

PUBLIC WORKS

JOHN ELLIOT
Manager of Utilities
City of Nanaimo
2016

PUBLIC WORKS TODAY

A City is like a large living organism. As it lives and consumes, it also continuously expels wastes.

It's estimated a City with a population of a million people would use and expel in a day the following:

USE

625,000 tons of water, 2,000 tons of food, 9,500 tons of fuel.

EXPEL

500,000 tons sewage, 2,000 tons solid waste, 120 tons suspended solids, 950 tons of air pollutants.

PUBLIC WORKS TODAY

To a great degree, the main purpose of PUBLIC WORKS is to supply and ultimately dispose of these bulk commodities.

The following PUBLIC WORKS functions are generally considered essential for the public health and economic viability of their residents.

The Public Works Department consists of four divisions:

1. Utilities (storm, sanitary sewer, water)
2. Sanitation, Recycling & Cemeteries
3. Roads & Traffic Services
4. Service Centre (Fleet Operations)

PUBLIC WORKS BUILDING (better photo??)



2016 ANNUAL BUDGET

UPDATE!!! Updated on Sept 14, 2016

Expenditures:

Engineering & Public Works	\$32.5 Million
Water	\$31.3 Million
<u>Sewer</u>	<u>\$18.1 Million</u>
Total Expenditures	\$87.9 Million

***Annual budgets may vary significantly year to year depending on the undertaking of major capital projects. For example, in 2014 the Water Treatment Plant is under construction.*

Revenue:

User Fees (incl. garbage, sewer, water)	\$23.7 Million
---	----------------

***Additional revenue sources can include: general taxation, property rentals, fees and sales of services, transfers from reserves, grants.*



UTILITIES

The Utilities Division is divided into four sections:

- **Water Supply**
- **Water Distribution**
- **Sanitary Sewer**
- **Storm Sewer**

WATER SUPPLY

- Funding for the Water Supply Section is provided from user fees.
- The Water Supply Section is responsible for the daily inspection and maintenance of:
 - 230 sq. kilometres of watershed
 - 90 km of supply piping
 - 9 dams

Jump Creek Dam & Reservoir



Jump Creek Gate Motors



JUMP LAKE SPILLWAY





South Fork Dam

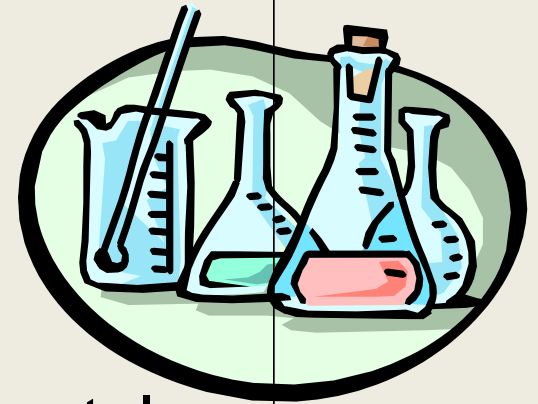




SOUTH FORK LAKE



- 50 raw water samples (pre-chlorinated) are taken and tested per month.
- 100 treated water samples are taken and tested per month.
- Cryptosporidium, Giardia, fertilizers, metal scans and THM's are tested for monthly
- Full spectrum analysis annually



- 8 reservoirs – total capacity of 83,279 cubic m³
- South Forks & Jump Creek reservoirs – 16.6 million cubic m³
- 64 pressure reducing/surge relief stations
- 24 pressure zones
- 7 pumping stations
- Over 27,000 water metres which are read three times annually
- Delivered 13.3 billion litres of water to City of Nanaimo & Southwest Extension in 2015, down from a high of 17.5 billion litres in 2009.

Tanya Reservoir



Rod Glen Pumping Station



Watershed Rain Gauge



Dams

- The City owns and maintains 9 dams
- 2 dams store potable drinking water: Jump Creek Dam, South Fork Dam.
- 7 dams are recreational: Westwood Lake Dam, Harewood Lake Dam, Upper Chase River Dam, Middle Chase River Dam, Lower Chase River Dam, Witchcraft Lake Dam and old Reservoir No.1

Dams



Harewood



Jump Creek



South Fork



Reservoir #1



Westwood



Upper Chase



Witchcraft



Middle &
Lower Chase

Dams

- Provincial Dam Safety regulations require inspections weekly, monthly and yearly on dams
- Every year we hire engineers to carry out *Formal Annual Dam Safety Inspections* for all dams
- Every 7 - 10 years, we hire engineers to undertake more rigorous *Dam Safety Reviews*



South Fork Water Treatment Plant

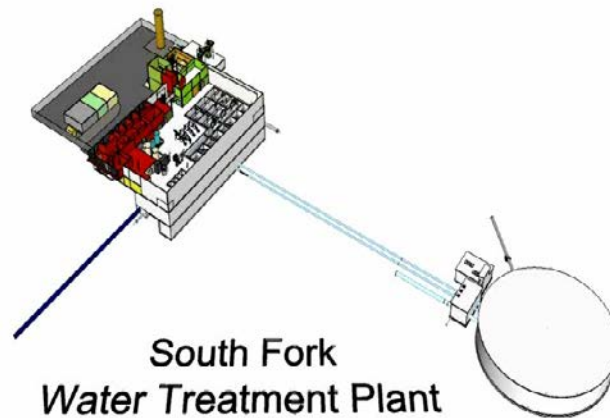


South Fork Water Treatment Plant

- Membrane filtration using gravity
- \$72.5 Million
- \$35.9 M in Federal/Provincial funding
- Construction of twin pipelines to feed the WTP completed
- Treatment plant construction commenced May 2013
- Went on line December 2015



SOUTH FORK WATER TREATMENT PLANT



SOUTH FORK WATER TREATMENT PLANT



*Construction of the new Water Treatment
Plant building and clearwell – May 1, 2014*

New Reservoir No. 1

- 14 million litres treated water storage
- Energy Recovery Facility will generate power as we fill the reservoir
- Construction commenced March 2013, completed March 2014
- \$11.2 Million project
- \$7.7 Million funded from Gas Tax Fund

Reservoir No. 1

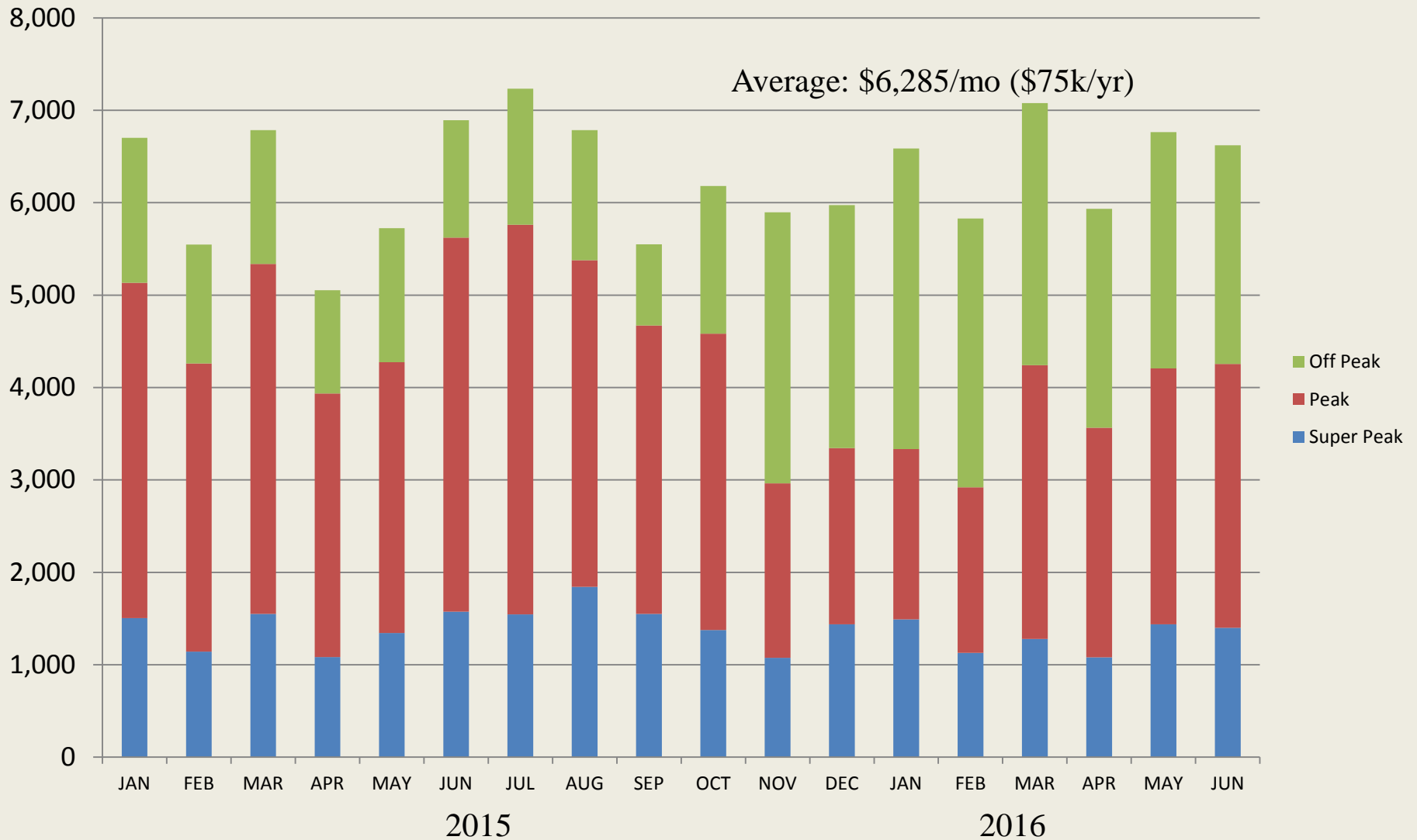
- 46 m diameter treated water storage tank



Energy Recovery Facility

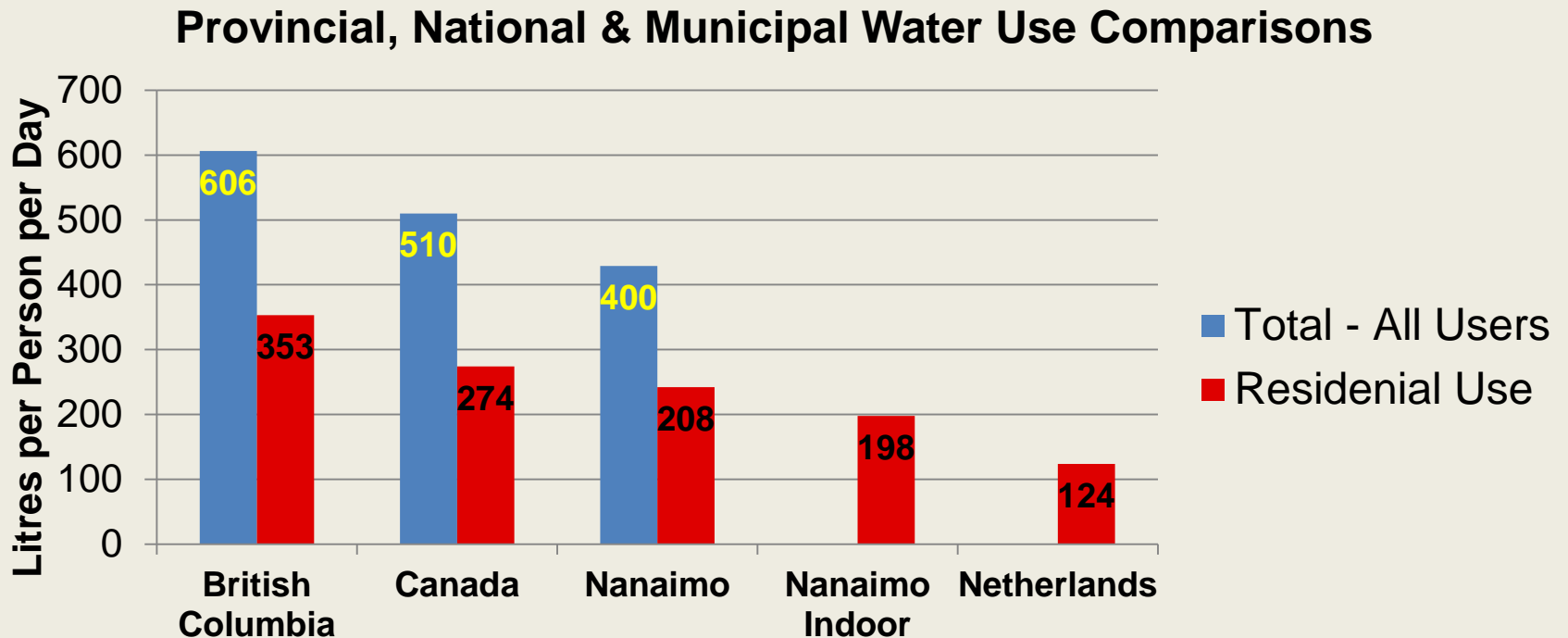


Revenue to Date



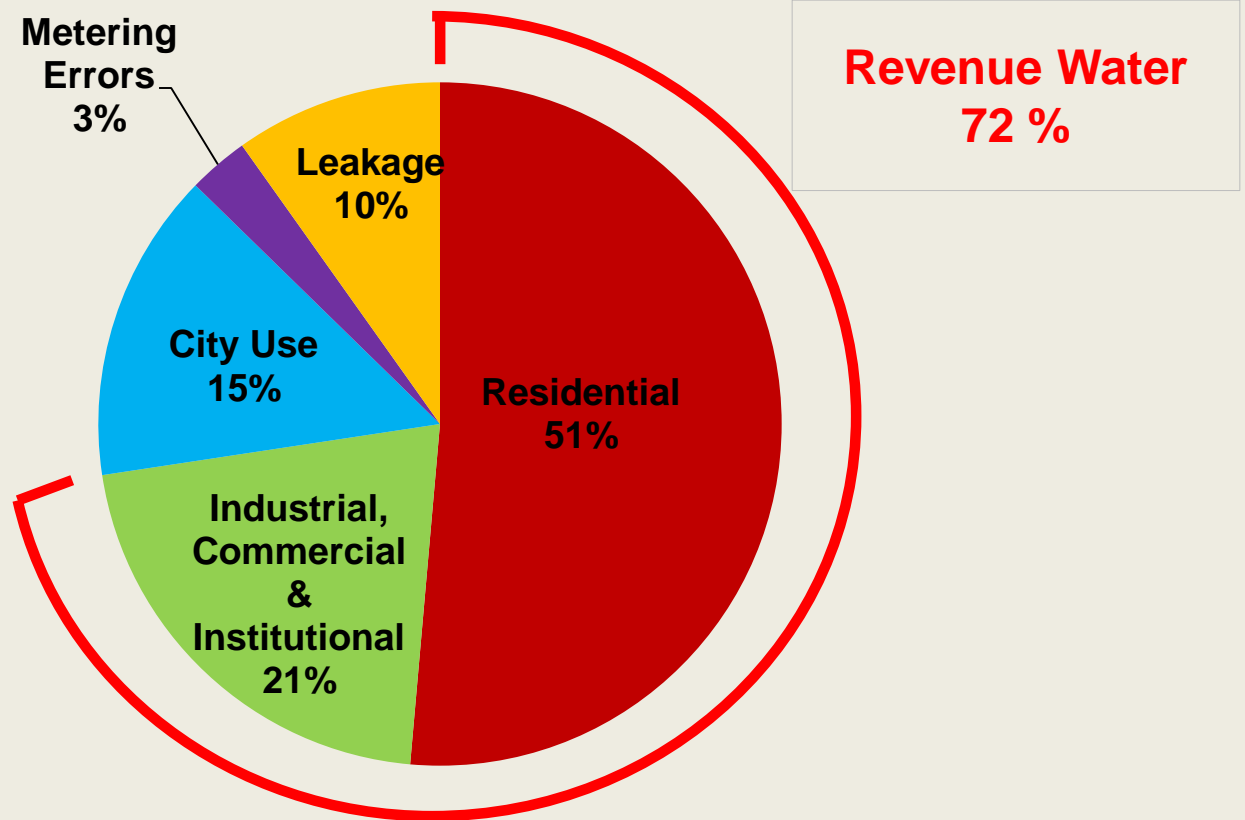
Water Audit

- The City undertook its first water audit to identify the way the City uses water



Water Audit

- Water Balance – how did Nanaimo use water?



Water Audit – Key Findings

- The City's bulk water meters are accurate
- Actual leakage 9.83% of water supplied
- 50% of large industrial and commercial meters are oversized and under recording
- Residential meters:
 - Average age 14 years
 - 97.8% accurate
- Lose accuracy and revenue beyond 24 yrs.
- Infrastructure Leakage Index 1.54 – an extremely tight system.



Water Conservation

- Universal metering & expanded block billing
- Full-cost accounting
- Summer watering restrictions
- RDN & *Team WaterSmart*
- Toilet rebate program
- Water Conservation Strategy
- It's working!

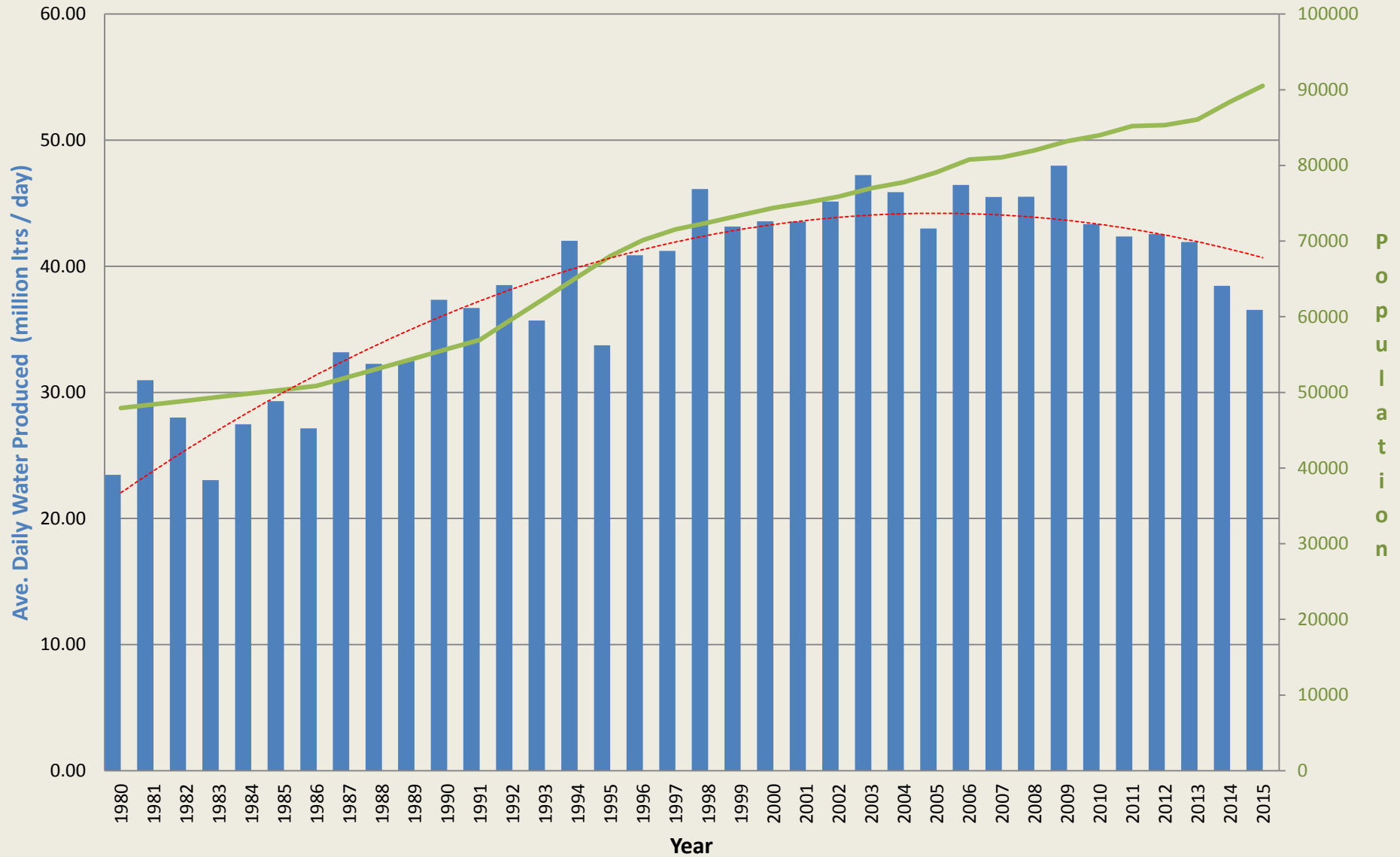


WATER DISTRIBUTION

- Funding for the Water Distribution Supply Section is provided from user fees (\$3.3 million).
- Water Distribution is responsible for the maintenance of:
 - Supply & Distribution
 - 627 km of water main
 - Over 24,000 connections
 - 211 km of service piping
 - 2988 fire hydrants (maintained by Fire Department)
 - 6799 valves
 - Nanaimo is completely metered for H₂O



City of Nanaimo Average Daily Water Production



Water Main Break Report





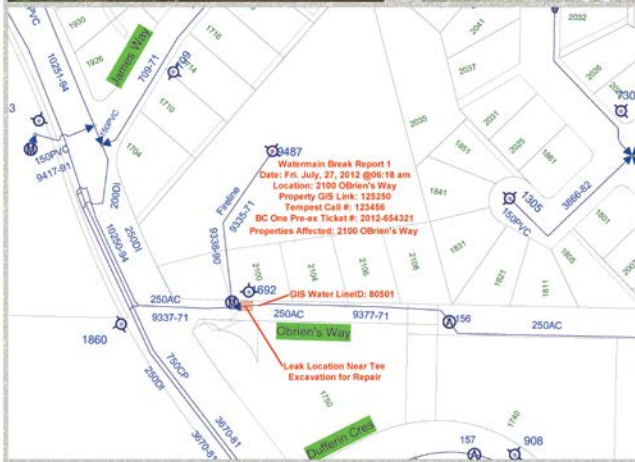
Yearly Totals with Cost Charges

	2007	2008	2009	2010	2011	2012	2013
Main Breaks	19	13	22	13	18	11	6

Main Breaks = Water Main Break reports completed on affected houses.

Year	Cost Center 1859 Charges	Number of Breaks	Average Charge Per Break
2010	\$ 74,352	13	\$ 5,719.38
2011	\$ 101,838	18	\$ 5,657.67
2012	\$ 74,993	11	\$ 6,817.54
2013	\$ 81,300	6	\$ 13,550.00
Total	\$ 332,483	48	\$ 6,926.73

Example Report		Water Main Break Report		ID	1
Date	Friday, July 27, 2012	mm-dd-yyyy	Time	6:30 AM	Tempest Call# 123456 BC 1 Ticket# 2012654321
Street	Obrien's Way	Civic Address	2100	GIS Line ID#	80501
Response Time		12	minutes		
General:		mm-dd-yy		Type of Failure:	
Date Break Reported	Jul-27-12	Time Break Reported	6:18 AM	Circumferential Break	
Date Water Shut Off	Jul-27-12	Time Water Shut Off	6:30 AM	Longitudinal Break	
Date Water Turned On	Jul-27-12	Time Water Turn On	10:00 AM	Split Bell	
Properties Affected	Yes	Property GIS Link	125250	Corrosion Pit Hole	
Civic Affected	2100	Street Affected	Obrien's Way	Leaking Joint	
Was owner told to call Insurance	Yes			Leaking Valve	
Break History in Area	Yes			Leaking Service Connection	
History Details	None				Broken Fitting
5 year Capital Plan to Replace?	No	Year		Probable Cause of Failure:	
Distance from nearest property line	0	m			Corrosion
Physical Data				Ground Frost	
Pipe Diameter	250	mm			Joint Failure
Pipe Material	AC			Disturbance (Third Party)	
Year of Installation	1971			High Pressure	
Pipe Wall Thickness		mm or Class of Pipe	CI 200	Frozen Pipe	
Type of Lining				Unknown	
Type of Joint	Bell			Type Of Repair:	
Type of Water Service				Repair Clamp	
Normal Ops Pressure	120	psi			Dresser Couplings
Under Blvd or Road?	Yes			Replace Pipe Section	
Depth of Cover	1.2	m			Length of Pipe Replaced
Depth of Frost		mm			Replace Valve
Type of Native Soil	Gravel			Replace Service Connection	
Type of Backfill	Gravel			Repair Joint	
Able to Determine Cause?	No				
Cause Details	Possibly ground settlement, area was previously a swamp.				
Repair Difficulties Detail or Comments	Size of thrust block, lining up pipe in tee				
Further / Work Required	No	Pipe Sample Taken	No		
Further Work Details	Asphalt Patch on road and Driveway Entrance; Insurance Company to Cover Rest of Driveway, Landscape damage and internal house repairs				
City Equipment on Site Details	227 - Pickup; 401 - Gravel Truck; 417 - Flush Truck; 568 - Backhoe.				
City Personnel on Site Details	B. Thomas, B. Currie, G. Cook, T. Armstrong, A. Noble, J. Schuman, S. Brockway				
Report Completed By	Colby Richmond	Report Completed Date	Friday, July 27, 2012		

2100 Obrien's Way		Water Main Break Report		ID	1
					
					
 <p>Watermain Break Report 1 Date: Fri, July, 27, 2012 @06:18 am Location: 2100 Obrien's Way Property GIS Link: 125250 Tempest Call #: 123456 BC One Pre-ex Ticket #: 2012-654321 Properties Affected: 2100 Obrien's Way</p> <p>GIS Water LineID: 80501 Obrien's Way Leak Location Near Tree Excavation for Repair</p>					





Location: 2100 Obrien' Way
Date: Fri. July 27, 2012 @6:18 AM
Water Main Break Picture: Page 1 of 10

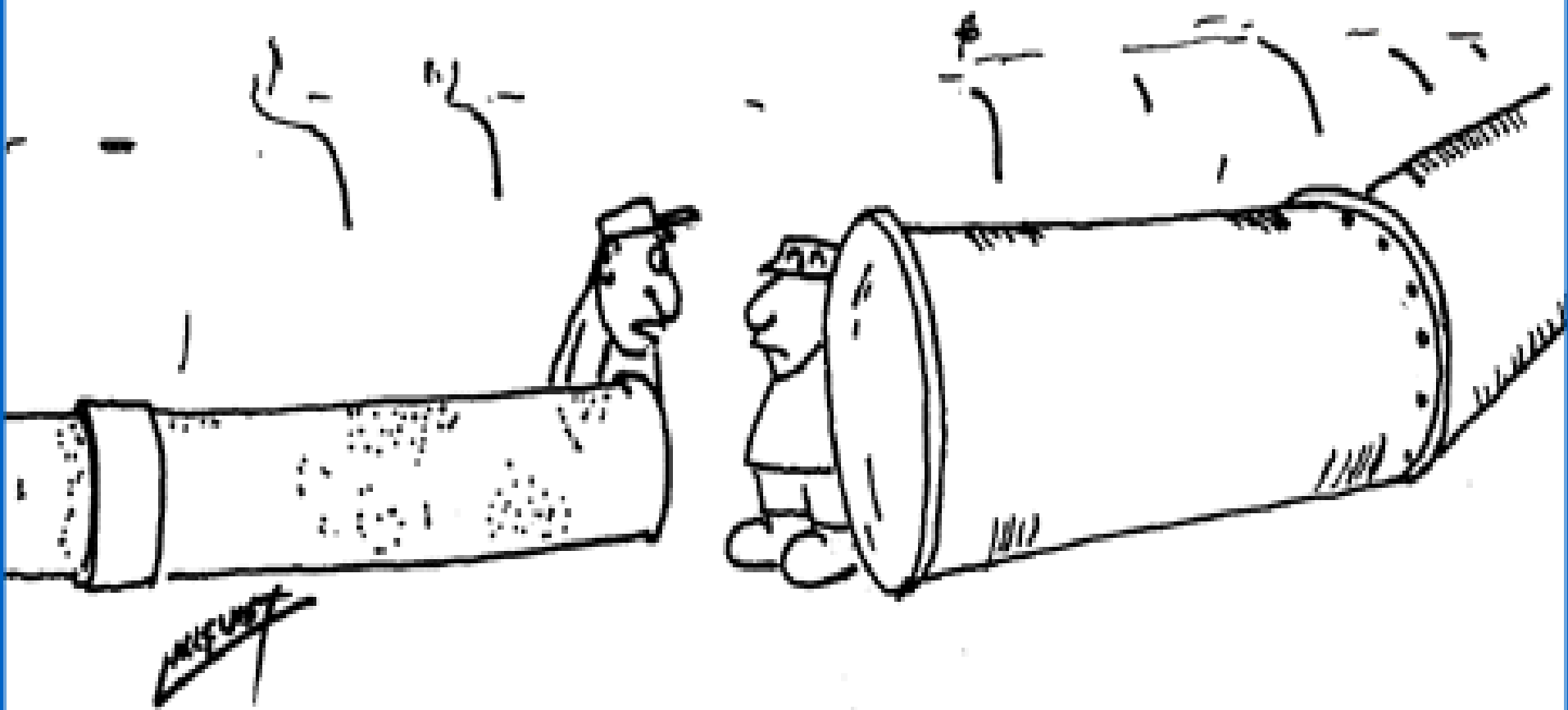






Location: 6334 Metral Drive
Date: Mon. Dec. 10, 2007
Water Tie-in Picture: 4 of 5

SID



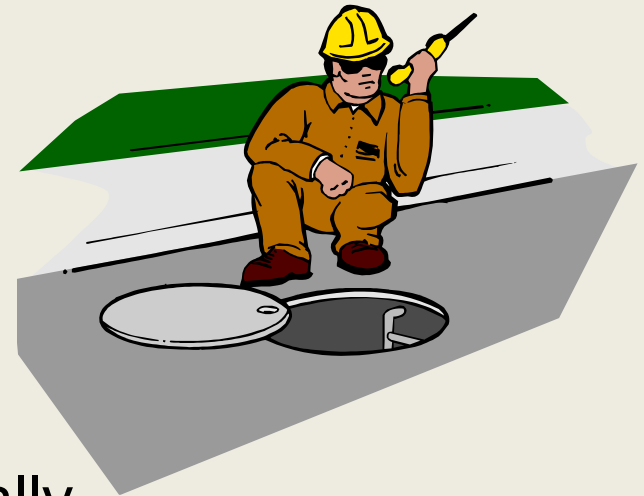
Seriously now... one of us is working from the wrong specs.

Pressure Reducing Station



SANITARY SEWER

- Funding for the Sanitary Sewer Section is provided from user fees (\$1.8 Million).
- Responsible for the maintenance of:
 - 562.06 km of sewer main
 - 20,600 connections
 - 330 km of service piping
 - 6465 manholes
 - 16 Sewer pumping stations
 - 13 flow monitoring stations
 - 135 km of main flushed annually
 - 37 km of video inspection annually



Vactor Truck





Brookwood Pump Station

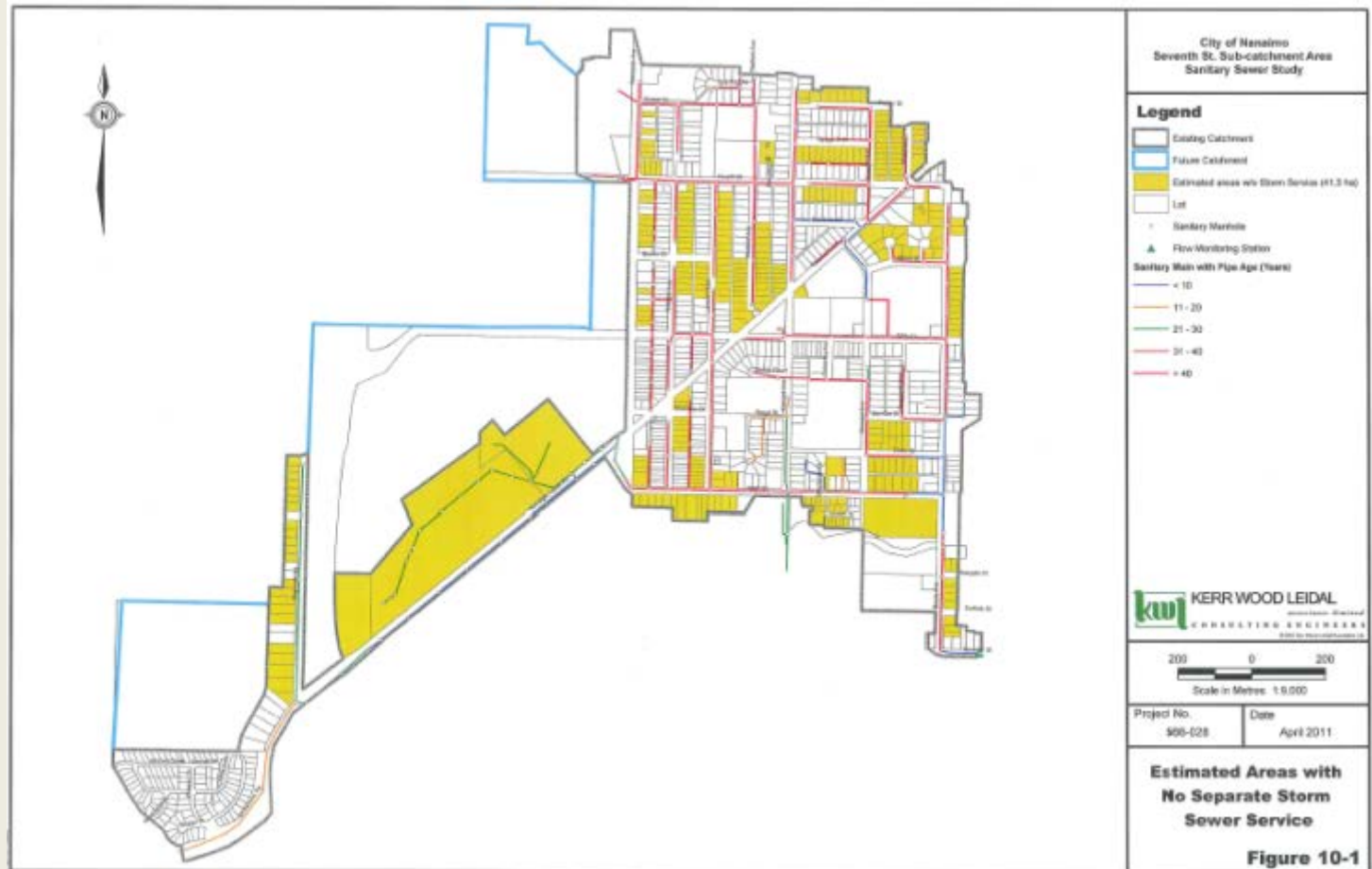


Harewood Wykes Program

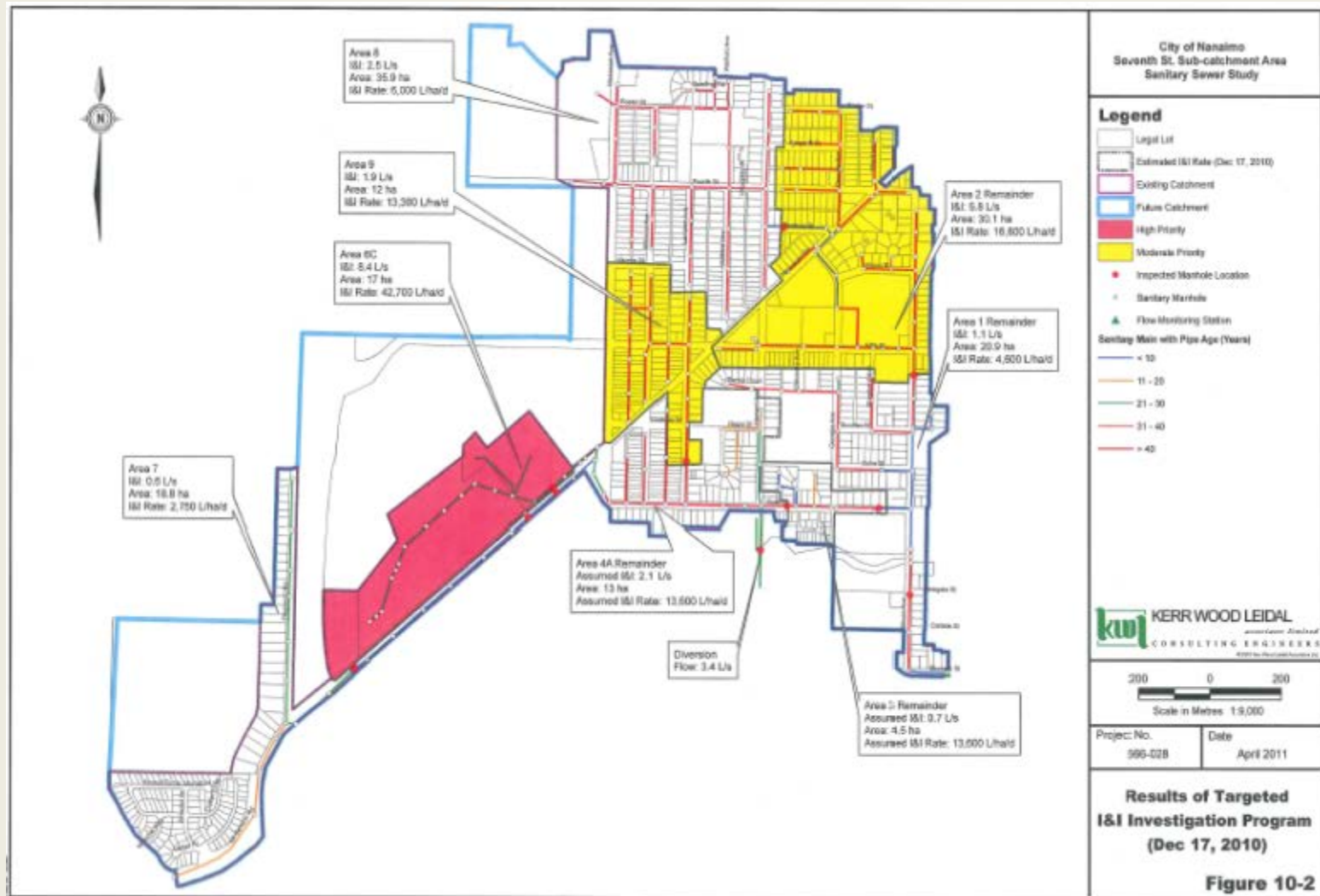
Sanitary Sewer Department

- **Notable Recommendations:**
 - Detailed investigation required of military land adjacent to Nanaimo Lakes Road - found 605m of abandoned sanitary sewer running full of storm water
- **Outcome: Cap off existing abandoned 275mm vitrified clay and 375mm concrete sanitary sewer pipes**
- Investigate and rectify sources of inflow and infiltration within the Harewood area between 3rd Street and 6th Street and Wakesiah Avenue and Bruce Avenue
- **Outcome – replace Harewood Wye's**

Harewood Area Properties Identified With Possible I&I Problems



Priority Areas Of Investigation Within The Harewood Area













416

1575

REBEL
TANK BODY

03/16/2010 01:29



03/16/2010 01:34



CAUTION ASBESTOS HAZARD

03/16/2010 01:38



03/16/2010 01:50



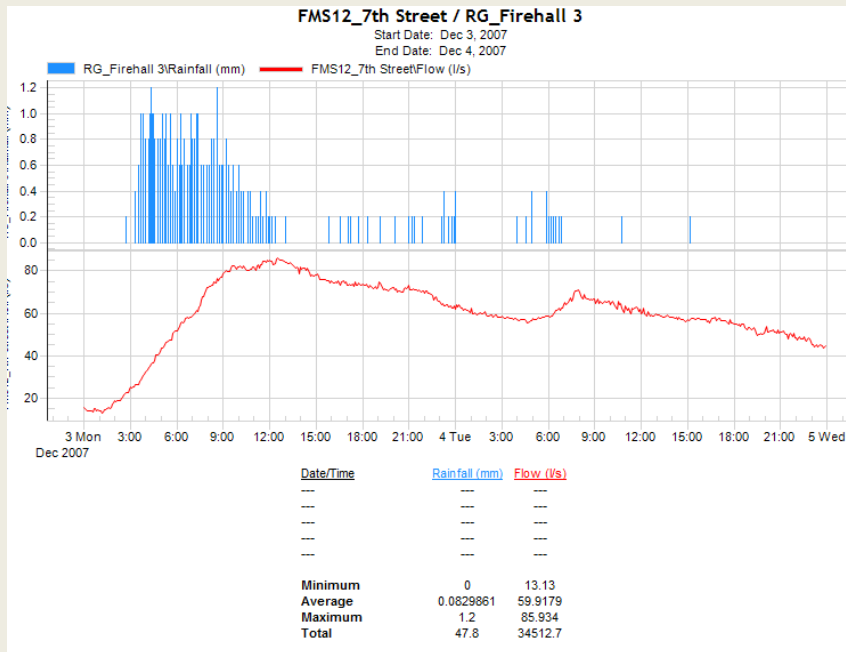
03/16/2010 01:51



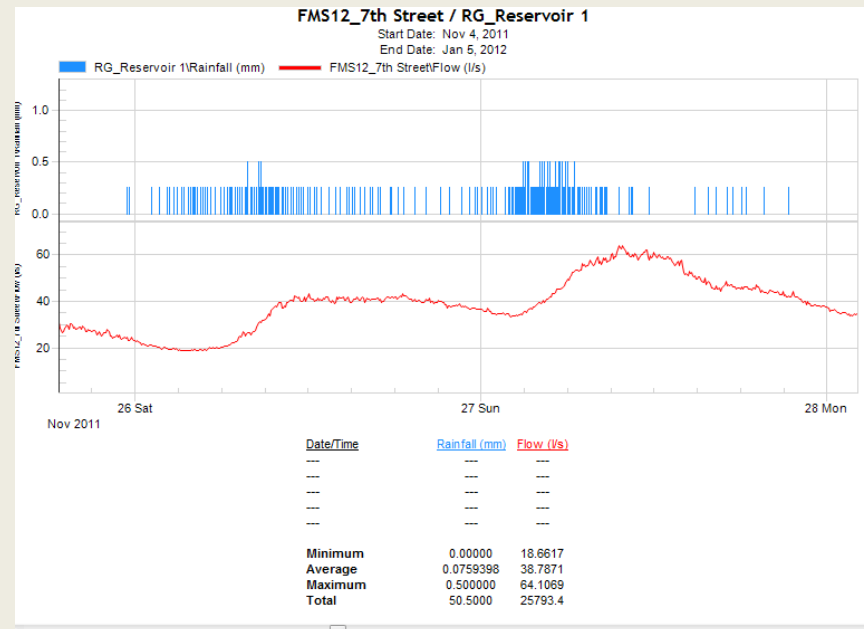
Harewood Wye Replacement

– Evidence that it works!

Dec 3rd 2007 - 7th Street sewer catchment - 47.8mm of rainfall brought a maximum flow of 85.9 lps



Nov 27th 2011 - 7th Street sewer catchment - 50.5mm of rainfall brought a maximum flow of 64.1 lps – a reduction of 25.3% in flow

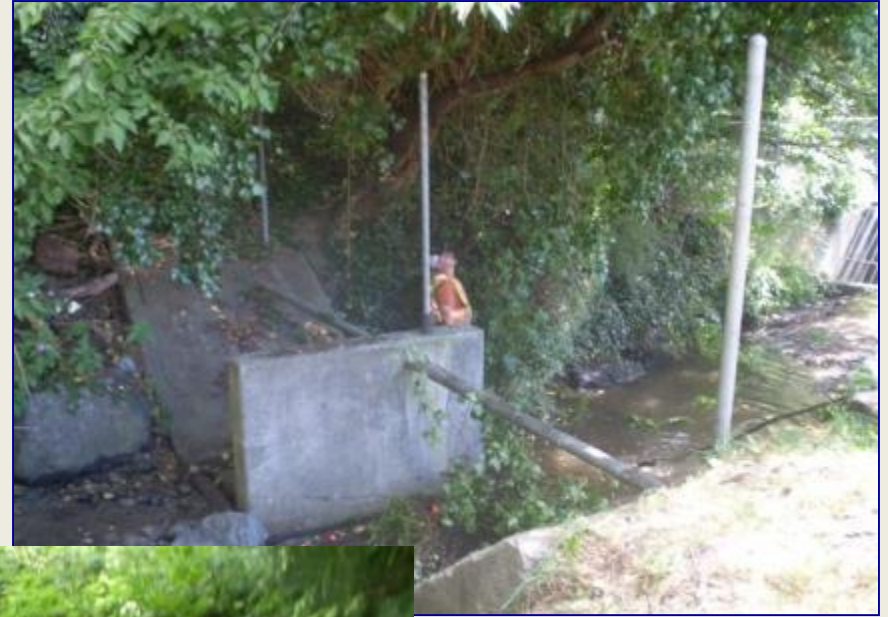


Benefits of the Harewood Wye Program

- Operational savings – sanitary sewer system is more efficient , therefore saving maintenance costs
- Capital savings – the reduction in sewage flow and I&I saves upsizing of downstream sewer laterals and trunk lines
- Taxpayer savings – less sewerage flow ultimately needs to be treated at the Regional District of Nanaimo treatment plant

STORM DRAINAGE

- Funding for the Storm Drainage Section is provided from general taxation (\$1.8 Million).
- Responsible for the maintenance of:
 - 423.9 km storm main
 - 350 km open ditches
 - 8000 storm connections
 - 80 km service piping
 - Storm water detention facilities
 - 4,750 manholes
 - 11,000 catch basins
 - 1,250 inlet/outlet structures
 - 5 rainfall monitoring stations



Ditch/Swale Policy

Department:	Public Works	
Subject:	Ditch / Swale Policy	

POLICY

The City will only authorize ditches / swales to be piped and infilled on an exception basis because of the merits of open drainage.

All approved ditch / swale infill work is to be done to City standard and at the property owner's expense. If the ditch infill request impacts multiple property owners a Local Improvement Process will be used. The work will be inspected by the City.

REASON FOR POLICY

The city promotes open ditch / swale drainage as part of its efforts to implement a more environmentally sustainable approach to protect the natural environment while striving to meet the needs of our residents in a fiscally responsible manner. The Official Community Plan also offers direction to:

- protect and enhance the natural environment.
- achieve a balance between protecting property from flood hazards and protecting water quality and quantity for natural habitat.
- revise the City's approach to storm water management for public and private drainage systems in order to meet the City's environmental objectives, while remaining cost effective.

Ditches and swales manage rain water for road and property drainage by: helping filter runoff, reducing downstream peak flow rates, providing storage and increasing groundwater recharge. When a ditch is filled and replaced with a pipe, most of the storm water management benefits are compromised. The cumulative impact of many ditch filling projects within the same drainage area is likely to increase downstream peak flows and degrade the quality of run-off reaching surface water bodies. If implemented without appropriate technical analysis or design guidelines, ditch alteration can result in upstream flooding or local infrastructure maintenance problems. A disruption in the flow of water from a single property can impact the integrity of a drainage system for many others.

AUTHORITY TO ACT

Delegated to Staff.

PROCEDURE

An exception will be considered by utilizing the Ditch / Swale checklist which is attached. Based on the response to these questions, the request is either declined or it proceeds to engineering assessment.

Ditch/ Swale Checklist

DITCH / SWALE INFILL REQUEST CHECKLIST

Address:_____ City Representative:_____

The following questions will be considered by staff when a request for a ditch infill or alteration is received.

- | | Yes | No |
|--|--------------------------|--------------------------|
| 1. Does the ditch have permanent water and/or considered having fish habitat using criteria regulated by the Ministry of Environment and the Department of Fisheries and Oceans? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Is the ditch located within or leads directly into an environmentally sensitive wetland or a watercourse? | <input type="checkbox"/> | <input type="checkbox"/> |

If the answer to either of these questions is yes, then the request is denied.

- | | | |
|--|--------------------------|--------------------------|
| • Will the ditch / swale infill harm or impact watercourses and/or environmentally sensitive areas in any way? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Will this ditch infill prevent any further flooding problems in the area? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Is the water table likely to rise in the area of the ditch infill? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Will the ditch infill improve public safety in the area? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Is there a slope stability problem to be alleviated by the ditch infill? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Will the ditch infill compromise the road base in the area by raising the water table in this section? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Is this ditch infill or area in the Five Year Capital Plan or has it been considered as a Capital Project? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Is this ditch infill consistent with the other ditch infills in the area? | <input type="checkbox"/> | <input type="checkbox"/> |
| • Are existing drainage patterns impacted? | <input type="checkbox"/> | <input type="checkbox"/> |

Based on the response to these questions, the request is either declined or it proceeds to engineering assessment. The engineering assessments will vary in terms of scope and detail depending on the complexity of the request. The assessment will include as a minimum:

- identify the drainage basin or catchment area and tributary
- identify outlets, routing and grade requirements
- identify allowable and design flows based on City of Nanaimo Manual of Engineering Standards and Specifications (MoESS)
- confirm outlet capacity
- determine the impact on the outlet and erosion control requirements
- provide design submissions necessary to meet Ministry of Environment and Dept. of Fisheries and Oceans requirements, where applicable

Applicable information (pipe size, C.B. required, finished surface):

New Products Sheet

Location Form

Location_ID: Location_Name: 3650 Rock City Road

UTM_Northing: 5452044 UTM_Easting: 428319 Map Sheet: 352A

Utility: Storm Sewer APL #: APL211 (Approved Product Listing #)

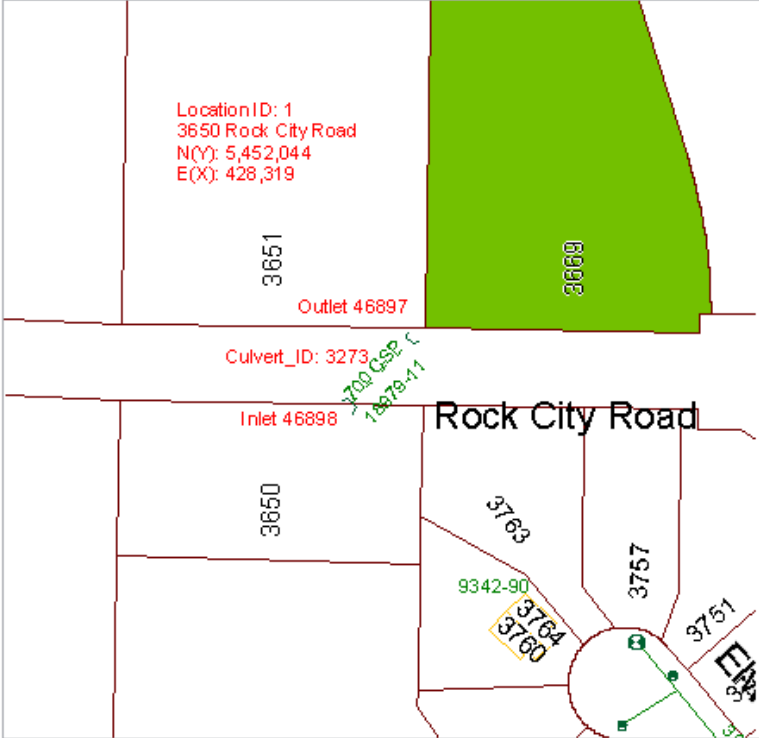
Pipe_ID: 3273 Node ID-U/S: 46898 Node ID-D/S: 46897

Feature_Make: CSP - Trenchcoat Pipe_Size: 700 mm Pipe_Length: 22.50 m


Feature_Type: Culvert Asbuilt_No: 18979 Asbuilt_Yr: 2011

Description: Installed by City of Nanaimo Construction Crew


Overall_Map:



U/S Node Pic:



D/S Node Pic:

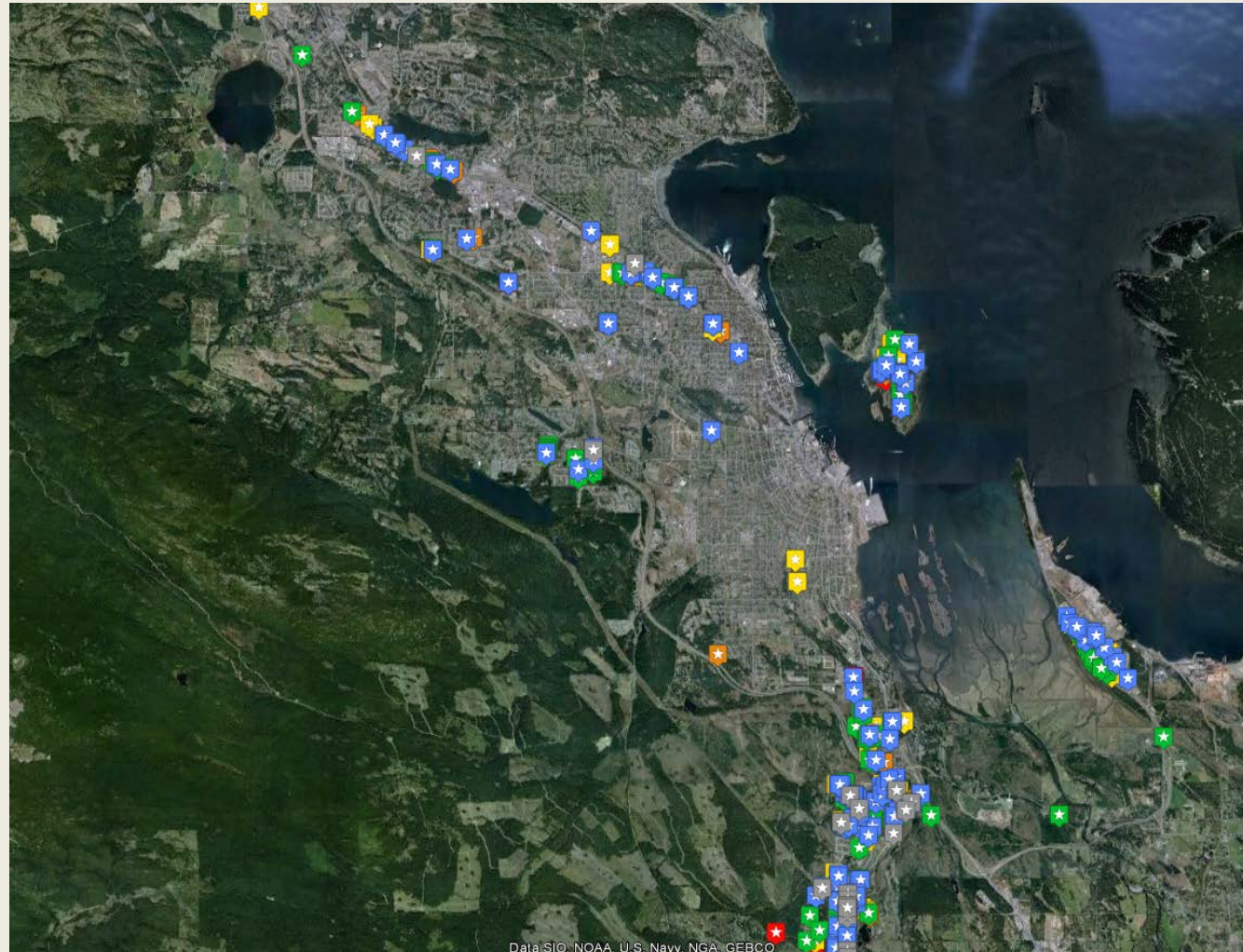


Inspection

Inspection_I	Inspector	Date	Time	Condi	Shape	Comments
	2 C. Richmond	5/10/2012	#####	Good	Circular	no scatches or wear shown
*	(New)					

Record: 1 of 1 No Filter Search

CULVERT CONDITION



Stormwater Management Facilities - City Responsibility

Identification Number: 25.02 Facility Name: Boxwood Pond

ID: 37 Identification Number: 25.02 Facility Name: Boxwood Pond Property GISlink: 128563

Street Number: 2121 Street Name: Boxwood Road Lot Number: 2 Plan Number: VIP60640

Statutory RW Number:

Tributary Area

Drainage Basin Number: 25 Sub Basin Area (Ha): .00 Local Only: No

Ownership

Private: ☐ City: ☒ Statutory RW: ☐

Method of Storage

In Line: ☒ Off Line: ☐

Type of Storage

Pond: ☒ Parking Lot: ☐ Chamber: ☐ Pipe: ☐

Design Details: 8715-4-88, 8716-4-88 - Slide gate outlet control structure. Opening height of 38cm passes 17.0 CFS (481.37 l/s)

Operational Details: Slide gate outlet control structure and Northfield XING checks by city monthly.

Comments: Hist. Civic 2400 Maxey Rd. Pond covers multi civics - 2121 & 2135 Boxwood, 2365 & 2350 Northfield and 2141 Mountain Vista. City DWG#'s 8715-4-88, 8716-4-88. In 1995 Earth Berm reinstated at 2141 Boxwood Rd after failure. Northfield xing checks

Feature Active: Yes Volume (m3): 10624.00 Asbuilt DWG Number: 008716-88

Maximum Allowable Discharge

5 Year Event: .00 25 Year Event: .00 100 Year Event: .00

Operational Maintenance Information

Pipe Type: Pipe Size: Maint Schedule:

Map Sheet #: Northing: Easting:


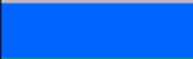




Location Desc:

Operation Maint:

Storm Culvert Inspections

Note: overall score is based on the highest value of any deterioration type - as shown in Google Earth KMZ file (Places, Temporary Places, Culvert Inspections)

[https://cityportal.nanaimo.ca/sites/EngGIS/Shared%20Documents/Conditional/Storm Culverts/Network%20Link%20KMZ/Culvert Condition.kmz](https://cityportal.nanaimo.ca/sites/EngGIS/Shared%20Documents/Conditional/Storm%20Culverts/Network%20Link%20KMZ/Culvert%20Condition.kmz)

Icon Score	Icon Color	
0	GREY	
1	BLUE	
2	GREEN	
3	YELLOW	
4	BROWN	
5	RED	

Stormwater Management Facilities - City Responsibility

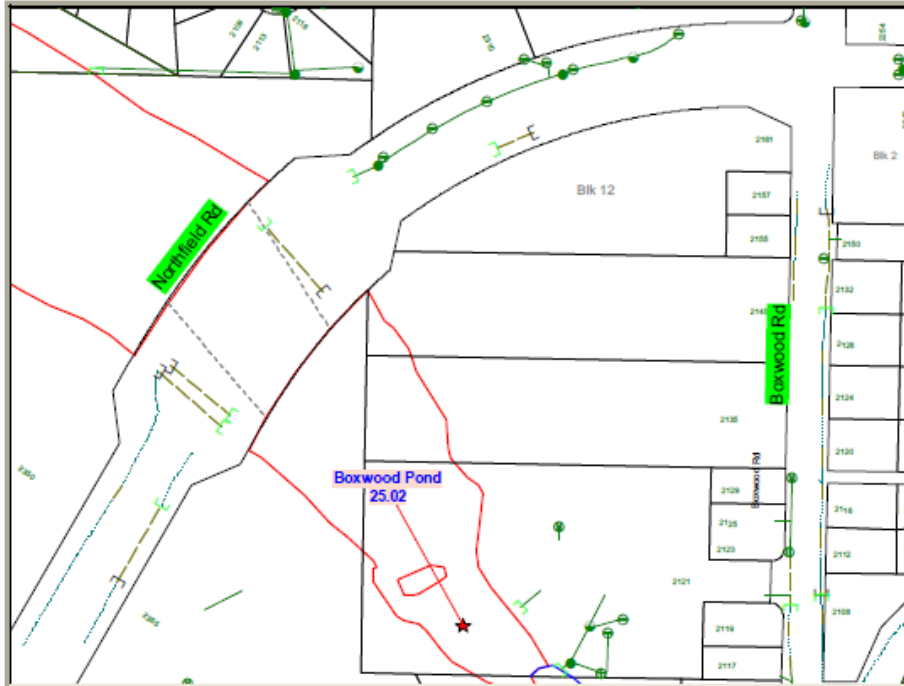
Identification Number:

25.02

Facility Name:

Boxwood Pond

Overall Map:



Inside Pic 1:



Inside Pic 2:



Outside Pic 1:



Outside Pic 2:



Surrounding Pic 1:



Surrounding Pic 2:



GPS Culvert Assessment Sheet - Manual Method

Prepared By C. Richmond

Date of Assessment	
Civic address	
Road Name	
Culvert ID	
Culvert Size	
Culvert Material	
Culvert Length	
Inlet Type	
Outlet Type	
Notes	
Barrel	
Debris	
Infiltration	
Material Deterioration	
Ponding	
Shape	
Channel	
Debris	
Scour	
Vegetation	
Embankment	
Material Deterioration	
End Structure	
Debris	
Infiltration	
Material Deterioration	
Guardrail	
Material Deterioration	
Headwall	
Material Deterioration	
Settlement	
Joint	
Alignment	
Infiltration	
Joint Open	
Material Deterioration	
Surface	
Material Deterioration	

Road Wash Out Video Click Here





SANITATION, RECYCLING & CEMETERIES

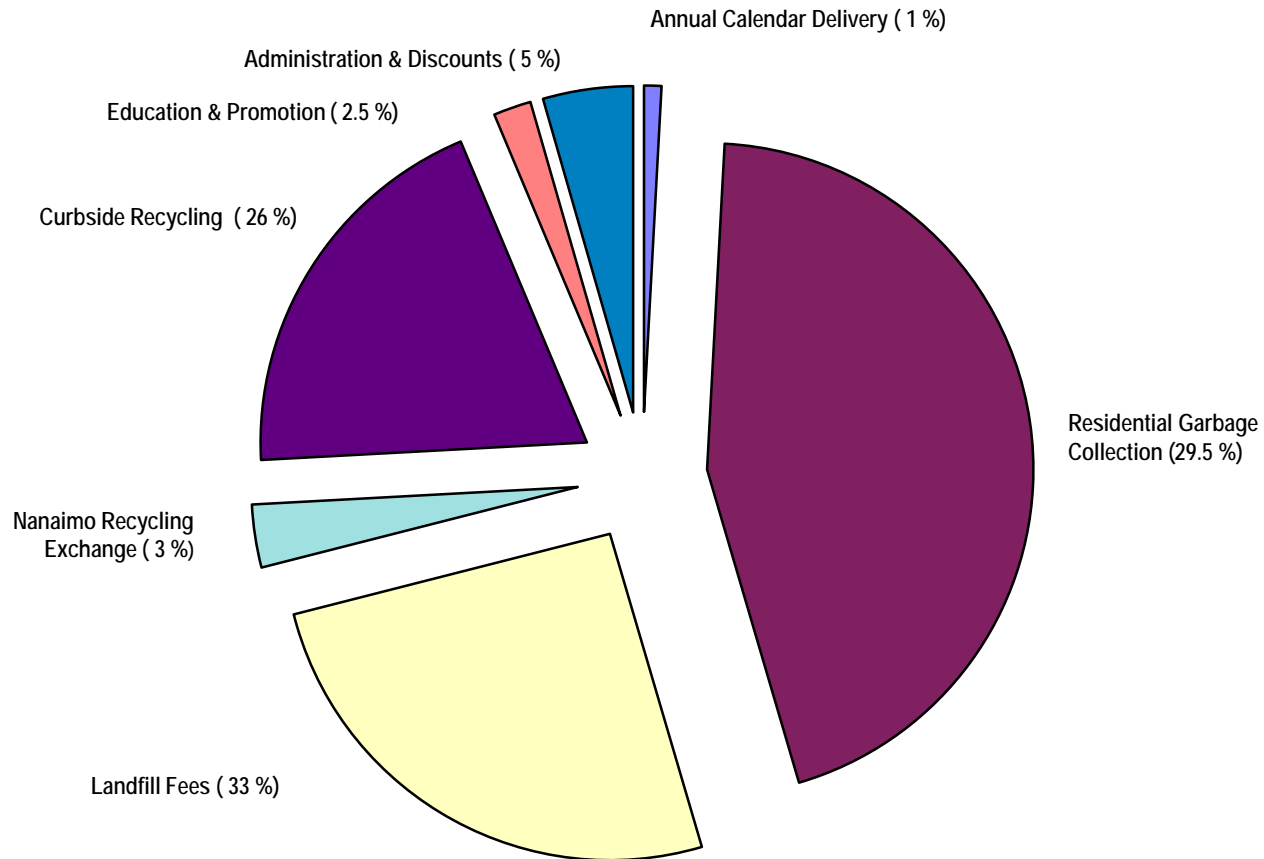


SANITATION TEAM



- This Division is responsible for solid waste, recycling, cemeteries and Public Works Administration.
- Funding is primarily provided through over \$2 million in user fees and general taxation (\$1.3 million).

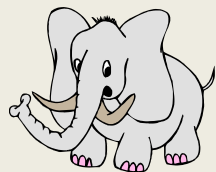
WHERE IT GOES
2014 USER RATE = \$94.50 / RESIDENCE / YEAR



**Based on 2015 budget, c/w \$125/tonne landfill tipping fee
and
\$95/tonne tipping fee for food waste**

SANITATION

- Collection of solid waste is user fee funded (2015: 25.8¢ per day)
- Collection service is provided to over 26,757 residences (35 routes)
- 7,250 tonnes of garbage and food waste are collected annually (via City personnel and equipment) at an average disposal cost of \$110 per tonne. (RDN landfill and compost facility)
- The average household produces 150kg of garbage per year (or the same weight as a baby elephant!)



KITCHEN WASTE PROGRAM

- Organics collected as food waste consists of cooked and raw foodwaste including bones, Tim Horton's cups, paper plates, paper milk cartons, dirty pizza boxes, etc.
- Food waste diversion results in over 45% of what was garbage prior to 2011, going to a compost facility in stead of landfill.

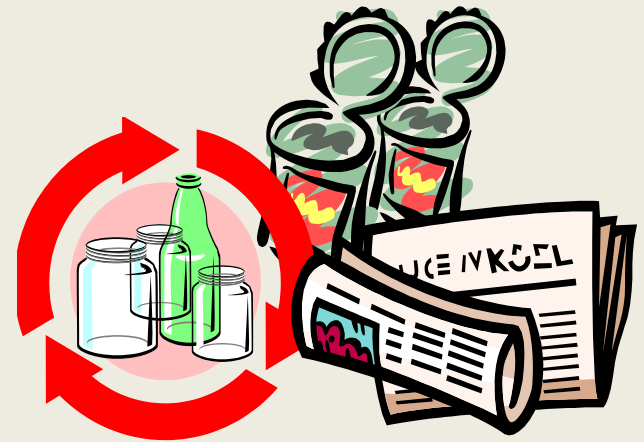


WHY A FOOD WASTE PROGRAM?

- Regular garbage collection of 1 – 77 litre container is every second week
- Food waste collection and bi-weekly curbside recycling diverts close to 70% of each households refuse from landfill
- Greenhouse gas emissions are reduced and life of the landfill extended.
- Nanaimo is 2nd in BC for waste diversion!

RECYCLING

- Recycling services are funded through user fees.
- 3,750 tonnes of recyclables are collected (via curbside contractor personnel and equipment) at a cost of \$178.75 per tonne (2014)
- Average 13 kg / per month / household



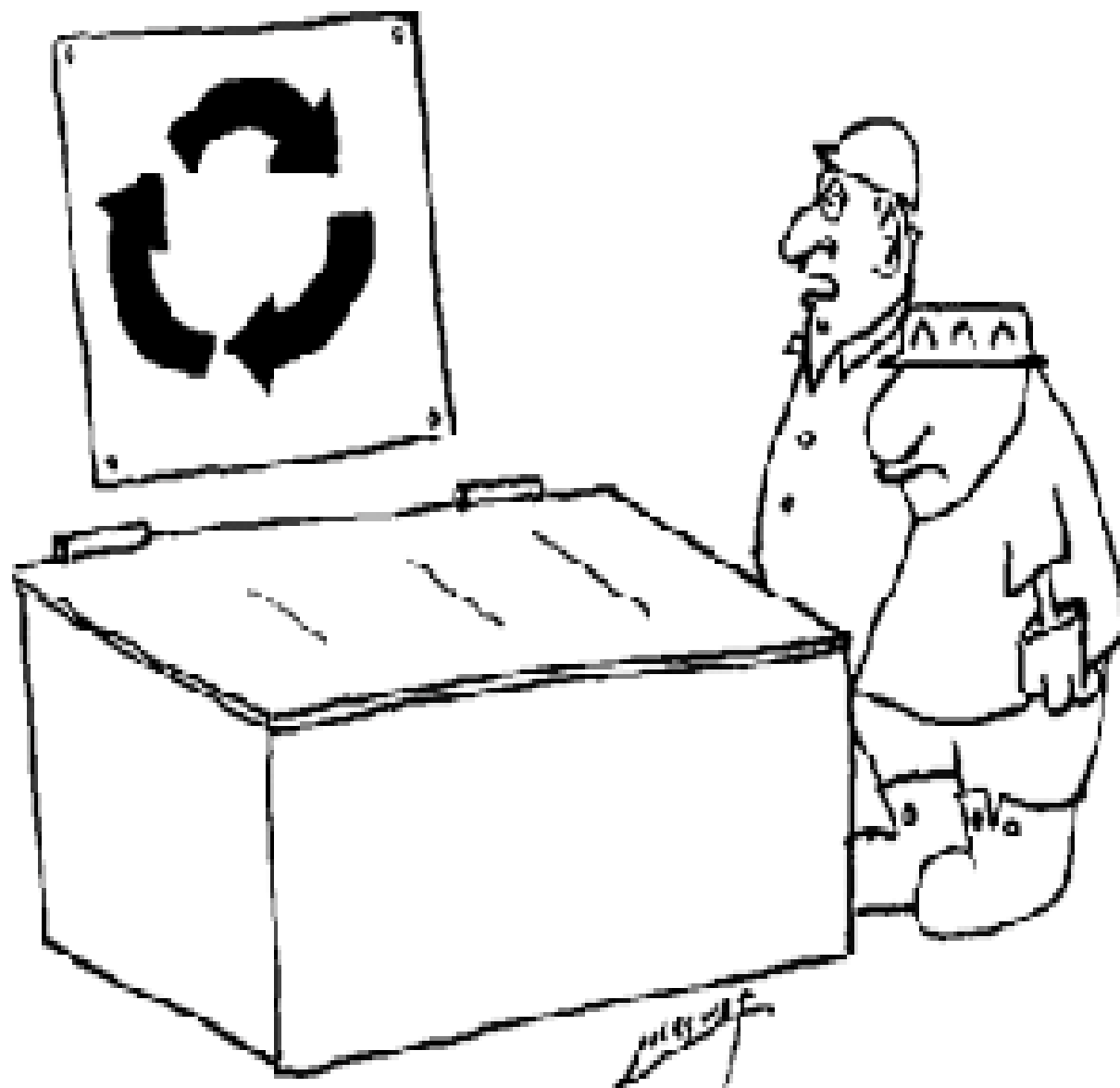


- Multi Material BC (MMBC) is the Province's new printed paper and packaging (PPP) stewardship program. They pay the City to collect PPP (resulting in lower user fees).
- MMBC is funded by the producers of PPP.
- Garbage user rates have declined from \$125 in 2013 to \$94 by 2015.
- Plastic bags are no longer accepted.
- One of many stewardship programs in BC (eg: oil, tires, batteries, electrical items).

RECYCLING DROP-OFF LOCATIONS

- Nanaimo Recycling Exchange (NRE)
Kenworth Road. Open 7 days a week, only closed on Christmas Day (recycling drop off)
- Nanaimo Regional District Landfill on Cedar Highway (recycling drop off and landfill)
- International Composting Corporation on Maughan Road (organic waste)

SID



No wonder you keep getting lost and ending up back here, that's a recycling sign, not directions

STREET SWEEPING

- Street cleaning is funded from general taxation.
- All streets are swept a minimum of twice annually.
- High service areas - i.e. downtown are swept weekly.
- A sidewalk sweeper is used in the downtown core and for other high profile areas.

Street Sweeper



CEMETERIES

- Funded from general taxation, fees for services and interest from the Perpetual Care Fund.
- General Taxation \$143,131 (2013)
- Fees for Services \$72,045 (2013)
- 73 full burials (2013)
- 232 ash burials (2013)

Cemeteries are located at:

- Bowen Road
- Townsite Road (Chinese Cemetery)
- Ledgerwood Road (Wellington Cemetery)
- Wallace Street and Comox Road (Heritage Cemetery)

BOWEN CEMETERY



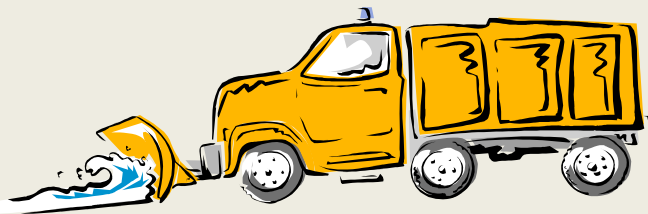
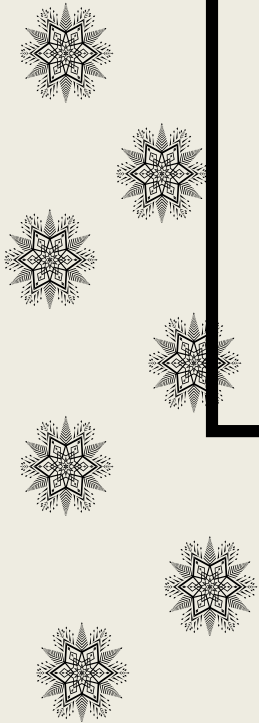
CHINESE CEMETERY



WELLINGTON CEMETERY

- There are no longer any burial plots available for purchase within the Bowen and Wellington Cemeteries.
- Both burial and cremation plots are available at the Chinese or Townsite cemetery.
- Property and facility maintenance is performed by contractors.

ROADS & TRAFFIC SERVICES



ROADS

Roads & Traffic Services is funded from general taxation (\$4 Million)

The Roads Section is responsible for the maintenance of:

- 1050 km of roads
- 17.8 km of laneways
- 408 km of sidewalks
- 5.25km roadways on Protection Island

Asphalt Truck



The Roads Department is responsible for:

- Bridge inspections and repairs - there are 12 bridges in the City.
- All wooden bridges have been replaced with concrete structures.
- Boulevards, walkways, fencing and guardrails.

East Wellington Road Bridge



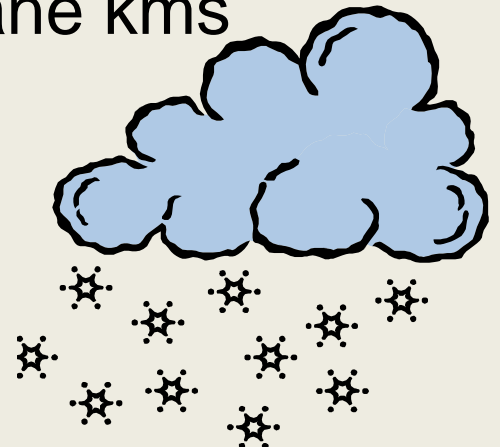
This Division is also responsible for:

- Crack sealing
- Dust suppression in gravel lanes, Protection Island, parking lots, etc.

SNOW & ICE CONTROL



- The annual budget for SNIC is \$600,000.
- In 2008/2009 season, \$1.1 million was expended on SNIC.
- Snow and ice control can cost \$50,000 per day - this includes labour, overtime, equipment and material.
- The City annually contracts out 100 lane kms per year.





Sanders



Salt Shed



Brine Mixer & Tanks



SID



I told you the estimates for salt and sand were low.

TRAFFIC SERVICES

The Traffic Section is responsible for the maintenance of:

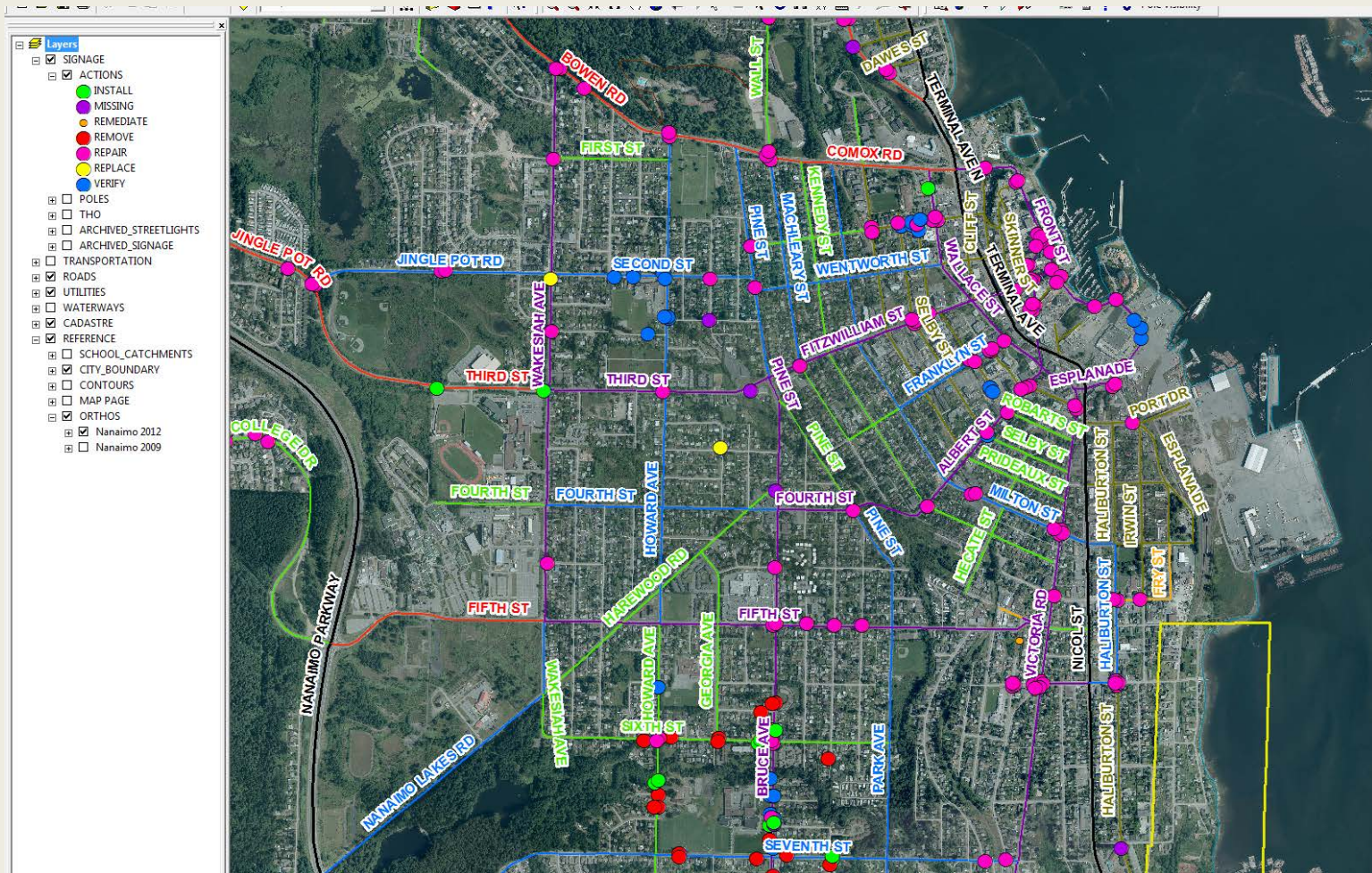


- 53 traffic signals
- 7,856 street lights – 3,718 are City-owned
- It costs the City just under \$1 million annually to energize
- Currently investigating street light dimming, induction lighting and LED lighting to reduce costs and shrink our carbon footprint

- 17,000 regulatory and non-regulatory signs, including 2,043 stop signs.
- Repairs due to vandalism are approximately \$18,000 per annum.
- 990 crosswalks and 800 stop bars.



- ArcMap GPS Locations for all signs, traffic markings, crosswalks, stop bars, arrows, goring, bike stencils, telspar or round stock, traffic signals, lamp standards, street banners and Christmas decorations.
- Dots on map indicate Call for Service (workorder)



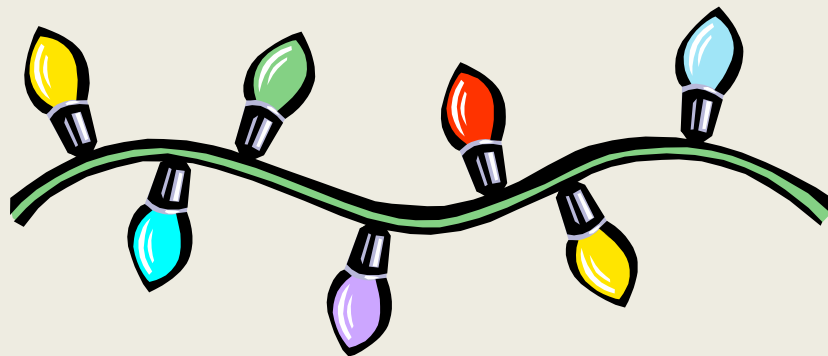
Sign Shop



Over 200 Km of yellow centerline and 78 Km of white fog line are painted annually using 9,000 liters of paint, 15 tonnes of thermo plastic and 11 tonnes of glass bead.



- Street Banner Program in conjunction with the Nanaimo Art Gallery and Exhibition Center & Downtown Nanaimo Partnership
- 1179 survey monuments
- Seasonal decorations and lighting in the downtown area



Street Banners

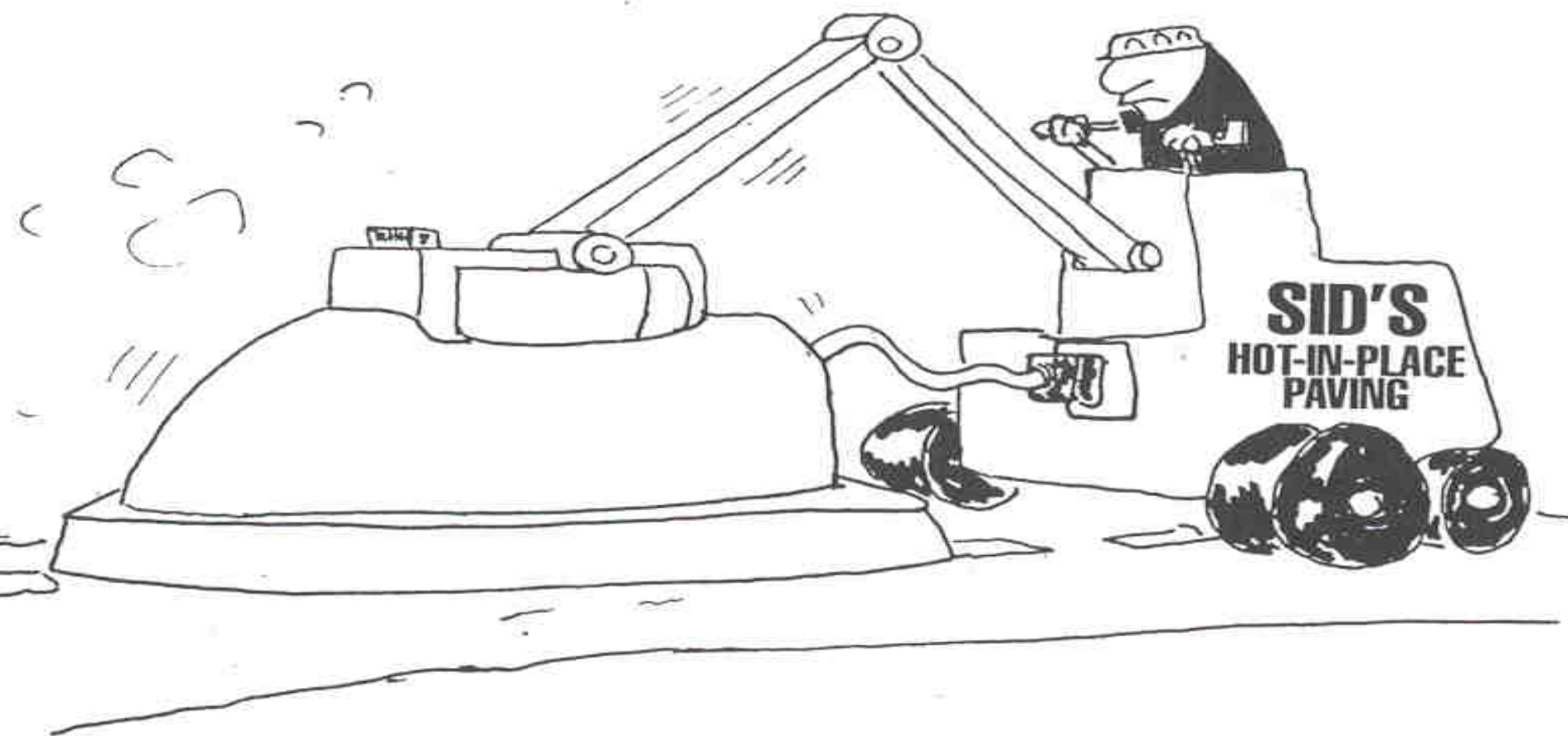


ROADS

- The Roads Capital rehabilitation program is funded from general taxation.
- \$1.3 million for surface restoration.
- Plus \$370,000 for sub-surface (water, storm and sanitary) restoration.

FUNDING

- Arterial & Collector Roads:
 - \$1,000,000
- Local Roads:
 - \$500,000



Conventional Paving



Asphalt Recycling Train



Before



After



Milton Street Project (Sept 2004)



Being sensitive to
the environment





Unit 414

FLEET SERVICES



Unit 433



Unit 113

***Is comprised of a diverse fleet of trucks, cars,
fire trucks, pumps, equipment, vans, tractors,
trailers, mowers, compressors, leaf blowers,
Zambonis
And Gen Sets***

Fleet Services



Looks after the purchase, maintenance and repair of all City fleet vehicles and small equipment for all departs, such as Fire Dept, Parks & Rec (including Zambonis).

Manages City fuel and fuel pumps located @ Public Works Yard.

There are currently 6 service bays, 1 welding bay and 1 small equipment shop. Fleet Services is equipped with 2 service pits and 4 vehicle lifts.

Department runs a preventative maintenance program on all fleet equipment. In addition, often mechanical staff are assigned to special projects.



FLEET SERVICES TEAM

- *Fleet Services is funded from the Equipment Depreciation Fund (sustained by internal rentals).*
- *Fleet Services operating costs are \$2.28 million per year.*
- *Average fleet replacement between 2015 – 2019 is \$800,000 per year (excluding Nanaimo Fire Rescue).*
- *Responsible for the purchase and maintenance of all fleet vehicles (Public Works, Parks & Rec, City Hall and Fire/Rescue).*
- *Fleet Services is a Certified Preventive Maintenance Inspection Facility.*





Responsible for the maintenance of:

Zamboni Unit 808
Converted to electric



Snow & Ice Equipment



Unit 5015
Toro Groundsmaster mower



- *200 trucks, cars and mobile equipment*
- *367 pieces of small equipment (pipe saws, weed eaters, pumps, etc.)*
- *31 stationary engines (generators for emergency power)*
- *68 pieces of snow removal equipment (sanders, nose and belly plows)*
- *Equipment dedicated to snow removal is valued at \$800,000+*
- *Net book value of all vehicles is \$9.1 million.*
- *Net book value of machinery and equipment is \$3.8 million.*



Unit 541
mini sweeper

Unit 733



FLEET SERVICES

also responsible for:

- *Installation and repair of 316 parking meters.*
- *Facility maintenance for the Public Works Yard.*
This involves all renovations, building maintenance, upgrades, grounds maintenance and janitorial services.
- *Security (cameras, perimeter fencing, gates)*
- *Fire alarms, fuel pumps (maintenance, servicing and upgrades).*
- *GPS - Installation and operation of the Fleet GPS system.*
- *Managing Lost Lake Radio Tower*
- *Managing UHF/VHF portable & mobile radios and licensing*
- *All yard maintenance*
- *Custodial work for all Public Works buildings*



PUBLIC WORKS FACILITIES / PROJECTS

SCOPE OF WORK

Looks after all Public Works buildings, Public Works yard and Lost Lake Radio Tower

- *All renovations, maintenance and upgrades*
- *Public Works yard (upgrades, parking, signage)*
- *Security (cameras, fence, gates)*
- *Fire Alarms, fuel pumps (maintenance, servicing and upgrades)*

Some 2014 Yard Projects:

- *Asphalt paving upgrade*
- *Public Works Meeting Room*
- *Fire alarm upgrade*

Some 2015 Yard Projects:

- *CNG facility upgrade*
- *3 roof replacements*
- *Security upgrade*

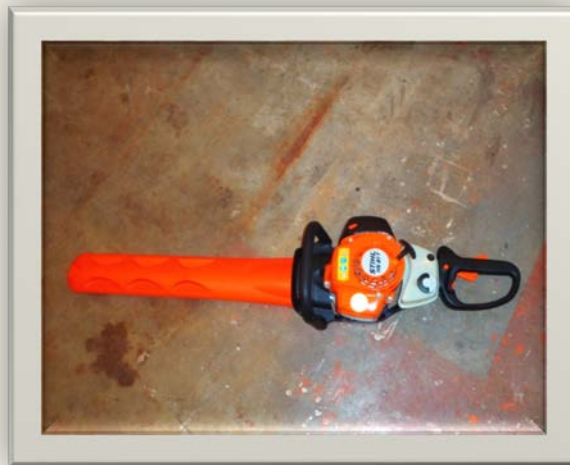
Some 2016 Yard Projects – various projects and paving

- *Ongoing security upgrades of Public Works*
- *Ongoing CNG upgrades to Fleet Services shop*
- *Lost Lake Radio Tower – Tower upgrades and property clearing*
- *Replaced exterior rollup doors in the truck barn – Signs & Lines Dept.*
- *LED Lighting to gas kiosk*
- *Install roll up doors in the Signs and Lines storage building*
- *Main administration painting*
- *Reno Fleet Services office (painting, pocket door)*

SMALL EQUIPMENT SHOP

This department consists of 1 full-time Fleet Maintenance/Small Equip mechanic. He is on staff to repair and service all small equipment inventory. Mechanic maintains inventory of equipment, parts and supplies. There are currently 367 pieces in the small equipment inventory.

Small Equip master equipment list is maintained by Fleet Services. Hourly/weekly, monthly rates have been created to better meet the needs of the departments.



REDUCING OPERATING COSTS & GHG EMISSIONS

We currently have 6 electric vehicles:

- *4 Nissan Leafs*
 - *1 truck converted in-house to electric*
 - *1 low speed vehicle (located on P. Island)*
 - *2 electric Zambonis*
-
- *10 propane converted trucks*
 - *2 CNG Trucks*
 - *2 filling stations located @ Public Works yard*
-
- *In the process of purchasing 2 CNG garbage trucks - to arrive fall of 2016.*
 - *A second in-house conversion to another electric Zamboni is currently underway.*
 - *Purchase of a second factory electric Zamboni planned in 2017*



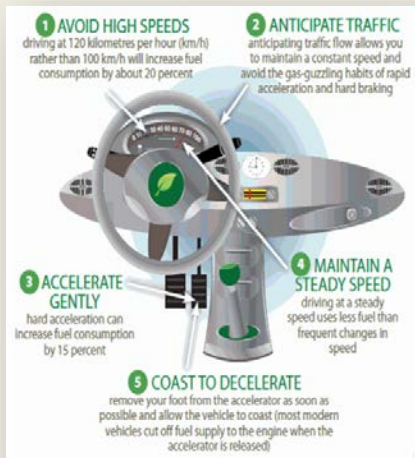
FLEET SERVICES

CITY OF NANAIMO DRIVER TRAINERS

- ***Mike Ryce & Darren Fargo***

Both provide corporate driver training for all City staff.

- ***Conduct training & evaluations of employees
that operate city vehicles & equipment***
 - ***Both individuals issue & endorse
Equipment Operator Permits***



***Anti Idle and Eco Driving Facilitator
is
Kevin Lamb, Fleet Services Foreman***



CUSTOMER SERVICE



**"If you'd like to press 1, press 3.
If you'd like to press 3, press 8.
If you'd like to press 8, press 5..."**

Customer Service

- In-house
- Interdepartmental Service
- Know who does what
- Timely response is appreciated
- On average we receive 100 – 150 calls per day (doubles during snow season)
- In 2013, 7211 work orders were created.
- So far this year 5299 work orders have been created.



Customer Service

Citizens/Taxpayers

- They are our clients
- Ever watchful and knowledgeable
- Response time important
- Pubwoks (Public Works Work Order Retrieval System)





VISION

The City of Nanaimo Green Group is committed to environmental sustainability in the workplace. Green Group activities are designed for staff by staff. The Green Group aims engage staff as champions of change and to empower all employees to make environmentally sustainable choices.

- City-wide environmental sustainability initiative. The Group is working together to build a sustainable workplace plan.
- Supports the City's Strategic Plan and builds upon successes with the City's recent "Green Community" designation.
- Projects include – recycling, composting, ride share initiative, Green procurement, asset sharing and training, information sharing.

LOOKING AHEAD

- Succession Planning (aging workforce)
- Asset Management
- Maintain existing infrastructure within budgetary constraints
- Replace aging infrastructure in a timely manner through a long-term Capital Plan
- Public-Private Partnerships
- Promote public education/awareness of our services
- Continue to improve our responsiveness and service delivery to our customers
- Sustainability (carbon foot print).

PUBLIC WORKS ?

PUBLIC WORKS IS:

- ☑ A straight way to service
- ☑ A challenge to change
- ☑ An invitation to innovation
- ☑ An incentive to improvement
- ☑ An avenue to advancement

PUBLIC WORKS IS NOT:

- ☒ A road to riches
- ☒ A fairway to fame
- ☒ A gangway to glory
- ☒ A recipe for recognition

PUBLIC WORKS

THANK YOU !

QUESTIONS ?