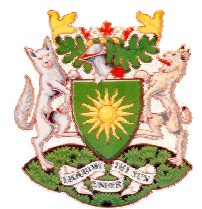
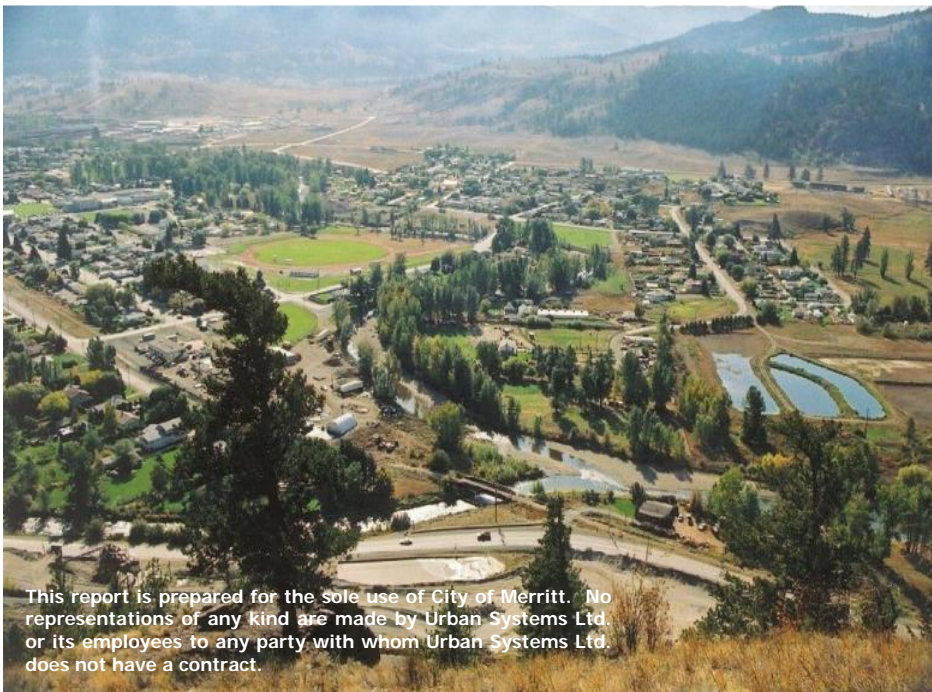




CITY OF MERRITT



Development Cost Charge Bylaw Background Report



January 2007

File: 0521.0178.01

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1.0 INTRODUCTION

1.1 Background

The City of Merritt has traditionally used Development Cost Charges (DCCs) as a mechanism to recover from developers monies to off-set the capital costs of community infrastructure required to support new development. Such infrastructure typically includes road, water, sewer, storm drainage and park services which provide for broader community needs and not just those of a specific site or development. DCCs allow local governments to pool funds from many developers to facilitate the installation of services which will serve their common interests. DCCs are payable by parties obtaining an approval of subdivision or a building permit. The use of DCCs is widely accepted throughout British Columbia, and is enabled through the *Local Government Act*.

The City's existing bylaw was updated in 2004/2005, and since then, changes have occurred. The City's existing DCC Bylaw contains projects that have been completed either in whole or in part. Using the same methodology from 2004/2005, the new bylaw will addresses projects that benefit the entire City and are intended to address growth induced costs. Council has also chosen to include parkland improvements as an eligible capital cost as part of this new bylaw.

1.2 Guiding Principles

Guiding principles establish the baseline for establishing the DCC Bylaw's preparation and administration. These principles are summarized below:

- **Those Who Benefit Pay**

The DCC approach is based on the "benefitter pays" principle. Where the beneficiary of a particular service can be clearly established, costs will be clearly and fairly allocated to the beneficiary.

- **Fairness and Equity**

Fairness and equity are closely related to the "benefitter pays" concept. Costs are shared equitably among service beneficiaries. This includes the allocation of costs between both new and existing service beneficiaries.



- **Administrative Efficiency**

If the principle of equity was the only consideration in the development of cost recovery strategies, complex arrangements would result. Instead, equity has been balanced with administrative efficiency to ensure cost recovery strategies are readily understood, easily implemented and efficient.

- **Integration**

There are two key documents which have provided overall guidance to the evolution of the City's new DCC approach: The City's Official Community Plan and the Five Year Financial Plan. Every effort has been made to ensure that the DCC program is fully integrated with these key documents.

- **Limit City of Merritt's Financial Risk**

Local governments generally assume financial risks when they undertake capital projects to accommodate new development. This is especially true when long term borrowing is used to finance capital projects that are required by new developers to pay for these projects. The financing strategy included in the DCC Bylaw recognizes the City of Merritt's desire to limit its financial risk.

- **Consideration of the City of Merritt's Competitiveness in the Market**

DCCs must recognize the fact that local governments do not operate in an economic vacuum. Rather, they compete daily with other communities for economic development that will result in employment opportunities for residents and a healthy, diversified tax base. It must be clearly understood that DCCs are one factor in local government competitiveness in the marketplace.

- **Certainty**

Certainty is important to both the development community and the City of Merritt. From the development community's perspective it is important to have well understood DCC rates, and timely and orderly construction of required services. From the City's view point, certainty of DCC revenue to support the financing of required capital projects is key. The City has sought to provide a high level of certainty throughout the development of this DCC program.



- **Accountability**

The City of Merritt maintains a transparent DCC update process. The information on which DCCs are based has been accessible to all stakeholders. This included opportunities for meaningful and informed participation by the development community and the public.

- **Recognition of Premature Development**

The City of Merritt anticipates that there may be development proposals which are beyond the five year time horizon which may be prematurely advanced. These developments may in turn accelerate the need for services which are also beyond the five year projection. In such instances, the City will explore additional cost recovery options to supplement DCCs.

1.3 Report Content

The remainder of this report contains the following sections:

Section 2.0 General Considerations – sets out a number of general considerations followed in the preparation of the DCC Bylaw.

Section 3.0 Growth Projection – demonstrates growth projections for the City of Merritt over the next five years.

Sections 4.0 to 8.0 Road, Water, Sewer, Storm Drainage and Park Development Cost Charges – provides background information on road, water, sewer, storm drainage and park DCCs respectively.

Section 9.0 Summary – summarizes total DCCs by type of land use.



2.0 GENERAL CONSIDERATIONS

2.1 Introduction

The City of Merritt followed a number of general considerations in formulating Development Cost Charges (DCCs). This section documents these general considerations.

2.2 Capital Cost Eligible for Development Cost Charges (DCC's)

As outlined in Section 933 of the *Local Government Act*, local governments may levy development cost charges on developers who obtain approval of a subdivision or a building permit authorizing the construction, alteration or extension of a building or structure. The *Act* also specifies the type of capital projects for which DCCs may be imposed. The following services are eligible:

- Highways/roads (other than off-street parking)
- Water
- Sewer
- Storm Drainage
- Parkland Acquisition and Improvement

The City of Merritt has chosen to use DCCs as a tool to recover monies from developers to assist in off-setting costs for each of the services listed above.

The projects outlined in this DCC Bylaw are all city-wide applicable. As such, all calculations assume a single sector approach rather than multiple sectors with differing rates.

2.3 Determination of Capital Project Costs Attributable to Development

All of the capital projects for roads, water, sewer, storm drainage and parkland acquisition and improvement set out in the City's Five Year Financial Plan were reviewed from three perspectives:

- **Project Resolves an Existing Problem**

In many instances, a capital project is proposed solely to resolve an existing problem. A good example of such projects is annual road rehabilitation projects undertaken by the City to repair aging and decaying streets. If resolution of an existing problem is the only



rationale for a particular project, it was removed from consideration under the DCC program.

- **Project Required to Accommodate New Development**

Capital projects are often required to accommodate new development. A well required to provide water for new development in the community illustrates this type of project. Where a project is required solely to accommodate new development, its full value is included in the DCC program.

- **Hybrid Project – Solves Existing Problem and Accommodates New Development**

There are many capital projects which do not fit neatly into either of the groups noted above. Rather, these projects assist in resolving existing problems and have the capacity to accommodate new development. In these cases, total capital costs are apportioned between existing and new development in a fair and equitable manner.

2.4 Municipal Assist Factor

Section 933 of the *Local Government Act* states that DCCs are intended to provide funds to assist local governments to pay the costs of specific types of services. This means that 100% of the required funds cannot come from levies on development. The local government must contribute to some extent through what is referred to as an “assist factor.” The City of Merritt has chosen an assist factor of 1% for use in this DCC program.

2.5 Public Consultation

A DCC program cannot be developed in isolation. Development interests within the community must have the opportunity to understand the rational supporting DCCs, including the scope and extent of projected growth, nature of required capital project, and other matters. Furthermore, the general public must be afforded the opportunity to participate as they too contribute to funding capital projects through general taxation and utility charges. Specific opportunities provided as part of the evolution of this DCC program include a public open house held on February 1, 2007 to apprise the development community and interested public of the new DCC Bylaw as well as considerations of the DCC Bylaw in open Council.



2.6 Setting and Collection of Industrial Development Cost Charges

The Province's Development Cost Charge Best Practices Guide suggests that DCCs for industrial uses be calculated on the basis of site area for road, water, sewer and storm drainage services. As detailed in this Background Report, the City of Merritt has followed this approach.

With respect to the collection of industrial DCCs, it is critical to understand the future form and scope of industrial development in the community. The City of Merritt is encouraging the development of various forms of industrial use in the community. This direction is consistent with the City's Official Community Plan.

Industrial development will take different forms. Some will use extensive site areas for outdoor storage, vehicle movement and manufacturing, yet include limited building area. Other industrial uses will have smaller site area with more of the site covered by buildings. It is difficult to determine the site:building area relationship at the time of subdivision. In addition, industrial development can often unfold in a phased manner, with the timing of later phases uncertain and dependant upon the success of the earlier phases.

These factors present a challenge in levying an appropriate DCC at the time of subdivision on the basis of site area. The City therefore has decided to levy DCCs at the time of building permit on the basis of building area. Site area charges have been translated in to building area charges as outlined in Appendix F.

2.7 Interpretation

In this bylaw, the following definitions apply.

"commercial" means any commercial use as permitted under the City's Zoning Bylaw;

"industrial" means any use permitted under the City's Zoning Bylaw;

"institutional" means any institutional use permitted under the City's Zoning Bylaw;

"multi-family – low/med density" means any building consisting of three or more dwelling units, each of which is occupied or intended to be occupied as the residence of one family as permitted under the City's Zoning Bylaw;



"multi-family – high density" means any building consisting of three or more dwelling units, each of which is occupied or intended to be occupied as the residence of one family as permitted under the City's Zoning Bylaw;

"single family" means any building which is occupied or intended to be occupied as the permanent home or residence of one family as permitted under the City's Zoning Bylaw;

"zoning bylaw" means the City of Merritt Zoning Bylaw No. 1894, as amended from time to time.



3.0 GROWTH PROJECTIONS

3.1 Context for Growth Projections

The City of Merritt has experienced varying rates of growth over the past three decades. Since the mid 1970s, Merritt's population has increased from approximately 5,300 to 6,400 in the early 1990s. The amalgamation of Merritt with Colletteville in 1996 increased the City's population by approximately 600 people. By 2001, Merritt's population was estimated at approximately 7,400. Historic data which depicts Merritt's population changes over the past 30 years is presented on Table 1.

Table 1
Population Growth, 1971 to 2001



The last formal Census data that is available is 2001. At that point, the City's population was estimated at 7,396. Since that time, BC Stats has conducted annual estimates of population growth in Merritt. In 2004, BC Stats estimated Merritt's population to be 7,665.



A five year horizon will be used to update the existing DCC program in Merritt. Based on the historic population records above, the average annual growth rate since 1971 is 1.2%. Using this growth rate, the projected population for the City of Merritt for the period 2007 to 2011 can be summarized as follows:

Table 2
Projected Population: 2007-2011

Year	Population
2007	7,945
2011	8,333
Growth (2007--2011)	388

3.2 Residential Growth

A number of key assumptions were required in order to prepare projections of residential growth for the next five years. These assumptions are stated below:

- Effective Population Growth

Effective population growth is that component of growth which results in demand for new residential development. Most communities can accommodate some growth without a net increase in residential housing stock. In Merritt, it has been assumed that 90% of population growth will result in demand for new residential development.

- Composition of Residential Housing Stock

Merritt's residential housing stock comprises a mix of single and multi-family units. The assumed composition of this stock over the next five years is based on the current proportion of housing stock as reported by Statistics Canada as well as recent trends derived from building permit data, along with a knowledge of current, overall market trends in residential development. The composition of housing stock has been estimated according to these information sources and is summarized in Table 3.



- Institutional Residential Growth

There has been significant residential development targeted for seniors in the City of Merritt in recent years. This type of development has not necessarily correlated with population growth per se, but it is the manifestation of market trends and demographics at more of a provincial scale. This trend is expected to continue in the near future, with the expansion of Coquihalla Gillis House.

At the same time, the Nicola Valley Institute of Technology has indicated plans to construct a 40-unit student residence. Based on discussions with local institutions (NVIT, Nicola Valley Health Centre), past trends and other assumptions, a projected number of institutional-related units is provided. It is assumed that this type of development would generally be equivalent to the Multi-Family – High Density development in terms of demands on infrastructure and therefore would be included in that charge category. For clarity, it is separated from the Multi-Family – High Density category in subsequent sections of this document.

Table 3
Composition of Housing Stock

Type of Residential Unit	Proportion of Total Housing Stock
Single Family (incl. mobile homes)	80%
Multi-Family - Low/Med Density	10%
Multi-Family - High Density	10% (not including Institutional Use)

Sources: Stats Canada and City of Merritt Building Permit Records

- Occupancy Rates of Residential Housing Units

The average number of persons projected to occupy households is an important assumption in formulating residential growth forecasts. In the case of Merritt, the average number of persons per household by household type is reported below.



Table 4
Occupancy Rates of Housing Units

Occupancy Rates	Avg. Persons Per Dwelling Unit
Single Family (incl. mobile homes)	2.7
Multi-Family - Low/Med Density	2.3
Multi-Family - High Density	1.6

Source: Stats Canada

Applying these assumptions to the projected population growth rates discussed earlier results in the estimate of new residential growth as summarized below in Table 5.

Table 5
Projected Residential Growth: 2007-2011

Type of Residential Unit	Projected Number of Units
Single Family	110
Multi-Family - Low/Med Density	14
Multi-Family - High Density	14
Institutional – Multi-Family – High Density	100
Total	238

3.3 Commercial and Industrial Growth

In order to prepare projections for commercial and industrial growth from the period 2007 to 2011, the assumption that there is a direct correlation between population growth and demands for commercial and industrial floor space has been made. This assumption allows historic ratios between population levels and extent of commercial and industrial floor space to be used. The ratios for Merritt are presented below.



- Commercial Floor Area and Ratio

Total commercial floor area is estimated to be approximately 115,800 m² based on BC Assessment Authority data and Building Permit data from the last three years. This results in 14.8 square meters of commercial floorspace per person in Merritt.

- Industrial Floor Area and Ratio

Total industrial floor area is estimated by the City to be 1,897,200 m² (189.72 ha). This results in 241.7 square meters of industrial land per person.

Table 6
Projected Commercial Growth

Land Use	Projected Growth
Commercial	5,700 sq. m.
Industrial	9.4 ha

3.4 Institutional Growth

It is difficult to establish a direct correlation between population growth and demand for a range of institutional services. The method which was therefore used as part of this DCC program involved obtaining information from key institutions in the community regarding capital plans for the next five years. The Nicola Valley Institute of Technology (NVIT) is planning to construct a 930 sq. m ceremonial arbour. Major renovations are planned for schools in Merritt but there will be no expansion according to School District No. 58. The Nicola Valley Health Centre is expanding Coquihalla Gillis House which is captured in Table 5 - Projected Residential Growth. Beyond what has been confirmed for NVIT, 5,000 sq. m. has been allocated for "other" institutional development that may occur in the future. Table 7 illustrates projected institutional growth.



Table 7
Projected Institutional Growth

Institution	Projected Growth (m ²)
NVIT	1,000 sq. m.
Other	5,000 sq. m.
Total	6,000 sq. m.



4.0 ROAD DEVELOPMENT COST CHARGES

4.1 Introduction

The City of Merritt is planning to undertake a number of road projects over the next five years. Many of these projects, such as the annual local road improvement program to repair decaying streets, are to resolve existing problems. Projects which fall into this category have been removed from consideration by the DCC program. In addition, smaller roads which will be required to serve new development do not fall within the scope of the DCC program as they are typically constructed by land developers as part of the subdivision approval process. The City's road DCC program includes larger collector and arterial roads which serve the entire community, along with other transportation infrastructure of City-wide significance.

Based on the City's Official Community Plan and recent development in the North East sector (Voght Street/North Entry Corridor), the major road network that will face the greatest growth in use (regardless of where that growth is located) is along the Voght Street corridor. The DCC Road projects, therefore, primarily focuses on projects which will increase the capacity of this corridor.

4.2 Capital Projects

Approximately \$2,805,000 of DCC-related capital projects are planned over the next five years. A summary of these projects, together with the key sources of revenue, is provided in Table 8. Revenue required from DCCs to support these projects is \$700,200.

4.3 Reserve Balance

The City of Merritt has been collecting DCCs for road projects for a number of years. The current DCC road reserve balance is \$472,000 (from City of Merritt Chief Financial Officer, January 22, 2007).

4.4 Trip Generation

Trip generation rates are an accepted means of measuring the demands placed on road infrastructure among different types of development. Trip generation is typically measured in units known as 'trip ends', which means a one-directional vehicle movement either entering or exiting a site. Trip ends during the peak vehicle activity period of the day (afternoon rush hour) are most often used for comparisons. The standard reference for trip generation is the Institute of Transportation Engineers' Trip Generation Manual.



Table 8
Summary of DCC-Related Road Projects

ROAD PROJECT	TOTAL ESTIMATED COST	TIMING	SOURCES OF REVENUE			
			% Attrib. to new Growth	DCCs	Other Revenue Source (Grants etc.)	City Portion
Voght Corridor						
- Lights @ Voght and Grimmet	\$337,000	2009	100%	\$337,000		
- Left Turn at Nicola Valley Health Centre	\$165,000	2007	20%	\$33,000		\$132,000
- Sidewalk / Coyote Bluff - Grimmet	\$105,000	2008	100%	\$105,000		
- Enhancements @ Belshaw / De Wolf	\$176,000	2007	20%	\$35,200		\$140,800
Voght/Garcia Couplet (25% cost) ¹	\$1,250,000	2024	10%	\$41,500	\$835,000.00	\$373,500
Springbank - Grimmett Connector	\$650,000	2009	20%	\$130,000		\$520,000
Cleasby Street Extension	\$115,000	2007	10%	\$11,500		\$103,500
Road Projects: Capital and Financial Planning	\$7,000	2011	100%	\$7,000		
TOTALS	\$2,805,000			\$700,200	\$835,000	\$1,269,800

Note 1: Includes Coldwater re-alignment - Voght to Garcia.



The Province's Best Practices Guide references the Trip Generation Manual, and these assumptions have been used for the City of Merritt. Therefore, the trip generation rates used in the City of Merritt's DCC program reflect those in the Best Practices Guide.

There is one exception to the Best Practices Guide's approach. In examining the assumptions underpinning trip generation for industrial uses, the City found that Merritt's circumstances differed in several respects. The most marked difference is the forecast composition of industrial activity, wherein Merritt is expecting a higher proportion of light industrial activity relative to heavier industrial use. Trip generation rates for industrial use were therefore recalculated. The details of these calculations are set out in Appendix G.

4.5 Calculation of Road DCCs

The following table summarizes the calculation of road DCCs. Numbers included in the spreadsheets have been rounded accordingly.

Table 9
Calculation of Road DCCs

Traffic Generation Calculation

Land Use	Estimated New Development	Trip Generation (Peak Hour)	Total Trips Generated (Peak Hour)
Single Family Residential	110 du	1.02 per du	112.20
Multi Family - Low/Medium Density Residential	14 du	0.64 per du	8.96
Multi Family - High Density Residential	114 du	0.40 per du	45.60
Commercial	5,700 m ²	0.014 per m ²	79.80
Industrial	9.4 ha	16.85 per ha	158.39
Institutional	6,000 m ²	0.018 per m ²	108.00
TOTAL			512.95

Unit Road DCC Calculations

Net Road DCC Program Recoverable	\$ 700,200.00
Existing Road DCC Reserve Monies	\$ 472,000.00
Net Amount to be Paid by DCC's	\$ 228,200.00
DCC Per Trip End	\$ 444.88

**Resulting Road DCCs**

Land Use	DCC	
Single Family Residential	\$ 454	per du
Multi Family - Low/Medium Density Residential	\$ 285	per du
Multi Family - High Density Residential	\$ 178	per du
Commercial	\$ 6.23	per m ²
Industrial	\$ 7,496	per ha
Institutional	\$ 8.01	per m ²



5.0 WATER DEVELOPMENT COST CHARGES

5.1 Introduction

Currently, Merritt's water system serves over 90% of City residents within a service area of approximately 10 km². In 1996, the unincorporated area of Colletteville was annexed into the City of Merritt. This area previously received water service from the Coldwater Improvement District (CID) which was disbanded at the time of incorporation. The water supply (i.e. one of the two CID wells) and distribution system in Colletteville were upgraded/replaced under a specified area project, assisted by an infrastructure grant. However, the CID reservoir was abandoned with the additional storage requirement provided from existing City reservoirs reducing the "excess" storage available.

Over the next five years, the City is planning to undertake various projects to enhance water-related utilities. Many of these projects are intended to repair aging utility components and are therefore exempt from consideration under the DCC program. The key projects planned over the next five years which are DCC eligible include construction of a new well and a new reservoir.

5.2 Capital Projects

It is expected that \$3,937,000 of DCC-related water capital projects will be completed over the next five years. Table 10 provides a summary of these projects along with the key sources of revenue. DCC revenue required to support these projects is \$1,092,000.

5.3 Reserve Balance

The City of Merritt has been collecting DCCs for water projects for a number of years. The current DCC water reserve balance is \$1,110,000 (from City of Merritt Chief Financial Officer, January 22, 2007).

5.4 Water Demands

Water is used throughout the community for consumptive purposes (both indoor and outdoor water use) as well as to provide adequate flows for fire protection. Different land uses place different levels of demand on the City's water utilities. In the case of residential land use, water demands are most closely related to the number of persons residing in each type of residential unit (i.e., single family, various densities of multi-family). Section 3.2, Table 5 of this report contains details on the projected number of persons per residential unit.



Water demands for non-residential land uses are typically stated as population equivalents (i.e., a calculated area of commercial, industrial or institutional land which is deemed to place the same demand on the water utility as a person). The Province's Best Practices Guide contains population equivalent rates for non-residential uses. These rates were used in the case of institutional land uses, but adjusted for commercial and industrial activities to account for typical water demands for BC Interior communities.



Table 10
Summary of DCC-Related Water Projects

WATER PROJECT	TOTAL ESTIMATED COST	TIMING	SOURCES OF REVENUE			
			% Attrib. to new Growth	DCCs	Other Revenue Source (Grants etc.)	City Portion
New Well	\$950,000	2008	50%	\$186,939	\$576,122	\$186,939
Reservoir	\$1,500,000	2008	50%	\$750,000		\$750,000
Monitoring Wells	\$150,000	2007-2011	10%	\$15,000		\$135,000
Disinfection	\$450,000	2007-2009	10%	\$45,000		\$405,000
Well Replacements	\$500,000	2009	10%	\$50,000		\$450,000
Well Rehabilitation	\$180,000	2009-2011	10%	\$18,000		\$162,000
Aquifer Protection Planning	\$200,000	2007-2011	10%	\$20,000		\$180,000
Water Projects: Capital and Financial Planning	\$7,000	2011	100%	\$7,000		
TOTAL	\$3,937,000			\$1,091,939	\$576,122	\$2,268,939



5.5 Calculation of Water DCCs

The following table summarizes the calculation of water DCCs. Numbers included in the spreadsheets have been rounded accordingly.

Table 11
Calculation of Water DCCs

Equivalent Population Calculation

Land Use	Estimated New Development	Equivalence Factor	Equivalent Water Units
Single Family Residential	110 du	2.7 per du	297.00
Multi Family - Low/Medium Density Residential	14 du	2.3 per du	32.20
Multi Family - High Density Residential	114 du	1.6 per du	182.40
Commercial	5,700 m ²	0.006 per m ²	34.20
Industrial	9.4 ha	28 per ha	263.20
Institutional	6,000 m ²	0.011 per m ²	66.00
TOTAL			875.00

Unit Water DCC Calculation

Net Water DCC Program Recoverable	\$ 1,091,939.00
Existing Water DCC Reserve Monies	\$ 1,110,000.00
Net Amount to be Paid by DCC's	\$ -
DCC Per Equivalent Water Unit	\$ -

Resulting Water DCCs

Land Use	DCC	
Single Family Residential	\$ -	per du
Multi Family - Low/Medium Density Residential	\$ -	per du
Multi Family - High Density Residential	\$ -	per du
Commercial	\$ -	per m ²
Industrial	\$ -	per ha
Institutional	\$ -	per m ²



6.0 SEWER DEVELOPMENT COST CHARGES

6.1 Introduction

The majority of Merritt is serviced with sanitary sewers, although some areas are serviced by on-site systems. Unsewered areas include some parcels north of Nicola Avenue in the East Merritt/Diamondvale sector, and areas in the South Merritt and South Interchange sectors¹. Less than 50 people utilize on-site sewage systems in Merritt.

In 1996, the unincorporated area of Colletteville was incorporated into the City of Merritt. Prior to this, sewerage in Colletteville was handled via on-site disposal. A new sewer collection system for Colletteville, funded through a specified area and infrastructure grant, was installed connecting to the existing City of Merritt treatment and disposal works. This addition reduced the available "excess" capacity in the City system.

In 2002, the City of Merritt undertook a Liquid Waste Management Plan (LWMP) with the intent to identify potential solutions to establish direction for safe and environmentally sustainable treatment and disposal of municipal wastewater. Public participation was a key component of the LWMP process. The projects listed as part of the DCC program for this bylaw are a result of this comprehensive plan and are required in part to serve new development.

6.2 Capital Projects

Over \$5,220,000 of DCC-related sewer capital projects are planned for the next decade. Table 12 provides a summary of these projects along with key sources of revenue. Revenue from DCCs to support these projects is \$2,778,000.

6.3 Reserve Balance

The City of Merritt has been collecting DCCs for sewer projects for a number of years. The current DCC sewer reserve balance is \$890,000 (from City of Merritt Chief Financial Officer, January 22, 2007).

¹ Sectors are identified in the City's Official Community Plan (2004).



6.4 Sewer Demands

Similar to the other services reviewed as part of this DCC Background Report, different land uses place different levels of demand on the City's sewer system. With respect to residential land uses, the number of persons living in a residential unit most closely approximates the demand for sewer services. Section 3.2 of this report contains details on the projected number of persons per residential unit. Demands placed on the sewer system by non-residential development are commonly expressed as population equivalent rates for non-residential land uses. These rates were used in calculating Merritt's sewer DCCs for non-residential land uses. See Appendix H for recalculated industrial equivalencies.



Table 12
Summary of DCC-Related Sewer Projects

SEWER PROJECT	TOTAL ESTIMATED COST	TIMING	SOURCES OF REVENUE			
			% Attrib. to new Growth	DCCs	Other Revenue Source (Grants etc.)	City Portion
Clarifier Weir Upgrade (Design and Construct)	\$25,000	2006	30%	\$7,500		\$17,500
Monitoring Program (\$20,000/year)	\$100,000	2007-11	30%	\$30,000		\$70,000
Electrical/SCADA Upgrade/Standby Generator	\$675,000	2007	30%	\$67,500	\$450,000	\$157,500
Composting Program - Planning, Design, and Construction	\$900,000	2007	50%	\$450,000		\$450,000
Reconfigure Rapid Infiltration Basin	\$420,000	2007	40%	\$168,000		\$252,000
Lift Station and Grit Removal	\$1,100,000	2007	50%	\$183,333	\$733,333	\$183,333
Dedicated Blower, DO Control, Fine Bubble Diffusers in Aerated Sludge Tank	\$143,000	2007	30%	\$14,300	\$95,333	\$33,367
Aeration Basin #3, Clarifier #3, and UV Disinfection	\$1,800,000	2011	100%	\$1,800,000		
Network Capacity Evaluation	\$50,000	2007	100%	\$50,000		
Sanitary Sewer Projects: Capital and Financial Planning	\$7,000	2009	100%	\$7,000		
TOTALS	\$5,220,000			\$2,777,633	\$1,278,667	\$1,163,700



6.5 Calculation of Sewer DCCs

The following table summarizes the calculations of sewer DCCs. Numbers included in the spreadsheets have been rounded accordingly.

Table 13
Calculation of Sewer DCCs

Equivalent Population Calculations

Land Use	Estimated New Development	Equivalence Factor	Equivalent Sewer Units
Single Family Residential	110 du	2.7 per du	297.00
Multi Family - Low/Medium Density Residential	14 du	2.3 per du	32.20
Multi Family - High Density Residential	114 du	1.6 per du	182.40
Commercial	5,700 m ²	0.013 per m ²	74.10
Industrial	9.4 ha	5.1 per ha	47.94
Institutional	6,000 m ²	0.011 per m ²	66.00
TOTAL			699.64

Unit Sewer DCC Calculation

Net Sewer DCC Program Recoverable	\$ 2,777,633.33
Existing Sewer DCC Reserve Monies	\$ 890,000.00
Net Amount to be Paid by DCC's	\$ 1,887,633.33
DCC Per Equivalent Sewer Unit	\$ 2,698.01

Resulting Sewer DCCs

Land Use	DCC	
Single Family Residential	\$ 7,285	per du
Multi Family - Low/Medium Density Residential	\$ 6,205	per du
Multi Family - High Density Residential	\$ 4,317	per du
Commercial	\$ 35.07	per m ²
Industrial	\$ 13,760	per ha
Institutional	\$ 29.68	per m ²



7.0 STORM DRAINAGE DEVELOPMENT COST CHARGES

7.1 Introduction

The City of Merritt utilizes a combination of natural drainage patterns, piped flows, storm water detention/retention works and other facilities to manage storm drainage. Projects to be considered include storm water projects (including expansion or environmental modifications of existing outfalls or ponds) identified through a review of existing storm facilities and areas requiring system expansion or modifications. Where these works are intended in whole or in part to serve new development, they become subject to consideration under the DCC program.

7.2 Capital Projects

The total value of DCC-related capital projects for storm drainage works planned for the next five years is \$1,402,000. Table 14 provides a summary of these projects along with key sources of revenue. DCC revenue required to support these projects is \$320,500.

7.3 Reserve Balance

The City of Merritt has been collecting DCCs for storm drainage projects for a number of years. The current DCC storm drainage reserve balance is \$151,700 (from City of Merritt Chief Financial Officer, January 22, 2007).

7.4 Storm Drainage Generation

The demand for storm drainage services is directly related to the potential storm water run-off generated by a development. The potential for stormwater run-off is in turn influenced significantly by the amount of impervious area on a given site. Impervious areas are created through the construction of roofs, parking lots, driveways and access roads. Another important consideration in calculating storm drainage generation is the density of development which is typically expressed as number of units per given area for residential development and site coverage for commercial and institutional development.

The Province's Best Practices Guide utilizes an approach for calculating storm drainage generation which takes into consideration both impervious area and density of development. The storm drainage generation rates used in the Merritt DCC program reflect those in the Best Practices Guide.



Table 14
Summary of DCC-Related Drainage Projects

DRAINAGE PROJECT	TOTAL ESTIMATE D COST	TIMING	SOURCES OF REVENUE			
			% Attrib. to new Growth	DCCs	Other Revenue Source (Grants etc.)	City Portion
Storm Water LWMP	\$70,000	2009	25%	\$17,500		\$52,500
Voght/Garcia Outfall (25% cost)	\$50,000	2024	100%	\$17,000	\$33,000.000	
Coyote Pond/Outfall Completion	\$30,000	2006	100%	\$30,000		
2nd Avenue Outfall	\$160,000	2008	20%	\$32,000		\$128,000
Colletteville Outfall	\$125,000	2008	20%	\$25,000		\$100,000
Misc. Storm Outfall/Environmental Upgrading ¹	\$300,000	2007-2011	20%	\$60,000		\$240,000
Douglas Street Outfall	\$660,000	2011	20%	\$132,000		\$528,000
Drainage Projects: Capital and Financial Planning	\$7,000	2009	100%	\$7,000		
TOTALS	\$1,402,000			\$320,500	\$33,000	\$1,048,500

Note 1: Addition of Silt Removal devices to existing outfalls:

- Voght - North side of Coldwater
- Voght - South side of Nicola River
- Chapman
- Granite / Spring
- Canford Avenue



7.5 Calculation of Storm Drainage DCCs

The following table summarizes the calculation of storm drainage DCCs. Numbers included in the spreadsheets have been rounded accordingly.

Table 15
Calculation of Storm Drainage DCCs

Drainage Impact Calculation

Land Use	Estimated New Development	Equivalence Factor	Equivalent Drainage Units
Single Family Residential	110 du	1.00 per du	110.00
Multi Family - Low/Medium Density Residential	14 du	0.44 per du	6.16
Multi Family - High Density Residential	114 du	0.27 per du	30.78
Commercial	5,700 m ²	0.0032 per m ²	18.24
Industrial	9.4 ha	22.5 per ha	211.50
Institutional	6,000 m ²	0.003 per m ²	18.00
TOTAL			394.68

Unit Storm Drainage DCC Calculation

Net Storm Drainage DCC Program Recoverable	\$ 320,500.00
Existing Storm Drainage DCC Reserve Monies	\$ 151,700.00
Net Amount to be Paid by DCC's	\$ 168,800.00
DCC Per Equivalent Drainage Unit	\$ 427.69

Resulting Storm Drainage DCCs

Land Use	DCC	
Single Family Residential	\$ 428	per du
Multi Family - Low/Medium Density Residential	\$ 188	per du
Multi Family - High Density Residential	\$ 115	per du
Commercial	\$ 1.37	per m ²
Industrial	\$ 9,623	per ha
Institutional	\$ 1.28	per m ²



8.0 PARK DEVELOPMENT COST CHARGES

8.1 Introduction

Parkland improvement projects are to be considered as part of the DCC Bylaw update. Park projects anticipated over the next five years include upgrades which will largely benefit the broader needs of the community, rather than those of specific neighbourhoods. Works include upgrades to Central Park, the City's major park which serves the entire community as well as landscaping at Juniper Avenue and Parker Drive above Central Park, another park used by the community.

The City's 2003 DCC balances are greater than the current projects attributable to DCC's as outlined in this report. This results in a "negative" Park DCC calculation. Therefore, the City does not need to collect any more DCC funds for park projects. However, itemizing the projects as part of this DCC bylaw will enable the City to access funds for the identified projects when it comes time to complete these projects.

8.2 Capital Projects

It is projected that \$327,000 of DCC-related parkland projects will be undertaken by the City in the next five years. A summary of these projects, along with their key sources of revenue, is provided in Table 16.

8.3 Reserve Balances

The City of Merritt has been collecting DCCs for park projects for a number of years. The current DCC park reserve balance is \$75,000 (from City of Merritt Chief Financial Officer, January 22, 2007).

8.4 Demand for Parks

The Ministry's Best Practices Guide notes that as people generate the need for parks and associated improvements, demand should be simulated based on the relative impact of each residential land use. This relative impact is best expressed by the number of persons per dwelling unit for the various densities of residential use (i.e. single and various multi-family). This approach was followed by the City of Merritt, using the number of persons per dwelling unit discussed in earlier sections of this report.



Table 16
Summary of DCC-Related Park Projects

PARK PROJECT	TOTAL ESTIMATED COST	TIMING	SOURCES OF REVENUE			
			% Attrib. to new Growth	DCCs	Other Revenue Source (Grants etc.)	City Portion
Central Park - drainage and trails to Rotary Park	\$30,000	2009	15%	\$4,500		\$25,500
Central Park - Change Rooms and Restrooms	\$180,000	2009	15%	\$27,000		\$153,000
Central Park - Drainage, Landscaping, and Irrigation for Field #5	\$70,000	2009	15%	\$10,500		\$59,500
Xeriscape Landscaping at Juniper Avenue and Parker Drive above Central Park	\$40,000	2009	15%	\$6,000		\$34,000
Park Projects: Capital and Financial Planning	\$7,000	2011	100%	\$7,000		
TOTALS	\$327,000			\$55,000		\$272,000



Summary of DCC- Related Park Projects

8.5 Calculation of Park DCCs

The following table summarizes the calculation of Park DCCs. Numbers included in the spreadsheets have been rounded accordingly.

Table 17
Calculation of Park DCCs

Equivalent Population Calculation

Land Use	Estimated New Development	Equivalence Factor	Equivalent Drainage Units
Single Family Residential	110 du	2.7 per du	297.00
Multi Family - Low/Medium Density Residential	14 du	2.3 per du	32.20
Multi Family - High Density Residential	114 du	1.6 per du	182.40
TOTAL			511.60

Unit Park DCC Calculation

Net Park DCC Program Recoverable	\$ 55,000.00
Existing Park DCC Reserve Monies	\$ 75,000.00
Net Amount to be Paid by DCC's	\$ -
DCC Per Equivalent Park Unit	\$ -

Resulting Park DCCs

Net Park DCC Program Recoverable	\$ 55,000.00
Existing Park DCC Reserve Monies	\$ 75,000.00
Net Amount to be Paid by DCC's	\$ -
DCC Per Equivalent Park Unit	\$ -



9.0 SUMMARY

9.1 Development Cost Charges Without Municipal Assist Factor

The DCCs calculated in Sections 4 through 8 of this report are summarized in Table 18 by land use and services.

Table 18
DCCs Without Municipal Assist Factor

Land Use	Service					
	Roads	Water	Sewer	Drainage	Parks	Total
Single Family Residential	\$ 454	\$ -	\$ 7,285	\$ 428	\$ -	\$ 8,167 per du
Multi Family - Low/Medium Density Residential	\$ 285	\$ -	\$ 6,205	\$ 188	\$ -	\$ 6,678 per du
Multi Family - High Density Residential	\$ 178	\$ -	\$ 4,317	\$ 115	\$ -	\$ 4,610 per du
Commercial	\$ 6.23	\$ -	\$ 35.07	\$ 1.37		\$ 42.67 per m ²
Industrial	\$ 7,496	\$ -	\$ 13,760	\$ 9,623		\$ 30,879 per ha ¹
Institutional	\$ 8.01	\$ -	\$ 29.68	\$ 1.28		\$ 38.97 per m ²

Note 1: At time of subdivision: \$ 30,879 per ha

At time of Building Permit: \$ 9.08 per m²

9.2 Development Cost Charges with a 1% Municipal Assist Factor

The application of a 1% municipal assist factor results in the DCC rates set out in Table 19.

Table 19
DCCs With 1% Municipal Assist Factor

Land Use	Service					
	Roads	Water	Sewer	Drainage	Parks	Total
Single Family Residential	\$ 449	\$ -	\$ 7,212	\$ 424	\$ -	\$ 8,085 per du
Multi Family - Low/Medium Density Residential	\$ 282	\$ -	\$ 6,143	\$ 186	\$ -	\$ 6,611 per du
Multi Family - High Density Residential	\$ 176	\$ -	\$ 4,274	\$ 114	\$ -	\$ 4,564 per du
Commercial	\$ 6.17	\$ -	\$ 35.00	\$ 1.00	\$ -	\$ 42.24 per m ²
Industrial	\$ 7,421	\$ -	\$ 13,622	\$ 9,527	\$ -	\$ 30,570 per ha ¹
Institutional	\$ 7.93	\$ -	\$ 29.38	\$ 1.27	\$ -	\$ 38.58 per m ²

Note 1: At time of subdivision: \$ 30,570 per ha

At time of Building Permit: \$ 8.99 per m²



APPENDIX A

Road Capital Project Details



ROADS

.1 Lights at Voght and Grimmer (Voght Corridor)

1. Description of Work
 - Signalize intersection of Voght and Grimmer. Include and upgrade turning bays.
2. Cost of Work

\$337,000
3. Implications of Not Doing This Work
 - Reduced safety and road capacity.
 - Increased traffic accidents.
 - Increased delays.
4. Benefit in Doing This Work
 - Increased safety and capacity of existing road.
 - Reduced accidents and delays.
 - Allow continued development of NE sector and Voght Corridor.
 - Maintain consistent level of service along Voght Street Corridor as growth proceeds.
 - Increased access to North Bench residential area
5. Priority Level
 - High Priority
6. Source of Funds
 - -% General Revenue
 - 100% DCCs
 - -% Other

.2 Left Turn at Nicola Valley Health Centre (Voght Corridor)

1. Description of Work
 - Provide left turn bay to Nicola Valley Health Centre, Voght Street entrance.



2. Cost of Work
 - \$165,000
3. Implications of Not Doing This Work
 - Reduced safety and road capacity.
4. Benefit in Doing This Work
 - Increased safety as growth proceeds and traffic volume increases.
 - Supports growth of services at the Nicola Valley Health Centre.
5. Priority Level
 - High Priority
6. Source of Funds
 - 80% General Revenue
 - 20% DCCs
 - -% Other

.3 Sidewalk/Coyote Bluff to Grimmatt (Voght Corridor)

1. Description of Work
 - Provide sidewalk on south side of Voght Street from Coyote Bluff residential area to Grimmatt Street.
2. Cost of Work
 - \$105,000
3. Implications of Not Doing This Work
 - Pedestrians presently use mid block crosswalk to cross Voght Street.
 - Relocating the crosswalk to Grimmatt provides safety benefits.
4. Benefit in Doing This Work
 - Safer access from Coyote Bluffs residential area to existing school site.
 - Increase traffic safety/level of service by relocating crossing to Voght/Grimmatt intersection.
5. Priority Level
 - High Priority



6. Source of Funds

- -% General Revenue
- 100% DCCs
- -% Other

.4 Enhancements at Belshaw/DeWolf (Voght Corridor)

1. Description of Work

- Truck traffic causes congestion in vicinity of Belshaw and DeWolf. As development continues, increased congestion will impact Voght Street operations.

2. Cost of Work

- \$176,000

3. Implications of Not Doing This Work

- Reduced safety and road capacity.
- Access difficulties will limit potential for growth of new businesses in DeWolf Way Business area.

4. Benefit in Doing This Work

- Increased access/amenity for DeWolf Way business area.
- Encourage new development within DeWolf Way business area.

5. Priority Level

- High Priority

6. Source of Funds

- 80% General Revenue
- 20% DCCs
- -% Other



.5 Voght/Garcia Couplet (25% Cost)

1. Description of Work
 - Provide for a one-way couplet in the downtown core utilizing Voght and Garcia. Includes upgrading Voght Street Bridge and a new bridge crossing the Nicola River along the Garcia Street alignment.
2. Cost of Work
 - \$1,250,000 (25% of total project) (Preliminary Estimate)
3. Implications of Not Doing This Work
 - Reduced safety and road capacity.
 - Decreased access to downtown from new development areas along Voght Corridor.
4. Benefit in Doing This Work
 - Increased safety and road capacity.
 - Increased level of service.
 - Increased access to downtown from new residential/business area.
5. Priority Level
 - High Priority
6. Source of Funds
 - 23% General Revenue
 - 10% DCCs
 - 66% Other

.6 Spring Bank – Grimmatt Connector

1. Description of Work
 - Connect Spring Bank and Grimmatt to provide secondary access to Voght Street from Coyote Bluffs development area.
2. Cost of Work
 - \$650,000



3. Implications of Not Doing This Work
 - Increased traffic movements at Voght/River Ranch intersection.
 - Decreased access to Voght from new development areas within Coyote Bluffs.
 - Increased congestion on Voght Street.
4. Benefit in Doing This Work
 - Reduces point loading at Voght Street intersections.
 - Increased emergency vehicle access.
 - Opportunity to develop additional land within the Coyote bluffs area.
5. Priority Level
 - High Priority
6. Source of Funds
 - 80% General Revenue
 - 20% DCCs
 - -% Other

.7 Cleasby Street Extension

1. Description of Work
 - Complete Cleasby Street through old rail right-of-way. Upgrade road standard. Continuation/completion of "Rail Crossings" project from previous DCC.
2. Cost of Work
 - \$115,000
3. Implications of Not Doing This Work
 - Currently there is a lack of north/south connectivity in the area.
 - Extension will provide route across old rail right-of-way.
4. Benefit in Doing This Work
 - Increased cross-town accessibility.
 - Increased emergency vehicle access.
5. Priority Level
 - High Priority



6. Source of Funds
 - 90% General Revenue
 - 10% DCCs
 - -% Other

.8 Road Projects: Capital and Financial Planning

1. Description of Work
 - Capital and financial planning updates to determine impacts of growth on the City's Road Network
2. Cost of Work
 - \$7,000
3. Implications of Not Doing This Work
 - Required for transportation planning and analysis of traffic impacts as City continues to grow.
 - Poor match between road facilities and requirements as City grows.
4. Benefit in Doing This Work
 - Efficient planning and timely execution of road upgrading projects to accommodate growth.
5. Priority Level
 - High Priority
6. Source of Funds
 - -% General Revenue
 - 100% DCCs
 - -% Other



APPENDIX B

Water Capital Project Details



WATER

.1 New Well

1. Description of Work
 - New well to accommodate future development in Merritt and provide redundancy (in a different aquifer) for existing wells.
2. Cost of Work
 - \$950,000
3. Implications of Not Doing This Work
 - Inability to supply future development. Over utilization of existing wells and aquifer.
4. Benefit in Doing This Work
 - Supply for future development. Decrease reliance on existing wells and existing aquifer.
5. Priority Level
 - High Priority
6. Source of Funds
 - 17% General Revenue
 - 17% DCCs
 - 66% Other

.2 New Reservoir

1. Description of Work
 - New reservoir to accommodate future development within Merritt and provide additional fire storage.
2. Cost of Work
 - \$1,500,000
3. Implications of Not Doing This Work
 - Inability to supply future development.
 - Insufficient fire storage in existing reservoirs.



4. Benefit in Doing This Work
 - Fire and working storage for new development.
 - Location will enhance fire flows in south of City.
5. Priority Level
 - High Priority
6. Source of Funds
 - 50% General Revenue
 - 50% DCCs
 - -% Other

.3 Monitoring Wells

1. Description of Work
 - Install up to five monitoring wells to provide ongoing groundwater data.
2. Cost of Work
 - \$150,000
3. Implications of Not Doing This Work
 - Future development of the aquifer may not be completed as efficiently as possible.
 - More onerous Conditions of Permit may be required due to lack of understanding of the aquifer.
4. Benefit in Doing This Work
 - Future source water well development will be optimized through better understanding of the local aquifer.
5. Priority Level
 - High Priority
6. Source of Funds
 - 90% General Revenue
 - 10% DCCs
 - -% Other



.4 Disinfection

1. Description of Work
 - Design and implementation of disinfection system works at the City's highest duty wells.
2. Cost of Work
 - \$450,000
3. Implications of Not Doing This Work
 - Risk of being out of compliance with Conditions of Permit imposed by Interior Health.
 - Currently there is no barrier against bacteriological outbreak in the community water system.
4. Benefit in Doing This Work
 - Addition of a disinfection system meets the requirements of the Conditions of Permit and provides a disinfection barrier within the water system.
5. Priority Level
 - High Priority
6. Source of Funds
 - 90% General Revenue
 - 10% DCCs
 - -% Other

.5 Well Replacements

1. Description of Work
 - Current City wells are reaching the end of their service life and will need to be replaced.
2. Cost of Work
 - \$500,000
3. Implications of Not Doing This Work
 - Operations and maintenance costs for existing wells will increase.
 - Risk of not being able to meet City water demands if one of the wells fail.



4. Benefit in Doing This Work
 - The City will be able to continue providing safe, reliable potable water without unplanned interruptions.
5. Priority Level
 - High Priority
6. Source of Funds
 - 90% General Revenue
 - 10% DCCs
 - -% Other

.6 Well Rehabilitation

1. Description of Work
 - Rehabilitate existing wells to extend service life.
2. Cost of Work
 - \$180,000
3. Implications of Not Doing This Work
 - Operations and maintenance costs for existing wells will increase.
 - Risk of not being able to meet City water demands if one of the wells fail.
4. Benefit in Doing This Work
 - The City will be able to continue providing safe, reliable potable water without unplanned interruptions.
5. Priority Level
 - High Priority
6. Source of Funds
 - 90% General Revenue
 - 10% DCCs
 - -% Other



.7 Aquifer Protection Planning

1. Description of Work
 - Long term plan developed to understand the local aquifer and put measures in place to protect this resource.
2. Cost of Work
 - \$200,000
3. Implications of Not Doing This Work
 - Risk of being out of compliance with Conditions of Permit imposed by Interior Health.
 - The City will not have an understanding of what activities may compromise its water supply and no way to control new developments which may pose a risk to the aquifer.
4. Benefit in Doing This Work
 - The long term safety of the City water supply will be increased.
5. Priority Level
 - High Priority
6. Source of Funds
 - 90% General Revenue
 - 10% DCCs
 - -% Other

.8 Water Projects: Capital and Financial Planning

1. Description of Work
 - Capital and financial planning updates to determine impacts of growth on the City Water System.
2. Cost of Work
 - \$7,000



3. Implications of Not Doing This Work
 - Required for water system planning and for analysis of the impacts major development will have on the water system as the City grows.
 - Poor match between water facilities and requirements as the City grows.
4. Benefit in Doing This Work
 - Efficient planning and timely execution of water upgrading projects to accommodate growth.
5. Priority Level
 - High Priority
6. Source of Funds
 - -% General Revenue
 - 100% DCCs
 - -% Other



APPENDIX C

Sewer Capital Project Details



SEWER

.1 Clarifier Weir Upgrade (Design and Construct)

1. Description of Work
 - Install two new weirs on the clarifiers.
2. Cost of Work
 - \$25,000
3. Implications of Not Doing This Work
 - Poor effluent quality and inability to take one clarifier off line for servicing.
4. Benefit in Doing This Work
 - Improves effluent quality and enables maintenance to occur.
5. Priority Level
 - High Priority
6. Source of Funds
 - 70% General Revenue
 - 30% DCCs
 - -% Other

.2 Monitoring Program

1. Description of Work
 - Test samples from the Coldwater River, Nicola River, and monitoring wells upgradient and downgradient of the rapid infiltration basins.
2. Cost of Work
 - \$20,000/yr (\$100,000 total)
3. Implications of Not Doing This Work
 - Would not be able to confirm the City is not negatively impacting the environment or public health.



4. Benefit in Doing This Work
 - Proves the City is not negatively impacting the environment or creating a public health hazard.
5. Priority Level
 - High Priority
6. Source of Funds
 - 70% General Revenue
 - 30% DCCs
 - -% Other

.3 Electrical/SCADA Upgrade/Standby Generator

1. Description of Work
 - Upgrade electrical supply, MCC, wiring, transfer switch, SCADA systems, and a standby generator.
2. Cost of Work
 - \$675,000
3. Implications of Not Doing This Work
 - Deterioration in reliability to operate, inability to operate 3 blowers, effluent quality deterioration under power outages.
4. Benefit in Doing This Work
 - More reliable operations, ability to run 3 blowers, ensure effluent quality is met during power outages and accommodate new growth.
5. Priority Level
 - High Priority
6. Source of Funds
 - 70% General Revenue
 - 30% DCCs
 - -% Other



.4 Composting Program – Planning, Design and Construction

1. Description of Work
 - Investigate options to produce a reusable compost from the sludge that is generated from the STP. Implement the preferred solution.
2. Cost of Work
 - \$900,000
3. Implications of Not Doing This Work
 - Will be in breach of the terms of the LWMP.
4. Benefit in Doing This Work
 - Turns a waste product into a reusable asset.
 - May generate some revenue if compost is sold to the public.
 - May be able to avoid the purchase of topsoil for some City projects.
5. Priority Level
 - High Priority
6. Source of Funds
 - 50% General Revenue
 - 50% DCCs
 - -% Other

.5 Reconfigure Rapid Infiltration Basin

1. Description of Work
 - Design and construct rapid infiltration basins to maximize the use of the City's lot in Colletville.
2. Cost of Work
 - \$420,000
3. Implications of Not Doing This Work
 - The City will, with growth, exceed the disposal capacity of the existing rapid infiltration basins.



4. Benefit in Doing This Work
 - Accommodates new growth in the City.
 - Continue to dispose of effluent in an environmentally responsible way.
5. Priority Level
 - High Priority
6. Source of Funds
 - 60% General Revenue
 - 40% DCCs
 - -% Other

.6 Lift Station and Grit Removal

1. Description of Work
 - Replace existing screw pumps (which are \pm 20 years old) with a new pump station and install a grit removal facility.
2. Cost of Work
 - \$1,100,000
3. Implications of Not Doing This Work
 - The screw pumps could fail and sewage would back up in to people's homes.
 - Grit will continue to cause wear on downstream components.
4. Benefit in Doing This Work
 - Accommodate new growth, improve longevity of mechanized equipment, reduce labour requirements for maintenance, provide security of equipment operation.
5. Priority Level
 - High Priority
6. Source of Funds
 - 50% General Revenue
 - 50% DCCs
 - -% Other



.7 Dedicated Blower, DO Control, and Fine Bubble Diffusers in the Aerated Sludge Tank

1. Description of Work
 - Install a dedicated blower to the aerobic digester and provide dissolved oxygen control. Install fine bubble diffusers in the digester.
2. Cost of Work
 - \$143,000
3. Implications of Not Doing This Work
 - Continue to waste energy, aeration process is difficult to control.
4. Benefit in Doing This Work
 - Energy savings, simplifies the ability to control oxygen levels in the plant.
5. Priority Level
 - High Priority
6. Source of Funds
 - 70% General Revenue
 - 30% DCCs
 - -% Other

.8 Aeration Basin #3, Clarifier #3, and UV Disinfection

1. Description of Work
 - Expand the sewage treatment plant to include a third aeration basin and clarifier. Add UV disinfection to decrease the use of chlorine disinfection at the back end of the plant.
2. Cost of Work
 - \$1,800,000
3. Implications of Not Doing This Work
 - Unable to provide sewer treatment capacity for new growth within the City.



4. Benefit in Doing This Work
 - Increases treatment capacity of the sewage treatment plant to accommodate future growth in the City.
5. Priority Level
 - High Priority
6. Source of Funds
 - -% General Revenue
 - 100% DCCs
 - -% Other

.9 Network Capacity Evaluation

1. Description of Work
 - Determine capacity of existing sewer collection network.
2. Cost of Work
 - \$50,000
3. Implications of Not Doing This Work
 - Unable to efficiently determine impacts new development will have on the existing collection system.
4. Benefit in Doing This Work
 - City will be able to readily determine impacts new development will have on the existing collection system and where upgrades will be required.
5. Priority Level
 - High Priority
6. Source of Funds
 - -% General Revenue
 - 100% DCCs
 - -% Other



.10 Sanitary Sewer Projects: Capital and Financial Planning

1. Description of Work
 - Capital and financial planning updates to determine the impacts of growth on the City's Sewer collection and treatment systems.
2. Cost of Work
 - \$7,000
3. Implications of Not Doing This Work
 - Required for sewage system planning and for analysis of the impacts major development will have on the sewage collection and treatment systems.
 - Poor match between sewer facilities and requirements as the City grows.
4. Benefit in Doing This Work
 - Efficient planning and timely execution of sewer upgrading projects to accommodate growth.
5. Priority Level
 - High Priority
6. Source of Funds
 - -% General Revenue
 - 100% DCCs
 - -% Other



APPENDIX D

Storm Drainage Project Details



DRAINAGE

.1 Storm Water LWMP

1. Description of Work
 - Complete a comprehensive Stormwater - Liquid Waste Management Plan.
2. Cost of Work
 - \$70,000
3. Implications of Not Doing This Work
 - May be required by Provincial and/or Federal Agencies.
 - Increased recognition of the sensitivity of Nicola and Coldwater Rivers may mean new developments are hampered by stormwater management issues.
4. Benefit in Doing This Work
 - Stormwater management for new developments can occur in a well planned, coherent manner.
 - Stormwater management projects can be implemented in an efficient, co-ordinated manner as growth occurs.
5. Priority Level
 - High Priority
6. Source of Funds
 - 75% General Revenue
 - 25% DCCs
 - -% Other

.2 Voght/Garcia Outfall (25% cost)

1. Description of Work
 - Construct silt management and drainage enhancement facilities.
2. Cost of Work
 - \$50,000



3. Implications of Not Doing This Work
 - Growth in area south of Voght and around Garcia may be hampered.
 - Road upgrading to accommodate growth along Voght corridor may be hampered.
4. Benefit in Doing This Work
 - Road and drainage works can be integrated.
5. Priority Level
 - High Priority
6. Source of Funds
 - -% General Revenue
 - 100% DCCs
 - -% Other

.3 Coyote Pond/Outfall Completion

1. Description of Work
 - Complete conversion of Coyote storm pond from a "silt pond" to a stormwater attenuation pond.
2. Cost of Work
 - \$30,000
3. Implications of Not Doing This Work
 - Pond will not meet DFO requirements as growth in Coyote Bluffs continues.
 - Potential for environmental damage if pond does not function as required to facilitate new growth in Coyote Bluffs.
4. Benefit in Doing This Work
 - Enhanced pond performance.
 - Enhanced environmental protection of the Nicola River.
5. Priority Level
 - High Priority



6. Source of Funds

- -% General Revenue
- 100% DCCs
- -% Other

.4 2nd Avenue Outfall

1. Description of Work

- Completion of flow attenuation and silt removal facilities at 2nd Avenue outfall from Garcia Street.

2. Cost of Work

- \$160,000

3. Implications of Not Doing This Work

- Grow in area North of Nicola Avenue and East of Garcia to the Nicola River may be hampered.

4. Benefit in Doing This Work

- Work will meet DFO requirement.
- Reduced potential for environmental impact on Nicola River.

5. Priority Level

- High Priority

6. Source of Funds

- 80% General Revenue
- 20% DCCs
- -% Other

.5 Collettsville Outfall

1. Description of Work

- Completion of flow attenuation and silt removal facilities at Collettsville outfall (foot of Hill Street).



2. Cost of Work
 - \$125,000
3. Implications of Not Doing This Work
 - Growth in Collettsville including Corbett Light Industrial, and other areas of Collettsville may be hampered.
 - Risk of environmental impacts to Coldwater River.
4. Benefit in Doing This Work
 - Facilitate growth in the Collettsville area.
 - Meet DFO and environmental requirements.
 - Reduced risk of environmental impact on Coldwater River.
5. Priority Level
 - High Priority
6. Source of Funds
 - 80% General Revenue
 - 20% DCCs
 - -% Other

.6 Misc. Storm Outfall/Environmental Upgrading

1. Description of Work
 - Installation of silt removal devices to existing outfalls:
 - Voght - North side of Coldwater
 - Voght – South side of Nicola River
 - Chapman
 - Granite/Spring
 - Canford Avenue
2. Cost of Work
 - \$300,000



3. Implications of Not Doing This Work
 - Growth in area may be hampered by inadequate stormwater management facilities.
 - Increased risk of environmental impact on Nicola and Coldwater Rivers.
4. Benefit in Doing This Work
 - Facilitate growth in the affected areas. Meet DFO and environmental requirements.
 - Reduced risk of environmental impact on Nicola and Coldwater Rivers.
5. Priority Level
 - High Priority
6. Source of Funds
 - 80% General Revenue
 - 20% DCCs
 - -% Other

.7 Douglas Street Outfall

1. Description of Work
 - Construction of flow attenuation and silt removal facilities
2. Cost of Work
 - \$660,000
3. Implications of Not Doing This Work
 - Growth in area may be hampered by inadequate stormwater management facilities.
 - Increased risk of environmental impact on Nicola and Coldwater Rivers.
4. Benefit in Doing This Work
 - Facilitate growth in the affected areas. Meet DFO and environmental requirements.
 - Reduced risk of environmental impact on Nicola and Coldwater Rivers.
5. Priority Level
 - High Priority



6. Source of Funds

- 80% General Revenue
- 20% DCCs
- -% Other

.8 Drainage Projects: Capital and Financial Planning

1. Description of Work

- Capital and financial planning updates to determine the impacts of growth on the City's drainage system.

2. Cost of Work

- \$7,000

3. Implications of Not Doing This Work

- Required for drainage system planning and for analysis of the impacts new development will have on the drainage system.
- Poor Match between drainage facilities and requirements as the City grows.

4. Benefit in Doing This Work

- Efficient planning and timely execution of drainage projects to accommodate growth.

5. Priority Level

- High Priority

6. Source of Funds

- -% General Revenue
- 100% DCCs
- -% Other



APPENDIX E

Park Project Details



Parks

.1 Central Park – Drainage and Trails to Rotary Park

1. Description of Work

- Increased development will result in more intense use of the City's main "Central" Park. Improvements to drainage and trails around Rotary Park (part of Central Park Complex) will allow for this more intense use without damage to the park or excess maintenance.

2. Cost of Work

- \$30,000

3. Source of Funding

- 85% General Revenue
- 15% DCCs
- -% Other

.2 Central Park – Change Rooms and Restrooms

1. Description of Work

- Increased development will result in more intense use of the fields, diamonds, Youth (Skateboard) Park etc. within Central Park. Permanent change and restroom facilities are required to accommodate this more intense use.

2. Cost of Work

- \$180,000

3. Source of Funding

- 85% General Revenue
- 15% DCCs
- -% Other



.3 Central Park – Drainage, Landscaping, and Irrigation for Field #5

1. Description of Work

- Increased development will result in more intense field use. Higher quality field construction including drainage and irrigation are necessary to permit this more intense usage.

2. Cost of Work

- \$70,000

3. Source of Funding

- 85% General Revenue
- 15% DCCs
- -% Other

.4 Xeriscape Landscaping at Juniper Avenue and Parker Drive above Central Park

1. Description of Work

- A xeriscape garden will serve as a demonstration for new development of the City's desire for low water use/low maintenance landscape approaches. This location above Central Park is intended because high water use gardens in the area have increased erosion and local slope instability.

2. Cost of Work

- \$40,000

3. Source of Funding

- 85% General Revenue
- 15% DCCs
- -% Other

.5 Park Projects: Capital and Financial Planning

.1 Description of Work

- Capital and financial planning updates to determine park requirements due to growth.



- .2 Cost of Work
 - \$7,000

- .3 Implications of Not Doing This Work
 - Poor match between park facilities and requirements, as City grows.

- .4 Financial Benefit in Doing This Work
 - Efficient planning and execution of park upgrading projects as the City grows.

- .5 Priority Level
 - High Priority

- .6 Source of Funds
 - -% General Revenue
 - 100% DCCs
 - -% Other



APPENDIX F

Calculation Of Industrial Site Area Charges



Calculation of Industrial Site Area Charges

1. Site coverage calculation for projected industrial use:

Assumptions: 70% of projected industrial growth is light industrial with average site coverage of 40%

30% of projected industrial growth is heavy industrial with average site coverage of 20%

Overall average for projected industrial use is therefore 34%

$$(0.7) \times (0.4) + (0.3) \times 0.2 = 0.34 = 34\%$$

2. Calculation of Industrial DCC

	DCC per Hectare	Site Coverage	DCC per m²
Proposed DCC Rate	\$30,136	34%	\$8.86



APPENDIX G

Calculation of Industrial Trip Generation Rates



Calculation of Industrial Trip Generation Rates

1. ITE Trip Generation Rates

Light Industrial Uses (Peak Hr./Acre)		Heavy Industrial Uses (Peak Hr./Acre)	
Warehouse	8.75	Heavy Industrial	2.16
Mini Warehouse	3.95	Manufacturing	8.37
Industrial Park	10.48		
Light Industrial	7.26		
Average	7.61	Average	5.27

2. Split of Forecast Industrial Uses

Light Industrial – 70%

Heavy Industrial – 30%

3. Calculation of Trip Generation

$$(.70)(7.61) + (.30)(5.27) = 6.91 \text{ trips per acre (Rc)}$$

4. Calculation of Weighted Trip Generation

Assume: T = % Trucks = 10%

P = % Pass By = 25%

F = Truck Factor = 3

Therefore, $3 \times 6.91 = RT = 20.73$

Weighted Trip Generation

$$\begin{aligned} R_w &= (1-P) \times Rc (1-T) + (RT) \\ &= ((1 - .25)(6.91)(1 - .10) + (20.73)(.10) \\ &= 6.74 \text{ trips per acre (16.85 trips per hectare)} \end{aligned}$$



APPENDIX H

Calculation of Industrial Sewer Rate Equivalence Factor



Calculation of Industrial Sewer Rate Equivalence Factor

The Ross Chocolates Facility was chosen as a representative example of the type of industrial development likely to occur within Merritt over the 5-Year Bylaw timeline.

Assumptions:

- 5 acre facility (~2 ha)
- 44 full time employees
- Indoor water usage = sewer generation (Use 90 L/day/person for Merritt Industrial areas)
- Average household sewage generation rate = 350 L/day/household

The DCC Best Practices Guide calculates an Equivalence Factor by using an industrial sewage generation rate of 22,500 L/day/ha.

$$\frac{22,500 \text{ L/day/ha}}{350 \text{ L/day/household}} = 64.3 \text{ per ha industrial}$$

This is not representative of Industrial sewage generation in Merritt.

Example: Ross Chocolates Facility

$$\frac{44 \text{ people}}{5 \text{ acre}} = \frac{20 \text{ people}}{1 \text{ ha}}$$

$$\frac{20 \text{ people} \times 90 \text{ L/day}}{350 \text{ L/day/household}} = \frac{1,800}{350} = 5.1 \text{ per ha industrial}$$

Thus, an Industrial Equivalence Factor for sewage generation of 5.1 per ha is used.