

# Discussion Paper No. 2

**Draft**

**Regional District of  
Kitimat-Stikine**

**Stage 3 LWMP  
Potential Cost Recovery Methods**

**May 2007**

## Regional District of Kitimat-Stikine Stage 3 Liquid Waste Management Plan

### Potential Cost Recovery Methods

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## 1 Introduction

The Regional District of Kitimat-Stikine (RDKS) is currently conducting Stage 3 of the three-stage Liquid Waste Management Plan. Stage 3 involves selecting a final option, complete with discharge standards, implementation schedule, cost estimates, and proposed financing. Discussion Paper No. 1 examined the location and type of effluent disposal for the proposed 1<sup>st</sup> Avenue area Wastewater Treatment Plant. The conceptualized treatment plant consists of a membrane-bioreactor (MBR) with ultraviolet (UV) disinfection. Other areas around the Lake will be served by communal septic systems.

This Discussion Paper investigates potential cost recovery methods that may be used by the RDKS to support the overall wastewater treatment improvements program. The proposed wastewater treatment program will have costs related to the initial construction, as well as the on-going day-to-day costs of operating and maintaining the facility. Programs such as infrastructure grants should cover some of the capital costs. However, there will still be a portion of the capital cost that will have to be paid for directly by the users of the system. Since this would likely involve a loan, say, from the BC Municipal Finance Authority (MFA), there will be annual costs of repaying the capital and the attendant borrowing interest, much like a home mortgage. With the addition of the annual operating and maintenance (O&M) costs, there will always be a total annual amount that must be paid for by the system users.

There are several means by which the cost of repaying capital, borrowing interest, and operation and maintenance costs may be funded. These options include:

- Assessment-based fees
- Flat rate fees
- Water meter-based user fees
- Combinations of the above

These options are discussed below.

## 2 Cost Recovery Options

### 2.1 Assessment-based Fees

Assessment-based fees would be based on the value of the property, as shown on the tax roll, and would be proportional to the value of the property. For example, if the total treatment facility operating costs were \$600,000 per year and a property represented 0.1 percent of the total tax roll value, then the owners of the property would pay 0.1 percent of \$600,000 or \$600 per year. Properties representing a greater or lesser percentage of the total tax roll would pay proportionally higher or lower than the \$600 per year.

The biggest advantage of assessment-based fees for revenue generation is that it is easy. All the RDKS requires are the total amount to be paid for the year, the total assessment, and the individual property assessments. Barring delinquent payment of fees, the use of assessment-based fees guarantees that the required funding will be available to cover the annual facility costs.

The disadvantages of this system include potential lack of equitability and the lack of incentive to decrease wastewater generation. The equitability (or lack of) comes from the fact that many properties are assessed quite highly, but yet their occupancy is relatively low. For example, a home assessed at \$300,000 may only have two people in it where as a home assessed at \$150,000 could have, for example, ten people in it. Under the assessment-based fee system, the owner of the \$300,000 home would pay twice as much as the owner of the \$150,000 home, yet the amount of wastewater from the \$300,000 home is likely a fifth of that from the \$150,000 home. Some people would see this as being inequitable. Other people would suggest that the owner of the \$300,000 home is likely better able to pay the fees than the owner of the \$150,000 home. Well that may be true; in fact, there is no correlation between the assessment value of a home and the ability to pay taxes or fees.

On the commercial side, there would be arguments that the commercial establishments that have higher values are likely those that also consume the most water and, therefore, generate the most wastewater. As a result, they should pay more for their wastewater water treatment services. Just like with homeowners, this may or may not be true.

Assessment-based fees to pay for wastewater treatment offer no incentives to conserve water and/or generate less wastewater. The property owner knows that the fees will be the same whether they conserve or not. While many people would conserve on a matter of principle, others would not even try if there were no financial reward for doing so.

In addition to the above, there are problems with the assessment-based fee system when there may be other, out of RDKS, users of the system, e.g. Provincial Park Campground. In both cases, the assessment-base system would not work for such users, and some other means of charging those users would have to be developed.

## 2.2 Flat Rate Systems

Flat rate systems are sometimes called parcel taxes. In this case, if there are 400 parcels (properties) on the tax roll and the total annual facility cost was \$200,000, then each parcel would have to pay \$500 per year, regardless of the value of the property or the amount of wastewater generated by that parcel. As with the assessment-based fees, the flat rate system would be very easy for the RDKS to administer. All the RDKS requires are the total amount to be paid out over the year and the total number of connections, both inside and outside the RDKS (as appropriate). Using this information, the RDKS could calculate and issue the required flat rate utility bills for the wastewater treatment service.

There are some problems with the flat rate system. As with the assessment-based fee system, the flat rate system offers no incentives to generate less wastewater: some people are going to say, “If I am paying the same regardless of how much wastewater I generate, why should I care about generating less wastewater? What’s in it for me?” While such attitudes can be overcome through education (pamphlets, programs on TV, and articles in the newspaper), the fact remains there is no financial incentive to promote conservation.

The other problem with the flat rate system is it still does not address inequity. A home with two users still pays the same as a home with ten users. As a result, the two-user home would effectively be subsidizing the ten-user home.

When the complication of commercial users comes into effect, the flat rate system really breaks down because the number of users in a commercial establishment in RDKS can be substantial. This would potentially lead to the need for a multi-tier flat rate system that would have residential users pay one flat rate and commercial users paying another flat rate. Setting up such a multi-tiered system would likely involve review of water consumption records and the setting of the flat rate “tiers” based on ranges of cubic metres of water consumed per month, e.g. 0 – 10 m<sup>3</sup>/month is one tier, 10 to 20 m<sup>3</sup>/month, another tier, and so on to cover the range of monthly flows. Setting the value of the tiers would be more complex and there is the possibility of not getting the tiers correct and either having a shortfall of funds or a surplus of funds.

## 2.3 Flow-based Fees

Flow-based fees are typically an attempt at sharing the costs of the treatment plant on an equitable basis. The guiding thought is, if somebody creates more wastewater, they should pay more to operate the treatment plant than someone who generates less wastewater, i.e. it is a “user” fee. Since monitoring wastewater flows is typically not easy and expensive, it is more common to simply use water meter flow data as a surrogate for wastewater flow data. Typically, a factor of 0.8 to 0.9 is used for the wastewater flow, i.e. an assumption is made that over the year, 80 to 90 percent of the water consumed is converted to wastewater. The other 10 to 20 percent typically is assumed to go to activities such as lawn and garden watering and driveway car washing – which do not create wastewater. In some cases, there are no water meters in place so the initial start-up costs of this

fee system can be high. When water metering is already in place, using the water consumption data to charge out the costs of capital and operation and maintenance of the treatment plant would be relatively easy and could be simply an additional line item on the water utility bill.

While flow-based fees might seem to solve the problems of inequity, they don't. The problem is when there are seasonal users and, in particular, summer seasonal users, although the amount of flow that these users generate may be small, the time at which they demand the service (by flushing a toilet or running a restaurant dishwasher) occurs exactly at the same time as the peak wastewater generation period. As a result, the seasonal user requires part of a larger treatment plant than if the demand was more evenly spread over the entire year. Therefore, unless there is a way for them to contribute more directly to the capital cost of the larger, peak load, treatment plant, the seasonal user will likely not pay their fair share of the overall plant costs based only on their seasonal flow-based fees.

The other potential problem with a flow-based user fee program is that it can promote water conservation. While this is normally a good thing, from a revenue generation viewpoint, water conservation and wastewater flow decreases mean that there could be a shortfall of revenue in a given year. Although adjustments, i.e. higher per volume unit costs, can be made in the next year to make up the shortfall, the higher fees will encourage even more water conservation and lower wastewater generation. This will proceed until an equilibrium level of fees and water conservation activities is eventually reached.

## **2.4 Combination Methods**

Based on the above discussions, all the cost recovery methods would work, at least to some degree. However, each method has some inherent inequity issues. As a result, it may be better to use a combination of methods. This would likely mean that a portion of the total annual cost, e.g. the fixed cost of paying for the capital and interest, would be paid for through either assessment-based fees or a minimum flat rate connection fee (charged annually). The remaining, variable costs, e.g. cost of chemicals and/or electricity to run the plant that are truly proportional to the flow, would be recovered through flow-based user fees. As a result, most inequities would be erased, while, at the same time, the possibility of having a revenue short fall would also be decreased.

## **3 Other Factors to be Considered**

During Stage 2 of the Liquid Waste Management Planning exercise (Technical Memorandum No. 1), communal wastewater treatment for Lakelse Lake East was investigated using a variety of service options. Some of the options included servicing non-residential areas such as the Provincial Park and Mt. Layton Hotsprings Resort. As such, the RDKS may receive interest from such users to be hooked up to the RDKS's wastewater treatment system. At this point, it is not clear exactly how these connections would be technically and administratively accommodated. Technically, the treatment plant would have to be made somewhat larger to accommodate the

additional, non-RDKS flows. Administratively, if non-RDKS users were to use the treatment plant, the question of ownership of the infrastructure and how the additional costs would be recovered would have to be resolved. If the RDKS was to partner with, say, the Provincial Park, then it is likely fair that the Provincial Park not only pay their incremental capital costs, but also a share of the base-case capital works as well. Beyond that, the annual operating costs could be paid on a flow-based user fee basis (assuming that a flow meter would be installed in the force main conveying wastewater from the Provincial Park Campground to the treatment plant).

Another approach to this issue would be to have the non-RDKS users such as the Provincial Park Campground, develop and construct their own smaller treatment plant(s). In this situation, the RDKS would not be involved.

In yet another approach, the Provincial Park Campground and the RDKS could enter into an agreement to develop and construct a collection system, pumping station(s), and force main that they would jointly own and operate as a consortium, with wastewater being discharged to the RDKS system on a fee-for-service, i.e. flow-based user pay system, basis. In this case, there would be no partnering and the RDKS would set the fees to be charged to the consortium on a basis that reflects the needs of the RDKS, i.e. additional revenues to cover both the additional capital and operating and maintenance costs needed to accommodate the consortium's flows. While this is similar to the partnering approach, it would absolve the RDKS of the obligation to own and maintain a collection system, pump station(s), and force main(s) outside of its legal boundaries. It would also provide the RDKS with more flexibility in the setting of the fees-for-service.

## 4 Conclusions

There are three main means of recovering the costs to pay for and operate the wastewater treatment plant. These include the following:

- Assessment-based fees
- Flat rate fees
- Water meter-based wastewater flow user fees

None of these methods are perfect by themselves. Each method has some inherent inequities or it has some risk of not being able to raise sufficient funds to cover all of the costs associated with owning and operating the treatment plant. As a result, it is likely better to have some form of a combined system that is based on covering fixed costs via either assessment-based fees, or flat rate fees, and then have the annual operating and maintenance costs covered by the flow-based user fees. Such a system should decrease both the inequities of the assessment-based and flat-rate fees, and the risk of revenue short falls associated with flow rate-based only user fees.

Discussions with the Provincial Park Campground and other potential non-RDKS users about partnering with or using the RDKS's wastewater treatment plant should take place directly with RDKS and outside of this LWMP planning process.