



April 11, 2003

File: 76780-30/VCUMB

Village of Cumberland
2673 Dunsmuir Avenue
PO Box 340
Cumberland BC V0R 1S0

SENT BY FAX: 250 336-2321

ATTENTION: Mac Fraser, Manager of Operations

Dear Mr. Fraser:

Re: Village of Cumberland Liquid Waste Management Plan (LWMP) – Stage 2

Thank you for the letter dated January 23, 2003 sent on your behalf from Douglas Anderson of Anderson Civil Engineering and the attached reports entitled: “Village of Cumberland Liquid Waste Management Plan, Stage 2, Volume 1, Final Report” and “Village of Cumberland Liquid Waste Management Plan, Stage 2, Volume 2, Supplementary Documents.”

Stage 2 of a LWMP should examine a number of options and associated costs in detail, include provisions for public input, and result in a draft waste management plan. I hereby approve the Stage 2 report and authorize the Village of Cumberland to proceed with Stage 3 of the LWMP. A number of issues, as outlined below, must be addressed in Stage 3.

1. Reclaimed Water Standards

Certain aspects of the requirements to meet reclaimed water standards (as per Schedule 2 of the Municipal Sewage Regulation (MSR) merit further consideration and discussion, as follows:

Chemical addition and filtration:

This part of the treatment train is meant to ensure that no viruses are present in the effluent. The MSR states that sixty day storage after secondary is acceptable in lieu of filtration under certain conditions.

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The Village of Cumberland is proposing to sample for viruses as an alternative to including this part of the treatment train.

Emergency Storage:

The report indicates that the required 20 days of emergency storage are available in the summer months, but not in the high rainfall months. Please provide more detail as to how this storage is provided and for what time period.

Alternative Method of Disposal and Redundancy:

The report indicates that an alternative method of disposal (as per Section 10 (2) of the MSR) and duplication of the lagoons (as required in Appendix 1 to Schedule 7) for treatment will not be provided.

Effluent Quality:

Table 11.2 in the Stage 2 report includes the recommended effluent quality. Some of the effluent quality requirements in Schedule 2 are not met.

Other Issues to Consider:

Authorized Use: The MSR Section 10(7)(a) requires that the reclaimed water use be authorized in writing by the local health authorities having jurisdiction, or under a local service area bylaw.

Public Information: The MSR Section 10(8) requires that the reclaimed water provider provide information and communication materials in regards to reclaimed water use.

2. Draft Operational Certificate (OC)

The Stage 2 report includes a draft OC for the discharge from the Village of Cumberland sewage treatment plant. The following items should be considered in revising the draft OC during Stage 3.

Phosphorus and Ortho-phosphate Limit:

The OC specifies a discharge limit of 100 ug/L for orthophosphate during the summer period (May 1 to September 30). While this limit is based on the monitoring information that is available and seems like a reasonable target, there is no way of being certain that this limit will satisfy the goal of protecting Maple Lake Creek and the Trent River. Every river system is unique and will respond differently to the input of nutrients; therefore, the only way to determine if the amount of phosphorus going into the Trent River is acceptable, is to monitor the response in the receiving environment. Several years worth of data may be required to determine an ortho-phosphate limit. The OC will have to be worded appropriately, so that the receiving environment is protected in the interim.

Effluent Quality Limits:

There are discrepancies between some of the limits in the OC and the limits set in Table 11.2. The limits for nitrogen compounds should also be discussed.

Monitoring Requirements:

Section 3.1 of the OC outlines the requirements for discharge monitoring. The monitoring program, as presented, does not reflect the requirements of the MSR.

Section 3.2 of the OC outlines the requirements for receiving environment monitoring. The monitoring program, as presented, does not reflect the program outlined in the Stage 2 report. A site plan with the monitoring locations identified in the Stage 2 report would be helpful.

3. Design Issues

Winter Conditions:

To refine the design of the treatment works, winter discharge conditions should be further studied in Stage 3. Information on the flows in Maple Lake Creek and the Trent River are required to determine appropriate discharge standards for the winter period. If sufficient dilution is available, reclaimed water standards may not be required in the winter months.

Lagoon Performance:

The effluent quality from the lagoons is quite good all year long. Because of the relatively low HRTs (hydraulic retention times) during the winter months, it is possible that the good effluent quality occurs as a result of dilution rather than treatment. To determine if the lagoons are providing adequate pre-treatment prior to discharging to the wetlands, the lagoon performance should be further studied.

Flows:

The Stage 2 report includes design flows determined from different methods and applied to various aspects of the design. Please establish a relationship between the various design flows determined. The flows should be refined in Stage 3 to reflect the timing of sewer separation and other upgrades to the collection system, to ensure that the lagoons and wetland are sized accordingly for adequate removal.

Wetland:

The wetland design is still conceptual and should be more detailed in Stage 3.

The wetland design must ensure that the natural area to be preserved remains unaffected by changes resulting from construction of the treatment wetland. The Stage 2 report indicates that the natural fen/bog area should not be disturbed hydraulically. Also, there should not be any change in the nutrient composition to this area, according to the report by Ron Buechert (July 2001). The effect of draw down on the plants will need to be assessed, as discussed in the Stage 2 report.

4. Phosphorus Removal

We acknowledge that the Village of Cumberland is proposing an innovative way of achieving phosphorus removal by using a constructed wetland and that we will not know for certain how much phosphorus will actually be removed until the wetland has been operating for a period of time; however, an appropriate time frame for meeting the objectives of the LWMP will have to be set.

The Wetlands Pacific report (December 2002) indicates that Gearhart has found (based on data obtained from the constructed wetland in Arcata, California) that “At loadings of less than 1.5 kg/ha-day, with retention times of at least 15 days, an upper limit of 1.5 mg/L of orthophosphates can be annually removed”. Table 7 in the Wetlands Pacific report indicates that removals as high as 2.25 mg/L are expected. Please explain this, as it seems to contradict the findings of Gearhart.

The Stage 2 report recommends that additional phosphorus removal be included, as the wetland is not expected to remove sufficient quantities of phosphorus to meet the effluent quality limits set to protect the Maple Lake Creek and the Trent River. The report recommends that source control and Lemna harvesting should be implemented now, and chemical phosphorus removal or another method be considered at a later date. In Stage 3, please specify timing for implementation of Lemna harvesting, source control and other treatment. Please review Section 20 of the MSR for guidance on what the source control bylaw should include.

5. Stormwater Management

In Stage 1, recommendation #10 includes activities to be implemented in regards to stormwater management. Please provide an update on the status of these activities or timelines for when they will be implemented as part of the LWMP.

With sewer separation being implemented, additional stormwater will need to be managed. The Village may be able to use the constructed treatment wetlands to pretreat and attenuate stormwater flows in the winter months. This will depend upon the effluent quality limits set for the winter months and the hydraulic capacity of the wetlands.

Please provide a plan in Stage 3 for the management of stormwater. You should consult the ministry document entitled: “Stormwater Planning: A Guidebook for British Columbia,” at the following website:

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

6. Construction Costs and Schedule

Table 13.1 in the report outlines the recommended timing for implementing aspects of the plan, including extending some of the service area, upgrading the collection system,

separating the combined sewer system and building a constructed treatment wetland. The table indicates that only part of the sewers will be separated by the time the wetland is fully built in 2006. Also, upgrades to the collection system for infiltration and exfiltration will not occur until after 2006, and will not be complete until 2020. Taking into consideration the hydraulic capacity of the treatment works, please provide technical justification for the timing of implementing these upgrades to the collection system. Please also provide a timeline for when all areas with on-site sewage systems will be connected, as requested in #13 of the Stage 1 approval letter dated June 13, 2001.

Table 13.1 includes estimated costs and timelines for implementing some aspects of the plan, but does not address all plan components. Issues like source control, stormwater management and biosolids management have not been included.

7. Waste Management Plan

Stage 3 should result in a LWMP being prepared and adopted by bylaw and in draft operational certificates. The LWMP should include an implementation schedule for all aspects of the plan, more detailed design and cost estimates and proposed financing arrangements.

Once Stage 3 is approved, a committee should be formed to monitor the progress of the LWMP. Stage 3 should include an outline of the structure and mandate of the committee.

8. Consultation

The Ministry of Water, Land and Air Protection considers public input to be one of the most important aspects of the waste management planning process. The plan should be flexible enough to be able to adapt to public input and new information obtained during the technical review. Please continue to provide opportunities for public review and input.

First Nations must be given ample opportunity to provide input to the plan. Please document any contact you make with them in regards to the LWMP and any input or response they provide.

9. Infrastructure Funding

We fully support the Village of Cumberland's request for infrastructure funding. Two major goals of the LWMP are to decrease the phosphorus loading to the Trent River and to produce reclaimed water for stream flow augmentation. To accomplish these objectives, a treatment process with several stages is required and the constructed wetland is an integral component of this process. The wetland has the potential to remove a significant amount of phosphorus it also provides a high quality effluent which can be used to supplement the low flows in the Trent River and enhance fish habitat. The recommended upgrades to the collection system, including sewer separation, are also required to ensure that the treatment system is not hydraulically overloaded.

Congratulations on completing Stage 2. I commend the Village of Cumberland for its willingness to consider innovative approaches to solving a complex problem. We look forward to working with you in Stage 3.

Yours truly,

B.W. Medlar
Assistant Regional Waste Manager
Environmental Protection Division

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REF: Stage 2 Response
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