

**REVIEW OF THE REGULATIONS
RELATED TO TRUCKED LIQUID WASTES
IN THE
CAPITAL REGIONAL DISTRICT (CRD)**

Prepared for:



**The Capital Regional District
524 Yates Street
Victoria, B.C.
V8W 2S6**

Prepared by:



Paul A. Beauchemin, P.Eng.

Mizanur Rahman, B.Sc., MBA

**310 East Esplanade
North Vancouver, B.C. V7L 1A4
Tel: (604) 986-0233**

November 28, 2003

EXECUTIVE SUMMARY

The CRD identified that there may be potential environmental concerns relating to the improper management of Trucked Liquid Waste (TLW) within the region. To address these concerns, the CRD asked Envirochem Services Inc. (Envirochem) to review the legislation, regulation and enforcement surrounding TLW management, identify potential gaps and make recommendations that could lead to improved TLW management, and the protection of human health and the environment.

To provide a framework for the review, the management (or life) cycle of TLW was broken down into the key activities of: generation; onsite storage and pre-treatment; transportation; off-site storage, treatment and/or recycling; discharge into sewers (if applicable); and final disposal and/or final release into the environment. The Federal, Provincial, regional and municipal legislation, regulation and enforcement actions around each of these key activities were then evaluated to identify gaps and areas for possible improvement.

This study included all types of TLW. Some liquid wastes are not highly contaminated and can be sent directly into sewer requiring little additional regulation; while others are so contaminated that they meet the BC *Special Wastes* criteria and require the considerable regulation that already exists in B.C. Those wastes that fall between these two ranges, (intermediate or middle wastes) were identified as the most poorly understood, managed and regulated, and are therefore the focus of this study.

As an outcome of this review, the following conclusions are presented.

Conclusions:

1. Improper handling of TLW in the CRD (e.g., storage, transport, or disposal) could result in significant environmental impacts.
2. For those middle or intermediate liquid wastes that are not classed as “Special” or “Hazardous”, yet are still so contaminated that they cannot be directly sent to sewer, the current regulatory framework programs are neither clearly defined, nor sufficiently enforced to ensure proper management. (For example, there is little information on generator identification, waste characterization, and disposal.)
3. The lack of documentation and tracking for this intermediate TLW makes it difficult to assess the amount of TLW that is generated and trucked, where and how it is disposed, and the associated environmental risks.
4. The CRD has the legal mandate, authority and programs in place to manage wastes that enter their sewer system, but no regulatory authority to manage (i.e., identify, track and ensure proper disposal of) liquid wastes generated in(or entering) the CRD that do not enter the sewer system.

5. Programs for enforcement or inspections by municipalities to maintain storm sewer quality and identify or prevent illegal discharges are at differing, but generally early, stages of implementation.
6. For wastes classified as “*Special*” (hazardous), the existing regulatory and tracking (waste manifesting) structure is generally sufficient to ensure good management. However, current enforcement is on an issue-by-issue, or complaint driven basis rather than as an ongoing pre-planned program. In addition, the definition and suite of chemical analyses required to confirm if a waste meets, or does not meet, the hazardous waste criteria is sufficiently complex (and/or expensive) that it may not be a priority for the smaller to intermediate waste generators.
7. There is a perceived lack of understanding by the TLW handlers (generators, transporters) of the relevant regulations, risks, and requirements.
8. There is a need for improved generator and waste auditing, tracking (i.e., data management), communication and training.

Recommendations:

The following program steps are recommended to reduce the environmental and legal risks posed by improper management of TLW (roughly in order of priority).

1. Provide increased training and support to the generators and transporters into the regulation, identification, risks, and proper management of TLW.
 - a. Including replacing the concept of waste with new concepts (not just terms) such as “by products” “excess production” or “raw materials.”
 - b. Working towards ensuring that the costs and consequences of this by product generation and its subsequent minimization, recycle, reuse, transport, and disposal, are included into the design and the operational and financial management of any facility.
2. Conduct additional investigations to identify the TLW generators, transporters, and treaters, to verify the amount and nature of the waste generated, and its ultimate disposal.
3. Recommend increased documentation and tracking to generators for both due diligence and to assist with defining; volumes, waste types and appropriate transporters and disposers.
4. Increase the level of enforcement and inspection. This could be accomplished through coordinating with existing regulatory inspection or by industry-driven external or internal audits. If internal or external audits are used, develop and provide an audit framework or protocol that is supported by the ICI stakeholders and still provides adequate management information to the CRD.

5. Evaluate the need for and then if needed implement the selected changes or additions to regulations (as outlined in this report) that would give the CRD (or other agencies) the authority and mandate to ensure these intermediate wastes that are generated or entering the District, are properly managed.

Specific conclusions and recommendations are presented with supporting details in the body of the report. The goal of these recommendations is to outline possible changes that would address current regulatory deficiencies and provide the CRD (or other regulatory bodies) with adequate regulatory authority to define the issues, reduce the potential environmental risks, and improve TLW management.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
1.0 INTRODUCTION	1
1.1 Acknowledgements.....	1
1.2 Problem Definition.....	1
1.3 Existing Liquid Waste Management Programs	2
1.4 Study Objectives	2
1.5 Study Approach	3
2.0 BACKGROUND - WHAT ARE TRUCKED LIQUID WASTES.....	5
2.1 Legal Definitions	5
2.2 Study Definition of TLW	5
2.3 Activities Associated with the Management of TLW.....	6
2.4 Inventory of the Types and Volumes of TLW Generated in the CRD	9
2.4.1 Inventory Limitations.....	10
2.5 Additional Investigations	10
3.0 EXISTING REGULATIONS APPLYING TO TLW.....	12
3.1 Federal Regulations	14
3.1.1 Canadian Environmental Protection Act (CEPA).....	14
3.1.2 Fisheries Act (FA).....	14
3.1.3 Transportation of Dangerous Goods (TDG).....	14
3.2 BC Waste Management Act and Regulations.....	14
3.2.1 BC Special Waste Regulation (SWR).....	15
3.2.2 Return of Used Lubricating Oil Regulation (RULOR).....	15
3.2.3 Post-Consumer Paint Stewardship Program Regulation (PCPSPR).....	16
3.2.4 Post-Consumer Residual Stewardship Program Regulation (PCRSR)	16
3.2.5 Spill Reporting Regulation (SRR)	16
3.2.6 Contaminated Site Regulation (CSR)	16
3.2.7 Municipal Sewage Regulation (MSR).....	16
3.2.8 BC Approved Water Quality Guidelines (BCAWQG).....	16
3.3 Regulations of the Capital Regional District (CRD)	17
3.3.1 CRD Sewer Use Bylaw #2922 (SUB)	17
3.3.2 Septage Disposal Bylaw	17
3.3.3 Hartland Landfill Tipping Fee and Regulation Bylaw (HLTFRB)	17
3.3.4 Model Storm Sewer Bylaw (MSSB)	17
3.4 Guidelines, Objectives and Criteria	18
4.0 REVIEW AND GAP ANALYSES OF EXISTING REGULATIONS AND ENFORCEMENT	19
4.1 Identification of Potential TLW Generators at the Pre-Start or Planning Stage....	20
4.2 Identification of Potential TLW Generators at the Business Licensing Stage.....	21
4.3 Generation and On-Site Storage of Liquid Wastes.....	22
4.4 Discharges of Liquid Waste into Storm Sewers	23
4.5 Discharges of the Liquid Waste into the Return Facility for Recycling.....	24

4.6	Discharges of Liquid Waste into the Sanitary Sewer and Septage Facility by the Generator.....	26
4.7	Discharges of Liquid Waste into Sanitary Sewers, Septage Facilities, or Storm Sewers by the Waste Transporters/Haulers	28
4.8	Discharges of TLW to the Hartland Landfill by Waste Transporters.....	29
4.9	Discharges of TLW into Private Disposal Facilities Located in the CRD	30
4.10	Discharges of TLW to Special Waste Facilities by Special Waste Transporters ..	32
4.11	Illegal Discharges by the TLW Generator/Transporters to Unlicensed Disposal Facilities, Water-bodies, Land, Road Side, or Other Unknown Sites.....	33
5.0	EXISTING ENFORCEMENT PRACTICES AROUND TLW	35
5.1	CRD Enforcement Activities and Services Plan.....	35
5.2	GVRD's Sewer Use Bylaws Compared to the CRD's Sewer Use Bylaw.....	36
5.3	Enforcement Activities of the BC Ministry of Water, Land and Air Protection ...	36
6.0	SUMMARY CONCLUSION AND RECOMMENDATIONS	38
6.1	Summary	38
6.2	Conclusions.....	40
	6.2.1 Regulation:.....	40
	6.2.2 Enforcement.....	40
6.3	Recommendations.....	40
	6.3.1 Phase One: Education and Training.....	41
	6.3.2 Phase Two: Regulatory Initiatives	41

TABLES

Table 1:	TLW Generators and the Types and Amounts Generated.....	9
Table 2:	Act and Regulations Applying to TLW Management in CRD.....	12
Table 3:	Regulations Applicable to the Business Start-up of Potential TLW Generators	20
Table 4:	Legislative Components Applicable to the TLW Generators.....	22
Table 5:	Legislative Components Applicable to Discharge to Storm Sewer.....	24
Table 6:	Regulations Applicable to the TLW Disposal to Return Facility Operator.....	25
Table 7:	Regulatory Components Applicable to the TLW Generators for Discharging into Sanitary Sewer/Septage Facility	27
Table 8:	Regulatory Components Applicable to TLW Transporters Discharging into Sewer and Septage Facilities	29
Table 9:	Legislative Components Applicable to the Disposal of TLW by the Transporter to the Hartland Landfill.....	30
Table 10:	Legislative Components Applicable to the TLW Haulers for Disposing into Permitted Non-Special Waste Treatment/Disposal Facility	31
Table 11:	Legislative Components Applicable to the TLW Transporters for Disposing into Special Waste Facility.....	32
Table 12:	Legislative Components Applicable to the TLW Generator/Transporters for Disposing into Unknown Place or Facility	34

TABLE OF CONTENTS CONT'D.

FIGURES

Figure 1: Schematic Diagram Showing the Study Approach and Components.....	4
Figure 2: Trucked Liquid Waste Life Cycle Activities.....	8
Figure 3: Regulatory Framework for TLW Management.....	13
Figure 4: TLW Life-cycle Components and the Applicable Regulations.....	19
Figure 5: RSCP Procedure Modified to Identify Potential TLW Generator Through the Business Licensing Process.....	21
Figure 6: Schematic Diagram Showing the TLW Generation and Storing On-site.....	22
Figure 7: Discharge of Liquid Waste by the Generators into the Storm Sewer.....	24
Figure 8: Schematic Diagram Showing the Disposal of Recyclable TLW to Return/Recycle Facilities.....	25
Figure 9: Schematic Diagram Showing Discharges of TLW into Sanitary Sewer and Septage Facility by the TLW Generator.....	26
Figure 10: Discharge of TLW into the Sewers and Septage Facility by the TLW Transporter....	28
Figure 11: Schematic Diagram Showing the Disposal of TLW by the Transporter to the Hartland Landfill.....	30
Figure 12: Schematic of the Disposal of TLW to a Non-Special Waste Private Facility.....	31
Figure 13: Schematic Diagram for Disposal at Special Waste Facilities Outside the CRD.....	32
Figure 14: Schematic Diagram Showing the Disposal of TLW into Unknown Places.....	34
Figure 15: Liquid Waste Management Life Cycle Activities Cross Referenced to Regulations and Report Recommendations.....	42

APPENDICES

Appendix I TLW Management Questionnaire (Blank Waste Generator Questionnaire)
Appendix II Review of the Regulations Related to (Trucked) Liquid Waste
Appendix III List of Abbreviations
Appendix IV References

1.0 INTRODUCTION

The Capital Regional District (CRD) has undertaken a multi-faceted program to ensure the appropriate environmental management of Trucked Liquid Waste (TLW). The action program developed by the CRD for the year 2002-2003 focused on the following major areas:

- Continuation of stakeholders meetings and other liaison;
- Education of generators and haulers;
- Production of a directory of service providers;
- Promotion of pollution prevention;
- Local infrastructure promotion; and
- Regulation review.

Envirochem Services Inc. (Envirochem) has been retained by the CRD to conduct the regulatory review component. This involves reviewing the environmental regulation and enforcement relating to the regional generation, transport and disposal of Trucked Liquid Waste. Then based on this review, identify gaps in the legislation, regulation, or enforcement that could result in improper management of the TLW.

1.1 Acknowledgements

Envirochem would like to acknowledge the considerable assistance that the CRD provided in helping to prepare this report; especially Mr. Chris Robins for generously sharing his considerable knowledge and experience in both regulatory affairs and liquid waste management.

1.2 Problem Definition

TLW generated in the CRD contains many different types of contaminants (as described below) which, if not managed properly, has potential to create significant environmental impacts through contaminated air, soils, surface and ground waters. In addition, poor management can elevate the risk of chemical exposure to people and the environment along the TLW management cycle. To define and enforce proper practice and to reduce these risks, several Federal, Provincial and municipal acts and regulations have been enacted. These include *the Fisheries Act, the Canadian Environmental Protection Act (CEPA), the BC Waste Management Act, Municipal Sewer Use Bylaws*, etc. These legislations provide the authority with administrative tools for the overall liquid waste management program of the CRD. However, several significant problems have been identified in regulating TLW including a perceived:

- General lack of knowledge of the waste generators on the requirements of the regulations;
- Confusion about the areas of responsibilities and boundaries of actions among generators, waste haulers, and regulators;

- General lack of understanding and knowledge about appropriate methods and techniques on waste collection, storage, transport, treatment, and disposal of TLW;
- Gaps in legislation and/or regulation; and
- Lack of co-ordinated enforcement to identify and correct inappropriate waste disposal.

Solutions to these perceived problems include: presenting the existing regulatory requirements relating to TLW in an understandable way to the concerned waste generators, haulers and facility operators via an education program; identifying regulatory and enforcement gaps around TLW handling and recommending new regulations or enforcement; working with agencies to close enforcement gaps and developing and implementing new guidelines and regulations if necessary.

1.3 Existing Liquid Waste Management Programs

To address liquid waste management, the CRD has undertaken several programs for handling, treatment, disposal, and beneficial uses of the liquid wastes. The programs include:

- Source Control for sanitary sewers
- Storm Water Quality
- Harbours Environmental Action;
- Management of Inflow and Infiltration; and
- Wastewater and Marine Assessment.

These programs are primarily focusing on liquid wastes entering the CRD and municipal sewer systems and not on the management of TLW. The CRD has identified TWL management as an issue, and thus a Trucked Liquid waste program was included under the Core Area Liquid Waste Management Plan (LWMP). A component of the program is this regulatory review to provide background information on the proper management of these TLW.

1.4 Study Objectives

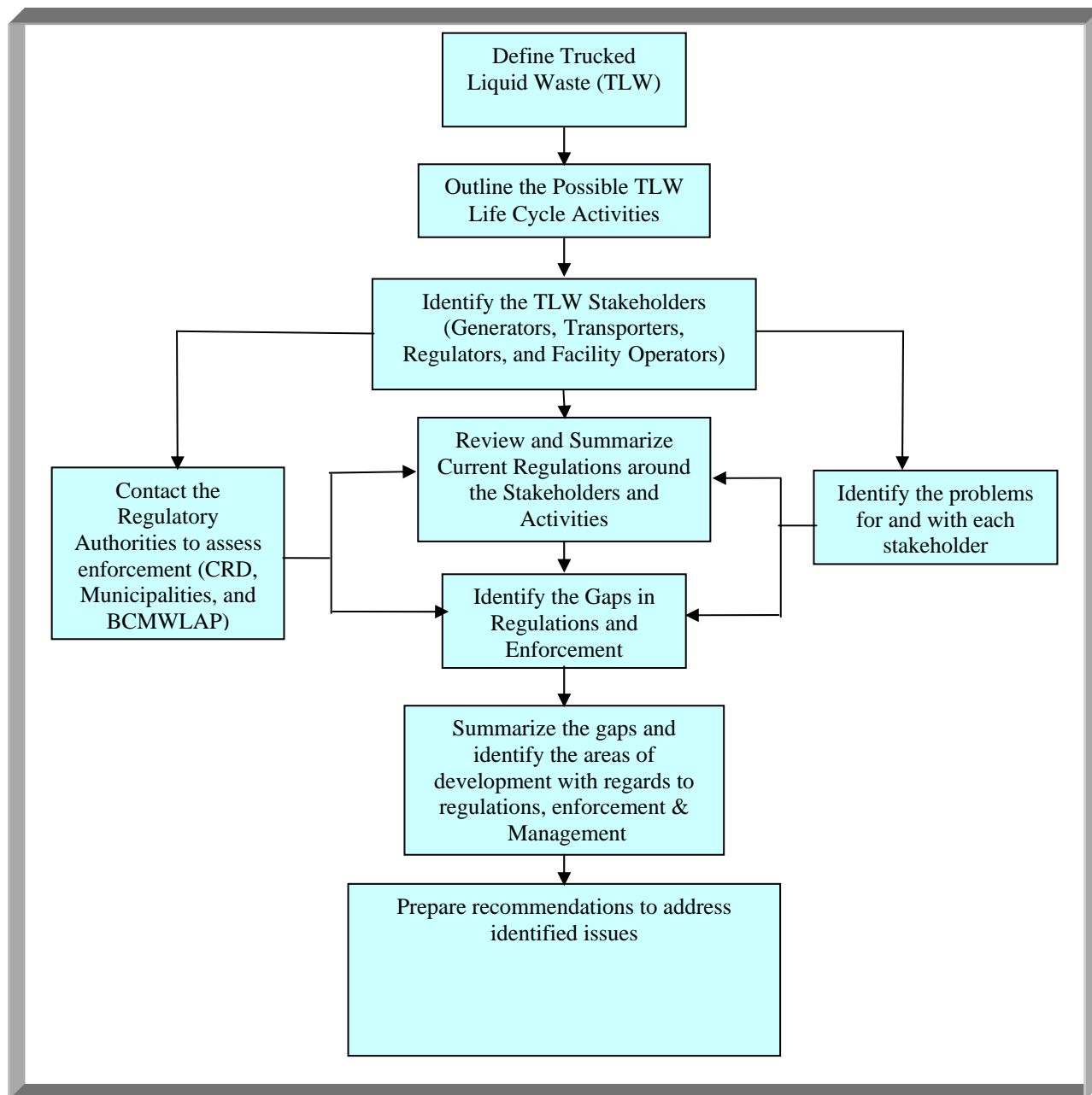
To improve TLW management and minimise, Envirochem was asked to focus on the regulatory issues and specifically to:

- i. Summarise the current regulatory requirements around TLW;
- ii. Identify the gaps in the regulations respective of TLW;
- iii. Identify the gaps in the enforcement of the current legislation;
- iv. Present recommendations for an approach to the program that would facilitate compliance; and
- v. propose solutions to close gaps found by this study

1.5 Study Approach

Due to the number and complexity of regulations surrounding the management of liquid wastes, it was necessary to break down the project into a framework of manageable units to effectively achieve the study objectives. The framework chosen was a modified life cycle assessment (LCA) of the activities surrounding TLW management (see **Section 2.3**). Using this framework the following steps were completed for this regulatory review:

- A review of the TLW life cycle, from generation (cradle) to final disposal (grave) was conducted to identify the stakeholders and various activities that could have environmental impacts (releases) or may require additional regulatory controls;
- The acts, regulations, bylaws and guidelines (regulatory components) related to each these TLW activities and the various stakeholders were identified and reviewed;
- This information was then summarized in textual, tabular, and graphical forms linking the relevant regulatory components to each of the TLW activities;
- This allowed the identification of:
 - gaps or problems in the regulations that may limit proper management and/or regulatory compliance of TLW; and
 - gaps in enforcement of the regulations;
- This regulatory and activity review and gap analyses was then used to recommend possible ways to:
 - reduce the gaps and improve the regulatory compliance.

Figure 1: Schematic Diagram Showing the Study Approach and Components

2.0 BACKGROUND - WHAT ARE TRUCKED LIQUID WASTES

“Trucked Liquid Waste (TLW)” is a term used in the liquid waste management plans of the BC Ministry of Water, Land and Air Protection (BCMWLAP), the GVRD, the CRD, and other regional sewer use bylaws.

2.1 Legal Definitions

The CRD Septage Bylaw No. 2827 and Sewer use Bylaw No. 2922, define Trucked Liquid Wastes (TLW) as “any waste that is collected and transported from the site where the waste originated by means other than discharge to a sewer. Septage waste, recreational vehicle waste, carpet cleaning waste, and ship or boat waste, although frequently trucked and are therefore TLW, are already managed under separate source control programs.

CRD’s Model Storm Sewer Bylaw defines the Trucked Liquid Waste (TLW) as any waste that is collected and transported from the site where the waste originated by means other than discharge to a sewer including, but not limited to, holding tank waste, septic tank waste, chemical toilet contents, catch basin waste, oil and grease from interceptors or traps, and other sludges of organic or inorganic origin.

GVRD’s Sewer Use Bylaw defines “Trucked Waste” as any waste that is collected and transported offsite by means other than discharge to a sewer, including but not limited to, Septic Tank Waste, and Oil and Grease from interceptors.

The USEPA includes domestic septage, chemical toilet waste, grease interceptor waste, sand trap waste, non-hazardous commercial and industrial (categorical and non-categorical) waste, hazardous waste, ground water remediation site waste, and landfill leachate as TLW.

2.2 Study Definition of TLW

For the purposes of this study TLW are those liquid wastes generated by Industrial-Commercial-Institutional (ICI) operations that cannot be legally discharged directly to sewer or environment and are transported by truck, excluding domestic (septic) waste which is covered under a separate regulatory scheme.

Possible reasons for transport can include:

- the wastes do not meet the Sewer Use Bylaw requirements (e.g., may require pre-treatment or are residuals from such pre-treatment plants);
- the wastes are generated at a location that is not connected to a sewer;
- economic and/or regulatory factors favour transport;
- lack of available sewer capacity; and/or
- the TLW has a value or use elsewhere for recycle, reuse, or return.

2.3 Activities Associated with the Management of TLW

Each activity in the TLW life cycle from generation to final disposal was examined to identify gaps in the applicable regulation and enforcement, and to evaluate and recommend effective changes or additions. This study used an approach similar to a Life Cycle Assessment (LCA) to break down the TLW life cycle into its various components. The traditional LCA approach was then modified in that a detailed assessment is not conducted on each of the environmental impacts. Rather, the life cycle activities are reviewed to identify where there could be potential releases (impacts) to the environment and then the regulatory and enforcement structures are examined around these activities. For the purposes of this study, the start of the life cycle is the initial business planning and licensing, and the end of the life cycle is the final release or discharge into the environment. This final release could occur at any stage in the cycle once the waste has been generated, including onsite storage, transportation and/or treatment.

The focus of the review is on liquid wastes and potential discharges to storm sewer, sanitary sewer, surface water, ground water and land, from engineered secure landfills to unregulated or uncontrolled dumping or spilling. Emissions to air from evaporation or incineration, for example, and risk associated with the transportation corridors are not covered. The key components included in the trucked liquid waste cycle are shown on **Figure 2** and include:

- Generation:
 - Business Start-up (planning, design, licensing and permitting)
 - Generation (including Pollution Prevention (P2) evaluations)
- Onsite Treatment:
 - Minimization, reuse, recycling, risk reduction
 - Onsite Storage
- Transportation:
 - Loading
 - Transporting
 - Unloading (including controlled and uncontrolled releases)
 - Tracking (bills of lading and manifests)
- Off-Site Treatment:
 - Recycling
 - Risk reduction (e.g. neutralization, stabilization)
- Final Discharge to:
 - Air (incineration and evaporation)
 - Water (storm and/or sanitary sewers, surface and/or ground waters)
 - Land

Liquid wastes only become TLW once they have been transported by trucks. However, to effectively manage or regulate TLW it is necessary to consider the complete liquid waste cycle. For example, any controls or regulations that reduce the volume or the risks associated with the generation of liquid wastes will likely have a similar impact on the volume and/or nature of the wastes that are transported.

The life cycle diagram **Figure 2** presents all of the possible options that could be associated with the management of liquid wastes. It does not imply that all options are necessarily followed all, or even some of the time. The Figure is intended to show the options or possibilities that may require regulation or enforcement to limit their happening. From this it can be seen that changes in sewer and other regulations, their complexity, enforcement, and user fees can effect the volume of liquid wastes that are transported (TLW).

In addition the concept of waste should be continually revisited so that “waste” is replaced with new concepts (not just terms) such as “by products” “excess production” or “raw materials.” In addition the costs and consequences of this “by product” generation and its subsequent minimization, recycle, reuse, transport, and disposal, must be clearly built into the design and the operational and financial management of any facility.

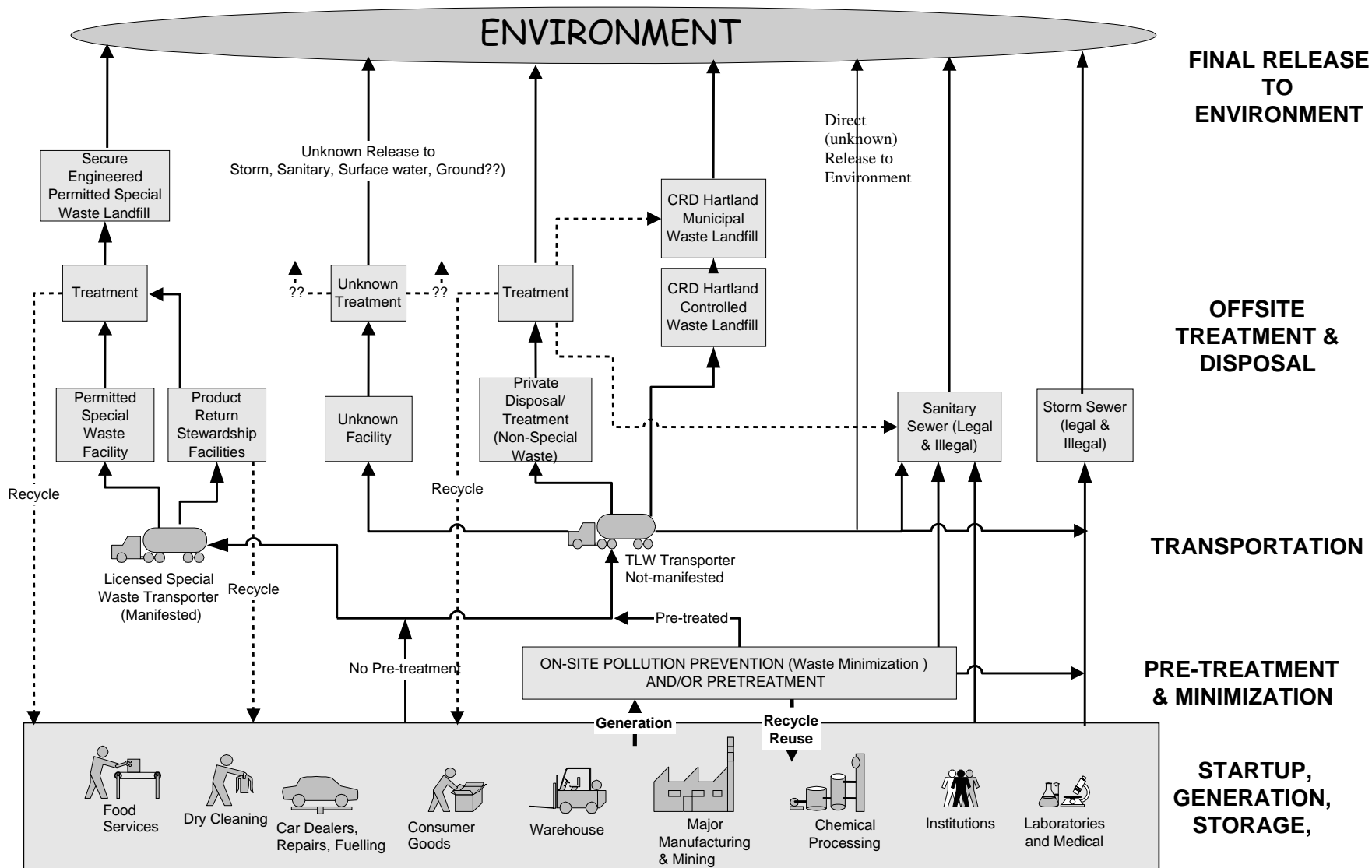


FIGURE 2: TRUCKED LIQUID WASTE LIFE CYCLE ACTIVITIES

2.4 Inventory of the Types and Volumes of TLW Generated in the CRD

In order to focus the regulatory review on the significant waste generation or impact sectors, it is important to understand the sources, nature, and quantities of TLW generated in the CRD. TLW may contain both regulated and non-regulated (non-hazardous) wastes. For example, waste oil from auto repair shops is regulated under the BC Special Waste Regulation if it contains 3% or more mineral oil. Consequently, wastes containing less than 3% mineral oil or non-mineral oils, such as fats, and greases from food services, are not covered by the Special Waste Regulation and are essentially non-regulated in terms of their generation, storage, transportation or treatment. Depending on the source and properties, TLW waste varies in terms of type, nature, concentration, health and environmental risk.

The CRD has recognized the potential for inappropriate discharge of TLW into the sewer system, and elsewhere as a major concern. To gain additional insight they commissioned two studies into the generation of TLW, “*Inventory of Trucked Liquid Waste Generated in the Core Area of the Capital Regional District – Phase 1 (2002)*” and “*Review of Management Practices for Catch Basin and Oil-water Separator Wastes*”. The studies estimated that about 25 million litres of TLW are generated annually in the CRD’s core area. 85% of the waste generated is waste oil from automobile repair operations and 11% is engine coolant from the same sector. The study also found that about 0.9 million litres of grease trap and other wastes are generated by the food services sector. **Table 1** summarises the study findings on the major TLW generators and approximate amount of TLW generated in the CRD. Although these studies, completed in 2002, provide considerable information on the amount and sources of waste generated in the CRD, they are subject to a number of known limitations outlined in the following **Section 2.4.1**.

Table 1: TLW Generators and the Types and Amounts Generated

Businesses and Industrial Sector	Major Types of TLW	TLW Generated (Litres x 10⁶)
Automobile Repairing Operations including Gasoline Services Stations	Waste Oil, Engine Coolant, Cleaning solvent	20.20
Construction and Mining machinery and Equipment (excluding Petroleum)	Waste Oil, Engine Coolant, Cleaning solvent	1.58
Motor vehicle Dealers (Used Lubricating Oil Stewardship Program)	Waste oil, Engine Coolant, Flammable liquids	0.90
General Automobile Repair Shop	Waste Oil, Engine Coolant, Cleaning solvent	0.85
Automobile Parking Lots	Catch basin waste, Oily water waste, Engine coolant	0.016
Auto and Home Supply Stores		0.27
Top, Body, and Upholstery shops, and paint shops	Residual paints	0.005
Dairy Products Stores	Fats	0.02
Carpet cleaning waste (including dry cleaning)	Residual solvents	0.05
Food services Operations (Hotels, restaurants, and other food services)	Grease traps, Fats, oils, cleaning waste	0.9

The second study, “*Review of Management Practices for Catch Basin and Oil-water Separator Wastes*” examined the wastes produced from the cleanout of catch basin and oil-water separators. The study shows that these wastes have high solids contents, may contain contaminants that exceed ambient water quality criteria and may qualify as *Special Waste* depending on the concentration of the contaminants.

The generation, transport, or treatment and disposal of TLW, are subject to an assortment of regulations, including Federal, Provincial, and municipal acts, regulations, bylaws, and guidelines. Besides, possessing a variety of waste characteristics, generated wastes are also transported to a variety of destinations including; recycling depots, private waste management facilities, special waste facilities, municipal facilities, as well as, other locations both in and outside the CRD including potential illegal disposal or dumping. Each of these activities may also be subject to regulations, which are discussed in the following sections.

2.4.1 Inventory Limitations

Due to the good response from the major vehicle repair facilities and the limited responses from other generators in preparing the above inventory values, it is suspected that the inventory may be unduly biased to show greater percentage of waste generated from motor vehicle repair than may actually be the case. In addition, the limited information and lack of documentation available from the transporters and treatment facilities was not sufficient to crosscheck the estimated generation rates. For these reasons, the inventory numbers may not be representative of the actual generation rates within the CRD.

2.5 Additional Investigations

To obtain insight into the current TLW management practices and to confirm the earlier inventory results, a follow-up survey of the generators, transporters/treaters and enforcement agencies was considered for inclusion as part of this project. It was determined that completion of such a comprehensive survey was outside the terms of reference and budget for this current project, consequently it was not conducted. However, survey forms were developed as shown in **Appendix I** and using these as a guide, a very limited and informal telephone survey was conducted. This survey included approximately fifteen generators, five transporters/treaters, and four agencies: (BC Ministries of Transportation; and Water, Land, and Air Protection; District of Saanich; and the CRD). In addition, valuable time was spent with CRD environmental services staff to gather background and supporting information for this project. The names and contact information for the telephone survey were taken from the CRD files and the earlier 2002 Phase 1 Survey waste inventories.

Although the scope and thoroughness of this preliminary survey was necessarily limited, it did highlight the need for additional information to confirm the generators, the volumes, and disposition of TLW. In addition, the survey indicated that:

- The majority (12 of the 15) of the potential waste generators contacted stated that they did not generate any “significant” trucked or special liquid wastes.

- Very little information was available from the generators on their waste types, characteristics, quantities or final means of disposal.
- Many of the generators contacted had no formal emergency response plans to deal with potential spills of their waste.
- The generators appeared to have had little training into the regulations or the proper management, characterization, treatment and disposal of hazardous and non-hazardous wastes. This observation was supported by the interviews with the transporters who stated that waste characterization information supplied by the generators was often limited or not provided.
- As a result of this lack of information, wastes that may not actually be hazardous may be treated as hazardous by the transporter/treater possibly creating extra costs for the generators, and conversely, the generators may be (knowingly, or unknowingly) creating hazardous waste and not managing it appropriately.
- Little information was available on the prevalence of mixing wastes on trucks (i.e. multi-generator pickups) or truck washing between loads. The larger truckers, with their own treatment facilities, indicated that they were able to wash the truck containers and treat the washings on their own sites. Management of truck washing wastes generated by those truckers without access to their own treatment facilities could not be confirmed.
- The presence and effectiveness of formal programs to monitor the quality of storm water discharges and potential ICI (industrial, commercial, institutional) contributors to the storm sewers could not be confirmed.

It should be emphasized that the scope of this survey was necessarily limited and consequently the findings may change with a larger sample. However, the survey did provide an insight into some of the key issues facing regulators, municipalities and the CRD in managing or at least gathering reliable information on liquid waste generation, characterization, transportation and disposal.

3.0 EXISTING REGULATIONS APPLYING TO TLW

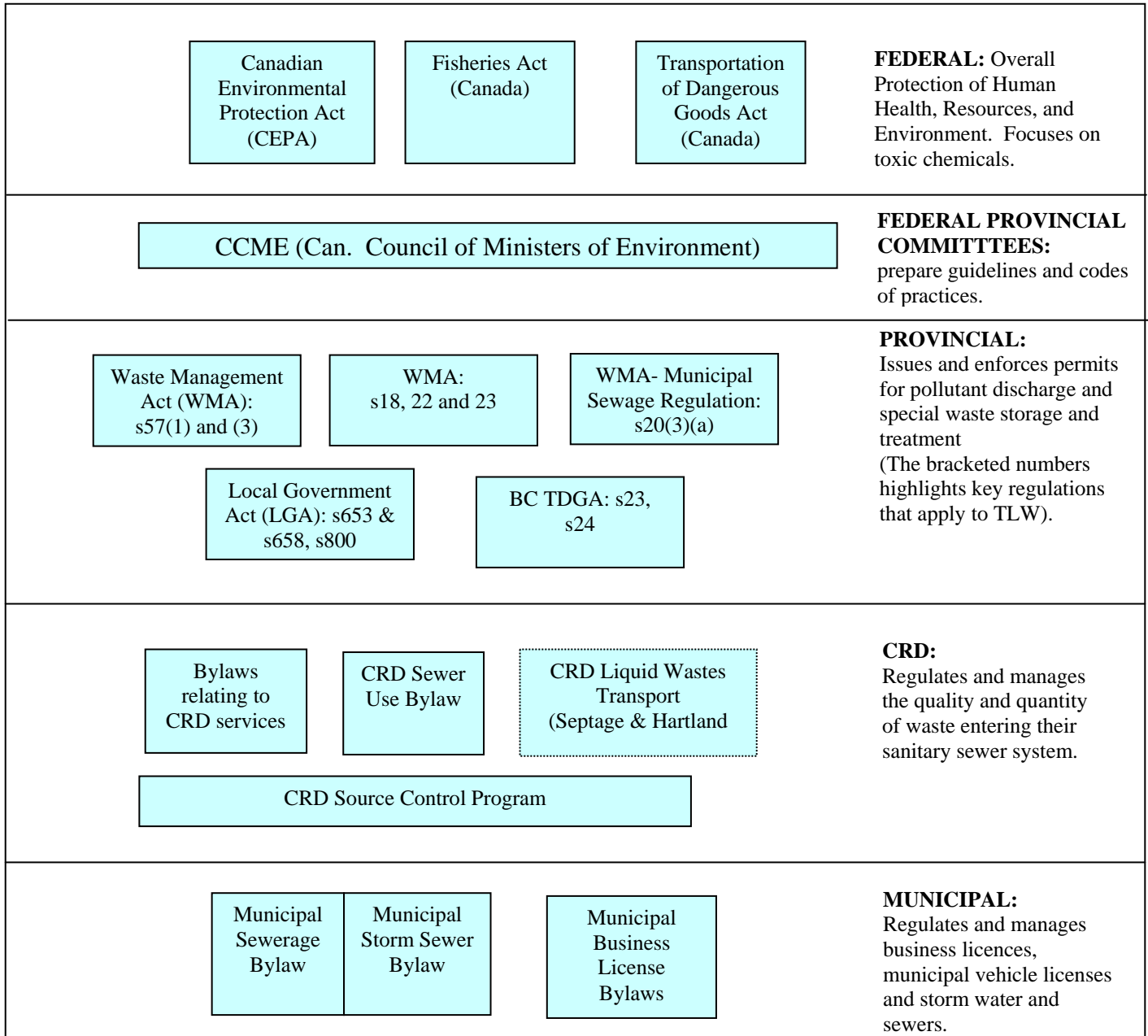
The principal regulations relevant to the management of TLW are summarized in **Table 2**. A clear understanding of these key regulations by the stakeholders and their enforcement by the relevant agencies is essential to the effective and efficient management of TLW

Table 2: Act and Regulations Applicable to TLW Management in CRD

Applicable Legislation or Regulation	Regulatory and/or Enforcement Authority
Canadian Environmental Protection Act (CEPA)	Environment Canada
The Fisheries Act	Dept. of Fisheries and Oceans
Transportation of Dangerous Goods Acts (TDG) Also [The Provincial Transport of Dangerous Goods Act]	Environment Canada &/or Transport Canada [BC MWLAP and MOT]
Waste Management Act (WMA)	BCMWLAP
Special Waste Regulation (SWR)	BCMWLAP
Return of Used Lubricating Oil Regulation	Provincial Transport of Dangerous Goods Act (BCTDGA), Industry
Post-consumer Paint Stewardship Program regulation	BCMWLAP, Industry
Post-consumer Residual Stewardship Program regulation (solvents and pesticides)	BCMWLAP, Industry
Spill Reporting Regulation	BCMWLAP / Public
Contaminated Sites Regulation	BCMWLAP
Municipal Sewer Regulation (MSR)	Municipality
BC Guidelines for Landfill Facility	BCMWLAP
BC Approved Water Quality Guidelines (BCAWQG)	BCMWLAP/ Health
CRD's Sewer Use Bylaw # 2922	CRD
Septage Disposal Bylaw	CRD
Hartland Tippling Fee Bylaw	CRD
Municipal Business License Bylaw	Municipality
Municipal Storm Sewer Bylaw	Municipality

Figure 3 A Graphical Overview of the Regulatory Framework Relating to TLW Management.

Figure 3: Regulatory Framework for TLW Management



The following sections present brief overviews of the acts, regulations, relevant guidelines and criteria that apply to TLW. A more detailed discussion and a clause-by-clause analysis is presented in **Appendix I**. These summaries provide the basis for the specific recommendations for regulatory changes that could be considered to improve the management of TLW.

3.1 Federal Regulations

3.1.1 Canadian Environmental Protection Act (CEPA)

The Canadian Environmental Protection Act (CEPA) 1999 is federal legislation that addresses the protection of the Canadian environment and public from exposure to toxic chemicals. This Act exercises its power in co-operation with provincial, municipal and other governments to protect, enhance, and restore the environment. CEPA, through the National Pollutant Release Inventory (NPRI) and other programs, defines and prepares lists of toxic substances, including liquid wastes that are manufactured, generated, imported, exported, or released in Canada. The act sets pollution prevention, monitoring and reporting, and emergency response requirements.

3.1.2 Fisheries Act (FA)

The Fisheries Act is a Federal legislation and governs commercial and recreational fishing and fish habitat in all waters in Canada. The Act is concerned with discharges of any “deleterious” substances into watercourses frequented by fish that may cause degradation of water quality, affect fish habitat, or kill fish. If TLW is discharged directly or indirectly into the water bodies frequented by fish habitat, this Act will come into force provided such discharges could alter the receiving water quality or proved deleterious to fish and/or their habitat. The Department of Fisheries and Oceans (DFO) is responsible for the enforcement of the Act.

3.1.3 Transportation of Dangerous Goods (TDG)

There are two regulations namely the Federal, “*Transportation of Dangerous Goods Act (TDG)*” and the Provincial, “*Transport of Dangerous Goods Act (BCTDGA)*” to control the pollution from dangerous goods during transportation. Both regulations contain similar provisions for controlling transportation of dangerous goods except for their jurisdictions and amount of penalties.

Trucked liquid wastes that contain dangerous goods (e.g., poisonous, oxidizing, or corrosive substances) above certain levels fall under the provisions of the TDG during transport, shipping and receiving. The BCTDGA aims at controlling the pollution from the dangerous goods during transportation within the province and conforms to and is based on the Federal TDG, which deals with the inter-provincial and international transportation of dangerous goods. These Acts contain provisions regarding the *safety requirements, standards and marks, emergency response plan, administrative officials* (Inspectors) and duties of the Inspectors *for monitoring compliance*.

3.2 BC Waste Management Act and Regulations

The *Waste Management Act* is the main statute for the regulation of pollution and wastes in B.C. The Environmental Protection Division of the BC Ministry of Water, Land, and Air Protection (MWLAP) is responsible for overall waste management and enforcement of the Act.

The Act and the regulations made under the Act cover the handling, management and discharge of all types of wastes (including TLW). It regulates: all municipal, institutional, commercial, and industrial (ICI) waste discharges; contaminated site investigations and remediation; special (hazardous including liquid) waste and handling and disposal and general environmental protection.

3.2.1 BC Special Waste Regulation (SWR)

Special Waste Regulations (SWR) has been enacted under the *Waste Management Act*. The SWR defines and regulates *the Special (hazardous) Wastes handling in BC starting from the generation to storage, to transport, to disposal*, with an aim to track the movement of *Special Wastes* at each of these phases. *The SWR, defines "Special Waste"* as dangerous goods that are no longer used for their original purpose (i.e., wastes or residuals) that require special care in their handling, storage, transport, or disposal to prevent environmental impacts.

If trucked liquid wastes, such as solvents and residuals from dry cleaning services, or waste oils from auto repair operations, are sufficiently concentrated then they are classified as *Special Wastes* and fall under the SWR. The SWR requires special waste handlers to comply with a variety of procedures including registration and waste manifesting. These procedures are designed to track the *Special Wastes* from the “cradle to the grave”. The Ministry maintains a Special Waste Information System (SWIS) database to manage the special waste- generation, movement and disposal. However, SWR does not specify the ways to track the generators that produce wastes that are not concentrated, or in quantities large enough, to classify as *Special Wastes*.

3.2.2 Return of Used Lubricating Oil Regulation (RULOR)

The return of used lubricating oil is regulated by the Return of Used Lubricating Oil Regulation under the WMA and deals with lubricating oil which through use, storage or handling has become unsuitable for its original purpose, but is suitable for re-refining or other permitted uses. The program is operated by the sellers of lubricating oils. BCMWLAP is responsible for enforcing the regulation.

To make the Used Lubricating Oil Program consistent with the ministry’s Industry Product Stewardship Business Plan, the program was brought under the Post-Consumer Residual Stewardship Program Regulation on January 23, 2003 by Order in Council 0059. This amendment places responsibility for the collection of not only used oil, but also filters and containers (of 30 litres or less), on brand-owners, rather than retailers and came into effect July 22, 2003. However, for the purposes of TLW only oil is significant, although dripping filters can also be a minor source of waste oil and if not properly disposed can contaminate soils and ground water.

3.2.3 Post-Consumer Paint Stewardship Program Regulation (PCPSPR)

Consumer waste paint products including latex, oil and solvent-based architectural coatings, stains and paints for commercial and homeowner use may constitute TLW. The recycling, treatment, or disposal of these wastes falls under the Post-Consumer paint Stewardship Program Regulation under the *Waste Management Act*. The stewardship program regulation aims at ensuring pollution prevention and source control of the consumer pollution to the environment.

3.2.4 Post-Consumer Residual Stewardship Program Regulation (PCRSR)

The post-consumer residual stewardship program regulation has been enforced under the Waste Management Act to ensure that residuals of solvent and flammable liquids, gasoline, pesticides, and pharmaceuticals are collected, stored, processed, recycled or reused, and properly disposed.

3.2.5 Spill Reporting Regulation (SRR)

Spill reporting regulation of WMA may be applicable to TLW in the event of any spillage of liquid waste stored at the generation point, or during transportation to the facility operations. This regulation sets out the reportable volumes and then requires the mandatory reporting of chemical spills. It could have application anywhere along the TLW life cycle.

3.2.6 Contaminated Site Regulation (CSR)

BC Contaminated Site Regulation of WMA is applicable in the event of contamination of a site (ground, ground water..) either due to spillage, consistent leakage of the waste from the waste containers, or contamination of the land from dumping of the waste by the TLW generators or haulers. Gasoline service stations, dry cleaners, food processing plants or any other industrial operations with underground or above ground storage may contribute to contamination of the site. BCMWLAP is responsible to enforce the regulation.

3.2.7 Municipal Sewage Regulation (MSR)

Municipal Sewer Regulation under the WMA regulates the discharges of waste from the sewage facility into the environment.

3.2.8 BC Approved Water Quality Guidelines (BCAWQG)

BC Water quality guidelines are developed in order that water quality data can be assessed and site-specific water quality objectives can be prepared. They provide the benchmarks for the assessment of water quality and setting water quality objectives. In general, water quality problems are non-existent if the substance concentration is lower than the guideline(s). However, if the substance concentration exceeds its guideline, an assessment of the water quality is desirable

3.3 Regulations of the Capital Regional District (CRD)

Presently, the CRD has three principle enforceable bylaws relating to TLW, namely, the Sewer-Use Bylaw; the Septage Bylaw; and the Hartland Landfill Tipping Fee and Regulation Bylaw that can be linked with TLW. It has also formulated a Model Storm Sewer Bylaw for adoption by the member municipalities.

3.3.1 CRD Sewer Use Bylaw #2922 (SUB)

The Capital Regional District (CRD) is authorized under Section 22 and 23 of the Waste Management Act (WMA) to formulate necessary bylaws to regulate the disposal of waste, including non-domestic and TLW into its sewer system. Under the Bylaw there is a provision of Codes of Practices (COP) for specific industrial or commercial operations to aid implementation of sewer-use bylaw.

3.3.2 Septage Disposal Bylaw

Supplementary Letters Patent authorize the CRD to provide septage disposal facilities, including the powers to regulate disposal facilities and compel their use.

3.3.3 Hartland Landfill Tipping Fee and Regulation Bylaw (HLTFRB)

Hartland Landfill Tipping Fees and Regulation Bylaw #2338 is primarily concerned with specifying the wastes that can be disposed at the Landfill and the penalties for acts that are in contravention of the bylaw.

3.3.4 Model Storm Sewer Bylaw (MSSB)

CRD has developed a Model Storm Sewer Bylaw for adoption by the member municipalities. The bylaw does not allow the discharge of wastes, other than clean stormwater and a few other exceptions, into the storm sewer.

3.4 Guidelines, Objectives and Criteria

In addition to the above acts, regulations and bylaws, there are also a variety of other guidelines, objectives and criteria that provide guidance to the regulators in issuing permits, as well as, to the generators, transporters, and facility operators in assessing standard industrial practice and due diligence. Samples of these guidelines include:

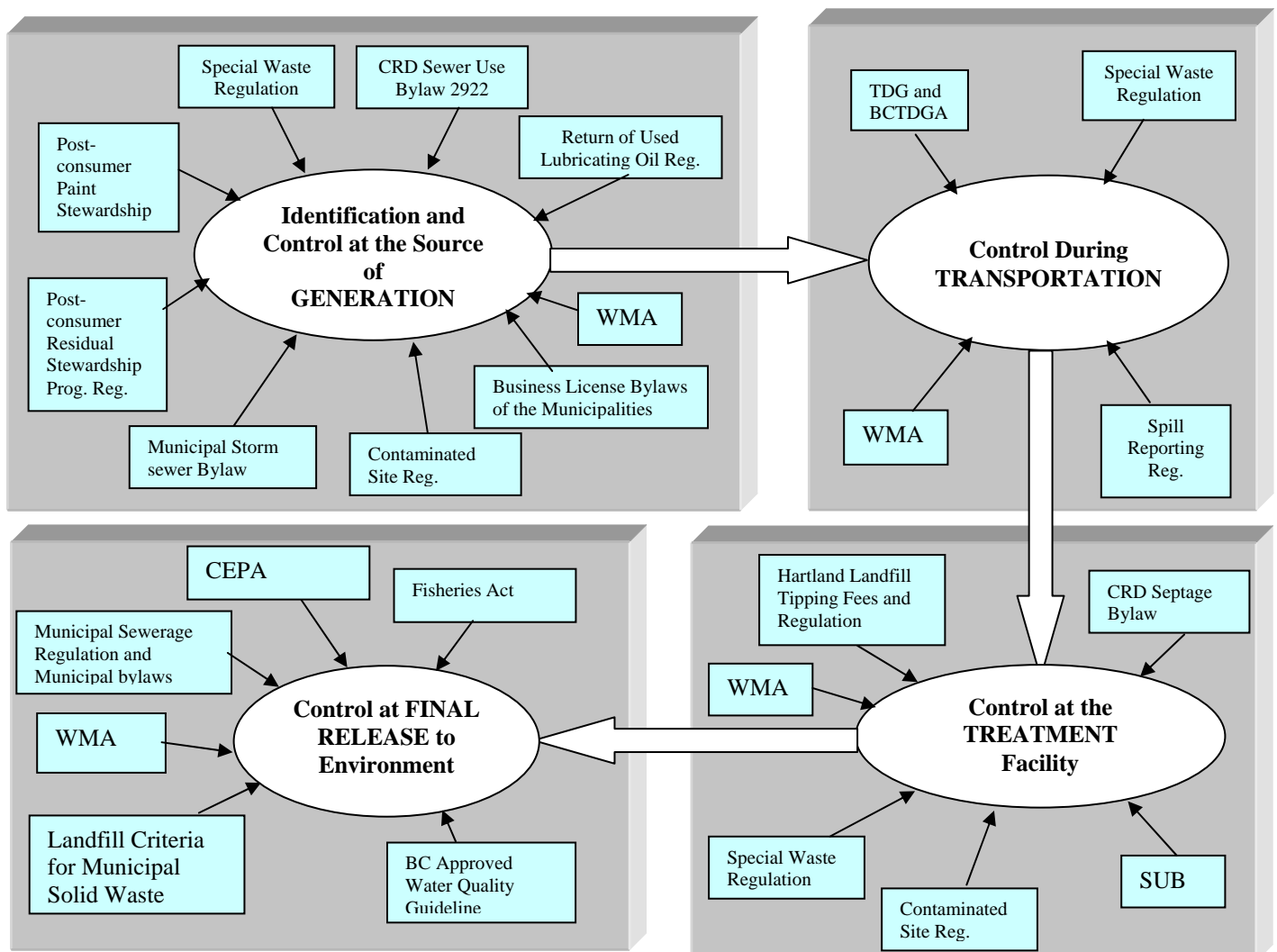
- Pollution Control Objectives for:
 - The Forest Products Industry of British Columbia;
 - The Chemical and Petroleum Industries of British Columbia;
 - The Mining, Smelting, and Related Industries of British Columbia;
 - Municipal Type Waste Discharges In British Columbia;
- A Compendium of Working Water Quality Guidelines for British Columbia;
- British Columbia Approved Water Quality Guidelines (Criteria): 1998 Edition;
- Guidelines For Industry Emergency Response Contingency Plans;
- British Columbia Water Quality Index;
- Persistent Toxic Substance Definition; and
- Summary of Environmental Standards and Guidelines for Fuel Handling, Transportation and Storage.
- CCME (Can. Council of Ministers of Environment) publish various guidelines
- Codes of Practices from both governmental and industrial organizations.

4.0 REVIEW AND GAP ANALYSES OF EXISTING REGULATIONS AND ENFORCEMENT

As discussed above, different Acts, Regulations, Bylaws, Guidelines, and Codes of Practices may be applicable to the Trucked Liquid Waste life cycle. Except for the SUB and Septage Bylaw, no regulations specifically define TLW; rather it is included in different regulations under the category of wastes, such as, *Special Wastes*, non-domestic wastes, restricted liquid wastes, effluent, used oil, etc. That is why it is necessary to review a variety of regulations other than those that just deal with TLW.

The following schematic diagram (**Figure 4**) shows how the different acts and regulations apply to the various TLW life cycle activities. It also provides insight into which regulations should be reviewed when looking for management or regulatory improvements. As some regulations apply to more than one activity (for example, the BC Waste Management Act (WMA) applies to all activities in the cycle) the diagram has been simplified to only show the key regulations at that apply to each stage.

Figure 4: TLW Life-cycle Components and the Applicable Regulations



The following sections present for each of the various TLW life-cycle activities (i.e. business start-up, operation, generation, storage, transportation, treatment, and disposal) a review of the related acts, regulations (with specific clauses), the agencies and enforcement practices. The schematic waste flow (activity) diagrams presented in each section refer back to TLW management activities overview shown on **Figure 2**. For each activity, the potential gaps in regulation and enforcement are then summarized. Identifying a “gap” does not necessarily mean that new or amended regulations are required, rather it indicates where there are potential opportunities for improvement. These improvements could be in the form of additional training or communication to the TLW managers about the intent, application, requirements or even the existence of some of the regulations.

4.1 Identification of Potential TLW Generators at the Pre-Start or Planning Stage

The TLW life cycle starts with planning a business that may or may not have the potential to generate TLW through its operations. Several regulations are applicable relating to permits for construction, occupancy and business licenses. **Table 3** shows the regulations applicable to the start-up of any type of business. Those businesses that are potential TLW generators could be identified at this early stage and perhaps encouraged to develop pollution prevention plans, or given information packages, or directed to relevant Codes of Practice for application or review.

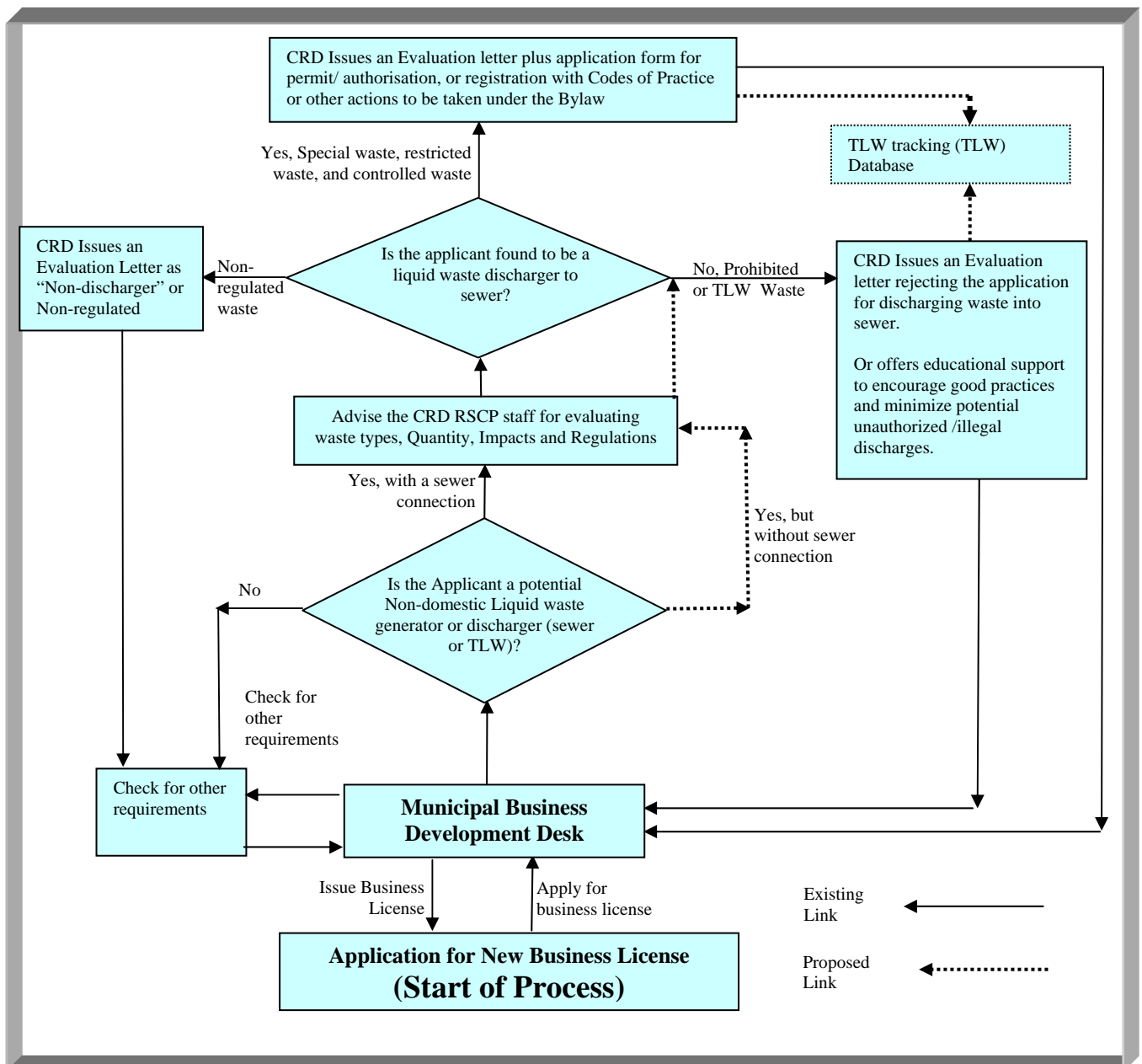
Table 3: Regulations Applicable to the Business Start-up of Potential TLW Generators

Regulatory Components	Gaps/Improvements in the Regulation	Statutory Enforcement Method	Gaps/Improvements in the Enforcement
CRD Building Regulation Bylaw No. 4			
Section 2.1.2 and Section 3.13 requires that every person shall apply for and obtain: a building permit before: changing occupancy.	No gap. Bylaw adequately describes the requirements for building permits to start any business.	Section 2.6 provides the authority to building official to issue certificate for occupancy. Section 4.0 authorizes the building official to impose penalty for violation of the provisions of the bylaw.	No gap. Without the certificate of occupancy, no one can start business in the building.
Municipal Business License Bylaw			
TLW generator and the transporter both need to obtain a business license before starting operations and also require approval when the use of the business premise is changed.	Current business license processing by the Municipalities does not require mandatory notification or involvement of the CRD. GAP: The CRD may be unaware of potential TLW generator.	Local city authorities issue business licenses or approval for changes in business premises. There is a formal but voluntary process, municipalities use for informing the CRD of business licenses and changes in business activities that may generate TLW (see Figure 5).	GAPs: Since this municipal notification process is voluntary and not mandatory the CRD may: - not know of potential generators and - have no program to track the company if there is no discharge to sewer.

4.2 Identification of Potential TLW Generators at the Business Licensing Stage

As part of the CRD's Regional Source Control Program (RSCP) a generic procedure for waste discharge assessment has been developed to assist the municipalities/electoral areas to assess the waste discharge requirements of the new business license applicant. In 2001, a total of 36 waste discharge assessment forms (WADF) were submitted to CRD for evaluation. The procedural steps involve the CRD's RSCP staff to review the application and use their experience to provide relevant information on potential non-domestic waste discharges. Current procedural steps to issue business license and assess waste discharge are shown in **Figure 5**.

Figure 5: RSCP Procedure Modified to Identify Potential TLW Generators Through the Business Licensing Process



The above procedure has been slightly modified so that it can be used to identify and track potential TLW generators in addition to the potential sewer users. This information could then be input into a database or management information system (MIS) to aid in evaluation or compliance monitoring. Effective implementation of the notification program by the municipalities would facilitate identifying potential TLW generators and assist in controlling pollution (unauthorized discharges) throughout the TLW cycle.

4.3 Generation and On-Site Storage of Liquid Wastes

Figure 6 shows the steps for a potential TLW generator including pre-start-up business licensing, then starting the activities that generate liquid waste, on-site pre-treatment (if any) and then storage of the liquid waste that may be trucked for disposal either by the generator himself or by an independent waste transporter. **Table 4** shows the existing legislation that may be applicable in the process.

Figure 6: Schematic Diagram Showing the TLW Generation and Storing On-site

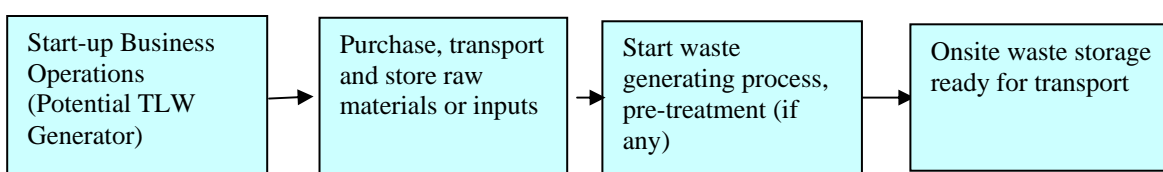


Table 4: Federal/Provincial Legislative Components Applicable to TLW Generators

Regulatory Components	Gaps/Improvements in the Regulation	Regulatory Enforcement Method	Gaps/Improvements in the Enforcement
Waste Management Act (WMA)			
Section 4 requires that the generator of Special Waste must keep the waste confined as authorized by the permit/order/approval.	GAP: This section outlines the procedures for proper confinement of TLW containing Special Waste, but does not include confinement of non-Special Wastes.	<p>Section 10 authorizes the Manager to issue permit to introduce waste into the environment.</p> <p>Section 11 authorizes the Manager to approve discharge of waste for max 15 months without issuing permit.</p> <p>Section 29 authorizes the Manger to conduct pollution investigation.</p> <p>Section 31 authorizes the Manager to issue pollution prevention orders.</p>	Potential GAP. If the Manager thinks the TLW handling of an operation may cause pollution to the environment, he can ask for permit/authorization/order; for example for special waste generation or storage. Then set up an enforcement / inspection/ reporting program for the permittee. However, there is little information available on such enforcement particularly for the smaller TLW generators.

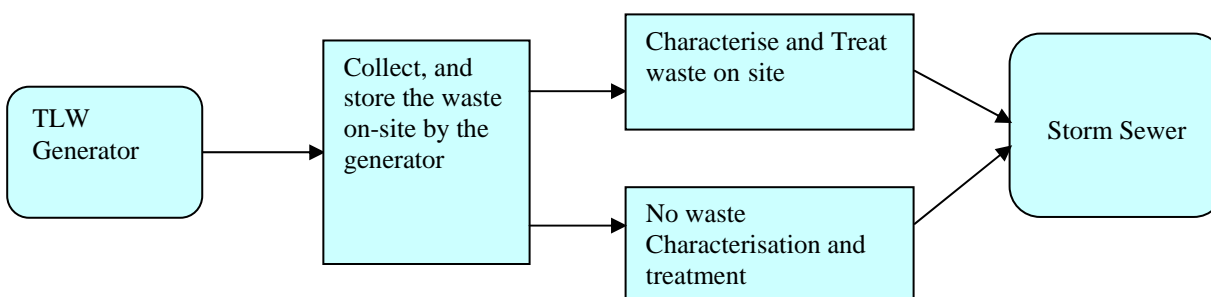
Regulatory Components	Gaps/Improvements in the Regulation	Regulatory Enforcement Method	Gaps/Improvements in the Enforcement
Special Waste Regulation (SWR)			
Sections 48 and 50 specifies: <ul style="list-style-type: none"> proper containment, waste classification naming and signage, quantity generated, quantity in storage, time in storage of the waste allowed for registration with the Ministry (e.g., waste containing TCE: 1,000 L for storage). 	Waste generator may have problem in classifying the waste due to lack of technical information and knowledge. GAP: There are no similar management and registration requirements for wastes that fall below Special Waste criteria.	Enforcement by the Ministry under the WMA. Based on relative risk, as set out in the permit. There is little or no inspection of lower risk or non-permitted sources other than response to community complaints.	As revealed from discussions with the Ministry officials, registration record evaluation is the triggering tool for compliance monitoring at the point of generation. GAP: There is no inspection program for non-Special Waste generators..
Canadian Environmental Protection Act (CEPA)			
Section 66(2): Reporting of toxic substance (e.g. DSL Domestic Substances List and National Pollutant Release Inventory (NPRI). Section 95: Toxic Spill Reporting	Potential Gap: Small quantities that may be locally significant may not require reporting.	Section 63(2): Recognizing publicly pollution achievers. Section 121: release of guideline and Codes of Practice.	No gap. Facilitate the enforcement of the provisions of the Act.

4.4 Discharges of Liquid Waste into Storm Sewers

As shown in **Figure 2**, once liquid waste is generated it is possible to discharge it into the storm sewer system either with or without being characterized as to its acceptability for the storm system. The options are to:

- characterise the waste (if it contains *Special Waste*), as required under SWR and treat the waste on site to meet the SWR requirements for the discharge from a *Special Waste* processing facility and then discharge into the storm sewer; or
- discharge into storm sewer without any waste characterisation and treatment on the site.

Currently, the municipalities discharge stormwater directly into watercourses or near-shore often with minimal or no treatment. **Figure 7** shows the discharge options for the generators into the storm sewer and **Table 5** shows the applicable regulations. These diagrams are not meant to imply that the discharge of any waste other than stormwater into storm sewers is permitted or encouraged. On the contrary, the purpose is to identify possible disposal options (legal or illegal) open to the generator/transporter and determine if the existing regulations and enforcement are sufficient.

Figure 7: Discharge of Liquid Waste by the Generators into the Storm Sewer**Table 5: Legislative Components Applicable to Discharge to Storm Sewer**

Regulatory Components	Gaps/Improvements in the Regulation	Statutory Enforcement Method	Gaps/Improvements in the Enforcement
Waste Management Act (WMA)			
Section 3 does not allow any discharge of waste into the environment unless permitted / authorized/ ordered/ or approved by the Ministry.	This section of the Act, by requiring permits for discharges, creates an administrative burden on the regulators. The increased use of guidelines and/or COPs supplemented by enhanced training and communication could be used to reduce the administrative burden. This approach would also provide the opportunity for industry self-regulation and compliance. GAP: Resources currently not available to permit all discharges to the environment	Section 31(2) (b) authorizes the Manager to order tests surveys and any other actions to determine the extent and effects of pollution and report the result.	GAP: TLW generator may be subject to inspection by the Ministry, but it is too costly to conduct enforcement on thousands of TLW generators. Current enforcement is based on complaints lodged to the Ministry; consequently there is limited inspection or enforcement of generators.
Model Storm Sewer Bylaw			
Section 2(1) does not allow discharge of TLW into Municipal storm sewer system. Section 8 allows such discharge upon approval from Municipal Manager for the business to operate under COPs.	No gap within the jurisdiction of the Municipality. GAP: Inconsistent adoption and application of the Bylaw	Section 10 (enforcement by the municipal inspector). Section 12 (provision of penalties of max. \$ 2,000 for violation of the Bylaws).	GAP: Programs are under development and implementation. The programs are not consistent across the CRD

4.5 Discharges of the Liquid Waste into the Return Facility for Recycling

Another available option for the TLW generators of recyclable waste, as shown in **Figure 3**, to transport the waste to the return facility for recycling either himself, or use a waste transporter. Currently, disposal/return of recyclable TLW to a return facility operator is regulated by three product stewardship programs, namely:

- Return of Used Lubricating Oil Regulation;
- Post-Consumer Paint Stewardship Program Regulation; and
- Post-Consumer Residual Product Stewardship Program regulation.

Figure 8 and Table 6 respectively shows the schematic diagram of disposing recyclable TLW into the designated return facilities and the applicable regulations. With the increasing emphasis on full life cycle management the number of such recycling programs can be expected to grow.

Figure 8: Schematic Diagram Showing the Disposal of Recyclable TLW to Return/Recycle Facilities

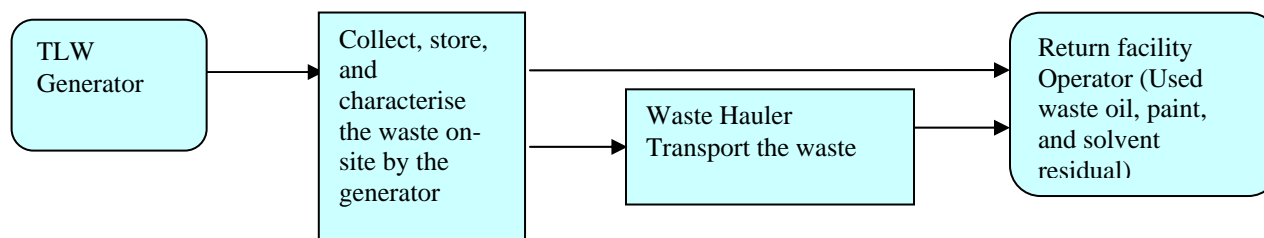


Table 6: Regulations Applicable to the TLW Disposal to Return Facility Operator

Regulatory Components	Gaps/Improvements in the Regulation	Statutory Enforcement Method	Gaps/Improvements in the Enforcement
Return of Used Lubricating Oil Regulation			
Relevant Sections: 3, 4, and 5 regarding the availability and operation of the facility. No provision of reporting to the Ministry about the product received, stored and disposed by the return facility operator.	GAP: There is no clause relating to reporting requirements consequently it is difficult to assess the amount of oil received and from whom.	Under Section 6, BCMWLAP enforces the compliance of the regulation. Enforcement applies to the return facility operators.	GAP: There is no reporting requirement by the Ministry for facility operator about waste received. Compliance performance is difficult to evaluate properly. Enforcement ensures that the return facility operators are compliant with respect to public awareness creation as well as efficient operation of the facility.
Post-consumer Paint Stewardship Program Regulation			
Relevant Sections: S3 and 4: availability of the services of the operation. S5: annual reporting requirement. S8: requirements to be fulfilled for operating the stewardship program.	No gap	Section 10 empowers BCMWLAP to enforce the penalty for non-compliance of the regulation. Enforcement applies to the return facility operators.	No gap. Enforcement ensures that the return facility operators are compliant both in public awareness creation and efficient operation of the facility.

Regulatory Components	Gaps/Improvements in the Regulation	Statutory Enforcement Method	Gaps/Improvements in the Enforcement
Post-consumer Residual Product Stewardship Program Regulation			
S5: requires approved residual stewardship program for the business to operate. S9 ensures that consumers are made aware of the program. S13: reporting requirements.	No gaps	Section 14 empowers the BCMWLAP to enforce penalties for non-compliance of the regulation. Enforcement applies to the return facility operators.	No gap. Enforcement ensures that the return facility operators are compliant both in public awareness creation and efficient operation of the facility.
Special Waste Regulation			
Sections relevant to Special Waste registration, transport license, manifest, records and reporting.	No gap.	Sections relevant to enforcement, monitoring, sampling, and analysing. Enforcement and penalty provisions under the WMA.	GAP: Because of the complex character and classification system for Special Waste, there should be a provision of waste auditing or COP adherence that could be used in place of chemical waste characterisation that could be used to demonstrate compliance.

4.6 Discharges of Liquid Waste into the Sanitary Sewer and Septage Facility by the Generator

TLW generators may have the option to discharge their waste into the sanitary sewer or septage facility (shown in **Figure 2**). They may do so either by characterising the waste generated and pre-treating the waste before discharge or discharging without wastes characterisation and pre-treatment. **Figure 9** shows the schematic diagram of discharging TLW into the sanitary sewer and septage facility by the TLW generator. Relevant regulatory components applicable to this option are described in **Table 7**.

Figure 9: Schematic Diagram Showing Discharges of TLW into Sanitary Sewer and Septage Facility by the TLW Generator

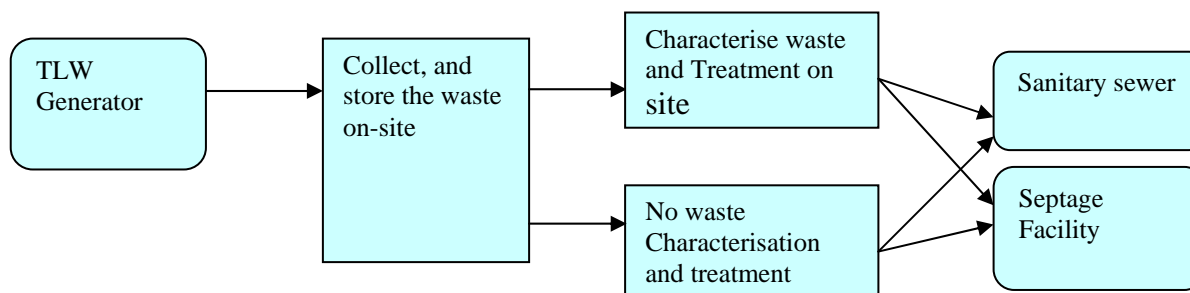


Table 7: Regulatory Components Applicable to TLW Generators for Discharging into Sanitary Sewer/Septage Facility

Regulatory Components	Gaps/Improvements in the Regulation	Statutory Enforcement Method	Gaps/Improvements in the Enforcement
CRD Sewer Use Bylaw No. 2922			
<p>Section 2.1, to 2.11 (specifies the conditions for discharging waste into sewer line). Section 3.1 (dischargers requiring permit /authorisation along with set terms and conditions). Section 3.2 (authorizes to issue permit/authorisation for discharging non-domestic low volume or restricted waste) S4.0 sets the terms and condition for using Codes of Practices (COP) for discharging waste. S5.0 requires that the permittee maintain all equipment and facilities in good order, and follow authorized waste control works or treatment works for discharging into sewer. S6.0 requires retention of records relating to monitoring, sampling and analysis. S7.0 specifies the notification requirements for discharging in contravention to the permits/authorization/ COP/order. S9.0 specifies the requirements for conducting monitoring, sampling, and analysis.</p>	<p>No Gap: CRD is adequately managing the discharges of wastes into the sanitary sewer and through this program identifies and can manage potential TLW generators that are also connected to sewer.</p>	<p>S3.4 authorizes the Manager to withhold the permit / authorisation for violation of the bylaw. S8.0 empowers the Manager to enforce the provisions of the bylaw by inspecting the site. S9 empowers the Manager to ask the discharger to undertake sampling and analysis of the waste discharges. S10.0 specify the penalties to be imposed to the violators of the permits/authorisation.</p>	<p>Potential GAP: As long as the waste generator applies for a sewer connection, they will come under the existing CRD SUB enforcement and the RSCP. However, this program focuses on the sewered waste and not on waste trucked off site. SUB inspections could be modified to include the potential for waste transported offsite to disposal sites connected to the sewer system.</p>
CRD Septage Bylaw No. 2827			
<p>S2.3 and 2.4 allow the permittee to discharge Trucked Liquid Waste into septage facility under terms and conditions in pursuit of Bylaw 2827.</p>	<p>No gap</p>	<p>S2.8 empowers the Manager to cancel or withheld the permit/ authorization/order for discharging the waste into septage facility. S10.0 specify the penalties.</p>	<p>No gaps</p>

Regulatory Components	Gaps/Improvements in the Regulation	Statutory Enforcement Method	Gaps/Improvements in the Enforcement
Waste Management Act			
Section 23(1) authorizes the regional district including CRD to make bylaws respecting the direct or indirect discharges of wastes into any sewer (sewage, storm, or combines sewer) or drain connected to a sewer facility.	GAP: The regulation is under review to address de-permitting of lower risk discharges	Section 22(2) and 22(3) authorizes the Manager to prohibit or regulate the discharge of non-domestic waste into a sewage facility and specify the conditions for such discharge.	Potential GAP: As the adoption of the MSSB is voluntary, programs for the control of discharges into the storm sewers may not be evenly enforced across all municipalities. However, the CRD Storm Water Quality Program in place under the LWMP is addressing the application of the MSSB

4.7 Discharges of Liquid Waste into Sanitary Sewers, Septage Facilities, or Storm Sewers by the Waste Transporters/Haulers

Like the TLW generators, TLW waste haulers also could discharge their waste into the sanitary sewer or septage facility (as shown in **Figure 2**). They may do so legally by characterising the waste generated and pre-treating the waste before discharge as per the terms and conditions of the permit/authorizations, or illegally discharging into the facilities. TLW routes under this option are shown in the **Figure 10** and relevant regulatory components applicable to this option are described in **Table 8**.

Figure 10: Discharge of TLW into the Sewers and Septage Facility by the TLW Transporter

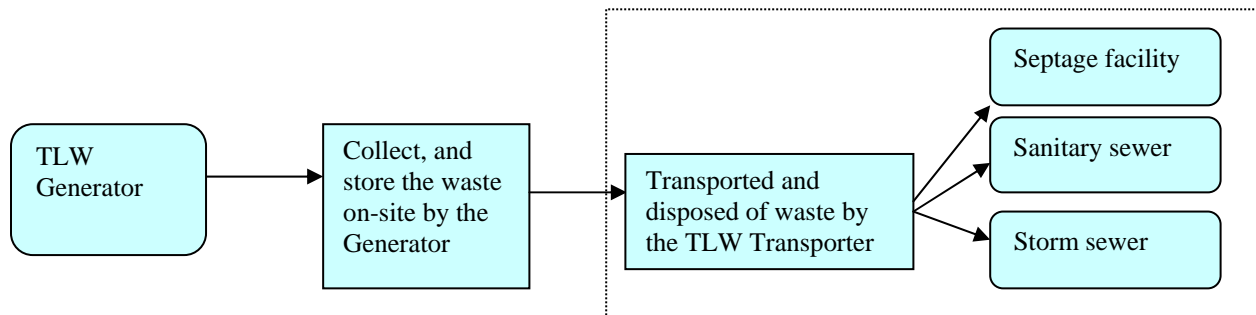


Table 8: Regulatory Components Applicable to TLW Transporters Discharging into Sewer and Septage Facilities

Regulatory Components	Gaps/Improvements in the Regulation	Statutory Enforcement Method	Gaps/Improvements in the Enforcement
CRD Septage Bylaw No. 2827			
<p>S2.7 specifies the conditions in regards to waste source, type, quantity, and characteristics, etc. as required by the facility operator before receiving the waste.</p> <p>S3.1 requires that the waste hauler shall have a licence for using the septage facility.</p> <p>S5.0 requires the hauler to conduct sampling and analysis of waste, at his expense, as ordered by the Manager.</p>	No gap.	<p>S2.8 authorizes the Manager or Operator of the septage facility to discontinue to accept the waste from the hauler if he does not comply with the requirement.</p> <p>S3.5 to 3.8 authorizes the Manager to revoke or suspend the hauler's licence for non-compliance of the provisions of the bylaw. S4.0 empowers the Manager to enter and inspect the facility. S5.0 authorizes the Manager to conduct monitoring, sampling and analysis of the waste hauled by the hauler.</p>	GAP: There is no manifestation system mandated TLW. There is little information to define the level of compliance or management.
Special Waste Regulation			
Section 5(2) requires that the Special Waste hauler carry manifest of the waste to be disposed to the waste facility.	No gap.	Section 19(1) authorizes the Manager to verify that the effluent discharged into the storm sewer from the facility meets the prescribed criteria of the regulation.	GAP: There are insufficient resources to conduct a regular schedule of verification (inspection) of discharges.
Waste Management Act			
Section 9 requires that the waste hauler completes a manifest of waste to be hauled, and must not carry more than the prescribed amount in the permit.	GAP: The section is applicable for carrying TLW containing Special Waste only.	Section 29, 31, 33, 54 are relevant respecting of site visit, pollution abatement order, and penalties.	GAP: Enforcement based on establishing the pollution impact and is onerous on Ministry staff.

4.8 Discharges of TLW to the Hartland Landfill by Waste Transporters

The Hartland Landfill Tipping Fee and Regulation Bylaw authorizes TLW containing restricted wastes to be discharged into the landfill site, provided such waste is authorized in writing and meets the CRD Landfill criteria. TLW waste haulers discharging liquid wastes into the landfill as shown on **Figure 11** are subject to the regulations summarized on **Table 9**.

Figure 11: Schematic Diagram Showing the Disposal of TLW by the Transporter to the Hartland Landfill

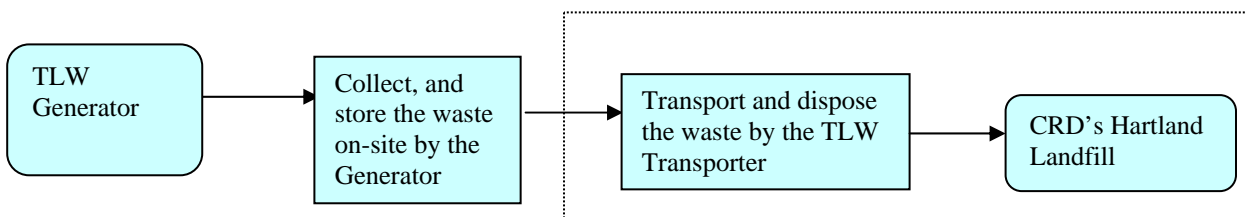


Table 9: Legislative Components Applicable to the Disposal of TLW by the Transporter to the Hartland Landfill

Regulatory Components	Gaps/Improvements in the Regulation	Statutory Enforcement Method	Gaps/Improvements in the Enforcement
Bylaw # 2338 (Hartland Landfill Tipping fees and Regulation)			
S2(d) governs disposal of specially permitted controlled waste (waste oil, liquid sludge, etc.). S2(i) governs disposal of restricted wastes. S4(b)(i): Penalty provision S5: governs verification of actual quantity with the manifested quantity.	No gap. Facilitates to discharge non-recyclable TLW (restricted wastes) into the landfill and the CRD ensures proper environmental management (discharge) as required by WMA.	S5 (c) authorizes the Manager to prohibit or suspend the hauling of waste into the Hartland Landfill for non-compliance of the provisions of the bylaw.	No gap. Waste discharges are monitored by CRD staff.
Special Waste Regulations			
Section 6: Facility operator maintains the records and information of Special Waste received.	No gap	Section 5(1) authorizes the facility operator to identify all hazards associated with the Special Waste received at the facility.	No gap. Ensures that the wastes disposed are characterised and quantified. Potential Gap: The level of enforcement and monitoring was not confirmed

4.9 Discharges of TLW into Private Disposal Facilities Located in the CRD

Discussions with several waste transporters determined that they collect and transport wastes (mainly *Special Wastes*) to private facilities for treatment and disposal or to temporary storage facilities before bulking and further transport to facilities both inside and outside of the CRD. Some wastes are sufficiently contaminated that they require further treatment, but do not meet the BC Special Waste criteria. For example, interceptor sludges and liquids with less than 3% mineral oil and grease, and some contaminated site wastes that may be too contaminated to leave onsite, but still are not *Special Wastes*.

Figure 12 shows the possible disposal route of TLW (*Special Waste*) to a permitted treatment and disposal facility while **Table 10** summarizes the applicable regulations and sections.

Figure 12: Schematic of the Disposal of TLW to a Non-Special Waste Private Facility

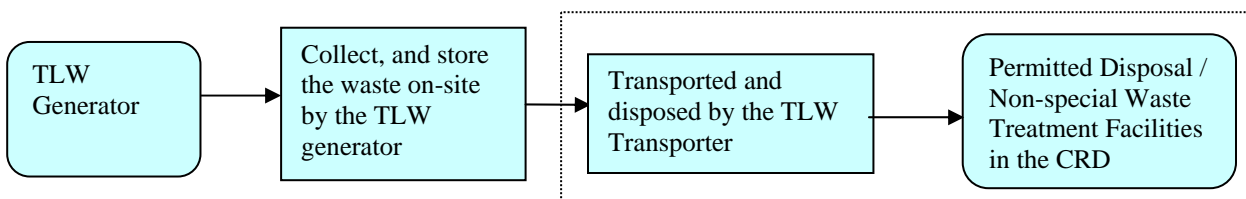


Table 10: Legislative Components Applicable to the TLW Haulers for Disposing into Permitted Non-Special Waste Treatment/Disposal Facility

Regulatory Components	Gaps/Improvements in the Regulation	Statutory Enforcement Method	Gaps/Improvements in the Enforcement
Special Waste Regulation			
The Special Waste regulation does not apply to those wastes that do not meet the criteria.	GAP: These wastes although not meeting the Special Waste criteria may still have hazardous properties and/or exceed CSR levels. They are not controlled by the SWR. Manifesting or waste tracking should be considered for these types of wastes.	There are no inspections or enforcements for non-Special Wastes under the SWR.	GAP: Regulations should be considered for the inspection of waste generators, transporters and treatment and disposal facilities.
Transportation of Dangerous Goods Act			
The TDG does not apply to those wastes that do not meet the criteria.	GAP: These wastes although not meeting the TDG criteria may still have hazardous properties and/or exceed CSR Levels. They are not controlled by the TDG.	There is no enforcement or inspections under the TDG for these (non dangerous) wastes.	GAP: Consider establishing a mechanism of inspecting waste transporters.
Waste Management Act			
Section 3 limits the release to the environment of a polluting substance without a permit or authorization, but does not cover the generation transportation (unless spilt).	No gap: Release of any polluting substances can be brought under permit/authorization (if required).	Provincial Ministry is authorized to inspect releases of polluting substances into the environment.	GAP: There are minimal resources available for enforcement in the CRD.
Fisheries Act			
This act controls releases of deleterious substances to fish-bearing waters.	No gap	Federal DFO is authorized to inspect releases of deleterious substances into the fish-bearing waters.	GAP: There are minimal resources available for enforcement in the CRD.

4.10 Discharges of TLW to Special Waste Facilities by Special Waste Transporters

Transportation of TLW that contains *Special Wastes* and disposal of *Special Waste* into the Special Waste Facility are subject the regulations enforced by both Provincial and Federal government. Control of movement of *Special Wastes* and Special Waste Facility operations are well documented in the Waste management Act, Special Waste regulations, Transportation of Dangerous Goods Act (both Provincial and Federal). Some recyclable materials like waste oil, waste paint and solvents are stored and processed under product stewardship programs. Non-recyclable waste like PCB, and other residuals are treated (e.g., incinerated) at facilities usually outside of B.C. **Figure 13** and **Table 11** show respectively the schematic diagram of the TLW route to a Special Waste Facility and the relevant regulations applicable for the discharge.

Figure 13: Schematic Diagram for Disposal at Special Waste Facilities Outside the CRD

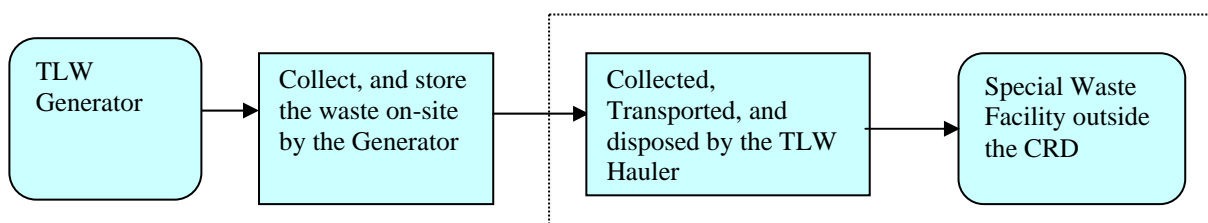


Table 11: Legislative Components Applicable to the TLW Transporters for Disposing into Special Waste Facility

Regulatory Components	Gaps/Improvements in the Regulation	Enforcement Method	Gaps/Improvements in the Enforcement
Waste Management Act			
Sections 3(5), 9(1), 9(2): Covers the permit or authorisation for transport and deposit of Special Wastes, and manifest requirements. Section 9(3): Covers manifest verification by the facility accepting the delivery. Section 5(4): Requires notifying the Manager in the event of variations in weight or waste types. Section: 6 (keeping waste records by the facility). Section 32(5): Liquid effluent criteria for land disposal.	No gap. Transportation of Special Waste is allowed with requisite permit/license. No gap.	Section 29: Access and inspection right to the polluter's premise. Section 30: Inspection of vehicle carrying Special Waste Section 5 defines the conditions on which the Special Waste Facility operates and can accept the delivery from the waste hauler. Section 12(3): order for spill remediation. Section 29 and 30: Ministry for enforcing the compliance.	No gap. No gap. Intended to check any spill of wastes or illicit dumping on the way. No gap. Provision of reporting by the public, evaluation of manifests, and evaluation of self-assessment forms trigger enforcement requirements.

Regulatory Components	Gaps/Improvements in the Regulation	Enforcement Method	Gaps/Improvements in the Enforcement
Section 4: confinement of Special Waste. Section 5: manner of disposing Special Waste at the facility. Sections 8 and 9: requirements of permits/authorisation, manifest, and license. Section 11: Requirements of permits for temporary storage from the manager. Section 12: spill prevention and reporting.			
Transportation of Dangerous Goods Act(Federal)			
Section 18: Covers reporting of any spillage and immediate remedy measures taken by the hauler or person in charge of goods.	No gap.	Section 15: Inspection of containment, shipping records, emergency responses plan. Section 17: detention of goods for non-compliance. Section 33-36: Offence and penalties for contravention and non-compliance of the provisions of the Act.	No gap.
Special Waste Regulation			
Sections 5: (Waste information). Section 6: (Waste record) Section 27(6): Leachate effluent criteria. Section 28(5): Effluent criteria to be met. Sections 45 and 46: Transport license and manifest requirements.	No gap.	Section 5: Access to the facility for compliance monitoring.	No Gap

4.11 Illegal Discharges by the TLW Generator/Transporters to Unlicensed Disposal Facilities, Water-bodies, Land, Road Side, or Other Unknown Sites

There exists the possibility to dump TLW illegally, particularly the non-regulated wastes into places such as public lands and parks, open land, by the roadside, to sea, sewer lines, and water bodies. Lack of knowledge about the regulations and the potential adverse environment impacts; limited fines or enforcement, or the higher cost of legal disposal may prompt the TLW generators /transporters to consider or conduct illegal discharging. However, there are regulatory ways available to identify the illicit dischargers and bring them to justice. **Figure 14** and **Table 12**, respectively, shows the schematic diagram of the illicit discharging route and the relevant regulations that may be applied in this regard.

Figure 14: Schematic Diagram Showing the Disposal of TLW into Unknown Places

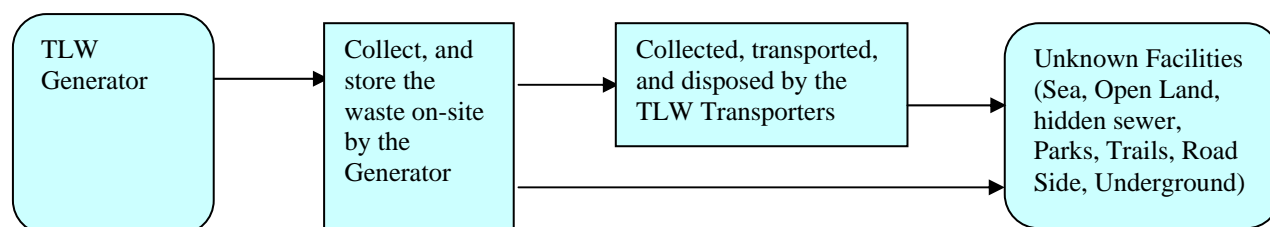


Table 12: Legislative Components Applicable to the TLW Generator/Transporters for Disposing into Unknown Place or Facility

Regulatory Components	Gaps/Improvements in the Regulation	Statutory Enforcement Method	Gaps/Improvements in the Enforcement
The Fisheries Act			
<p>S36 of the <i>Fisheries Act</i> prohibits the deposit of deleterious substances into waters frequented by fish, unless authorised by regulation.</p> <p>S40 (4) requires the person to report to the Inspector in the case of discharge of any deleterious substance in the fish habitat.</p>	<p>Potential GAP: No specific definition of deleterious substances. It prohibits discharges of both regulated and non-regulated substances (product or wastes).</p>	<p>Section 38 authorizes the Minister or the designated officer to inspect any work or undertaking resulting or likely to result in the deposit of a deleterious substance in water frequented by fish. Officer may ask the person authorised to conduct sampling, analysis, and monitoring and submit the record to the officer.</p> <p>Section 40 provisions an indictable offence and penalty of up to \$1 million and or imprisonment for the violator of Section 35 and Section 36.</p>	<p>Potential GAP: Possible duplication in enforcement and subsequent legal complexities in enforcement with other regulations (e.g., WMA).</p>
Waste Management Act			
<p>Section 9.1(2): Disposal at a public place.</p> <p>Section 12(5): Reporting the escape or spill of waste.</p>	<p>No gap.</p>	<p>Section 12(3): authority to order to put the contingency plan in action in the case of spill.</p> <p>Section 31 and 33: Pollution abatement order.</p>	<p>No gap. Facilitate control of illicit polluters. However, there is There are minimal resources available for inspection in the CRD.</p>
CRD Sewer Use Bylaw 2922 and Model Storm Bylaw			
<p>Section (2.4) Prohibits the discharge of TLW except under specific authorization.</p>	<p>No gap for discharge to sanitary sewer.</p>	<p>Section (8.1) Authorizes designated staff to enforce the bylaw.</p>	<p>No gap</p>
<p>Section (20)i Prohibits the discharge of TLW to storm sewers or watercourse</p>	<p>No gap for discharge to storm sewers or designated watercourse</p>	<p>Section (10) Designates municipal staff to enforce the bylaw</p>	<p>Potential GAP: Bylaw has not been adopted by all municipalities, enforcement varies and programs are under development.</p>

5.0 EXISTING ENFORCEMENT PRACTICES AROUND TLW

5.1 CRD Enforcement Activities and Services Plan

The CRD is responsible for enforcement of the Sewer Use Bylaw #2922, Septage Bylaw #2827, and the Hartland Landfill Tipping Fees Bylaw. A Regional Source Control Program (RSCP) has been implemented by the CRD under the leadership of the designated Sewage Control Manager. The RSCP program has a staff of nine who are responsible for managing the program including identifying and controlling the sources of waste entering the sanitary sewer system. Supportive activities include: issuance of waste discharge permits and authorizations; development of Codes of Practice (COP); COP inspections; and increased education and awareness programs.

According to the 2001 and 2002 Annual Reports on the RSCP, there are more than 2,500 businesses operating in the CRD which are regulated under the SUB . The RSCP also gains information on businesses through the business license issuing process of municipalities.

Discussion with CRD personnel reveals that the enforcement activities of the bylaws are triggered by unadvertised but scheduled visits to generating operations and facilities. The generators that adopt the COPs are supposed to keep records of the types and quantity of wastes produced, stored, and disposed. COP inspections are targeted for 20% of each sector per year plus any necessary follow up to deal with non compliance situations.

Enforcement inspectors evaluate the records at the site and inspect the treatment works and monitoring installations of facilities where such terms and conditions apply. Enforcement actions for non-compliance usually include letters and may elevate to tickets and other penalties.

Inspections by RSCP staff verify the extent of TLW discharges to sanitary sewer and provide valuable insight into the discharge of TLW to storm sewers and the main types of wastes that are that may be illegally discharged. However, within the existing RSCP and resources it is not always possible to identify and stop illicit dischargers nor to assure that all wastes shipped off site are properly disposed.

To assist generators in complying with regulatory requirements to reduce the permit requirements and improve waste discharge quality, the CRD has been implementing Codes of Practices (COP) for nine types of discharge operations, namely:

- Food Services;
- Dry Cleaning;
- Photographic Imaging;
- Dental;
- Automotive Repair;
- Vehicle Wash
- Carpet cleaning;
- Fermentation; and,
- Printing.

5.2 GVRD's Sewer Use Bylaws Compared to the CRD's Sewer Use Bylaw

GVRD's Sewer Use Bylaw is a similar piece of regulation to the CRD's Sewer Use Bylaw and also aims to control the direct or indirect discharge of waste into sewers and drains. However, between these two bylaws, there are some differences in definition of the different waste terms particularly "non-domestic waste" and "trucked waste". GVRD's Bylaw defines "non-domestic" wastes as including any waste except domestic waste, sanitary waste, trucked waste, stormwater, and cooling water; whereas, the CRD's Bylaw defines non-domestic waste as not including domestic waste, sanitary waste, stormwater and uncontaminated water.

Section 2.4 of the GVRD's Bylaw specifies that no person shall discharge or allow or cause to be discharged into a storm sewer any substance except stormwater, cooling water or uncontaminated water. There is no such clause in the CRD's Bylaw to control discharges into storm sewer. However, CRD has developed a Model Storm Sewer Bylaw for voluntary adoption by the member municipalities for discharging into the municipal drainage system only.

Section 7.8 of the GVRD's Bylaw requires that the discharger of non-domestic waste into the sewer or sewage facility keep the records and provide information in the form and manner required by the Manager with respect to the waste discharged, handled, stored, treated or transported.

5.3 Enforcement Activities of the BC Ministry of Water, Land and Air Protection

The BC Ministry of Water, Land, and Air protection (BCMWLAP), under the Act of Waste Management Act, 1996, is responsible for the overall waste management of the Province and enforcement of the Act. However, the Ministry discharges its responsibilities through delegating some of the waste management authority to the regional districts, municipalities, and territories. Trucked liquid waste (TLW) management is a concern with the Ministry through its goal to ensure safe and clean water to the Province. In this regard, the Ministry sets both ambient and source (discharges and emissions) standards and monitors the achievements of standards.

During the year 2000-2001, the Ministry administered 3,132 permits under the WMA to B.C. industries for discharges to the environment. Out of these 3,132 permits, 1,453 permits (46%) were for liquid waste discharges and 247 permits for *Special Waste* discharge. To reduce the number of the permits and change the prescriptive role of the Ministry into a more supportive role, the Waste Management Act has now been under review with the goal of updating and simplifying the implementation of the Act. One of the goals is to reduce the number of active permits by promoting self regulation using codes of practice in place of permits.

With regard to TLW, the BCMWLAP is responsible for enforcing several regulations, including the: Waste Management Act; Special Waste Regulation; Municipal Sewage Regulation; Return of Used Lubricant Oil Regulation; Post-consumer Paint Stewardship Program Regulation; Residual Product Stewardship Regulation; Transport of Dangerous Goods Act; and Spill Reporting Regulations. Given the large number of businesses and institutions that are potential trucked liquid waste generators, it is burdensome to carryout the enforcement actions with limited staff available in the Ministry, as revealed from the discussion with the BCMWLAP personnel.

During discussions with several TLW transporters and private facility operators regarding the inspections of the vehicles and facility, it was found that on an average one (1) inspection per year was conducted. Discussion with the enforcement officials of the BCMWLAP indicates that emphasis is given for the enforcement of the relatively large industrial dischargers. For the Ministry, enforcement is also carried out by the peace officers (including local police), weigh scale operators, and Transport Canada Inspectors.

6.0 SUMMARY CONCLUSION AND RECOMMENDATIONS

6.1 Summary

This study used:

- a detailed review of the current regulations and enforcement practices
- conversations with:
 - CRD Pollution Control and Hartland Landfill staff
 - Staff from BC MWLAP and the municipalities
 - Liquid waste transporters;
 - Equipment suppliers;
 - Waste generators; and
- The previous experience of the study team in dealing with TLW management issues at a variety of sites within BC to identify and investigate the environmental acts and regulations related to the management of trucked liquid wastes.

The initial purpose of the project was to investigate if regulatory changes (or additions) were warranted to improve the management (i.e. minimize the environmental risks) of trucked liquid wastes, however as the work progressed the scope was expanded to include investigation into other non-regulatory approaches such as training, communication and guideline development strategies that could also lead to improved TLW information collection and waste management

The study generally confirmed the original perceived issues that:

- There is only limited knowledge of the volumes and final disposition of TLW
- That many of the TLW generators, especially the smaller volume generators, are not sufficiently knowledgeable on:
 - the requirements of the regulations
 - characteristics of their waste and the associated regulatory requirements
 - appropriate methods and techniques on waste collection, storage, transport, treatment, and disposal of TLW;
- There is confusion about the areas of responsibilities and boundaries of actions among generators, waste haulers, and regulators;
- There are gaps in legislation and/or regulation; and
- There is a lack of co-ordinated enforcement to identify and correct inappropriate waste disposal.

There are over twenty (20) acts and regulations relating to the TLW waste handling process, ranging from the Bylaws of the CRD and its member municipalities through to Provincial and Federal acts and regulations. Some aspects of TLW handling are covered by more than one regulation, such as, inspection of TLW discharges into sanitary sewer or to the environment may fall under the purview of WMA, SWR, and Fisheries Act. As a result, there is a possibility of duplication in enforcement by different authorities, or confusion about who is actually responsible for enforcing the regulation(s) which could result in a lack of enforcement.

However, there may be an opportunity to simplify its regulation (management) by intergovernmental co-operation.

The current focus of the legislation from senior governments is principally on Special or Hazardous Waste Management and the final release of contaminants into the environment rather than onsite management, minimization, or recycle.

Because many of these regulations are based on relatively complex definitions (at least to the non technical person) of waste types and characteristics, it is difficult and potentially costly for the small and intermediate sized generators to properly characterize their wastes to ensure appropriate management.

Generators may also not understand the liability they may face for illegal discharges. Since there is little regulation to manage transportation of non-special(non-hazardous) TLW some generators pay little attention to liability after their waste is on the truck, believing that once they have paid a waste transporter/treater they no longer have any liability for their waste.

Lack of documentation disposal makes it difficult for regulatory agencies to determine whether an illegal discharge occurred either at the site of the waste generation or by a service provider such as a transporter or waste disposer.

Regulation and enforcement is spread across many regulatory agencies including: the municipalities - the CRD; Provincial - Ministry of Transportation, and BC Ministry of Water Land and Air Protection (BCMWLAP); and Federal – Environment Canada, Fisheries and Oceans Canada, and Transport Canada.

Provincial enforcement activities are currently focused on the major (permitted) generators, gross violations of regulatory requirements, such as, major spills or releases and the historical contamination resulting from past releases. Federal activities in B.C. focus on fish habitat with an increasing role in gathering data on industrial emissions (e.g., National Pollutant Release Inventory [NPRI]) and toxic chemical manufacture, generation, import, or release. There are almost no enforcement actions for non-hazardous waste transport and it appears limited enforcement (inspection) of hazardous waste transport beyond manifesting. Due to the the emphasis on the major sources and the other limitations discussed above, the extent of illegal discharges cannot currently be easily assessed as the senior government resources have not focussed on this area of waste management.

Most of the enforcement activities relating to non-hazardous wastes (non-manifested) generation and transport for this area are initiated and completed by the CRD, primarily through the new Trucked Liquid waste program, the regional source control programs (RSCP) for controlling discharges to the sanitary sewer system and to some extent through the stormwater quality program.

6.2 Conclusions

The study identifies specific weaknesses in the current regulatory structure with respect to TLW, and makes recommendations that should lead to improved TLW management and environmental protection.

Specific weaknesses were identified in the following areas:

6.2.1 Regulation:

- Reg1. The key regulations apply to disposal and rely on waste characteristics to define the appropriate disposal making the regulations difficult to interpret and follow for many generators.
- Reg2. There are no requirements for manifesting or tracking TLW making it difficult for regulators and others to determine whether a waste was properly disposed and whether generators may face liability for inappropriate disposal.
- Reg3. Programs for sanitary and storm sewer source control can effectively regulate discharges to those systems but authority to determine what happens to waste diverted from those systems is beyond the current scope for those programs.

6.2.2 Enforcement

- Enf1. Due to uncertainties around the scope of the problem that may occur as a result of inappropriate TLW disposal, senior governments have focussed efforts on other priorities that they evaluate as higher risk.
- Enf2. Many municipal storm sewer programs are in an early stage of implementation which means diversion of potentially illegal discharges from the storm sewer as TLW has yet to occur.
- Enf3. Information on potential TLW generators and inappropriate disposal of TLW may be available from sources such as municipal business licence applications and source control inspections, there is currently no program to collect or use or confirm the accuracy of this information.

6.3 Recommendations

The recommendations outlined below are based on a phased approach starting with increased education and communication with the TLW managers (generators, transporters, treaters and disposers) and then moving to a second phase that would depend on the outcomes and success of the first phase. This second phase would include the evaluation and implementations of changes to regulation and enforcement practices.

6.3.1 Phase One: Education and Training

This includes:

1. building on the findings of study along with existing inspection and enforcement programs, identify the training and educational needs for the sector;
2. develop the required programs necessary provide guidance in the regulatory requirements, liability, and proper disposal of waste;
3. encouraging internal or third party audits or assessments of of the TWL players to identify waste issues and develop the required management actions;
4. working with service providers to estimate volumes of wastes that are being properly dealt with and the trends, positive or negative
5. working with RSCP and municipal staff to identify specific issues and working on solutions for those wastes;
6. using existing regulatory program findings to identify issues and quantify the extent of non compliance with existing regulation
7. encouraging stakeholders, and other affected groups to identify and report potential illegal management activities or discharges, for example as required by the Spill Reporting Regulation
8. working with municipalities to adopt and implement the model storm sewer bylaw;
9. working with generators to assist them with record keeping as a due diligence measure to reduce liability;
10. working with government agencies to discuss needs for additional resources as issues are identified;

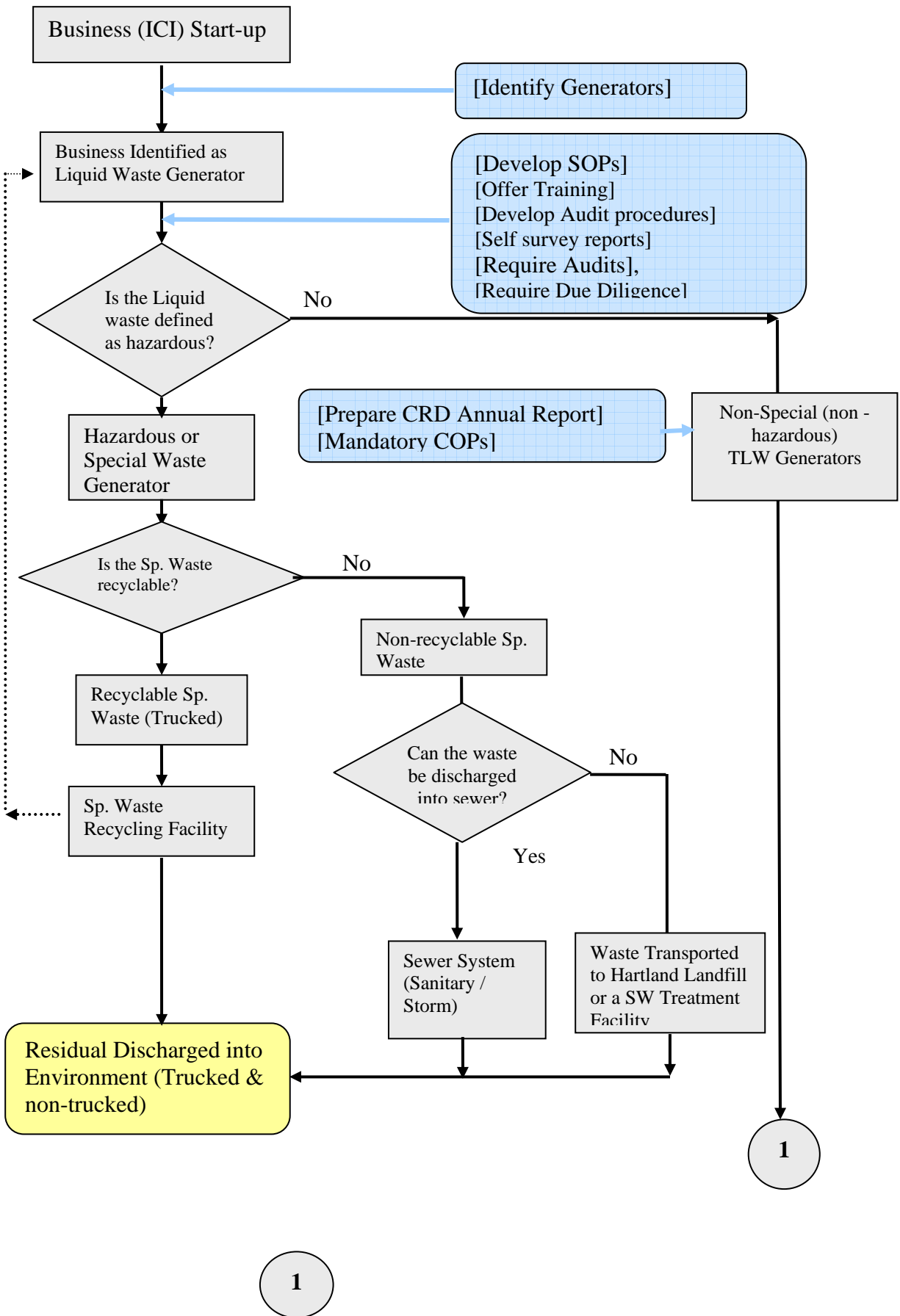
As all TLW is eventually funnelled through the truckers or transporters and as the number of transporters is less than the number of generators, focusing training, regulatory (e.g., licensing) inspection and enforcement efforts on this sector may be the most cost-effective approach to improving TLW management.

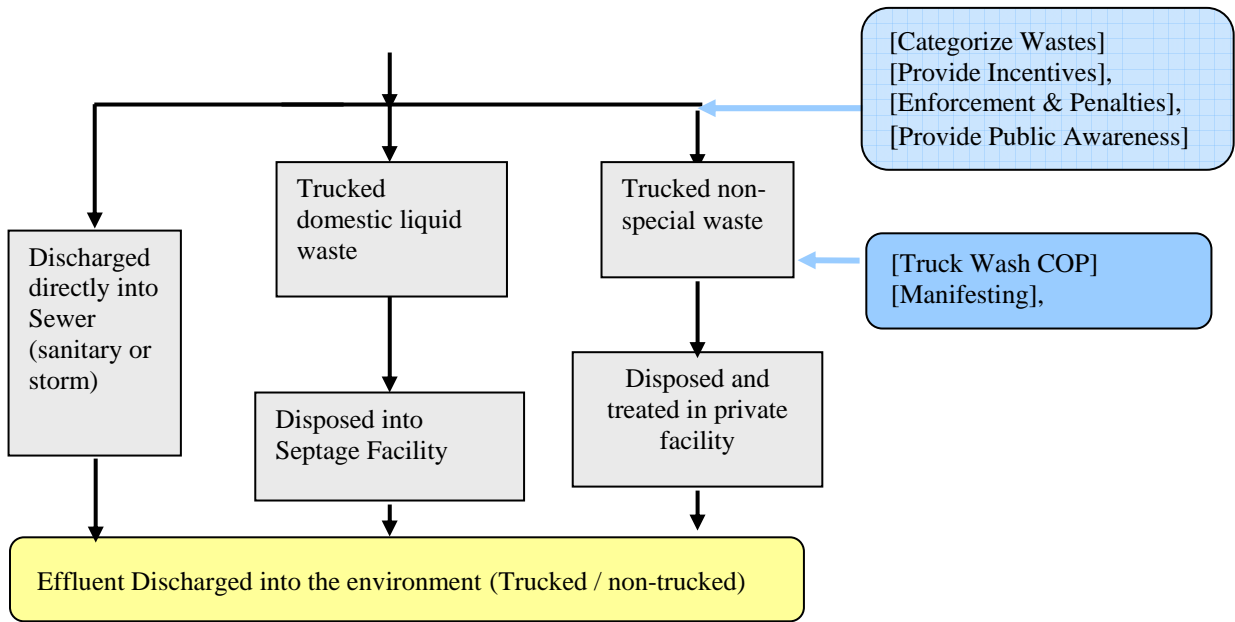
6.3.2 Phase Two: Regulatory Initiatives

Following the Phase one steps, if the illegal discharge or environmental risks of TLW is found to be a significant issue for the CRD then regulatory initiatives or modifications should be considered such as;

11. Ensure that all potential TLW generators are identified and followed up with in the municipal licensing process
12. developing operational criteria or codes of practices (possibly in partnership with BCMWLAP) for key industrial sectors or areas such as for the truck washing or waste storage;
13. develop new regulations or amendments to existing regulations, such as, the CRD Sewer Use By-law (SUB) so that the whole process of TLW handling could be brought within the administrative and legal capacity of the CRD. Authority to do such amendments may be through delegation of authority or responsibility from the BCMWLAP and the WMA;
14. Work with the other provincial and federal agencies to minimize duplication of effort and develop a coordinated “single window” approach to inspection and enforcement.

Figure 15: Liquid Waste Management Life Cycle Activities Linked to the Recommendations Included in the Report





- Legend:**
- Activity Existing Regulations that could be applied:
 - [Text] Recommended new or amended regulation, training, reporting or support
 - Final release or discharge to environment

APPENDIX I

Sample TLW Questionnaire

(The attached blank sample questionnaire is for a Waste Generator.)

Similar questionnaires were also prepared for the CRD and BC MWLAP Inspectors/Regulators and for the Waste transporters. These questionnaires were used to conduct an informal telephone poll.

SAMPLE SURVEY FOR TRUCKED LIQUID WASTE(TLW) GENERATORS

Background

Envirochem Services Inc. has been retained by the CRD to review of the regulations and enforcement surrounding the generation and management of non-domestic (industrial or commercial) trucked liquid wastes (TLW). To do this we are investigating how the potential generators, transporters and treatment facilities are identified, regulated, and inspected.

To assist us gather this information we have prepared the following questionnaire. Your help in completing it is greatly appreciated.

For information on this contract or project please feel free to contact Mr. Chris Robins at the CRD at 250 360 3219.

Please return the filled in questionnaire to Envirochem Services Inc, 310 east Esplanade, North Vancouver, BC, V7L 1A4. Tel: 604 986 0233, (1 800 321 3311 Toll free) Fax: 604 986 8583 and email: response@envirochem.com.

1. Information about the Business

- a. Name of Business:
- b. Types of Business:
- c. Address of Business:
- d. Phone number of Business:
- e. Name of contact at Business:

2. What kind of permit / authorization / order you have to handle liquid wastes? (Check all that apply)

- Does not require any permit / authorization/ order
- Permit/ authorization / order from Municipality
- Permit/ authorization / order from **CRD**
- Permit/ authorization / order from Ministry of Water, Land, and Air protection(**MWLAP**)
- Permit/ authorization / order from Environment Canada
- Others (Please specify)

3. What Type of Wastes are Generated by your Business/Industry? (Please Check)

- Domestic septage
- Waste oil
- Oil and grease
- Contaminated soil
- Special waste
- Controlled waste
- Restricted waste
- Others (Please specify).

3. Waste Characteristics and Amount Generated

- a. Have you classified the waste generated from your business?
- b. If yes, please list a recent monitoring result / waste composition as manifested
- c. Please mention the approximate amount of liquid waste generated per month? (in liters)

4. Waste Storing and Disposal Information

- a. Do you have permit to discharge waste into sewer line?
- b. Do you follow any Codes of Practice (COP) for your business operation?
- c. If yes, do you have facility to monitor the discharge points
- d. If answer to 4a is No, how do you dispose the liquid waste.

5. Waste Records and Reports

- a. Do you maintain any record on amount and types liquid waste produced? If yes, how often you submit the waste discharge report to the City/ CRD?
- b. Do you have any approved spill response plan?
- c. Have you been asked by the CRD Sewage Manager to prepare Contingency Plan for the wastes handled by you?
- d. Do you need to submit any record on waste disposal to the Municipality / CRD / MWLAP?

6. Information Regarding Non-compliance and Inspections

- a. How often your business operation is being inspected and by whom?
- Municipal Inspector; Number of Inspections/year:.....
 - CRD Inspector; Number of Inspections/year:
 - Ministry (MWLAP) Official; Number of Inspections/year:.....
 - Environment Canada Inspector.....; Number of Inspections/year:.....
 - No inspection at all
- b. Have you ever failed to comply with the terms and conditions of the permit /authorization /orders issued to you regarding liquid waste handling? If yes, how many time during the last one year?
- c. What are areas of the terms and conditions, you find difficult to comply with? Please list on priority basis.

7. Information on the Act/ Regulations/ Bylaws

- a. Please mention the name of the Acts, Regulations, By-laws, and guidelines applicable to your business.
- b. Do you have any specific comments for improvements of the related Acts/Regulations/ By-laws/Guidelines? Please specify.

Thanks for Your Cooperation

[Note: All the information to be provided to this questionnaire would remain strictly confidential]

APPENDIX II
Detailed Review of the Regulations
Relating to Trucked Liquid Waste

DETAILED REVIEW OF THE REGULATIONS RELATED TO (TRUCKED LIQUID WASTE

A.1 CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)

The Canadian Environmental Protection Act (CEPA) 1999 is federal legislation that addresses the overall environmental protection of Canada. This Act exercises its power in co-operation with provincial, municipal and other governments to protect, enhance, and restore the environment.

Section 44 allows the Minister (Federal Minister) to work in co-operation of the governments (including provincial) in conducting research on the environment, develop a system of *monitoring on environmental quality, and publish research results for the public.*

Section 46 authorizes the Minister, for creating inventory of data on environmental quality, *formulating objectives, guidelines, codes of practices*, issuing guidelines or assessing or reporting on the state of the environment, to notify the *persons in possession of listed substances for submitting the information on the substance listed in the schedule.*

Section 48 authorizes the Minister to establish a *national inventory of releases of pollutants* using the information collected in this regard and any other information to which the Minister has access, and may use any information to which the Minister has access to establish any other inventory of information.

Section 55 authorizes the Minister to *formulate*, in consultation with the province and other government agencies and committees, *objectives, guidelines, and code of practices related to the environment and pollution prevention or the recycling, reusing, treating, storing or disposing of substances or reducing the release of substances into the environment;*

Section 56 authorizes the Minister to *order notice to any person or group of persons to prepare pollution prevention plan in respect of toxic substances.*

Pollution prevention plan has to be made according to the *model plan mentioned in the Section 61*. In carrying out the duties under Section 61, the Minister shall offer to consult with the government of a province and the members of the Committee who are representatives of aboriginal governments and may consult with a government department or agency, aboriginal people, representatives of industry and labour and municipal authorities or with persons interested in the quality of the environment.

Section 63(2) provides the system to *publicly recognise the achievers in the area of pollution prevention.*

Sections 65 to 69 of the CEPA deals with the *control of toxic substances*. These sections provides authority to the Minister to consult with the provinces, other governmental agencies, and industry in order to *conduct research on the toxic substances and its impacts on the environment and also to make inventory of the toxic substances including the list of non-domestic substances (Section 66(2)).*

Section 95 requires that in the *case of release of toxic substance to the environment, person (s) concerned, property owner or employee shall notify or provide written report to the enforcement officer, take reasonable actions to reduce or mitigate the pollution impact, and notify the public who may be affected by the release.*

Section 99 allows the Minister, in respect of a substance or a product containing a substance in contravention of toxic release, *to direct any manufacturer, processor, importer, retailer or distributor of the substance to notify the public about the release and also direct them to replace the substance or accept the refund of the substance or take any other measures to protect the environment.*

Section 121 authorizes the Minister, after consulting with the province, governments, member of the committee, and related international agencies, *to release guidelines and codes of practice to prevent and reduce marine pollution from land-based sources.*

Section 195 authorizes the Minister to examine and *conduct research, including tests, respecting the causes, circumstances and effects of and remedial measures for an environmental emergency; and publicise demonstration project.*

Sections 196 and 197 states that the Minister, after consulting with the provinces, governments, agencies, industry, municipal authorities, labour, and persons interested, shall issue *and publish the guidelines, and codes of practice in respecting the prevention of, preparedness for and response to an environmental emergency and for restoring any part of the environment damaged by or during an emergency.*

Section 199 authorizes the Minister to publish a notice, through appropriate media, that requires to the *preparation and implementation of emergency response plans* within specific time frame respecting the prevention, preparedness for, response to, or recovery from, an environmental emergency in respect of toxic substance (listed in the schedule) or other substance mentioned in the notice.

Section 200 authorizes the Governor in Council, on the recommendation of the Minister and after the Committee is given an opportunity to provide its advice to the Minister under Section 6, *make regulations establishing a list of substances that, if they enter the environment as a result of an environmental emergency:*

- i. have or may have an immediate or long-term harmful effect on the environment or its biological diversity;
- ii. constitute or may constitute a danger to the environment on which human life depends; or,
- iii. constitute, or may constitute a danger in Canada to human life or health.

Section 201 requires a person, in the case of environmental emergency respecting of listed substances, to *provide both verbal and written reports on the environmental emergency* to the enforcement officer or other person designated pursuant to the regulations. The person notifying the enforcement officer also has to *take all reasonable emergency measures consistent with the protection of the environment and public safety to prevent the environmental emergency, or to repair, reduce or mitigate any negative effects on the environment or human life or health that*

result from the environmental emergency or that may reasonably be expected to result from it; and (c) make a reasonable effort to notify any member of the public who may be adversely affected by the environmental emergency.

In the case of failure to report by the person(s) concerned, Section 201(4) authorizes the enforcement office to take *remedial measure* either by him-self or caused others to do the same. Section 202 states about the *system of reporting by a volunteer* and his *privileges* in the reporting.

Section 204 authorizes the Minister, in consultation with provinces, aboriginal governments, departmental agencies, to establish a *national system for the notification and reporting of environmental emergencies*.

Section 205 states about the liabilities of the person who owns or has the charge, management or control of a substance immediately before an environmental emergency.

A.2 FISHERIES ACT (FA)

Section 35 of the *Fisheries Act* prohibits works or undertakings that may result in the *harmful alteration, disruption or destruction of fish habitat, unless authorised by the Minister or by regulation*. Section 36 prohibits the *deposit of deleterious substances into waters frequented by fish*, unless authorised by regulation.

Section 40 provisioned *an indictable offence and penalty of up to \$1 million and or imprisonment* for the violator of the Section 35 and Section 36.

Section 38 authorizes the Minister or the designated officer *to inspect any work or undertaking resulting or likely to result in the deposit of a deleterious substance in water frequented by fish*. Officer may ask the person authorised to conduct sampling, analysis, and monitoring and submit the record to the officer.

Section 40(4) requires the person to *report to the Inspector in the case of discharge* of any deleterious substance in the fish habitat.

A.3 TRANSPORTATION OF DANGEROUS GOODS

There are two regulations namely federal "*Transportation of Dangerous Goods Act*" (TDG) and provincial "*Transport of Dangerous Goods Act*" (BCTDGA) to control the pollution from dangerous goods during transportation. Both regulations contain similar provisions for controlling transportation of dangerous goods except for their jurisdictions and amount of penalties. The Federal TDG is enforced by Transport Canada while the Provincial BCTDGA is enforced by the provincial department of Transportation. Trucked liquid waste may contain dangerous goods (e.g., poisonous or corrosive substances) and therefore may fall under the provisions of these regulations during transport, shipping and receiving.

A.3.1 Federal Transportation of Dangerous Goods Act (TDG)

Section 4 authorizes the Minister to enter into agreement with the provincial government for administration of the Act and may *conduct technical research and investigation* for the development of *safety marks, standards and regulation* in co-operation with any government or agency and advisory council (Section 25 and 26).

The Act contains provisions regarding the *safety requirements, standards and marks, emergency response plan, administrative officials* (Inspectors) and duties of the Inspectors *for monitoring compliance*. The provisions spelled out the *financial responsibility* of the transporters (s14) requirements for *containment of the transported goods* (s8), duties to *respond to accidental release* and reasonable *emergency measures* to be taken (s18).

There is a provision for the Minister to conduct *inquiries of any accidental release* of the dangerous goods and publishing the inquiry finding (s21).

Section 33 to 40 specifies the provisions for offences and punishments due to the acts in contravention of the provisions of the Act, court orders to the convicted person, agent, or corporation, and the provision of due diligence.

A.3.2 BC Transport of Dangerous Goods Act (BCTDGA)

Section 5 requires that a *person must not handle or transport dangerous goods without complying with all applicable safety requirements, safety standards and marks*.

Section 8 authorizes the designated inspector to conduct inspection of the dangerous goods being handled or transported, *carry out sampling of goods for analysis, and examine records /documents to ensure the compliance* of the provisions of the Act.

In the case of a discharge, emission or *escape of dangerous goods from container* during handling or transportation, Section 9 empowers the designated Inspector to detain the goods from the container or remove the same at an appropriate place.

Section 16 specify the provisions of penalties for the act in contravention to the provisions of the Act for *failing to comply with safety requirements, failing to assist the Inspector during the inspection, and failing to report any discharge*. Penalty ranges from \$50,000 to \$100,000 per offence or term of imprisonment or both.

Section 21(1) requires the person in charge, management or control of dangerous goods *report to the authority of any discharge, emission or escape of the goods* and Section 21(2) requires that the person reporting also take *emergency measures consistent with public safety to repair, or remedy a dangerous condition or to reduce or mitigate danger to life, health and property*.

Section 21(3) and (4) authorizes the Inspector may take emergency measure or request a qualified person to take emergency measures and authorizes them access to the site and take all reasonable measures.

Section 23 allows the municipality to *make Bylaws* with respect to highways under its direction, control and management and the transportation of dangerous goods on the highways. Whereas, Section 24 allows the Provincial Minister to enter into agreement with the Government of Canada with respect to *administration and enforcement of the Acts* (both Federal and Provincial).

A.4 WASTE MANAGEMENT ACT (WMA)

The *Waste Management Act* is the main statute for the regulation of pollution and wastes in BC, and Environmental Protection Division of the BC Ministry of Water, Land, and Air Protection (BCMWLAP) is responsible for overall waste management and enforcement of the Act.

Section 3 and its sub-sections define the *strict liability of a person operating the business, industry or trade for the collection, treatment, handling, transportation, discharge, destruction or other disposal of waste*. Section 3(2) to 3(5) requires that a person, in the course of conducting business activities (s3) or any prescribed activities, *must not introduce waste (effluent, special waste etc) into the environment unless there is valid and subsisting permit, approval, order or regulations or approved waste management plan*.

Section 4 specifies the requirements for the *confinement of special waste in accordance with the regulations, permits, approval, order, or approved waste management plan*.

Section 5 specifies the *requirements for the operation of the special waste disposal facility*.

Section 8 and 9 specifies the *requirements for the storage, disposal and transportation of special wastes* in respecting of amount of waste, manifest, and licence.

Section 10, 11 and 13 authorizes the Manager to issue permit or amendment of the *permit with respect to storing, treatment, and disposal* into the environment specifying the *quantity and characteristics of the special waste* and other terms and conditions relating to construction or alteration of works, monitoring the methods of handling, procedures and manners of handling of wastes, recycling and recovery of certain wastes, etc.

Section 12 and 12.1 are concerned with the *spill prevention, reporting and spill response actions*. These sections authorizes the regional waste manager (Manager) to order the person in possession of “polluting substances” (waste if spilled may substantially impair the usefulness of land, water or air) to *prepare and implement the contingency plan*, construct or alter the works, and undertake investigation, test, survey to measures the magnitude of the risks involved with the waste. Depending on the perceived hazards or threat of a spill to the environment, Section 12.1 *authorizes the government to access and carry out spill response actions to assess, monitor, prevent, stabilise, contain, remove, clean up, and evacuate affected persons*. It also authorizes the Manager to identify the person(s) in possession of the spilled substances and specify the cost of the spill response actions to be paid by them.

Section 22(2) and 22(3) authorizes the Manager to *prohibit or regulate the discharge of non-domestic waste into a sewage facility and specify the conditions for such discharge*.

Section 23(1) *authorizes the regional district including CRD to make bylaws respecting the direct or indirect discharges of wastes into any sewer (sewage, storm, or combines sewer) or drain connected to a sewer facility.* Section 23(3) requires that the *bylaws made under s23(1) have provision of keeping records and the information respective of non-domestic waste produced, and imposes conditions respecting the discharge into sewers of that waste, and specify the classes or persons to whom the conditions apply.*

Section 54 *specifies the offences and the provision of penalties for violating the Act and the regulations under the Act.*

A.4.1 BC Special Waste Regulations (SWR)

The SWR, defines "Special Waste" as dangerous goods that are no longer used for their original purpose (i.e. wastes or residuals) that require special care in their handling, storage, transport, or disposal to prevent environmental impacts. In B.C., Special Wastes include:

- PCB wastes;
- wastes containing dioxin;
- waste oil;
- waste asbestos;
- leachable toxic waste (usually containing dissolved metals);
- waste containing tetrachloroethylene (TCE) (e.g. dry cleaning fluid);
- waste containing polycyclic aromatic hydrocarbon (PAH);
- wastes containing pest control products; and,
- Special Wastes may exhibit the hazardous properties (like toxicity, reactivity, corrosivity, flammability, etc.).

TWL like solvent residuals from the Dry Cleaning Services may contain TCE- a special waste. Waste oils from auto repair operations are special wastes under the SWR. However, depending on the amount of wastes handled, frequency and duration of storage, transportation, and treatment operation, special waste handlers are required to comply with the requirements of the different sections of the regulation. Some of the pertinent sections of the SWR that may be related to TLW are discussed below:

Section 5(1) requires that the Special Waste facility owner before accepting the waste *identify all hazards associated through waste characterisation, scientific review, consultation with the generators, manufacturer etc.* Section 5(2), and 5(3) require the *facility operator to check that waste disposal carry manifest, and the manifest matches with the waste description,* and whether the disposable quantity exceeds by 100 kg or 100 L of the manifested quantity. In the case of variation by $\pm 5\%$ from the manifested quantity, Section 5(4) requires that the facility operator immediately notify the Manager or director to seek authorisation or instructions regarding acceptance of the special waste.

Proper implementation of the Section 5 (manifesting) is designed to track the waste from generation to final disposal and help to identify and minimize the spillage of wastes during transportation or illegal dumping of wastes. It also provides waste reports to the Ministry for tracking the system losses of the special wastes.

Section 6 requires that the *facility owner maintain the operating records*, for inspection by the Inspector, of the waste handled for two years after the waste is removed from the facility. The records shall include for each Special Waste:

- (a) the description including the name, identification number as described in the Federal Regulations, and the physical state;
- (b) the quantity in kilograms or litres;
- (c) the method and date of storing, re-packing, treating or disposing at the facility, cross-referenced to specific manifest document numbers applicable to the special waste; and,
- (d) the location of each special waste within the facility and the quantity at each location.

Section 10 requires that the facility operator *provides and maintains spill protection* system and keep records on spill incidents for inspection.

Section 11 requires that facility operator *prepare and maintain a contingency plan* as approved by the Manager for emergency responses.

Section 12 requires that *emergency systems are tested at least once in a year* to ensure that protective measure, procedure, equipment and clothing are capable of proper operation during the emergency.

Section 13 requires that the *facility owner provide training to its employees*, which includes the instruction on duties and responsibilities, fire and personnel protective equipment, spill response procedure, use of abatement and clean up, shut down operations and hazards of all Special Waste handled in the facility.

Section 17 requires that the owner of the short-term storage facility *ensure that the effluent discharges into the sewer meets the effluent criteria* (schedule 1.2) of the regulation.

Section 17(1) defines the *procedures for storing PCBs* and requires that short term waste facility storing PCB maintains an up-to-date inventory and site map indicating where the PCBs are stored and also maintain a fire safety plan approved by the fire commissioner.

Section 19 requires that the owner of a treatment facility shall ensure that any *discharge of liquid effluent to the environment, to storm sewers or to a municipal or industrial effluent treatment works which results from the operation of the treatment facility meets the effluent criteria* prescribed in the regulation (schedule 1.2).

Section 30(5) requires that the owner of a *waste pile including liquid containers shall ensure that any discharge of liquid effluent to the environment, to storm sewers or to a municipal or industrial effluent treatment works which results from the waste pile meets the effluent criteria* prescribed in the regulation (Schedule 1.2).

Section 37 *does not allow storing, treating or disposing Special Waste by injection into the ground.*

Section 39 *prohibits disposal of any Special Waste into any system of waste disposal operated by a municipality or other public authority unless the deposition or discharge is expressly authorised by a permit, approval, order, regulation.*

Sections 40 to 42 outlines the *requirements of handling some specific Special Wastes, including waste oil, waste paint, waste asbestos, and household hazardous waste.* Section 42.1 requires the waste paint recyclers to keep records of waste paint recycled and submit the report to the director annually.

Section 43 *requires the registration of Special Waste* depending on the volume of *Special Waste* generated or stored set out in Column II of Table 1 of Schedule 6 of the regulation. BCMWLAP issues a unique BC generator number (called BCG) to the registrant.

Section 42.4 requires the *collection facility keep records of wastes* in terms of waste description, types, and quantity for 2 years and for inspection.

Section 45 states the *requirements of transport license* for transporting Special Waste, while Section 46 and its sub-sections *outline the manifest requirements for transporting Special Wastes.*

Sections 50(2), 50(4), and 50(5) *states the conditions of the containers, waste types and compatibility of wastes, and cleaning requirement, while storing and transporting Special Waste.*

A.4.2 Return of Used Lubricating Oil Regulation (RULOR)

Trucked liquid waste (TLW) may include used lubricating oil. Return of used lubricating oil is regulated by Return of Used Lubricating Oil Regulation under the WMA deals with the return of used lubrication oil (means lubricating oil which through use, storage or handling has become unsuitable for its original purpose but is suitable for re-refining or other permitted uses.) and operated by the sellers of lubricating oils. BCMWLAP is responsible for enforcing the regulation.

Section 3 provisioned the requirements of return facility and ensures the *availability of return facility* to accept used oil free of cost up to certain quantity.

Section 4 and 5 requires the return facility operators maintain *specific signs and oil recycling logo* for *display* and educational program for the consumers. Non-compliance to the requirements of Sections 3, 4 and 5 are subject to *penalty of max. \$ 5,000* as specified in Section 6.

A.4.3 Post-Consumer Paint Stewardship Program Regulation (PCPSPR)

Section 3 and 4 ensures that all paint brand owners must operate a BCMWLAP approved stewardship program and must *treat, contain, recover energy from, recycle or reuse* all post-consumer paint within six months after collecting or receiving the post-consumer paint at the return collection facility.

Section 5 requires that every brand-owner must provide to the director a quarterly, as well as, an *annual report* detailing the effectiveness of the brand-owner's stewardship program including amount of consumer paints sold and post-consumed paint collected, stored, processed, recycled, reused or energy recovered, location of the return facilities, and description of the consumer information and educational program, etc.

Section 6 provisioned the requirement to *provide educational and consumer information* to the consumers free of cost respecting of return facilities, economic and environmental benefits, etc. Section 8 states the requirements to be followed by the brand-owner or the sellers for the stewardship program.

Section 10 provisioned the *monetary penalty of max 200,000 and or stop selling right* of consumer paints for the acts in contravention of the provisions of the regulation.

A.4.4 Post-Consumer Residual Stewardship Program Regulation (PCRSR)

Section 5 requires that a brand-owner of a product must have *an approved residual stewardship program* in force before starting the business operation. The stewardship program must include consumer awareness plan for proper use, and storage of the product, collection of residuals, management of the collected residuals, expected quantity of product to be sold and residuals to be collected, location of the return facility, and reporting procedures to the Director, etc.

Section 9 requires that the brand-owners must provide to each seller of the brand-owner's product, free of charge, *consumer information respecting safe use and storage of the products, safe storage and handling of the residuals and containers, and location of and access to collection facilities.*

Section 13 require that the brand-owners must submit *annual report* to the Director with respect to the residual product stewardship detailing the amount of residuals collected, stored, processed, recycled or reused, disposed., and educational programs implemented.

Section 14 provisioned the *penalty of max 200,000 or 6 months imprisonment or both* for the acts in contravention of the provisions of the regulation.

A.4.5 Spill Reporting Regulation (SRR)

Section 2 states the *procedure of spill reporting* and the *contents of the reporting* that include the reporting persons name and contact address, location of spill, quantity, types of spilled products, probable cause and effects of the spill, and remediation measures taken.

Section 3 requires that, where a spill occurs, the person who immediately before the spill had possession, charge or control of the spilled substance shall take all reasonable and practical action, having due regard for the *safety of the public and of himself or herself*, to stop, contain and minimize the effects of the spill.

A.4.6 Contaminated Site Regulation (CSR)

The BC Contaminated Site Regulation is applicable in the event of contamination of the site either due to spillage, consistent leakage of the waste from the waste containers or contamination of the land from dumping of the waste by the TLW generators or haulers. Gasoline services stations, dry cleaners, food processing plants and other industrial operations with underground or above ground storage facilities may contribute to contamination of the site. BCMWLAP is responsible for enforcement of the regulation.

A.4.7 Municipal Sewer Regulation (MSR)

Municipal Sewer Regulation has been adopted under the authority of Sections 57(1) and (3) of the Waste Management Act (WMA) to regulate the effluent discharges from the sewage facility into the environment.

Section 11 requires that the facility operator must not *introduce the effluent from the facility into water* unless he meets the effluent criteria mentioned in schedule 3 to 5 of the regulation or ensure, through environmental impact study, that the discharge will not degrade the receiving water quality or discharges are prohibited to a particular area (as scheduled).

Section 12 requires that the facility operator must not *discharge the effluent into the ground* unless he or she meets the criteria of schedule 4 or 5 or conduct environmental impact assessment.

Sections 20(1) and (2) prohibits the *discharge of non-domestic waste into the sewer system* unless such discharge meets the criteria mentioned in the column 3 of schedule 1.2 of SWR and the sewage treatment plant owner ensures that the final discharge (effluent) meets the requirements of the regulation.

Section 24 requires that *discharge of effluent or use of reclaimed water* is prohibited, unless monitoring of effluent and the receiving environment is undertaken by the discharger to determine compliance with this regulation. Sections 25 and 26 define the procedure of *conducting sampling, setting the monitoring points and installing flow measuring devices, and analyses of the pollutant parameters*.

Section 27 requires that, the discharger must *monitor the receiving environment* to provide data to assess the potential impact of the discharge and to ensure that water quality parameters, outside the initial dilution zone, do not exceed any known water quality guidelines.

Section 28 requires that a person must not introduce a discharge into the environment unless the person retains the effluent flow and effluent quality data and receiving environment *monitoring data for inspection by the manager at any time*, and the discharger must submit the data and associated quality control work by electronic transmission directly to the ministry's central computer system, or the format accepted by the Manager.

Section 29 states the provision of *penalties of up to \$200,000 or 6 months imprisonment or both* for activities in contravention to this regulation and for submitting false monitoring data or report.

A.5 LOCAL GOVERNMENT ACT (LGA)

Section 4 specifies the broad principles under which the relationship between the local governments and the provincial government exists. This relationship includes the co-operation, delegation of power, needs for consultation, specific needs of the local governments, and independence of the local governments.

Section 517(1) provides general authority to the local governments to offer services required within the jurisdiction while Section 517.1(1) provides the authority to the local governments (municipality, regional district) to establish new bylaws required for discharging its services.

Sections 653, and 658(1) provides authority to the municipalities to establish bylaw to provide a system of business licences in order to track the types and operations of businesses.

A.6 BC GUIDELINES FOR LANDFILL FACILITY

Section 4.1 deals with the *Ground and Surface Water Quality Impairment*. Landfills must not be operated in a manner that ground or surface water quality at or beyond the landfill property boundary exceeds the limits set by the Approved and Working Criteria for Water Quality prepared by the Ministry of Water, Land and Air Protection, or other appropriate criteria.

Section 7.15 requires that a *monitoring program covering ground and surface water, landfill gas and ambient air quality* must be submitted to and approved by the Manager as set out pursuant to these criteria in monitoring guidelines being prepared by the Ministry. A separate guideline prepared by the Ministry helps in developing monitoring program for the landfill emissions.

Section 7.16 requires the owner and/or operator of a landfill *keep record and maintain the both on-site and at the legal address of the owner/operator information including inspection records* for inspections conducted by staff and regulatory agencies; training procedures; contingency plan and notification procedures; monitoring results for gas, leachate, surface and ground water; volumes of leachate collected from the site (where leachate collection and management are carried out); and interpretations of monitoring results.

Section 7.17 requires that *landfill operator submits an annual Operations and Monitoring Report to the Manager* in a timely fashion as specified by the Manager. These reports are to contain information that include: total volume and/or tonnage of waste discharged into the landfill for the year; leachate, water quality and landfill gas monitoring data and interpretation; amounts of leachate collected, treated and disposed; and an up-to-date contingency plan, noting any amendments made to the plan during the year, etc.

A.7 BC APPROVED WATER QUALITY GUIDELINES (BCAWQG)

BC Approved Water Quality Guidelines sets the limits of the contaminant concentrations in the receiving stream in the province. If any discharges in to the sewer system or the effluents from the facility operations falls into the stream that may exceeds the contamination criteria of the guidelines, such discharges (effluent concentration and volume) has to be re-evaluated. This guideline calls for reactive measures to be taken in the event of non-compliance in discharge.

A.8 CRD SEWER USE BYLAW # 2922 (SUB)

The Capital Regional District (CRD) is authorized under Sections 22 and 23 of the Waste Management Act (WMA) to formulate necessary bylaws to regulate the disposal of waste including non-domestic and TLW into its sewers system, landfill and septage facilities.

Discharges of TLW and the regulatory provisions pertinent to TLW that covers under the SUB are discussed below:

Section 2 and specifically Sub-Sections 2.1, 2.2, 2.3, and 2.4 states the requirements for *discharging wastes into the sewer*. Sub-Section 2.1 states the requirements that apply to discharges to sanitary sewer for *prohibited waste, restricted waste, high volume discharge (> 10 m³/d), non-domestic waste, uncontaminated water and stormwater*. Sub-Section 2.3 prohibits *discharge of septage other than into a sewer at a septage disposal facility*. Sub-section 2.4 specifically mentioned about the conditions for *discharging TLW into Septage or other authorised facility*. Sub-Section 2.5 prohibits discharges of water or other substances for the purposes of diluting non-domestic waste.

Section 3.1(a) requires that permit holders maintain the *limits and restrictions on the quantity, frequency of discharge and nature of the waste permitted to be discharged*;

Section 3.1(b) requires the holder of a waste discharge permit or authorisation, at his or her expense, *to repair, alter, remove or add works, or construct new works to ensure that the discharge will comply with the waste discharge permit or authorisation*, this bylaw and any enactment;

Section 3.1(c) requires the holder of a waste discharge permit or authorisation, upon request by the Manager, *to monitor and submit the information on discharge including routine maintenance check dates, cleaning and waste removal dates, and the means of disposal of accumulated wastes and waste treatment residuals*. Sub-Section 3.1(e) requires the holder of the waste discharge permit or authorisation to *submit to the manager detailed plans and operating procedures* for all existing facilities installed on the premises for the purpose of preventing accidental discharge;

Section 6.1 requires that holders of a waste discharge permit, authorisation, an order or persons *operating under a code of practice* permitting the discharge of waste produced on property other than residential property requires to retain and preserve any records, books, documents, memoranda, reports, correspondence and any and all summaries of such documents, relating to monitoring, sampling and chemical analysis required by the manager, a waste discharge permit, authorisation or order.

In the case of discharges in contravention to the permit, authorisation, codes of practice or order, Sections 7.1 and 7.2 specify the *procedure to reporting* such discharges to the Manager and control measures to be taken.

Section 9 and its sub-sections specify the conditions for *installing monitoring points, maintenance of monitoring installation devices, sampling and analysis requirements* for discharging any waste other than domestic sewage and includes both non-domestic and TLW.

Sewage Control Manager of CRD issues (Under WMA: s22) permits/authorisation to the business (waste generators), waste haulers and facility operators to discharge into the sewer depending on the specific terms and conditions on waste type, volume, and frequency of discharge.

Sewage Control manager is responsible for enforcement of the permits and authorisation on discharges.

There is a provision of *codes of practices (COP) for specific industrial or commercial operations to aid implementation of sewer use bylaw*.

A.9 HARTLAND LANDFILL TIPPING FEE AND REGULATION BYLAW (HLTFRB)

Section 2(d) allows *disposal of specially permitted controlled waste* (some of the TLWs- waste oil, liquid sludge etc.) subject to the approval of the CRD Engineer with respect to the safe disposal, handling facilities, tipping fees etc.). Section 2(i) prohibits any disposal of restricted wastes (recyclable wastes) at the Hartland Landfill

Section 4(b)(i) provides provision of *penalty for at least \$100* to the violator of the bylaw and Section 4(b)(ii) provisioned *to restrict further disposal of solid waste* including specified controlled waste.

Hartland Landfill also follows the “Landfill Criteria for Municipal Solid Wastes” developed by the BCMWLAP where Section 7 specifies the criteria to be met for the operation of the landfill particularly about *maintenance of the record keeping and annual report* to be submitted to the Manager. Record and the annual report must include the monitoring results for gas, leachate, surface and ground water quality.

A.10 MODEL STORM SEWER BYLAW (MSSB)

Section 2 states the terms and condition of discharging of domestic and non-domestic waste, trucked liquid waste or prohibited waste into the storm sewer. Section 2(1) categorically specifies the *discharge of TLW into storm sewer*, the section does not allow any discharge of TLW into storm sewer.

Any act in contravention to the provisions of the Bylaw (e.g., Sections 2(1) and 8(3)) become an offence under the Section 12. (Section 12 provisions *imposing fine by the Manager to the violator up to \$ 2,000 for each offence.*)

Sections 10 and 13(1) authorizes *unrestricted entry of the Inspector or authorised enforcement officer into a premise for carrying out inspections* to administer the Bylaw.

APPENDIX III

List of Abbreviations

LIST OF ABBREVIATIONS

Abbreviated Word	Full Meaning of the Abbreviated Word
BCAWQG	BC Approved Water Quality Guidelines
BCMWLAP	BC Ministry of Water, Land, and Air Protection
CEPA	Canadian Environmental Protection Act
COP	Codes of Practice under the CRD Sewer Use Bylaw
CSR	Contaminated Site Regulation
FA	Fisheries Act
HLTFRB	Hartland Tipping Fees Regulation Bylaw of CRD
LGA	Local Government Act of BC
MSR	Municipal Sewer Regulation under WMA
MSSB	Model Storm Sewer Bylaw of CRD
PCPSPR	Post-Consumer Paint Stewardship Program Regulation
PCRSR	Post-Consumer Residual Stewardship Program Regulation
RSCP	Regional Source Control Program of CRD
RULOR	Return of Used Lubricating Oil Regulation (RULOR)
S, s	Section of a particular regulation (e.g., s2 of WMA: Section 2 of the WMA)
SRR	Spill Reporting Regulation under WMA
SUB	CRD Sewer Use Bylaw
SWIS	Special Waste Information System of BCMWLAP
SWR	Special Waste Regulation under WMA
TDGA	Transportation of Dangerous Goods Act
TLW	Trucked Liquid Wastes as defined under different regulations
WMA	Waste Management Act

APPENDIX IV

List of References

REFERENCES

BC Approved Water Quality Guidelines:

<http://wlapwww.gov.bc.ca/wat/wq/BCguidelines/approved.html>

Canadian Environmental Protection Act (CEPA)

<http://laws.justice.gc.ca/en/C-15.31/index.html>

Capital Regional District Sewer Use Bylaw No. 2922

http://www.crd.bc.ca/bylaws/liquidwastesept_1/b129229999/b129229999.pdf

Capital Regional District Septage Disposal Bylaw No. 2827

http://www.crd.bc.ca/bylaws/liquidwastesept_1/index.htm

Capital Regional District Parks Regulation Bylaw No. 2721

http://www.crd.bc.ca/bylaws/parks_/index.htm

Contaminated Sites Regulation. B.C. Reg. 375/96.

http://www.qp.gov.bc.ca/statreg/reg/W/WasteMgmt/WasteMgmt375_96/375_96.htm

Fisheries Act.

<http://laws.justice.gc.ca/en/F-14/index.html>

Hartland Landfill Tipping Fees and Regulation Bylaw No. 2338.

http://www.crd.bc.ca/bylaws/solidwastelandf_/index.htm

Landfill Criteria for Municipal Solid Waste;

<http://wlapwww.gov.bc.ca/epd/epdpa/mpp/lcmsw.html>

Post-Consumer Paint Stewardship Program Regulation. B.C. Reg. 200/94

http://www.qp.gov.bc.ca/statreg/reg/W/WasteMgmt/200_94.htm

Post-Consumer Residual Stewardship Program Regulation B.C. Reg. 111/97

http://www.qp.gov.bc.ca/statreg/reg/W/WasteMgmt/111_97.htm

Return Of Used Lubricating Oil Regulation. B.C. Reg. 64/92.

http://www.qp.gov.bc.ca/statreg/reg/W/WasteMgmt/64_92.htm

Special Waste Regulation. B.C. Reg. 63/88.

http://www.qp.gov.bc.ca/statreg/reg/W/WasteMgmt/WasteMgmt63_88Special/63_88.htm

Spill Reporting Regulation. B.C. Reg. 263/90.

http://www.qp.gov.bc.ca/statreg/reg/W/WasteMgmt/263_90.htm

Transport of Dangerous Goods Act.

http://www.qp.gov.bc.ca/statreg/stat/T/96458_01.htm#section1

Transportation of Dangerous Goods Act (Federal)

<http://laws.justice.gc.ca/en/T-19.01/index.html>

Waste Management Act, Ministry of Water, land, and Air Protection, BC.

http://www.qp.gov.bc.ca/statreg/stat/W/96482_01.htm

Waste Management Act Municipal Sewage Regulation. B.C. Reg. 129/99

http://www.qp.gov.bc.ca/statreg/reg/W/WasteMgmt/129_99.htm