growing demand for the ability to scan existing paper documents into electronic format for efficient storage and transmission.</p> <p>In many cases, these divergent needs can be met by large, centralized multi-function devices that offer high processing speeds and lower per-page costs. In others, smaller devices are more appropriate for quick jobs where ready access is important.</p> <p>This budget allocation will be used to meet both types of requirements. It will provide funds to ensure that large, multi-function devices are maintained and replaced in a cost-effective manner, and acquire and deploy smaller special-purpose units as appropriate.</p> <p>This project works toward City Council's Goals #1¹ and #4², Objectives #1.4³ and #4.4⁴, and Action 4(b)⁵.</p>

O&M IMPACT This project is not expected to have direct impact on O&M expenditures; however, if the various printers and multi-function devices are not properly supplied and maintained, a lack of appropriate availability could disrupt general service provision.

-
- ¹ Affordability.
 - ² Continuous Improvement.
 - ³ Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - ⁴ Be a leader in innovation.
 - ⁵ Lead in Innovation and Best Practices.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT CORPORATE SERVICES

DIVISION INFORMATION TECHNOLOGY

PROJECT Social Media

COST 2013 \$15,000
 2014 \$15,000
 2015 \$15,000

STATUS New

PHASE Ongoing

DESCRIPTION In 2013, the City will develop a social media strategic plan and then move forward to set up selected key tools such as Facebook, Twitter and a blog. Training will provide appropriate staff members with the requisite skills to manage these tools using HootSuite (a social media dashboard that facilitates monitoring streams, lists and postings).

In 2014 and 2015, the organization will build on the existing tools and add new ones such as LinkedIn, YouTube, Google Moderator, etc. Staff training will also be needed to stay current.

This project works towards City Council's Goals #1¹, #3² and #4³, Objectives #1.4⁴, #3.3⁵, #3.4⁶ and #4.4⁷, and Actions 4(a)⁸ and 4(b)⁹.

O&M IMPACT This project may result in a small increase in software maintenance costs but it enables City staff to work more efficiently, communicate more effectively, and provide improved services.

-
- ¹ Affordability.
 - ² Building Social Capital (Community Engagement).
 - ³ Continuous Improvement.
 - ⁴ Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - ⁵ Improve community participation and volunteerism opportunities.
 - ⁶ Promote heritage, culture, arts and other unique characteristics of Yellowknife to honour our past and preserve/showcase our history and cultural diversity.
 - ⁷ Be a leader in innovation.
 - ⁸ Develop a Customer Service Culture.
 - ⁹ Lead in Innovation and Best Practices.

CAPITAL FUND - 2013 Capital Projects

	2011 Budget (\$000's)	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
Community Services							
Arenas							
YKCA Upgrades	-	8	-	-	-	-	-
YKCA Upgrades - Dehumidifiers	-	-	75	75	40	-	-
YKCA Upgrades - Generator	125	130	-	-	-	-	-
YKCA Upgrade - Sprinkler System	-	-	100	100	220	-	-
YKCA Upgrade - Floor Replacement	-	-	35	35	-	-	-
YKCA Upgrades -Wiring	-	-	-	-	-	15	-
YKCA - Ice Plant Bldg., Ice Boards & Ice Plant	-	-	-	-	-	585	930
Multiplex - Fall Protection	-	-	30	30	-	-	-
Multiplex Façade Repair	-	-	-	-	85	-	-
Multiplex - Painting DND Gymnasium & Lobby	-	-	-	-	70	-	-
Fieldhouse	-	73	-	32	-	-	-
Fieldhouse Indoor Playground	-	14	-	-	-	-	-
Fieldhouse Floor Cover	30	-	-	22	-	-	-
	155	225	240	294	415	600	930
Library							
Library Study	-	-	-	16	-	-	-
Expansion / Renovations	-	-	-	45	-	-	-
	-	-	-	61	-	-	-



CAPITAL FUND - 2013 Capital Projects

	2011 Budget (\$000's)	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
Parks/Trails							
Back Bay Floatplane Dock	-	3	-	57	-	-	-
Columbarium Park	-	-	75	75	-	-	-
Repair on McMahon Frame Lake Trail	50	22	-	28	-	-	-
Old Airport Road Multipurpose Trail	-	-	-	-	-	-	-
Lakeview Cemetery Expansion	-	-	-	-	35	-	-
Fencing - Cemetery and Ballparks	-	-	-	-	80	-	-
Playground Equipment Replacement	90	91	115	118	100	-	-
Relocation of Olexin Park Playground	28	1	-	27	-	-	-
Fritz Theil Upgrade	-	-	64	64	-	-	-
Ball Diamond Upgrade	-	-	-	-	-	45	-
Rental Equipment	-	-	32	32	15	15	-
Sport & Multiuse Fields Upgrade	-	-	100	112	180	240	-
Trail Development - Tin Can Hill	-	-	-	-	60	-	-
Yellowknife Rotary Park - Trail Extension	-	-	-	-	20	-	30
Doornbos park	-	-	-	-	-	-	40
Twin Pine Hill Trail Development	50	-	350	50	150	-	-
Park and Trail Development - Niven Subdivision	70	58	-	12	-	-	-
Integrated Parks, Trails & Open Space Development Study Implementation	-	-	-	-	-	-	-
Outdoor Recreation Facility - Design Development	-	-	-	-	90	-	-
Somba k'e Sculpture	-	-	-	-	46	-	-
Civic Plaza/Somba K'e Park/ Library Site Design and Development	-	261	-	2	-	-	-
	288	435	736	577	776	300	70

CAPITAL FUND - 2013 Capital Projects

	2011 Budget (\$000's)	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
Pool							
Replacement of Air Handling Unit	210	86	-	156	-	-	-
Deck Repair	25	12	-	13	-	-	-
Air Conditioning	45	34	-	14	-	-	-
Pool Upgrade	-	-	150	150	100	200	100
	<u>280</u>	<u>132</u>	<u>150</u>	<u>333</u>	<u>100</u>	<u>200</u>	<u>100</u>
Wildcat Café							
Structural Repair	385	232	-	242	-	-	-
City Hall							
Air Handling Unit Replacement	-	30	-	-	-	-	-
Upgrades	-	-	-	30	-	-	-
Roof Replacement	355	-	100	455	-	-	-
Generator Replacement	125	70	-	55	-	-	-
Renovation Study	50	54	-	71	-	-	-
Building Renovations	-	-	-	-	980	-	-
Boiler Replacement	-	-	200	200	40	-	-
	<u>915</u>	<u>385</u>	<u>300</u>	<u>1,053</u>	<u>1,020</u>	<u>-</u>	<u>-</u>
Total	<u>1,638</u>	<u>1,177</u>	<u>1,426</u>	<u>2,318</u>	<u>2,311</u>	<u>1,100</u>	<u>1,100</u>



CAPITAL FUND - 2013 Capital Projects

		2013 Budget Recommended (\$000s)	Formula Funding (\$000s)	Other Revenue (\$000s)	Grants (\$000s)	Twin Pine Hill Trail Reserve (\$000s)	MACA Capital Grant (\$000s)
Community Services	Page #						
Arenas							
YKCA - Dehumidifiers	240	40	40				
YKCA - Sprinkler System	241	220					220
Multiplex - Façade Repair	242	85	85				
Multiplex - Painting DND Gymnasium & Lobby	243	70	70				
Parks/Trails							
Lakeview Cemetery Expansion	244	35	35				
Fencing - Cemetery & Ballparks	245	80	80				
Playground Equipment Replacement - Niven Beach	246	100	20		80		
Rental Equipment	247	15	15				
Sport & Multi-use Fields Upgrade- William McDonald Middle School Field	248	180	180				
Trail Development - Tin Can Hill	249	60	60				
Yellowknife Rotary Park - Trail Extension	250	20	20				
Twin Pine Hill Trail Development	251	150	36	50		64	
Outdoor Recreation Facility - Design Development	252	90	90				
Somba k'e Sculpture	253	46	46				
Pool							
Locker Replacement	254	100	10				90
City Hall							
Building Renovations	255	980					980
Boiler Replacement	256	40	40				
Subtotal		2,311	827	50	80	64	1,290

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT COMMUNITY SERVICES

DIVISION FACILITIES

PROJECT Yellowknife Community Arena Dehumidifiers

COST \$40,000

STATUS Replacement

PHASE 1 of 1

DESCRIPTION The Yellowknife Community Arena was built in 1982. Since that time, the arena has utilized two Humicon dehumidification units to reduce humidity over the ice surface. The existing equipment has reached its full life expectancy and one unit is no longer operational. Repairs are no longer feasible and it will need to be replaced.

If the units are not replaced, the potential for mould growth is foreseeable in the immediate future as well as causing degradation to the metal components of the interior of the facility including plumbing, structural steel, and electronic components.

The dehumidifiers that are being proposed will be more energy efficient than the current 27-year-old units utilizing up-to-date technology.

This project works toward Council's Goal #2¹.

O&M IMPACT Little or no O&M impact above the normal operating budget.

¹ Enhancing our Built Environment



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT COMMUNITY SERVICES
DIVISION FACILITIES
PROJECT Yellowknife Community Arena Sprinkler System
COST \$220,000
STATUS Upgrade
PHASE 1 of 1

DESCRIPTION The current sprinkler system at the Yellowknife Community Arena was installed in 1982, making it 27 years old. The installation of the low emissivity roofing has placed the roofing too close to the sprinklers; this has recently been identified as a potential issue with the operations of the sprinkler system in a report completed by AD Williams.

The original installation has been an issue since the facility opened in 1982. The sprinkler does not drain back to the sprinkler tree, therefore additional drains have been installed which has caused the system to freeze and break on occasions. The proposal is to lower the heads which will address both issues.

This project works toward Council's Goal #2¹.

O&M IMPACT There is no O&M impact.



¹ Enhancing our Built Environment.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT COMMUNITY SERVICES

DIVISION FACILITIES

PROJECT Multiplex Façade Repair

COST \$85,000

PHASE 1 of 1

DESCRIPTION The first phase of the Multiplex was completed in 2003, with the second phase reaching completion in 2005. It has become a hub of activity as a year-round facility, attracting thousands of visitors each year. The Multiplex is open 20 hours a day for 36 weeks of the year, and 16 hours a day for the remaining 16 weeks of the year.

When the facility was built, a decision was made to remove the curbing in the parking lot to stay within the project budget. As a result, the siding of the facility has been damaged by snow removal and falling ice. It is proposed that barricades be placed around the exterior of the building and that the damaged siding be replaced with new siding to keep the aesthetics of the facility intact, as well as other measures taken to reduce further damage.

This works toward Council's Goal #2¹.

O&M IMPACT There is no O&M impact.



¹Enhancing our built environment.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT COMMUNITY SERVICES
DIVISION FACILITIES
PROJECT Multiplex – Painting of DND Gymnasium & Lobby
COST \$70,000
STATUS Upgrade
PHASE 1 of 1

DESCRIPTION The Multiplex opened in 2002. Its major focal points are the main lobby and the DND Gymnasium, and their rate of use is extremely high. Since the opening of the facility, there has been minor repair and patchwork done to the walls, but it is now in need of major repainting to protect the integrity of the building.

The Multiplex gymnasium has served many sporting, cultural, fundraising, and family functions. The facility has had some minor repairs and will require a more thorough overhaul in 2013.

The lobby is the main greeting area for all users of the facility. It is also used by various organizations for registration and reception. It is proposed that the two areas of the Multiplex be painted to ensure they remain vibrant and aesthetically pleasing.

This project works toward Council's Goal #2¹.

O&M IMPACT There will be no O&M impact.



¹ Enhancing our Built Environment.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT COMMUNITY SERVICES

DIVISION FACILITIES

PROJECT Lakeview Cemetery Expansion

COST \$35,000

STATUS New

PHASE 1 of 1

DESCRIPTION Lakeview Cemetery has been in existence since the late 1940s. There are approximately 15 to 20 interments annually, a number which has been steadily increasing over the past few years.

The active area of the cemetery covers approximately 17,500 square metres which, until recently, has been adequate for interments, including cremations and regular casket burials. In 2009, the area was expanded to the west which entailed the removal of trees and the addition of topsoil. This expanded area used up the last of the easily accessible land mass, and it is now necessary to undertake the development of the area to ensure it continues to meet the interment needs of the community well into the future.

It is proposed to design, survey, and expand the cemetery in an efficient and effective manner. This will ensure an orderly expansion in appropriate phases that will take into account topography and landscaping of the site.

This will work toward City Council's Goal #2¹.

O&M IMPACT There will be an impact on O&M as the area will need to be maintained as a Class 'A' park after its completion. The cost of this will be \$4.00 per square metre of park.

¹ Enhancing our Built Environment



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT COMMUNITY SERVICES

DIVISION FACILITIES

PROJECT Fencing (Cemetery and Ballparks)

COST \$79,500

STATUS Upgrade

PHASE 1 of 1

DESCRIPTION The Community Services Department maintains more than 150,000 square metres of parkland within the city limits, much of which is fenced with chain-link fence. Over the years, the fences have fallen in various locations due to a combination of age, damage, and vandalism.

It is proposed that the fences in the City of Yellowknife be upgraded and returned to a high standard of maintenance. This will help beautify the city, promote our facilities, and generate community well-being.

This project works toward Council's Goal #2¹.

O&M IMPACT There is no direct O&M impact.

¹ Enhancing our Built Environment

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT COMMUNITY SERVICES
DIVISION FACILITIES
PROJECT Niven Beach – Playground Equipment Replacement
COST \$100,000
STATUS Replacement
PHASE 1 of 1

DESCRIPTION Playgrounds have a life span of about 15 to 20 years and need to be replaced on an ongoing basis to best serve the community.

There have been multiple code changes and advances in play equipment over the past 20 years, and the new equipment is mostly hard plastic that endures well in our northern climate. Suppliers now recommend that all new playground equipment be constructed with plastics or powder-coated aluminum technologies.

In 2013, it is proposed that the playground equipment be replaced at Niven Beach. The equipment is a combination of steel and wooden structures that have deteriorated over the years. The equipment is used frequently by many citizens in the area.

The new playground equipment will stimulate children and encourage their mental and physical growth. This is an investment in the future of Yellowknife, and works toward Council's Goals #2¹ and #4². A sports grant will offset almost 90% of the cost of this project.

BUDGET

Equipment	\$100,000
<u>Less Grant</u>	<u>\$ 80,000</u>
Total =	\$ 20,000



O&M IMPACT

There will be no financial impact as these playgrounds already exist and will need the same level of safety checking regardless of the age of the equipment.

¹ Enhancing our built environment

² Continuous improvement



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT **COMMUNITY SERVICES**

DIVISION **FACILITIES**

PROJECT **Rental Equipment**

COST **2013 \$15,000**
 2014 \$15,000

STATUS **Replacement**

PHASE **2013 1 of 2**
 2014 2 of 2

DESCRIPTION The Department utilizes various tables, chairs, and staging while renting out the arenas and parks for a variety of events. These items are further utilized by the public and are incorporated into the fees and charges policy, generating revenue for the City.

Due to the amount of use, the equipment requires ongoing replacement.

It is proposed to replace a portion of the tables and chairs that have been damaged or disposed of over a three-year period which commenced in 2012.

The replacement costs are as follows:

80 tables	\$8,200
350 Chairs	\$6,800

This project works toward Council's Goal #2¹.

O&M IMPACT There will be no additional costs for maintenance as this will be covered under our current repairs and maintenance budget.

¹ Enhancing our Built Environment.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT COMMUNITY SERVICES

DIVISION FACILITIES

PROJECT Sport & Multi-Use Fields Upgrade

COST

2013	Wm. McDonald School	\$180,000
2014	Range Lake North School	\$150,000
2014	Sir John Franklin High School	\$90,000

STATUS Upgrade

PHASE

2013	1 of 2
2014	2 of 2

DESCRIPTION The Facilities Division currently maintains two sport fields (Range Lake North and William McDonald schools) where residents play organized soccer and rugby, and two multi-use fields (St. Joseph and Sir John Franklin schools) for general community use.

As the two sport fields are used to capacity, there is little time to perform the required maintenance, especially when work cannot begin until after the schools are closed for the summer months.

By staggering work on the fields over a four-year period, there will be minimal disruption to the user groups as only one field per annum will be retrofitted. With the use of the sod on the fields, it is projected that they will be out of service for no longer than a month at a time.

In 2012, St. Joseph School's field was the first to be retrofitted. The field was adjusted to accommodate close-to-legal requirements for a soccer pitch, thereby allowing for work on William McDonald Middle School's field in 2013. The field at William McDonald School would include an extension of the field and track, thereby enlarging both facility areas. The final two fields (Range Lake North and Sir John Franklin schools) will be completed in 2014.

In 2014 a sport grant will offset part of the cost of the project:

2014 Budget	\$240,000
Less: Grant	<u>\$ 80,000</u>
Total	\$160,000

This project works toward Council's Objective #2¹.

O&M IMPACT

There will be no additional costs for maintenance as this will be covered under our current budget for repairs and maintenance.

¹ Enhancing our Built Environment.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	COMMUNITY SERVICES
DIVISION	FACILITIES
PROJECT	Trail Design, Development, and Upgrade –Tin Can Hill
COST	\$60,000
STATUS	Upgrade & New
PHASE	1 of 1
DESCRIPTION	<p>In 2005, Council adopted the Integrated Parks, Trails and Open Space Development study with the mission of creating an environmentally-friendly park system that beautifies the City, meets the needs of residents, visitors and tourists and encourages people to be active in the outdoors year-round. The study addressed the future needs of the city in terms of parks and trails.</p> <p>Tin Can Hill Trail Tin Can Hill is within walking distance of a high number of residents as well as the downtown city core. With the completion of the School Draw housing development, there will be an even greater demand to provide recreational facilities in this area.</p> <p>It is proposed that funding be used for the design and development of approximately three kilometres of trail system.</p> <p>These projects work toward Council’s Goal #2¹ and #3².</p>
O&M IMPACT	<p>The O&M will depend on the length of the trails. For every kilometre of trail developed, the O&M impact would be \$6,000 per annum.</p>

¹ Enhancing our Built Environment.

² Building Social Capital (Community Engagement).

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT COMMUNITY SERVICES

This project would meet City Council's Goal #2¹ and #3².

DIVISION FACILITIES

O&M IMPACT

There would be an increase of about \$2,000 per annum in the cost of maintaining this trail system, including staff time and equipment.

PROJECT Yellowknife Rotary Park – Trail Extension

COST 2013 - \$20,000
2015 - \$30,000
Total = \$50,000

STATUS New

PHASE 2013 1 of 2
2015 2 of 2

DESCRIPTION In 2003, the Yellowknife Rotary Club and the City of Yellowknife collaborated to build the Yellowknife Rotary Centennial Waterfront Park off School Draw Avenue. In 2005, a picnic shelter was completed and the boardwalk expanded. In 2006, a bandstand was added to the park, and, in 2008, a further extension to the boardwalk was completed.

Residents throughout the city use the park quite extensively, as it offers a good-quality green picnic area and provides an excellent view of the waterfront.

In 2010, the walkway in the park was paved and a disabled ramp installed to allow access for disabled citizens.

Currently, the trail stops after ½ kilometre of trail and it is proposed that the boardwalk be extended around the marshlands to connect with an informal trail extending from Ragged Ass Road. This extension will include several lookouts along the trail onto the lake, and the informal trail will be upgraded to provide proper access. Work on this project will be undertaken by the Rotary Club, with materials and supplies being provided by the department.

¹ Enhancing our Built Environment.

² Building Social Capital (Community Engagement).



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT **COMMUNITY SERVICES**

DIVISION **PARKS**

PROJECT **Twin Pine Hill Trail Development**

COST **2012 carryover \$350,000**
2013 **\$150,000**

BUDGET **Total project cost is \$550,000 and will be financed as follows:**

Capital Fund	\$ 36,000
Twin Pine Hill Trail Reserve	\$264,000
Deton Cho Corporation	<u>\$250,000</u>
Total	<u>\$550,000</u>

STATUS **New**

PHASE **2013 2 of 2**

DESCRIPTION The City of Yellowknife has entered into a Development Agreement with Yellowknife River Resources Inc. for the development of Twin Pine Hill.

The Agreement stipulates that Yellowknife River Resources Inc. will pay one-half of the costs of planning and constructing a trail system on City-owned land to a maximum of \$250,000.

It is proposed that in 2013, the consultation, planning, and development process be carried out and the first phase of the trail development be undertaken.

In 2014, the actual trail development will be completed.

This project works toward City Council's Goal #2¹.

O&M IMPACT The development of trails and parks on Twin Pine Hill will result in the allocation of staff and materials. Construction of these trails in 2014 will affect the 2014 O&M budget.

Increases are generally of the following magnitude:

\$160/tree planted
 \$3.20/sq. m of trail developed
 \$3.00/sq. m of Class A green space developed.

¹Enhancing our Built Environment.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	COMMUNITY SERVICES
DIVISION	FACILITIES
PROJECT	Outdoor Recreation Facility – Design Development
Cost	\$90,000
STATUS	New
PHASE	Replacement
DESCRIPTION	<p>Currently, the City has a number of outdoor recreational sport facilities within the City which include six ball diamonds, three sport (soccer) fields, a 340 metre track, eight tennis courts, one skateboard park, and 17 playgrounds. Many of the facilities are at maximum use and some of the facilities such as two of the soccer fields and track do not meet the minimum acceptable standards.</p> <p>The City is currently working on an agreement with Con Mine to obtain over 8 hectares of land which would be turned into a major outdoor recreational facility. In anticipation that the property would become available to the City within the next few years, it is important that the City and the outdoor facility user groups work together to come up with a design concept for a major outdoor recreational facility of this nature.</p> <p>It is proposed that in 2013, the consultation, planning, and development process be carried out.</p> <p>This project works toward Council's Goal #2¹.</p>
O&M IMPACT	<p>There will be an O&M impact once the facility is completed and the amount is undetermined as it depends on the type and size of facility.</p>

¹ Enhancing our Built Environment.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	COMMUNITY SERVICES
DIVISION	FACILITIES
PROJECT	Somba K'e Sculpture Completion
COST	\$45,500
STATUS	New
PHASE	1 of 1
DESCRIPTION	<p>The 2009 Capital Budget included an allocation of \$22,000 for the installation. The proposed project at that time was that a local artist had approached the City requesting this amount to cover the cost of the installation of a sculpture that he was going to produce through other funding sources.</p> <p>The commitment was made by the City through the budget process to provide the funding and the location in Somba K'e Park. The artist then undertook to complete the work. Following a downturn in the economy, the external funding sources for the project were no longer available. The sculpture currently sits in its unfinished state.</p> <p>The proposal for 2013 budget is to enter into a contract with the artist for the completion of the work. The budget to complete the project was provided to the City late in 2012 and includes costs for specialty paint, equipment and labour.</p> <p>This project works toward Council's Goal #2¹.</p>
O&M IMPACT	Little or no O&M impact above the normal operating budget.

¹ Enhancing our Built Environment.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	COMMUNITY SERVICES
DIVISION	PROGRAMS
PROJECT	Ruth Inch Memorial Pool - Locker Replacement for both Women's and Men's Change Rooms
COST	2013 \$100,000 2014 \$100,000
STATUS	Replacement
PHASE	2013 1 of 2 2014 2 of 2
DESCRIPTION	<p>The Ruth Inch Memorial Pool opened its doors to the public in the fall of 1988. The Pool continues to be a popular facility for the citizens and visitors of Yellowknife. The City installed coin-operated lockers, so the patrons of the Pool have a place to secure their belongings. Over the course of the last 25 years, the Pool environment has taken its toll on the lockers. Many of the mechanisms, hinges, and metal are breaking down and need to be replaced.</p> <p>Community Services plans to replace the lockers for both change rooms. The female lockers will be replaced in 2013 and the male lockers in 2014. The new lockers will be non-metallic, and the coin slots may be changed to accept loonies instead of quarters.</p> <p>This project works toward City Council's Goal #4¹.</p>
O&M IMPACT	Potential for revenue increase if the cost of the coin-operated lockers is increased from \$.25 to \$1.00. Otherwise, no major impact to the O&M.

¹ Enhancing our Built Environment.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT COMMUNITY SERVICES

DIVISION DIRECTORATE

PROJECT City Hall Renovations

COST \$980,000

STATUS New

PHASE 1

DESCRIPTION Over the past two years, the City has undertaken a concerted effort to improve the efficiency of the layout in City Hall to address security, staff safety, and provide outstanding customer service. To achieve these undertakings, in 2011, the City contracted an architectural and engineering firm to carry out a technical review of City Hall as well as provide a conceptual design on a One-Stop Shop layout of City Hall. As part of this exercise, an administrative team carried out the staff consultation to obtain input from the various departments that interface with the public on a daily basis.

The results of these efforts have resulted in a two-step process. In mid-2012, a temporary One-Stop Shop system was established on the second floor of City Hall with the first floor being restricted to City personnel or visitors with an escort. The second phase of the project will see a permanent One-Stop Shop established on the main floor of City Hall with an increase in building security and a professional One-Stop Shop scheme.

The Council Chamber has not been updated since the building was first built in the mid-1970s other than a small change to the interior furniture. During Council meetings, the main doors of City Hall are opened to the public which jeopardizes the entire building security due to the open nature of the layout. The renovation project will address both the interior of the Chamber as well as

security of the entire building during Council meetings.

The layout of the Chamber will be altered to reflect a more open, inviting, and accessible space with up-to-date technological audio/visual components that will improve the current system to allow for broadcasts of meetings. Access to the remainder of the building will be restricted but still allow for access to the elevator for those in need of it.

This project works toward Council's Goal #4¹.

O&M IMPACT This project will improve staff efficiency, safety and building security without affecting the O&M budget.

⁴ Continuous Improvement.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	COMMUNITY SERVICES
DIVISION	FACILITIES
PROJECT	City Hall – Boiler Replacement
COST	\$40,000
STATUS	Replacement
PHASE	1 of 1
DESCRIPTION	<p>City Hall was built in 1975 to serve as the administrative centre of the City of Yellowknife. The boiler in the building was originally installed in 1975, making it 37 years old. Boilers are normally replaced after 20 years of service.</p> <p>While the current boiler has served the City well, it is old and has exceeded its life expectancy. Parts for this boiler are becoming difficult to source and ongoing maintenance has become an issue.</p> <p>This project works toward Council’s Goal #2¹.</p>
O&M IMPACT	<p>There will be no financial impact as a boiler already exists and will require the same level of safety checking regardless of the age of the equipment.</p>

¹ Enhancing our Built Environment.



CAPITAL FUND - 2013 Capital Projects

	2011 Budget (\$000's)	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
Public Safety							
Directorate							
Emergency Supplies	-	-	15	25	-	-	-
Municipal Enforcement							
Communication Equipment Replacement	-	-	-	-	90	-	-
Replacement of Parking Meter Mechanisms	270	280	-	-	-	-	-
Office Furniture Replacement	12	11	-	-	-	-	-
	282	291	15	25	90	-	-
Fire & Ambulance							
Gas Monitoring Equipment	-	-	-	-	-	-	15
Paving and Foundation Repairs	-	-	-	-	-	-	140
Fire Division Master Plan	-	-	-	-	-	-	110
Storage Facility	-	-	-	-	-	150	-
Self-Contained Breathing Apparatus	50	50	-	-	50	-	-
Fire Hall Expansion	650	380	-	626	-	-	-
Bunker Gear / Safety Compliant Equipment	20	18	-	2	-	-	-
Bunker Gear Lockers	-	-	-	-	60	-	-
Smoke House Demolition	-	4	-	-	-	-	-
Front Ramps and Site Improvement	150	-	-	-	150	-	-
Zodiac Boat & Motor	20	-	-	22	-	-	-
Installation of Training Hydrant	-	-	110	-	80	-	-
Pavement for NE Side of Ramp	-	-	40	-	-	-	-
Mechanical Controls (Heat & Air Make Up)	-	-	25	33	-	-	-
Training Equipment for Firefighter Workouts	20	15	-	4	-	-	-
Live Fire Training Structure	50	133	-	13	-	-	-
Thermal Imaging Cameras	-	-	-	-	-	25	-
FDM Software (Apparatus Maintenance Module)	-	-	-	-	-	30	-
	960	601	175	699	340	205	265

CAPITAL FUND - 2013 Capital Projects

		2013 Budget Recommended (\$000s)	Formula Funding (\$000s)
Public Safety	<u>Page #</u>		
Municipal Enforcement			
Communication Equipment Replacement	259	90	90
Fire & Ambulance			
Self-Contained Breathing Apparatus	260	50	50
Bunker Gear Lockers	261	60	60
Front Ramp Improvements	262	150	150
Training Hydrant	263	80	80
Subtotal		430	430



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PUBLIC SAFETY

DIVISION MUNICIPAL ENFORCEMENT

PROJECT Communications Equipment Replacement

COST \$90,000

STATUS Replacement

PHASE New

DESCRIPTION The RCMP has provided radio equipment to the City's Municipal Enforcement Division (MED) for more than 15 years. This equipment includes portables (for officers to carry) and mobile units (within the vehicles).

Across Canada, the RCMP has been moving to a digital radio system (encryption) and had previously planned the conversion in the NWT for 2015 or later. The City was notified in July 2012 that the conversion to a digital platform will be in February of 2013, and that all RCMP-owned radios must be returned to the RCMP for deployment within their organization.

For MED to have any contact with the RCMP, they will need to purchase new radios that also have the encryption feature. The RCMP has stated that they could enter into a memorandum of understanding for encryption servicing on any new MED radios.

This project works toward Council's Goals #1¹ and #4², Objective #1.4³ and #4.4⁴ and Action #4(b)⁵.

O&M IMPACT These changes may have a slight impact on the O&M for Municipal Enforcement in the event that repairs are required on the new equipment or towards any encryption service with the RCMP. It is hoped that O&M for this purchase will be covered through existing O&M funding.

-
- 1 Affordability.
 - 2 Continuous improvement.
 - 3 Emphasize fairness and transparency in financial decisions, program delivery and land assembly.
 - 4 Be a leader in innovation.
 - 5 Lead in innovation and best practices.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	PUBLIC SAFETY
DIVISION	FIRE AND AMBULANCE
PROJECT	Self-Contained Breathing Apparatus (SCBA)
COST	\$50,000
STATUS	Replacement
PHASE	3 of 3
DESCRIPTION	<p>This equipment is essential to ensure respiratory protection for our firefighters during the course of their work. The Fire Hall's present inventory of SCBA needs to be increased to match an increase in the number of career and paid-on-call staff. By replacing these units, we maintain best practices, ensure compliance with legislative requirements, enhance firefighter safety, and mitigate major and costly repairs.</p> <p>This project addresses City Council's Actions #4(b)¹ and #4(c)².</p>
O&M IMPACT	Minimal

¹ Lead in innovation and best practices.

² Become a preferred employer.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PUBLIC SAFETY

DIVISION FIRE AND AMBULANCE

PROJECT Bunker Gear Lockers

COST \$60,000

STATUS New

PHASE 1 of 1

DESCRIPTION An increase in paid-on-call firefighters has created a need for more locker space. The Fire Hall expansion will open space in the apparatus bay to accommodate the extra, required bunker gear lockers. The new lockers will be consistent with those currently used by other firefighters.

This project works toward City Council's Goal #4¹.

O&M IMPACT Minimal

¹ Continuous Improvement

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	PUBLIC SAFETY
DIVISION	FIRE AND AMBULANCE
PROJECT	Front Ramp and Site Improvements
COST	\$150,000
STATUS	Replacement
PHASE	1 of 1
DESCRIPTION	Repairs are required to the front ramp and portions of the foundation which have heaved, causing structural damage. This amount was originally allocated to the 2011 Budget but was used instead to offset the cost of the Fire Hall expansion. This project works toward City Council's Goal #41.
O&M IMPACT	Minimal

¹ Continuous Improvement



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PUBLIC SAFETY
DIVISION FIRE AND AMBULANCE
PROJECT Training Hydrant
COST \$80,000
STATUS New
PHASE 1 of 1

DESCRIPTION Installation of an additional hydrant in close proximity to the burn structure is necessary to enhance training initiatives for staff and assist in meeting occupational health and safety requirements. The \$110,000 originally approved for 2012 was insufficient for the project. That amount will now be carried over to 2013, when an additional \$80,000 will be needed to complete this project.

This project works toward City Council's Goal #4¹.

O&M IMPACT Minimal

¹ Continuous Improvement

CAPITAL FUND - 2013 Capital Projects

	2011 Budget (\$000's)	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
Planning & Development							
Housing & Affordability Strategy/ Eco Housing	-	82	-	-	-	-	-
Yellowknife Smart Growth Redevelopment Plan	-	20	-	-	-	-	-
Old Airport Road / Franklin Ave. Streetscaping	-	939	-	-	-	-	-
50th Street Streetscaping	-	35	-	5	-	-	-
Harbour Plan & Smart Growth Development Plan Initiatives	500	93	500	954	600	1,000	500
Streetscaping Initiatives	450	430	500	520	500	500	500
	950	1,599	1,000	1,479	1,100	1,500	1,000

		2013 Budget Recommended (\$000s)	Formula Funding (\$000s)
Planning & Development	Page #		
Harbour Plan & Smart Growth Development Plan Initiatives	265	600	600
Streetscaping Initiatives	266	500	500
Subtotal		1,100	1,100



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PLANNING AND DEVELOPMENT

DIVISION PLANNING AND LANDS

PROJECT Harbour Plan and Smart Growth Development Plan Initiatives

COST
2013 \$600,000
2014 \$1,000,000
2015 \$500,000

STATUS Ongoing

DESCRIPTION In 2012, City Council adopted the Yellowknife Harbour Plan and the General Plan, and, in 2010, the Smart Growth Development Plan for information. Both plans have a series of recommendations which include initiatives that have attracted interest from federal funding agencies. Such projects include:

Harbour Park Improvements:

- Pilot's Monument
- Wiley Road Park
- Fisheries and Oceans Canada Wharf
- Otto and Lessard Drive Park
- Trail and boardwalk systems

Public Parks :

- Frame Lake Park
- Old Airport Road and Highway 3

The City has made application to CanNor for up to \$1 million in funding these various development initiatives in 2013 which will require a combination of matching and in-kind funds. The proposed funding will be sufficient to cover the City's funding requirements and to target a number of key Smart Growth and Harbour Plan initiatives which are most beneficial to the City.

Administration has had preliminary engagement with various private sector and public interests on these various initiatives and is confident that partnerships can be arranged to leverage additional resources. Based on input from the committee, the most beneficial projects will be pursued in 2013.

In addition to the goals and objectives of the Harbour Plan, General Plan, and the Smart Growth Development Plan, the project achieves Council Goals #2¹, #3², and #4³.

O&M IMPACT: Any park or trail development work will have an extended , three-year warranty/ maintenance period incorporated into the contract.

¹ Enhancing our Built Environment

² Building Social Capital (Community Engagement)

³ Continuous Improvement

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PLANNING AND DEVELOPMENT

DIVISION PLANNING AND LANDS

PROJECT Streetscaping Initiatives

COST

2013	\$500,000
2014	\$500,000
2015	\$500,000

STATUS Ongoing

PHASE 1 of 1

DESCRIPTION The City concluded its partnership arrangement with CanNor for the streetscaping of Old Airport Road in 2012. This work included the entranceway to Old Airport Road and extended to include areas in front of Staples, Stanton Plaza, Wal-Mart, and Extra Foods. Additional landscaping, amenity features, and trail connections to Range Lake and Kam Lake Road were deferred from the 2012 construction design due to budget. It is projected these works could be completed along with the streetscaping of a downtown street in 2013. These improvements will serve to provide safe and continuous pedestrian/cycling access to businesses and the downtown and have been endorsed by the Smart Growth Implementation Committee.

In addition to the goals and objectives of the General Plan and Smart Growth Development Plan, the project achieves Council Goals #2¹, #3², and #4³.

O&M IMPACT Administration has mitigated O&M streetscaping costs relating to landscape maintenance through the provision of underground irrigation and the provision of a 3-year maintenance period with the contractor.

¹ Enhancing our Built Environment.

² Building Social Capital (Community Engagement).

³ Continuous Improvement.



CAPITAL FUND - 2013 Capital Projects

	2011 Budget (\$000's)	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
Public Works & Engineering							
Fleet Replacement	1,259	1,179	1,449	1,303	1,035	1,366	1,338
	1,259	1,179	1,449	1,303	1,035	1,366	1,338
Engineering & Garage							
New Parking - Garage	750	-	150	950	-	-	-
Traffic Lights Video Detection Equipment	-	-	-	-	75	75	75
Diagnostic, Safety Equipment & Specialty Tools For Mechanics	15	21	20	20	-	-	-
Survey Equipment & AutoCad Software	75	-	-	78	-	-	-
Garage - Fire Code & Safety Improvements	100	62	50	50	-	-	-
	940	82	220	1,098	75	75	75
Roads & Sidewalks							
Road Rehabilitation	2,805	2,402	700	897	2,622	3,000	3,000
Franklin Ave./Old Airport Road Traffic Lights Upgrade	-	137	-	29	-	-	-
Traffic Lights UPS	60	60	60	60	-	-	-
Drainage Improvements	50	20	50	94	50	50	50
Stormceptor Supply & Install	-	-	-	15	-	-	-
McMeekan Causeway Abutment Stabilization	250	-	-	46	-	-	-
	3,165	2,619	810	1,141	2,672	3,050	3,050
Transit							
Marketing Plan, New Bus Shelters & Route Posts	20	-	20	53	-	-	-
	20	-	20	53	-	-	-

CAPITAL FUND - 2013 Capital Projects

	2011 Budget (\$000's)	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
Road Rehabilitation							
Latham Island Area:							
Morrison Drive					1,000		
N'Dilo	810	360	600	250			(1)
Raccine Road, Ingraham Drive & Doornbos Lane					322		
Central Business District:							
41St & 49A Ave				220			
45 St (49 Ave. - Franklin Ave.)						700	
51& 52 St. Overlay Program	495	742					1,300
52 Ave. (49 St. - 56 St.)						1,500	
Old Airport Road (Borden Drive to Cemetery Road)	1,300	1,200					
Kam Lake Industrial:							
Drybones Drive	200	100					
Deh Cho Boulevard					1,300		
Cameron Rd./Etthen Dr./Taltheilei Dr.							500
Utsingj Drive							1,200
Niven Lake:							
de Weerdt Drive, Driscoll Rd. & Haener Drive						800	
Miscellaneous patching and repairs			100	427			(2)
	2,805	2,402	700	897	2,622	3,000	3,000

Notes:

- (1) Under the contribution agreement between the City and Yellowknives Dene First Nations, each contributes half of project cost.
- (2) \$427,000 included patching for the 54th Ave. School Draw, Old Airport Road overlay, Old Airport Road left turn lane and Franklin Ave. overlays at Fire Hall.



CAPITAL FUND - 2013 Capital Projects

	2011 Budget (\$000's)	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
Solid Waste Management							
Landfill/Baler							
Landfill Expansion	500	3,132	200	200	-	-	-
Baling Facility Mechanical Upgrades	25	12	25	56	25	25	25
Site Restoration Liability	150	26	150	297	150	150	150
Disposal of Liquid Waste	-	-	-	10	-	-	-
Ban Commercial Cardboard	-	-	-	25	-	-	-
Storage for Unbaled Recyclables	-	53	-	-	-	-	-
Landfill Fire Control & Risk Reduction Plan	-	-	-	25	-	-	-
Shelter For E-waste	-	20	-	20	-	-	-
Solid Waste Facility Entrance Beautification	-	-	-	-	150	-	-
Centralized Composting Project	100	70	110	185	750	250	250
Overhead Door Replacement	130	139	-	-	-	-	-
Scrap Metal Recycling	-	26	-	8	-	-	-
Purchase an Excavator	-	-	300	-	-	-	-
Office/Break Room/ Washroom for Solid Waste Facility	-	-	120	120	-	-	-
	905	3,478	905	946	1,075	425	425
Community Energy Plan (CEP)							
Con Mine Geothermal Study	-	557	-	216	-	-	-
CEP Energy Coordinator	85	106	85	75	85	85	85
CEP Implementation/Study	-	1	-	-	-	-	-
CEP Communication	10	-	-	-	-	-	-
CEP Energy Efficiency Projects	405	137	415	400	415	415	415
	500	800	500	691	500	500	500

CAPITAL FUND - 2013 Capital Projects

	2011 Budget (\$000's)	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
Water & Sewer							
Pumphouses (PHs)/Liftstations(LSs)/Forcemains							
Water Treatment Plant/Reservoir Expansion	1,604	2,010	5,823	1,309	9,900	10,100	-
Liftstations Capital Upgrades	65	124	65	155	65	65	65
Reservoir Flushing, Cleaning & Repairs	60	45	25	125	25	25	60
Pump Replacement Program	400	141	100	100	-	-	-
Monitor & Controls Assessment & Upgrading PHs & LSs	80	51	75	157	75	75	75
Pumphouse & Liftstation Pipe Replacement	400	43	325	1,229	300	300	300
	2,609	2,414	6,413	3,075	10,365	10,565	500
Other							
Water Meter Replacement & Upgrade	-	9	15	102	-	-	-
Water Meter Replacement for PHs & LSs	-	-	-	18	-	-	-
Water Meter Readers	25	3	-	-	-	-	-
Water & Sewer System Review	-	1	-	-	-	-	-
Liftstation GenSet Installation (Backup Power)	350	99	-	566	175	175	175
Fire Hydrant Repair /Upgrade	30	30	30	30	30	30	30
Water Licence Study & Report Requirements	200	142	100	158	100	50	-
PH#4 Sodium Hypochlorite Generation	-	-	400	100	-	-	-
Personal Gas Monitoring Equipment Upgrade	-	-	30	30	-	-	-
	605	284	575	1,004	305	255	205



CAPITAL FUND - 2013 Capital Projects

	2011 Budget (\$000's)	2011 Actual (\$000's)	2012 Budget (\$000's)	2012 Forecast (\$000's)	2013 Budget (\$000's)	2014 Budget (\$000's)	2015 Budget (\$000's)
CMP Replacement Program:							
(includes repavement and concrete)							
Taylor Road Area:							
Franklin Avenue (Gitzel Street To Fire Hall) (2014 Water & Sewer & Paving)						7,000	
Lanky Court (2013 Water & Sewer & Paving)					1,200		
Matonabee Street (2012 Water & Sewer, 2013 Paving)			1,775	2,736	1,100		
Forrest Drive Area:							
Con Road (2015 Water & Sewer, 2016 Paving)							1,225
Forrest Dr - Burwash Dr. to 51A Ave.(2013 Water & Sewer, 2014 Paving)					650	525	
Frame Lake South:							
Knutsen Court (2013 Water & Sewer & Paving)	2,000	1,870	450	478	1,000		
Woolgar Ave./ Range Lake Rd.(2010 Water & Sewer, 2011 Paving)	700	583					
Byrne Road (Paving)					850		
Bromley Drive & Bromley Court (2013 Water & Sewer, 2014 Paving)					2,000	900	
Dagenais Drive (2015 Water & Sewer, 2016 Paving)							3,300
	2,700	2,453	2,225	3,214	6,800	8,425	4,525

CAPITAL FUND - 2013 Capital Projects

		2013 Budget Recommended (\$000s)	M.E.R. Reserve (\$000s)
Public Works & Engineering			
	Page #		
Fleet Management	275		
1053-09 2009 Crown Victoria B53		51	51
1122-09 Bush Hot Professional Series M		15	15
2019-96 Mobile Street Sweeper		367	367
2033-07 CAT 140M Grader		204	204
2100-01 2001 Bobcat Loader- Ingersoll		66	66
2110-97 97 Ford E350 Ambulance		179	179
3129-04 Zamboni Model: 440		123	123
Small SUV For Use By Staff at City Hall		30	30
		<hr/>	<hr/>
		1,035	1,035



CAPITAL FUND - 2013 Capital Projects

	Page	2013 Budget Recommended (\$000s)	Formula Funding (\$000s)	Gas Tax Rebate (\$000s)
Engineering & Garage				
Traffic Lights Video Detection Equipment	279	75	75	
Roads & Sidewalks				
Road Rehabilitation	280	2,622	2,622	
Drainage Improvements	284	50	50	
		<u>2,747</u>	<u>2,747</u>	-
Solid Waste Management				
Landfill				
Baling Facility Mechanical Upgrades	286	25	25	
Site Restoration	287	150	150	
Solid Waste Facility Entrance Beautification	288	150	150	
Centralized Composting Project	290	750	543	207
		<u>1,075</u>	<u>868</u>	<u>207</u>
Community Energy Plan (CEP) Initiatives				
CEP Implementation	291	85	85	-
Energy Efficiency Projects	291	415	415	-
		<u>500</u>	<u>500</u>	<u>-</u>

CAPITAL FUND - 2013 Capital Projects

		2013 Budget Recommended (\$000s)	Formula Funding (\$000s)	Long-Term Debt (\$000s)	Water & Sewer User Fees (\$000s)	M.E.R. Reserve (\$000s)	Gas Tax Rebate (\$000s)
Pumphouses/Liftstations (PHs/LSs)	Page #						
Water Treatment Plant	293	9,900		9,900			
Liftstations Capital Upgrade	295	65	65				
Reservoir Flushing, Cleaning & Repairs	297	25			25		
Monitor & Controls Assessment & Upgrade	298	75	75				
Pumphouse & Liftstation Pipe Replacement	300	300	100				200
Other							
Liftstation GenSet Installation (Backup Power)	301	175	175				
Fire Hydrant Repair/Upgrade	302	30	30				
Water Licence Study & Report Requirements	303	100	100				
CMP Replacement Program	304	6,800					6,800
		17,470	545	9,900	25	-	7,000
PW Subtotal		22,827	4,660	9,900	25	1,035	7,207



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	PUBLIC WORKS & ENGINEERING
DIVISION	FLEET MANAGEMENT
PROJECT	Upgrading of Fleet
COST	\$1,034,700
STATUS	Replacement/ New
PHASE	Ongoing
DESCRIPTION	<p>The mobile equipment fleet has a replacement value of \$13.4 million and must be maintained to meet the service levels expected by residents. The City has a fleet of 134 active heavy-duty and mobile equipment that support Fire and Ambulance, Road Maintenance, Water and Sewer Maintenance, Solid Waste, Parks, Arenas and Administrative functions, plus 23 stationary engines for emergency power generation and fire pumping capacity.</p> <p>The replacement vehicles have passed their useful lives according to City practices. In addition, they are recommended for replacement according to a mechanical assessment carried out by mechanics. In the 2006 Infrastructure Needs Assessment by Ferguson, Simek and Clark Architects and Engineers, it was noted that nearly half of the City's fleet has exceeded its anticipated life span. Currently the fleet has only a few vehicles that are older than the required age or do not meet the City's standard.</p> <p><u>Light Vehicles:</u> According to the City of Yellowknife Fleet Management Practices, these vehicles should be reviewed for replacement after five years and replaced after eight years. Replacing the aging fleet has lowered the O&M to operate the fleet. Starting next year, on an average, four pickups or vans have to be replaced every year to maintain the fleet to the policy standard. If the standard</p>

is not followed, more maintenance staff will have to be hired to maintain the fleet to a safe and operational level and there will be increased costs. Status: Good – meets standard. Note: Due to the success of the replacement program the replacement age of light vehicles was increased from eight to ten years.

Medium-Duty Trucks:

According to the City of Yellowknife Fleet Management Practices, these vehicles should be reviewed for replacement after eight years and replaced after ten years. Status: Medium - duty trucks meet standard and no replacement medium trucks are planned this year.

Municipal Enforcement Vehicles:

These are to be replaced every three years or 100,000 km. Due to the high usage, Municipal Enforcement vehicles require a high amount of maintenance (nearly five times that of similar vehicles in the fleet). For this reason, it is important to maintain the replacement schedule of the vehicles. One Municipal Enforcement vehicle must be replaced yearly to maintain the City standards and in order to reduce O&M costs and labour requirements. With the replacement of one vehicle this year, the City will meet the practice identified. Status: Good – standard is maintained.

Heavy Trucks:

This vehicle class includes trailers, tandem tractors, dump trucks, and street sweepers. One of the street sweepers is due for replacement. Most heavy trucks are to be replaced every 12 years. Sweeper and vacuum trucks are replaced every 8 years because of high usage and the resulting wear on parts in that type of vehicle. Reliability is greatly diminished as the equipment ages. After evaluation, the replacement age was changed to 8 years from 12. Sweepers and vacuum trucks must meet environmental requirements set out by territorial and federal governments.

Trucks are used for City projects and snow removal in the winter. The cost for the City to operate these vehicles is about half that of hiring contractors. Each truck is operated for about 1,000 hours annually, saving the City \$45,000 per year for each truck it operates rather than contracting out. A highway tractor and roll-off bin truck were added to the fleet in 2012.

Trailers are reviewed when aged out. If practical, the trailer is refurbished and returned to service. The dump trailers (due to more use and normal wear and tear) are replaced when aged out.

As trucks get older, increased maintenance and repairs are required, such as replacing motors and transmissions at costs of \$20,000 and \$10,000 respectively. Breakdowns inevitably occur when equipment is needed, resulting in a cost to engage contractors that is much higher than using our own resources. Status: if replacement continues, heavy-truck fleet is in good condition.

Heavy Equipment:

Heavy equipment is used for City projects and snow removal in the winter. The cost for the City to operate our own equipment is about half that of hiring contractors. Each piece of heavy equipment is operated for about 1,000 hours annually, saving the City \$45,000 per year for each piece of heavy equipment it operates.

Equipment in service at the Solid Waste Facility has a replacement cycle of six years. The equipment must run reliably or we may face environmental risks.

Graders are replaced every six years because the graders are required to maintain the roads in a safe manner. Breakdowns tend to leave areas that are not cleared in a timely manner, leading to complaints and possible dangerous road conditions.

As heavy equipment gets older, increased maintenance and repairs are required, such as replacing motors and transmissions at a cost of \$30,000 and \$20,000 respectively. Breakdowns inevitably occur when equipment is needed resulting in a cost to engage contractors. The operators supplied by a contractor often cause damage to the streets because they are not aware of hidden hazards such as frost heaved manholes and uneven curbs.

The City has explored contracting out heavy equipment services and leasing vehicles, but recommends the acquisition of replacement vehicles as the most cost-effective option. Status: if replacement continues, heavy-truck fleet is in good condition.

Mobile Tractors:

This class includes Zambonis, skid steers, compactors, and forklifts. The anticipated life span is ten years. This equipment is currently tasked with sidewalk and Ice surface maintenance in the winter. Work in the summer includes sidewalk resurfacing and cold mix patches, trail repairs, and grounds maintenance. Status: if replacement continues, Mobile Tractor fleet is in good condition.

Emergency Vehicles:

This includes fire trucks, ambulances and water trucks. Due to increased demand and aged equipment, the replacement life cycle standard has been re-evaluated by Public Works and the Fire and Ambulance Division. The standard for replacement was reduced from 30 years to 20 years for most firefighting equipment. This was done after a replacement part was not available for a fire truck that was over 20 years old. The vehicle was out of service for eight weeks until a part was finally found at a used car wrecker. Parts are no longer manufactured for vehicles over 20 years old.



Ambulances are now replaced on a 12-year cycle, due to the high amount of use and reliability issues with ambulances as they get older. We have three ambulances and one is replaced every four years. The newest is placed on “first out the door” service and the oldest is declared surplus. Status: most of the emergency vehicles are due for replacement since re-evaluation of their life cycle. Condition is poor for most second line duty vehicles, while front line vehicles are in good condition.

Other Equipment:

This class of equipment includes the miscellaneous equipment required by City departments to do their work. Included are: riding mowers, snowmobiles (Municipal Enforcement Division), all-terrain vehicles (firefighters), Solid Waste Facility baler, light trailers, line-painters, and crack sealing equipment, trailer-mounted water pumps, and ground thawing equipment. Equipment in this group have a varied life expectancy and replacement cost. Status: for the most part, this equipment group is in good shape and the replacement schedule allows for safe work and consistent workflow.

Stationary Engines:

Our fleet mechanics also maintain and service stationary engines. This includes standby generators for City water and sewer supply and City facilities (City Hall, Fire and Ambulance Division, Multiplex/Fieldhouse). The stationary engines provide standby electricity on water and sewer services in times of power outages or natural disasters. The estimated value of the stationary engines is approximately \$4.8 million. Many of the existing engines are old; three are over 30 years old, 12 are over 20 years old. Parts are often unavailable for engines over 20 years old. Though these engines get little use, even small breakdowns may result in lengthy repairs.

Status: The Mobile Reserve Fund is not used to replace stationary engines, although fleet resources are used to maintain them. It is recommended to departmental

managers that the older stationary engines be replaced. Fleet-wide, it is recommended that one engine a year be replaced until all stationary engines are less than 20 years old.

Summer Vehicles:

Summer vehicles are those that have been replaced but are still useful in a secondary or low priority role. There are ten light vehicles used mainly by Community Services staff in the summer or as administration vehicles year round, and one heavy equipment class dump trailer used in winter as a backup or used with a leased tractor for winter snow removal, one vacuum truck and a sanding truck with a belly blade used for backup. If repair of a summer vehicle exceeds an estimated cost of \$500, the vehicle may be removed from service at the discretion of the Works Superintendent.

This project addresses City Council's Objective #4.1¹.

O&M IMPACT

Maintenance costs will decrease if City of Yellowknife Fleet Management Practices are followed, due to reduced fuel consumption and repair costs. City residents will be highly satisfied with City services. If the fleet is replaced and a schedule followed, services will be more consistent and not interrupted due to equipment failure.

¹ Be accountable to residents by ensuring open and accessible information flow and accessible decision making.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	PUBLIC WORKS & ENGINEERING	
DIVISION	ROADS AND SIDEWALKS	
PROJECT	Traffic Lights Video Detection Equipment	
COST	2013	\$75,000
	2014	\$75,000
	2015	\$75,000
STATUS	New	
PHASE	Initial	

DESCRIPTION The City of Yellowknife has historically relied solely upon wire loops in the asphalt surface of intersections to detect vehicle presence and subsequently giving a call to change the traffic lights in that particular direction.

Traffic loops can be troublesome in the winter under snowy conditions. They are expensive to install and maintain. They are also susceptible to road conditions and construction activity. Over 35% of current loops in use require some measure of repair. This can cause major inefficiencies in traffic flows and timing patterns.

Video detection equipment is the new standard in detection and data collection and is easy to install and program. According to the manufacturer's specifications, it has a proven field detection accuracy of 98%, including motorcycles and bicycles. The cameras can also capture traffic data, such as traffic counts of cars, trucks and pedestrians as well as vehicle speeds. However, vehicle speed data can only be used for design methods and not as a method of speed enforcement.

The approximate cost is \$35,000 per four-way intersection. Therefore, with a \$75,000 annual investment, two intersections can be completed per year while allowing approximately \$5,000 for installation costs.



This project works towards City Council's Goal #4¹.

O&M IMPACT Will increase public safety and reduce call-outs for Public Works & Engineering staff.

¹ Continuous Improvement

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PUBLIC WORKS & ENGINEERING

DIVISION ROADS & SIDEWALKS

PROJECT Road Paving/Rehabilitation

COST

2012	\$2,622,000
2013	\$3,000,000
2014	\$3,000,000

STATUS Replacement

PHASE Ongoing



DESCRIPTION Paving work includes not only new asphalt pavement, concrete curb and sidewalks, but also considers the replacement and future needs of underground infrastructure of water, sewer, storm, traffic communication, power, telephone, cable, fibre optic, etc.

The typical design life of pavement is generally between 20 and 25 years, but will vary significantly. This design life is dependent on various factors such as traffic volumes, vehicle types, geotechnical conditions, construction practices, and adequate maintenance. The design life of 20 to 25 years applies to most city streets, except for the Kam Lake Industrial Subdivision where the roads were paved with no base reconstruction. The paved roads in the Kam Lake Industrial Subdivision will likely have a life of only 10 years or less. It is important to note that concrete curbs and sidewalks are not installed in downtown alleys or on roadways with rural cross sections. In areas of potential settlement, the City considers asphalt sidewalks as opposed to concrete sidewalks as they are less costly and are easier to maintain or repair should settlements occur.

The construction of new roads generally coincides with the development of new subdivisions. The replacement of roads generally follows the replacement of water and sewer infrastructure. Otherwise, paving is scheduled for reconstruction when a road is in poor condition and may be endangering the public or when maintenance and repairs no longer are cost-effective. The paving of roads may be done in the same year as water and sewer infrastructure replacement or may be delayed a year or two to allow for settlement, depending on the ground conditions.

There has been concern expressed by the public as to the condition of the sidewalks and roads in the central business district. The majority of roads in the central business district are over 30 years in age and are well beyond their life expectancy. The replacement of several



As streets are reconstructed, the City works with Northland Utilities Limited to ensure that street lighting levels are evaluated and increased, as required by national standards. Additional underground duct work is being coordinated in this work with Northland Utilities Ltd., NorthwesTel Inc. and NorthwesTel Cable Inc. for present and future needs.

2013 Road Paving / Reconstruction Projects

Deh Cho Boulevard Reconstruction

With the construction of Deh Cho By-Pass Road in 2010, there has been a significant increase in heavy truck traffic on Deh Cho Boulevard as this is now the main route for trucks entering the Kam Lake Industrial area. Deh Cho Boulevard is currently undergoing significant deflection which is causing very poor road conditions.

This work will require large excavations and reconstruction of the road base as well as stabilization methods to ensure that the heavy truck traffic can be supported by the road base.

Old Town Paving – Raccine Road, Ingram Drive, and Doornbos Lane

Public Works would like to dedicate a portion of the 2013 paving budget to placing asphalt on the roads on Pilot's Monument Hill, which would include Ingraham Drive, Raccine Road and Doornbos Lane.

There are several factors that support this direction. Maintenance of this hill in both summer and winter is problematic. The extreme nature of approach slopes and exiting slopes make maintenance more difficult, including sanding and plowing in the winter as well as grading and dust control in summer months. Pilot's Monument is also a prominent tourist attraction where people from all over the world go to view Yellowknife.

Due to the nature of roadways in Old Town, Public Works is unsure if concrete curb, gutter and sidewalk are applicable in this area. This will be investigated and determined through the detailed design process.

Morrison Drive (from Sikyea Tili to Lessard Drive)

This is a priority road for many people who travel from Old Town and the community of N'dilo into Yellowknife. There have been drainage and storm water retention issues for a number of years. It also serves as a major transit thoroughfare and needs resurfacing to repair a number of ongoing problems.

2014 Road Paving / Reconstruction Projects

52 Ave (Between 49 Street and 56 Street)

Several sections of this street have undergone significant differential settlement. The initial plan was to complete resurfacing block-by-block. Upon further investigation and taking into consideration the age of the storm water system, it was decided that this full section be completed in one construction season.

45 Street (Between 49 Avenue and Franklin Avenue)

This street is one of the oldest streets in Yellowknife. The asphalt and concrete have both degraded and are in need of replacing. There are no signs of significant differential settlement of the roadbed, so the area should require only replacement of the asphalt and concrete structures.

Deweerd/Driscoll/Haener Drive

Paving of the initial portion of Haener Drive was completed in 2010. The remaining section of Haener, along with Driscoll and Deweerd Drive, was supposed to be surfaced with asphalt and concrete in summer of 2012.

CAPITAL FUND - 2013 Capital Projects

However, based upon video inspection of water/sewer mains and services, 31 of 35 services need to be repaired and one section of sewer main needs regrading. Due to strict time constraints in the 2012 season, the asphalt and concrete surfacing of these streets was delayed.

2015 Road Paving / Reconstruction Projects

Downtown Street Overlay Program - 51 Street and 52 Street

Public Works has determined a method of road resurfacing that may make construction less invasive and timelier on streets that have no differential settling problems. Many downtown streets have no movement problems, but the concrete sidewalk is severely deteriorated. A prime example of this is a section of 51 Street, between 51 Avenue and 52 Avenue (next to King Pin Bowling Alley). Instead of complete removal of asphalt and concrete materials, the contractor will be required to remove dilapidated structures, such as sidewalks, while keeping intact the asphalt roadway. New concrete appurtenances will then be installed and an overlay of asphalt will be done to resurface the road.

This method will save time and money by not completely removing the road surface and roadbed. It will also save on materials by not importing new aggregate to rebuild the road base, which is in relatively good condition to begin with.

Cameron Rd. / Etthen Dr. / Taltheilei Dr. (Kam Lake Industrial Park)

This will almost complete the paving of the Kam Lake area with the exception of Utsingi Drive and the Enterprise Drive extension which was constructed in 2011. It has been the department's objective to attempt to pave at least one Kam Lake street per year. This has not always been achievable. However, the older section of the Kam Lake area will be finished in 2014.

Utsingi Drive (Kam Lake Industrial Park)

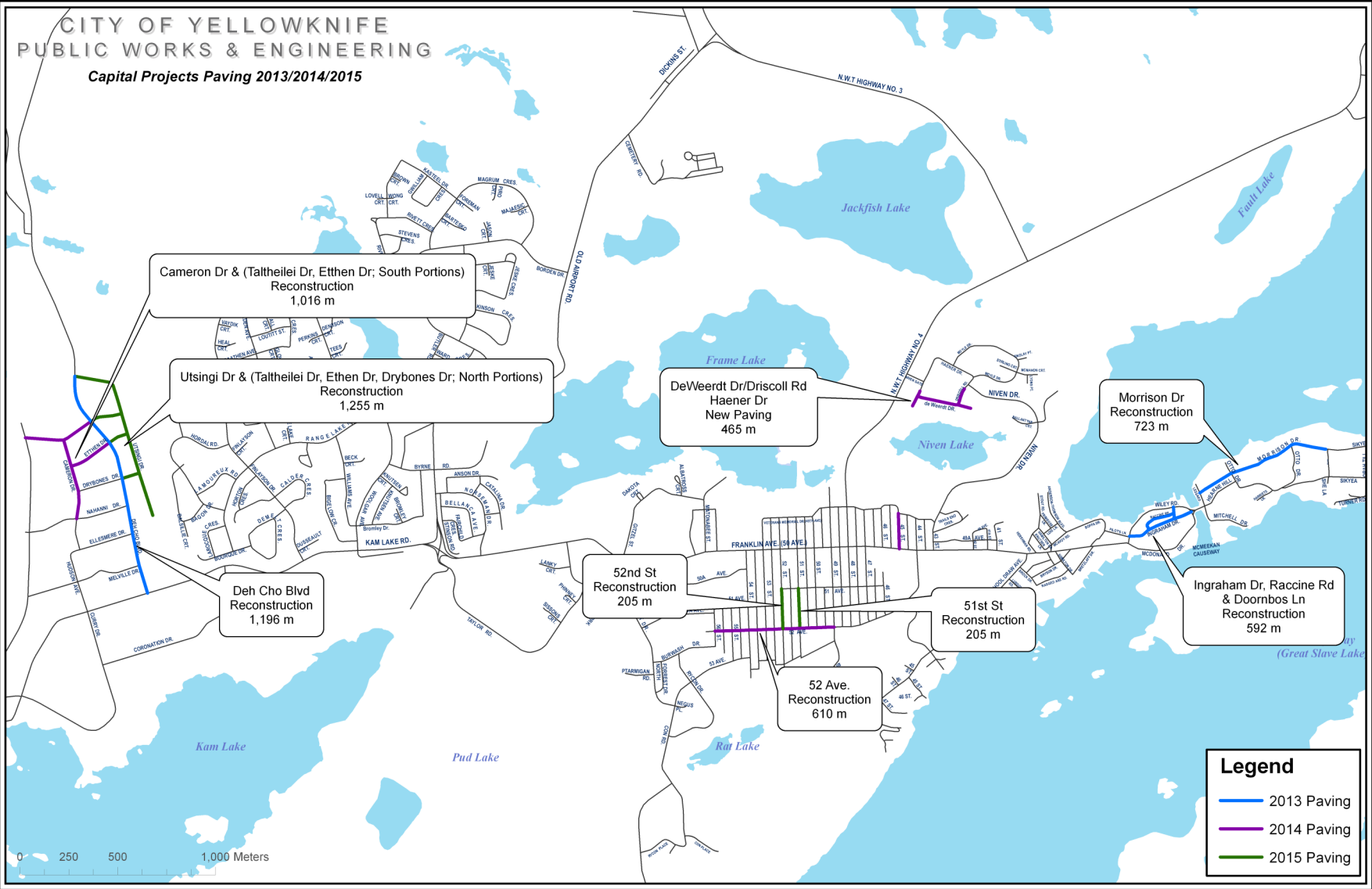
This will nearly complete the paving in the Kam Lake area with the exception of the Enterprise Drive Extension which was construction in 2011.

Tentative 3-Year Paving Plan

Street	Replacement Year	Paving Estimate
Deh Cho Boulevard	2013	\$1,300,000
Raccine/Ingraham/Doornbos	2013	\$322,000
Morrison Drive	2013	\$1,000,000
52 Avenue	2014	\$1,500,000
45 Street	2014	\$700,000
Deweerd/Driscoll/Haener	2014	\$800,000
Cameron/Etthen/Taltheilei	2015	\$500,000
51 Street	2015	\$650,000
52 Street	2015	\$650,000
Utsingi Drive	2015	\$1,200,000
TOTAL		\$8,622,000



CAPITAL FUND - 2013 Capital Projects



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	PUBLIC WORKS & ENGINEERING	
DIVISION	ROADS AND SIDEWALKS	
PROJECT	Drainage Improvements Including Storm Sewer Repairs	
COST	2013	\$50,000
	2014	\$50,000
	2015	\$50,000
STATUS	Existing	
PHASE	Ongoing	
DESCRIPTION	Drainage issues take considerable effort to resolve as many locations have not been designed with drainage in mind. This causes significant efforts from City staff as well as from contractors hired by the City to minimize property damage. This past spring a fast melt occurred even though the accumulated snowfall was only average. The rate of the melt was increased due to the warm spring weather and local development, making direct drainage channels rather than the slower drainage natural tundra provides. This situation caused flooding of property. The flooding also has eroded the soil over the force-main going to Fiddler's Lake Lagoon and exposed the pipe. A washed-out road creates a hazard to the residents since there is no safe way to get off the property. Furthermore, service and emergency vehicles cannot access the property while the flooding is occurring. One ditch in Kam Lake does not drain because it has bedrock that should have been blasted in the past. As a result, the property owner has to set up a series of pumps and hoses to resolve what the drainage system should have prevented.	

Along with some ditches that have to be widened or bedrock blasted for drainage, there are several culverts of insufficient size which must be replaced to allow for heavy spring runoff. There are many culverts of sufficient size which are not effective because their elevation is incorrect due to height-of-fill increase from development. These should be re-installed to direct water away from property.

The City has had a number of requests from concerned residents regarding the storm water drainage along sections of Forrest and Dagenais drives. In both instances settlement of the road has caused significant ponding which resulted in either roadways being undermined or homes being damaged during heavy rainfalls. Since these roads are not scheduled for reconstruction in the near future, the City intends on either extending existing storm sewers in these areas or installing new storm sewers in order to alleviate these problems.

The City continues to require this capital funding to address ongoing drainage concerns or problems that have developed over time.

This project works toward City Council's Objective #2.3¹.

O&M IMPACT

Businesses and the City will enjoy lower pumping costs. Flood damage to property and emergency repairs to roads will drop. Property owners and emergency vehicles will have year-round safe access.





¹ Develop smart and sustainable approaches to energy, water and sewer, waste management, and building systems.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PUBLIC WORKS & ENGINEERING

DIVISION SOLID WASTE FACILITY

PROJECT Baling Facility Mechanical Upgrades

COST

2013	\$25,000
2014	\$25,000
2015	\$25,000

PHASE Ongoing

DESCRIPTION The Baling Facility was built in 1992 and has served the needs of the community well. Equipment installed at the time of construction now requires various upgrades or replacement to ensure the handling of solid waste continues in an efficient and cost-effective manner.

In 2003, the main hydraulic ram on the baler failed and had to be replaced. In 2004, two overhead doors had to be replaced, as well as the underground electrical conduit operating the fire suppression system. This year, most of the alarms for the fire suppression system will have to be replaced to pass inspection.

Present equipment includes: dust collector unit, HVAC burners, overhead doors, fire pump and sprinkler system, fire alarm system, electrical components, air compressor and boilers for in-floor heating.

On a yearly basis, the boilers for the in-floor heating and air compressor have to pass a GNWT inspection under the *Boilers and Pressure Vessels Act*. The fire alarm and suppression system have to pass an annual inspection.

In 2006, an internal audit was taken at the Baling Facility. During this inspection, it was noted that several items require upgrades, repairs or replacement. These include electrical, plumbing and heating, and signage that will be upgraded.

In 2007, the fire suppression pump had to be replaced as well as repairs to the building and modifications to the air handling units.

Proper maintenance and attention to continued upgrading of equipment ensure a safe work environment for Baling Facility employees.

Operation of the Baling Facility works toward Council's Action #4(c)¹.

O&M IMPACT

O&M costs are increasing yearly due to mechanical breakdowns with equipment that is nearing the end of its lifespan. Adherence to the maintenance schedule of mechanical upgrades will decrease costs greatly since there will be reduced repairs and resultant downtime. Baling Facility operating efficiency will also improve.

¹ Become a Preferred Employer.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PUBLIC WORKS & ENGINEERING

DIVISION SOLID WASTE

PROJECT Site Restoration

COST
 2013 \$150,000
 2014 \$150,000
 2015 \$150,000

STATUS Ongoing

PHASE Ongoing (Final closure in 2015)

DESCRIPTION The City has adopted nationally recommended public sector accounting policies earlier than the Government of the Northwest Territories requires adoption. As part of these policies, the City is required to estimate future landfill closure costs and set aside a portion of these costs.

As of December 31, 2011, the net present value of total closure and post-closure costs are estimated to be \$1,279,428. The City has included \$1,224,595 (96%) as part of site restoration liability. Of the total capacity of 700,000 cubic metres, 30,000 cubic metres (4%) remain. It is expected that the existing landfill will be closed in 2012, and site restoration completed by 2015.

There is a difference between the net present value of future landfill liabilities and the actual costs that will be incurred. The difference is estimated to be about \$750,000. In order to avoid the large difference at the end of landfill closure, it is recommended to accrue the amount over the next six years.

In 2013, 2014, and 2015, the City estimates that it will need to set aside \$150,000 each year to fund the future site restoration liability costs.

It is anticipated that the City will begin close-out procedures for the existing working landfill in 2012. However, it will continue to be used as a transfer station for all waste, soil remediation, processing of wood products, yard waste and steel waste for recycling and salvaging in the three-cell system.

This project works toward Council's Objective #2.3¹.

O&M IMPACT

A capital funding allocation for future landfill site restoration will reduce the impact on the Solid Waste Management Fund and reduce the need for future solid waste user fee increases.

¹ Develop smart and sustainable approaches to energy, water and sewer, waste management, and building systems.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PUBLIC WORKS & ENGINEERING
DIVISION SOLID WASTE
PROJECT Solid Waste Facility Entrance Beautification
COST \$150,000
STATUS New

DESCRIPTION The City of Yellowknife leads the North with its solid waste management facility (SWF). The multifaceted facility serves the residents of Yellowknife with a number of programs. For example, the SWF provides a contaminated soil remediation program, recycling center, scrap metal recycling, electronic waste disposal, and appliance disposal. We also employ a baler in the facility that compacts household waste and constructs bales which are easily landfilled and extends the life of the landfill significantly.

The SWF also deals with services specific to Yellowknife such as “honey bag” drop-off and disposal, as well as a three-cell salvage area which provides a safe and supervised area for residents to drop off and pick up reusable items.

This facility is highly used and frequented. Some landscaping and beautification would greatly enhance the appearance of the facility. In addition, the facility is located on the Ingraham Trail, and highly visible to residents and tourists alike as they drive past. The facility should project a clean and well-kept image, given its location.

There are also two major contracting companies that will benefit from the beautification of this entrance; they are NWT Construction and RTL Robinson Ltd.

The City approached both contractors for contributions to the project, through either a cash contribution or labour and equipment use in lieu of cash. The photos below show the areas of proposed upgrade at the entrance (on the left) and an example of a southern facility (on the right) with a simple landscaping plan.

In addition to the landscaping, the City will install “slats” on the chain-link fencing at the front of the facility to reduce the amount of windblown debris escaping the property. This will also reduce maintenance on the landscaped entrance area. Baled paper and recyclables are currently stored at the front of the facility, creating loose debris that can add to the windblown refuse. The City will alter its storage methods and operations to put these bales in a more appropriate area of the facility.

This project works toward Council’s Goal #4¹.

O&M IMPACT

There will be a small impact on operation and maintenance costs in that the landscaping will have to be maintained. This will be designed to be minimal and can be accomplished by existing staff.



Areas of upgrade.





Example of what is envisioned.

¹ Continuous Improvement

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PUBLIC WORKS AND ENGINEERING

DIVISION SOLID WASTE FACILITY

PROJECT Centralized Composting Project

COST

2013	\$750,000
2014	\$250,000
2015	\$250,000

STATUS New

DESCRIPTION In July 2007, Gartner Lee conducted a waste audit at the Solid Waste Facility. The Waste Composition Study showed that 2,100 tonnes of food waste were disposed of by the residential and commercial sectors in 2006, accounting for 26% of the total waste stream. They recommended a significant diversion of food waste from the various sectors which will require the development of a centralized organic waste processing facility.

Between December 2007 and April 2008, a study was undertaken by two Ecology North staff members in cooperation with staff at the City of Yellowknife and the GNWT to research centralized municipal composting options. This study was funded by the GNWT Department of Environment and Natural Resources. Their final report recommends that the City implement a pilot project focusing on compostable waste from 10 to 15 commercial sites which would provide 400 to 600 tonnes of compostable material per year. It is recommended the project run for at least two years to allow for two summer seasons of active composting. The compost site is to be at the Solid Waste Facility where a base pad will be constructed out of recycled asphalt. An electric bear fence will be required.

Composting will divert waste from the Solid Waste Facility, reduce greenhouse gas emissions associated with production of methane in the landfill, reduce the attractiveness of the active landfill to birds and other

wildlife, and produce a finished product that is in high demand in this geographical area. A centralized composting project is more efficient than the smaller backyard composters and, because it reaches higher temperatures, is able to decompose more waste including animal products. It is also worth considering that paper products can be composted in a centralized compost site which will save the cost of shipping them south and it recycles them into usable soil. It is anticipated that the finished compost will be marketable in Yellowknife and usable for many City projects including cover material for the landfill closure.

The pilot project completed in 2011 and an analysis will be conducted to determine the feasibility of city-wide composting. Funding has been earmarked in 2013 of approximately \$750,000, which will be determined in 2012 through the analysis.

2014 and 2015 will require \$75,000 of funding each year for O&M of the centralized composting site. To maintain and operate the site in an efficient manner, we will require a certain amount of equipment and labor.

This work's toward City Council's Objective # 2.3¹.

O&M IMPACT

This pilot project will require some time from solid waste facility equipment operators to maintain the compost piles. However, diverting waste from the main waste stream will reduce the amount of staff time needed at the baler. This funding includes the construction of a composting pad along, with an electric bear fence. It also includes organic waste collection services for 20 months and a compost and education coordinator for 25 hours per week.

¹ Develop smart and sustainable approaches to energy, water and sewer, waste management, and building systems.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PUBLIC WORKS & ENGINEERING

DIVISION ENGINEERING

PROJECT Community Energy Plan Funding

COST

2013	\$500,000
2014	\$500,000
2015	\$500,000

DESCRIPTION This project addresses issues related to energy security, environmental sustainability and responsible and innovative management of resources. The City has developed a Community Energy Plan (CEP) designed to support the community in its effort to reduce emissions and ensure the City leads by example. The CEP has set emission reduction targets of 6% by the community and 20% by the City by 2014 over 2004 levels. The CEP is the visionary strategy of how to achieve emission reductions in Yellowknife. In addition to reducing Yellowknife's emissions, the CEP provides a framework on how to reduce the cost of energy use within both City operations and the community.

The City and community are spending over \$2.8 and \$114 million respectively every year on energy, and forecasts predict a 19% increase in energy expenditures over the next ten years. As energy prices continue to rise, the CEP provides an important plan for reducing the City's reliance on non-renewable energy, thus increasing its energy security, economic and environmental sustainability.

2013 - \$500,000

Energy Coordinator Position - \$85,000

The Energy Coordinator is responsible for implementing the CEP and was made a permanent position in 2009.

The primary duties of the position include:

- Identifying funding opportunities to support the implementation of the CEP, and assisting in the application process;
- Briefing Administration and Council on the energy and emissions implications of their decisions when deemed applicable;
- Providing quarterly updates to the CEP Implementation Advisory Committee on the progress of the CEP;
- Working with facilities and operational managers to identify and implement energy efficiency projects working on a "continuous improvement" policy;
- Working with City departments to ensure purchases are made taking energy efficiency into consideration;
- Working with other levels of government and the private sector to support the implementation of the CEP;
- Working to develop a district energy system in the downtown area;
- Communicating with the general public and City staff on activities and projects related to the CEP.

Integrated Community Energy Use - \$150,000

In 2012, studies were commissioned to better define the energy sources locally available in Yellowknife. Having defined the actual energy sources, integrated resource recovery can be put into motion in 2013 to enable the use of this energy that would otherwise have been lost or wasted. Focusing on the City's internal needs, resources and expertise will allow for a reduction in risk and a better return on investment, both in the economic and environmental sense. In 2013, investment in this process will cover an energy monitoring pilot project, studies, and designs of systems able to use the identified energy sources.

Energy Retrofits and Continuous Improvements - \$205,000

The City seeks to continuously improve the energy performance of its facilities, leveraging the CEP budget to secure external funding, with most projects qualifying for matching dollars. Managers can use these funds to support energy efficiency projects in their facilities, of which CEP funding could represent a portion of the total project amount. The funding amount is determined based on a number of criteria, including the level of energy savings the project would produce and environmental benefit. A number of energy-saving opportunities have been identified in previous audits, including upgrading hot water systems, improving lighting efficiency and increasing insulation.

Curling Club Lighting Retrofit - \$60,000

Lighting above the ice surface at the Curling Club is approaching the end of its useful life. The lights will be replaced with more energy-efficient options. Operational controls will be considered to reduce unnecessary lighting while playing surfaces are not in use.

2014 - \$500,000

Energy Coordinator Position - \$85,000

Energy Retrofits and Continuous Improvements - \$300,000

The City continuously seeks to improve the energy performance of its facilities, leveraging the CEP budget to secure external funding, with most projects qualifying for matching dollars. Managers can use these funds to support energy efficiency projects in their facilities, of which CEP funding could represent a portion of the total project amount. The funding amount is determined based on a number of criteria including the level of energy savings the project would produce and environmental benefit.

A number of energy-saving opportunities have been identified in previous audits, including upgrading hot water systems, improving lighting efficiency and increasing insulation.

Yellowknife Energy and CO₂ Inventory - \$50,000

A CO₂ inventory was completed for the years 2004 and 2009. This inventory is a way to monitor progress in energy use and emissions.

Ruth Inch Pool Roof Insulation Upgrade - \$65,000

The pool roof membrane is scheduled to be replaced. The CEP budget will contribute to increasing the insulation levels to current standards.

2015 - \$500,000

Energy Coordinator Position - \$85,000

Energy Retrofits and Continuous Improvements - \$415,000

The CEP projects support City Council's Objective #2.3¹.

O&M IMPACT

The project will support the reduction of greenhouse gases and costs to the City, residents, and businesses.

¹ Develop smart and sustainable approaches to energy, water and sewer, waste management, and building systems.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	PUBLIC WORKS & ENGINEERING	
DIVISION	WATER & SEWER	
PROJECT	Pump House No. 1 Upgrades & New Water Treatment Plant	
COST	2012 Carryover	\$ 5,100,000
	2013	\$ 9,900,000
	2014	\$10,100,000
STATUS	Ongoing	

DESCRIPTION The City obtains its potable water from the Yellowknife River. Pumphouse #2, located at the Yellowknife River, delivers water to Pumphouse #1 via an eight-kilometer submarine pipeline in Yellowknife Bay. Pumphouse # 1, located at the end of 48 Street towards Yellowknife Bay, is the water treatment/distribution and computer monitoring/control centre for the City.

Currently, the City's only water treatment is disinfection using chlorine gas. The water is also fluoridated to assist in reducing dental decay.

In addition to the daily tests at the pumphouse and twice-weekly tests at the hospital laboratory, the City carries out comprehensive water tests annually or semi-annually. In 2001, Public Works & Engineering started a comprehensive year-round water testing and analysis program. This program was followed by an assessment of the water quality and recommendation for improvements to meet more stringent guidelines.

In 2009, the Government of the Northwest Territories adopted the Canada Drinking Water Guidelines as legislation, thus requiring the City to comply with the new guidelines which state, "Waterworks systems that use a surface water source or a groundwater source under the

direct influence of surface water should filter the source to meet the turbidity limits." As well, water quality criteria that are more stringent than the current drinking water quality guidelines are expected to be established in the future. For example, reduced acceptable levels of turbidity and trihalomethanes are once again under review, and a requirement for further treatment is anticipated within the next couple of years. Public demand for improved water quality is expected, which would in turn establish a need for water conditioning in the future.

Since the city obtains its water from the Yellowknife River, a surface water source, there is always a potential for either of the water-borne pathogens (*Cryptosporidium* or *Giardia lamblia*, which causes giardiasis, or "beaver fever") to enter our water supply. To date, Yellowknife has not experienced an outbreak of either of these pathogens. Although the likelihood of an occurrence is low, the City should nevertheless establish emergency response procedures. A key emergency measure, aside from a boil water order, would be to install appropriate water treatment processes.

During the summer of 2004, a boil water advisory was issued because of the high level of silt in the Yellowknife River. The level of silt exceeded the guidelines.

During the 2002 - 2004 budget planning process, it became apparent that another related factor needed to be considered simultaneously for the project. Pumphouse #1 was constructed in 1948 and added to piece-by-piece from 1968 through the mid-1980s. It has been long overdue for replacement and was originally planned to be done in the early 1990s following the construction of the new reservoir (1991). The new pumphouse building has been designed to be located on top of the reservoir. The extensive growth of the city recently has created an additional burden on the capacity of the reservoir.

CAPITAL FUND - 2013 Capital Projects

The current demand is starting to exceed the capacity of the reservoir. In order to meet the growth of the city, the reservoir must also be expanded. The intent is to expand the capacity of the reservoir to meet the city's current and future ten-year needs.

The first phase of this project was the reservoir expansion at the existing facility; this work was completed in 2008. The engineering services contract was awarded to AECOM in the spring of 2010 and has been progressing to date. Currently, the consultant has been working towards water source selection, civil site design and access, as well as preparing to tender for membrane selection. Once the membrane supplier has been selected, the detailed design can occur.

As the design and planning stage has progressed throughout 2012, the updated construction cash flow is as follows:

2012 Year to Date	\$3,202,952
2012 Projected Remaining	\$250,000
2013 Construction	\$15,000,000
2014 Construction	\$10,000,000
2014 Post Construction Fees	<u>\$100,000</u>
	\$28,552,952*
	(Estimate)

This total figure includes the access road construction that was completed in 2011 along with all piping upgrades that were a requirement of that road construction. It also includes engineering design fees to date.

The project is currently at the 75% design stage. Tender documents are expected in October 2012, with the call for tenders shortly thereafter, and the award scheduled in early 2013.

Budget

In 2012, City Council passed a by-law allowing City Administration to borrow \$20,000,000 in order to complete the water treatment plant and Pumphouse #1 upgrades. This will free up Gas Tax funding for other capital projects.

This project works toward City Council's Objective #2.3¹.

O&M IMPACT

There would be no significant change in O&M costs or staff time for the pumphouse. However, operating costs will increase with addition of treatment estimated at \$70,000 (3% capital) per year.



¹ Develop smart and sustainable approaches to energy, water and sewer, waste management, and building systems.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PUBLIC WORKS & ENGINEERING

DIVISION PUMPHOUSES/LIFTSTATIONS

PROJECT Liftstations - Capital Upgrades

COST

2013	\$65,000
2014	\$65,000
2015	\$65,000

PHASE Ongoing

DESCRIPTION The City has 11 sewage liftstations to lift sewage from people's homes to the sewage lagoon. The value of the liftstations is in the order of \$30 million. The Niven Lake liftstation was added in 2006 in order to meet the needs of continuing residential development. Like the pumps located in the pumphouses for the potable water supply, the pumps and sewage grinders in the liftstations must be maintained and replaced at regular intervals.

If pumps or grinders fail, a sewage overflow can result. This has occurred in the past and a backup has resulted in sewage entering people's homes. In 2003, a sewage overflow at Liftstation #6 cost the City \$25,000 for remediation. On another occasion, sewage backed up in a number of downtown homes due to the grinder not working to capacity.

The average costs to rebuild a pump and a comminutor (sewage grinder) are \$20,000 and \$30,000, respectively. The cost to replace a comminutor is \$80,000. The larger pumps at Liftstations #5 and #6 cost between \$30,000 and \$40,000 to replace.

The high number of components and the high cost of repairs justify the allocation of capital to the sewage liftstations.

Many of the city's liftstations are aging and require increased architectural care and maintenance. These buildings have aged cladding and inefficient windows. It is suggested that insulation and windows be upgraded to reduce heating costs. This, in conjunction with new siding and roofing, will reduce the operating cost for each building and blend better with the surrounding neighbourhood.

This project works toward City Council's Objective #2.3¹.

O&M IMPACT

There will be a reduction in call-outs and sewer spills, as well as power consumption. Rebuilding and/or replacing the pumps and sewage grinders will increase the life of the sewage liftstations. This will also reduce heating costs and eliminate the need for painting every three to four years.



Wet Well

¹ Develop smart and sustainable approaches to energy, water and sewer, waste management, and building systems.



Grinder



Sewage Pump

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PUBLIC WORKS & ENGINEERING

DIVISION WATER & SEWER

PROJECT Pumphouse Reservoir - Flushing, Cleaning and Repairs

COST
2013 \$25,000 – Pumphouse #4
2014 \$25,000 – Pumphouse #3
2015 \$60,000 – Pumphouse #1

PHASE Ongoing

DESCRIPTION The City has three water storage reservoirs that are used to provide potable drinking water to residents, as well as firefighting capabilities. The City's Water License N1L3-0032 was renewed with a condition that the main reservoir be cleaned. Under operational compliance, the City should flush the main reservoir at Pumphouse #3 and at Pumphouse #4.

Flushing the reservoir requires advanced planning and management. The process includes draining the reservoir, removing and disposing of the sediment, and disinfecting the interior of the reservoir, while maintaining a continuous water supply to the city. An additional requirement during the flushing is to evaluate the walls and grout small cracks.

Public Works & Engineering recommends the flushing, cleaning and repair of the City's water reservoirs once a year on a three-year cycle as there are three reservoirs.

This project works toward City Council's Objective #2.3¹.



O&M IMPACT Less debris in the reservoir will increase the effectiveness of the chlorine added to the water. This will increase the free chlorine residual and, in turn, reduce the quantity of chlorine required for disinfection. Additional savings will occur once the cracks are filled and leaks abated.

¹ Develop smart and sustainable approaches to energy, water and sewer, waste management, and building systems.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	PUBLIC WORKS & ENGINEERING
DIVISION	WATER & SEWER
PROJECT	Monitors and Controls Assessment of Pumphouses and Liftstations Upgrading
COST	2013 \$75,000 2014 \$75,000 2015 \$75,000
STATUS	New
PHASE	Ongoing
DESCRIPTION	<p>In a three-phase program in 1997 through 2000, the City began automating all of its pumphouses and liftstations. In addition, the City installed a dedicated communication line to interconnect its most crucial facilities in order to avoid the characteristic interruptions of a telephone line. Many parts are now obsolete, and with the advancement of computer technology, some replacement parts are not made anymore and upgrades are required.</p> <p>The automation of these stations used for the delivery of essential services reduced operator time and increased the system reliability. The City implemented a Supervisory Control and Data Acquisition (SCADA) computer system as the network controller of the system. The main computer for the SCADA system is located in Pumhouse # 1. As a result of the automation, this is the only station that is staffed twenty-four hours per day. All alarms and system feedback are received on the SCADA computer in Pumhouse # 1 which is the centre for emergency dispatch. Automation is required to relieve operators of hands-on requirement. Emergency dispatch is now their primary function.</p>

In order to ensure effective upgrades and maintenance to the City's SCADA monitors and controls, an assessment of the current system needs to be performed. This assessment will evaluate the monitors and controls employed in the system and the system deficiencies, as well as recommended improvements to the system.

The implementation of the findings of this assessment is the second part of this project. They were initiated in 2007 and will continue through 2015. To date, numerous shortcomings in the monitoring and controls system have been resolved. New infrastructure is being put in place that increases the efficiency of the City's infrastructure system.

The City's new water treatment plant project will be the hub for the SCADA system. The upgrading that has been continuing since 2008 will ensure up-to-date equipment and an easy transition when the treatment plant comes online.

This project works toward City Council's Objective #2.3¹.

O&M IMPACT

This assessment and upgrade will effectively increase the efficiency of the system and reduce operational maintenance by reducing the number of call-outs.

With the proper repair of the SCADA system, Water & Sewer trades workers will be able to reduce the number of building inspections and spend more time repairing worn components.

Implementation of new water quality monitors will relieve the need for weekend rounds and increase water quality compliance ability and public expectations.





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- 1 Develop smart and sustainable approaches to energy, water and sewer, waste management, and building systems.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PUBLIC WORKS & ENGINEERING

DIVISION WATER & SEWER

PROJECT Pumphouse & Liftstation Pipe Replacement

COST
2013 \$300,000
2014 \$300,000
2015 \$300,000

STATUS Ongoing

DESCRIPTION The age of our infrastructure is such that the City will have to rebuild the piping of a pumphouse or liftstation yearly to avoid catastrophic failure. A study performed by A.D. Williams Engineering in 2004 discovered that pipes inspected at the two buildings were only 40% to 70% the thickness of new pipes. Small leaks occur regularly in these buildings. Leaking pipes and electricity are a dangerous combination for a workplace.

Liftstation #5 is the main liftstation for the City. All but one of the other liftstations in the city pump sewage to Liftstation #5 and from there it is pumped to Fiddler's Lake Lagoon. With nine liftstations pumping to Liftstation #5 it is very important that it function at peak operating performance. Shutdowns for unplanned repairs are not acceptable, as overflow sewage goes into Kam Lake. There are not enough trucks in Yellowknife to haul sewage to the lagoon, should a breakdown occur.

The pipe at Liftstation #5 has deteriorated over time to the point that it is now 40% of its original thickness. Average thickness at elbow bends is 50% of original thickness and most straight run pipes are 60% to 65% of original thickness. Leaks require repair approximately every two months. Should pipe replacement not be completed, it is inevitable that a main pipe break will occur, resulting in the City being unable to remove sewage.

This works toward City Council's Objective #2.3¹.

O&M IMPACT Welded pipe will be replaced with Victaulic style connectors. Replacement pipe will be coated with epoxy paint to prolong the life cycle. Future repairs may be done by City crews at significant cost savings.

¹ Develop smart and sustainable approaches to energy, water and sewer, waste management, and building systems.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	PUBLIC WORKS & ENGINEERING
DIVISION	WATER & SEWER (PUMPHOUSES & LIFTSTATIONS)
PROJECT	Liftstation GenSet Installation (Backup Power)
COST	2013 \$175,000 – LS #6 Generator Replacement 2014 \$175,000 – LS #9 Generator Replacement 2015 \$175,000 – LS #8 Generator Replacement
PHASE	Final
DESCRIPTION	<p>The age of our infrastructure is such that the City will have to rebuild a pumphouse or liftstation genset regularly to avoid catastrophic failure. Genset provides backup power in case of power failure. With the growth of the city in recent years, liftstations cannot be without power for more than a very short time. In their original design, backup power was not required because wells could receive sewage for hours and not overflow. With the recent infilling of local area infrastructure, any power outages lasting longer than 15 minutes at a high-flow time of day risk becoming overflow situations, when sewage flows into the nearest lake causing an environmental hazard.</p> <p>This project works toward Council's Objective #2.3¹.</p>
O&M IMPACT	Fewer spills and greater public confidence in the water and sewer system.

¹ Develop smart and sustainable approaches to energy, water and sewer, waste management, and building systems.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PUBLIC WORKS & ENGINEERING

DIVISION WATER & SEWER

PROJECT Fire Hydrant Repair/Upgrading

COST

2013	\$30,000
2014	\$30,000
2015	\$30,000

STATUS Ongoing

DESCRIPTION The City maintains 320 fire hydrants. Hydrants are used in emergency situations to fight fires, but are also a source of water in the event sections of water piping become damaged. The underground pipe can be shut off and the system connected above ground, one hydrant to the next, to maintain circulation on the system and prevent freezing.

The Municipal and Community Affairs standard for Community Works requires that each hydrant be inspected and rebuilt every six years. Public Works & Engineering inspects all fire hydrants in the city during the annual water main flushing program. At this time a list of defective or damaged hydrants is established and maintenance is facilitated accordingly. Approximately 55 hydrants are repaired or upgraded annually. By maintaining the standard, the City protects residents and itself from fires, mishaps and lawsuits arising from non-functioning hydrants.

Maintenance work includes removing the hydrant, dismantling, and inspecting it, then replacing worn or inoperative parts. Upgrades are also performed on the hydrants to make them more reliable in winter operation. In vaults that are susceptible to flooding, plugs are installed to stop water from entering through a drain hole.

This water would freeze and render the hydrant inoperative. Metal bearings are replaced with Teflon busing to give the hydrant a “thermal break” which helps to prevent the transfer of cold from air to water and cause freezing of otherwise moving parts.

A new hydrant vault will increase ease of future maintenance and eliminate service disruption due to currently high maintenance requirements.

This project works toward meeting City Council’s Objective #2.3¹.

O&M IMPACT

Emergency repairs will proceed more smoothly because valves and hydrants work properly. There will be fewer emergency calls because of faulty hydrants. Should there be a fire, all persons on the Water & Sewer crew have the ability to repair a hydrant in an emergency.



¹ Develop smart and sustainable approaches to energy, water and sewer, waste management, and building systems.



CAPITAL FUND - 2013 Capital Projects

DEPARTMENT PUBLIC WORKS & ENGINEERING

This works toward Council's Goal Objective #2.3¹.

DIVISION Water & Sewer

O&M IMPACT

No impact to O&M, the majority of this work will be done on a consultant basis.

PROJECT Water Licence Study and Report Requirements

COST 2013 \$100,000

2014 \$50,000

STATUS New

DESCRIPTION In May 2010, the City received a renewal for its water licence. The new water licence has a 12-year duration, beginning May 31, 2010 and ending May 30, 2022.

The new licence requires the City to perform studies, create management plans and compile reports for the Fiddler's Lake Sewage Lagoon and the Solid Waste Facility. These items are to be submitted intermittently over the next four years. The majority of the work was done in 2011.

The projects required at the Solid Waste Facility include investigation into background metal concentrations in the area surrounding the landfill and an evaluation of the discharge area for treated water from the lagoon at the Contaminated Soil Treatment Facility.

The projects required for Fiddler's Lagoon include a Lagoon Treatment System Management Plan, comparison of effluent quality and lagoon performance with the Canada-wide Strategy for the Management of Municipal Wastewater Effluent, and evaluations of three site-specific parameters.

In order to maintain compliance with the terms of the current water licence, these studies, reports, and management plans must be undertaken and submitted within the given timeframes.

¹ Develop smart and sustainable approaches to energy, water and sewer, waste management, and building systems.

CAPITAL FUND - 2013 Capital Projects

DEPARTMENT	PUBLIC WORKS & ENGINEERING
DIVISION	WATER & SEWER
PROJECT	Water & Sewer Infrastructure Replacement - Accelerated Corrugated Metal Pipe (CMP) Replacement Program
COST	2013 \$6,800,000 2014 \$8,425,000 2015 \$4,525,000
STATUS	Replacement
PHASE	Program initiated in 1984 and is ongoing
DESCRIPTION	<p>The water and sewer capital projects are part of ongoing replacement of the deteriorated water and sewer mains, as well as the upgrading of residential water and sewer services.</p> <p>Background - The Development of the City's Water & Sewer Infrastructure</p> <p>The majority of the city is on piped water and sewer service with the exception of Old Town, Latham Island, Kam Lake Industrial Park, commercial buildings at the airport, and some commercial buildings along Old Airport Road.</p> <p>In the late 1940s, the City began providing piped water and sewer services in the present downtown area. Pumphouse #1 was constructed during this time to draw water from Great Slave Lake and distribute water to downtown residents.</p> <p>Expansion of the city through the 1950s and 1960s was predominantly in the downtown area later referred to as the Central Business District (CBD). In the late 1960s, the expansion had reached the area of 50A Avenue and 57 Street.</p>

The city continued to obtain its water directly from Great Slave Lake until runoff and windblown arsenic resulted in high arsenic levels in the water and lake bottom sediments. In 1969, a new water intake line was constructed from the mouth of the Yellowknife River to Pumphouse #1. This submarine line is still in use and is a good example of Yellowknife's aging infrastructure requiring major work in the future. The estimated cost of replacement of the water intake line is about \$5 million.

There was considerable expansion during the next decade. The early 1970s saw the development of Matonabee/Gitzel streets and construction along Forrest Drive. Pumphouse #3 was constructed in 1970 to serve the new areas of the city. In 1976, development began in Frame Lake South in the area of Bromley Drive and Williams Avenue. To supply water to this area, Pumphouse #4 was constructed in 1978 to serve Frame Lake South and Range Lake North areas. Pumphouse #4 has the capacity to serve 10,000 people, and is currently at about two-thirds of its capacity.

In the 1980s, expansion of the city was generally in Frame Lake South. In the 1990s, expansion of the City was generally in Range Lake North. Pumphouse #5 was built in 1989 and serves as a recirculation station which simply keeps the water moving to avoid freezing in the Range Lake area.

Water and Sewer Replacement Program

Water and sewer mains and services in the downtown core of the city were installed in the 1940s and 1950s. By 1977, the sewer mains had degraded to a point of failing entire sections of the City's piped system. This jeopardized the provision of reliable and safe water and sewer services for a significant part of Yellowknife.



Corrugated metal pipe (CMP) sanitary sewers were first installed in Yellowknife in the 1940s and continued to be used until 1977. After 1977, ductile iron pipe became widely available as a viable and cost-effective alternative. CMP was considered feasible at the time due to its ability to withstand deformations resulting from permafrost deformation or freeze-thaw ground movements, its low economic cost, and its ability to withstand the necessary freighting from Edmonton to Yellowknife. However, infrastructure replacement programs have revealed that CMP used in the 1940s is badly corroded and, in some cases, the bottom half of the pipe is no longer intact. Sewers without bottoms will sometimes collapse, resulting in the blocking of the pipe, and causing sewage to back up into the homes of residents. Occasionally, sewage travels into the surrounding environment, resulting in high groundwater infiltration and gravel/soil accumulation in the sewers. This in turn taxes the City's remaining infrastructure.

Cast iron water mains were installed at the same time as the CMP sanitary sewers from the 1940s to the early 1970s. These cast iron water mains are uninsulated and, as a result, substantial thaw settlement of areas with permafrost has occurred. This results in pulling apart at the joints and sudden failure of the mains in some locations. The uninsulated mains necessitated substantial heating of the water to prevent freezing of the water mains. Finally, many of the water mains originally installed were not large enough, to comply with today's standards of fire protection.

The useful life of the CMP sewers, installed during the 1940s through the 1970s, has been found to be about 25 to 30 years. In 1984, a program was initiated by the City to replace all of its deteriorated water and sewer piping in the CBD. As this was far beyond the City's financial capabilities, the GNWT funded a significant portion of the replacement costs annually. Since 1984, the City, along with GNWT cost sharing, has spent nearly \$23 million.

An estimated \$7 million is required to complete work on the piping infrastructure in the CBD area. A substantial amount of CMP sewer and cast iron water mains lies outside of the CBD and also needs to be replaced.

With the ongoing replacement programs continuing today, the City changed the standard to more modern materials, so that the water mains are now insulated ductile iron pipe and the sewer mains are ductile iron. With the newer materials and standard installation construction practices, the life expectancy of water and sewer pipes can be as much as 50 years. The actual life of a particular pipe will vary depending on where in the city the water and sewer infrastructure is located. In Yellowknife, we have three different areas of rock, granular native material and frost-susceptible soils. A note of caution in assuming life expectancy: some areas of the City have inferior ground conditions (frost-susceptible soils) which will result in lower life expectancies for water and sewer pipes.

Typically, the driving force for the replacement of the water and sewer mains has been the perforated corrugated metal pipe sewer lines which have collapsed. The replacement program consisted of not only replacing the sewer pipes but, while the trenches are open, upgrading the water mains and services to current standards and levels of installation.

Included in the annual Water & Sewer Upgrading Programs are the following:

1. Replace existing corrugated metal pipe sewer mains with ductile iron pipe.
2. Install concrete sewer manholes.
3. Replace existing cast iron water mains with appropriately sized insulated ductile iron pipe.
4. Replace single heat traced copper service lines with a dual, insulated copper re-circulating system.

5. Replace in-line hydrants and valves with hydrants and valves located in insulated, poured-in-place concrete vaults with manhole access.
6. Road stabilization and reconstruction with crushed rock backfill.
7. Complete the project with concrete sidewalks and a paved roadway.

As part of its water/sewer infrastructure replacement program, the City also replaces single line water services (both the heat trace type and Aquaflow). We suspect that a significant number of these are inoperative leading to freeze-ups during the winter. Generally, when single line services fail, a bleeder is installed to avoid freezing. Bleeders work by continually running water so it doesn't freeze. The water coming out from the bleeders is wasted, and is a burden to the City's infrastructure. The bleeders and single line water services will be replaced with dual line insulated copper recirculating system. Sewer services will be repaired/replaced based on their condition assessed by a camera inspection and/or field determination.

In 2012, City Council approved a plan that would accelerate the replacement of all CMP remaining in the city. The acceleration of this program means increased funding to replace the CMP as quickly as possible to avoid emergency repairs in cold winter months which can be very costly and a public safety concern.

2013 Water and Sewer Replacement Projects

Bromley Drive and Bromley Court

This is the oldest remaining section of CMP in the City. Several repairs have been done over the length of Bromley Drive throughout the years. In addition to degrading sewer pipe, this street also has the most water bleeders of anywhere else in the city. These bleeders are a large source of water wastage in the potable water system. The planned capital upgrades of this street will reduce the water bleeder replacement list by almost 40%.

Knutsen Court

This is the last remaining section of CMP in this area. This area has undergone varying levels of construction since 2003 with the upgrades to Woolgar Avenue, Knutsen Avenue, Bigelow Crescent and part of Williams Avenue, as budget has allowed.

Forrest Drive (between 51A Avenue and Burwash Drive)

This section of CMP was not scheduled to be replaced until near the end of the CMP program. It was thought to be in relatively good shape compared to the remaining sections. However, in the summer of 2012, there was a major failure of this pipe and City staff had to perform an emergency repair to keep the infrastructure intact. Once inspected it was evident that this pipe had deteriorated rapidly and will need replacement in 2013.

Lanky Court

In September 2010, Public Works crews had to respond to an emergency collapse of a section of sanitary sewer main on Lanky Court. After further investigation it was discovered that this section of pipe had been repaired, but the remaining pipe in the cul-de-sac is in poor condition.

Matonabee Street Paving (from 2012 CMP replacement)

This street was excavated as part of the scope of work for the 2012 CMP replacement program. It is scheduled to be resurfaced with asphalt and concrete in 2013.

Byrne Road Paving (from 2012 CMP replacement)

This street was also excavated as part of the scope of work for the 2012 CMP replacement program. It is scheduled to be resurfaced with asphalt and concrete in 2013.

Knutsen Court Paving (from 2013 CMP replacement)

This street was also excavated as part of the scope of work for the 2013 CMP replacement program. It is scheduled to be resurfaced with asphalt and concrete in



CAPITAL FUND - 2013 Capital Projects

2013, should ground conditions be conducive to paving in the same year as water and sewer works.

Lanky Court Paving (from 2013 CMP replacement)

This street was also excavated as part of the scope of work for the 2013 CMP replacement program. It is scheduled to be resurfaced with asphalt and concrete in 2013, should ground conditions be conducive to paving in the same year as water and sewer works.

2014 Water and Sewer Projects

Franklin Avenue (from Gitzel Street to Fire Hall).

This is the largest section of CMP remaining in the city. However, it is the most vital in that it carries a large volume to the City's main Liftstation #5, which is located in the City yard on Taylor Road. This will be a large project that will dramatically reduce traffic flow in this corridor. It will also require the replacement of asphalt and concrete immediately following the water and sewer replacement as this road is a main artery.

Bromley Drive Paving (from 2013 CMP replacement)

This street was also excavated as part of the scope of work for the 2013 CMP replacement program. It is scheduled to be resurfaced with asphalt and concrete in 2014.

Forrest Drive Paving (from 2013 CMP replacement)

This street was also excavated as part of the scope of work for the 2013 CMP replacement program. It is scheduled to be resurfaced with asphalt and concrete in 2014.

2015 Water and Sewer Replacement Projects

Dagenais Drive

There is significant differential settlement on this street which indicates problems with underground infrastructure. The surface conditions continue to get worse each season, which also means that the underground infrastructure is being stressed and could fail.

Con Road

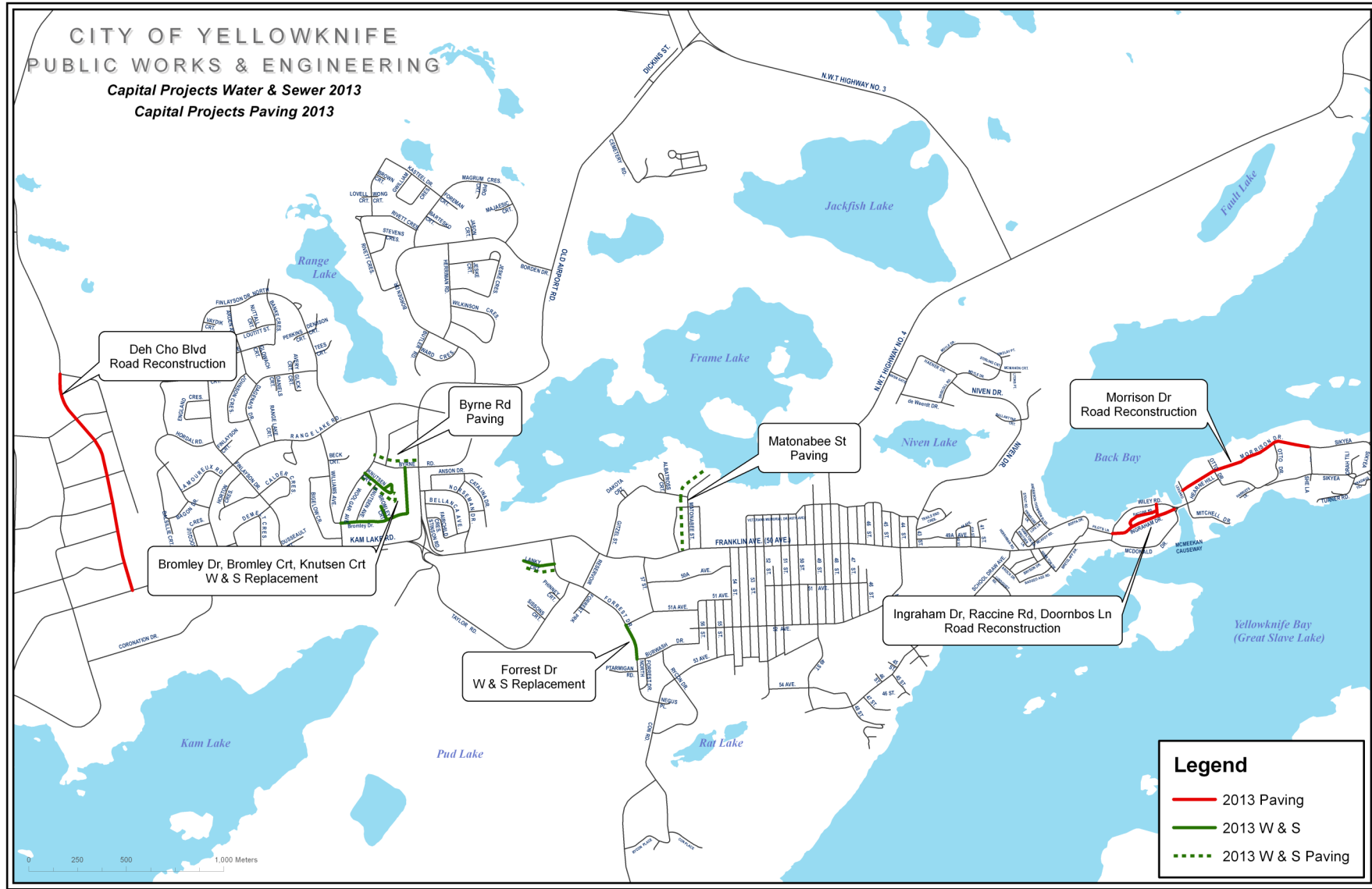
This is an older section of CMP that is scheduled to be replaced. The Rycon Drive loop was replaced in 2004. This section of Con Road should replace the remaining CMP in the area. With the planned redevelopment of the Shaganappy/Ptarmigan area, this CMP replacement should coincide with this work.

Remaining CMP Inventory

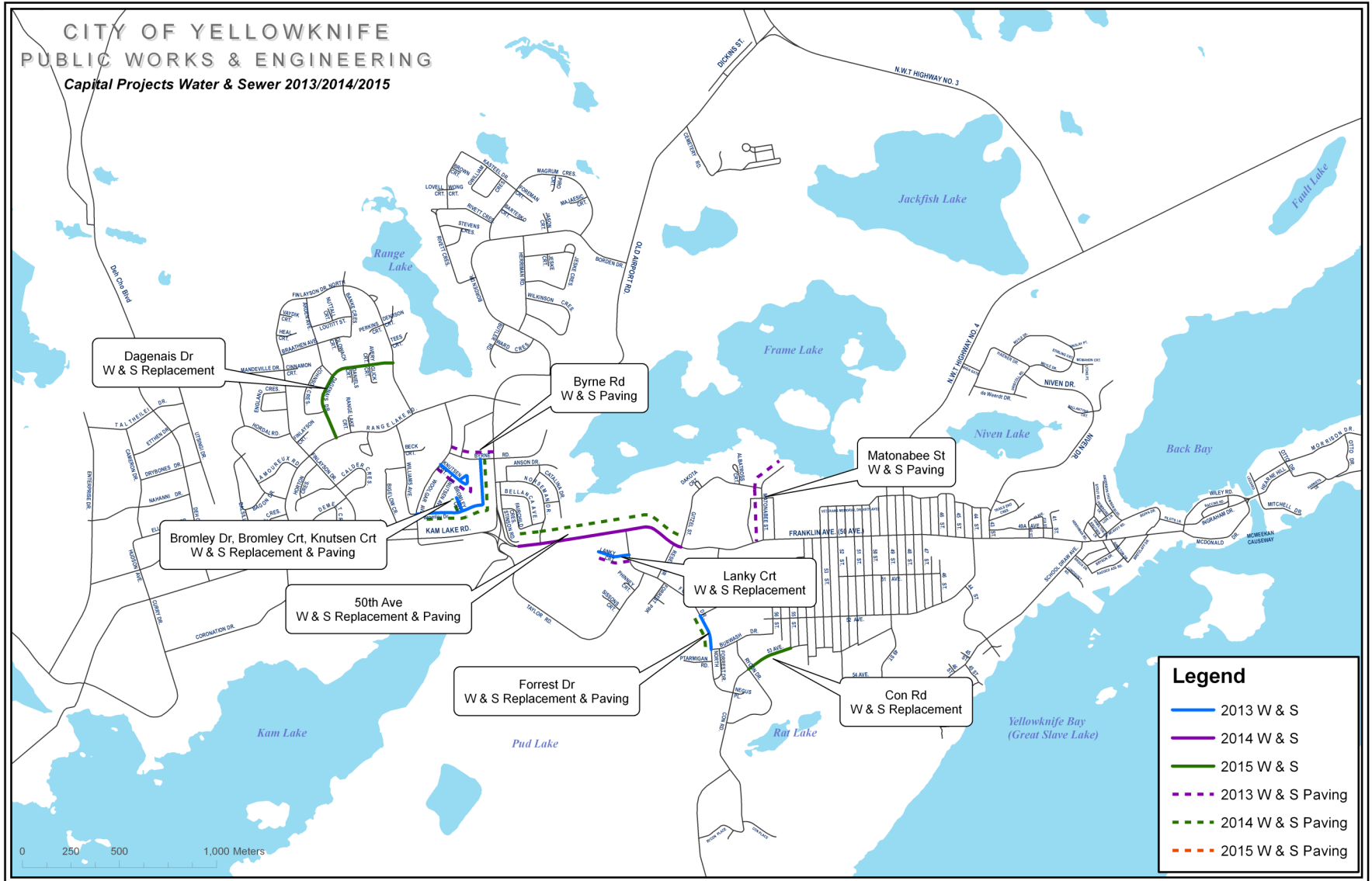
Street	Replacement	CMP Estimate	Paving Estimate
Matonabee St	2012/2013	\$2,500,000	\$1,100,000 (2013)
Byrne Road	2012/2013	\$950,000	\$850,000 (2013)
Lanky Court	2013	\$900,000	\$300,000
Knutsen Court	2013	\$600,000	\$400,000
Forrest Drive	2013/2014	\$650,000	\$525,000 (2014)
Bromley Drive	2013/2014	\$2,000,000	\$900,000 (2014)
Franklin Avenue	2014	\$3,500,000	\$3,500,000
Dagenais Drive	2015/2016	\$3,300,000	\$1,300,000 (2016)
Con Road	2015/2016	\$1,225,000	\$500,000 (2016)
Williams Avenue	2016/2017	\$1,500,000	\$600,000 (2017)
Finlayson Drive	2017/2018	\$2,100,000	\$1,700,000 (2017)
TOTAL		\$15,750,000	\$9,725,000

These priorities are subject to change from year to year depending on failures and deteriorating pipe conditions. Therefore, the section which has the greatest probability of failure based on inspections will have higher priority. This is reviewed and evaluated annually.

CAPITAL FUND - 2013 Capital Projects



CAPITAL FUND - 2013 Capital Projects



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