

DATE: February 28, 2019**FILE:** 5380-03**TO:** Chair and Directors
Comox Valley Regional District
(Comox Strathcona Waste Management) BoardSupported by Russell Dyson
Chief Administrative Officer**FROM:** Russell Dyson
Chief Administrative Officer***R. Dyson*****RE: Regional Organics Compost Project – March 2019 Update**

Purpose

To provide a project update related to siting analysis and backhauling options.

Recommendation from the Chief Administrative Officer:

For information and discussion purposes only.

Executive Summary

At their February 7, 2019 meeting, the Board provided staff direction to compare the 2.9 hectare site at the Norm Wood Environmental Centre (NVEC) with Block J at the Campbell River Waste Management Centre (CRWMC).

Siting analysis completed by our consultant (Jacobs) at the NVEC shows that:

- Only the initial phase of the regional organics project (14,500 tonne/year) could be built on the 2.9 hectare site. An additional 1.2 hectares is required elsewhere on the NVEC site for auxiliary installations.
- The 2.9 hectare site cannot accommodate the expansion planned within 10 years.
- The risk of odour complaints due to the proximity of a residential area is high.
- An investigation is in process in conjunction with the City of Campbell River to determine the availability of additional land for auxiliary installations.

Siting analysis work completed at the Campbell River Waste Management Centre Block J (Appendix A) shows that:

- The regional organics project (initial phase of 14,500 tonne/year and future expansion up to 30,300 tonne/year) could be built in Block J.
- The risk of odour complaints from neighbours is lower than at the NVEC.
- The landfill activity and compost processing are similar activities.
- The CRWMC Block J is on Crown Land and within Agricultural Land Reserve (ALR).
- An application for non-farm use on ALR land is going to be submitted during the first week of March 2019. Approval is required from the Agricultural Land Commission (ALC) in order to implement the processing facility. An answer from the ALC is expected within 3 to 4 months (June). Historically the ALC has approved the site for sand/gravel extraction for defined periods of time.
- If the ALC approves the application, the current Crown Land lease with the Province of BC to use the site will have to be amended to add the use of a composting facility. The current lease

agreement for Block J is for “sanitary landfill purposes.” The agreement expires in 2021. There is no fee linked to the current lease agreement.

- Section 18.4.2 of the SWMP identifies the CRWMC Block J as a potential site to expand the CRWMC landfill. The construction of a composting facility in this location precludes the expansion of the landfill simultaneously. An investigation is in process to determine the feasibility of expanding the CRWMC landfill into Block J.
- It is expected that permissions from the ALC and the Province could take up to six months to secure. An indication of support may be provided sooner.
- A reviewed project timeline will be communicated to the NBCF explaining the delay in identifying a final site for the processing facility. The March 31, 2020 deadline requirement for project completion under the NBCF will need to be extended.
- Drawings showing preliminary layouts of the compost processing facility can be found in Appendix A.
- Preliminary analysis shows that the construction of the CSWM Regional Organics Processing Facility is feasible in this location. The key issue now is to determine if the ALC will accept this non-farm use in this location.

Next steps: Capital and operational cost comparison between the NVEC and CRWMC Block J followed by a final decision on siting. For the final site, additional studies including a geotechnical/hydrological study, an odour dispersion model and a public/First Nations consultation will be completed.

Backhauling

- Backhauling opportunities between the CRWMC and the Comox Valley Waste Management Centre (CVWMC) are under investigation.
- An opportunity may exist for backhauling organic waste from the CVWMC to the compost processing facility in Campbell River using empty trailers hauling waste to the CVWMC. Starting in 2022 or 2023, Municipal Solid Waste (MSW) from the CRWMC will be trucked to the CVWMC for disposal.
- Estimated amount of MSW and organic waste to be hauled are 86 tonnes/day and 32 tonnes/day respectively.
- Topics under investigation are:
 - Trailer style and size, odour and leachate leak concerns while hauling and contamination of trailer from MSW.
 - Capital and operational hauling cost comparison between all scenarios assessed.

Prepared by:

G. Bau

Gabriel Bau, P.Eng.
Manager of CSWM Projects

Concurrence:

A. McGifford

Andrew McGifford, CPA, CGA,
Senior Manager of CSWM
Services

Concurrence:

M. Rutten

Marc Rutten, P.Eng.
General Manager of Engineering
Services

Attachments: Appendix A – “Jacobs Technical Memo Processing facility siting at the CRWMC Block J”



Memorandum

Suite 150
 205 Quarry Park Boulevard SE
 Calgary, Alberta T2C 3E7
 Canada
 T +1.403.258.6411
 F +1.403.255.1421
 www.jacobs.com

Subject	Evaluation of Potential Composting Site at Campbell River Waste Management Centre - Block J
Attention	Gabriel Bau, P.Eng
From	John Berry, P.Eng.
Date	February 27, 2019
Copies to	File
Project Name	Comox Valley Regional District Composting Facility
Project No.	700041CH

1.0 Introduction

Jacobs¹ and Morrison Hershfield are assisting the Comox Valley Regional District (CVRD) and its member municipalities with the planning and procurement of a new regional organics processing facility and an organics waste transfer station that will service municipalities in the Comox Strathcona Waste Management (CSWM) service area.

The first phase of this project includes an analysis that confirms the location for these facilities. As part of this analysis, the City of Campbell River (the City) identified three locations at the Norm Wood Environmental Centre (NVEC) and one location at the Campbell River Waste Management Centre (CRWMC). The NVEC locations were discussed in a separate technical memorandum (TM). This TM discusses Block J located within the CRWMC. All these locations have been reviewed with the CSWM Technical Advisory Committee for the construction of the organics processing facility.

The purpose of this TM is to evaluate Block J at the CRWMC as to its suitability for the organics processing facility. The scope of this TM does not include evaluation of other locations either within the City of Campbell River or elsewhere within the CSWM service area.

2.0 Key Siting Considerations

Siting of the regional organics processing facility is an important decision that will affect other decisions, as well as the successful operation of the facility. Important siting considerations include:

- Composting Technology: Each composting technology, and its accompanying equipment, will have slightly different site requirements.

¹ On December 15, 2017, all CH2M HILL companies became part of Jacobs and are now wholly owned direct subsidiaries of Jacobs. CH2M HILL Canada Limited remains a separate legal entity and we will continue to operate and conduct business under this entity in Canada; however, we refer to ourselves in deliverables, including this technical memorandum, as Jacobs.

- Topography: Topography affects site drainage, facility visibility and, potentially, odour movement.
- Proximity to Land Users: Consider the site's proximity to other land users (e.g. residential areas). The facility will potentially impact sensitive individuals due to noise, odour, dust, increased traffic, etc.
- Buffer Areas: Open fields and treed spaces can help avoid or mitigate environmental impacts.
- Vectors: Insects, rodents, etc. may transport diseases, depending on feedstock materials.
- Fires: Maintaining a buffer distance to trees can be prudent and a facility fire protection plan is required.
- Weather Conditions: Rainfall patterns and prevailing winds will affect leachate generation and odour movement.
- Wetlands & Flood Plains: Sites should not be in or near wetlands due to the higher potential for environmental impacts. Sites subject to flooding or where the seasonal high groundwater table is less than one metre from the soil surface should not be chosen.
- Site Utilities: The need for access to infrastructure utilities including electrical power, domestic sewage treatment, and water lines should be considered.
- Space Requirements: Adequate space should be provided for storing raw materials and finished product, curing, and odour and leachate control measures.
- Vehicular Traffic: Access to the facility should be easy and should be over wide, paved roads through non-residential areas.
- Travel Distance: Travel distances for incoming feedstock and to finished compost purchasers should be minimized.
- Local Zoning: Zoning bylaws should permit construction of the facility.

2.1 Facility Capacity

The required capacity of a regional composting facility is addressed in a separate TM. Table 1 presents a summary of the three recommended sizes.

Table 1 Facility Capacity

Description	Year 2028 (tonnes per year)	Year 2038 (tonnes per year)	Year 2038 full blown (tonnes per year)
SF + MF Food Waste	4,159 (SF)	4,827 (SF)	6,114 (SF + MF)
SF + MF Yard Waste	6,988 (SF)	8,109 (SF)	12,599 (SF + MF + Depots)
Commercial Food Waste	3,360	3,620	9,232
Biosolids	NA	NA	2,357
Total Estimated Tonnage	14,500	16,500	30,300

Notes:

SF = Single family residential households

MF = Multi-family residential households

Depots = Regional yard waste drop-off depots

3.0 Campbell River Waste Management Centre (CRWMC) Block J

The CRWMC is located on the east side of Highway 28 and on the west side of Argonaut Road, approximately 5.5 kilometres west of Campbell River. The CRWMC is one of the two regional solid waste

facilities in the CVRD and the Strathcona Regional District and treats solid waste from the boundaries of the Comox Valley and Strathcona Regional Districts.

The CRWMC layout consists of four blocks, of which one is the Block J site that comprises a soil/gravel extraction area used for landfill purposes and a stormwater pond. Figure 1 illustrates the Block J site layout and the area required to construct the organics processing facility.

3.1 Block J site

The Block J site consists of a \pm 19 hectares site located in the northeast corner of the CRWMC property. It is bounded on the east side by Argonaut Road, on the northeast side by a privately-owned cleared land, on the west side by heavily forested land and on the south and southwest by the CRWMC. The site is located within the City limits.

3.1.a Site Zoning

Appendix A shows details of the City's Zoning Bylaw No. 3250. The Block J site is currently zoned **I-4, Industrial Four** by the City. This zoning provides areas for landfill operations, recycling, auto wrecking, equipment and materials storage and repairs. Permitted uses include:

- landfill in accordance with the *Environmental Management Act*.

The CVRD has confirmed with the City's Sustainability and Long-Term Planning Manager that the existing land use zoning is appropriate for construction and operation of the organics processing facility. Furthermore, the CVRD is seeking approval from the Agricultural Land Commission (ALC) to use this land for non-farm use, as illustrated in Figure 1.

Minimum setback distances for lands zoned I-4 are:

- Front, rear and side yards = 8.0 metres
- Yards adjacent to a highway or arterial road = 30 metres

The maximum building height for this type of use is 10 metres. Site Description

Vehicular access into the Block J site is from a driveway approach located east of Block J off Argonaut Road (Exhibit 2 and Exhibit 3). The access road into Block J is a narrow dirt road that extends north along the east side and west along the north side of Block J (Exhibit 4, Exhibit 5 and Exhibit 6). A soil/gravel extraction area is located on the southwestern quadrant of the site and is used for landfill purposes (and Exhibit 8).

Exhibit 1 Argonaut Road Approach from Northeast to Access Road into Block J



Exhibit 2 Argonaut Road Approach from Southwest to Access Road into Block J



700041CH

Exhibit 3 Existing Driveway Approach into Block J



Exhibit 4 Access Road



Exhibit 5 Landfill Monitoring Well and Localized Ponding along Access Road



Exhibit 6 Access Road on Northwest Quadrant of Block J



700041CH

Exhibit 7 Steep Slope on the West Side of Block J**Exhibit 8 Soil/Gravel Extraction Area Used for Landfill Purposes**

A privately-owned clearing and residence are located approximately 100 metres east of the proposed stormwater pond, on the northeast side of Block J. The site is heavily treed and slopes to the east with a steep slope located on the west side of Block J.

A stream DP area and a ditch DP area run from the northeast of Block J and extend right up to the entrance of the access dirt road at Argonaut Road.

3.1.b Improvement Requirements

If development of the regional composting facility proceeds at the CRWMC, improvements to the access road into the site will be required. These improvements must be reviewed and approved by the City of Campbell River. Improvements to the access road would most likely include:

- Widening of driveway approach at Argonaut Road to accommodate tractor-trailer vehicles.
- Clearing and grubbing of trees to allow for widening along the access road.

Furthermore, site utilities improvements are also required to allow for the operation of an organics composting facility at the Block J site and will include:

- Overhead power line servicing the CRWMC would have to be extended north across Argonaut Road to service the site.
- Domestic sewage would be managed by installing a holding tank and hauling the sewage to an approved disposal location.
- Water requirements would be met by harvesting water from the existing surface water pond located on the southern part of the site and the proposed surface water pond for the organics composting facility to be placed downhill on the eastern side of the site. Additionally, a water well would be drilled to supplement the water demand to the composting facility.

3.1.c Site Evaluation

Table 2 presents an evaluation of Block J site using the key siting considerations listed in Section 2.0.

Table 2 Evaluation of Block J Site

Siting Consideration	Evaluation
Composting Technology	Composting technology and accompanying equipment will not be affected by site location.
Topography	Site is located on a gradual slope in a lower area of the CRWMC property and has adequate drainage. This site would only be visible from the privately-owned land located to the east. This is good from both site drainage and visibility viewpoints.
Proximity to Land Users	There is only one land user nearby, approximately 100 metres away. This proximity to odour receptors will result in a low risk of odour, noise and dust complaints.
Buffer Areas	The area is currently heavily treed. As such, there is potential to leave some existing trees along the property lines to act as a buffer between the facility and the adjacent landowners.
Vectors	Control of vectors will not be affected by site location.
Fires	Trees will need to be cleared and a fire protection plan will be required.
Weather Conditions	Weather conditions are similar compared to other sites evaluated in the region.
Wetlands & Flood Plains	The site is on a slope and has adequate drainage. There are no anticipated issues with either wetlands or flood plains.

Siting Consideration	Evaluation
Site Utilities	Electrical power, domestic sewage, and water requirements will require improvements, as outlined in Section 3.1.b.
Space Requirements	There is enough space on this site to construct the composting facility and any of its phased expansions listed in Table 1.
Vehicular Traffic	Vehicular traffic would access the site through a driveway approach off Argonaut Road. Improvements required are outlined in Section 3.1.b.
Travel Distance	The travel distances for collection vehicles, transfer trailers and customers purchasing finished compost is appropriate. Traffic flow is good between buildings onsite.
Local Zoning	The I-4 zoning and the future ALC approval will permit construction of the facility on this site.

3.1.d Space Requirements

The three different phases of implementation (14,500 tonnes/year; 16,500 tonnes/year; 30,300 tonnes/year) will fit inside the 19-hectare Block J site and will allow for additional space for any future expansion. The ancillary services located onsite include:

- Scale
- Scale house
- Administration / maintenance building
- Ditching for storm water system

Appendices B through D provide the conceptual site layouts for the three sizes of facility.

4.0 Conclusions and Recommendation

The CRWMC Block J site will accommodate the initial and subsequent planned expansion phases of the regional composting facility. If the regional composting facility is constructed on the Block J site, vehicular access and site utilities improvements would be required. Furthermore, measures should be considered to provide an appropriate buffer between the facility and the existing landowner located directly east of the site.

Jacobs confirms that construction of the CSWM Regional Organics Processing Facility is possible at this location, assuming that improvements to the driveway approach and the provision of site utilities are achievable and the proximity to the adjacent land owner can be managed.

Attachments

Figures

Figure 1 Proposed Non-Farm Use Area, Approximately 10.3 ha, Comox Strathcona Waste Management Service

Appendices

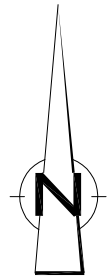
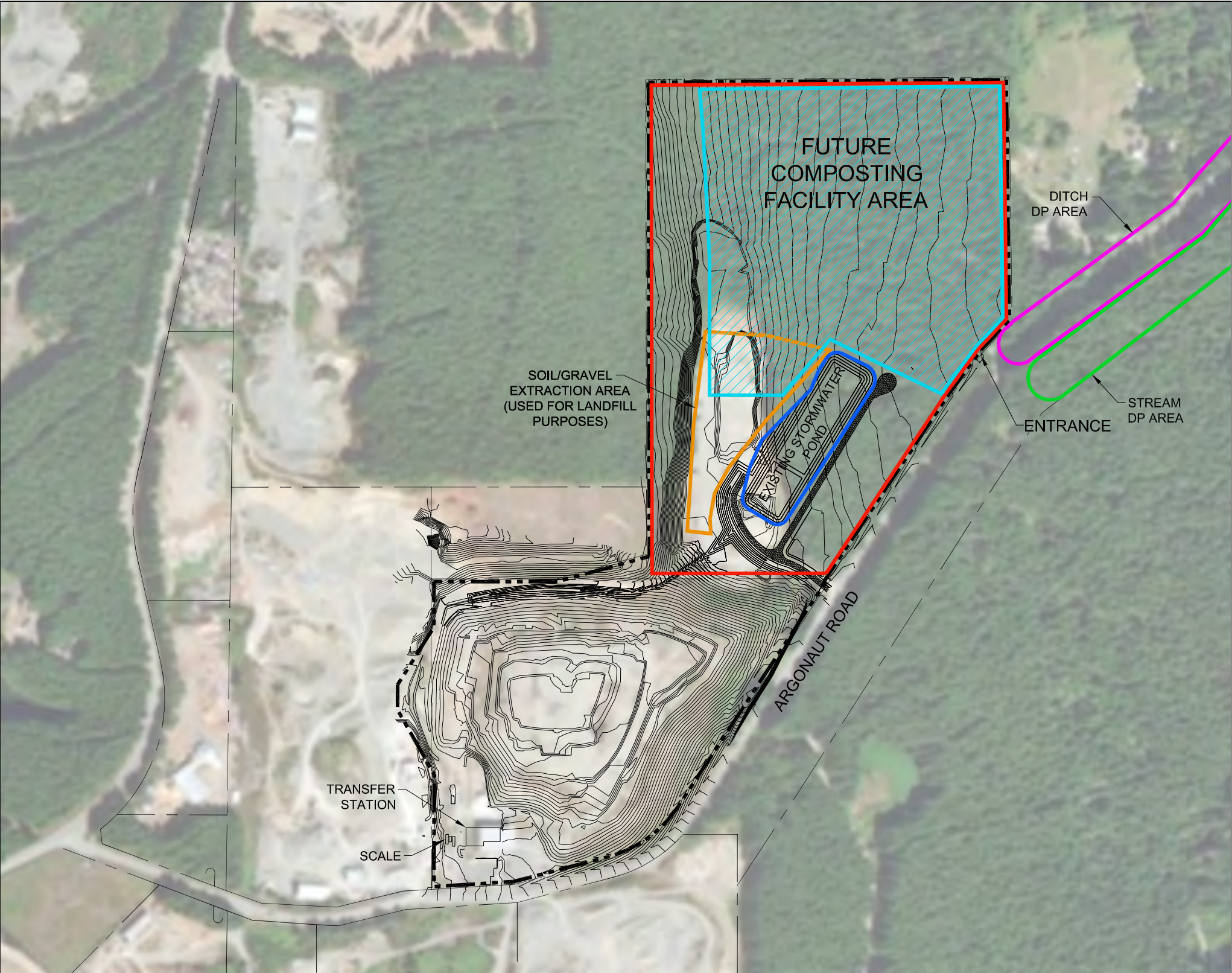
Appendix A City of Campbell River Zoning Bylaw No. 3250

Appendix B Conceptual Site Layout for a 14,500 tonne per year Composting Facility

Appendix C Conceptual Site Layout for a 16,500 tonne per year Composting Facility

Appendix D Conceptual Site Layout for a 30,300 tonne per year Composting Facility

Figure 1
Proposed Non-Farm Use Area, Approximately 10.3 ha
Comox Strathcona Waste Management Service



- LEGEND
- CRWMC
 - BLOCK J
 - SOIL / GRAVEL EXTRACTION AREA
 - STREAM DP AREA
 - DITCH DP AREA
 - EXISTING STORMWATER POND
 - ▨ PROPOSED NON-FARM USE AREA APPROX 10.3 ha

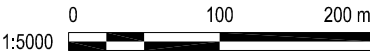
Municipal Address
6300 Argonaut Road, Campbell River

Legal Description
Block J, District Lot 85, Sayward Land District
Lease/Permit/Licence # 103555

Lot Size
+/- 19.0 hectares

Area Required for Composting Facility
+/- 10.3 hectares

Land Use Zoning
I-4, Industrial Four

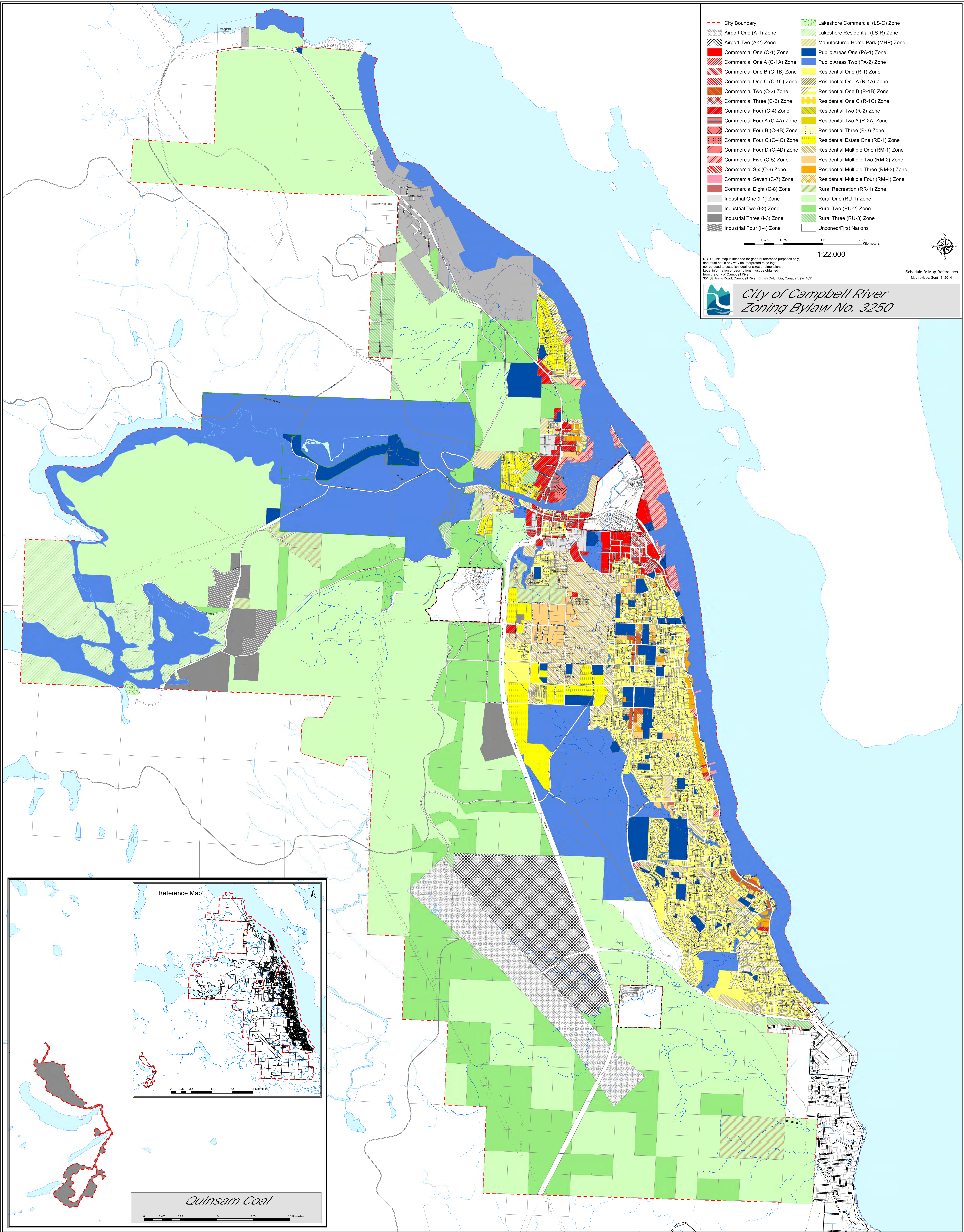


PROPOSED NON-FARM USE AREA, APROXIMATELY 10.3 ha
COMOX STRATHCONA WASTE MANAGEMENT SERVICE
REGIONAL ORGANIC PROCESSING FACILITY

700041CH

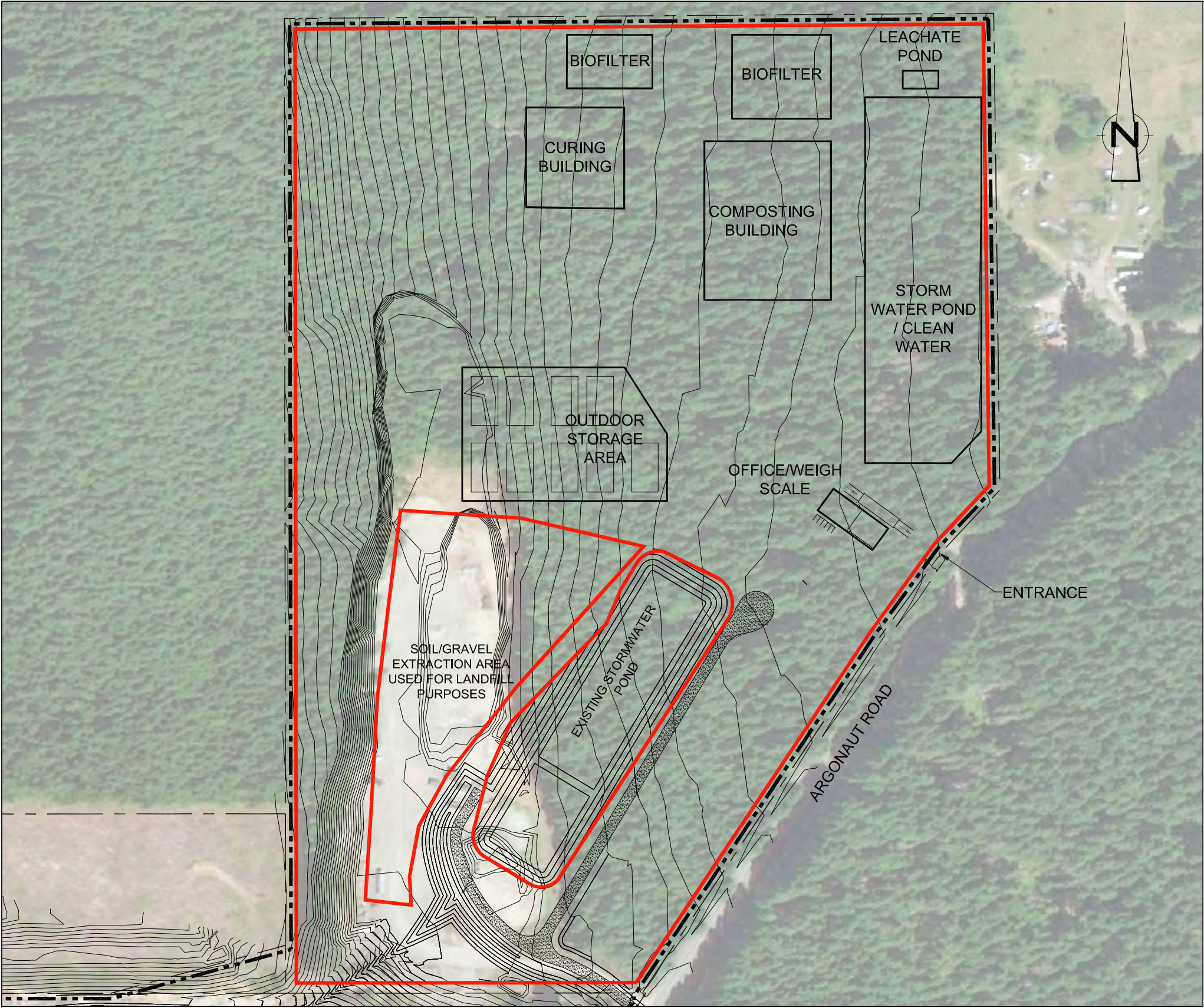
Appendix A

City of Campbell River Zoning Bylaw No. 3250



Appendix B

Conceptual Site Layout for a 14,500 tonne per year Composting Facility



COMPOST FACILITY DESIGN ASSUMPTIONS

CAPACITY = 14,500 TONNES OF FEEDSTOCK
PER YEAR (2038)
SF + MF FOOD WASTE = 29%
SF + MF YARD WASTE = 48%
COMMERCIAL FOOD WASTE = 23%
BIOSOLIDS = 0%

ACTIVE COMPOSTING STAGES:
STAGE 1 = 9 GORE PILES (3 WEEKS EACH)
STAGE 2 = 6 GORE PILES (2 WEEKS EACH)
STAGE 3 = 4 GORE PILES (1 WEEK EACH)
EACH PILE = 20m x 6m x 3m HIGH
VOL = 240m³

CURING:
6 PILES (6 WEEKS EACH)
EACH PILE = 20m x 12m x 3.7m HIGH
VOL = 700m³

STORAGE:
EACH PILE = 27.5m x 15m x 3.7m HIGH
VOL = 1,000m³
6 MONTHS STORAGE = 9,000m³ = 9 PILES

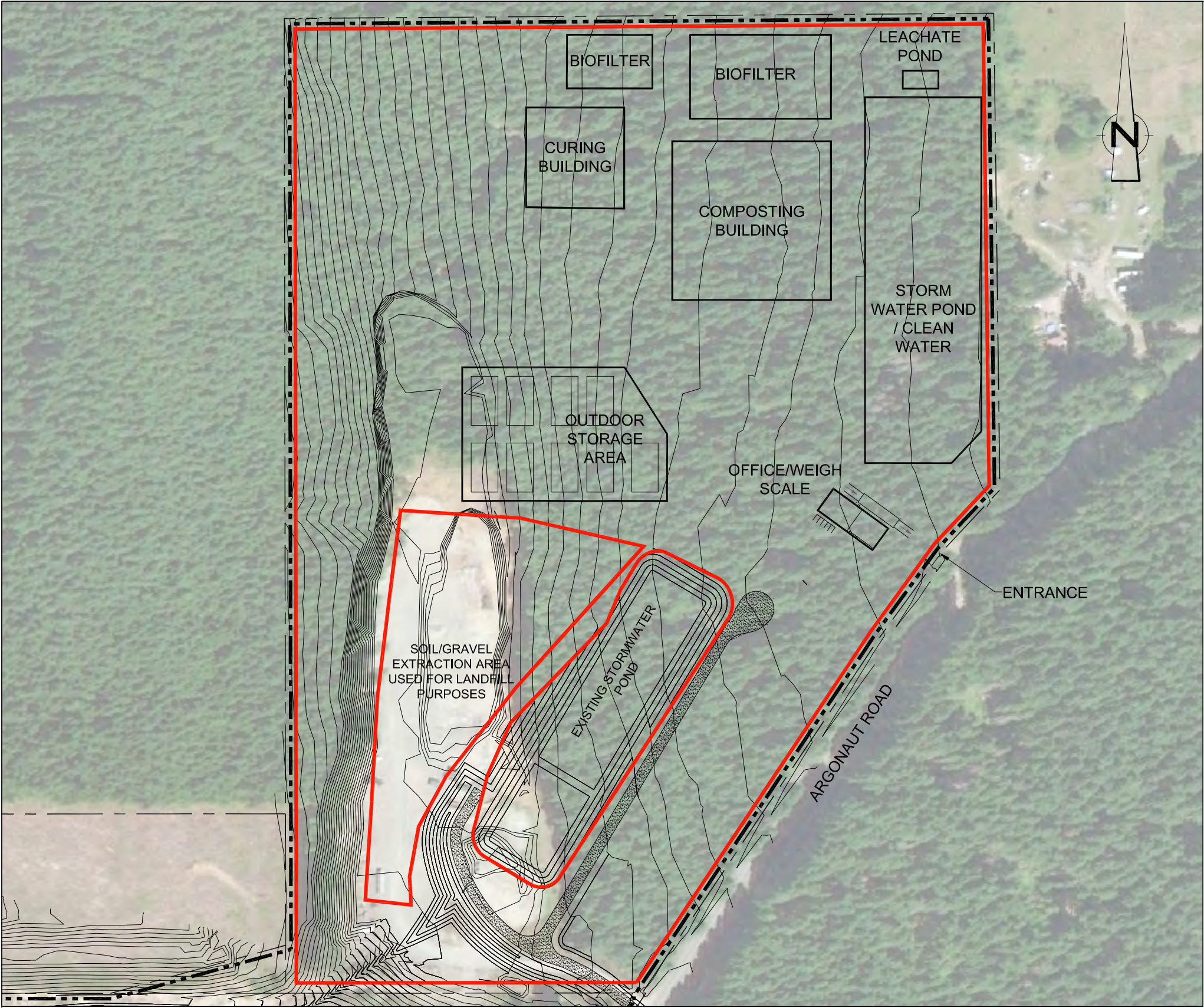
Municipal Address
6300 Argonaut Road, Campbell River
Legal Description
Block J, District Lot 85, Sayward Land District
Lease/Permit/Licence # 103555
Lot Size
+/- 19.0 hectares
Area Required for Composting Facility
+/- 10.3 hectares
Land Use Zoning
I-4, Industrial Four



COMOX VALLEY REGIONAL DISTRICT
14,500 TPY COMPOSTING FACILITY
CONCEPTUAL SITE LAYOUT

Appendix C

Conceptual Site Layout for a 16,500 tonne per year Composting Facility



COMPOST FACILITY DESIGN ASSUMPTIONS

CAPACITY = 16,500 TONNES OF FEEDSTOCK PER YEAR (2038)
SF + MF FOOD WASTE = 29%
SF + MF YARD WASTE = 49%
COMMERCIAL FOOD WASTE = 22%

ACTIVE COMPOSTING STAGES:
STAGE 1 = 12 GORE PILES (3 WEEKS EACH)
STAGE 2 = 9 GORE PILES (2 WEEKS EACH)
STAGE 3 = 9 GORE PILES (1 WEEK EACH)
EACH PILE = 20m x 6m x 3m HIGH
VOL = 240m³

CURING:
6 PILES (6 WEEKS EACH)
EACH PILE = 20m x 12m x 3.7m HIGH
VOL = 700m³

STORAGE:
EACH PILE = 27.5m x 15m x 3.7m HIGH
VOL = 1000m³
6 MONTHS STORAGE = 9000m³ = 9 PILES

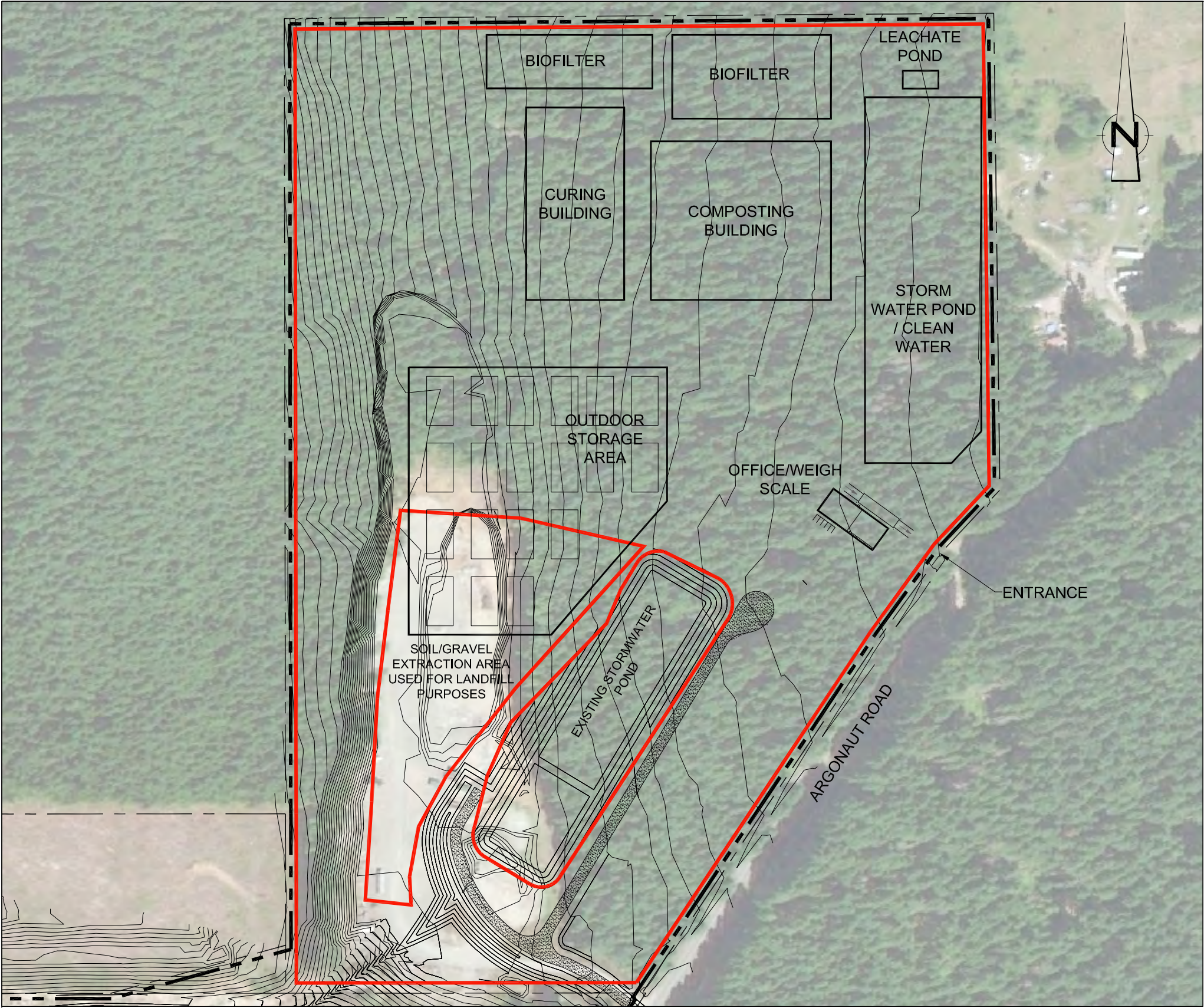
Municipal Address
6300 Argonaut Road, Campbell River
Legal Description
Block J, District Lot 85, Sayward Land District
Lease/Permit/Licence # 103555
Lot Size
+/- 19.0 hectares
Area Required for Composting Facility
+/- 10.3 hectares
Land Use Zoning
I-4, Industrial Four



COMOX VALLEY REGIONAL DISTRICT
16,500 TPY COMPOSTING FACILITY
CONCEPTUAL SITE LAYOUT

Appendix D

Conceptual Site Layout for a 30,300 tonne per year Composting Facility



COMPOST FACILITY DESIGN ASSUMPTIONS

CAPACITY = 30,300 TONNES OF FEEDSTOCK
PER YEAR (2038)
SF + MF FOOD WASTE = 20%
SF + MF YARD WASTE = 42%
COMMERCIAL FOOD WASTE = 30%
BIOSOLIDS = 8%

ACTIVE COMPOSTING STAGES:
STAGE 1 = 18 GORE PILES (3 WEEKS EACH)
STAGE 2 = 12 GORE PILES (2 WEEKS EACH)
STAGE 3 = 6 GORE PILES (1 WEEK EACH)
EACH PILE = 20m x 6m x 3m HIGH
VOL = 240m³

CURING:
11 PILES (6 WEEKS EACH)
EACH PILE = 20m x 12m x 3.7m HIGH
VOL = 700m³

STORAGE:
EACH PILE = 27.5m x 15m x 3.7m HIGH
VOL = 1,000m³
6 MONTHS STORAGE = 18,000m³ = 18 PILES

Municipal Address
6300 Argonaut Road, Campbell River

Legal Description
Block J, District Lot 85, Sayward Land District
Lease/Permit/Licence # 103555

Lot Size
+/- 19.0 hectares

Area Required for Composting Facility
+/- 10.3 hectares

Land Use Zoning
I-4, Industrial Four



COMOX VALLEY REGIONAL DISTRICT
30,300 TPY COMPOSTING FACILITY
CONCEPTUAL SITE LAYOUT