
Bowen Island Municipality

Public Works Department

**Proposed Civic Facility
Site and Infrastructure Assessment**

Draft

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Purpose

The purpose of this report is to identify location options for the proposed Civic Facility, and to provide criteria and servicing requirements for selecting a site or sites. The focus on this report is on infrastructure and Public Works issues; other issues must also be considered in determining the final site selections for the proposed facility.

It is anticipated that this report will accompany a more comprehensive report from the municipal Planning Department, regarding potential uses for the Surplus Lands in general. This report will therefore also assist Council in determining the future of newly acquired lands.

Background

Legal Transfer of the GVRD Crippen Park Surplus Lands was completed on December 21st, 2005 and lease agreements were subsequently finalized to allow the GVRD Parks staff continued use of their Dorman Road Works yard and the upper floor of the Library. The leases will continue until BIM and GVRD reaches agreement to share the Municipality's works yard on Mount Gardner Road.

During the strategic planning session on July 12, 2005 Staff was asked to report back to Council with recommendations on how to proceed with plans for the surplus lands. This report is intended to begin to address this request by addressing Civic facilities needs as identified by the Civic Facilities Task Force (CFTF).

At its December 19, 2005 Committee of the Whole meeting Council received a request from the CFTF, requesting affirmation for allocation of property for a Civic Facility on Lots 2 and 3 (see Figure 1). The report presented by the CFTF indicated that the scope of their study was limited to the options for use within the building(s), and consideration and cost estimates were not provided for items required beyond the building foot print(s). The report recognized that other items needed to be addressed, and provided a list of items as follows.

- Professional and consulting fees and disbursements,
- Planning and Administrative costs,
- Legal fees, expenses and financing fees,
- Building permits and development cost charges,
- Loose furniture and equipment,
- Removal of Hazardous waste materials and contaminated sites,
- Demolition of existing buildings, if any,
- Cost escalation past June 2005, if any
- Off-site works

Existing Conditions

Appendix A provides a summary table identifying available municipally owned parcels located close to Snug Cove, and provides brief overview information pertinent to each parcel (i.e. OCP and LUB designations, current uses, and some options for future uses for each parcel).

Criteria for Civic Facility Location

Criteria for Site Locations include the following items:

- Building foot print area requirements
- Site/Parking area requirements
- Driveway/Road Access
- Proximity to Snug Cove (for some building uses)
- Water, Sewer, and Storm water servicing requirements
- Hydro and Tel servicing requirements

These are described in detail in the following sections.

Building Area

The CFTF report identified the following building structure floor area requirements.

- Concept One (One Building / All Uses / One Site) 32,000 sq.ft (2,972 sq.m.)
- Concept Two (Two Buildings / Campus Style / One Site) 34,700 sq.ft (3,223 sq.m.)
- Concept Three (Two Buildings / Two Sites) 34,780 sq.ft (3,230 sq.m.)

The descriptions of the concepts are provided in the CFTF report.

Site/Parking Area

A significant factor for determining the site sizing requirements is the road access and parking requirements, which are influenced by the site selected and any topographical constraints and challenges, facility use and other factors.

The existing Land Use Bylaw provides parking area requirements relative to building floor area; some basic assumptions were added to this information to develop criteria for the required site areas (See Appendix B for calculations). These assumptions (which should be confirmed by an experienced building professional) are summarized as follows:

Table 2: Site Area and Parking Space Requirements

	Parking Spaces Required	Site Area Required
Concept One	89	31,000 sq.ft.
Concept Two	96	40,000 sq.ft.
Concept Three		
Theatre Building	51	20,500 sq.ft
Recreational Building	<u>45</u>	<u>20,000 sq.ft</u>
Total	96	40,500 sq.ft
Notes: Site areas do not include building foot prints, or access roads.		

It is noted that the LUB requires an off-street parking space ratio of 1 space per 40 m² of building area for this type of structure in Village Zones. For the theatre floor space alone, this results in a requirement of only 12 parking spaces, for the 200 seat facility. This is not realistic for the given use and building options for a separate building for this use alone should incorporate significantly more parking. It is assumed that a combined use facility would enable the sharing of daytime/evening parking area, thus reducing the overall number of parking areas required.

It is assumed that the parking area would be paved for dust suppression, maintenance, and drainage purposes, which is consistent with the requirements of the LUB.

Total Site Area

The total site area requirements are therefore as follows.

Table 3: Total Area Requirements

	Total Area Required (building and site)		
	(sq.ft.)	hectares	acres
Concept One	63,000 sq.ft.	0.59	1.45
Concept Two	75,000 sq.ft.	0.70	1.72
Concept Three			
Theatre Building	36,000 sq.ft	0.33	0.82
Recreational Building	<u>40,000 sq.ft</u>	<u>0.37</u>	<u>0.90</u>
Total	76,000 sq.ft	0.70	1.72
Notes: Does not include access roads.			

Driveway/Road Access

Given the total function of the facility (and nature of people access/exiting the facility on mass for scheduled events), it is recommended that the facility have two double lane accesses. However, this may not be feasible without reviewing synergies with other development. For Concept Three, consideration for a single, two lane access might be acceptable, but should be reviewed further, depending on the site conditions.

The total area required for access driveways is dependant on the shape of the lot selected, development style, and topographical constraints, and property lines.

A maximum access grade of 15% slope is recommended, although less than 10% is preferred.

Proximity to other Facilities

Specific building and site uses are anticipated to compliment existing facilities, and therefore should be located in close proximity to those other structures. This includes the following.

- Recreation Facility – prefer location close to BICS,
- Parking Area(s) – prefer low visual impact, also prefer to augment BICS parking and facilitate better pick up/drop off,
- Theatre – prefer location within sight and walking distance to existing Snug Cove commercial area.

Water Servicing Requirements

- **Fire Protection Requirements** – Based on Fire Underwriter Survey (FUS) 1995 Recommendations, the parameters for Concept One (single structure) is as follows.
 - fireflow rate: 9,000 to 10,000 L/min (2,000 to 2,200 lgpm)
 - fireflow duration: 2 hours

- Req'd Storage Vol.: 1,080,000 to 1,200,000 L (237,600 to 264,000 lgal)
- No. of hydrants req'd: 1 per 12,000 sq.m. site area

It is assumed that the facility is to be sprinklered, with standard wood frame construction.

All of the available sites have similar fire fighting capacities, as all are located on the gravity portion of the Municipality's Cove Bay Water System, which has the highest storage reserve capacity, and among the highest flow capability on the island. However, there is no field test or water system fireflow model data available to determine the actual fireflow capability of the system at each available site; however, it is believed that the system cannot support the required fireflow indicated above.

It is recommended that for Concept One, non-combustable construction be used, which would reduce the fire flow demand by approximately 45%, which is recommended given the public use and value of the facility.

Fire flow requirements for Concepts Two (campus type) and Three (single building) options would be lower, and therefore, from a loss prevention and fire protection standpoint, it is recommended that Concepts Two or three be preferred. Sprinklers and non-combustable construction is also recommended for these Concepts.

- **Domestic Water Supply** – Rough estimates of water consumption for the facility (based on square footage and typical usage rates) for each use indicates a daily water consumption of 10,500 to 11,400 L/day (2,300 to 2,500 lgal/d). This is equivalent to approximately 10 Single Family residential units according to the Land Use Bylaw.
- **Irrigation** - It is assumed that minimal irrigation is required, as a result of xeriscaping, or natural landscaping, or use of rainwater collection for irrigation. Some irrigation allowance is included in the above domestic demand estimate.

Sewer Servicing Requirements

Based on rough estimates of water consumption, it is estimated that 8,800 L/day (1,900 lgal/d) (i.e. 80% of water consumption) of sewage would be generated from the facility. A professional building designer should confirm this estimate, especially if on-site septic disposal is selected as the preferred option.

Stormwater Servicing Requirements

It is assumed that all possible measures would be taken to attenuate storm water runoff peak flows from the site. However, for the purpose of conservative design, it shall be assumed that 100 % impervious areas will ultimately exist for access, parking, and building areas. Parameters for calculating storm water runoff rates are provided in the draft municipal Infrastructure Design Bylaw.

Stormwater calculations have not been completed for the facility, but this should be done prior to final site selection. This issue is more significant for development located on the south portion of Lot 2, or on Lot 3, for which off-site capacity upgrading may be required.

Hydro and Tel Servicing

It has not been determined whether underground site servicing for these utilities is required (i.e. versus overhead servicing). This is largely an aesthetic consideration, and can significantly

affect this servicing cost. This decision, may also be site specific (i.e. above ground lines may be more acceptable at the back of a building, but less so in high visibility areas).

Power requirements are not known for this facility. It is assumed that only secondary power service would be required, and provision for a backup generator is not included herein, but could be a future consideration.

It is assumed that parking area lighting would be required, which would include underground power conduits and lamp standards.

Tel servicing is not considered to be a significant factor, as telephone lines will likely be located either on hydro poles on the property, or in common trench. The identified sites are all close to the established utility grid.

Access to high speed internet would also be required for the office areas.

Options for Civic Facility Building(s)

For each of the three concepts identified in the CFTF Report, several options exist when combining these with the available sites, and also when reviewing utility servicing options. For the purpose of this report, those designations (i.e. "Concepts One, Two and Three) shall remain consistent, and various site and servicing 'options', shall be referred to as 'scenarios' to avoid confusion.

Available Sites for Civic Facility Location

Figure 1 shows the lands near Snug Cove owned by the Municipality.

Of the available lands the following parcels are not deemed available or suitable for a Civic Facility, due to site area, topography, proximity to Snug Cove, and existing use.

- Mt. Gardner Rd. – **Lot 1**
- Library/Tourism Info site – **Lot 4**
- Sewage treatment plant – **Lot 5**
- Existing GVRD Parks Works Yard – **Lot 6** (adjacent to sewage treatment plant)
- Existing Public Works (Highways) Works Yard - (agreement in place for future use of this yard by GVRD)
- Existing Solid Waste Yard – zoned for solid waste and recycling use (i.e. future BIRD facility)
- Carter Rd. Parcel (Former Library lot)

Therefore, only the following locations are reviewed in the scope of this report.

- Behind Bowen Court and BICS - **Lot 2**
- Behind RCMP - **Lot 3**

This is consistent with the CFTF request for consideration for these two parcels.

The existing RCMP property on Miller Rd. is not included in this study, although this parcel may become available, should the RCMP residence and station be relocated (potentially as part of the Civic Facility project).

Legal plans for Lots 2 and 3 are provided in Appendix C.

General site information regarding utility servicing for Lots 2 and 3 is provided in Table 4.

Figure 1: Available Sites

Schedule "A"
Location of Surplus Lands

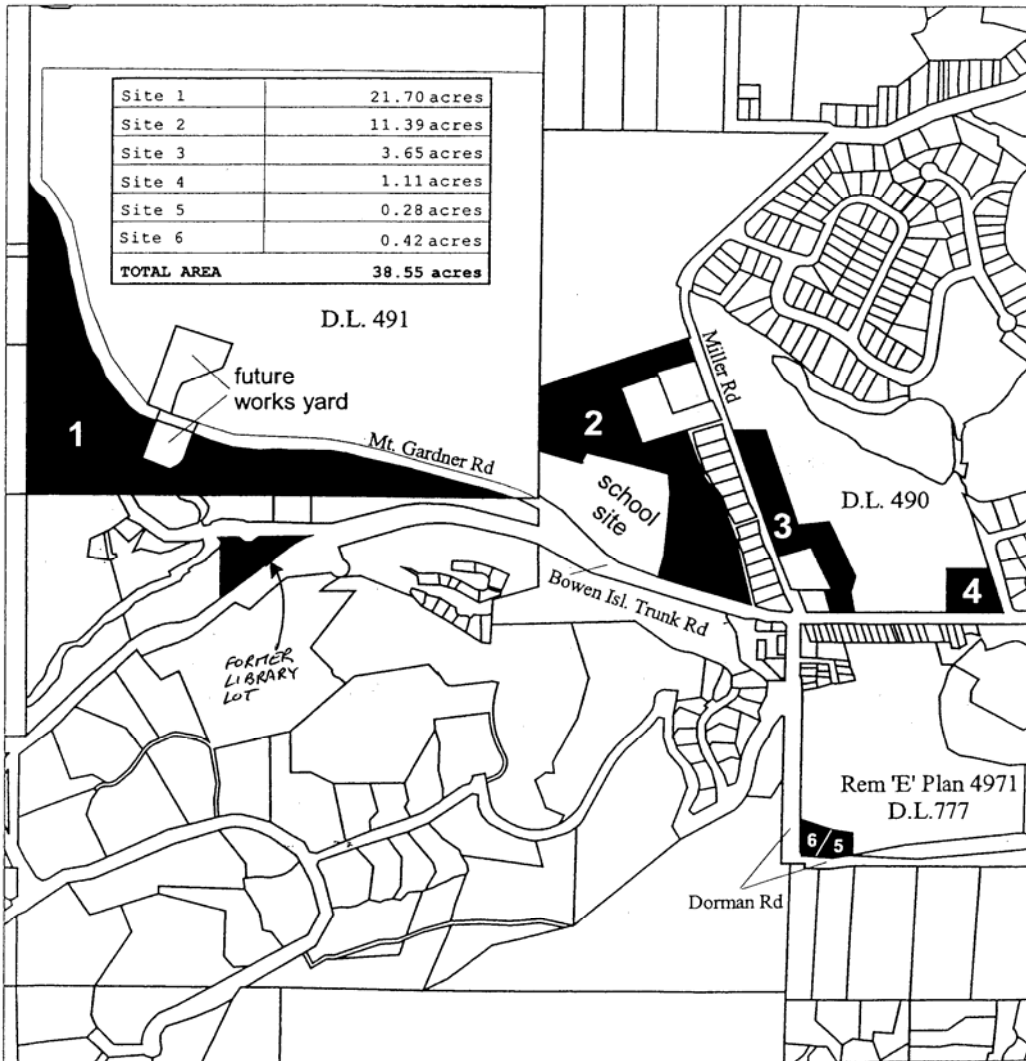


Table 4: Utility Considerations for Lots 2 and 3

	Lot 2	Lot 3
Location	Behind Bowen Court and BI Community School	Miller Road behind the RCMP Building
Available Water Servicing	<p><u>Partially</u> within Cove Bay Water System Boundaries – Cove Bay Long Range Plan allocates 30 equivalent residential connections to GVRD Surplus Land use.</p> <p>Use of lot area behind BICS and Seniors Complex would require Cove Bay Water System Area Boundary Expansion, but water connection allocations could be transferred from other part of lot.</p> <p>'High' capacity watermain runs along Grafton Road.</p> <p>'High' capacity watermain runs along Miller Road.</p>	<p>Within Cove Bay Water System Boundaries – Cove Bay Long Range Plan allocates 30 equivalent residential connections to GVRD Surplus Land use.</p> <p>'High' capacity watermain runs along Miller Road.</p> <p>Pressure reduced watermain runs along Bowen Island Trunk Road.</p>
Access to Sanitary Sewer Servicing	<p><u>Not</u> within Snug Cove Sewer System Boundaries. Snug Cove Sewer Area Boundary Expansion required unless on-site septic is feasible, or use of old BICS septic field possible.</p> <p>Sewage treatment plant expansion, if required would be part of larger project with cost sharing, latecomers agreements, etc... It is believed that the Facility may have been accounted for in the allocations for sewer capacity in the design of the existing system.</p>	<p>Within Snug Cove Sewer System Boundaries</p> <p>Latecomer fees may apply, however this lot is not noted in the list of latecomers in the Snug Cove Sewer Regulation Bylaw #46, although the facility may have been accounted for in the Cates Hill area.</p> <p>Removal of ex. Library Septic field may be required for use of entire site – other costs will apply.</p>
Road Access	From Grafton road and Miller Road possible.	Likely only from Miller Road due to topographical constraints, although road frontage on Bowen Island Trunk Road exists.
Access to Hydro and Tel	Good	Good
Stormwater Drainage Considerations	Dependant on actual site location, but storm ditches and sewers exist on adjacent downstream roadways.	Property slopes toward Crippen Park. Storm sewer direction toward existing storm sewer on Bowen Island Trunk Road, but would provide additional storm sewer loading and downstream issues.
Topography and other site constraints	Southern portion has topographical constraints	Relocation of existing GVRD trails on the site may be required.

Servicing Scenarios for Civic Facility Options and Sites

Of the three Concepts identified in the CFTF report for the proposed facility, there are several possibilities for site layouts when combining the Options with the properties, and for each Concept/Site combination there may be several possibilities for utility servicing and access. This creates several servicing “Scenarios”, which are described as follows, and depicted in the figures provided in Appendix D.

Concept One – One Building / All Uses / One Site

For the identified CFTF Options One and Two, there is little or no difference in site servicing costs as the buildings are on the same site, but either separate or together. In terms of the level of cost estimation provided in this report, the difference would easily be accounted for in the contingency added to the estimates.

Therefore, for the purpose of this study, Option One shall be considered the same as Option Two from a site servicing standpoint, with Option Two depicted in the analysis and figures as it provides more site layout complexity.

Concept Two – Two Buildings / Campus Style / One Site

Scenario 1 – Lot 2: (behind BICS and Seniors Complex)

This servicing scenario provides a campus style arrangement located behind BICS and the Seniors Complex, with servicing details as follows. (see Figure D-1)

- Driveway access would be provided from both Miller’s Rd. [2 lane] and Grafton Rd. [2 lane].
- Water supply would be provided from the municipal Cove Bay water system, with a watermain tie-in on Miller Road near the northwest corner of the proposed Abbeyfield site.
- Sewer disposal would be provided from the municipal Snug Cove sewer system. Although several alternatives exist, for this scenario, a gravity line is proposed to Miller Road, where a new sewage pump station (to municipal standards) would be installed to pump through a forcemain southward along Miller Road, then west along Grafton Road to an existing sanitary manhole. The forcemain would be twinned with a gravity sewer at the same time, which would provide future servicing to properties fronting Miller Road along the route. Sewage treatment plant expansion might be required, as well as associated and cost sharing, and establishment of additional latecomer’s charges, etc....
- Stormwater drainage would be provided by a gravity storm sewer main to the roadside ditch along the west side of Miller Road, then flowing to Terminal Creek.

Concept Two – Two Buildings / Campus Style / One Site

Scenario 2 – Lot 2:

This servicing scenario is a variation on Scenario 1, with a change in sewage disposal. The installation of an onsite ground disposal septic system is proposed for this scenario, instead of the required infrastructure to connect to the municipal Snug Cove sewer system. (see Figure D-1)

Concept Two – Two Buildings / Campus Style / One Site

Scenario 3 – Lot 2:

This servicing scenario is a variation on Scenario 2, with a change in one of the access routes. The access route to Grafton Road would be replaced with a single lane, exit only route, through Mallard Road. (see Figure D-1)

Concept Two – Two Buildings / Campus Style / One Site

Scenario 4 - Lot 3: (Along Miller Road near RCMP Property)

This servicing scenario provides a campus style arrangement located on Miller Road, next to the existing RCMP residence, with servicing details as follows. (see Figure D-2)

- Driveway access would be provided from Miller's Road, with two double lane access locations, distant enough from the crest of the hill to satisfy safety issues.
- Water supply would be provided from the municipal Cove Bay water system, with a watermain tie-in on Miller Road. The water servicing costs would be minimal due to the location of the existing watermain on Miller Road.
- Sewer disposal would be provided from the municipal Snug Cove sewer system. For this scenario, an on site sewage pump station (to commercial standards) would be installed to pump through a forcemain southward along Miller Road, then west along Grafton Road to an existing sanitary manhole. Sewage treatment plant expansion might be required, as well as associated and cost sharing, and establishment of additional latecomer's charges, etc....
- Stormwater drainage would be provided by a gravity storm sewer main to the existing storm sewer along the north side of Bowen Island Trunk road, which discharges at Snug Cove through the Union Steamship Marina.

Concept Three – Two Buildings / Two Sites

Scenario 5 - Lot 2: Recreation Facility behind BICS, Theatre building above Seniors Lane

This servicing scenario, only contemplates the Recreation Facility, and is similar to Scenario 3, but with only one driveway access. (see Figure D-3)

This Scenario must be combined with Scenarios 6 or 7, for comparison with Scenarios 1 through 4.

Concept Three – Two Buildings / Two Sites

Scenario 6 - Lot 2: Theatre next to BICS field

This servicing scenario, only contemplates the Theatre building (including BIM and RCMP offices), with servicing details as follows. It is noted that further site investigation is required to determine if this option is feasible, as the site is limited by topographical constraints. (see Figure D-4)

This Scenario must be combined with Scenario 5, for comparison with Scenarios 1 through 4.

- Driveway access would be provided from Grafton Road, with one double lane access. If combined with Scenario 5, a connector road could be added to provide through access.
- Water supply would be provided from the municipal Cove Bay water system, with a watermain tie-in on Grafton Road. The water servicing costs would be minimal due to the location of the existing watermain on Grafton Road.
- Sewer disposal would be provided from the municipal Snug Cove sewer system by gravity to an existing sanitary manhole close by on Grafton Road. Sewage treatment

plant expansion might be required, as well as associated and cost sharing, and establishment of additional latecomer's charges, etc... Use of onsite septic disposal might also be an option, but feasibility is uncertain, and cost might be similar.

- Stormwater drainage would be provided by a gravity storm sewer main to the nearby existing roadside ditch along the north side of Bowen Island Trunk road, which discharges at Snug Cove through the Union Steamship Marina.

Concept Three – Two Buildings / Two Sites

Scenario 7 - Lot 3: Theatre building next to existing RCMP residence

This servicing scenario, only contemplates the Theatre building (including BIM and RCMP offices), with servicing details as follows. It is noted that this option minimizes impact to the existing septic field for the Library, as well as the existing GVRD trail which crosses the site. (see Figure D-5)

This Scenario must be combined with Scenario 5, for comparison with Scenarios 1 through 4.

- Driveway access would be provided from Miller's Road, with two double lane access locations, distant enough from the crest of the hill to satisfy safety issues.
- Water supply would be provided from the municipal Cove Bay water system, with a watermain tie-in on Miller Road. The water servicing costs would be minimal due to the location of the existing watermain on Miller Road. Use of onsite septic disposal might also be an option, but feasibility is uncertain.
- Sewer disposal would be provided from the municipal Snug Cove sewer system. For this scenario, an on site sewage pump station (to commercial standards) would be installed to pump through a forcemain southward along Miller Road, then west along Grafton Road to an existing sanitary manhole. Sewage treatment plant expansion might be required, as well as associated and cost sharing, and establishment of additional latecomer's charges, etc... Use of onsite septic disposal might also be an option, but feasibility is uncertain, and cost might be similar.
- Stormwater drainage would be provided by a gravity storm sewer main to the existing storm sewer along the north side of Bowen Island Trunk road, which discharges at Snug Cove through the Union Steamship Marina.

Assessment of Civic Facility Servicing and Location Scenarios

Advantages and Disadvantages

Appendix E provides a summary of advantages and disadvantages for the site and servicing Scenarios.

Site and Servicing Costs

The CFTF Report identified the following Capital Costs for the three identified building Concepts.

- Concept One approximately \$6,163,300
- Concept Two approximately \$6,838,600
- Concept Three approximately \$6,920,200

To these costs, site servicing costs must be added, which are provided in Appendix F. Cost estimates provided are Class “C” (conceptual) in nature, and a 20% contingency has been included in the estimates, as well as engineering and landscape architecture costs.

Table 5: Summary of Costs

	Concept Two				Concept Three	
Scenario	1	2	3	4	5 & 6	5 & 7
Building Costs	6,838,600				6,920,200	
Site Costs	940,000	860,000	747,000	752,000	490,000 <u>309,000</u> 799,000	490,000 <u>446,000</u> 936,000
Total Costs	\$7,778,600	\$7,698,600	\$7,585,600	\$7,590,600	\$7,719,200	\$7,856,200

Conclusions

From the Site Servicing analysis, the following is concluded.

General

1. Final site selection is premature at this time, without additional information (noted above, and a more comprehensive Planning study of the Snug Cove area and GVRD Surplus Lands potential uses.
2. Several servicing scenarios would require the construction of infrastructure which would benefit other lands, and assumptions are made regarding cost sharing. These scenarios are likely not feasible without the involvement of other stakeholders.

Cost

3. Based on total project costs, the cost ranking is as follows.

Highest cost	Scenarios 5 & 7	\$7,856,200	Concept Three
	Scenario 1	\$7,778,600	Concept Two
	Scenarios 5 & 6	\$7,719,200	Concept Three
	Scenario 2	\$7,698,600	Concept Two
	Scenario 4	\$7,590,600	Concept Two
Lowest Cost	Scenario 3	\$7,585,600	Concept Two

4. The servicing scenarios for Concept Three (separate sites) are among the highest total cost, as is to be expected.
5. The range in total cost represents only \$270,600, or only about 3.5%. Given the uncertainties in the project, and the contingencies included for this level of detailed estimate, this might not be considered significant enough to differentiate the options based on cost alone.
6. The cost difference between Concept One and Concept Two is not considered relevant for the purpose of this study, and therefore costs provided for Concept Two may also be applied to Concept One servicing scenarios.

Site Considerations

7. Of the servicing scenarios and site combinations, Scenario 4 (Concept Two) offers very little flexibility due to the size of the site, in regards to design options and future expansion. Since this scenario also includes a Recreation Facility at this location, which might not be the best location for it, consideration should be given to eliminating this scenario from future analysis.
8. Scenario 6 (Concept Three) may not be feasible due to the site and topographical constraints. Further assessment of the site is recommended, including obtaining detailed survey mapping.

9. Several servicing scenarios would benefit from synergies with potential future adjacent development on (currently) municipally owned lands. Therefore, a final decision regarding the site should not be made without considering options for other lands, which should be brought forward in a comprehensive Planning report.

Utility Considerations

10. Water servicing capacity for the facility has been accounted for in the Cove Bay Water System Long Range Plan, however administrative water service area boundary adjustment may be required depending on which site is selected.
11. Sewer servicing capacity at the existing sewage treatment plant, for the facility, appears to have been accounted for in the original Snug Cove Sewer Design and Planning, however the facility may have been contemplated for inclusion in Cates Hill. This should be confirmed, as no plant expansion or any associated latecomer costs are included in this analysis. Administrative sewer service area boundary adjustment may be required depending on which site is selected.
12. Storm water calculations have not been completed for the facility, and should be done prior to final site selection. This issue is more significant for development located on the south portion of Lot 2, or on Lot 3.
13. Onsite septic disposal should be investigated for options with high sewer servicing costs.
14. The location of the existing Library Septic Field significantly affects the cost of Scenario 4 (Concept Two), and therefore this should be confirmed if this option is considered further (see comments above).
15. Basic knowledge of the fire protection capabilities of the existing Cove Bay Water system suggest that the facility should incorporate separate buildings (I.e. Concepts Two or Three), as well as sprinkler systems, and possibly non-combustible construction. Further analysis may be required.

Future Planning and Addition Information Required

The following additional information is required in order to further refine this study.

- Comprehensive planning study for all GVRD Surplus Lands
- Study of Sewage Treatment Plant Expansion
- Council decision regarding expansion of existing utility service area boundaries for water and sewer
- Topographical survey plans for sites
- Determination of exact Library Septic Field location
- Site investigations for On-site Septic disposal
- Confirmation of feasibility of Concept Three – Scenario 6
- Assessment of storm water impacts on downstream facilities, depending on option selected
- Confirm water system fire protection capabilities and building construction type
- Confirmation that Civic Facility accounted for in existing sewage system capacity design allocations
- Confirmation of grant funding eligibility for each Concept

Appendix A

Summary of Key Information for Available Sites

Appendix B - Summary of Key Information for Available Sites
General Description and Land Use

	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5	Lot 6	Former Library Lot
Location	Mount Gardner Road	Behind Bowen Court and BI Community School	Miller Road behind the RCMP Building	Cardena Road & Bowen Trunk Road	Dorman Road	Dorman Road	Corner of Carter Road and Government Road
Size of Lot	21.70 acres	11.39 acres	3.65 acres	1.11 acres	0.45 acres	0.42 acres	
Existing OCP Designation (per Snug Cove Plan)	Rural Reserve	CI – Civic Institutional VR – Village Residential	CI/VC – Civic Institutional / Village Commercial VR – Village Residential	CI – Civic Institutional	CI – Civic Institutional	CI – Civic Institutional	PF – Public Facility
Existing LUB Designation	RR1	P1(b) VR2	P1(a)	VCi	P1(a)	P1(a)	CD2 Area 6
Current Use	Park land	Park land	Park land	Library & Tourist Info Centre	BIM Sewage Treatment Plant	GVRD Parks Works Yard	Vacant
Possible Future Use	Options: Carve off a portion to increase size of BIM Works Yard and: 1) Leave remainder as Park land 2) Develop clustered housing/park land 3) Sell land to recover funds to pay off debt to acquire land and develop civic facilities 4) Other uses not yet determined	Options: 1) Develop for civic facilities 2) Leave as park land 3) Develop for residential use 4) Develop a portion of the land and sell remainder to recover funds to pay off debt to acquire land and develop civic facilities 5) Other uses not yet determined	Options: 1) Develop for civic facilities 2) Leave as park land Develop for residential use 3) Develop a portion for commuter parking 4) Develop a portion of the land and sell remainder to recover funds to pay off debt to acquire land and develop civic facilities 5) Other uses not yet determined	Library & Tourist Info Centre	BIM Sewage Treatment Plant	Options: 1) BIM Sewage Treatment Plant Works Yard 2) Ferry commuter parking 3) Other uses not yet determined	Options: 1) Cove Bay water treatment plant site 2) Skateboard park site 3) Arts Centre 4) Other uses not yet determined

Appendix B

Site Servicing Criteria

Appendix B - Site Servicing Criteria Parking and Site Area Criteria

Parking and Site Area Requirements

The following assumptions were made. These should be confirmed by an experienced building professional.

Land Use Bylaw Requirements:

- Parking space requirements (Village Zones) 1 per 40 m² floor area
- Parking space requirements (Rural Zones) 1 per 15 m² floor area
- Allowance for daytime staff parking:
 - Municipality 2 per 35 m² floor area + 15
 - RCMP: 4
 - Offices : 1 per 40 m² floor area
- Allowance for evening staff parking:
 - Theater: 8
 - RCMP: 4
 - Offices : 1 per 40 m² floor area
- Maneuvering aisle width:
 - 90 degree parking (2 way) 6.7 m (22 ft)
 - 90 degree parking (1 way) 6.4 m (21 ft)
 - 60 degree parking (1 way) 5.5 m (18 ft)
 - 45 degree or less parking (1 way) 3.9 m (12.8 ft)
- Standard parking space area/stall: 5.5 m x 2.5 m (13.8 m²), or 18 ft x 8.2 ft (147.6 ft²)
- Disabled parking space area/stall: 6 m x 3.7 m (22.2 m²), or 19.7ft x 12.14 ft (239 ft²)

Other Assumptions:

- Parking space to theater seat ratio 1 per 3 seats (assumed)
- Loading/unloading areas: 3 pkg spaces
- Parking lot area green space/landscaping/median width: 1.2 m (4 ft)
- Landscaping sidewalk/buffer area around building: 4.6 m (15 ft)

Appendix B - Site Servicing Criteria Parking and Site Area Calculations Concept One

Proposed Civic Facility
Site Area Calculation

32,000 sq ft, 200 Seat Theatre Option				
CFTF Option One - One Building, All Uses, One Site				
Calculation of Building Area and Required Parking Spaces				
Building Areas	sq. ft.	sq. m.	req'd	
			pkg spaces	
Gymnasium	7,500	697	17	1 per 40 sq.m.
Auditorium	5,000	464	12	1 per 40 sq.m.
Kitchen/Bar	800	74	2	1 per 40 sq.m.
Admin/Office	600	56	1	1 per 40 sq.m.
Change Rooms	1,200	111	3	1 per 40 sq.m.
Washrooms	600	56	1	1 per 40 sq.m.
Storage	1,700	158	4	1 per 40 sq.m.
Foyer/gallery/etc.	2,500	232	6	1 per 40 sq.m.
Lounge	300	28	1	1 per 40 sq.m.
Craft Room	1,100	102	3	1 per 40 sq.m.
Meeting Rooms	1,200	111	3	1 per 40 sq.m.
Playcare Room	600	56	1	1 for Village zones
Weight Room	1,400	130	3	1 per 40 sq.m.
Municipal Office	4,500	418	27	2 per 35 sq.m. plus 15
RCMP Office	3,000	279	6	1 per employee plus 2
Total Area	32,000	2,973	89	
Parking Spaces (alternate method for auditorium)				
Theatre Seats	200			
Pking spaces/Theatre Seat	0.33			1 per 3 seats
No. of Parking Stalls	67	calc by # of seats		

Calculation of Required Site Area			
Building			
Area	32,000 sq ft		2,973 sq.m.
Length	254 ft		80 m
Width	140 ft		43 m
Buffer Area Around Building			
Area	8,400 sq ft		780 sq.m.
Length	560 ft		171 m
Width	15 ft		5 m
Parking Area			
Parking Space Dimensions			
Width	8.2 ft		2.5 m
Length	18.0 ft		5.5 m
Area	148 sq.ft.		13.75 sq.m.
Parking Stall Area	13,240 sq.ft		
Lane Area between parking rows			
Width	22 ft		
Length	8.2 ft		
Area	180 sq ft		per 2 parking stalls
Parking Lane area	8,071 sq.ft		
Median/Landscape Area			
Width	3 ft		
Length	8.2 ft		
Area	25 sq.ft		per 2 parking stalls
Median/Landscape area	1,101 sq.ft		
Loading Bay Area			
No of Stalls	3		
Width	8.2 ft		
Length	18.0 ft		
Area	444 sq.ft		
Total Surrounding Area	31,255 sq.ft		2,903 sq.m.
Total Area	63,255		5,876 sq.m.
	1.45 acres		0.59 ha

plus access roads

Appendix B - Site Servicing Criteria Parking and Site Area Calculations Concept Two

Proposed Civic Facility
Parking Area Calculation

34,700 sq.ft, 200 Seat Theatre Option				
GFTF Option Two - Two Buildings, Campus Style, One Site				
Calculation of Building Area and Required Parking Spaces				
Building Areas	sq. ft.	sq.m.	req'd	pkg spaces
Building I - Recreation Centre				
Gymnasium	7,600	706	18	1 per 40 sq.m.
Kitchen/Bar/etc.	800	74	2	1 per 40 sq.m.
Admin/Office	600	56	1	1 per 40 sq.m.
Change Rooms	1,200	111	3	1 per 40 sq.m.
Washrooms	600	56	1	1 per 40 sq.m.
Storage	1,700	158	4	1 per 40 sq.m.
Foyer/gallery/etc..	2,500	232	6	1 per 40 sq.m.
Craft Room	1,100	102	3	1 per 40 sq.m.
Meeting Rooms	1,200	111	3	1 per 40 sq.m.
Playcare Room	600	56	1	1 for Village zones
Weight Room	1,400	130	3	1 per 40 sq.m.
Building I - Total Area	19,300	1,793	44	
Building II - Auditorium / Municipal Services				
Auditorium	5,000	464	12	1 per 40 sq.m.
Kitchen/Bar/etc.	300	28	1	1 per 40 sq.m.
Washrooms	320	30	1	1 per 40 sq.m.
Foyer/gallery/etc..	1,800	167	4	1 per 40 sq.m.
Meeting Rooms	480	45	1	1 per 40 sq.m.
Municipal Office	4,500	418	27	2 per 35 sq.m. plus 15
RCMP Office	3,000	279	6	1 per employee plus 2
Building II - Total Area	15,400	1,431	51	
Both Buildings - Total Area	34,700	3,223	95	
Parking Spaces (alternate method for auditorium)				
Theatre Seats	200			
Pkng spaces/Theatre Seat	0.33			1 per 3 seats
Parking Stalls for Auditorium			67	calc by # of seats

Calculation of Required Site Area		
Buildings		
Building I		
Area	19,300 sq.ft	1,793 sq.m.
Length	174 ft	53 m
Width	110 ft	34 m
Building II		
Area	15,400 sq.ft	1,431 sq.m.
Length	147 ft	45 m
Width	92 ft	28 m
Buffer Area Around Building		
Area	15,690 sq.ft	1458 sq.m.
Length	1,046 ft	319 m
Width	15 ft	5 m
Parking Area		
Parking Space Dimensions		
Width	8.2 ft	2.5 m
Length	16.0 ft	5.5 m
Area	148 sq.ft.	13.75 sq.m.
Parking Stall Area		
	14,168 sq.ft	
Lane Area between parking rows		
Width	22 ft	
Length	8.2 ft	
Area	180 sq.ft	per 2 parking stalls
Parking Lane area		
	8,636 sq.ft	
Median/Landscape Area		
Width	8.2 ft	
Area	25 sq.ft	per 2 parking stalls
Median/Landscape area		
	1,178 sq.ft	
Loading Bay Area		
No of Stalls	3	
Width	8.2 ft	
Length	18.0 ft	
Area	444 sq.ft	
Total Surrounding Area	40,116 sq.ft	3,727 sq.m.
Total Area	74,816	6,950 sq.m.
	1.72 acres	0.70 ha

plus access roads

Appendix B - Site Servicing Criteria Parking and Site Area Calculations Concept Three

Proposed Civic Facility
Parking Area Calculation

34,780 sq ft, 202 Seat Theatre Option CFTF Option Three - Two Buildings, Two Sites				
Calculation of Building Area and Required Parking Spaces				
Building Areas	sq. ft.	sq.m.	req'd	pkgs spaces
Building I - Recreation Centre				
Gymnasium	7,600	706	18	1 per 40 sq.m.
Kitchen/Barric.	800	74	2	1 per 40 sq.m.
Admin/Office	600	56	1	1 per 40 sq.m.
Change Rooms	1,200	111	3	1 per 40 sq.m.
Washrooms	800	74	2	1 per 40 sq.m.
Storage	1,700	158	4	1 per 40 sq.m.
Foyer/gallery/etc.	2,500	232	6	1 per 40 sq.m.
Craft Room	1,000	93	2	1 per 40 sq.m.
Meeting Rooms	1,200	111	3	1 per 40 sq.m.
Playcare Room	600	56	1	1 for Village zones
Weight Room	1,400	130	3	1 per 40 sq.m.
Building I - Total Area	19,400	1,802	48	
Building II - Auditorium / Municipal Services				
Auditorium	5,000	464	12	1 per 40 sq.m.
Kitchen/Barric.	280	26	1	1 per 40 sq.m.
Washrooms	320	30	1	1 per 40 sq.m.
Foyer/gallery/etc.	1,800	167	4	1 per 40 sq.m.
Meeting Rooms	480	45	1	1 per 40 sq.m.
Municipal Office	4,500	418	27	2 per 35 sq.m. plus 15
RCMP Office	3,000	279	6	1 per employee plus 2
Building II - Total Area	15,380	1,429	61	
Both Buildings - Total Area	34,780	3,231	96	
Parking Spaces (alternate method for auditorium)				
Theatre Seats	200			
Plng spaces/Theatre Seat	0.33			1 per 3 seats
Parking Stalls for Auditorium	67			calc by # of seats

Calculation of Required Site Area Site I			
Buildings			
Building I			
Area	19,400 sq.ft	1,802 sq.m.	
Length	174 ft	53 m	
Width	110 ft	34 m	
Buffer Area Around Building			
Area	8,520 sq.ft	791 sq.m.	
Length	568 ft	173 m	
Width	15 ft	5 m	
Parking Area			
Parking Space Dimensions			
Width	8.2 ft	2.5 m	
Length	18.0 ft	5.5 m	
Area	148 sq.ft	13.76 sq.m.	
Parking Stall Area	6,811 sq.ft		
Lane Area between parking rows			
Width	22 ft		
Length	8.2 ft		
Area	180 sq.ft		per 2 parking stalls
Parking Lane area	4,030 sq.ft		
Median/Landscape Area			
Width	3 ft		
Length	8.2 ft		
Area	25 sq.ft		per 2 parking stalls
Median/Landscape area	630 sq.ft		
Loading Bay Area			
No of Stalls	3		
Width	8.2 ft		
Length	18.0 ft		
Area	444 sq.ft		
Total Surrounding Area	20,154 sq.ft	1,872 sq.m.	
Total Area	39,554	3,674 sq.m.	
	0.91 acres	0.37 ha	

Site II			
Buildings			
Building II			
Area	15,380 sq.ft	1,429 sq.m.	
Length	147 ft	45 m	
Width	92 ft	28 m	
Buffer Area Around Building			
Area	7,170 sq.ft	666 sq.m.	
Length	478 ft	146 m	
Width	15 ft	5 m	
Parking Area			
Parking Space Dimensions			
Width	8.2 ft	2.5 m	
Length	18.0 ft	5.5 m	
Area	148 sq.ft	13.75 sq.m.	
Parking Stall Area	7,685 sq.ft		
Lane Area between parking rows			
Width	22 ft		
Length	8.2 ft		
Area	180 sq.ft		per 2 parking stalls
Parking Lane area	4,624 sq.ft		
Median/Landscape Area			
Width	3 ft		
Length	8.2 ft		
Area	25 sq.ft		per 2 parking stalls
Median/Landscape area	630 sq.ft		
Loading Bay Area			
No of Stalls	3		
Width	8.2 ft		
Length	18.0 ft		
Area	444 sq.ft		
Total Surrounding Area	20,463 sq.ft	1,900 sq.m.	
Total Area	38,623 sq.ft	3,529 sq.m.	
	0.82 acres	0.33 ha	
Total Area - Both Sites	78,377 sq.ft	7,603 sq.m.	
	1.73 acres	0.70 ha	

plus access roads

Appendix B - Site Servicing Criteria Domestic Water Consumption Calculations

Proposed Civic Facility Domestic Water Demand Calculations

reference: Water Supply and Pollution Control, 4th Edition, Viessman and Hammer.

Area/Room	Area (sq.ft)	Avg. Demand Rate (lgal/d)	unit	Daily demand (gpd)
Gymnasium	7500	4 person	30	120
Auditorium	5000	1.5 seat	500	750
Kitchen/Bar	800	20 employee 1.5 visitor	2	40 incl.
Admin/Office	600	0.08 sq.ft		48
Change Rooms	1200	0.08		96
Washrooms	600	0.08		48
Storage	1700	0.08		136
Foyer/gallery/etc..	2500	0.08		200
Lounge	300	0.08		24
Craft Room	1100	0.08		88
Meeting Rooms	1200	0.08		96
Playcare Room	600	0.08		48
Weight Room	1400	4 person	10	40
Municipal Office	4500	0.08 sq.ft		360
RCMP Office	3000	0.08 sq.ft		240
	32,000			2,334

Appendix B - Site Servicing Criteria FUS Fire Flow Calculations – Wood Frame Construction

Cove Bay Water System
 Zone: Lower Zone
 Area: GVRD Surplus Lands
 Land Use: Civic Institutional

Proposed Civic Facility (32,000 sq.ft) - One Building		
F	17,992	220°C*(A ^{0.5}) in LPM
A	2,973	floor area (sq.m.)
C	1.5	Construction coefficient
		1.5 for wood frame
		1.0 for masonry walls, wood floors
		0.8 for non combustable
		0.6 for fire resistant
rounded	18,000	
	-25%	Occupancy Hazard Rating
	13,500	
	-30%	Automatic Sprinkler Credit
	-4,050	
	0%	Seperation Charge
	0	
Total	9,450	LPM
rounded	9,000	LPM
	2,378	usgpm
duration	2	hours
volume	1,080,000	L
	237,567	lgal
	285,336	usgal

Proposed Civic Facility (34,780 sq.ft) - One Building		
F	18,757	220°C*(A ^{0.5}) in LPM
A	3,231	floor area (sq.m.)
C	1.5	Construction coefficient
		1.5 for wood frame
		1.0 for masonry walls, wood floors
		0.8 for non combustable
		0.6 for fire resistant
rounded	19,000	
	-25%	Occupancy Hazard Rating
	14,250	
	-30%	Automatic Sprinkler Credit
	-4,275	
	0%	Seperation Charge
	0	
Total	9,975	LPM
rounded	10,000	LPM
	2,642	usgpm
duration	2	hours
volume	1,200,000	L
	263,963	lgal
	317,040	usgal

12,000 sq.m. Average Area per hydrant

Proposed Civic Facility (19,300 sq.ft) - Recreation Bldg		
F	13,973	220°C*(A ^{0.5}) in LPM
A	1,793	floor area (sq.m.)
C	1.5	Construction coefficient
		1.5 for wood frame
		1.0 for masonry walls, wood floors
		0.8 for non combustable
		0.6 for fire resistant
rounded	14,000	
	-25%	Occupancy Hazard Rating
	10,500	
	-30%	Automatic Sprinkler Credit
	-3,150	
	0%	Seperation Charge
	0	
Total	7,350	LPM
rounded	7,000	LPM
	1,540	lgpm
	1,849	usgpm
duration	2	hours
volume	840,000	L
	184,774	lgal
	221928	usgal

Proposed Civic Facility (15,400 sq.ft) - Auditorium Bldg		
F	12,462	220°C*(A ^{0.5}) in LPM
A	1,431	floor area (sq.m.)
C	1.5	Construction coefficient
		1.5 for wood frame
		1.0 for masonry walls, wood floors
		0.8 for non combustable
		0.6 for fire resistant
rounded	12,000	
	-25%	Occupancy Hazard Rating
	9,000	
	-30%	Automatic Sprinkler Credit
	-2,700	
	0%	Seperation Charge
	0	
Total	6,300	LPM
rounded	6,000	LPM
	1,320	lgpm
	1,585	usgpm
duration	2	hours
volume	720,000	L
	158,378	lgal
	190,224	usgal

Appendix B - Site Servicing Criteria FUS Fire Flow Calculations – Non-combustible Construction

Cove Bay Water System
 Zone: Lower Zone
 Area: GVRD Surplus Lands
 Land Use: Civic Institutional

Proposed Civic Facility (32,000 sq.ft) - One Building		
F	9,596	220°C*(A ^{0.5}) in LPM
A	2,973	floor area (sq.m.)
C	0.8	Construction coefficient
		1.5 for wood frame
		1.0 for masonry walls, wood floors
		0.8 for non combustable
		0.6 for fire resistant
rounded	10,000	
	-25%	Occupancy Hazard Rating
	7,500	
	-30%	Automatic Sprinkler Credit
	-2,250	
	0%	Seperation Charge
	0	
Total	5,250	LPM
rounded	5,000	LPM
	1,321	usgpm
duration	1.75	hours
volume	525,000	L
	115,484	lgal
	138,705	usgal

Proposed Civic Facility (34,780 sq.ft) - One Building		
F	10,004	220°C*(A ^{0.5}) in LPM
A	3,231	floor area (sq.m.)
C	0.8	Construction coefficient
		1.5 for wood frame
		1.0 for masonry walls, wood floors
		0.8 for non combustable
		0.6 for fire resistant
rounded	10,000	
	-25%	Occupancy Hazard Rating
	7,500	
	-30%	Automatic Sprinkler Credit
	-2,250	
	0%	Seperation Charge
	0	
Total	5,250	LPM
rounded	5,000	LPM
	1,321	usgpm
duration	1.75	hours
volume	525,000	L
	115,484	lgal
	138,705	usgal

12,000 sq.m. Average Area per hydrant

Proposed Civic Facility (19,300 sq.ft) - Recreation Bldg		
F	7,452	220°C*(A ^{0.5}) in LPM
A	1,793	floor area (sq.m.)
C	0.8	Construction coefficient
		1.5 for wood frame
		1.0 for masonry walls, wood floors
		0.8 for non combustable
		0.6 for fire resistant
rounded	7,000	
	-25%	Occupancy Hazard Rating
	5,250	
	-30%	Automatic Sprinkler Credit
	-1,575	
	0%	Seperation Charge
	0	
Total	3,675	LPM
rounded	4,000	LPM
	880	lgpm
	1,057	usgpm
duration	1.5	hours
volume	360,000	L
	79,189	lgal
	95,112	usgal

Proposed Civic Facility (15,400 sq.ft) - Auditorium Bldg		
F	6,657	220°C*(A ^{0.5}) in LPM
A	1,431	floor area (sq.m.)
C	0.8	Construction coefficient
		1.5 for wood frame
		1.0 for masonry walls, wood floors
		0.8 for non combustable
		0.6 for fire resistant
rounded	7,000	
	-25%	Occupancy Hazard Rating
	5,250	
	-30%	Automatic Sprinkler Credit
	-1,575	
	0%	Seperation Charge
	0	
Total	3,675	LPM
rounded	4,000	LPM
	880	lgpm
	1,057	usgpm
duration	1.5	hours
volume	360,000	L
	79,189	lgal
	95,112	usgal

Appendix C

Legal Plans for Lots 2 and 3

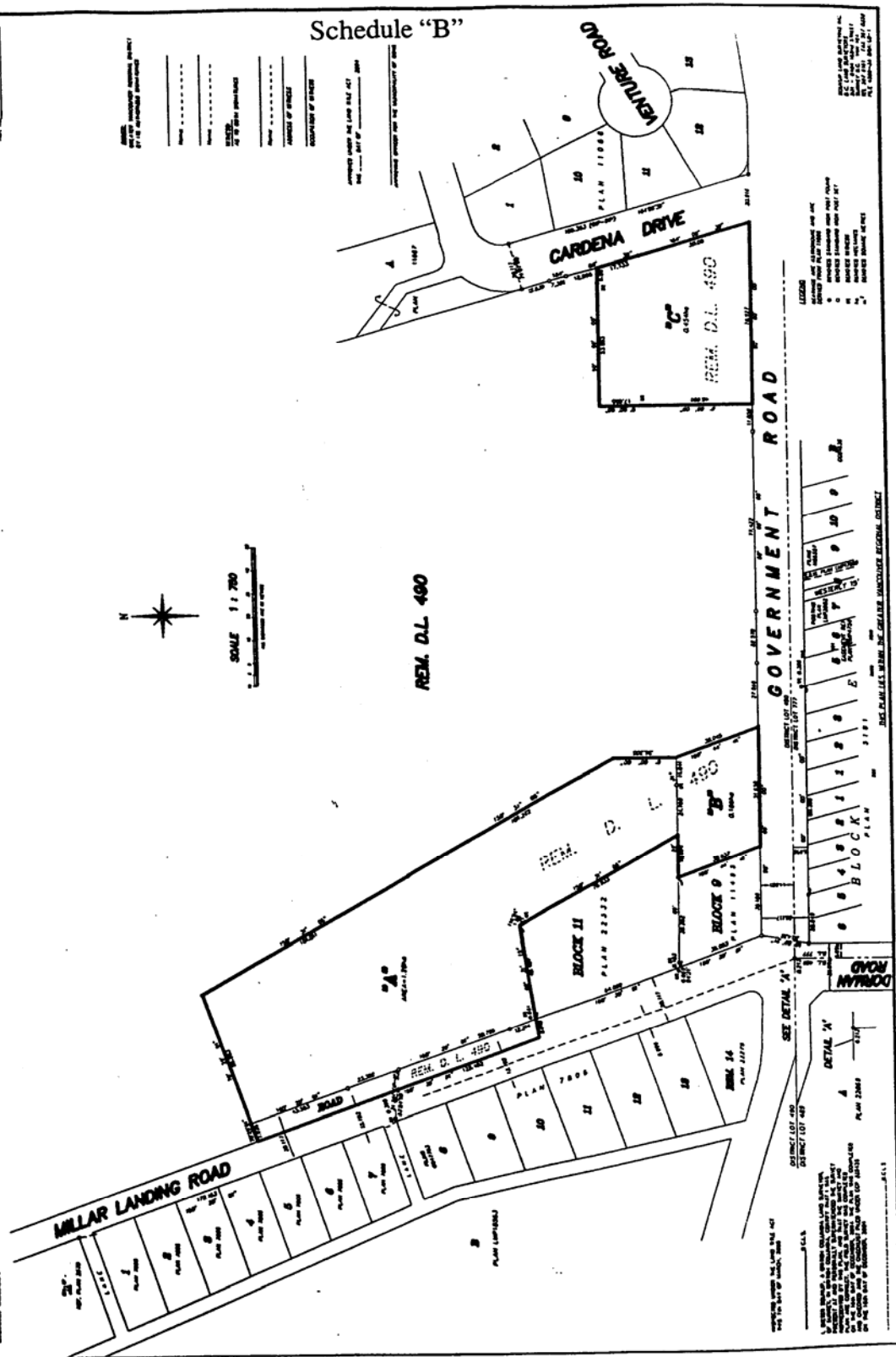
PLAN 807
 APPROVED BY THE LAND TITLE OFFICE
 AT THE DISTRICT OFFICE
 DISTRICT OF COLUMBIA
 DATE: 11/11/1983

Schedule "B"

**SUBMISSION PLAN OF PORTIONS OF DISTRICT LOT 490 GROUP 1 N.M.D. EXCEPT
 (1) PARCEL "A" (REFERENCE PLAN 2879)
 (2) THE MOST SOUTHERLY ROAD AND THE MOST EASTERLY LANE DEDICATED BY DEPOSIT OF PLAN 7884
 (3) THOSE PORTIONS IN PLAN 7808, 11088, 11363, 11485, 17816, 28332, LMP16863, LMP23400 AND LMP44342
 SCALE: AS SHOWN**



SCALE 1 : 750
 0 10 20 30 40 50
 FEET



APPROVED BY THE LAND TITLE OFFICE
 AT THE DISTRICT OFFICE
 DISTRICT OF COLUMBIA
 DATE: 11/11/1983

LEGEND
 EXISTING
 PROPOSED
 EASEMENT AREA
 EASEMENT

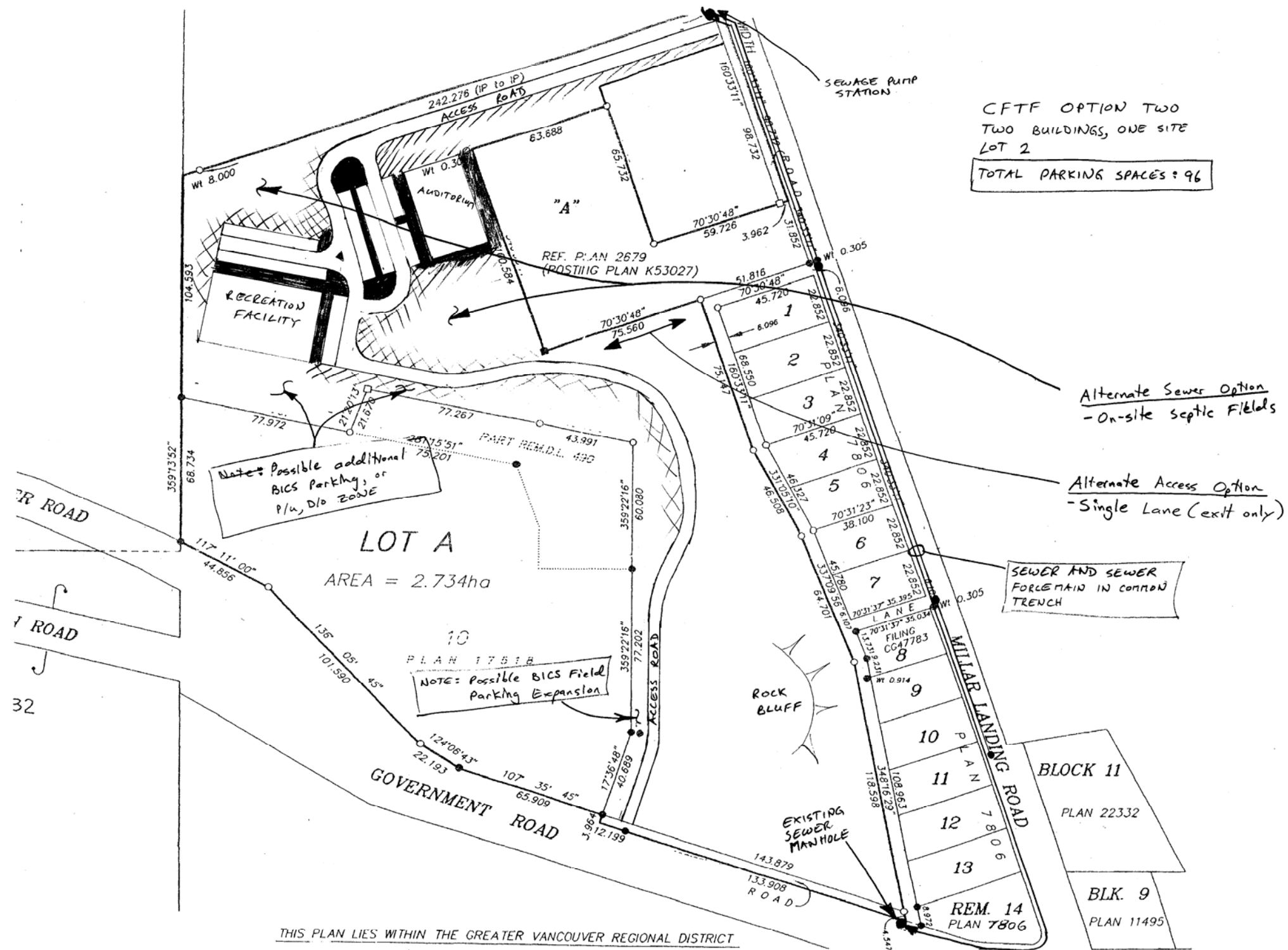
BLOCK PLAN
 DISTRICT LOT 490
 DISTRICT OF COLUMBIA

SEE DETAIL "A"
 DETAIL "A"
 PLAN 23088

Appendix D

Facility Site and Servicing Scenarios

Figure D-1
Option Two – Two Buildings / Campus Style / One Site
Scenarios 1, 2 and 3 - Lot 2: (Behind BICS and Seniors Complex)



THIS PLAN LIES WITHIN THE GREATER VANCOUVER REGIONAL DISTRICT

Figure D-3
Option Three – Two Buildings / Two Sites
Scenario 5 - Lot 2: (Recreation Facility only)

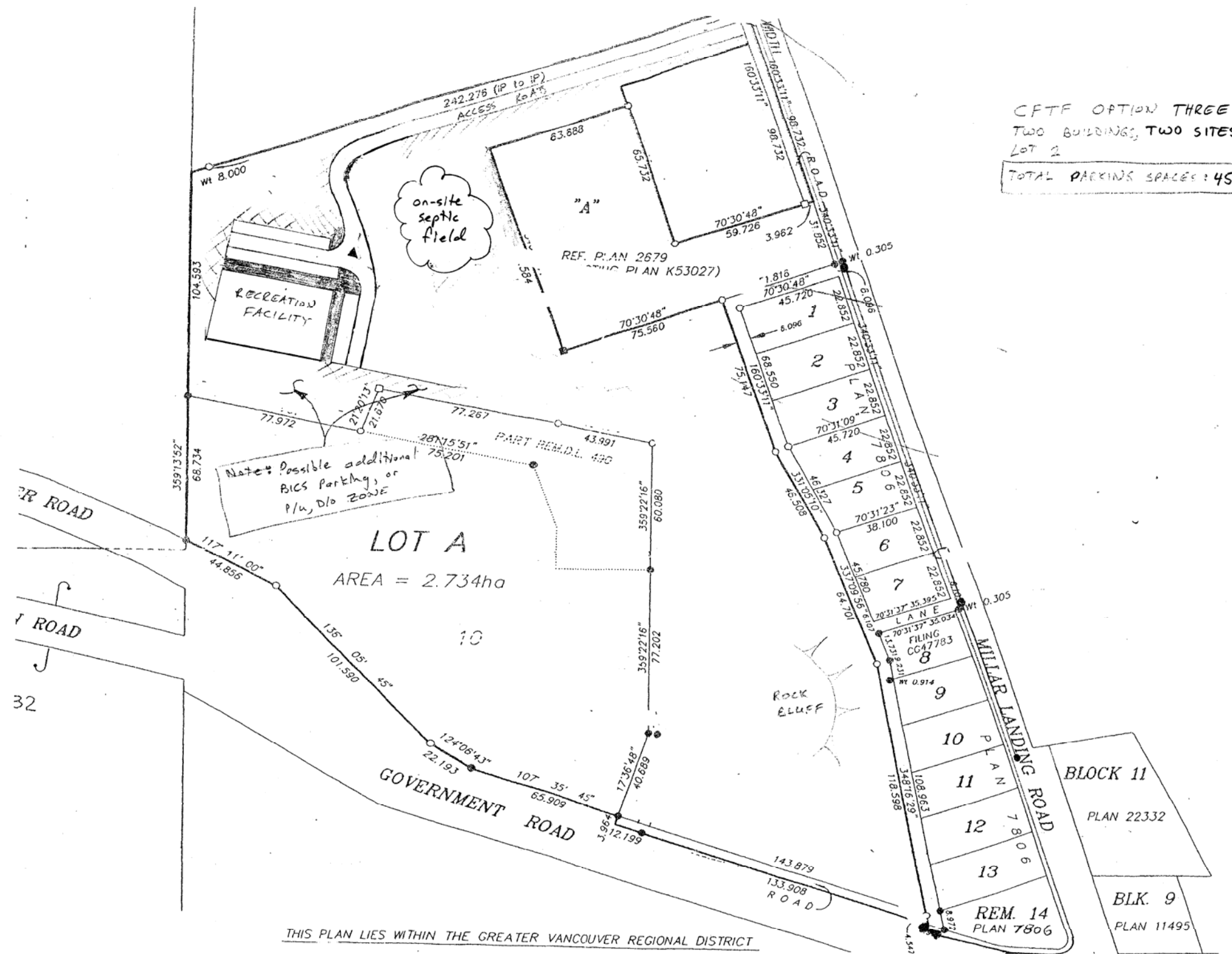


Figure D-4
 Option Three – Two Buildings / Two Sites
 Scenario 6 - Lot 2: (Theatre building only)

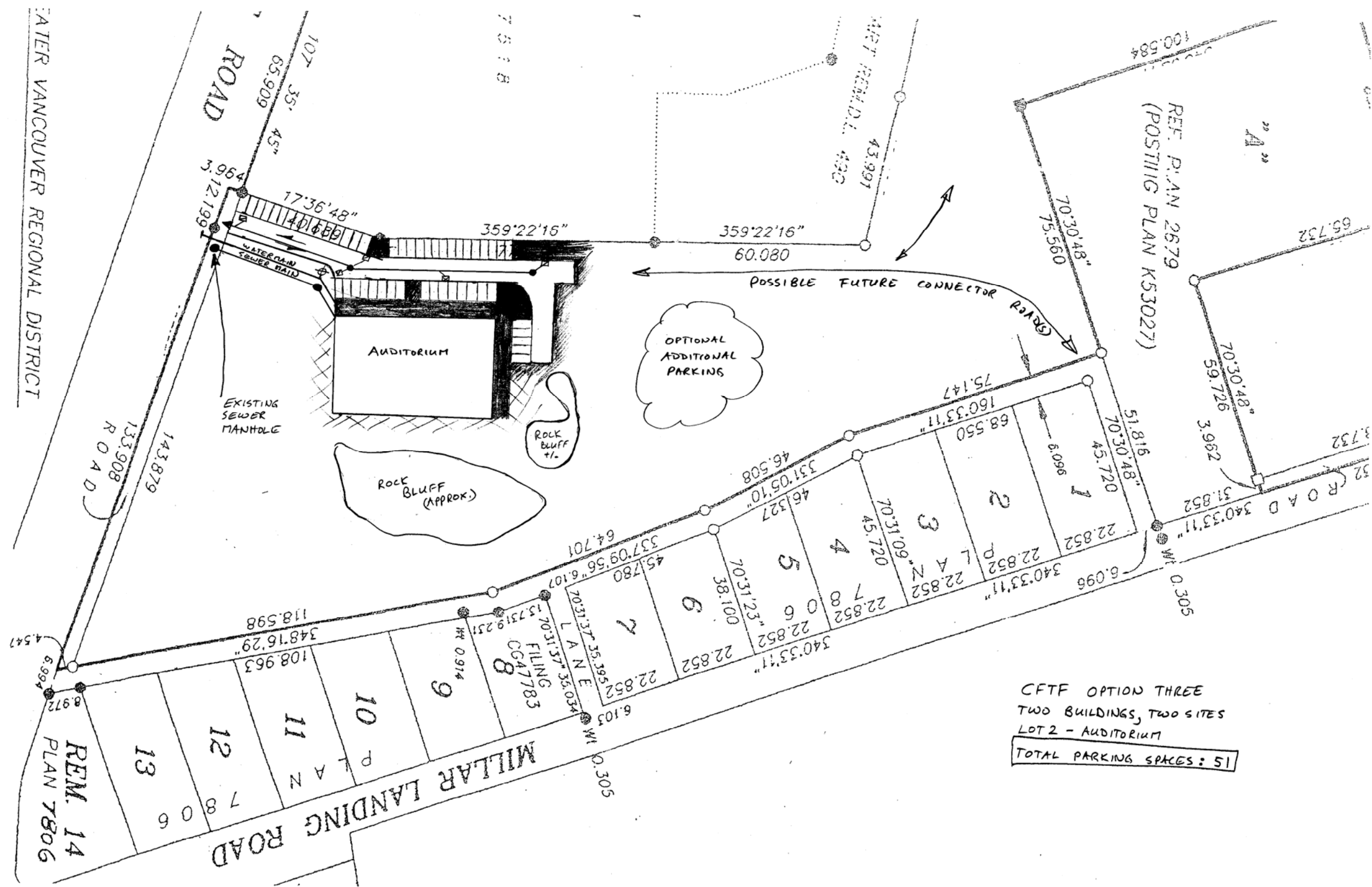
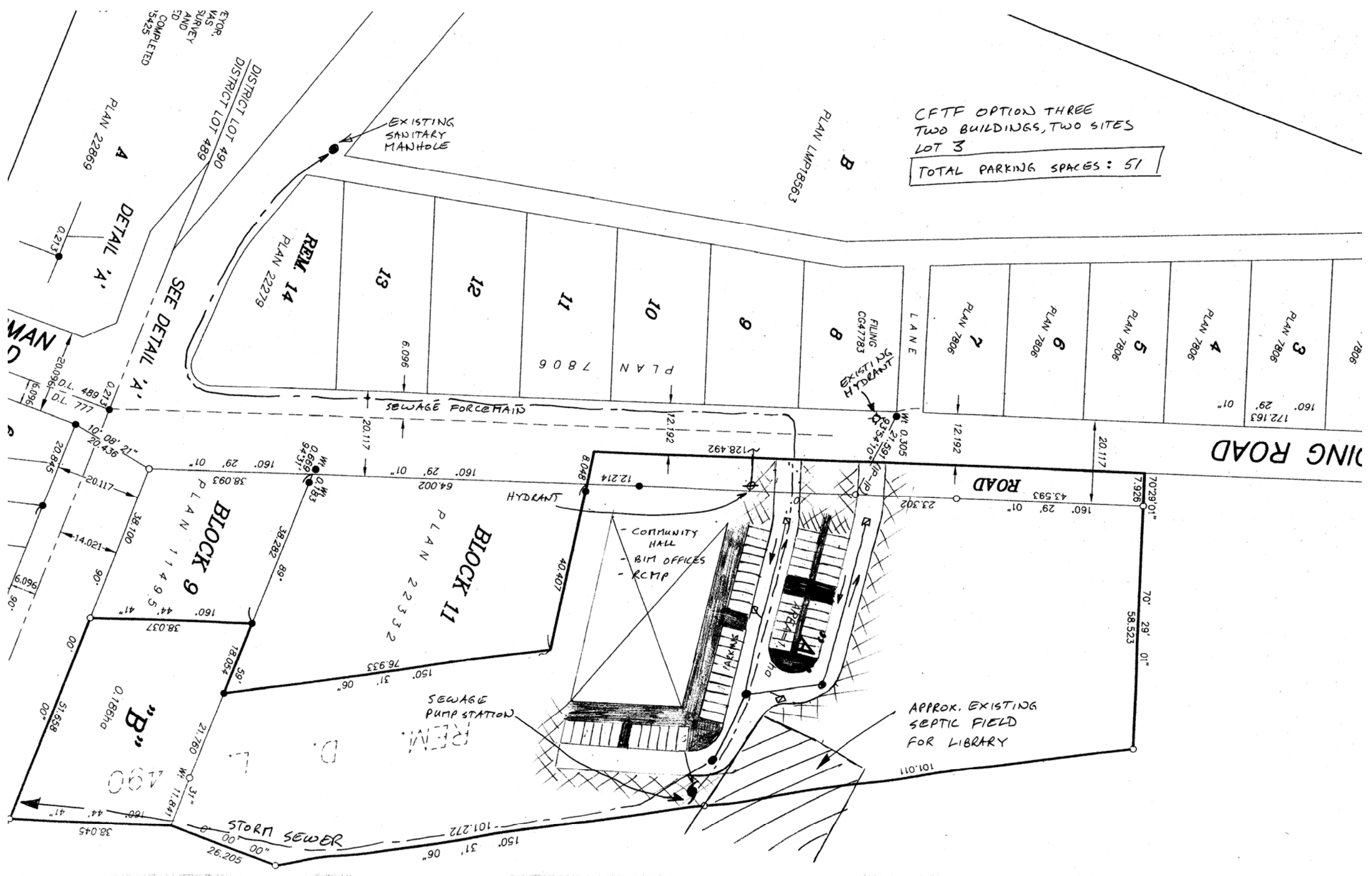


Figure D-5
Option Three – Two Buildings / Two Sites
Scenario 7 - Lot 3: (Theatre building only)



Appendix E

Advantages and Disadvantages for Facility Site and Servicing Scenarios

Table E-1
CFTF Concept Two (Campus Style Scenarios)
Advantages and Disadvantages

	Concept Two				
	Lot 2			Lot 3	
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	
Advantages	<p><u>Common to Scenarios 1, 2 &3</u></p> <p>Parking – parking would compliment BICS parking Access – additional road access to back of BICS could reduce p/u and d/o congestion at existing school parking lot Traffic – would reduce traffic through Bowen Island Trunk Rd. and Miller Rd. intersection during school p/u and d/o times Access – good access locations from existing roads Visual – impact of site minimal from Existing main roads, GVRD trails, and school Proximity- increases access from senior’s complex – no need to cross busy road Proximity – increased access to facility from school for student and assembly uses Site Layout & Expansion – room for additional expansion, ability to work with existing site topography Water – provides additional fire hydrants for fire protection of school on north side Site – Selective tree retention possible</p>				<p>Proximity – theatre building within sight and walking distance from existing Snug Cove businesses Water - minimizes new water main construction Sewer - within existing Snug Cove Sewer System Boundaries Water - within existing Cove Bay Water System Boundaries</p>
	<p>Proximity - additional access to potential marketable property along N. side of Senior’s Lane Sewer - provides future opportunity to Millers Rd. properties for future sewer servicing Sewer - could utilize existing School septic field if available and functioning</p>	<p>Sewer – Reduces capital costs and STP expansion compared to Scenarios 1 Sewer - could utilize existing School septic field if available and functioning</p>	<p>Sewer – Reduces capital costs and STP expansion compared to Scenarios 1 Access – reduced capital costs compared to Scenario 1 Sewer - could utilize existing School septic field if available and functioning</p>		
Disadvantages	<p><u>Common to Scenarios 1, 2 &3</u></p> <p>Access - creates additional traffic along senior’s complex Proximity – Theatre building not within sight and distance from existing Snug Cove businesses Sewer - outside of existing Snug Cove Sewer System Boundaries Water - outside of existing Cove Bay Water System Boundaries</p>				<p>Site - limited site area, limited ability to retain existing vegetation and work around topography, Site – entire site clearing (tree removal) required Site - Significant visual impact of from existing main road, adjacent properties, and GVRD trails Site - Relocation of existing GVRD trail required Site - Relocation of existing library septic field required Drainage - potential issues regarding downstream drainage easement ownership Sewer - Requires sewer treatment plant expansion</p>
	<p>Sewer - Requires up-fronting capital costs for sewer main along Miller Rd. and setting up latecomer’s agreement Sewer - Requires sewer treatment plant expansion</p>		<p>Access – only one access would have two way traffic</p>		

Table E-2
CFTF Concept Three (Separate Building Sites Scenarios)
Advantages and Disadvantages

	Concept Three		
	Lot 2	Lot 2	Lot 3
	Scenario 5	Scenario 6	Scenario 7
Advantages	<p>Parking – parking could compliment BICS parking Access – additional road access to back of BICS could reduce p/u and d/o congestion at existing school parking lot Traffic – would reduce traffic through Bowen Island Trunk Rd. and Miller Rd. intersection during school p/u and d/o times Access – good access locations from existing road Visual – impact of site minimal from Existing main roads, GVRD trails, and school Proximity- increases access from senior’s complex – no need to cross busy road Proximity – increased access to facility from school for student and assembly uses Site Layout & Expansion – ample room for additional expansion, ability to work with existing site topography Water – provides additional fire hydrants for fire protection of school on north side Site – Selective tree retention possible Sewer – on-site septic appears possible (reduces reliance on sewage plant) Site – Less visual impact on seniors complex than Concept Two scenarios</p>	<p>Parking – parking would compliment BICS parking Visual – impact of site minimal from Existing main roads, GVRD trails, and Snug Cove Proximity- increases access from existing Snug Cove commercial area Proximity – increased access to facility from school for student and assembly uses Site Layout & Expansion – possible room for additional parking to the north Water – close to existing utility services Sewer – close to existing utility services Stormwater – close to existing drainage Site – Selective tree retention possible Water – inside of Cove Bay service area</p>	<p>Proximity – theatre building within sight and walking distance from existing Snug Cove businesses Water - minimizes new water main construction Sewer - within existing Snug Cove Sewer System Boundaries Water - within existing Cove Bay Water System Boundaries Site – reduces impact on GVRD trails relative to Concept Two Scenarios</p>
Disadvantages	<p>Access - creates additional traffic along senior’s complex Sewer - outside of existing Snug Cove Sewer System Boundaries Water - outside of existing Cove Bay Water System Boundaries</p>	<p>Access – OK access locations from existing road, but concerns regarding site lines, and impact on future ferry marshalling. Site Layout & Expansion – site limited by topography – additional feasibility investigation required. Site – may restrict future expansion of BICS field Stormwater – additional load on existing storm sewer Sewer - outside of existing Snug Cove Sewer System Boundaries Sewer - Requires sewer treatment plant expansion, unless on-site disposal feasible</p>	<p>Site – visual impact of from existing main road, adjacent properties, and GVRD trails, but could be mitigates Drainage – additional load on existing storm sewer, potential issues regarding downstream drainage easement ownership Sewer - Requires sewer treatment plant expansion, unless on-site septic disposal feasible</p>

Appendix F

Site and Servicing Cost Estimates

Appendix F
Table F-1: Site and Servicing Cost Estimates

CFTF Concept	Concept Two				Concept Three		
	Lot 2		Lot 3		Lot 2	Lot 2	Lot 3
Location	Campus		Campus		Recreation Facility	Theatre Building	Theatre Building
Building	Campus		Campus		Recreation Facility	Theatre Building	Theatre Building
Scenario	1	2	3	4	5	6	7
On site Infrastructure Costs							
Site Clearing ^[1]	25,000	25,000	25,000	25,000	15,000	12,000	12,000
Access Road #1	112,000	112,000	28,000	5,000	n/a	7,000	5,000
Access Road #2	54,000	54,000	54,000	5,000	54,000	n/a	5,000
Parking Area ^[3]	273,000	273,000	273,000	273,000	161,200	163,600	163,600
Watermains	55,000	55,000	55,000	12,000	55,000	14,000	9,000
Sewer Mains	35,000						
Sewer Pump Station (on site)	n/a	n/a	n/a	25,000	n/a	n/a	15,000
On-site Septic Field ^[1]	n/a	50,000	50,000	n/a	30,000	0	n/a
Storm Sewer main	29,000	29,000	29,000	47,000	29,000	7,000	47,000
Landscaping ^[1]	20,000	20,000	20,000	20,000	12,000	12,000	12,000
Hydro Service ^[1]	6,000	6,000	6,000	6,000	5,000	5,000	5,000
Tel Service ^[1]	2,000	2,000	2,000	2,000	1,000	1,000	1,000
SubTotal	\$611,000	\$626,000	\$542,000	420,000	\$362,200	\$221,600	\$274,600
Off Site Infrastructure Costs							
Watermains	0	0	0	0	0	0	0
Sewer Mains	^[4] 44,000	0	0	0	0	0	0
Sewage Forcemain	^[4] Incl.	0	0	48,000	0	0	48,000
Sewage Pump Station (off site)	^[5] 30,000						
Sewage Treatment Plant Upgrade (portion of) ^[6]	n/a	0	0	n/a	0	n/a	n/a
Library SCS Latecomers Charge	0	0	0	60,900	0	0	0
Library Connection cost	0	0	0	7,000	0	0	0
Existing septic field removal ^[1]	0	0	0	10,000	0	0	0
SubTotal	\$74,000	\$0	\$0	\$125,900	\$0	\$0	\$48,000
Total Site Construction Costs	\$685,000	\$626,000	\$542,000	\$545,900	\$362,200	\$221,600	\$322,600
Other Costs							
Engineering (15%)	102,750	93,900	81,300	81,900	54,300	33,200	48,400
Landscape Architect (allow)	15,000	15,000	15,000	15,000	10,000	10,000	10,000
Contingency (20%)	137,000	125,200	108,400	109,200	72,400	44,300	64,500
Total Site Costs	\$939,750	\$860,100	\$746,700	\$752,000	\$498,900	\$309,100	\$445,500
	Say \$940,000	Say \$860,000	Say \$747,000		Say \$490,000	Say \$309,000	Say \$446,000

Notes:

- [1] – allowance only.
- [2] – cost could be shared with other facilities developed along route, if any.
- [3] - based on \$8/sq.ft incl. base prep, paving, lighting, storm CB's, medians, etc...
- [4] – 40% est. share of future sewer gravity sewer and forcemain along Miller Rd.
- [5] – 15% est. share of future sewage pump station on Miller Rd.
- [6] – Facility believed to be accounted for in original sewer service area allocations for Cates Hill – confirmation required.