Comox Valley REGIONAL DISTRICT

Staff Report

DATE: May 9, 2019

FILE: 5340-20

TO: Chair and Members
Comox Valley Sewage Commission

FROM: Russell Dyson
Chief Administrative Officer

Supported by Russell Dyson
Chief Administrative Officer

R. Dyson

RE: **Discussion Surrounding Requests and Concerns Made by the Curtis Road Residents Association Delegation on April 16, 2019**

Purpose

To provide information and address the concerns and requests of the Curtis Road Residents Association (CRRA) as outlined by the delegation from Jenny Steel at the April 16, 2019 Comox Valley Sewage Commission.

Recommendations from the Chief Administrative Officer:

1. THAT staff be directed to develop a landscape plan for revegetation of the berms to be constructed around the equalization basin, and consult with the residents on Curtis Road to ensure that it will resolve concerns about increased visual impact arising from clearing associated with the project.

2. THAT staff be directed to consult with the Curtis Road Resident's Association and other residents in proximity to the Comox Valley Water Pollution Control Center to create a communications protocol that notifies residents about operations that can affect the neighbourhood, including major projects, predictable activities, and those operations with odour impacts.

3. THAT odour dispersion modelling be completed to understand the odour impacts to the surrounding community following the completion of odour control capital upgrades in 2018 and that the modelling include both with and without the tall stack at the Comox Valley Water Pollution Control Centre;

   AND FINALLY THAT the results of the odour dispersion modelling study be reported back to the Comox Valley Sewage Commission to inform the discussion on the next steps for odour control work at the Comox Valley Water Pollution Control Centre.

Executive Summary

At the April 16, 2019 Comox Valley Sewage Commission meeting, information was presented by the Curtis Road Resident's Association (CRRA). The presentation, and accompanying report, attached as Appendix A, outlined two primary areas of concern:

1. Continued concerns surrounding odour, specifically from the bioreactors.
2. Location of the equalization (EQ) basin proposed for construction at the Comox Valley Water Pollution Control Centre (CVWPCC).

CVWPCC Odour Control

- There is a long history of odour complaints at the CVWPCC, including a court case and settlement in the 1990s that led to the regional district implementing significant odour control measures at that time.
- Despite the measures taken in the 1990s, odour complaints continued and in 2013 the Comox Valley Sewage Commission directed staff to undertake study work to confirm the impact and recommend further mitigation measures.
- In 2016, an odour study was completed which concluded that facility odours could be reduced by over 80 per cent by rehabilitating the existing scrubber, covering the primary clarifiers and installing an activated carbon polisher, while the remaining 18 per cent of CVWPCC odour could be resolved by covering the bioreactors.
- The sewage commission directed that the scrubber be rehabilitated, primaries be covered, and carbon polisher be installed and that a follow up odor study be undertaken to assess the effectiveness of these upgrades.
- This scope was subsequently completed in 2018 and a follow up odour study is planned as soon as possible and no later than the summer of 2019.
- The cost for covering the bioreactor tanks is estimated at between $3 million to $5 million.
- While there are no standards for wastewater treatment plant odours within British Columbia, there has been discussion through the ongoing Liquid Waste Management Planning (LWMP) process about whether to recommend the Comox Valley Regional District (CVRD) commit to achieving the Ontario odour standard.

EQ Basin

- The EQ basin will be used during the confluence of peak wet weather events and king tides to ensure adequate outfall capacity and provide a buffer to ensure the plant can effectively treat wastewater during extreme wet weather events.
- Considerable work has been completed to determine the best location for the EQ basin, taking into account operational needs, construction costs and avoiding constraints to future plant expansion
- Odour impacts from the EQ basin are not anticipated because it will only be used during the stormiest winter months and will be cleaned out after every use. Similar to the existing effluent storage basin, residents and local trail users will likely never see the EQ basin in operation.
- Soil excavated for construction of the EQ basin will be used to create two new berms to fill in two gullies between sand dunes between the CVWPCC and Curtis Road which currently act as funnels for air from the CVWPCC into the community.
- Unless otherwise directed staff will proceed as planned with installation of the EQ basin in 2019, as any delays to the project schedule will result in increased risk as the CVWPCC will have to go another winter without the basin to help buffer peak flows at the plant.

In response to the delegation at the April 16, 2019 Comox Valley Sewage Commission meeting the following next steps are planned:

- Consult with the CRRA and other nearby residents to create a communications protocol for notification to residents about operations and odour impacts from the plant. This protocol would become policy that will ensure continuity in approach regardless of turn-over of key staff.
- Distribute regular neighbourhood updates during key stages of the EQ basin construction.
- Develop a landscape plan for the revegetation of the spoil berm that will be constructed as part of the EQ basin project and consult with Curtis Road residents to ensure the plan will satisfy their concerns regarding the loss of buffer from clearing associated with the project.

- Retain a consultant to complete a follow up odour study at the CVWPCC to determine the effect of rehabilitating the existing scrubber, covering of the primary clarifiers and addition of the activated carbon polisher. These results will be shared with Curtis Road residents and feedback will be included in a final report to the Comox Valley Sewage Commission to inform next steps and any further capital upgrade requirements that may be needed for odour control.
- Within the 2019 odour study, assess the viability of removing the tall stack to reduce the visibility of the CVWPCC from Curtis Road by modelling dispersion of odours with and without the stack.

Prepared by:	Concurrence:
K. La Rose	***M. Rutten***
Kris La Rose, P. Eng. Senior Manager of Water/ Wastewater Services	Marc Rutten, P. Eng. General Manager of Engineering Services

Stakeholder Distribution (Upon Agenda Publication)

Curtis Road Residents Association	✔

Background/Current Situation

At the April 16, 2019 Comox Valley Sewage Commission meeting, information was presented by the CRRA discussing odours and concerns about the EQ basin project at the CVWPCC. As part of the delegation a report was provided, attached as Appendix A, the report outlined two primary areas of concern:

1. Concerns surrounding odour, specifically from the bioreactors.
2. Location of the EQ basin proposed for construction at the CVWPCC.

In response to the report prepared by the CRRA, this report serves to provide discussion and recommendations based on the requests of the CRRA. For the two primary areas of concern, a brief timeline and/or description of the issue is provided outlining the study work and decisions made by the Comox Valley Sewage Commission, requests made by the CRRA and some relevant discussion points and responses from CVRD staff.

Timeline: CVWPCC Odour Control and the Covering of the Bioreactors

Since the motion made by the Comox Valley Sewage Commission in 2013 to evaluate odour control equipment and practices at the CVWPCC the following work has been completed:

- 2014 - Implementation of an odour control tracking program.
    - An odour control tracking program was implemented to provide a way to address odour complaints in a consistent manner and provide statistical information related to odour complaint frequency. Since its implementation 404 complaints have been received from 23 addresses. The number of complaints from each address varies from one to 209.
- 2015 - Odour control systems evaluation.
    - Completed by RWDI Air Inc. the purpose of this study work was to review the wet-chemical scrubber's performance, audit the CVWPCC's operational practices and review new odour control technologies. Findings of this work determined that the odour control system was in good working condition but recommended completing odour dispersion modelling to better understand the extent to which CVWPCC odor was impacting nearby properties.

- 2016 - Odour dispersion modelling.
    - Determined emission rates and odour concentrations from the plant and then input this measured data into a dispersion model developed for the geographical area. The modelling work concluded that the CVWPCC was exceeding the Ontario odour standard at all 12 sensitive receptors. It was identified that strongest odours were from the scrubber stack, followed by the primary clarifiers and then the bioreactors.
- 2017 - Odour control options development.
    - ISL Engineering and Land Services was contracted to develop capital cost estimates and engineering solutions to reduce odour emissions as identified from the odour dispersion modelling work. The recommended capital upgrades that were approved by the Comox Valley Sewage Commission, totaled $2.18 million, and included retrofitting the existing scrubber, covering the primary clarifiers and installing a dual bed activated carbon polisher.
    - Covering of the bioreactors was not included as it was hoped that improvements to the scrubber system and covering of primary tanks would be sufficient to resolve odour concerns from the CVWPCC.
- 2017 - CVRD wastewater operators completed the retrofit of the existing chemical scrubber.
- 2018 - Construction of the recommended odour control capital upgrades.
    - In spring 2018, temporary covers were installed over the primary clarifiers as fabrication of the permanent covers was delayed. Installation of the activated carbon polisher and permanent primary clarifier covers was completed by November 2018. To ensure the activated carbon polisher is operating as intended, further carbon sampling and performance testing is currently underway.
- 2019 – CVRD wastewater operators continue to identify opportunities and implement solutions to further reduce odors from the facility, including installation of covers on the discharge flume and a sweet vent above the outfall manhole.

CRRA Requests: Odour Control and Covering of Bioreactors

In their report and delegation presentation to the Comox Valley Sewage Commission the CRRA included several requests related to odor control and covering of the bioreactors:

1. Provide a plan for installing odour controls on the bioreactors on an urgent basis.

From the sampling completed by RWDI in 2015, the hydrogen sulfide concentration at the location of the bioreactors was zero parts per million (six feet above bioreactors in the middle). Although this only represents a one-time measurement and readings may be higher at other times, it was staff's intent to complete an updated dispersion modelling study in the summer following completion of the covering of the primary clarifiers and addition of the activated carbon polisher to determine if further upgrades were necessary. With the recent completion of the latest phase of odor control upgrades at the plant, this follow up odor study including dispersion modelling is planned for summer of 2019.

At the onset of the development of a capital upgrade plan to address odour control, ISL reviewed air flow from different areas within the plant and the capacity of the current scrubber system. ISL concluded that in order to cover the bioreactors and treat the required volume of air, a second scrubber and activated carbon polisher system would be required. The reason a secondary odour control system would be necessary is because the bioreactors are aerated, which requires higher ventilation rates and results in a larger air flow being generated than other covered processes in the plant, and the current system already collects and treats air from the majority of the plant and did not have enough capacity to also treat air collected from the bioreactors. The cost to treat air from the bioreactors and add a separate chemical scrubber and activated carbon polisher was estimated at approximately $3 million.

2. Consider retiring the tall stack

The purpose of the stack is to aid in the dispersion of treated air from the CVWPCC. The original odor study undertaken by the regional district in the 1990s suggested three options for odour controls, only the one chosen included a stack. The other two options included higher levels of treatment for the odorous air from the CVWPCC and therefore did not require the additional dispersion provided by a stack.

Now that a carbon polisher has been added to the odor control system it may be possible to remove the stack without negatively effecting the odor performance of the plant. Removal of the tall stack would minimize the visibility of the CVWPCC from Curtis Road.

The following is recommended:

- Summer 2019: Complete dispersion modelling of the upgraded odor controls with primary covers and activated carbon polisher now installed and run model with and without a tall stack to better understand the impacts of possible stack removal.
- Fall 2019: Report back to the Comox Valley Sewage Commission with the results of the dispersion modelling study to inform decisions on next steps and capital upgrade requirements.
- Remove stack if the results of the updated dispersion modelling conclude that it can be done without negatively effecting odor levels at nearby properties.

3. Assure that cost estimates for all planned expansions include costs for odour control.

As part of the LWMP process, review of odour standards from other jurisdictions is being completed; consideration will be given to whether the CVRD should commit to meeting standards not yet present in British Columbia. This includes reviewing the Ontario odour standards for wastewater treatment plants. Achieving the Ontario standard for odour at our CVWPCC will almost certainly require that the bioreactor tanks be covered.

EQ Basin

The EQ basin was identified as a capital project in 2016 as part of the CVWPCC capacity assessment completed by ISL. The purpose, need and timeline for the EQ basin is discussed below:

- Effluent is discharged via an outfall to the Strait of Georgia. For the majority of the year the outfall utilizes gravity and no pumping is required to discharge effluent. However during the confluence of peak wet weather flows and high tide events, the outfall has trouble discharging via gravity and treated wastewater is diverted to the current effluent storage basin where it is pumped into the outfall to help with discharge. Due to the pumping and outfall configuration the maximum amount of effluent that is able to be pumped is limited, which has led to rapidly increasing effluent storage basin levels and a concern about overflow from this basin.
- The EQ basin will be used to mitigate short variations in peak flow rates and provide storage during peak wet weather events when the outfall at the CVWPCC is at capacity. The EQ basin will divert primary effluent prior to secondary treatment, provide a buffer to ensure the plant can effectively treat wastewater during peak wet weather events, and minimize risk of overflowing the current effluent storage basin when the capacity of the outfall is reduced during high tide events.
- Consideration was originally given to upgrading the pumps within the existing effluent storage basin and pressurizing the outfall to increase capacity. However there is risk associated with increasing the pressure in a pipe that is 35 years old and has never previously experienced being operated at increased pressures. In addition, this concept did not help address concerns surrounding effluent quality and escapement of solids into the effluent.

- Construction of the EQ basin will begin in July 2019, with construction being completed by fall 2019 so that the basin will be operational prior to the winter months. A schedule for the EQ basin project is provided as appendix B.

CRRA Requests: EQ Basin

In their report and delegation presentation to the Comox Valley Sewage Commission the CRRA included several requests related to the EQ basin project:

1. Direct staff to find another location within the CVWPCC site.

The capacity study completed by ISL in 2016 identified the current location of the basin as preferred. As the detailed design began, it was identified that there was the possibility to site the basin on the West side of the property. However, the routing of the piping to avoid existing infrastructure and connect the EQ basin to the existing treatment process would impact and limit options for CVWPCC expansion in the future.

To ensure that the site can accommodate future upgrades as intended when the CVWPCC was constructed and designed in the 1980s, the available areas to site the basin are constrained by future upgrade plans and wetland areas on the Northwest boundary of the property.

Considerable work has been completed to determine the best location for the EQ basin, taking into account operational needs, construction costs and future expansions. Further work and review of the location of the EQ basin will delay construction of the project. Any additional delays will result in the basin construction not being complete prior to November and December, when the basin will be needed the most, this will result in the CVWPCC having to go another winter without additional buffer capacity.

2. Re-assess the immediate need for the EQ basin.

The EQ basin will maximize the lifespan of the outfall, which is a significant capital cost and is due for replacement in the 2030s. The basin is necessary to ensure that treatment and discharge systems at the CVWPCC work during the highest wastewater inflows, which occur during wet weather events.

Since identification of the need for an EQ basin in 2016, the CVRD has added extra capacity to the existing effluent storage basin by raising the height of the overflow. However, the EQ basin remains needed as an urgent project as the effluent storage basin still remains at risk of overflowing during high flow, high tide events. Overflow of the effluent storage basin would result in effluent from the CVWPCC being discharged to gullies and ditches in the Northeast corner of the property.

The basin's use while critical is limited, and is only expected to be used a handful of times a year and following use the basin will be emptied and cleaned, similar to the current effluent storage basin on site. Because of this, we expect minimal to no odour impacts (none during spring, summer or fall).

3. Plant fast growing trees along the fence line to screen the buildings and processes from Curtis Road.

The CVRD has retained a landscape architect to develop a conceptual landscape design for the spoil berms as part of the EQ basin project. In June, engagement with Curtis Road residents is planned to review the conceptual design and to provide the opportunity to provide comments.

A final planting plan will be developed based on the feedback from residents in June. Following construction, the spoil berm will be planted in fall.

CRRA Requests: Host Community Agreement

The CRRA also requested that the Comox Valley Sewage Commission consider paying affected properties some form of host community compensation until a remedy is in place, and pointed towards the agreement between the Comox Strathcona Waste Management (CSWM) service and the Village of Cumberland for the CSWM landfill as a local example.

The CVRD is committed to being a good neighbour to the residents of Curtis Road and the recommendations and actions outlined in this report are all in support of this goal. Focussing staff efforts on improving our relationship with the CRRA, gaining trust through good communication and being responsible to community concerns, should effectively address the issues raised by the CRRA.

For context, the CSWM landfill Host Community Agreement between the is with the CVRD and the Village of Cumberland is a government to government agreement intended to offset the impacts to Village infrastructure and operations, such as heavy truck traffic on Village roads, and collection of litter blown off of loads going to and from the landfill.

Policy Analysis

At the April 16, 2019 Comox Valley Sewage Commission meeting the following recommendation was approved:

> *THAT staff provide a report regarding the requests and concerns of the Curtis Road residents as outlined by the delegation from Jenny Steel at the April 16, 2019 meeting.*

Options

The Comox Valley Sewage Commission has the following options:

1. Proceed with construction of the EQ basin as planned and complete odour dispersion modelling as soon as possible to determine whether further odour control upgrades are required.
2. Proceed with construction of the EQ basin as planned, do not proceed with further odour dispersion modelling work and direct staff to come back with a concept and cost estimate for covering the bioreactors.
3. Move the EQ basin to an alternate location at the CVWPCC, do not proceed with further odour dispersion modelling work and direct staff to come back with a concept and cost estimate for covering the bioreactors.

The EQ basin is urgently needed at the CVWPCC to help buffer peak wet weather flow events, considerable work has been completed to determine the best location for the EQ basin, taking into account operational needs, construction costs and future plant expansions.

To better understand the effectiveness of the $2 million in odour control upgrades completed in 2018 and the impact of odours on the surrounding community, it is recommended to complete a follow-up odour dispersion modelling study prior to completing further capital works for odour control. At the request of the CRRA, the modelling should also consider the effects on air dispersion with and without the tall stack in place to better understand the impacts of possible stack removal.

As such, Option No. 1 above is recommended.

Financial Factors

It is expected that an odour dispersion modelling, as described above in the options section will cost approximately $35,000 to complete. The outcome of this study will help to inform the next steps.

Legal Factors
There are no odour regulations within British Columbia, and the CVWPCC complies with its operating permit issued by the Ministry of Environment.

The regional district has previously negotiated a settlement related to odour issues with the Curtis Road residents, and has met all of its requirements under the settlement agreement. The CRRA has requested a plan to address their concerns be provided by May 16, 2019, if a plan is not forthcoming the CRRA has indicated they will pursue other courses of action.

Regional Growth Strategy Implications
The EQ basin will maximize the lifespan of the outfall, which is a significant capital cost and is due for replacement in the 2030s, aligning with the Regional Growth Strategy goal of providing affordable and effective infrastructure.

Intergovernmental Factors
This Comox Valley Sewerage System is governed by the Comox Valley Sewage Commission whose membership includes representation from the Town of Comox, the City of Courtenay and the Department of National Defence.

Interdepartmental Involvement
The CVRD Engineering Services branch is leading this work with support from the Corporate Services branch for development of a communications protocol.

Citizen/Public Relations
The External Relations department will work with the Engineering Services branch and seek input from the CRRA to develop a communications protocol that provides guidelines for informing residents about operations and odour impacts from the plant. A communications plan will be developed to keep the community updated during EQ basin project construction and External Relations will assist in identifying additional opportunities for engagement with the community – including the development of a landscape plan for the revegetation of the spoil berm and communicating the results of odour dispersion modelling.

Attachments: Appendix A – "Odours and EQ Basin Issues Delegation to the Comox Valley Sewage Commission, Curtis Road Residents Association, April 2019"
Appendix B – "EQ Basin Construction Schedule"

Appendix A

DELEGATION REQUEST

Submitted on Tuesday, March 12, 2019

Names of persons speaking: Jenny Steel and other residents of Curtis Road

Organization you are representing: Curtis Road Residents Association

Primary purpose of the organization: Represent residents of our community

Number of members: 60

Mailing address:
495 Curtis Road
Comox, BC V9M 3W1

Contact name: Jenny Steel

Subject matter: Noxious odours from the CVWPCC and EQ Basin Construction Project issues.

Requested meeting date: April sewage commission meeting

Audio-visual equipment needed: Powerpoint access

Sewage Commission Delegation

Request for Sewage Commission action on Bioreactor Odours and EQ Basin Issues

Curtis Road Residents Association, April 16 2019

This presentation is an overview of the report delivered to the Sewage Commission on April 9, 2019

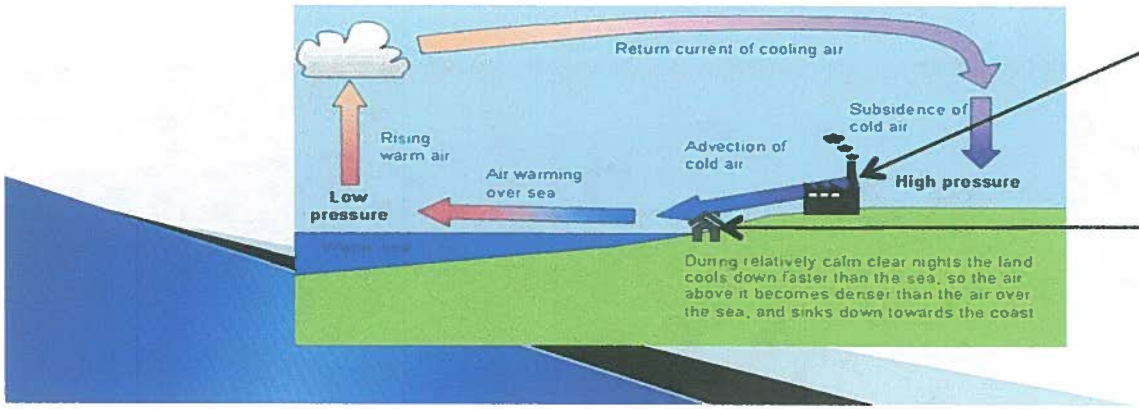
Background

Curtis Road and the CVWPCC

- Curtis Road is a quiet beachfront community of 49 properties in Area B established in the 1930's.

- The CVWPCC site was chosen in the late 70's because of its:
  - Proximity to deep water at Cape Lazo
  - A buffer zone of heavy woods and a ridge to screen the plant from Curtis Rd.

- But the site has a big meteorological challenge -- offshore breezes



Odours generated here

Get sucked down here in the evening

Background

Odour History

- Promised no odours and no visual stigma
- 1984-1992 Took eight years and a lawsuit to move the extremely odourous composting experiment off-site
- 1991-1999 Following the 1991 out-of-court settlement, it took eight years to put in mandated controls on seven plant processes -- but the controls did not meet the settlement terms and so did not solve the chronic odour problems and complaints continued
- 2006-2012 CVRD's Odour Control Policy, while acknowledging that odours were still a problem, gave it cover to ignore complaints for nine more years -- meanwhile, odour intensity and frequency increased.
- 2013-2016 After community and media pressure it took over three years for staff to complete studies of the odour problem. A plan was delivered to the Sewage Commission in January 2017

History demonstrates CVRD's callous indifference to the odour impacts on our community

Problem 1 Bioreactor Odours

Odour Study Findings

- Scrubber -- only 42% efficient at removing odour and there were leaks in the foul air collection ducts RWDI Report October 2015

- "The [Ontario] odour standard was exceeded at all 12 sensitive receptors and the CVWPCC was predicted to generate odour above the standard as far as two kilometers away" RWDI Report November 2016

Table No. 1: Maximum predicted odour concentrations at sensitive receptors

Sensitive Receptor	Odour Concentration (OU)	Frequency of Exceedance (%)
SR1	5.45	4.1
SR2	6.8	13.7
SR3	5.9	10.8
SR4	8.5	16.3
SR5	11.1	18.4
SR6	10.6	17.3
SR7	10.0	15.9
SR8	9.7	11.7
SR9	4.57	0.8
SR10	5.22	3.6
SR11	6.54	11.4
SR12	7.7	15.6

Sensitive Receptor Points on Lower Curtis Road (medians)

9.7 OU's vs. 1 OU Std.
15.9% frequency vs. 0.5% frequency Std.
1400 hours per year vs. 44 hours Std.

Problem 1 – Bioreactor Odours

Odour Study Mitigation Scenarios

	Scenario 1 Filter Only		Scenario 2 Filter and Primary Clarifier Covers		Scenario 3 Filter + Primary Clarifier Covers + Bioreactor Covers	
Sensitive Receptor	Mitigation Scenario 1		Mitigation Scenario 2		Mitigation Scenario 3	
	OU	%	OU	%	OU	%
SR1	1.4	0.2%	0.6	0.0%	0.6	0.0%
SR2	5.0	**3.4%**	2.3	0.0%	0.6	0.0%
SR3	3.7	**1.3%**	1.7	0.1%	0.6	0.0%
SR4	5.1	**6.5%**	2.7	**1.3%**	0.6	0.0%
SR5	5.1	**8.7%**	2.6	**4.3%**	0.7	0.0%
SR6	4.5	**7.8%**	2.6	**4.1%**	0.8	0.0%
SR7	4.2	**6.6%**	2.4	**3.5%**	0.9	0.0%
SR8	2.9	**3.2%**	1.8	**0.6%**	0.99	0.0%
SR9	3.5	**0.5%**	1.6	0.1%	0.5	0.0%
SR10	3.6	**0.5%**	1.6	0.2%	0.5	0.0%
SR11	2.3	**2.7%**	1.2	0.1%	0.7	0.0%
SR12	6.3	**6.4%**	3.0	3.9%	0.8	0.0%

NOTES: Values in **bold** indicate frequency of exceedances greater than 0.5%

Only this scenario meets the 1 OU standard

Problem 1 – Bioreactor Odours

Issue

- But approval and funding were sought for Scenario 2 -- for an additional filter and primary clarifier covers. The need for bioreactor covers was not mentioned at all in the January 2017 Staff Report -- which falsely claimed that the $2.1m investment would bring CVWPCC into compliance with the Ontario standard.

- RWDI's November 2016 Recommendation: *"Even with additional controls on the stack, the site would still have significant odour impacts associated with the primary clarifiers and the bioreactors. We would recommend that those tanks be covered and also be vented through the scrubber stack.."*

- ISL's 2016 engineering report did not dispute the need for bioreactor covers and left it up to the CVRD to either include the work in the immediate 2017 construction plans or delay it for future construction (based on funding availability).

- With only two of three fixes put in place in late summer 2018, Curtis Road still experiences chronic odour problems. Problems have been reported through last fall and winter months

Problem 1 Bioreactor Odours

Cost estimates

$3m estimate appears reasonable compared to:

- $7.6m spent to expand the bio-solids facility by 35%
- $9m to the Village of Cumberland over 20 years to "host" the solids treatment centre
- Tens of millions estimated to move the force-main from the Balmoral Beach foreshore
- $7.16m for an Equalization Basin which will be used only infrequently and is a stop-gap measure

Represents a capital Investment of less than $3 per user per annum

Problem 1 – Bioreactor Odours

Remedy Sought

1. Install bioreactor odour controls as a 2019 priority
   - The odour needs to controlled at the source. There is no evidence that berm building across two gullies would do anything other than cause the heavy foul air to move down other depressions and gullies.

2. No more studies -- studies and history show bioreactors are the remaining cause of odours (almost as much as the primary clarifiers) and the solution is known
   - Staff now apparently plan another modelling study in summer

3. Host Community Compensation should be given until a remedy is in place

4. Be proactive not reactive - revise 2024 and 2031 expansion cost estimates to include odour controls up front

Problem 2 – EQ Basin
Background

- Originally approved in 2016 as a $5.4m covered and odour controlled concrete tank to:
  - Prevent the effluent basin overflowing – twice per year
  - Prevent washing out of solids and micro-organisms to the strait in very wet weather
  - Project was considered urgently required for the 2016/2017 rainy season
- Morphed into an open half-acre membrane-lined basin apparently because of excessive cost – the current estimate for the basin is $7.16m
- Basin was to be located far from Curtis Road but then was moved to encroach into the buffer zone about 3-5 months ago because of cost.
- Apparently will no longer be required after 2024/2031 expansions.

Problem 2 – EQ Basin Issues

- Lack of project visibility and consultation
- Odour potential – 68 meters behind property lines
- Visual barrier has been destroyed
- Property values diminished
- Well water security and pollution concerns
- Environmental impact
- Trust undermined

Problem 2 – EQ Basin Remedy

1. Find another location. The CVWPCC property is 35 acres:
   - The fenced CVWPCC is approximately 8 acres
   - The Curtis Road Buffer zone is approximately 7.35 acres
   - This leaves nearly 20 acres – surely another site can be found for a half-acre basin
2. Retire the tall stack to soften the visual stigma
3. Plant fast growing trees along the fence line
4. Host Community compensation until the visual screen restored

Conclusion/Next Steps

- The burden for lack of odour solutions has been placed on Curtis Road residents through:
  - Decreased quality of life
  - Reduced property values
  - Reduced rents
- It's long past due for CVRD and the users of sewer services to step up to the plate and fix the problem they've caused in our community. Just ask some of the folks here for the impact that the plant has on their lives
- The Sewage Commission is asked to provide a plan to address these issues to CRRA by 16 May 2019.
  - "The CVWPCC constitutes and has at all material times constituted a nuisance to the affected lands"

Spending braggadocio unmasked

CVRD on their web-site, in press releases and in person are always quick to point out how much has been spent on odour controls – as if that should somehow reduce the air pollution we experience. In fact they've spent very little:

- 1984 Minimum odour controls – pre-chlorination and filters on sludge dewatering building and zero on the composting process
- 1997 $2m was spent on the court-ordered Odour Control Project– but 3 of 10 work items in the contract were unrelated to odour
- 2003 $5m investment at Pidgeon Lake and cited as an odour control cost is unrelated to resolving Curtis Road odour issues – composting had been moved there eleven years earlier.
- 2003 Sewage Commission refused to invest $1.4m for primary clarifiers and bioreactor covers -- they knew fifteen years ago that these were needed.
- 2018 $2.1m spent for primary clarifier covers and an additional filter - work that should have been part of the court-ordered 1997 Odour Control Project

Less than $4.1 million over 35 years - $3 per user per year

Less than a can of Febreze!

Odours & EQ Basin Issues Delegation to the Sewage Commission

April 16

2019

This document presents background information to members of the Comox Valley Sewage Commission for the delegation by Curtis Road Residents Association concerning Odour and the EQ Basin Project Issues.

Curtis Road Residents Association

Table of Contents

The following members of the Curtis Road Residents Association have contributed to the creation of this report:

Jenny Steel, Brian Dolan, Marie and Ian Holm, Bryan Lai, Ron Hatch, Doug Manness, Angus and Rolande Ramsey, Joanne and Peter Paulson, Mike Richman, Marg Hundt, Diane Bolton, Mike Hoy and David Oakley.

Final Version April 9 2019

Purpose of Delegation

The residents of Curtis Road have lived with foul odours from the Comox Valley Water Pollution Control Centre (CVWPCC) since its commissioning in 1984. The odour of living next to the CVWPCC needlessly affects our quality of life and now, with the visual screen between us partially destroyed by deforestation, the CVWPCC causes further economic harm to our entire community

The purpose of our delegation is to seek the Sewage Commission's immediate action on two urgent problems:

Problem 1 – Bioreactor Odour: The remaining major odour problem needs fixing. Recent studies establish the need for bioreactor odour controls and that they can be installed for a reasonable cost.

Problem 2 – EQ Basin: The encroachment of a planned Equalization Basin into the buffer zone between our properties and the CVWPCC brings hazards to our community that need addressing -- the visual screen between us must be restored to reverse the economic harm that removing it has caused.

This document has been prepared to provide background information for our presentation on April 16, which will focus on the two problems. A history of the plant and its odours is also provided in this document for those Sewage Commission members who may be less familiar with the topic.

About Curtis Road

Curtis Road is a beachfront community of forty-two properties established in the 1930's as a recreational area. Today, most residents live here full-time. There are three beach accesses used frequently throughout the year by valley residents and visitors.

Eighty residents have formed the Curtis Road Residents Association (CRRA). The goal of our association is to address common community issues such as CVWPCC odour smell and road conditions; we also intend to develop further our community spirit through picnics, potlucks and garage sales.

Curtis Road is part of Electoral Area B. As such, we do not participate in the sewer service nor are we given representation on the Sewage Commission.

About the CVWPCC

A series of studies and reports, completed in the 1970's, examined sewage treatment and disposal alternatives for the Comox Valley. They concluded that effluent should be disposed to the Strait of Georgia through a long deep marine outfall in the vicinity of Cape Lazo. Site selection was undertaken in 1979/80. The current thirty-five acre site on Brent Road was chosen in 1980 because, among other considerations, the treed hillocks between the plant and Curtis Road formed a *"…natural buffer zone to provide sound, odour and visual screening of the treatment plant from the nearest residences*". *"This ridge would be retained, as much as possible, in its natural treed state as a buffer zone".* [1, 2]

[1] Dayton and Knight Ltd, Opinion to Singleton, Urquhart and Macdonald, Oct 4 1991, page 5,last para.
[2] AESL, Pre-Design Report, VII Treatment Plant and Outfall, November 13 1979.

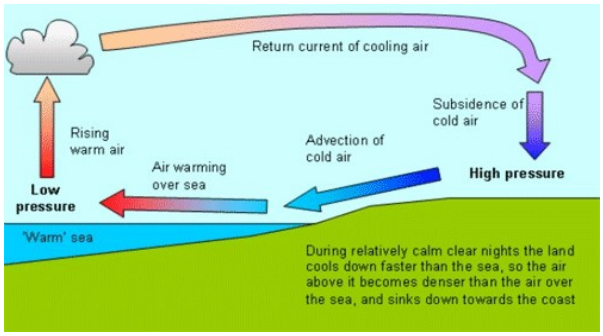
The buffer zone between Curtis Road and the CVWPCC extends from 120 to 130 metres at the northerly end and 80 to 90 metres at the southerly end.

Politicians and regional district staff assured neighbouring properties that the treatment plant would be a state of the art facility with no odours whatsoever and it would be hidden behind the heavily treed ridge. We note that noise, odour and visual appearance are the three primary terms in nuisance laws.

The plant design was completed in April 1982 and it was commissioned in 1984 at a cost of $31.6m. The Department of National Defence contributed $4.018m. Comox and Courtenay paid the rest with assistance of 75% through the Provincial Sewage Facilities Assistance Program.

According to experts,[3] the site poses significant and unique challenges to odour control:

1. During the day, warming of the land by the sun causes the air to rise and to be replaced with cooler air from above the water creating a sea-breeze or on-shore breeze. At night when the air above the land cools, the air flow pattern is reversed, creating a land breeze, or off-shore breeze. Under off-shore wind conditions odours released from the plant can be picked up and sucked to the water through Curtis Road properties. Because the heating and cooling of the land is not rapid, and the temperature differential is not extreme, the velocity of the wind created by this convection, particularly during the warmer summer months, is typically very low. Minimal wind velocity can aggravate odor conditions by reducing the dispersion/dilution potential of the air.[4]



2. Several long force mains exist in the wastewater collection system and wastewater can be retained for 16 to 24 hours. Wastewater retained for such long periods in pressurized pipe becomes anaerobic promoting formation of odorous compounds.

Odour History

1984 to 1993 — Shock, Horror and Denial

It became obvious immediately upon plant commissioning that there were serious odour problems. The Regional District, the Ministry of the Environment and the local MLA all received a barrage of complaints from local residents. The odours, usually in the evening and early morning when the air flow is towards the ocean, were truly sickening.

Odour control logs for the period September 1984 to April 1985 showed the average odour intensity (on a scale of one to four) was 2.7 — moderate to strong. Twenty-six percent of log entries rated the odour as four or extreme. Residents could not go outside in the evening because of the smell — it infiltrated their homes and "clung to the curtains". A UBC Professor, hired by MLA Stan Hagan, estimated that the intensity was a thousand times more than acceptable. Representative comments during those years:

[3] JM Smith and Associates, Consulting Engineers, Assessment of odor emission's from the CVWPCC April 1991
[4] Malcolm Pirnie 1991 Odour Assessment Study

"This stink is so strong that we are awakened at night." July 1984

"We find ourselves sickened by a variety of noxious odours on most evenings of the year when there aren't South Easters blowing." September 1989

"As I sit here writing this Letter of Notice the odour wafting over from the sewage treatment plant permeates the house making our everyday household activities very unpleasant (to say the least). In the three weeks that we've resided here there have been very few "odour-free" days." July 1991: from a departing renter.

Odour problems should have been anticipated. Only two odour control mechanisms had been included in the design – wastewater pre-chlorination, to solve the long force-main transit times, and air filters on the sludge dewatering building.

The original sludge management design had been changed in 1982 from a closed vessel anaerobic digestion system to a $1.5m cheaper, but experimental, composting system where large volumes of sludge/wood-chip mixture were exposed to the atmosphere.

The Regional District was one of the first in Canada to adopt this type of composting — as touted by the Sewage Committee of the day *"Such a system goes several steps beyond most of the existing Canadian composting schemes which are essentially pilot projects (including Kelowna) and is in the forefront of the use of composting in North America"* [5]. Consulting engineers JM Smith of Portland Maine stated in their 1991 expert witness testimony that it was well known before 1982 that this composting method had a great potential for releasing offensive odours.

Because of a required legal time limit, a writ was issued in the Supreme Court in 1984 by Curtis Road property owners for odour nuisance. There was an understanding that if the situation was remedied then residents would drop the court action.

Between 1984 and 1989 the Regional District modified many parts of the plant in an attempt to improve performance and to reduce odours. None were successful. Some were of questionable design and not well maintained. The composting facility had the most significant modifications – but improvements made to the composting process had the unfortunate side effect of increasing volumes of foul air.[6]

Communication between Curtis residents and the elected officials and managers of the CVRD gradually deteriorated. The initial promise of no smell became a mixed message. Plant managers admitted to problems but the elected officials of the day claimed they did not exist. As of 1989, the Regional District was not prepared to make any further changes to reduce odours — leaving Curtis Road no other choice but to proceed with the lawsuit.

In 1990, the Regional District used its bully pulpit to engage a heavy-hitting Vancouver law firm. The trial time was unreasonably extended from ten to forty days and more and more information and testimony was demanded in the hopes that Curtis Road residents would be unable financially to

[5] Comox Valley Sewage Disposal Committee, Review of Sludge Disposal Methods, 3rd August 1982
[6] JM Smith & Associated, Consulting Engineers, Portland, ME Assessment of Odor Emissions From the CVWPCC April 1991

continue their case. In October 1991, the Regional Board went as far as passing a unanimous motion to *"serve notice of intention to expropriate twenty six lots on Curtis Road for the treatment and disposal of sewage"*. The ethics of this move was strongly questioned both by the media and by the general public.

In November 1991 just before trial, the Ministry of Environment stepped in. It advised the Regional District that new regulations, especially those relating to composting, would require changes to plant operations to reduce odours. The Regional District decided, one week before trial, to settle out of court. The settlement ordered the Regional District to: [7]

a) Immediately move composting off-site. Starting June 1992, sludge was temporarily buried at the landfill pending introduction of the windrow composting operation in 1994.
b) Install odour controls *"at least as effective as a bio-filter and a packed tower wet chemical scrubber"* on seven other plant processes, including the primary clarifier weirs by December 1996.
c) Pay Curtis Road residents damages, legal expenses and costs for an odour right of way for five years -- pending the installation of the odour controls.

We understand that the Regional District recovered these and its own costs from its insurers a few years later.

1994 to 2003 — Foot Dragging Years

Moving the composting off-site in 1992 certainly reduced the intensity of the odours but, as anticipated, there remained the odours from the other plant processes. As part of the settlement, Curtis Road residents had given the Regional District an odour right of way until December 1996 — allowing them ample time to meet the settlement conditions.

However, it was not until four long years later, in early 1996, that the Regional District finally began odour control contracting. Reid Crowther stated in their July 1996 design report[8] that *"The fast-track nature of this odour control assignment has not allowed for a detailed evaluation of odour generation at the CVWPCC"*.

Reid Crowther proposed that odours from the primary clarifiers could be fixed more cheaply by submerging the weirs. The remaining six of the seven plant processes requiring odour control would be physically covered and the foul air treated before being released to the atmosphere.

Table 6.2 Air Flows and Peak Day Performance of Two Stage Chemical Scrubber Options

Option	Combined Air Flow m^3/h	H_2S Concentration, ppm	
		Inlet	Exhaust
Option 4: Treat air with a chemical scrubber/biofilter system	21,820	28	0.014
Option 5: Treat air with a chemical scrubber/tall stack system	21,820	28	0.280
Option 6: Treat air with a chemical scrubber/activated carbon system	21,820	28	0.003

Foul air treatment options proposed were a) a chemical scrubber/ bio filter or b) a chemical scrubber/tall stack or c) a chemical scrubber/activated carbon system. Despite being the most inefficient at odour removal (see Table 6.2), the cheaper wet chemical scrubber/tall stack option was chosen. Dispersion from the tall stack was expected to dilute the twenty-eight times more odourous air before reaching Curtis Road – which it likely did, unless of course there was an off-shore breeze and an air inversion.

[7] Supreme Court of Canada, Minutes of Settlement, NO. S0008, Courtenay Registry
[8] Reid Crowther Odour Control & Sludge Management Pre-Design Technical Memorandum, July 1996

In our opinion, the selection of the scrubber/stack option did not meet the terms of the settlement. The settlement required the efficiency of a scrubber/bio filter. Moreover, once commissioned, the foul odour from the top of the forty-meter tall stack now affected properties at the more elevated south end of Curtis Road during north-west winds.

It is important to note that one of the selection criteria for the cheaper scrubber/tall stack option was that the trees and ridge would hide the stack from Curtis Road – trees that have now been chopped down to make way for the Equalization Basin.

The main parts of the Odour Control System comprising covers, venting, scrubber and tall stack, were finally put in place by May 1997 – five and a half years after the settlement. The contract for the head-works odour controls was not approved until April 1999.[9] Plant staff told us that they were never able to get the primary weir submersion mechanism to work properly. A request to the Regional District in 2000 on this particular point resulted in obfuscation as did other queries in 2013.

Unsurprisingly then, while the odours had been reduced there still remained odour issues. An October 1998 letter to the sewage commission cited odourous events on fifteen different days in the month of August alone. That resident reported *"We have had to cancel many outdoor barbecues and activities. We feel that we cannot use our home as we should be able to due to the obnoxious smells coming from the treatment plant. We cannot entertain or even sit on our sundeck in the evening and enjoy our home*." The Sewage Commission minutes showed receipt of several complaints in the years following the odour control commissioning.

2003 to 2012 — We won't spend another nickel years

In October 2003, the Sewage Commission instructed staff to draw up a policy prohibiting any further expenditure of public funds for odour control.[10] The policy, not formally approved until 2006, was never made public – in fact it still cannot be found in its entirety on CVRD's web site. There was no public consultation or Area B involvement.

Under the policy, any further expenses on odour control would only be made if staff became aware of new technology or new operating procedures or if there was a new regulatory requirement to do so or if the level of odour emission was increasing beyond current levels. There is no evidence that the "current" levels were ever measured let alone any periodic measurement taken to see if they were increasing.

The policy acknowledged *"At the present time some complaints and concerns about odours remain. The estimated cost of addressing these concerns through the installation of fixed covers and related appurtenances at the secondary clarifiers,* ***aeration basins, primary clarifiers*** *and effluent discharge chambers is approx. $1.4m. This amount is considered to be disproportionate to the benefit that is likely to be achieved."*

While the Sewage Commission were perfectly fine spending $30m+ to treat wastewater and unknown millions more on conveyance, they steadfastly refused to spend 5% more to fully address the air

[9] Sewage Commission, Minutes of Meeting, April 1999
[10] CVRD, Policy for Expenditure of Funds for odour control , CVWPCC Reference 5340, 26 June 2006

pollution it had caused – less than a can of Febreze per household per year at that time would have fixed the problem.

CVRD's web site has for several years touted the "*significant investment previously made to control odours"* and that *"staff work closely with complainants to ensure that they understand the history of plant odours and the extensive effort and expense that the CVRD had undertaken in an effort to improve odours".* Scratch beneath the surface (as we did with Freedom of Information and Privacy Protection requests) and it is apparent that comparatively very little has actually been spent. A hasty decision in 1982 resulted in a bad sludge handling design – with the result that composting was ordered to be moved to a remote location in 1992. A $5m investment at that remote location over a decade later cannot be cited as an investment in "odour controls" at the CVWPCC — yet it always is. The Comox-Strathcona Regional District Annual Report of 2006 stated that the district was playing a "leadership role" in making this investment and that by so-doing they established one of the "most innovative bio solid composting facilities in Canada" — the business case for that investment, $900k of which was through a provincial grant, never mentioned odour control once. The $2million touted as being spent for the Odour Control Project in 1997/98 was not all spent to control odour – of the ten work items included in the contract, three were completely unrelated to odour controls.[11]

For the next nine years, 2003 to 2012, all complaints were futile — plant staff simply referred the complainers to the policy and expected them to feel grateful to CVRD for spending so much — even though the odour problems had not ever been fixed.

With no Area B representation on the Sewage Commission and emotionally exhausted from two very trying decades, Curtis Road residents just didn't have the energy to lock horns once again with the Sewage Commission and the Regional District Board.

2013 to 2019 — We're fighting for our rights again

It's not clear why in the late 2000's the odours significantly worsened. Perhaps it was the 2008 plant expansion or just an increase in the number of users. It also could have been that the settlement-mandated odour controls had never been fully put in place. The scrubber/stack combination filtered only hydrogen sulphide with no bio-filter to absorb other odours. The required primary clarifier odour controls were non-functional/non-existent.

Furthermore, it's hard to trace how long CVRD had been simply ignoring residents' complaints or how many complaints had been reported since the odour policy was put in place. The complaint voice mailbox was full on September 2012. Moreover, Curtis residents claimed many more complaints than the four logged into CVRD's official complaint log. It was obvious that staff were simply ignoring complaints and certainly not reporting them to the Sewage Commission on any kind of routine basis. An informal survey in 2013 found:

- One resident averaged calls 2-3 times per week from March to June. In July and August the stench was there every night although the resident only reported twice per week.

[11] Warren, Request for Information Pursuant to FOIPPA File No. 13-09-05, October 2013

- A new homeowner on Curtis Road called in complaints six times in August. Two requests for callbacks were ignored.
- Yet another reported that his family had called to complain at least four times in the last year.
- Others reported that they had called but couldn't recall when and how many times

Here's a sampling of comments collected from different Curtis Road households in 2013:

- The smell was so foul this summer that I wasn't able to have my windows open from the time the wind died down in the evening until the morning breezes started up
- Almost every night in summer and fall and then occurring on and off throughout the year we are reminded that we live below a sewage treatment plant that has been stinking for years and years since it was first installed. Guests quickly pack up and leave making any excuse they can to get out of here.
- Offensive odours seem to persist especially in the evenings and early mornings
- The composting sewage smell was offensive enough during that evening, that it provoked much discussion around the beach fire.
- Odours are unpleasant, and it affects our desire to have company during the summer months sometimes.
- The odor affects our quality of life. It is extremely unpleasant to live with. Windows must be closed and venturing outside is nauseating. We are embarrassed to have people visit.
- I spent two days (November 20th and 21st) working on the roof of our house …..when the temp. was as low as -3 degrees C. at night (probably causing an inversion). The smell of composting sewage was strong and disagreeable on both days
- The sewer smell is getting worse for longer periods of time now it seems

As a result of pressure both through the mainstream media and correspondence, the Sewage Commission agreed in November 2013 to evaluate the existing odour control system to make sure it was operating properly and to put in place a new complaint tracking system. Between June 14 and August 15, 2014 the new tracking system recorded sixty-one complaints — a far cry from the ten per year claimed, and still claimed, on CVRD's web site.

Despite letters asking for a fast-track evaluation, the contractor, RWDI, did not start work until early 2015 and did not deliver a report until October 2015 —almost two years after the initial approval. RWDI reported that the scrubber was not working efficiently —it was only removing 42% of the odour emissions. In addition, there were several leak points in the system.[12]

RWDI's Odour Survey of nearby residences showed that more than half of the twenty-seven respondents were not aware of the Regional District's new process for complaints. Of the Curtis Road respondents: 86% of them frequently detected foul odours from the plant; 93% rated the odours from unpleasant but not strong to very strong and very objectionable. 50% rated the odours as very strong and very objectionable. Moreover there were many angry comments regarding the odours and lack of information as to progress and plans.

[12] RWDI, Odour System Evaluation Report, October 20, 2015.

RWDI concluded that it was really not possible to say whether the stack and scrubber were providing sufficient odour control in the surrounding community and recommended dispersion modeling of the stack and other odour sources to find out. CVRD received the odour dispersion modelling report in November 8, 2016 — three full years after the original approval for the odour assessment.

Meanwhile, Curtis Road continued to live with chronic odour problems.

Twelve sensitive receptors (SRs) recorded odour concentrations in odour units (OUs) at locations in the area surrounding the CVWPCC. See Figure 1 at right for their location. The OU's were compared to Ontario odour standards[13]. SR2 to SR8 are on the lower section of Curtis Road.

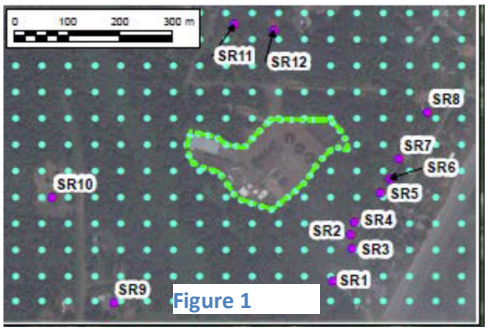


Figure 1

<u>The odour standard was exceeded at all twelve sensitive receptors. The dispersion modelling had shown that the CVWPCC was predicted to generate odour above the standard as far as two kilometers away.</u>

The acceptable frequency of exceeding the Ontario odour standard is 0.5 per cent or 44 hours per year that the odour concentration exceeds one odour unit. Figure 2 shows the maximum predicted concentrations at each of the 12 sensitive receptors.

Sensitive Receptor	Odour Concentration (OU)	Frequency of Exceedance (%)
SR1	5.45	4.1
SR2	6.8	13.7
SR3	5.9	10.8
SR4	8.5	16.3
SR5	11.1	18.4
SR6	10.6	17.3
SR7	10.0	15.9
SR8	9.7	11.7
SR9	4.57	0.8
SR10	5.22	3.6
SR11	6.54	11.4
SR12	7.7	15.6

Figure 2

<u>The median OU's calculated for lower Curtis Road (SR2-8) exceeded the 1 OU standard by nearly 10 fold (9.7 OU's).</u>

In November 2016, ISL engineering was engaged to develop technical options and construction estimates for the needed additional odour controls. In January 2017, a Staff Report was delivered to the Sewage Commission and $2.18m was approved to add a dual-bed carbon polisher, to cover the primary clarifiers (finally) and to retrofit the twenty-year-old chemical scrubber. This work would be part of the Phase 1 upgrades starting in spring 2017.[14]

The scrubber retrofit was completed in early 2018 — temporary covers were installed on the primary clarifiers in spring 2018 with permanent covers installed in September/October. The polisher was commissioned in August 2018.

Almost five years had now passed since CVRD had reluctantly agreed to study the problem. That the polisher and the primary clarifier odour controls should have been put in place two decades earlier in order to meet the terms of the 1992 court settlement is a point lost to current CVRD staff.

Curtis Road thought that finally we would be able to rest easy and without smell. Not so – the Regional District once again had let us down.

[13] All figures and tables in this Section were copied from RWDI, Odour Dispersion Modeling Report November 8, 2016

[14] Oakman, Staff Report Odour Control systems dispersion modeling results and upgrade option, January 12 2017

Problem 1 — Bio-reactor Odour Controls — lack thereof

Current Odour Problem

The primary clarifier covers and the new polisher seemed to have helped but there are still major issues — particularly, but not limited to, the south end of Curtis Road. One property owner there has been very vigilant reporting each time he experiences bad odours. Since the new odour controls were put in place (around September 1, 2019), he has sent fifty-four emails reporting odours. Forty-one reported a distinctively sewer characteristic and the remainder a dirty laundry/rotten diapers smell. Twenty-two reported the odour as moderate to strong and two as extreme.

Recent 2019 reports:

"Just getting back home from a nice 3 weeks away and am wondering why I keep having to email the CVRD. Last evening (March 18) at about 19:30, I walked down to the end of Curtis Rd and could smell sewage odour all the way to the bottom of Brent Rd. At 20:00 I left for the walk back home and although the smell had dissipated somewhat, It began to strengthen as I moved southward along Curtis. Please don't put us through another summer like 2018."

"I can say that I have experienced foul odours every day walking down the street (especially in the middle section) except for those few days this winter when the temperature was below 0 during the daytime. Through July and August the stench has been increasing every year for the past 7 or 8 years and is especially appalling in the evening and nighttime. The only times I do not smell the treatment plant are during those nights when a strong wind is blowing on-shore—those are the few times I can actually keep a window open in my bedroom during the night!"

"I certainly did continue to experience the smells after mid-August last year (2018). Maybe marginally not as bad but I remember being surprised when I heard that upgrades had been completed because it didn't seem to have made much difference to what I was experiencing during the evenings and at night."

"We visited last week and had to endure this sewer smell Mar 18 /19 and 20th evenings. The worst night was March 20th (2019) when the smell was so strong we could even smell it when inside the house with the windows closed. This was the night after they started removing the trees from the area behind the natural hillside berm."

The northern end of the street experienced bad odours in August, September and October over several evenings – causing embarrassment at social gatherings and with visiting guests from Ottawa.

CVRD's February 28, 2019 correspondence to us about the EQ Basin acknowledges the continuing odour problem *"It is the CVRD's plan to create a pile of fill that disrupts air flow through this channel, with the intent to reduce odours from the plant being funneled towards Curtis Road".*

Recent tours of the plant by some Curtis Road residents identify that the bio-reactors are most definitively the source of the problem.

Why there's still a problem

We were shocked to find out recently that RWDI's Odour Modeling Report of November 2016[15] had actually recommended odour controls for the bioreactors. The report's concluding recommendation is:

"Even with additional controls on the stack, the site would still have significant odour impacts associated with the primary clarifiers and the bioreactors. We would recommend that those tanks be covered and also be vented through the scrubber stack with an improved control efficiency."

RWDI's OU emission rate measurements, derived from actual air samples, showed the primary clarifiers at 966.7 Odour Units per second (OU/s) and the bio-reactors not far behind at 734.5 OU's. The most odourous samples came from the bioreactor entrance at 3566 OU's – much greater strength than the 2702 OU's measured at the primary clarifiers.[16]

RWDI's report showed that they had modeled three mitigation scenarios to predict the effect on the neighbourhood:

- Mitigation Scenario 1: Adding another filter/polisher
- Mitigation Scenario 2: Adding another filter/polisher plus covering the primary clarifiers
- Mitigation Scenario 3: Adding another filter/polisher plus covering the primary clarifiers plus covering the bio-reactors.

The modeling results are shown in Table 6 below.

Table 6: Maximum Predicted Concentrations at Sensitive Receptors for Mitigation Scenarios

Sensitive Receptor	Mitigation Scenario 1		Mitigation Scenario 2		Mitigation Scenario 3	
	OU	%	OU	%	OU	%
SR1	1.4	0.2%	0.6	0.0%	0.6	0.0%
SR2	5.0	**3.4%**	2.3	0.0%	0.6	0.0%
SR3	3.7	**1.3%**	1.7	0.1%	0.6	0.0%
SR4	5.1	**6.5%**	2.7	**1.3%**	0.6	0.0%
SR5	5.1	**8.7%**	2.6	**4.3%**	0.7	0.0%
SR6	4.5	**7.8%**	2.6	**4.1%**	0.8	0.0%
SR7	4.2	**6.6%**	2.4	**3.5%**	0.9	0.0%
SR8	2.9	**3.2%**	1.8	**0.6%**	0.99	0.0%
SR9	3.5	**0.5%**	1.6	0.1%	0.5	0.0%
SR10	3.6	**0.5%**	1.6	0.2%	0.5	0.0%
SR11	2.3	**2.7%**	1.2	0.1%	0.7	0.0%
SR12	6.3	**6.4%**	3.0	3.9%	0.8	0.0%

NOTES: Values in **bold** indicate frequency of exceedances greater than 0.5%

Only Mitigation Scenario 3 meets the 1 OU Ontario standard — the foul air from the Primary Clarifiers **AND** the Bioreactors must be vented through the scrubber. Without bioreactor odour control the Ontario standard will be exceeded by more than 250% for those on lower Curtis Road.

[15] RWDI, Odour Modeling, Page 13, 5. Conclusions and Recommendations
[16] RWDI, Odour Dispersion Modelling, Appendix A, Results

ISL's engineering report did not question RWDI's findings. Its report quoted verbatim RWDI's recommendations. However, clearly ISL had been given marching orders re expenditures and recommendations. ISL concluded on Page 20 of their report that:

"Covering the current and future bioreactors will increase the odour control system substantially and will require a separate odour system with an anticipated capacity of 23,000 m^3/hr. In order to provide odour control with a reasonable cost, the required air flow from the bioreactors was separated as an optional system which can be included in the immediate construction stage or delayed for future construction. The timing of this optional odour control system may depend on the available project funding and the CVRD's choice. It is estimated that this optional covering of the bio-reactors and adding a separate chemical scrubber and AC polisher will cost approximately an additional $3.0m without applicable taxes".

The January 2017 Staff Report to the Sewage Commission made no mention whatsoever of the clear need for bioreactor odour controls[17]. There is not a single word in the staff report that tells the Sewage Commission that future funding will be needed for bioreactor odour controls to meet the standard and solve the Curtis Road odour problem.

In our opinion, this amounts to negligence. It should have been the Sewage Commission's decision to decide what is reasonable financially and what is not — nuisance is always unreasonable. All of the folks in Courtenay and Comox that we interact with are mortified that this problem hasn't been fixed by now considering the relatively small capital investment required to do so.

The bio-reactors sit adjacent to the proposed EQ Basin site – which has now been clear-cut. The protection afforded by the under-bush and trees to filter some of the odour has now disappeared. The odours from the bioreactors now have a much clearer path down to Curtis Road through the gullies in the ridge. It is unlikely that building berms across two of the gullies will have an impact — the air inversions and offshore breezes will, if anything cause the odours to find another route down other low spots and gullies to the ocean through different parts of Curtis Road or will simply go over the top of the berms. If building berms were an odour control solution then we would have expected to see that in at least one of the myriad of reports on this topic.

The root cause of the odour needs to be addressed.

CVRD staff has pointed to other sewage treatment plants (Kelowna, Vernon, and Penticton) where there are uncovered bioreactors in close proximity to residential housing. A quick look at those sites shows that two are using a different bioreactor technology — the Bardenpho process which normally uses mechanical aeration. Moreover it is unlikely that any of those sites have the same siting issues as the CVWPCC — offshore breezes, air inversion and long pipe transit times.

CVRD staff has stated that they will study the odour problem once again —yet another dispersion model by RWDI sometime over the summer months. This is redundant and a waste of time and $'s. A new study will simply confirm Curtis Road odour reports: that the bioreactors are indeed still stinky and make the same recommendation. Nothing has fundamentally changed that would make the bioreactors stop

[17] CVRD Debra Oakman, Odour control systems modeling results and upgrade options – CVWPCC, Jan 12, 2017.

stinking – our noses tell us that they are a problem and this is overwhelmingly supported by the last RWDI study.

Remedy

The capital cost estimate to remedy the remaining odour problem and cover the bioreactors is $3 million (plus applicable taxes). We do not believe that the good citizens of Comox and Courtenay would balk at less than $5 each per year[18] to rid us of the smell of their bodily functions. Further, this is a bargain when compared with:

- the $9 million Host Community Benefit Agreement with Cumberland for the Comox Valley Waste Management Centre being located in their jurisdiction,
- the $7.2 million EQ Basin that will become redundant in 5 to 10 years,
- $5.18 million to expand the bio-solids composting facility by 35%,
- the tens of millions of dollars estimated for the conveyance options under the LWMP.

We ask that the Sewage Commission:

1. Provide a plan for installing odour controls on the bioreactors on an urgent basis.
2. Consider paying those affected properties some form of Host Community Compensation until a remedy is in place. This would be similar to that paid to Cumberland for hosting the landfill site in their jurisdiction.
3. Assure that cost estimates for all planned expansions (2024 and 2031) included costs for odour control.

It is patently unfair to expect under these circumstances that Curtis Road residents continue any longer to live with this — the problem and its solution are well understood and affordable.

Problem 2 — Equalization Basin

Background

Project Background The Equalization Basin (EQ) "Basin" Project started out in 2016 as a project to put in place a $5.4 million covered concrete and odour-controlled tank serving two purposes.

Firstly, the tank would provide a buffer to stop the effluent basin overflowing when there is a king tide accompanied by a very heavy rainfall – maybe once or twice a year. A capacity assessment in early 2016 concluded that this required *immediate* attention to mitigate the risk of the storage basin overflowing in the upcoming 2016/17 rainy season.[19]

[18] 42000 users, $3m amortized over 25 years at 4%
[19] CVRD, Staff Report Cape Lazo Outfall Assessment Page 1, May 10 2016

Secondly, the tank would stabilize flow through the bioreactors and secondary clarifiers to prevent washing out of the microorganisms and solids into the Strait in very wet weather – estimated at 500 hrs. per year.

The tank would sit between the outflow of the primary clarifiers and the input to the bioreactors holding half-treated effluent. The Sewage Commission approved the EQ Tank project in November 2016 at a cost of $5.8 million.

Changing Plans We have been told that the concrete EQ tank was abandoned because it was cost-prohibitive. CVRD then pared back the flow stabilization requirement and settled instead on a less-costly ½ acre membrane-lined EQ Basin open to the atmosphere. The EQ Basin would be limited in use, we are told, to once or twice per year when the king tides might coincide with very wet weather and there is a danger of effluent basin overflow and two to three times a year to prevent washout. As the EQ Basin would contain only semi-treated primary effluent, it would need to be manually washed out after each use. The estimate was raised to $7.2 million and the increased funding approved at September 2018's Sewage Commission meeting.

Siting The site originally selected for the EQ Tank was adjacent to the primary clarifiers and the bioreactors — encroaching on the Curtis Road buffer zone. The first site chosen for the uncovered EQ Basin was on the side of the plant furthest away from Curtis Road. In fact, the RFP (request for proposal) issued in 2018 for the basin construction (later withdrawn we are told because of a lack of bidders), had the basin at the far side of the plant well away from Curtis Road. As of last November, during a plant tour for the LWMP PAC, the basin was still planned for the far side of the plant and not the Curtis Road buffer zone. Shortly after, we were told that the cost to build the basin on the far side also proved cost-prohibitive so CVRD staff decided to cut into the Curtis Road buffer zone.

Public Consultation The community's first heads-up about this project was a February 28, 2019 invitation to attend a March 7 briefing at the plant. The meeting was well attended. We received the project background and were given a tour of the planned site for the basin which we were told would be constructed later in 2019. Curtis Road residents made it very clear that they were not at all happy with the prospect of a ½-acre sewage basin sitting only 69.2 metres behind some property lines and encroaching into the buffer zone. On March 12, we asked for a delegation to voice our concerns and objections directly to the Sewage Commission.

Clear-Cutting Despite knowledge of our objections, on March 20, 2019 clear-cutting of the site was started. We requested a stop work order on March 21 listing our issues. The response received from CVRD was *"The current tree cutting and brushing work is required in order to accommodate a bird nesting window. It will proceed in order to protect birds in the area, and ensure that this urgent project can be completed before the next winter season. Construction on the actual EQ basin will not begin for several months".*

Problems

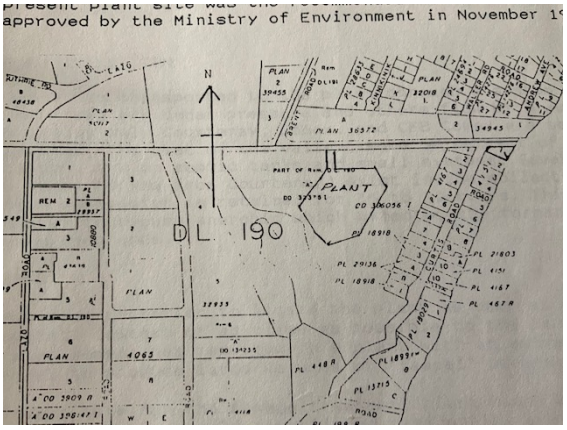
Odour Potential: Odours coming from a ½-acre open basin containing primary effluent located less than 80 meters behind some property lines are a major concern. Despite CVRD assurances, we are not at all convinced that a $7.2 million basin will be used only once or twice per year when king tides

coincide with wet weather – especially when the original estimate was for 500 hours use. Nor are we convinced that the basin will be promptly cleaned after each use. The clear-cutting now leaves almost a straight run from the odourous bio-reactors down the gullies – the brush and trees were likely providing some odour filtration.

Visual Barrier Destroyed: The Regional District chose the thirty-five acre site on Brent Road in 1980 because, among other considerations, the treed hillocks between the plant and Curtis Road formed a 80-120 meter natural buffer zone to provide sound, odour and visual screening of the treatment plant from the nearest residences.[20] Further, in 1997 the visual barrier provided by the trees allowed CVRD to select the cheaper scrubber/tall stack option for odour control. CVRD had a duty to respect and retain that visual barrier. But now the trees are gone. The plant and stack loom large, changing completely the feeling of the neighbourhood. Not only are we reminded of the sewer plant by the odours but now we see the plant each day. We are expected once again to accept without complaint both odour and visual stigmas of Comox, Courtenay and DND's sewage treatment facility.

Property Values: Residents are extremely upset about the impact on property value now that the visual barrier has been largely removed. It is now so obvious that we live next door to an industrial complex. Savings for Sewer Service users in Comox and Courtenay have come at the expense of Curtis Road property devaluation – this is unacceptable.

Concern for our wells: Curtis Road wells are shallow wells. Many residents are concerned that the basin excavation and the filling of gullies may affect well-water levels. There are also serious concerns that a tear or leak in the basin liner membrane could result in primary effluent seeping into and contaminating our water sources.



Ministry of Environment Approval: Shown at right is the site plan approved by the Ministry of Environment – the boundary of the plant and the buffer zone are clearly marked. We would like proof that the Ministry of Environment has approved an encroachment into the buffer zone and of the environmental impact assessment reportedly undertaken for this project.

Industry Best Practice: Industry best practice in Ontario requires a 100 – 150 metre separation between any open tank/basin and residential property – this open basin will be 68 metres behind the closest property.

Environmental Impact Residents have also expressed concern about the stability of the dune with the loss of so many trees. A Freedom of Information (FOIPPA) request has been submitted for the Environmental Impact Assessment that was reportedly undertaken for this project.

[20] Dayton and Knight Ltd, Opinion to Singleton, Urquhart and Macdonald, Oct 4 1991, page 5,last para.

Action Requested

How can CVRD possibly right this wrong – 100 foot trees do not regrow overnight. The damage is done.

We ask that the Sewage Commission:

- Direct that staff find another location within the 35-acre site to accommodate the basin. If this means re-arranging the 2024 and 2031 expansion plans then they must be re-arranged.
- Re-assess the immediate need for the EQ basin. A solution was considered urgently required for winter 2016 and here we are three years later. Further, the basin will no longer be needed , it seems, when additional bio-reactor/secondary clarifiers are added in 2024 and a new larger capacity outfall is installed in 2031. This is a $7.2 million investment to fix a temporary problem.
- Consider retiring the tall stack. With a scrubber and now, a polisher there should be no need for the stack according to the original design report.[21] This would soften somewhat the visual stigma. There was no evidence of any tall stack at other wastewater facilities we surveyed.
- Plant fast growing trees such as aspen or poplars along the existing fence line to screen the buildings and processes from our property.
- Enter into a Host Community Benefit Agreement with the Curtis Road residents to compensate homeowners pending full restoration of the visual screen. The concept of a Host Community Benefit Agreement is to balance the impacts a local community may experience in hosting a waste management facility against the advantages received by the users of the facilities from other communities. As an example, the 2013 agreement between the Village of Cumberland and the District for hosting the landfill within their boundary gave the Village a $3 million one-time payment for Bevan Road maintenance and a 20-year $300,000 annual payment – total value $9 million.[22]

Conclusion and Next Steps

This delegation addresses issues ongoing since 1984. These were acknowledged by a settlement in 1992 that included the Regional District's commitment to solving the air pollution issue. Unfortunately, the Regional District has failed to meet those commitments and has breached the contract with the residents. It is well known that the problems can be solved. It is due to the Regional District's refusal to fund solutions that the odour problems continue. The cost is not avoided. Instead, the burden shifts to Curtis Road residents through reduced property values, reduced rents, as well as the emotional frustration of having to hide inside or even leave when we should be enjoying a warm summer evening by the ocean. Regional residents and visitors who visit the beach and walk the forest trails each summer also incur the cost.

We ask the Sewage Commission to provide its plan to address these issues to our Association by the 16 May 2019.

[21] Reid Crowther, Odour Control and Sludge Management Pre-Design Technical Memorandum, July 1996
[22] CVRD/Cumberland, Host Community Benefit Agreement, July 3 2013

If a reasonable plan to address our issues is not forthcoming then Curtis Road Residents Association will have no choice but to pursue other courses of action. This would include media exposure (both conventional and social), lodging nuisance complaints[23], petitions, and complaints to the Department of Environment, the Provincial Ombudsman, our MLA, the Minister of Health, the Minister of Municipal Affairs and the Department of National Defence.

We will also pursue further our options for court action against the Regional District on the grounds of odour nuisance and economic harm.

Respectfully Submitted

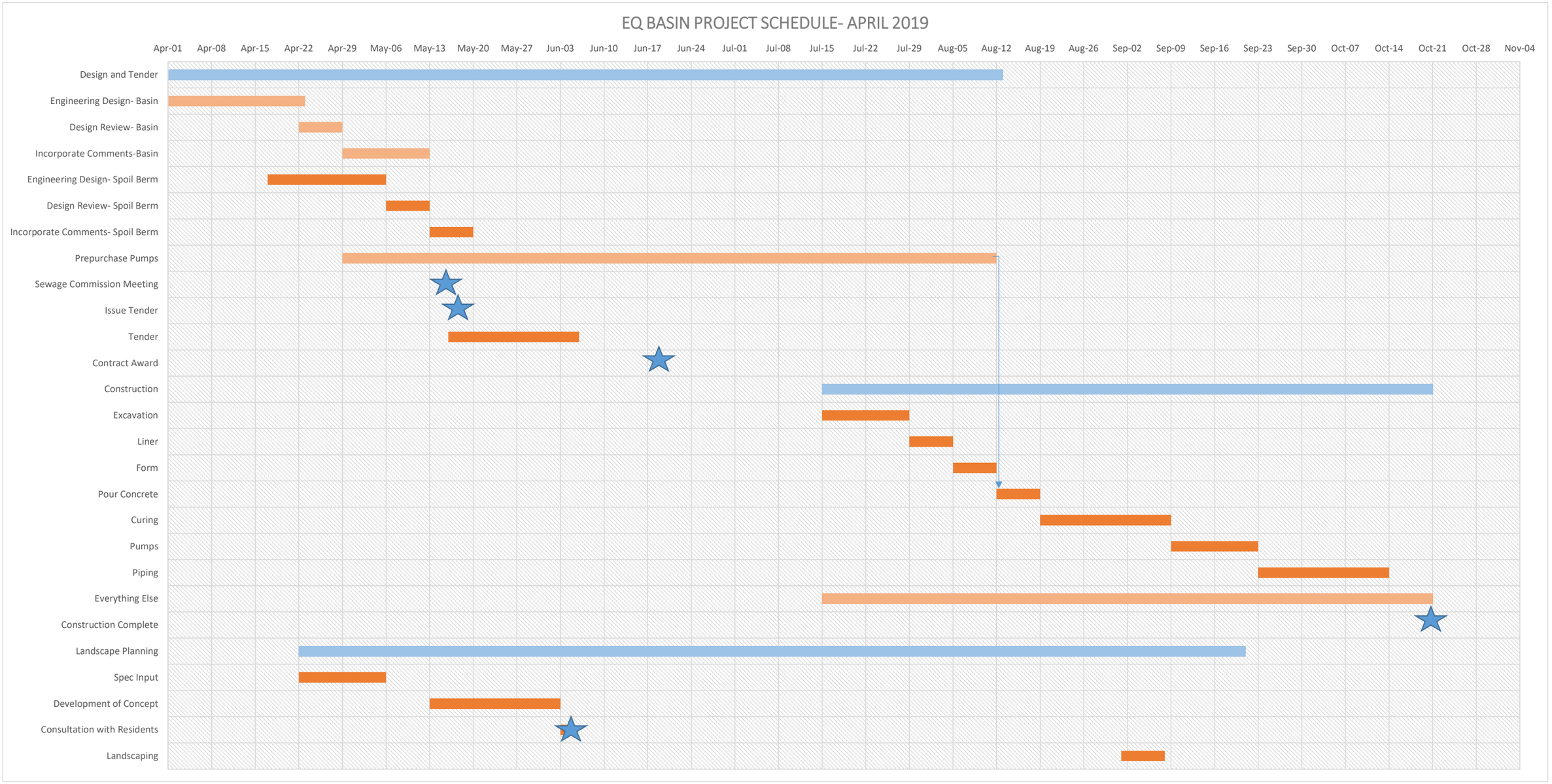
Curtis Road Residents Association

Response should be to:

Brian Dolan, Secretary, Curtis Road Residents Association
495 Curtis Road, Comox, V9M 3W1

[23] Electoral Areas, Unsightly Premises and Nuisance Regulation, Bylaw 377, 2015

Appendix B


EQ BASIN PROJECT SCHEDULE- APRIL 2019
Apr-01
Apr-08
Apr-15
Apr-22
Apr-29
May-06
May-13
May-20
May-27
Jun-03
Jun-10
Jun-17
Jun-24
Jul-01
Jul-08
Jul-15
Jul-22
Jul-29
Aug-05
Aug-12
Aug-19
Aug-26
Sep-02
Sep-09
Sep-16
Sep-23
Sep-30
Oct-07
Oct-14
Oct-21
Oct-28
Nov-04
Design and Tender
Engineering Design- Basin
Design Review- Basin
Incorporate Comments-Basin
Engineering Design- Spoil Berm
Design Review- Spoil Berm
Incorporate Comments- Spoil Berm
Prepurchase Pumps
Sewage Commission Meeting
Issue Tender
Tender
Contract Award
Construction
Excavation
Liner
Form
Pour Concrete
Curing
Pumps
Piping
Everything Else
Construction Complete
Landscape Planning
Spec Input
Development of Concept
Consultation with Residents
Landscaping