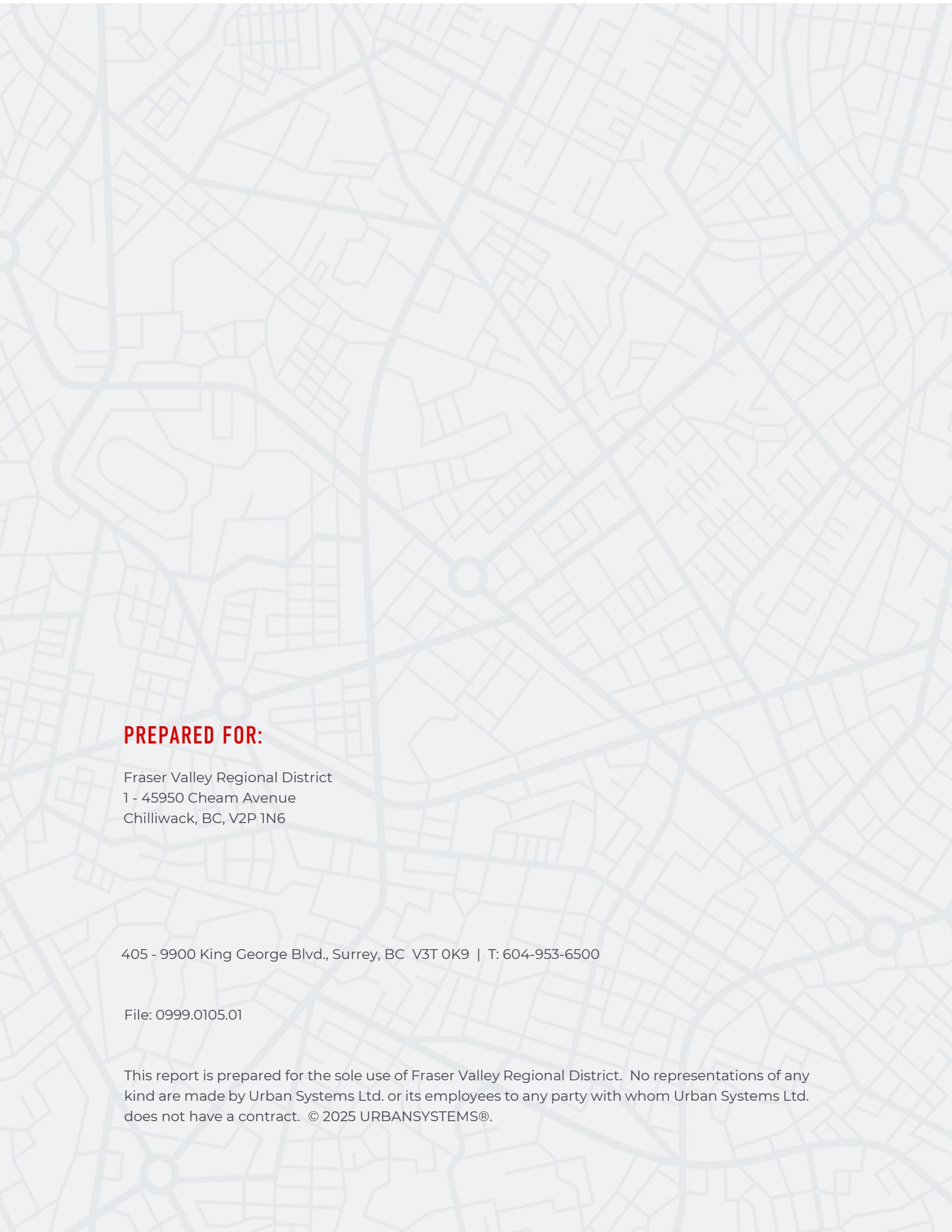


FVRD SMALL SCALE, MULTI- UNIT HOUSING (SSMUH) IMPLEMENTATION

FINAL REPORT

November 27, 2025

URBAN
SYSTEMS



PREPARED FOR:

Fraser Valley Regional District
1 - 45950 Cheam Avenue
Chilliwack, BC, V2P 1N6

405 - 9900 King George Blvd., Surrey, BC V3T 0K9 | T: 604-953-6500

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EXECUTIVE SUMMARY

In response to the Province of British Columbia's Bill 44, the Fraser Valley Regional District (FVRD) was granted an extension to December 31, 2025, to implement required Zoning Bylaw amendments to enable Small Scale Multi-Unit Housing (SSMUH) in its Electoral Areas (EAs). This extension provided FVRD with time to assess the impacts of increased housing density on FVRD water and sewer systems, and on the environmental health of sensitive areas with on-site septic systems.

Projections of SSMUH uptake were undertaken across eligible service areas, using low, medium, and high growth scenarios to estimate future SSMUH unit development and associated population projections. These projections form the basis for evaluating water and sewer system capacity, by identifying where existing infrastructure can accommodate new development and where upgrades may be required.

Based on anticipated SSMUH uptake, most FVRD-operated water and sewer systems are expected to support anticipated SSMUH growth. However, the analysis identifies specific infrastructure limitations, such as the need for a new reservoir in Deroche, careful management of water storage capacity in Morris Valley, and wastewater treatment capacity in Morris Valley. As well, there are capacity considerations related to future development in Area D, as SSMUH growth has the potential to utilize much of the remaining infrastructure capacity. Ongoing monitoring of the capacity will be required in relation to SSMUH development.

The infrastructure capacity review primarily contemplates SSMUH uptake versus new traditional growth through rezoning and/or subdivision activity. When new SSMUH units are permitted as-of-right under updated zoning, property owners have the potential to add secondary suites or accessory dwelling units through a straightforward building permit process, which limits the FVRD's ability to assess broader servicing impacts. In contrast, development that proceeds via rezoning or subdivision applications can trigger a more comprehensive review, allowing for detailed evaluation of infrastructure capacity and environmental considerations before approval.

A central focus of the review is the cumulative groundwater risks associated with increased housing density and the use of on-site septic systems. The regulatory framework governing groundwater protection in the FVRD is shaped by provincial standards for septic systems, with oversight provided by Fraser Health. The FVRD's role is primarily through zoning and building permit processes, with no formal oversight for on-site septic system approvals. Within this multi-layered framework, technical standards for on-site septic systems exist; however, there is no proactive consideration or monitoring of cumulative impacts. This is of concern particularly in areas with older septic systems, challenging soil and water table conditions, groundwater recharge zones, and areas in proximity to lakes or other sensitive features.

To address these concerns, there are several potential approaches. A more direct approach for the FVRD would be to potentially update the Building Bylaw to require a Professional Engineer review of septic system adequacy for SSMUH development, particularly where older Type 1 systems are proposed to be used for SSMUH development in high-risk locations. Other possible approaches include advocating for enhanced provincial oversight of on-site septic systems, and more proactive environmental monitoring. These strategies are presented as options for consideration, and the FVRD may adapt its approach as SSMUH uptake takes place and new data emerges.

As the FVRD contemplates its approach to SSMUH development regulation, key implementation considerations include:

- **Zoning Approach:** The FVRD could include secondary suites, ADUs, or both within its electoral area zoning bylaws. A cautious approach would be to simply permit secondary suites at this time

and monitor uptake. Other options include allowing for ADUs (e.g. either a secondary suite or an ADU could be permitted on a property), or taking more geographic-specific approaches, with only secondary suites permitted in areas with infrastructure capacity limitations or areas that are more sensitive to groundwater risks associated with on-site septic systems.

- **Long-Term Infrastructure Planning:** While there is capacity for SSMUH development in most FVRD water and sewer service areas, it is important to consider growth beyond SSMUH, especially for systems that have limited remaining capacity after accounting for SSMUH uptake.
- **Utility Rate Updates:** Since many FVRD areas have not allowed for secondary suite or ADU development to date, there is a need to review and update utility rates with consideration for new forms of development to ensure financial equity and sufficiency for each utility.
- **Groundwater Risk Management Approach:** SSMUH development could increase density in sensitive areas with on-site septic systems, and the FVRD faces a decision on whether to take a more direct approach (e.g. Building Bylaw updates to involve the FVRD in on-site septic system approvals) or recognize that the Province 'occupies the field' for septic system approvals and focus more on advocacy and environmental monitoring at this time.



1.0 INTRODUCTION

1.1 BACKGROUND & PURPOSE

To implement Bill 44 legislation related to Small Scale Multi-Unit Housing (SSMUH) in the Electoral Areas (EAs), the FVRD is required to amend its zoning bylaws. The SSMUH requirements state that at minimum, a single-detached dwelling and a suite or accessory dwelling unit (ADU) must be permitted on each residential parcel where a single-detached dwelling is currently permitted by zoning.

In 2024, the Province granted the FVRD an extension from June 30, 2024, to December 31, 2025, to analyze and implement Bill 44's requirements as they pertain to:

1. Water and sewer system capacity constraints arising from SSMUH development; and
2. Cumulative groundwater impacts and risks associated with increased density on existing parcels using on-site septic systems.

This extension provided the FVRD with the time needed to review the impacts of potential SSMUH uptake. Zoning bylaw amendments to enable SSMUH will mean that only a building permit would be required to create a Secondary Suite (SS) or Accessory Dwelling Unit (ADU), limiting the opportunity to examine servicing and infrastructure capacity constraints. As FVRD water and sewer services have defined capacities, it is important for the FVRD to understand how these capacities may be impacted by SSMUH before update zoning bylaws to accommodate Bill 44.

Further, groundwater risks are frequently concentrated in areas where older Type 1 septic systems are prevalent, especially in small-lot developments with high water tables and challenging soil conditions, often near lakes. These areas were identified by the previous FVRD Sewer Gap analysis prepared by Urban Systems, and the 2017 FVRD Electoral Area Source Water Protection Assessments Updated Report prepared by Golder. The transition from seasonal to permanent residency, along with factors such as agricultural run-off, has heightened the need to assess groundwater vulnerability in these locations. SSMUH uptake may increase density levels in these locations, underscoring the importance of reviewing groundwater impacts and evaluating potential management approaches.

To address these two items, this project:

- Projects potential SSMUH uptake using low, medium, and high-growth scenarios;
- Estimates population increases and resulting impacts to water demand and sewer flows;
- Identifies capacity constraints related to SSMUH uptake for water and sewer infrastructure within existing water and sewer service areas; and
- Reviews potential groundwater risks associated with on-site septic systems and SSMUH development, and evaluates possible approaches to mitigate SSMUH-related groundwater risks.

This report provides the FVRD with a basis to:

- Propose zoning bylaw amendments for SSMUH with consideration for servicing capacity impacts;
- Identify water and sewer service areas with capacity considerations to be addressed in the future; and,

- Select a preferred approach or approaches to address groundwater risks associated with potential increased density in the more sensitive areas (e.g. near lakes) where on-site septic systems are prevalent.

1.2 REPORT STRUCTURE AND APPENDICES

This section outlines how the report is organized:

- **Section 2: Estimated SSMUH Uptake Scenarios** evaluates how SSMUH will be implemented in different service areas dependent on local factors. To understand these, we:
 - Evaluated **SSMUH-eligible lots** to understand the baseline number of existing lots that could accommodate SSMUH development; and,
 - Estimated SSMUH uptake scenarios and calculated associated **unit & population projections** to understand growth scenarios in each SA.
- **Section 3: Water and Sewer System Capacity for Future Growth** explores the degree of water and sewer demand stemming from SSMUH uptake, and estimates the overall impacts of SSMUH uptake to existing FVRD systems, highlighting capacity constraints where applicable.
- **Section 4: SSMUH and Potential Groundwater Risks** reviews the potential groundwater risks linked to SSMUH development, outlines the regulatory framework, and identifies possible approaches for risk management.
- **Section 5: Implementation Considerations** outlines key implementation considerations for SSMUH, including zoning approaches, infrastructure planning, utility rate updates, and strategies for monitoring and mitigating groundwater risks.
- **Appendix A** provides a snapshot of each water and sewer service area with estimates of SSMUH growth, servicing capacity constraints, and risks.
- **Appendix B** provides current and estimated future water and sanitary system demands based on SSMUH uptake.
- **Appendix C** summarizes 2025 FVRD utility rates for service areas reviewed in this project.

2.0 ESTIMATED SSMUH UPTAKE SCENARIOS

This section outlines how potential uptake from SSMUH was estimated across the FVRD's electoral areas. The focus was on existing water and sewer service areas potentially impacted by SSMUH. The methodology in this first step of work involved confirming existing lots, differentiating between lots eligible for SSMUH development (e.g. single detached residential lots) versus other lots (e.g. lots with institutional or commercial uses), and developing estimated SSMUH uptake scenarios based on trends observed in nearby communities that allow for suites and/or ADUs, and observations on potential future growth in FVRD electoral areas.

The review also included developing an understanding of future developments (e.g. through rezoning and/or subdivision). These future developments were not included in SSMUH uptake scenarios as approvals are generally discretionary (e.g. through a rezoning process) and there is an ability for the FVRD to review servicing impacts in conjunction with review of these development applications, whether in association with rezoning or subdivision applications. In contrast, the FVRD generally does not have an opportunity to review broader servicing considerations in conjunction with building permit applications for potential SSMUH development that would be permitted as-of-right on existing properties. However, the scope of this project allowed for review of potential water and sewer system capacity impacts of SSMUH development on existing lots, to determine remaining potential capacity for future development.

SSMUH unit uptake and population estimates were calculated for all potentially SSMUH-eligible water and sewer service areas. SSMUH uptake projections were not developed for service areas that do not have zoning regulations (i.e. Electoral Area A), as there are no tangible changes to the land use regulatory framework as a result of Bill 44 in these areas, and therefore no potential servicing impacts associated with regulatory changes. Overall, the bulk of anticipated growth was concentrated in expected regions of development and demand, such as Cultus Lake and Popkum. Growth projections were used to estimate future water and sewer demands, and from there, impacts to infrastructure were assessed.

As noted in Section 4 of this report, there is the possibility that the FVRD could apply a hazardous conditions exemption to not allow SSMUH development in certain contexts where hazardous conditions exist and cannot be reasonably mitigated. However, the SSMUH uptake projections assume that SSMUH will be enabled through zoning bylaw amendments.

2.1 ASSESSING CURRENT SSMUH-ELIGIBLE LOTS

The following table outlines which service areas have been considered and notes any considerations around each service area. Exclusions are noted where applicable.

TABLE 1: SSMUH-ELIGIBLE SERVICE AREAS

	Water Service Area	Sewer Service Area
Area A	Excluded from analysis, as there are no zoning regulations in place, meaning development processes do not change with regard to SSMUH & Bill 44.	
Area B	Dogwood Valley, Yale	N/A
Area C	Morris Valley, Lake Errock	Morris Valley
Area D	Area D Integrated	Popkum

		Water Service Area	Sewer Service Area
Area E	Bell Acres	Baker Trails excluded: no SSMUH potential associated with existing mobile home development	
Area F	Hatzic Prairie	N/A	
Area G	Dewdney, Deroche	N/A	
Area H	Cultus Lake	Cultus Lake North (Cultus Lake South sewer area ineligible for SSMUH due to restrictive covenants).	

In order to assess current SSMUH eligible lots, FVRD sources were used to confirm the number of existing single detached lots (regardless of lot size) and newly subdivided or approved detached residential and non-residential lots within water and sewer service areas. **Appendix A: SSMUH Projections by Service Area** provides an overview of the existing and newly subdivided or approved lots within each of the service areas, along with estimates of potential future development potential (e.g. through rezoning or subdivision activity and for reference purposes only, as noted above). This assessment formed the basis of calculations for SSMUH uptake (also detailed in Appendix A) and associated water demands and sewer flows.

2.2 POPULATION PROJECTIONS & HOUSING NEEDS

The FVRD 2024 Interim Housing Needs report was referenced to understand the 20-year housing needs for each Electoral Area, shown below:

TABLE 2: FVRD 20-YEAR HOUSING NEEDS (# OF UNITS)

Electoral Area	20 Year Need
A	173
B	235
C	394
D	550
E	441
F	381
G	388
H	670

Growth assumptions for SSMUH uptake were then generated based on an understanding of FVRD housing needs, a review of historic growth trends, and a review of growth forecasts. Of note, SSMUH uptake is not anticipated to be the only form of development that contributes to meeting FVRD housing

needs. Other forms of development (e.g. new subdivisions or multi-unit developments) would also be needed to meet FVRD housing needs.

To provide a framework for SSMUH uptake estimates, FVRD water and sewer service areas were grouped into different growth uptake tiers, as follows:

- Tier 1 represents the highest potential uptake areas (such as Area D and Cultus Lake);
- Tier 2 are mid-level uptake areas (such as Lake Errock & Deroche);
- Tier 3 represents the lower potential uptake areas (e.g. Fraser Canyon communities and Morris Valley, where bareland strata development is less conducive to SSMUH uptake).

Considering the recent uptake of suites in comparable urban communities, a variety of uptake scenarios (low, medium and high) were generated for each uptake tier. Tables 3 and 4 illustrate the uptake tiering and the estimated percentage of eligible lots that are expected to experience uptake of SSMUH units annually.

In an FVRD electoral area context it is anticipated that most SSMUH development will be property owner led development (e.g. the addition of a suite to an existing home) as opposed to the acquisition of existing home sites by developers in order to redevelop with a new home and SSMUH unit or units.

Tables 3 and 4 below indicate tiering based on the percentage of lots that are estimated to see SSMUH uptake on an annual basis.

TABLE 3: WATER SERVICE AREAS, TIERED BY GROWTH

	Water			Uptake Tier
	Low	Medium	High	
Area B				
Dogwood Valley	0.2%	0.5%	1.0%	3
Yale	0.2%	0.5%	1.0%	3
Area C				
Morris Valley	0.2%	0.5%	1.0%	3
Lake Errock	0.5%	1.0%	1.5%	2
Area D				
Area D Integrated	1.0%	2.0%	3.0%	1
Area E				
Bell Acres	1.0%	2.0%	3.0%	1
Area F				
Hatzic Prairie	0.5%	1.0%	1.5%	2
Area G				
Dewdney	0.5%	1.0%	1.5%	2
Deroche	0.5%	1.0%	1.5%	2
Area H				
Cultus Lake	1.0%	2.0%	3.0%	1

TABLE 4: SEWER SERVICE AREAS, TIERED BY GROWTH

	Sewer			Uptake Tier
	Low	Medium	High	
Area C				
Morris Valley	0.2%	0.5%	1.0%	3
Area D				
Popkum	1.0%	2.0%	3.0%	1
Area E				
Baker Trails	n/a	n/a	n/a	n/a
Area H				
Cultus Lake North	1%	2%	3%	1

2.3 SSMUH GROWTH - UNITS

With baseline tiering completed, the number of potential estimated SSMUH units was estimated for each scenario. Tables 5 and 6 below illustrate existing SSMUH-eligible lots, and show the estimated net new SSMUH units for each service area under the high growth scenario. The high growth scenario is used to test capacity of water and sewer systems in the servicing analysis to follow in Section 3.

TABLE 5: HIGH BUILDOUT BY WATER SERVICE AREA

	Existing SSMUH-Eligible Lots	High Buildout to 2046 (Net New SSMUH Units)
Area B		
Dogwood Valley	20	4
Yale	81	17
Area C		
Morris Valley	234	49
Lake Errock	164	52
Area D		
Area D Integrated	500	315
Area E		
Bell Acres	31	20
Area F		
Hatzic Prairie	150	47
Area G		
Dewdney	2	1
Deroche	40	13
Area H		
Cultus Lake	601	379

TABLE 6: HIGH BUILDOUT BY SEWER SERVICE AREA

Existing SSMUH-Eligible Lots		High Buildout to 2046 (Net New SSMUH Units)
Area C		
Morris Valley	234	49
Area D		
Popkum	111	70
Area H		
Cultus Lake North	418	263

2.4 HOUSEHOLD SIZES

To establish population forecasts for infrastructure capacity assessment purposes, household size assumptions were generated, considering historical census data, growth trends, and location-specific considerations such as the predominance of new housing development or vacation uses. Estimates were made for dwellings with and without a Secondary Suite (SS) and Accessory Dwelling Unit (ADU). The following household size assumptions have been used for population forecasting purposes:

TABLE 7: HOUSEHOLD SIZES

	Without SS/ADU	With SS/ADU	Net New Population Per Suite
Area B			
Dogwood Valley	2.2	3.7	1.5
Yale	2.2	3.7	1.5
Area C			
Morris Valley	2.2	3.7	1.5
Lake Errock	2.4	3.9	1.5
Area D			
Area D Integrated	3.0	4.5	1.5
Area E			
Bell Acres	3.0	4.5	1.5
Area F			
Hatzic Prairie	2.4	3.9	1.5
Area G			
Dewdney	2.4	3.9	1.5
Deroche	2.4	3.9	1.5
Area H			
Cultus Lake	3.0	4.5	1.5

2.5 SSMUH GROWTH – POPULATION GROWTH

Using unit projections and household sizes as an established baseline, the population growth over time based on SSMUH uptake was assessed. The following tables illustrate the high uptake scenario for each service area. **Appendix A: SSMUH Projections by Service Area** provides further detail on low, medium and high growth scenarios for each of the service areas.

TABLE 8: POPULATION PROJECTIONS FOR HIGH BUILDOUT BY WATER SERVICE AREA

	Estimated Population (2025)	High Buildout to 2046 (Total Population)
Area B		
Dogwood Valley	44*	50*
Yale	178	204
Area C		
Morris Valley	515	589
Lake Errock	394	471
Area D Integrated	1500	1973
Area E		
Bell Acres	93	122
Area F		
Hatzic Prairie	360	431
Area G		
Dewdney	5	6
Deroche	96	115
Area H		
Cultus Lake	1803	2371

* Does not include Yale First Nation, which is connected via service agreement.

TABLE 9: POPULATION PROJECTIONS FOR HIGH BUILDOUT BY SEWER SERVICE AREA

	Estimated Population (2025)	High Buildout to 2046 (Total Population)
Area C		
Morris Valley	515	589
Area D		
Popkum	333	438
Area H		
Cultus Lake N	1371	1766

The tables above provide figures for SSMUH eligible lots and associated residential populations only. To estimate potential water/sewer demands and flows, modelling also factored in equivalent populations for existing non-residential development, where present.

2.6 SSMUH GROWTH – NEW GROWTH AREAS

SSMUH uptake in FVRD Electoral Areas will occur through two primary avenues:

- **Existing residential lots** that are SSMUH-eligible will have as-of-right zoning permission for SSMUH units (e.g. either a secondary suite and/or an ADU, as determined by the FVRD). This means that property owners would simply require a building permit to create a new SSMUH unit on an existing eligible residential parcel. This process is the subject of this review due to the lack of opportunity to review and mitigate all risks to FVRD servicing, as well as human and environmental health, through the building permit process.
- **New residential lots** being established through future rezoning and/or subdivision activities can also include SSMUH-related growth. In these cases, the FVRD would have the opportunity to review servicing capacity constraints and other possible impacts as part of the normal course of development review.

As indicated previously, the focus of this exercise has been to estimate SSMUH uptake on existing residential lots. As part of standard development planning processes (e.g. rezoning, subdivision) for new areas, the FVRD will have the opportunity to oversee and evaluate new residential development and associated servicing considerations. As a result, the priority for this review has been to assess SSMUH uptake on existing residential lots, given that the building permit process generally does not provide an opportunity to review servicing capacity considerations once lands are pre-zoned for SSMUH.

3.0 WATER & SEWER SYSTEM CAPACITY FOR FUTURE GROWTH

, Current water and sanitary demands were assessed and projected to consider future SSMUH growth. The current and future water and sanitary demands can be found in **Appendix B: Current & Future Water and Sanitary Demands**. The calculated demands were then compared to the existing water and sanitary system infrastructure. This was done to assess any constraints that may exist in the current water and sanitary systems. The results are summarized in this section.

3.1 WATER SYSTEM CAPACITY CONSTRAINTS

The current demand, and future water demands attributed to future SSMUH growth, were compared against any groundwater and surface water licenses, well pumps, booster pumps, and reservoirs in each service area. Table 10 shows the capacity remaining of each license or piece of infrastructure after future SSMUH growth in the high uptake scenario.

There are only three pieces of infrastructure that will not have enough capacity to accommodate future SSMUH growth in the high uptake scenario. These are:

- **Deroche Reservoir:** This reservoir does not have capacity to accommodate current day estimated fire flow demands of 60 L/s but does have adequate capacity for lower fire flow standard of 30 L/s which was used for past system design. The high SSMUH update scenario is limited and expected to represent less than 3% of the demand serviced.
- **Bell Acres Reservoir:** This reservoir also does not have capacity to accommodate current day demands under a fire flow of 60 L/s. It is noted that the FVRD is considering amending their bylaw to require a minimum fire flow of 30 L/s to reflect the original system design parameters for Bell Acres; this lower fire flow would allow the Bell Acres reservoir to have sufficient capacity for future SSMUH growth.
- **Morris Valley Reservoir:** This reservoir only has enough capacity for fire and balancing storage for the future SSMUH population. There is not enough capacity for emergency storage. The reservoir is planned for relocation (due to geohazard risks) and expansion as part of the Harrison Mills Neighbourhood Plan. The additional demand associated with SSMUH is a small component of the expansion that is planned.

In addition to the above, the Area D (Popkum) Reservoir will reach 89% of its capacity under the high SSMUH uptake scenario. As such, careful flow management and review will be needed to ensure that sufficient capacity is available at the reservoir for any planned developments.

TABLE 10: WATER SERVICE AREAS INFRASTRUCTURE CAPACITY REMAINING AFTER SSMUH

Service Area	Capacity of GW/SW License	Capacity of Well Pumps	Capacity of Booster Pumps	Capacity of Reservoir Remaining	Comments
	Remaining*	Remaining	Remaining	Remaining	
Hatzic Well	12,853m ³ /yr / 89,824m ³ /yr 14%	18L/s / 23L/s 79%	3.22L/s / 8.1L/s 40%	140m ³ / 650m ³ 22%	Reservoir capacity remaining includes emergency storage
Deroche	37,230m ³ /yr / 66,421m ³ /yr 56%	3.43/s / 5L/s 69%	N/A	-7m ³ / 329m ³ -2%	Reservoir is already currently undersized for 60 L/s fire flow + equalization. The capacity remaining excludes emergency storage. Sufficient capacity in reservoir if fire flow of 30 L/s used.
Morris Valley	38,285m ³ /yr / 166,737m ³ /yr 23%	6.66L/s / 17.5L/s 38%	N/A	-83m ³ / 588m ³ -14%	The reservoir is undersized if it includes emergency storage. Without emergency storage, 9% capacity remains.
Dogwood Valley	19,106m ³ /yr / 34,451m ³ /yr 55%	9.90L/s / 11.3L/s 88%	N/A	34m ³ / 450m ³ 7.6%	Capacity of reservoir remaining includes emergency storage.
Yale	47,292m ³ /yr / 100,635m ³ /yr 47%	5.92L/s / 9.7L/s 61%	N/A	90m ³ / 570m ³ 16%	Reservoir is adequately sized for fire flow of 60L/s but not 150L/s.
Cultus Lake	N/A	5.82L/s / 25.8L/s 23%	N/A	288m ³ / 1800m ³ 16%	Capacity of reservoir remaining ignores emergency storage.
Lake Errock	N/A	2.97L/s / 5.7L/s 52%	N/A	122m ³ / 574m ³ 21%	Reservoir capacity remaining includes emergency storage.
Area D (Popkum)	244,274m ³ /yr / 655,000m ³ /yr 37%	48.9L/s / 75L/s 65%	N/A	177m ³ / 1,650m ³ 11%	Capacity of reservoir remaining ignores emergency storage. Fire flow of 90L/s.
Bell Acres	2,040m ³ /yr / m ³ /yr 13%	L/s / L/s 85%	N/A	-126m ³ / 205m ³ -62%	This excludes emergency storage. Fire flow of 60 L/s used. Sufficient capacity in reservoir if fire flow of 30 L/s used.
Dewdney	N/A	N/A	N/A	N/A	Dewdney is serviced through a bulk water supply agreement with Abbotsford/Mission.

*GW = groundwater; SW = surface water

3.2 SEWER SYSTEM CAPACITY CONSTRAINTS

The current and future sanitary demands attributed to future SSMUH growth were compared against any discharge permits and wastewater treatment plant (WWTP) design capacities. Table 11 shows the capacity remaining of each discharge permit/design capacity after future SSMUH growth in the high uptake scenario. The current sewer system for each service area will be able to accommodate future SSMUH growth; however, the Morris Valley WWTP will reach its design capacity for average annual day flow. Additionally, the Area D Minters (Popkum) WWTP will reach 91% of its plant capacity and discharge authorization. As such careful flow management and review will be needed to ensure that sufficient capacity is available at both plants for any planned developments.

TABLE 11: SEWER SERVICE AREA INFRASTRUCTURE CAPACITY REMAINING AFTER SSMUH

Service Area	Capacity of Discharge Permit Remaining	WWTP Design Capacity Remaining for Average Annual Day Flow	WWTP Design Capacity Remaining for Maximum Day Flow	Comments
Morris Valley	109m ³ /d / 275m ³ /d 40%	0m ³ /d / 90m ³ /d 0%	42m ³ /d / 208m ³ /d 20%	The WWTP has a capacity of less than 10% at the medium uptake scenario but is adequate for the low uptake. Note that the WWTP can be expanded contingent on completion of the Neighbourhood Plan. Phase 1 expansion is for 383m ³ /d, which would be adequate for the high uptake scenario.
Cultus Lake North	1,650m ³ /d / 2,260m ³ /d 73%	319m ³ /d / 570m ³ /d 56%	310m ³ /d / 920m ³ /d 34%	None
Baker Trails*	19m ³ /d / 117m ³ /d 16%	63m ³ /d / 117m ³ /d 54%	19m ³ /d / 117m ³ /d 16%	None
Area D Minters (Popkum)	19m ³ /d / 201m ³ /d 9%	134m ³ /d / 200m ³ /d 67%	18m ³ /d / 200m ³ /d 9%	The WWTP and discharge permit have more than 10% capacity in the medium and low uptake scenarios

*Note Baker Trails is not eligible for SSMUH development as it is a mobile home park.

3.3 CAPITAL COST ESTIMATES

Class D capital cost estimates were reviewed for infrastructure that would need to be upgraded to accommodate future SSMUH growth. Estimates were reviewed for the Deroche reservoir and the Morris Valley reservoir, as those are the only two pieces of infrastructure in both the water and sanitary systems that would require upgrading to accommodate future SSMUH growth.

3.3.1 DEROCHE

The 2020 Deroche Neighbourhood identifies a future reservoir with a capacity of 1,063 m³ to service Deroche and Leq'a:mel First Nation (LFN). The total cost of this reservoir with 30% contingency and 10% engineering is estimated to be \$1.99M (\$2025). This cost includes site preparation, an access road, a watermain to the reservoir, clearing and grubbing, site piping, an aboveground, glass lined, steel reservoir, a level transmitter and telemetry, and decommissioning the existing reservoir and booster station. This reservoir has a design population of 667 people. Under the high uptake SSMUH scenario, the Deroche population will be 432 people. Using the ratio of 432/667, approximately \$1.29M would be attributed to the FVRD, with the remainder attributed to Leq'a:mel First Nation. **Approximately \$57,000 of the total \$1.99M would be attributed to the SSMUH population of 19 individuals.**

As the reservoir would be relocated to a higher elevation, the existing distribution system will need to be split into two pressure zones. The cost of additional distribution system upgrades is approximately \$373,000 (\$2025). This includes the cost of a pressure reducing valve, 100m of a new 150mm PVC watermain, removal and replacement of an existing watermain with 200mm PVC pipe, and the supply and installation of 5 new fire hydrant assemblies. **Approximately \$11,600 of the \$373,000 would be attributed to the SSMUH population of 19 individuals if apportioned by population.**

3.3.2 MORRIS VALLEY

Water Systems

The 2023 Harrison Mills Neighbourhood Plan identifies a new reservoir for the Morris Valley Service area. The reservoir is sized for a design population of 2,145 people and is estimated to cost \$4.07M (including 30% contingency and 15% engineering). The additional population attributed to future SSMUH is estimated to be 74 people. Using the ratio of 74 people to the 2,145 design population, **approximately \$140,500 of the total cost would be attributed to the SSMUH population.**

4.0 SSMUH AND POTENTIAL GROUNDWATER RISKS

In addition to reviewing potential impacts on water and sewer service areas, a key part of the study was to identify and assess potential groundwater risks associated with SSMUH development, in areas with on-site septic systems. This scope included a high-level assessment of potential groundwater risks, a review of the current regulatory framework for approval of on-site septic systems, and development of potential approaches to risk management and mitigation. It is important to note that this work did not undertake additional hydrogeological review but rather was based on existing documented information.

4.1 GROUNDWATER RISKS

Some areas within the FVRD Electoral Areas present potential risks to groundwater, particularly where older Type 1 on-site septic systems are prevalent. This is of concern particularly in areas with poor soil and high water tables, groundwater recharge zones, and areas in proximity to lakes and other sensitive features (e.g. Lake Erock, Lindell Beach, Hatzic Island, and pockets on Hatzic Prairie). Many of these locations were historically developed for seasonal use and in some cases have resulted in smaller lot developments. These areas also increasingly have permanent residents and, in some cases, other factors (e.g. agricultural run-off) that raise concerns about cumulative impacts on groundwater quality.

Key risk factors include the following:

- **Cumulative Effects:** With respect to SSMUH development (secondary suites and ADUs), there may be gradual increases in density and flows associated with on-site septic systems. The concern is that there may be slow-developing, long-term risks to groundwater and human health associated with nitrate contamination from on-site septic systems. However, there is currently no known monitoring program to detect trends and evaluate the cumulative effects of on-site septic systems. Consequently, there is currently no warning system in place to detect issues at early stages. Once groundwater becomes contaminated it is not easy and often not possible to reverse which leads to either abandonment or additional treatment prior to use.
- **Older Type 1 Systems:** The greatest risk is associated with existing, Type 1 septic systems, especially those getting near the end of life or are poorly maintained. These systems may not be suitable for new uses unless they meet specific criteria (e.g. age, design flow, maintenance, and performance standards).
- **Occupancy and Flow:** Occupancy levels and household sizes are a risk consideration. Where occupancy levels and household sizes are lower, modest additional flows from secondary suites may have a minimal impact. Conversely, areas with high levels of seasonal visitation may experience higher flow volumes, and risks. Risks are highest when existing systems are used to accommodate additional development, without professional assessment.

4.2 REGULATORY FRAMEWORK FOR ON-SITE SEPTIC

The regulatory framework for on-site septic systems in the FVRD is shaped by the roles of the Province, Fraser Health, and the FVRD itself. The Province 'occupies the field' in regulating on-site septic systems, with Fraser Health acting as the local authority for health-related oversight and approvals.

Province of BC Role:

- **Legislation & Standards:** The Province sets regulatory standards for on-site septic systems through the Heath Act and Sewerage System Regulation (SSR) and the Sewage System Standard

Practice Manual (SPM). These documents prescribe minimum standards for public health protection through a professional reliance model. However, as noted in the SPM “the SPM is not intended to address potential ‘cumulative impacts’ of discharge from multiple systems within a given area (i.e. subdivisions).”

- **Regulatory Changes:** The Province retains the ability to amend environmental regulations if concerns arise, and has required local governments to permit secondary suites under Bill 44. Recognizing these considerations, Bill 44 requires the FVRD (and other Regional Districts) to allow a minimum of a suite and/or accessory dwelling unit as-of-right within electoral areas; whereas, urban communities with community sewer systems are required to allow four to six SSMUH units depending on location and proximity to higher-order transit services. The specific options available for the FVRD for compliance with these regulations are discussed in the following section.

Fraser Health Role:

- **Oversight & Filings:** Fraser Health oversees the approval process for on-site septic systems, relying on filings by Authorized Persons (Registered On-Site Wastewater Practitioners [ROWP] or Engineers).
- **Complaint Response:** Fraser Health responds to complaints and carries out enforcement as required, but does not have budget to maintain a proactive monitoring program with respect to cumulative impacts. Their approach focuses primarily on addressing failing or illegally installed systems, as opposed to maintenance and upkeep of systems (unless complaints are received).

FVRD Role:

- **Land Use and Building Permit Review:** The FVRD reviews development applications for regulatory compliance with FVRD bylaws (e.g. development permit requirements, zoning compliance, building permit requirements). The FVRD receives copies of on-site septic systems filings made by Authorized Persons to Fraser Health. However, the FVRD does not have a role in reviewing or approving these filings. The FVRD has limited authority to regulate on-site septic systems, and potential approaches are reviewed further in Section 4.3.

4.3 POTENTIAL APPROACHES TO RISK MANAGEMENT AND MITIGATION

This section outlines six high-level possible approaches to managing the risks to groundwater, and mitigation. These represent a gradation of approaches and could be used in combination with one another. They range from the most restrictive to the least interventionist. Some outlined approaches may require the FVRD to obtain concurrent authority for on-site septic review with Fraser Health.

The approaches can be summarized as follows:

- **Hazardous Condition Exemption:** The Provincial SSMUH legislation allows for the possibility that SSMUH development could be prevented in the most sensitive areas, if development increases the threat or risk from a hazardous condition and the threat cannot be reasonably mitigated.
- **Groundwater Protection Development Permit Area (DPA) Conditions:** DPA conditions can form part of the development review process and require applicants to complete hydrogeological assessments or treatment systems to mitigate risk where needed. The application of DPAs can be in source water protection area for community wells or be expanded even further to include any area with there is deemed risk to aquifer or surface water quality.

- **Zoning/Subdivision Bylaw Requirements:** These requirements could be used to increase the minimum level of treatment (e.g. Type 3 septic systems) in specific areas where the FVRD believes there are greater risks due to cumulative impacts.
- **Building Bylaw Requirements:** The Building Bylaw could require proof of septic system adequacy (including requirements for Professional Engineering review in certain contexts) to meet standards for new construction in advance of building permit issuance.
- **Maintenance & Monitoring Program or Incentive:** A Bylaw could address septic system maintenance. This addresses known issues with the longevity of individually owned systems, at a broader level. Conversely, an incentive program could be developed to encourage proper maintenance and system upgrades.
- **Status Quo & Advocacy:** The Province and Fraser Health ‘occupy the field’ for oversight and review of on-site septic approvals and impacts, and the FVRD could maintain the status quo in terms of its role while potentially advocating for the Province to take a stronger role in environmental monitoring, particularly with respect to cumulative impacts.

These approaches are discussed in further detail below. Following a discussion of the six high-level approaches, an additional section discusses the geographic context, considering FVRD-wide versus more targeted geographic approaches.

4.3.1 UTILIZE HAZARDOUS CONDITIONS EXEMPTION FROM SSMUH IN SENSITIVE AREAS

As part of the considerations for specific circumstances which may challenge human or environmental health, Bill 44 permits municipalities to utilize an exemption from SSMUH requirements in specific cases. The legislation states that exemptions are possible for:

“Lands subject to a hazardous condition where development of the land to the density of use required by sections of 481.3 (3), (4) or (5) of the LGA can be exempted from the SSMUH legislation providing the local government has obtained a report in which a qualified professional certifies, for the local government, that:

- Increasing the density would significantly increase the threat or risk from the hazardous condition; and
- The threat or risk from the hazardous condition cannot be practically mitigated.”¹

These cases must be supported by evidence provided by a Qualified Professional (QP), which would provide supporting information indicating that the risk could not be reasonably mitigated. If the FVRD’s zoning bylaw were to include exempted lots for SSMUH, written notice must be provided to the Minister of Housing identifying the land to which the exemption applies, and the provisions of the legislation under which the exemption is exercised.

This approach is highly protective and would prevent additional density where a QP has identified scope of risk. However, significant investment of resources (e.g. ongoing groundwater monitoring) may be

¹ Small-Scale, Multi-Unit Housing Provincial Policy & Site Standards. Retrieved 22.10.2025 from https://www2.gov.bc.ca/assets/gov/housing-and-tenancy/tools-for-government/local-governments-and-housing/ssmuh_provincial_policy_manual.pdf

required to demonstrate that SSMUH development increases the threat or risk from a hazardous condition, and that the hazardous condition cannot be practically mitigated.

Within the *Local Government Act*, hazardous conditions are referenced as an area where local governments have authority to establish development permit requirements (*LGA* Section 491(2)). Generally, hazardous conditions are defined as geophysical, non-anthropogenic hazards, such as landslides, flooding, and wildfires, rather than cumulative groundwater risks or similar. This definition of hazardous conditions appears to potentially place limitations on the notion that a SSMUH exemption could be used in relation to cumulative groundwater risks, where alternative approaches exist, such as enhancing the level of treatment. There is therefore a risk that this approach does not adequately meet the province's view of unmitigable risk.

The scope of this approach is also limited, as it only restricts Bill 44-related SSMUH growth. The scope of the exemption simply precludes secondary suites and accessory dwelling units from being constructed, and it does not address potential concerns around existing on-site septic systems and their impacts on groundwater quality. If cumulative groundwater risk is a concern to the FVRD, there may be a need for other growth-related limitations related to other future development applications (e.g. Official Community Plan amendments, zoning bylaw amendments, subdivision applications).

Finally, this approach may call into question the FVRD's support for housing development in general. Use of a hazardous condition exemption is the most restrictive option possible in relation to SSMUH, and it would effectively shut out opportunities for secondary suites and/or accessory dwelling units in certain areas.

Key Considerations:

- Hazardous Conditions exemptions do not appear to apply to areas of cumulative groundwater risk, where there are other options to address concerns.
- Significant resources would be required to engage a Qualified Professional and prepare evidence (e.g. groundwater quality monitoring) of the risk or threat from a hazardous condition, including confirmation that the threat or risk cannot be practically mitigated.
- Exemptions are highly restrictive, and would prevent additional density in specific areas, potentially calling into question support for housing.

4.3.2 ESTABLISH GROUNDWATER PROTECTION DEVELOPMENT PERMIT AREA (DPA) CONDITIONS

Development Permit Areas (DPAs) are a planning tool used by local governments in British Columbia to manage land use and guide development in areas with special conditions or objectives. DPAs allow local governments to set specific requirements for new development, such as protecting environmentally sensitive areas or managing hazardous conditions.

In the context of groundwater protection, a DPA could be established to require additional review and safeguards for developments in areas where groundwater risks are elevated, such as regions with high water tables or areas next to sensitive environmental features such as lakes. Through a DPA, the FVRD could require site-specific assessments (for example, hydrogeological studies) and impose conditions like requiring advanced treatment or mitigation measures to reduce risks to groundwater quality.

DPAs offer flexibility to address unique site conditions and can be tailored to local needs. They are commonly used across BC to manage environmental (e.g. riparian area protection) or hazard related (e.g. geotechnical) risks. However, implementing a DPA involves significant administrative effort. It would also

require legal clarity on the scope of potential requirements, and potential areas of concurrent authority needed with Fraser Health.

Finally, a DPA would result in additional costs for development applicants, who would be required to complete technical studies in relation to applications (for a secondary suite or accessory dwelling unit) that would otherwise typically involve a straightforward building permit review process. The results of these technical studies can vary significantly based on the professional involved and the triggers for higher order on-site treatment systems. Thus, the outcomes of this approach could be variable and site-specific, with less potential emphasis on cumulative impacts. The approach is focused on ensuring that new development does not exacerbate existing environmental or health risks.

Key Considerations:

- DPA conditions are a common tool to address environmental and hazard risks, offering flexibility to address site-specific considerations (though not necessarily cumulative impacts).
- This approach is administratively onerous, carrying a burden up-front in design, and further responsibility for both FVRD staff and applicants in the development process for otherwise 'simple' building permit applications for secondary suites or accessory dwelling units.
- Applicants are likely to experience elevated cost because of the need to produce technical studies (with potential variable results) and implement higher-order commitments where they may be applicable.

4.3.3 ESTABLISH ZONING/SUBDIVISION BYLAW REQUIREMENTS RELATED TO ON-SITE SEPTIC SYSTEMS

Zoning bylaws and Subdivision and Development Servicing bylaws are core regulatory tools that local governments use to guide land use, development density, and servicing standards within their communities. These bylaws set out what types of buildings and uses are permitted on each parcel of land, and can include specific requirements for infrastructure such as water and sewer systems.

In areas where groundwater risks are elevated, such as regions with older septic systems, small lots, or challenging soil conditions, Zoning bylaws and Subdivision and Development Servicing bylaws may potentially be used to require higher standards for on-site sewage treatment. For example, bylaws may stipulate that secondary suites or accessory dwelling units (ADUs) only be permitted if a property is connected to a community sewer system or equipped with an advanced (Type 3) septic system. This approach would not prohibit SSMUH development, but would require a community sewer system connection or advanced treatment within certain contexts (e.g. specific geographic zones).

As with development permit area requirements, the goal of this approach is to ensure that new development does not exacerbate existing environmental or health risks. However, there is a key difference. With development permit area requirements, there would be technical review requirements associated with individual development requirements. With Zoning bylaw or Subdivision and Development Servicing bylaw requirements, pre-work would be required by the FVRD to identify the specific conditions (i.e. measurable standards such as lot size that do not require further investigation at time of development application) and/or geographic areas where advanced treatment or community sewer system connections are required in order to allow development of a secondary suite or accessory dwelling unit.

As a result, while Zoning and Subdivision bylaws provide a clear and enforceable framework for regulating development, they can also be less flexible in responding to site-specific conditions. Setting

upfront standards may help protect sensitive areas, but may also result in variance requests or challenges for property owners seeking to develop in areas with unique conditions.

Legal clarity is important when considering new bylaw requirements, especially regarding the authority of the FVRD to regulate on-site septic systems beyond provincial standards (i.e. concurrent authority with Fraser Health). Advanced septic systems can also present cost and feasibility challenges for applicants, so any proposed changes should be carefully evaluated for their impacts on both environmental protection and housing affordability.

Key Considerations:

- Bylaws are clear and enforceable, but clarity may come at the cost of responsiveness to local conditions, and result in variance requests.
- Legal review is necessary to confirm that the FVRD has the concurrent authority to regulate on-site septic systems beyond provincial standards through Zoning bylaw and/or Subdivision and Development Servicing bylaw requirements.
- Requiring advanced septic systems in certain conditions will present additional cost to applicants.

4.3.4 ESTABLISH BUILDING BYLAW REQUIREMENTS

Building bylaws are regulatory tools that allow local governments to set standards for construction and safety within their communities. Section 298(1) of the *Local Government Act* provides regional districts with the authority to regulate the construction, alteration, repair, or demolition of buildings and structures. This includes the authority to make bylaw requirements regulating the installation, alteration or repair of plumbing including septic tanks and sewer connections.

Currently, the FVRD's building permit process requires applicants to provide details of septic field locations as part of building permit applications. However, technical approval of septic systems is governed by the provincial Sewerage System Regulation, with filings submitted to Fraser Health by an Authorized Person (i.e. Registered On-Site Wastewater Practitioner or Professional Engineer). These practitioners are responsible for the design and approval of on-site septic systems. In practice, the FVRD building permit process includes receiving a confirmation from Fraser Health that a filing by an Authorized Person has been received. Fraser Health's process operates under a professional reliance model, meaning that neither Fraser Health nor the FVRD conducts a technical review of these filings.

To strengthen groundwater protection, the Building Bylaw could be amended to require a letter from a Qualified Professional (QP) such as a Professional Engineer, certifying that the proposed development meets current standards and best practices for quantity of flow and treatment for newly constructed on-site septic systems (as opposed to renovations of existing systems). Proof of septic system adequacy could be required prior to issuing a Building Permit (BP) for a secondary suite or ADU. This approach would integrate into the existing building permit review process and impose less administrative burden than a new development permit requirement.

This approach could address concerns around existing Type 1 systems, where applications for secondary suites or ADUs may rely on older or basic septic systems that may not adequately treat effluent before it reaches groundwater. For example, the bylaw could require QP review for any building permits involving septic systems over a certain age threshold (e.g. 15 years).

Similar to the development permit approach, outcomes may vary site by site, with less potential emphasis on cumulative impacts. However, requiring QP involvement provides greater assurance that

septic systems used for new SSMUH development meet appropriate new construction standards. The approach is thus also focused on ensuring that new development does not exacerbate existing environmental or health risks.

Key Considerations:

- Using the BP process to regulate is a lower administrative impact, higher-certainty way to regulate septic systems in new developments.
- This approach could address concerns around aging Type 1 (basic) systems.
- This approach presents a balance between burdening applicants and administration through the addition of responsibilities towards a QP (e.g. P.Eng.).

4.3.5 ESTABLISH A MAINTENANCE AND MONITORING OR INCENTIVE PROGRAM

Regular inspection and maintenance of on-site septic systems is a proactive strategy for protecting groundwater and public health, especially in areas with older or higher-risk systems. Maintenance and monitoring programs are used in some BC jurisdictions (e.g. Capital Regional District) to ensure that septic systems continue to function properly, helping to identify and address problems before they become serious. Typically, these programs require scheduled pump-outs and/or inspections.

For example, the Capital Regional District requires owners of basic (Type 1) septic systems to have their systems pumped out at least every five years. For advanced systems (Type 2 and Type 3), annual maintenance by an Authorized Person is required, with documentation submitted to the local government. These requirements help detect failing or aging systems, encourage timely repairs, and provide valuable data on groundwater health.

Implementing such a program in the FVRD would require a bylaw mandating regular inspections and maintenance, particularly in sensitive or high-risk areas. While this approach can be effective in identifying issues early and supporting long-term groundwater protection, it also involves administrative effort and costs for both the local government and property owners. These resource demands can be significant, requiring dedicated staff time, a new service function for ongoing program management, and clear communication with the public to ensure compliance and effectiveness.

In considering this approach, it is important to recognize that the FVRD has previously evaluated the feasibility of a maintenance and monitoring program. Concerns about administrative burden, funding requirements, and community acceptance have been significant factors in the decision not to proceed with implementation to date. Despite these challenges, a maintenance and monitoring program remains a potential tool for proactively managing the risks associated with aging septic systems and supporting the health and safety of FVRD communities.

Considering the FVRD's context, incentive programs can also be an effective way to encourage proper maintenance and upgrades of on-site septic systems. For example, a septic system rebate program could offer financial incentives to property owners who proactively maintain, repair, or replace aging systems. Such programs can help achieve many of the same public health and environmental benefits as formal operations and maintenance requirements, but with greater flexibility and potentially higher community acceptance. By reducing the financial barriers to system upgrades and rewarding responsible stewardship, incentives can support long-term groundwater protection and complement other regulatory strategies.

Several BC regional districts have successfully implemented septic system rebate programs to encourage proper maintenance and upgrades. For example, the Columbia Shuswap Regional District

(CSRD) offers the SepticSmart Rebate Program, which covers up to 75% of eligible expenses for activities such as installing risers, replacing distribution boxes, conducting system inspections, and installing effluent filters. Regular pump-outs are not included, but the program makes advanced maintenance and upgrades more accessible for property owners in designated service areas. Similarly, the Regional District of Nanaimo (RDN) provides rebates for installing effluent filters, distribution boxes, risers, and for major repairs or replacements of aging systems. These incentive programs help reduce financial barriers, promote responsible stewardship, and support long-term groundwater protection, often achieving similar public health and environmental benefits as formal operations and maintenance requirements, but with greater flexibility and community acceptance.

Key Considerations:

- Maintenance and monitoring of ageing systems is a known concern, and has a broader focus than just SSMUH development.
- This approach has significant new administrative requirements.
- The FVRD has considered establishing a maintenance and monitoring program in the past and has not chosen to proceed.
- An incentive program could be more feasible to implement, with greater flexibility and community acceptance.

4.3.6 STATUS QUO & ADVOCACY

Relying on the existing provincial framework for on-site septic systems is the simplest approach for local governments, and recognizes that the Province ‘occupies the field’ for septic system approvals. Under this model, technical approvals and oversight remain the responsibility of Fraser Health and the Province, while the FVRD focuses on land use and building permit compliance. This approach minimizes administrative burden and avoids duplicating regulatory efforts. However, it also limits the FVRD’s ability to directly influence individual septic approvals or address cumulative impacts on groundwater.

Advocacy is a key tool for local governments seeking to strengthen protections for groundwater and public health in relation to on-site septic systems. By engaging with provincial authorities and promoting best practices, local governments can help shape policies and programs that address both immediate and long-term risks. There are several potential advocacy opportunities. For example, the FVRD could advocate to:

- Strengthen provincial regulations for on-site septic systems, especially in sensitive or high-risk areas;
- Expand environmental monitoring programs to track water quality, nitrate levels, and other indicators of groundwater health; and,
- Encourage the inclusion of septic system inspections in standard homeowner inspections or seller disclosures during property sales.

One important advocacy focus is the enhancement of provincial regulations for on-site septic systems, especially in sensitive areas. The FVRD could encourage the Province to adopt stricter standards for system design, installation, and maintenance where groundwater vulnerability is high. Enhanced regulations could include requirements for advanced treatment technologies, more frequent inspections, or targeted upgrades in regions with older or high-risk systems. These measures would help ensure that septic systems are better equipped to protect environmental and human health in areas most at risk.

Another important advocacy opportunity is to encourage the Province to engage more directly in environmental monitoring related to on-site septic systems. This could include regular testing of lake water quality, monitoring nitrate levels in groundwater, and tracking other indicators of environmental health in sensitive areas. By expanding provincial monitoring programs, the FVRD would have access to better data to understand cumulative impacts, identify emerging risks, and inform future policy decisions. Enhanced environmental monitoring would support more effective protection of water resources and public health across the region.

A further practical advocacy strategy is to encourage the inclusion of septic system inspections as part of standard homeowner inspections or seller disclosures during property sales. Even when a property is not adding a secondary suite or accessory dwelling unit, these inspections help build a broader understanding of the condition of septic systems across the community. Over time, this information can support better decision-making, risk management, and public health outcomes.

While the status quo approach is straightforward and low-cost, combining it with targeted advocacy and public education can help address gaps in the current system and promote responsible stewardship of groundwater resources. This approach may also be combined with other approaches over a longer period.

Key Considerations:

- The status quo & advocacy approach recognizes that the Province ‘occupies the field’ and is straightforward to undertake as long-term strategy while continuing to evaluate other possible approaches.
- This approach does not explore the FVRD’s authority to regulate approvals and address cumulative impacts.
- This approach requires the lowest degree of administrative and financial support now, with the potential in the future to revisit other avenues and strategies.

4.3.7 GEOGRAPHIC AND OTHER CONSIDERATIONS

There is a need to balance region-wide consistency with local nuance when considering approaches to effectively manage groundwater risks associated with on-site septic systems and SSMUH development. Several of the six approaches outlined earlier could be set at the FVRD-wide level to establish a common baseline for new secondary suites and ADUs. For example, if updating the Building Bylaw, proof of septic system adequacy could be required at the building-permit stage for all SSMUH development regardless of location. At the same time, a key decision point is whether to apply such a requirement across the region, or whether to limit it to specific geographies in areas known to be more vulnerable. Both pathways are possible.

The previous FVRD Sewer Gap work underscored that groundwater risk is not uniform across the region. It focused on ground conditions, including soil characteristics, water-table depth, and the presence of older septic systems, to identify sensitive areas where elevated risk is more likely. In the FVRD context, areas like Lake Errock, Cultus Lake (Lindell Beach), and Hatzic Lake consistently emerge as areas of particular concern, suggesting that targeted measures (e.g., mandatory QP review as a building-permit requirement, enhanced monitoring, or more protective zoning controls) may be warranted in those locations.

A compounding challenge is the current lack of coordinated groundwater monitoring in sensitive areas. While individual projects or filings may generate site-specific information, there is no comprehensive program systematically tracking indicators like nitrates and long-term groundwater trends in sensitive

areas. This gap makes it harder to identify cumulative effects and act proactively. Strengthening provincial leadership and inter-agency collaboration on environmental monitoring, including routine lake-water quality sampling and groundwater testing, would materially improve decision-making and help confirm where FVRD-wide standards versus geographic-specific tools are most appropriate.

The FVRD has practical experience in higher-risk areas where aquifer and watershed protection is a prominent concern, such as around Hatzic Lake. To date, no conclusive QP evidence has been produced to demonstrate that increased septic loading will, in and of itself, pose a direct risk to specific aquifers or surface waters. Nonetheless, Fraser Health has indicated that, in light of the possible measures, the FVRD should consider additional, context-appropriate steps that best serve local needs. Fraser Health staff are open to ongoing coordination so that learning is shared as areas grow and conditions evolve.

Given the complexity and interjurisdictional nature of watershed management, there are significant opportunities for collaborative approaches to groundwater protection that extend well beyond the question of how to regulate SSMUH development. Partnerships among the Province, Fraser Health, Indigenous communities, and local governments can help align standards, monitoring, and data-sharing to address cumulative risks. For instance, the emerging Hatzic Watershed Stewardship Partnership work provides an example of how multi-party coordination could bring together diverse perspectives with a view to share evidence and respond across jurisdictions. Applying similar collaborative models in other sensitive areas could help the region respond more effectively to evolving groundwater and public health challenges.

4.4 SUMMARY

Groundwater risk in the FVRD remains a complex and evolving challenge, particularly in areas with older on-site septic systems, small-lot developments, and sensitive environmental conditions such as high water tables and proximity to lakes. While some indicators of groundwater quality issues exist, there is currently no comprehensive monitoring program to detect trends or cumulative effects. This lack of data means that risks may develop slowly and remain undetected until they become acute.

Given the inconclusive nature of current groundwater risk assessments, there are significant opportunities for the FVRD to engage in advocacy and partnerships. Advocacy efforts could focus on encouraging the Province to adopt stricter standards for septic system design, installation, and maintenance in high-risk areas, and to expand environmental monitoring programs to track water quality and other indicators. Partnerships with Fraser Health, Indigenous communities, and other governmental stakeholders could also help align standards, share data, and respond collaboratively to emerging risks.

From a regulatory perspective, amending the FVRD Building Bylaw is perhaps the most straightforward and defensible way for the FVRD to bolster oversight of septic system approvals, should it wish to 'occupy the field' alongside Fraser Health and the Province. Requiring a Professional Engineer review for older or high-risk systems as part of the building permit process would provide greater assurance that new SSMUH development meets appropriate standards, without imposing undue administrative burden. This approach is practical, integrates with existing processes, and can be applied region-wide or targeted to sensitive areas as needed.

Other approaches, such as establishing Groundwater Protection Development Permit Areas (DPAs), updating Zoning or Subdivision and Development Servicing bylaws, or implementing maintenance and monitoring programs or incentives, remain available and can be explored as SSMUH development proceeds and as more data becomes available. The FVRD should monitor SSMUH uptake and emerging groundwater risks, adapting its strategy as new evidence emerges.

Importantly, the FVRD can reserve the ability to use an exemption to SSMUH at a later date should groundwater risk be deemed an unmitigable hazard condition. This option, while restrictive, ensures that the FVRD can respond decisively if future monitoring or professional assessments demonstrate that increased density would significantly increase risk and that the risk cannot be practically mitigated. However, the review of approaches appears to indicate that other options remain to mitigate groundwater risks associated with incremental additional secondary suite or ADU development on single detached lots.

5.0 IMPLEMENTATION CONSIDERATIONS

As the FVRD considers amendments to its zoning bylaws to enable SSMUH development, there are several key implementation considerations, spanning the regulatory framework, infrastructure planning, utility rate structures, and environmental protection measures. Specifically, these implementation considerations include:

- **Zoning Approach:** The FVRD has a decision on whether to permit secondary suites, ADUs, or both within its electoral area zoning bylaws.
- **Long-Term Infrastructure Planning:** While there is capacity for SSMUH development in most FVRD water and sewer service areas, there is a need to consider infrastructure needs (e.g. reservoir or treatment plant expansions) for growth beyond SSMUH, especially for systems that have limited remaining capacity after accounting for SSMUH uptake.
- **Utility Rate Updates:** Since many FVRD areas have not allowed for secondary suite or ADU development to date, there is a need to review and update utility rates with consideration for new forms of development.
- **Groundwater Risk Management Approach:** As identified in Section 4, SSMUH development could increase density in sensitive areas with on-site septic systems, and there are various approaches that the FVRD could take to mitigate risks to groundwater.

The following subsections outline each of these considerations in further detail.

5.1 ZONING APPROACH

The provincial mandate requires the FVRD to permit, at minimum, a secondary suite or an accessory dwelling unit (ADU) on each eligible parcel (i.e. single detached lots). However, the FVRD has a choice of zoning approach – whether to allow secondary suites, ADUs, or both on eligible parcels. The choice of approach has implications for housing supply, infrastructure, and environmental management.

- **Permitting Only Secondary Suites:** Restricting additional density to secondary suites only could help preserve more of each parcel for on-site effluent treatment and disposal, potentially reducing groundwater risks. This approach may be preferable in areas with known sensitivities (e.g. high water table, proximity to lakes).
- **Permitting Both Suites and ADUs:** Allowing both forms of SSMUH maximizes housing flexibility and supply but may increase demands on water, sewer, and other infrastructure, and could exacerbate environmental risks in sensitive areas. The FVRD could potentially monitor uptake of secondary suites, allow ADUs on larger lots, and consider broader opportunities for ADUs.
- **Geographic Targeting:** The FVRD may consider a differentiated approach, permitting both suites and ADUs in areas with robust infrastructure and environmental capacity, while restricting ADUs in regions facing servicing or groundwater challenges. The infrastructure capacity analysis suggests that most electoral area water and sewer service areas have capacity for SSMUH. However, special consideration is warranted for service areas such as Morris Valley, which has infrastructure capacity limitations and a form of strata development that is unlikely to see significant SSMUH uptake; Deroche, which has water capacity limitations for existing development, with new capacity to be unlocked through future reservoir investment; and Area D, which likely has the greatest prospects for growth, and which should be continue to be monitored as SSMUH uptake materializes. As well, special consideration and a more cautious

approach may be warranted for areas that are more sensitive to groundwater risks, such as Lake Errock, Lindell Beach, and the Hatzic Lake area.

Ultimately, the zoning approach should balance provincial requirements, local housing needs, infrastructure capacity, and environmental protection.

5.2 LONG-TERM INFRASTRUCTURE PLANNING

Both SSMUH development and more traditional forms of growth (e.g. rezoning and subdivision activity for new single detached developments) will drive future demands on FVRD's water and sewer systems. Infrastructure planning must anticipate future needs, particularly in areas with limited existing capacity or where growth may be more substantial. While there is generally capacity for SSMUH development in most FVRD systems, there are a few areas with special consideration, highlighted below.

- **Deroche Reservoir:** The current reservoir in Deroche is undersized for present-day fire flow demands, and future SSMUH growth, while limited, would further strain capacity. Investment plans for a new reservoir have been identified, with the high SSMUH uptake scenario expected to represent less than 3% of the design capacity of the planned reservoir. Until such time that this reservoir is constructed, capacity for growth is limited in Deroche. Options include restricting subdivision activity due to servicing capacity limitations (this does not address SSMUH uptake on existing lots) and/or adding a restriction for new construction in the Building Bylaw until such time that additional fire storage is built unless Fire Underwriters Survey calculations show that the required fire flow is less than the fire flow that is available.
- **Morris Valley:** The Morris Valley area is anticipating considerable growth as outlined in the Harrison Mills Neighbourhood Plan. With this growth comes the need to expand the groundwater source capacity, relocate and expand the reservoir and expand the wastewater treatment plant. With SSMUH development occupying only a fraction of the proposed growth it will be most cost effective and practical to consider infrastructure expansion at the time of this greater growth. Much like Deroche the reservoir capacity limitation is driven by the increased fire flow standard from 30 L/s to 60 L/s. The WWTP while having adequate capacity for SSMUH will need to be monitored to ensure future growth does not pose an undue risk.
- **Area D:** Area D retains capacity for SSMUH growth, but remaining reservoir capacity is down to 11% by 2046 in the high uptake scenario and the Minters (Popkum) WWTP capacity/authorized discharge is down to 9% under the similar scenario, which may constrain future development through rezoning or subdivision. Proactive infrastructure planning and capacity management are needed to support sustainable growth. The FVRD does have present plans in the DCC Program/Capital Program to install a second reservoir cell which will bolster this capacity when needed.
- **Other Areas:** Infrastructure constraints and upgrade needs vary across service areas. FVRD should continue to assess system capacity, prioritize investments where uptake is likely to be highest, and coordinate infrastructure planning with zoning amendments.

5.3 UTILITY RATE AND DEVELOPMENT COST CHARGE UPDATES

The FVRD currently has a mix of metered and flat rate utility charges, depending on the service area. The FVRD's 2025 utility rates are summarized in Appendix C for reference.

Utility rates were generally designed without regard for SSMUH development. As a result, there are considerations for future rate-setting in relation to possible secondary suite and/or ADU development. These considerations are summarized below with respect to rate types.

- **Metered Utilities:** Most FVRD service areas with metered utilities have a minimum charge up to a set amount of usage, and a consumption rate based on usage beyond the set amount. In most cases, for single detached development the consumption rate (overage rate) is based on consumption over a threshold of anywhere from 75 m³ to 300 m³. In Hatzic Prairie, rates are tiered, with a consumption based rate for usage over 200 m³ and an increased rate for consumption over 400 m³. However, other service areas have just one consumption based rate.

With SSMUH development, properties will more quickly reach the set amount at which consumption based rates (the overage rates) come into effect. It is assumed that most properties will continue to have one meter, rather than having a separate meter for SSMUH units. As a result, there may be a need to review and adjust rates with consideration for the thresholds at which consumption based charges come into effect.

- **Flat Rate Utilities:** Some FVRD service areas have flat rate utility charges, and no metering. In these cases, the addition of a SSMUH unit would typically warrant the establishment of a new charge for the secondary suite and/or ADU, typically at a fraction (e.g. 30 to 40%) of the rate for a single detached home. The selected rate could be a reflection of the assumed household occupancy rate for the SSMUH unit in relation to the principal dwelling unit, with consideration for other related factors (e.g. reduced outdoor water usage for the SSMUH unit compared to the principal dwelling unit).

In addition to utility charges, the FVRD has Development Cost Charges (DCCs) for new development in Area D (e.g. Popkum Water DCCs). These DCCs generally have charges for single detached dwellings, and rates were developed prior to consideration of secondary suites / ADUs. Throughout BC, DCC bylaws generally do not charge additional rates for secondary suites. However, when establishing rates, household size assumptions are typically reviewed in relation to the possibility that some homes could have suites. Practices for ADUs vary, with some local governments levying DCCs (at a reduced rate) for ADU development, while others taking the same approach to ADUs as to secondary suites, and not having a separate charge. As the FVRD experiences uptake of SSMUH development, it may wish to monitor the potential need for DCC updates in the future.

5.4 GROUNDWATER RISK MANAGEMENT APPROACH

As discussed in Section 4 of this report, there are potential concerns about cumulative groundwater risks in sensitive areas served by on-site septic systems. Many of these concerns pre-date SSMUH and are related to factors such as the use of older Type 1 on-site septic systems, high water table, agricultural runoff, and proximity to lakes. Increased density from SSMUH development has the potential to place additional loads on septic systems in this area, highlighting the prospect of increased potential risks to groundwater.

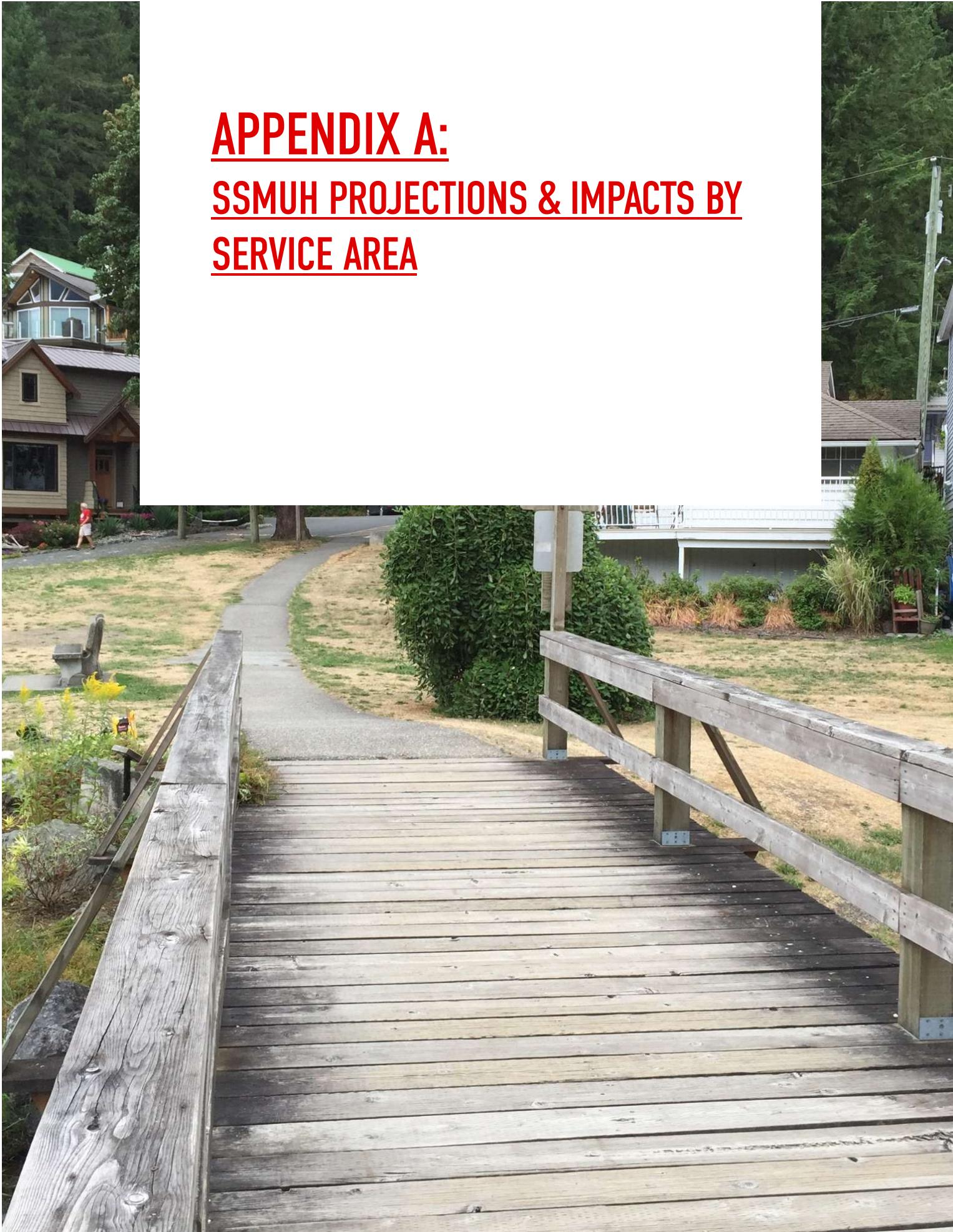
As indicated, the FVRD has several options. Through review with staff and the Electoral Area Services Committee, several approaches stand out as having the most potential:

- **Advocacy:** Section 4 of this report highlighted several potential areas for advocacy, including strengthening provincial regulations for on-site septic systems, expanding environmental monitoring programs (discussed in more detail below), and including septic system inspections in property transactions. Should the FVRD focus on these approaches alone, it would be out of recognition that the Province and Fraser Health 'occupy the field' when it comes to the regulation and review of on-site septic systems.
- **Monitoring Programs:** Establishing or enhancing groundwater monitoring programs could provide early warning of emerging risks, such as nitrate contamination, and support evidence-based decision-making. As the FVRD does not have direct resources for monitoring at this time, this would require advocacy to the Province to undertake monitoring, and/or the establishment of partnerships or a service to facilitate monitoring.
- **Building Bylaw or Other Regulatory Bylaw Updates:** Amending the Building Bylaw to require proof of on-site septic system adequacy from a Professional Engineer could help address concerns with SSMUH development on properties with older or high-risk septic systems in sensitive areas. This approach would strengthen FVRD regulatory oversight within the existing building permit process, although it would engage the FVRD directly in a review of septic system approvals (at least in certain contexts based on the way the bylaw update is structured). Section 4 of this report highlighted other potential regulatory bylaw updates, such as establishing development permit area requirements in areas with high groundwater risk. However, the most streamlined approach appears to be leveraging Building Bylaw authorities and integrating any approval requirements into the existing building permit review process.

Ultimately, a combined approach with advocacy, monitoring, and potential Building Bylaw (or other regulatory updates) could provide a framework for the FVRD to manage groundwater risks as SSMUH development proceeds. The FVRD does not need to proceed with all approaches at the same time. One approach would be to enable SSMUH through Zoning Bylaw updates, monitor uptake, and proceed with other mitigation updates as the FVRD gains more information on both SSMUH uptake and the extent of groundwater risks.

APPENDIX A:

SSMUH PROJECTIONS & IMPACTS BY SERVICE AREA



APPENDIX A: SSMUH PROJECTIONS & IMPACTS BY SERVICE AREA

BASE LOT COUNTS

SSMUH uptake scenarios were developed based on existing lot counts, confirmed with FVRD Planning. Existing lot counts were used as a baseline, with additional build-out capacity (for reference purposes only) as identified by the Water and Sewer Gap Studies as well as known area and minimum lot sizes. Base lot counts were finalized as follows, organized by service area.

TABLE 1: UNITS IN WATER SERVICE AREAS

Water SAs	Single Detached Lots			Other Lots			Total			
	Existing	Confirmed New	Potential Additional Build-Out Capacity	Existing	Confirmed New	Potential Additional Build-Out Capacity	Existing	Confirmed New	Existing + Confirmed	Potential Additional Build-Out Capacity
Hatzic Prairie	150	0	43	2	0	0	152	0	152	43
Dewdney	2	0	0	2	0	0	4	0	4	0
Deroche	40	0	28	2	0	0	42	0	42	28
Lake Errock	164	0	0	No data	0	0	164	0	164	0
Morris Valley	234	0	180	210	0	0	444	0	444	180
Cultus Lake	601	39	210	0	1	181	601	40	641	391
Bell Acres	31	0	10	2	0	0	33	0	33	10
Area D	500	53	580	3	0	27	503	53	556	607
Dogwood Valley	20	0	247	See note	0	0	20	0	20	247
Yale	81	0	27	2	0	0	83	0	83	27
No Zoning:										
Boston Bar	101	0	0	22	0	0	123	0	123	0
North Bend	31	0	251	5	0	0	36	0	36	251
Total	1955	92	1576	250	1	208	2205	93	2298	1784

Notes:

- Area A is exempt from SSMUH due to the absence of zoning.
- As per review with FVRD, 180 potential future units for Morris Valley was assumed as drawn from the Sewer Gap Report. The Water Gap Report notes 41 SSMUH-potential lots and 5 commercial potential lots.
- Dogwood Valley: Yale First Nation IR8 is provided with bulk water via servicing agreement.
- Cultus Lake confirmed new 'other' lot is to be 74 units of tourist accommodation

TABLE 2: UNITS IN SEWER SERVICE AREAS

Sewer SAs	Single Detached Lots			Other Lots			Total			
	Existing	Confirmed New	Potential Additional Build-Out Capacity	Existing	Confirmed New	Potential Additional Build-Out Capacity	Existing	Confirmed New	Existing + Confirmed	Potential Additional Build-Out Capacity
Area D: Popkum	111	53	14	0	0	10	111	53	164	24
Cultus North	418	39	5	2	1	0	420	40	460	5
Cultus South	105	0	451	0	0	0	105	0	105	451
Morris Valley/ Tapadera	234	0	180	210	0	0	444	0	444	180
Baker Trails	0	0	0	157	0	0	157	0	157	0
No SSMUH:										
North Bend (Hallecks Creek)	30	0	31	1	0	0	31	0	31	31
North Bend (Highline)	N/A	0	0	2	0	0	2	0	2	0
Hemlock Valley	0	0	0	No data	1430	0	0	1430	1430	0
Total	1102	92	709	372	1431	10	1476	1523	2999	719

Notes:

- Area A is exempt from SSMUH due to the absence of zoning.
- Cultus Lake North Potential Additional Build-Out Capacity identified through review with FVRD regarding expected growth. Single confirmed new 'other' lot is to be 74 units of tourist accommodation.
- Cultus Lake South not SSMUH-applicable due to covenant preventing secondary suites.
- Deroche and Lake Errock figures (on-site septic, no community sewer areas) use WSA boundaries.

SERVICE AREA SUMMARY SHEETS

DOGWOOD VALLEY

SSMUH UPTAKE & IMPACTS TO WATER SYSTEM



Electoral Area: B

Number of Residential Lots (2025): **20**

Estimated Population (2025): **44**

UNIT PROJECTIONS

	Annual Uptake (2026–2046)	Existing Lots (2025)	Approx. SSMUH Units/Yr	SSMUH Units Estimate (2046)	Total (2046)
Low	0.2%		<1	1	21
Med	0.5%	20	<1	2	22
High	1%		<1	4	24

POPULATION PROJECTIONS¹

	Annual Uptake (2026–2046)	Existing Pop. (2025)	Approx. Additional Pop./Yr	SSMUH Pop. (2046)	Total (2046)
Low	0.2%		<1	1	45
Med	0.5%	44	<1	3	47
High	1%		<1	6	50

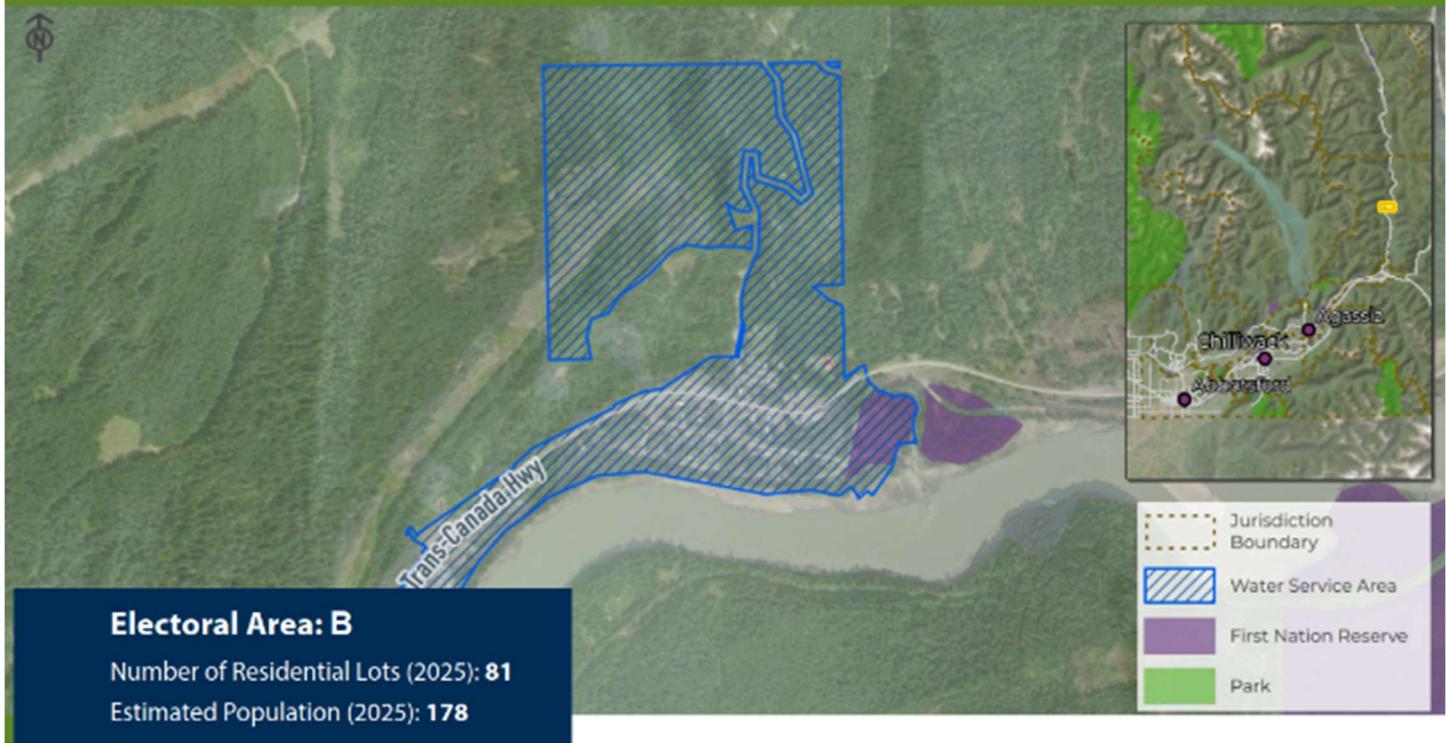
¹Assuming 2.2ppl/Single Detached Unit and 3.7ppl/SDU with Secondary Suite/Accessory Dwelling Unit.

WATER DEMAND PROJECTIONS & SERVICING IMPACTS

Average Day Demand (m ³ /d)	Max. Day Demand (m ³ /d)	Is Current GW/SW License Sufficient?	Does Critical Infrastructure Have Adequate Capacity?	Comments
40	120	✓	✓	None

YALE

SSMUH UPTAKE & IMPACTS TO WATER SYSTEM



UNIT PROJECTIONS

	Annual Uptake (2026–2046)	Existing Lots (2025)	Approx. SSMUH Units/Yr	SSMUH Units Estimate (2046)	Total (2046)
Low	0.2%		<1	3	84
Med	1%	164	1-2	34	48
High	1.5%		2-3	52	53

POPULATION PROJECTIONS¹

	Annual Uptake (2026–2046)	Existing Pop. (2025)	Approx. Additional Pop./Yr	SSMUH Pop. (2046)	Total (2046)
Low	0.2%		<1	5	183
Med	0.5%	178	<1	13	191
High	1%		~1	26	204

¹Assuming 2.4 ppl/Single Detached Unit and 3.9 ppl/SDU with Secondary Suite/Accessory Dwelling Unit.

WATER DEMAND PROJECTIONS & SERVICING IMPACTS

Average Day Demand (m ³ /d)	Max. Day Demand (m ³ /d)	Is Current GW/SW License Sufficient?	Does Critical Infrastructure Have Adequate Capacity?	Comments
145	330	✓	✓	None

MORRIS VALLEY

SSMUH HIGH UPTAKE & IMPACTS TO WATER SYSTEM



UNIT PROJECTIONS

	Annual Uptake (2026–2046)	Existing Lots (2025)	Approx. SSMUH Units/Yr	SSMUH Units Estimate (2046)	Total (2046)
Low	0.2%		<1	10	244
Med	0.5%	234	~1	25	259
High	1%		2-3	49	283

POPULATION PROJECTIONS¹

	Annual Uptake (2026–2046)	Existing Pop. (2025)	Approx. Additional Pop./Yr	SSMUH Pop. (2046)	Total (2046)
Low	0.2%		<1	15	530
Med	0.5%	515	1-2	37	552
High	1%		3-4	74	589

¹Assuming 2.2ppl/Single Detached Unit and 3.7ppl/SDU with Secondary Suite/Accessory Dwelling Unit.

WATER DEMAND PROJECTIONS & SERVICING IMPACTS

Average Day Demand (m ³ /d)	Max. Day Demand (m ³ /d)	Is Current GW/SW License Sufficient?	Does Critical Infrastructure Have Adequate Capacity?	Comments
350	940	✓	✗	Reservoir does not have capacity for fire & equalization storage. 60L/s fire flow used. Note that the reservoir does not have capacity for fire and equalization storage in the low uptake scenario.

MORRIS VALLEY

SSMUH HIGH UPTAKE & IMPACTS TO SEWER SYSTEM



UNIT PROJECTIONS

	Annual Uptake (2026-2046)	Existing Lots (2025)	Approx. SSMUH Units/Yr	SSMUH Units Estimate (2046)	Total (2046)
Low	0.2%		<1	10	244
Med	0.5%	234	1-2	25	259
High	1%		2-3	49	283

POPULATION PROJECTIONS¹

	Annual Uptake (2026-2046)	Existing Pop. (2025)	Approx. Additional Pop./Yr	SSMUH Pop. (2046)	Total (2046)
Low	0.2%		<1	15	530
Med	0.5%	515	1-2	37	552
High	1%		3-4	74	589

¹Assuming 2.2ppl/Single Detached Unit and 3.7ppl/SDU with Secondary Suite/Accessory Dwelling Unit.

SANITARY FLOW PROJECTIONS & SERVICING IMPACTS

Average Annual Daily Flow (m ³ /d)	Max. Day Flow (m ³)	Is Max Discharge Permit Sufficient for Current Flows?	Does WWTP have Capacity to Treat Future Flows?	Comments
90	165	✓	✓	Under the high uptake scenario, the Morris Valley WWTP will reach its design capacity for average annual day flow. The WWTP does have provisions in place for an expansion if needed

LAKE ERROCK

SSMUH UPTAKE & IMPACTS TO WATER SYSTEM



UNIT PROJECTIONS

	Annual Uptake (2026–2046)	Existing Lots (2025)	Approx. SSMUH Units/Yr	SSMUH Units Estimate (2046)	Total (2046)
Low	0.5%		<1	17	44
Med	1%	164	1-2	34	48
High	1.5%		2-3	52	53

POPULATION PROJECTIONS¹

	Annual Uptake (2026–2046)	Existing Pop. (2025)	Approx. Additional Pop./Yr	SSMUH Pop. (2046)	Total (2046)
Low	0.5%		1-2	25	419
Med	1%	394	2-3	51	445
High	1.5%		2-3	77	471

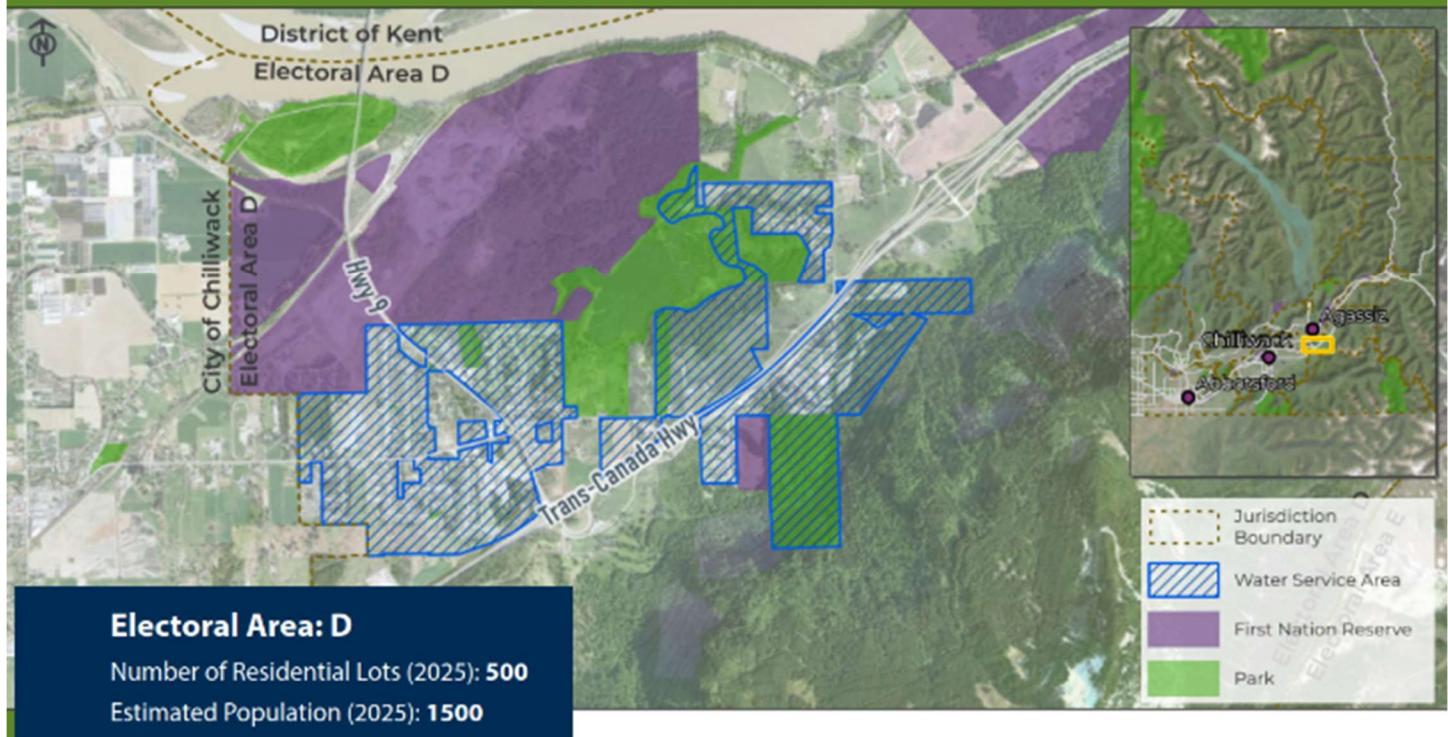
¹Assuming 2.4 ppl/Single Detached Unit and 3.9 ppl/SDU with Secondary Suite/Accessory Dwelling Unit.

WATER DEMAND PROJECTIONS & SERVICING IMPACTS

Average Day Demand (m ³ /d)	Max. Day Demand (m ³ /d)	Is Current GW/SW License Sufficient?	Does Critical Infrastructure Have Adequate Capacity?	Comments
100	240	N/A	✓	None

AREA D

SSMUH UPTAKE & IMPACTS TO WATER SYSTEM



UNIT PROJECTIONS

	Annual Uptake (2026–2046)	Existing Lots (2025)	Approx. SSMUH Units/Yr	SSMUH Units Estimate (2046)	Total (2046)
Low	1%		5	105	605
Med	2%	500	10	210	710
High	3%		15	315	815

POPULATION PROJECTIONS¹

	Annual Uptake (2026–2046)	Existing Pop. (2025)	Approx. Additional Pop./Yr	SSMUH Pop. (2046)	Total (2046)
Low	1%		7-8	158	1658
Med	2%	1500	15	315	1815
High	3%		22-23	473	1973

¹Assuming 3pppl/Single Detached Unit and 4.5pppl/SDU with Secondary Suite/Accessory Dwelling Unit.

WATER DEMAND PROJECTIONS & SERVICING IMPACTS

Average Day Demand (m ³ /d)	Max. Day Demand (m ³ /d)	Is Current GW/SW License Sufficient?	Does Critical Infrastructure Have Adequate Capacity?	Comments
1,125	2,250	N/A	✓	

AREA D

SSMUH UPTAKE & IMPACTS TO SEWER SYSTEM



UNIT PROJECTIONS

	Annual Uptake (2026–2046)	Existing Lots (2025)	Approx. SSMUH Units/Yr	SSMUH Units Estimate (2046)	Total (2046)
Low	1%		>1	23	134
Med	2%	111	2-3	47	158
High	3%		3-4	70	181

POPULATION PROJECTIONS¹

	Annual Uptake (2026–2046)	Existing Pop. (2025)	Approx. Additional Pop./Yr	SSMUH Pop. (2046)	Total (2046)
Low	1%		1-2	35	368
Med	2%	333	3-4	70	403
High	3%		5	105	438

¹Assuming 3pppl/Single Detached Unit and 4.5pppl/SDU with Secondary Suite/Accessory Dwelling Unit.

SANITARY FLOW PROJECTIONS & SERVICING IMPACTS

Average Annual Daily Flow (m ³ /d)	Max. Day Flow (m ³)	Is Max Discharge Permit Sufficient for Current Flows?	Does WWTP Have Capacity to Treat Future Flows?	Comments
65	180	✓	✓	The remaining WWTP capacity for the MDF and the remaining discharge permit capacity are at 9% in the high uptake scenario

BELL ACRES

SSMUH UPTAKE & IMPACTS TO WATER SYSTEM



UNIT PROJECTIONS

	Annual Uptake (2026–2046)	Existing Lots (2025)	Approx. SSMUH Units/Yr	SSMUH Units Estimate (2046)	Total (2046)
Low	1%		<1	7	38
Med	2%	31	<1	13	44
High	3%		~1	20	51

POPULATION PROJECTIONS¹

	Annual Uptake (2026–2046)	Existing Pop. (2025)	Approx. Additional Pop./Yr	SSMUH Pop. (2046)	Total (2046)
Low	1%		<1	29	122
Med	2%	93	1	20	113
High	3%		>1	29	122

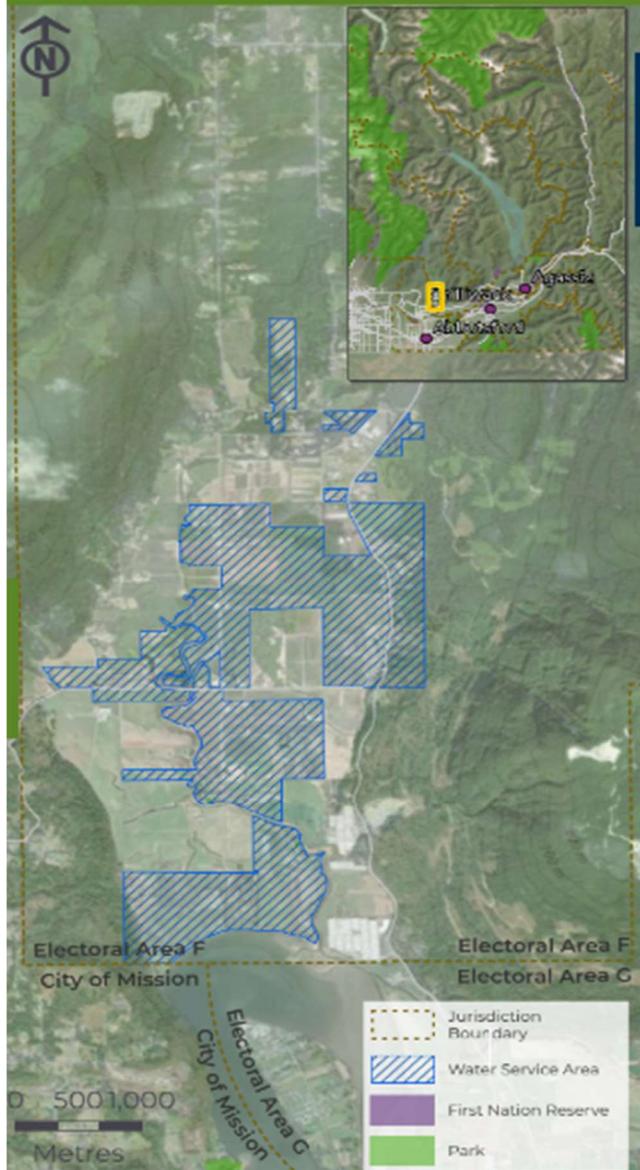
¹Assuming 3pppl/Single Detached Unit and 4.5pppl/SDU with Secondary Suite/Accessory Dwelling Unit.

WATER DEMAND PROJECTIONS & SERVICING IMPACTS

Average Day Demand (m ³ /d)	Max. Day Demand (m ³ /d)	Is Current GW/SW License Sufficient?	Does Critical Infrastructure Have Adequate Capacity?	Comments
40	120	✓	✗	Reservoir does not have capacity to accommodate current day demands under a fire flow of 60 L/s. The FVRD is considering amending their bylaw to require a minimum fire flow of 30 L/s for Bell Acres. This would give the reservoir sufficient capacity for future SSMUH growth

HATZIC PRAIRIE

SSMUH UPTAKE & IMPACTS TO WATER SYSTEM



Electoral Area: F

Number of Residential Lots (2025): **150**

Estimated Population (2025): **360**

UNIT PROJECTIONS

	Annual Uptake (2026–2046)	Existing Lots (2025)	Approx. SSMUH Units/Yr	SSMUH Units Estimate (2046)	Total (2046)
Low	0.5%		<1	16	166
Med	1%	150	1-2	32	182
High	1%		2-3	47	197

POPULATION PROJECTIONS¹

	Annual Uptake (2026–2046)	Existing Pop. (2025)	Approx. Additional Pop./Yr	SSMUH Pop. (2046)	Total (2046)
Low	0.5%		1-2	24	384
Med	1%	360	2	47	407
High	1.5%		3-4	71	431

¹Assuming 2.4pl/Single Detached Unit and 3.9pl/SDU with Secondary Suite/Accessory Dwelling Unit.

WATER DEMAND PROJECTIONS & SERVICING IMPACTS

Average Day Demand (m ³ /d)	Max. Day Demand (m ³ /d)	Is Current GW/SW License Sufficient?	Does Critical Infrastructure Have Adequate Capacity?	Comments
210	420	✓	✓	None

DEWDNEY

SSMUH UPTAKE & IMPACTS TO WATER SYSTEM



Electoral Area: G

Number of Residential Lots (2025): **2**
Estimated Population (2025): **5**

UNIT PROJECTIONS

	Annual Uptake (2026–2046)	Existing Lots (2025)	Approx. SSMUH Units/Yr	SSMUH Units Estimate (2046)	Total (2046)
Low	0.5%		0	0	2
Med	1%	2	0	0	2
High	1.5%		<1	1	3

POPULATION PROJECTIONS¹

	Annual Uptake (2026–2046)	Existing Pop. (2025)	Approx. Additional Pop./Yr	SSMUH Pop. (2046)	Total (2046)
Low	0.5%		0	0	5
Med	1%	5	0	0	5
High	1.5%		<1	1	6

¹Assuming 2.4 ppl/Single Detached Unit and 3.9 ppl/SDU with Secondary Suite/Accessory Dwelling Unit.

WATER DEMAND PROJECTIONS & SERVICING IMPACTS

Average Day Demand (m ³ /d)	Max. Day Demand (m ³ /d)	Is Current GW/SW License Sufficient?	Does Critical Infrastructure Have Adequate Capacity?	Comments
35	70	N/A	N/A	None

DEROCHE

SSMUH UPTAKE & IMPACTS TO WATER SYSTEM



Electoral Area: G

Number of Residential Lots (2025): 40

Estimated Population (2025): 96

UNIT PROJECTIONS

	Annual Uptake (2026–2046)	Existing Lots (2025)	Approx. SSMUH Units/Yr	SSMUH Units Estimate (2046)	Total (2046)
Low	0.5%		<1	4	44
Med	1%	40	<1	8	48
High	1.5%		<1	13	53

POPULATION PROJECTIONS¹

	Annual Uptake (2026–2046)	Existing Pop. (2025)	Approx. Additional Pop./Yr	SSMUH Pop. (2046)	Total (2046)
Low	0.5%		<1	6	102
Med	1%	96	<1	13	109
High	1.5%		<1	19	115

¹Assuming 2.4pl/Single Detached Unit and 3.9pl/SDU with Secondary Suite/Accessory Dwelling Unit.

WATER DEMAND PROJECTIONS & SERVICING IMPACTS

Average Day Demand (m ³ /d)	Max. Day Demand (m ³ /d)	Is Current GW/SW License Sufficient?	Does Critical Infrastructure Have Adequate Capacity?	Comments
80	185	✓	✗	Reservoir is not adequately sized for current day demands

CULTUS LAKE

SSMUH UPTAKE & IMPACTS TO WATER SYSTEM



UNIT PROJECTIONS

	Annual Uptake (2026–2046)	Existing Lots (2025)	Approx. SSMUH Units/Yr	SSMUH Units Estimate (2046)	Total (2046)
Low	1%		6-7	126	727
Med	2%	601	12-13	252	853
High	3%		19-20	379	980

POPULATION PROJECTIONS¹

	Annual Uptake (2026–2046)	Existing Pop. (2025)	Approx. Additional Pop./Yr	SSMUH Pop. (2046)	Total (2046)
Low	1%		9-10	189	1992
Med	2%	1803	19-20	379	2182
High	3%		28-29	568	2371

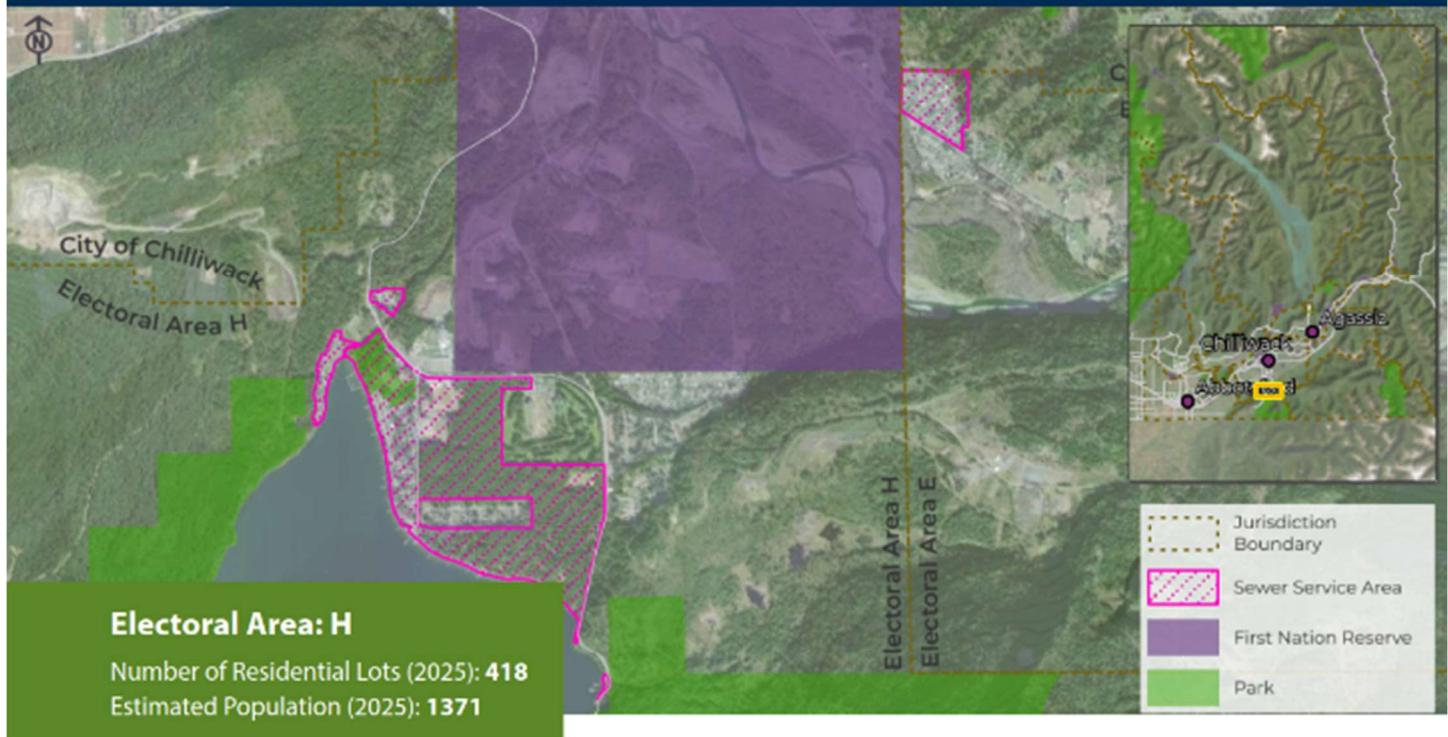
¹Assuming 3pppl/Single Detached Unit and 4.5pppl/SDU with Secondary Suite/Accessory Dwelling Unit.

WATER DEMAND PROJECTIONS & SERVICING IMPACTS

Average Day Demand (m ³ /d)	Max. Day Demand (m ³ /d)	Is Current GW/SW License Sufficient?	Does Critical Infrastructure Have Adequate Capacity?	Comments
790	1750	N/A	✓	None

CULTUS LAKE

SSMUH UPTAKE & IMPACTS TO SEWER SYSTEM



UNIT PROJECTIONS

	Annual Uptake (2026-2046)	Existing Lots (2025)	Approx. SSMUH Units/Yr	SSMUH Units Estimate (2046)	Total (2046)
Low	1%		4-5	88	506
Med	2%	418	9-10	176	594
High	3%		13-14	263	681

POPULATION PROJECTIONS¹

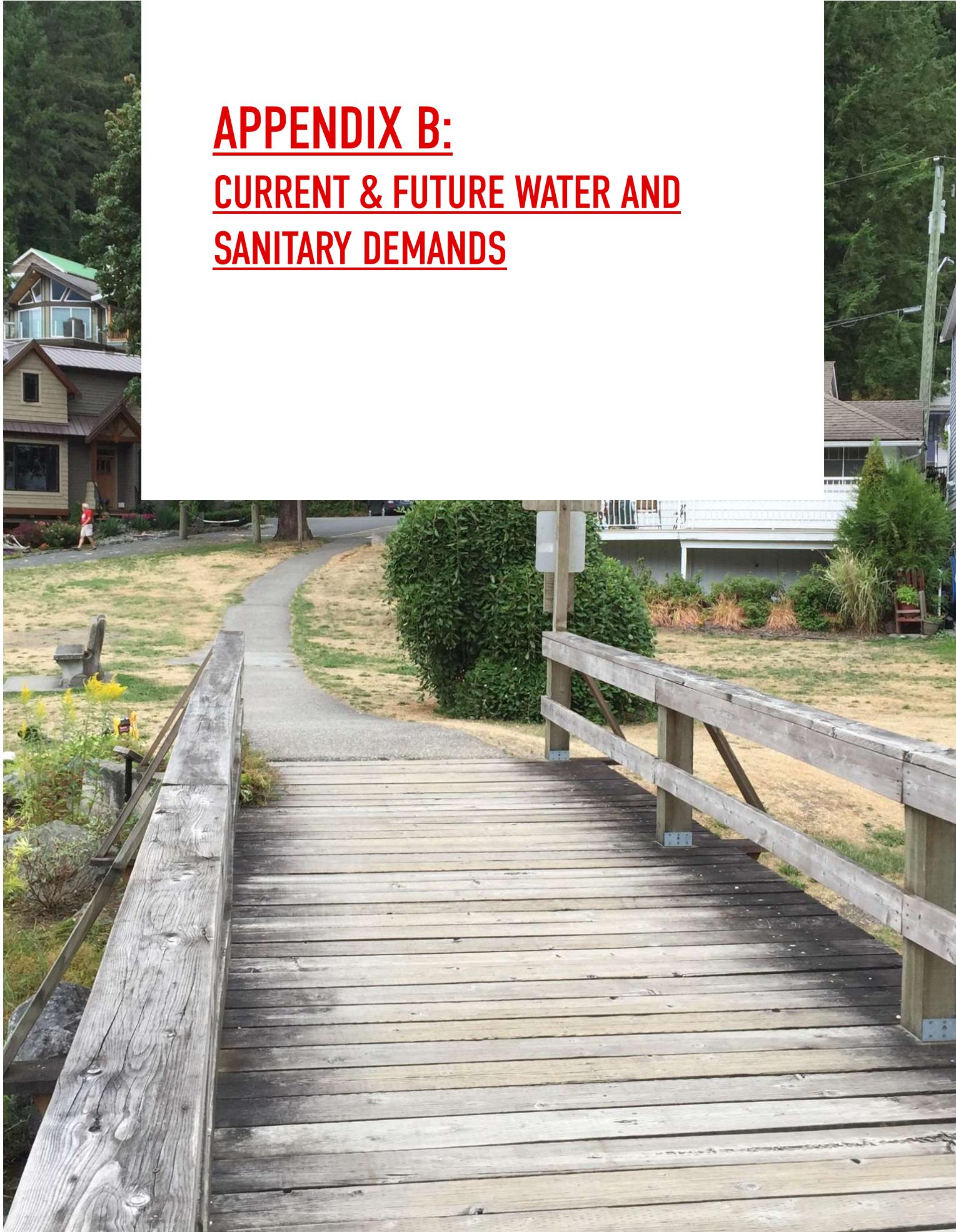
	Annual Uptake (2026-2046)	Existing Pop. (2025)	Approx. Additional Pop./Yr	SSMUH Pop. (2046)	Total (2046)
Low	1%		6-7	132	1503
Med	2%	1371	13-14	263	1634
High	3%		20-21	395	1766

¹Assuming 3ppl/Single Detached Unit and 4.5ppl/SDU with Secondary Suite/Accessory Dwelling Unit.

SANITARY FLOW PROJECTIONS & SERVICING IMPACTS

Average Annual Daily Flow (m ³ /d)	Max. Day Flow (m ³)	Is Max Discharge Permit Sufficient for Current Flows?	Does WWTP Have Capacity to Treat Future Flows?	Comments
250	610	✓	✓	None

APPENDIX B: **CURRENT & FUTURE WATER AND** **SANITARY DEMANDS**



APPENDIX B: CURRENT & FUTURE WATER AND SANITARY DEMANDS

WATER

Current Water Demands

Current demands were calculated using flow data provided by the FVRD. Average day demands (ADD) were calculated by dividing the total water use in 2024 by 365 days. The maximum day demand (MDD) was calculated using either a peaking factor of 2 (for metered developments) or 2.25 (unmetered developments). The peaking factors were obtained from the MMCD 2022 Design Guidelines. The current demands were compared against groundwater (GW) / surface water (SW) licenses and existing infrastructure in each service area to identify where the infrastructure or licensed allocations may be insufficient. The results are summarized in Table 1 below. Note that pumps were compared against the MDD.

TABLE 1: CURRENT WATER DEMANDS BY WATER SERVICE AREA

Service Area	ADD (m ³ /d)	MDD (m ³ /d)	Comments
Hatzic Prairie	190	380	Metered.
Deroche	75	125	Metered but billing flat rate. Please to start reading and billing by metered consumption in the future..
Morris Valley	330	890	Metered (Bulk Meters).
Dogwood Valley	40	120	Metered.
Yale	140	310	Unmetered.
Cultus Lake	615	1,390	Unmetered.
Lake Errock	80	190	Metered.
Area D Integrated	990	1913	Metered.
Bell Acres	30	100	Metered.
Dewdney	35	70	Metered

Future Water Demands

Future SSMUH-driven demands were calculated for 2046. The future average day demand was calculated as:

$$\text{Future ADD} = \text{Current ADD} + (\text{Additional population from SSMUH} * \text{FVRD per capita ADD}).$$

300L/c/d is the FVRD value for per capita ADD. The future maximum day demand was calculated using the same equation, but with the current MDD, and 600 L/c/d as the FVRD per capita MDD. Results are summarized in the table below. Note that the high uptake scenario is presented in Table 2 below. Also note that it is assumed the current day rate of leakage remains the same for the future demands.

TABLE 2: FUTURE WATER DEMANDS BY WATER SEWER AREA

Service Area	ADD (m ³ /d)	MDD (m ³ /d)	Comments
Hatzic Prairie	210	420	
Deroche	80	185	60L/s fire flow used.
Morris Valley	350	940	60L/s fire flow used.
Dogwood Valley	40	120	
Yale	145	330	
Cultus Lake	790	1750	150L/s fire flow used. GW licence application has not yet been made as the FVRD does not have land tenure in place yet.
Lake Errock	100	240	GW license on hold.
Area D Integrated	1,125	2,250	
Bell Acres	40	120	
Dewdney	35	70	

SANITARY

Current Sanitary Flows

Current sanitary flows were calculated using flow data received from the FVRD. The total sanitary flow in 2024 was divided by 365 days to determine the current annual average day flow (AADF). Note that this value includes any inflow and infiltration into the sanitary system. The maximum day flow (MDF) was found from the daily flow data received from the FVRD. The flows were then compared against the discharge permit and wastewater treatment plant design capacities. The results are summarized in the table below.

TABLE 3: CURRENT SANITARY FLOWS BY SSA

Service Area	AADF (m ³ /d)	MDF (m ³)	Comments
Morris Valley	75	130	Freshet can occasionally lead to high groundwater inflows. Has led to MDF of 200+ m ³ /d. District working on resolving this issue.
North Bend	10	40	None.
Cultus Lake North	155	420	None.
Baker Trails	55	100	None.
Minters (Popkum)	40	130	None.

Future Sanitary Flows

The future sanitary flows as a result of SSMUH were calculated for 2046. The future AADF was calculated as:

$$\text{Future AADF} = \text{Current AADF} + (\text{Additional population from SSMUH} * 0.8 * \text{FVRD per capita ADD}).$$

Where $0.8 * \text{FVRD per capita ADD} = 300 \text{ L/c/d} * 0.8$. This assumes that 80% of the average daily water consumption is converted into sanitary sewage.

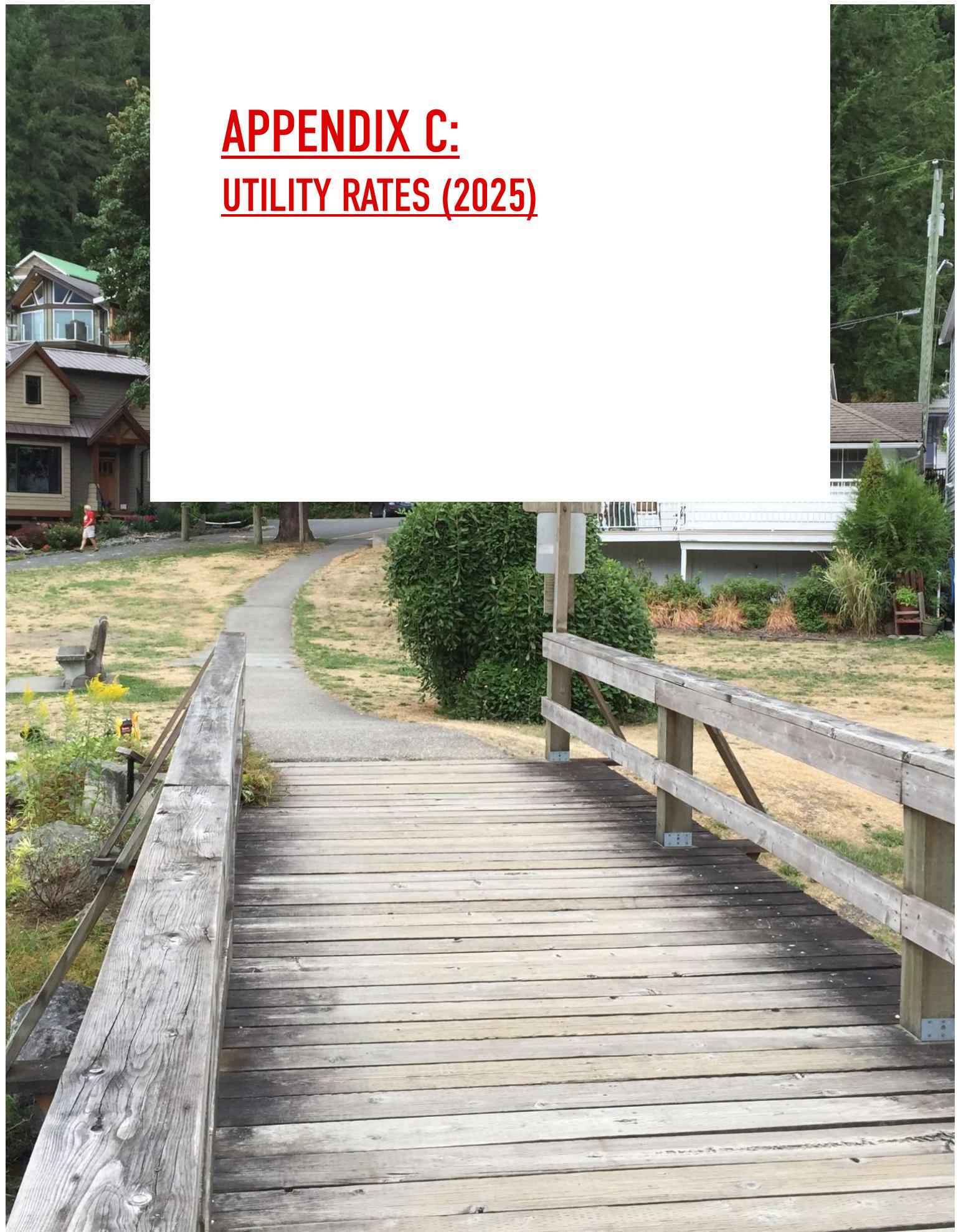
The future MDF was calculated using the same equation, but with the current MDF and the FVRD per capita MDD of 600 L/c/d. It is assumed that the rate of inflow and infiltration remains the same. Results are summarized in the table below. Note that the high uptake scenario is presented in Table 4 below.

TABLE 4: FUTURE SANITARY FLOWS BY SSA

Service Area	AADF	MDF (m ³)
	(m ³ /d)	
Morris Valley	90	165
Cultus Lake North	250	610
Baker Trails	55	100
Minters (Popkum)	65	180

APPENDIX C:

UTILITY RATES (2025)



APPENDIX C: UTILITY RATES (2025)

TABLE 1: CURRENT FVRD WATER UTILITY RATES (2025)

Service Area	Type of Rate	Minimum/Flat Rate	Overage based on:	Overage rate/m3	Property taxes
Area A					
North Bend	Metered	73.05	>100m3	0.98	Yes
Boston Bar	Metered	77.54	>75m3	1.27	Yes
Area B					
Dogwood Valley	Metered	38.82	>100m3	0.39	Yes
Area C					
Morris Valley	Metered	48.67	>300m3	0.33	Yes
Lake Errock	Metered	136.39	>200m3	3.17	Yes
Area D					
	Metered	74.69	>100m3	1.13	Yes
Area E:					
Bell Acres	Metered	84.11	>50m3	1.72	Yes
Area F:					
Hatzic Prairie	Metered	316.54	>200m3 >400m3	1.74 2.61	Yes
Area G:					
Deroche	Flat	98.32	N/A		Yes

Note: Rates are quarterly with the exception of Hatzic & Lake Errock, which are semi-annual.

TABLE 2: CURRENT FVRD SEWER UTILITY RATES (2025)

Service Area	Type of Rate	Minimum/Flat Rate	Overage based on:	Overage rate/m3	Property taxes		
Area A							
North Bend	Flat	98.35	N/A		Yes		
Area C							
Morris Valley	Flat	84.84			Yes		
Area D							
	No utility billing				Yes		
Area H:							
Cultus Lake North	Flat	1,368.50*	N/A	Parcel tax for debt servicing			

*Annual flat rate for service area