



Alberni-Clayoquot Regional District

SALMON BEACH COMMITTEE MEETING DECEMBER 16, 2020, 10:00 AM

Due to COVID-19, the meeting will be held via Zoom Video Conferencing and will be livestreamed on the ACRD website at:

<https://www.acrd.bc.ca/events/16-12-2020/>

Public Attendance: the public are welcome to attend the meeting via Zoom Webinar by registering at:

https://portalberni.zoom.us/webinar/register/WN_kUix7GxrTgmBwOCWXVTNGA

AGENDA

		PAGE #
1.	<u>CALL TO ORDER</u>	
	Recognition of Territories.	
	Notice to attendees and delegates that this meeting is being recorded and livestreamed to YouTube on the Regional District Website.	
2.	<u>APPROVAL OF AGENDA</u> <i>(motion to approve, including late items requires 2/3 majority vote)</i>	
3.	<u>MINUTES</u>	
a.	Salmon Beach Committee Meeting held September 23, 2020	3-5
	<i>THAT the minutes of the Salmon Beach Committee meeting held on September 23, 2020 be received.</i>	
4.	<u>REQUEST FOR DECISIONS & BYLAWS</u>	
a.	REQUEST FOR DECISION Salmon Beach Culvert Program	6-7
	<i>THAT the Salmon Beach Committee support the creation of a new driveway Culvert application program to regulate and standardize the installation of culverts with a cost recovery fee.</i>	

- b. **REQUEST FOR DECISION**
Salmon Beach Maintenance and Operations Service Contract

8-12

THAT the Salmon Beach Committee confirm the updated scope of service and pricing schedule for the Maintenance and Operation Contract at Salmon Beach to be included in a Request For Proposal(RFP)s for maintenance and operational services in Salmon Beach.

- c. **REQUEST FOR DECISION**
Salmon Beach Sewage Capacity Review and Pump and Haul Rates

13-20

THAT the Salmon Beach Committee recommend that the ACRD Board of Directors approve an increasing rate system for Pump and Hauls in Salmon Beach.

5. **REPORTS**

- a. **Update on Type 2 Treatment Project – J. Brunn (verbal)**
b. **Regional District of Nanaimo Blue Boxes – J. Brunn (verbal)**

THAT reports a-b be received for information.

6. **LATE BUSINESS**
(requires 2/3 majority vote)

7. **QUESTION PERIOD**

Questions/Comments from the public participating in the Zoom meeting.

Questions/Comments from the Public, respecting an agenda item, can be emailed to the ACRD at responses@acrd.bc.ca and will be read out by the Executive Assistant at the meeting.

8. **ADJOURN**



Alberni-Clayoquot Regional District

MINUTES OF THE SALMON BEACH COMMITTEE MEETING HELD ON WEDNESDAY, SEPTEMBER 23, 2020, 10:00 AM

Due to COVID-19 pandemic, meeting conducted via Zoom video/phone conferencing

MEMBERS

Mary Ellen Peete, Chair

PRESENT:

Kel Roberts, Director, Electoral Area "C" (Long Beach)

Jill Maibach

Ron McKinlay

Mike Shorthouse

Terry Graff

STAFF PRESENT:

Jenny Brunn, Interim General Manager of Community Services

Wendy Thomson, General Manager of Administrative Services

Teri Fong, Chief Financial Officer

Tricia Bryant, Asset Management Coordinator

Janice Hill, Executive Assistant

John Thomas, Environmental Services Technician

The meeting can be viewed on the Alberni-Clayoquot Regional District website at <https://www.acrd.bc.ca/events/23-9-2020/>

1. CALL TO ORDER

The Chairperson called the meeting to order at 10:07 am.

Director Roberts recognized this Committee falls within the territories of the Tla-o-qui-aht First Nation and the Yuułu?if?ath Government and to respect and honour that commitment.

The GM of Administrative Services reported this meeting is being recorded and livestreamed to YouTube on the Regional District website.

2. APPROVAL OF AGENDA

MOVED: J. Maibach

SECONDED: T. Graff

THAT the agenda be approved as circulated.

CARRIED

3. CORRESPONDENCE FOR ACTION/INFORMATION

4. REQUEST FOR DECISIONS & BYLAWS

a. Request for Decision regarding Salmon Beach Road Maintenance Recommendations

MOVED: M. Peete
SECONDED: J. Maibach

THAT the Salmon Beach Committee recommend that the Board of Directors instruct staff to work with Ministry of Transportation and Infrastructure (MOTI) to determine alternate options for the safe operations and maintenance standards of the Salmon Beach internal roads;

AND FURTHER, the Salmon Beach Committee recommend that the annual road maintenance plan provided by McGill Engineering be undertaken and that the 2021 Salmon Beach Transportation budget be increased from \$158,700 to \$229,700.

CARRIED

b. Request for Decision regarding Salmon Beach Community Water

MOVED: E. Peete
SECONDED: J. Maibach

THAT the Salmon Beach Committee investigate options for potable water.

CARRIED

c. Request for Decision regarding Salmon Beach Asset Management Plan Version 1 - Presentation by Tricia Bryant, Asset Management Implementation Coordinator

The Asset Management Coordinator presented the Salmon Beach Asset Management Plan – Version 1.

MOVED: E. Peete
SECONDED: R. McKinlay

THAT the Salmon Beach Committee recommend the Alberni-Clayoquot Regional District Board of Directors adopt the Salmon Beach Asset Management Plan Version 1.

CARRIED

5. REPORTS

a. Salmon Beach – Project Update Summary

The Salmon Beach Committee reviewed and received the project update report.

CARRIED

6. **UNFINISHED BUSINESS**

7. **LATE BUSINESS**

8. **QUESTION PERIOD**

There was no public in attendance and no questions/comments from the public emailed to responses@acrd.bc.ca.

9. **ADJOURN**

MOVED: J. Maibach

SECONDED: T. Graff

THAT this meeting be adjourned at 11:34 am.

CARRIED

Certified Correct:



Wendy Thomson,
General Manager of Administrative Services



REQUEST FOR DECISION

To: Salmon Beach Committee
From: John Thomas, Environmental Services Technician
Meeting Date: December 16, 2020
Subject: Salmon Beach Culvert Program

Recommendation:

THAT the Salmon Beach Committee support the creation of a new driveway culvert application program to regulate and standardize the installation of culverts with a cost recovery fee.

Desired Outcome:

To ensure that the installation of culverts in Salmon Beach meets Ministry of Transportation and Infrastructure (MOTI) standards and that an equitable and cost-recovery system is established for installation requests from property owners.

Background:

At the September 23, 2020 meeting, the Salmon Beach Committee supported a comprehensive plan to bring the internal roads in Salmon Beach up to MOTI standards over a five-year period. This program is focused on both the road network and drainage system and will be funded through parcel taxes. Although driveway culverts do make up part of the drainage network, they are for the sole benefit of the individual property that provides an access point to their property. If installed and maintained to standards they ensure the existing drainage network operates effectively. If not properly installed, they can impede the drainage system and may cause damage to neighbouring properties and roads through erosion.

In the past, property owners have installed their own culverts without any standard size, material or design specifications. This approach has caused issues with erosion due to high rainfall events and subsequent changing drainage patterns. In a recent attempt to gain control and ensure that new driveways had proper culverts, Salmon Beach began overseeing and paying for culvert installations. This has caused a swell of interest and requests for "free" culvert installations. The potential implications for installing culverts on-demand without a related cost to the property owner would see a significant increase in taxes to cover the costs and a backlog of requests to fulfill. This system is unequitable for the community as some individuals have paid for their own culverts to be installed properly, some have not met standards, while some would receive a culvert installed for free.

Normally in unincorporated areas, the roads and drainage network are regulated and managed by MOTI, which has culvert and driveway standards along with inspections. However, in Salmon Beach, MOTI does not recognize the internal roads as a MOTI asset, as the community is designated as water access only and the roads were never constructed to an acceptable level. Instead, the ACRD has been given permission by the MOTI to maintain the roads including the ditches and culverts within the community of Salmon Beach. The Area Director continues to lobby for improvement to the situation, but the Minister and senior staff have not been receptive to-date.

Summary:

This is a unique situation where the unincorporated area of Salmon Beach is working in a similar capacity as a municipality. Common practice for managing driveway access and culverts within municipalities is through regulatory bylaws with design specifications and permitting processes.

There are two options available for the community to regulate driveway access and culvert installation:

Option 1 - Set up a permitting system to regulate privately installed driveway culverts.

This will require that a bylaw be established with design standards covering driveway access and culvert installations. Property owners would be required to apply for a permit prior to completing any work. Completed works would need to be inspected to ensure that they meet the design standards. There would be staff time involved in the administration of this program and the inspection of individual culverts. The property owner would pay contractors directly for the cost of a culvert installation (estimated \$3,000) plus the permit fees which will cover the cost for an inspection (estimated \$500) to ensure that the private contractor has met the standards.

Option 2 - Set up a new driveway culvert application program to have the ACRD install culverts.

This would require property owners to apply for a new driveway culvert to be installed and to pay a flat fee for the work to be completed. The ACRD would hire a contractor to install a culvert to MOTI standards. The property owners would pay the flat installation fee which would be set at the average cost for installing a culvert (estimated at \$3,000) or the actual cost of installation, whichever is more. We note that this is a typical charging mechanism for municipal utilities, including ACRD water utilities, etc. This option will also require the creation of a new bylaw to require applications for culverts and set the fees for this service.

Both of these options will ensure that all new culverts are installed to the MOTI standards. If Option 2 is supported, the anticipated overall cost to the property owner is expected to be less because there will be no additional fees for independent on-site inspections. There will also be significantly less staff time involved in administering or coordinating culvert installation inspections. Therefore, staff are recommending that the committee support the creation of a new driveway culvert application program.

If the Committee supports either option, staff will begin developing the desired program including bylaw drafting and implementation anticipated by mid-2021. Until this program is in place, property owners needing to have new culverts installed will be directed to ensure that required MOTI standards are met. Culverts that do not meet MOTI standards and especially those that are impeding the existing drainage network (i.e. driveway without culvert, culverts that are undersized or are not functioning/filled with sediment) would be removed through the road and drainage maintenance program.

Time Requirements – Staff & Elected Officials:

Significant staff time will be required to create the Salmon Beach Culvert Program.

Financial:

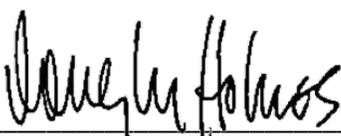
This program will ensure that the costs associated with culvert installation are fully paid through user fees.

Submitted by: 

John Thomas, Environmental Services Technician

Reviewed by: 

Jenny Brunn, GM of Community Services

Approved by: 

Douglas Holmes, BBA, CPA, CA, Chief Administrative Officer



REQUEST FOR DECISION

To: Salmon Beach Committee
From: John Thomas, Environmental Services Technician
Meeting Date: December 16, 2020
Subject: Salmon Beach Maintenance and Operations Service Contract

Recommendation:

THAT the Salmon Beach Committee confirm the updated scope of service and pricing schedule for the Maintenance and Operation Contract at Salmon Beach to be included in a Request For Proposal(RFP)s for maintenance and operational services in Salmon Beach.

Desired Outcome:

To update and replace the existing contract for Maintenance and Operational Services in Salmon Beach that expires on February 28, 2021.

Summary:

On November 12, 2020, the Salmon Beach Committee provided proposed updates for the contract to staff for review. These changes were incorporated into the new scope of service, as attached, with two exceptions based on the information from the Salmon Beach Septic System Capacity Review. The changes drafted by staff are:

1. Pump and Haul - Section 2. The Contractor will establish a pump and haul schedule that will not exceed the capacity of the receiving septic system. The current maximum volume is limited to 36,624 liters per week or approximately 7-8 pumps. Once the type 2 treatment system is in operation (anticipated for 2021) the weekly maximum volume is expected to increase to 47,611 liters per week or approximately 11 pumps per week. This will be based on effectiveness of treatment and direction may be given at any time by the ACRD to establish the weekly limit of pump and hauls allowed.
2. Pump and Haul New Section 8. The contractor is to provide supervised access to the septic system for residential self-haul and otherwise keep the access locked. Volumes of sewage self-hauled must be recorded.

The updated scope of services will be incorporated into a Request for Proposal (RFP) for Maintenance and Operational Services in Salmon Beach. Interested contractors will have 3 weeks to submit proposals with pricing. It is anticipated that the new contract would be awarded by early to mid-February.

Time Requirements – Staff & Elected Officials:

Staff time will be required to create, issue and award the RFP as well as execute contract documents, and provide contract management during the term.

Financial:

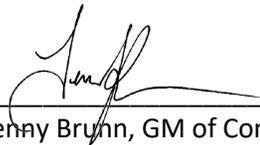
The work required in this contract is generally consistent with little to no variation from the frequency and specifics set out in the scope of work with the exception of pump and haul duties. This portion of the work will fluctuate based on the demand (number of requests) for pump and hauls. It will also increase once the pre-treatment system is installed. This is anticipated to increase by approximately 30% but will be dependent on the measured effectiveness of the treatment system and may be more or less than expected.

During the last RFP for the Maintenance and Operation Contract at Salmon Beach, the pricing came in with a significant increase based on the maximum future anticipated increase in pump and haul requirements. Continuing to use lump-sum pricing for work that is variable and unknown will result in bids based on the largest number of pump and hauls and highest possible price.

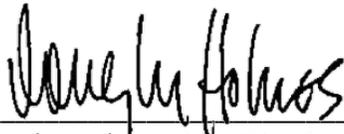
Instead of requesting lump sum pricing for the entire scope of this contract, staff are recommending that a lump sum price be requested for work except for the pump and hauls. These will be paid on a per unit rate. This will establish a payment schedule that is more directly tied to work completed. Pump and hauls are user-pay and the revenue will be proportionate to the costs.



Submitted by: _____
John Thomas, Environmental Services Technician



Reviewed by: _____
Jenny Brunn, GM of Community Services



Approved by: _____
Douglas Holmes, BBA, CPA, CA, Chief Administrative Officer

Schedule A

Salmon Beach Maintenance and Operations Services Contract Duties

Security

1. Ensure Salmon Beach entrance security gate operates in accordance with the following schedule:
During March 15th to September 15th ensure gate opens by 7:00 am and closes at 9:00 pm.
Throughout the rest of the year, ensure gate opens by 8:00 am and closes at 6:00 pm.
2. Provide routine inspection of the gate, or as needed.
3. Lock boat ramp February 15th to April 15th.
4. Place Department of Fisheries and Oceans notifications at Boat ramp within 24 hours of issuance, throughout season.

Ground Maintenance

1. Mow and weed the Community Park, beach access and sani field once a week from March 15th to October 15th to maintain a neat appearance. This includes trimming all vegetation around any play equipment, apparatus, buildings and fences. Areas are as shown on the attached map.
2. Trim the shoulders of all internal roads (from the edge of gravel to the edge of the dedicated right of way) and beach accesses once every two weeks from March 15th to October 15th as required maintaining a neat appearance.
3. Cut brush and branches extending into right of way of all internal roads, including ditches and access to sani-field once yearly.
4. The following tasks will be required from March 15th to September 15th:
 - a. Sweep tennis and basketball courts. Once a month.
 - b. Trim and remove weeds around tennis and basketball court fences. Once a month.
 - c. Inspect playground, tennis courts and basketball court for safety, needed repairs once a month, and submit inspection report to the ACRD after each inspection.
 - d. Rake gravel and remove garbage from playground. Once a month.
 - e. Wash playground equipment. Once a year – in advance of May 15th.
 - f. Maintain shrubs at playfield and at Salmon Beach entrance as needed.
5. Install and remove posts and tires at boat ramp twice per year (Spring and Fall).
6. Pressure-wash tennis and basketball courts May 1st, every two years commencing 2018.
7. Boat Ramp Maintenance:
 - a. Inspect Boat Ramp weekly from May 15th to September 15th, then monthly thereafter.
 - b. Pressure wash boat ramp walkway once per month May 15th to September 15th.
 - c. Maintain boat ramp and keep tidy as required.

8. Inspect and clean bridge quarterly, submit inspection report to the ACRD after each inspection.
9. For New Year's and special occasions, porta potties will be strategically placed in the community. After event, it should be cleaned out and then placed back in the storage compound for storage.
10. Inspect garbage dumpsters weekly from May 15th to September 15th, monthly for the remainder of the year. Ensure neat and orderly in appearance and coordinate disposal.
11. Report the number of pickups for the garbage services and send to accounting@acrd.bc.ca by the 3rd day of the following month.
12. Wash all signs as needed and install and repair signs at the request of the ACRD.

Pump and Haul

1. The Contractor may use the ACRD's pumper truck (the "Truck") while performing Services related to pumping and hauling sewage, on the following terms and conditions:
 - a. The Contractor shall perform regular safety checks on the Truck before and after pump and haul service and will advise the ACRD of any safety concerns noted;
 - b. The Contractor shall use due care and consideration when operating the Truck;
 - c. The Contractor shall only use the Truck for the purposes of performing Services related to pumping and hauling sewage;
 - d. The Contractor shall return the Truck to 1111 7th Avenue when not using the Truck to perform Services related to pumping and hauling sewage
 - e. Without limiting any other provision of the Agreement, the Contractor releases and must indemnify and save harmless the ACRD, its elected officials, appointed officers, employees and agents from and against all lawsuits, damages, costs, expenses, liability or fees (including fees of solicitors on a solicitor and own client basis) which the Contractor or anyone else may incur, suffer or allege by any reason related to the use, maintenance, or repair of the Truck, or any activity related to the Contractor's use of the Truck.
2. The Contractor will establish a pump and haul schedule that will not exceed the capacity of the receiving septic system. The current maximum volume is limited to 36,624 liters per week or approximately 7-8 pumps. Once the type 2 treatment system is in operation (anticipated for 2021) the weekly maximum volume is expected to increase to 47,611 liters per week or approximately 11 pumps per week. This will be based on effectiveness of treatment and direction may be given at any time by the ACRD to establish the weekly limit of pump and hauls allowed.
3. The Contractor must clean the filters in the 22,700-litre tank prior to transferring sewage to the tank. The transfer must be done slowly to allow solids settling and nor more than ½ truck volume at each transfer trip. If the filter alarms sound during the transfer, the operator must stop the transfer immediately and clean the filters.

4. The Contractor will monitor septic tank warning lights and alarms after pumping of a lot owner's holding tank is performed. The Contractor will reset and ensure the warning light switch is turned the "ON" position.
5. Contractor will maintain appropriate licensing requirements for ability to operate pump and haul truck.
6. Septic Field Site: Contractor will manage flows and ensure that sewage is flowing into the field. Visually check boxes located left and right in field area for flow. Record and report observations. Report any concerns found in septic field and pump station to the ACRD.
7. Generator: When running generator, check for fuel levels and safety issues. Perform maintenance in spring and fall for oil changes and fuel up. Report to the ACRD if repairs are required. Fuel and oil will be supplied by the ACRD.
8. The contractor has to keep access to the septic system locked at all times and has to supply supervised use to determine volumes of septic being introduced

Miscellaneous

1. Contractor's Checklist must be completed and submitted to the ACRD on a monthly basis.
2. Following significant weather events, at the direction of the ACRD, provide inspections of the community from the public roads and report to the ACRD on status of infrastructure and potential property damage.
3. If requested, attend meetings with the ACRD and Salmon Beach Committee (SBC) as scheduled.

Reporting Recap

Tasks	Frequency	Reports to be provided to
Garbage Dumpsters: Inspection for damage /needed repairs and pickups required.	Monitor weekly (May 15 - Sept. 15). Monthly thereafter	ACRD & SBC (if required)
Boat Ramp Inspection	Inspect weekly - submit reports on a monthly basis (May 15 - Sept 15) Inspect monthly thereafter	ACRD & SBC
Playground & Sport Courts Inspection Report	Monthly	ACRD & SBC
Bridge Inspection Report	Quarterly	ACRD & SBC
Contractor's Checklist	Monthly	ACRD & SBC
Report of all other activities performed at the request of the ACRD	Monthly	ACRD & SBC

After inspections, should any abnormalities or repairs needed, please provide contact to ACRD & SBC immediately.



REQUEST FOR DECISION

To: Salmon Beach Committee
From: Jenny Brunn, GM of Community Services
Meeting Date: December 16, 2020
Subject: Salmon Beach Sewage Capacity Review and Pump and Haul Rates

Recommendation:

THAT the Salmon Beach Committee recommend that the ACRD Board of Directors approve an increasing rate system for Pump and Hauls in Salmon Beach.

Background:

At the September 23, 2020 Salmon Beach Committee meeting there were a number of concerns raised regarding the increasing demands for pump and haul in the community. Staff have since completed a review of the system to estimate current and future sewer service demands and provide options for addressing some of the challenges, as attached in the Salmon Beach Septic System Capacity Review.

Summary:

The current pump and haul (P&H) demands are estimated at 27,139 litres/week with a peaking rate of 37,973 litres/week. This exceeds the current capacity of the system at 36,624 litres/week. The addition of type 2 treatment will increase capacity to 47,611 litres/week. However, this additional capacity is expected to be exceeded by 2027 average demands if current growth rates continue as shown in the chart below. Yellow highlighted indicates that the volume is over the current system capacity and orange highlighted indicates that it is over the capacity with type 2 treatment.

Year	Properties	Average Demand (based on P&H data)	Peak Demand (based on P&H data)	Limited Demand ** (Max 2 P&H/prop/year)
2019	149	19,992		
2020	158	23,100	37,973	
2021	170	25,126	41,770	22,084
2022	180	31,055	45,947	23,409
2023	191	34,160	50,542	24,814
2024	202	37,576	55,596	26,303
2027	241	50,014	73,999	31,327
2030	287	66,568	98,492	37,311
2035	376	107,209	158,623	49,930
2040	376	172,661	255,463	65,734

**Limited demand would allow a maximum of 2 P&H/year and assumes that 30% of the properties will only require 1 P&H/year until 2035. 2040 shows all properties requiring 2 P&H/year.

The detailed P&H records show that 2/3rds of properties using the P&H system requires 1 or 2 P&Hs per year. The remaining 27 properties require 3 or more P&Hs per year producing 38% of the sewage in the community. The current system with the addition of type 2 treatment will have capacity to serve the community until approximately 2030 if P&Hs accepted per property are limited to 2 per year.

Staff are recommending that a demand management strategy be put into place to keep demand within the system capacity. This can be achieved through limiting the number of pump and hauls per property to 2 (which is an even distribution of current capacity) or establishing an increasing rate system. If a fixed limit is set per property per year, then some properties may not use their allocation, creating unused capacity while other high demand properties are required to haul offsite. Alternately, establishing an increasing rate system would charge high volume users' higher rates which will discourage excessive usage and provide financial savings for those who use the system less. Rates would need to be confirmed through further financial review (to ensure they are cost recovery) but an example is:

- 1st P&H - \$150
- 2nd P&H - \$200
- 3rd P&H - \$300
- 4th or more - \$400 per P&H

Increasing rates for use of service is commonplace in utilities that are looking to encourage conservation of resources. This is an equitable and de-incentivized system that has been proven effective for demand management. This will encourage property owners to reduce their generation of sewage and will generate revenues required to cover operational costs, invest in infrastructural renewal and potentially pay for hauling off-site if capacity is met.

Time Requirements – Staff & Elected Officials:

Staff time will be required to update the existing bylaw, present to the committee for support and communication on changes to the community.

Financial:

Parcel taxes are currently \$155 per property covering 66% of the costs for this service. The P&H fees are \$120 per service. Resulting in a cost of \$275 for a property that has one P&H, \$395 for a property that has 2 P&Hs. Moving to increasing rates is the most equitable system for the sewage service of which costs are most directly related to demand. Based on the 2020 budget, this could be achieved by reducing parcel taxes to \$50 per property and setting the fees at \$150 for the first haul and \$200 for the second haul. This would result in a reduced rate for those who only have 1 pump and haul per year, the same rate for those who have 2 pump and hauls per year and increased rates for those who have more than 2 pump and hauls per year as shown in the table below:

	Current Rates	Current Total Cost	Increasing Rates	User Pay Total cost
Parcel tax	155	155	50	50
1st haul	120	275	150	200
2nd haul	120	395	200	400
3rd haul	120	515	300	700
4th haul	120	635	400	1100
5th haul	120	755	400	1500
9th haul	120	1235	400	3100

If the above increasing rates were in place for 2020, total revenues would be approximately 8% higher than current revenues. However, 62% of properties would pay the same or less than under the current system. The rates structure is expected to reduce requests significantly for those who request 3 or more pump and hauls and reduce wait times for pump and hauls.

Hauling double tanks would constitute 2 hauls (or each service limited to a maximum volume of 4,545 litres) to ensure equitable charges. Rates per litre will also need to be established and charged for those that self-haul volumes to the system which could be around \$5 per 100 litres with a minimum \$5 charge.

Options:

The Salmon Beach Sewage Capacity Review report provided 3 options to address the current peak demands and future demands that cannot be serviced by the existing system with type 2 treatment installed.

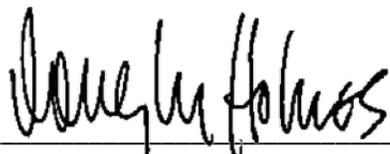
Option 1 – Implement a demand management strategy to limit P&Hs

Option 2 - Haul excess sewage to an external treatment system.

Option 3 - Expand capacity for sewage treatment in salmon beach.

It is recommended that Option 2 or 3 be pursued as longer-term solutions to address future demand projections once the recommended improvements for flow measurement are implemented and design projections can be refined with more accurate data.

Reviewed by: 
Jenny Brunn, GM of Community Services

Approved by: 
Douglas Holmes, BBA, CPA, CA, Chief Administrative Officer

Salmon Beach Septic System Capacity Review (November 20, 2020)

Salmon Beach has 376 recreational properties that all pump and haul (P&H) to a communal septic system. Recent rehabilitation of the septic field has been completed and treatment upgrades have been planned for the system. Increased growth in the community has been increasing demand on the septic system. This report is intended to determine current and future demands and provide options for long-term servicing.

Theoretical Build-out Design Demand

Based on the Sewer System Design Guideline of BC, the flow rate for seasonal cottages is 250 litres/person/day(lpcd). Building restrictions in Salmon Beach limit the square footage of buildings, resulting in a majority of one-bedroom buildings that have a minimum occupancy of 2. Therefore, the design demands from each developed property would be approximately 3,500 litres/week. This would produce a theoretical full build-out peak demand design of 1,330,000 litres/week. This peak demand would occur when all properties are being utilized in the peak period of the summer. Even though occupancy is limited to 180 days per year, the days that this applies to is not specified, therefore the peak demand needs to assume all properties can be occupied at the same time in the summer.

There are stringent limits on building size with a maximum of 768 ft² (70 m²) and limited access to water, which would keep demands lower than normal cottages. With interest in increasing water availability will come increased sewage production. Full build out and future demands should account for increased sewage production for each developed property as a result. However, it is also important to look at what the actual demands are for interim planning purposes.

Current Demands

There has not been any flow measurement of sewage in Salmon Beach to-date. The current demands are estimated using the records of P&Hs performed. The standard tank size for properties in salmon beach is 1200 gallons (5,455 litres) with approximately 5 tanks of double capacity. It has been assumed that a pump out of a full tank would be approximately 1,000 gallons (4,545 litres) and for the purposes of this review, double sized tanks are ignored.

2019 Data			
Annual P&Hs	# of Properties	Total P&H	Percent of Demand
1	87	86	32%
2	36	72	26%
3	16	48	18%
4	5	20	7%
5	3	15	5%
6			
7	1	7	3%
8			
9	1	9	3%

Jan -Nov 2020 Data			
Annual P&Hs	# of Properties	Total P&H	Percent of Demand
1	93	93	34%
2	38	76	28%
3	13	39	14%
4	10	40	15%
5	2	10	4%
6	1	6	2%
7			
8			
9	1	9	3%

Total	149	257		Total	158	273	
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Using these detailed P&H records from 2019 to present, we can separate the properties into 2 groups. The first group has minimal sewage generation and requires 2 or less P&Hs per year. This group produces about 62% of the demand and consists of 135 properties in 2020 (up from 123 in 2019).

The second group consists of only 27 properties (up from 26 in 2019) and requires 3 or more P&Hs per year. This second group makes up only 17% of the properties but produces 38% of the sewage in the community. It includes one outlier each year requesting 9 P&Hs. Interestingly, this was a different property each year.

In 2019, the estimated average flow was 22,462 litres/week. In 2020, the average flow, as of November, was 27,139 litres/week. The Maintenance and Operations Contract currently allows for pumping a maximum of 6 tanks per week which is approximately 24,270 litres/week. However, records from August 2020 show 37 tanks being pumped, resulting in a peak demand of 37,973 litres/week. This doesn't include the self haul sewage that is not measured and nor estimated.

Current Septic System Capacity

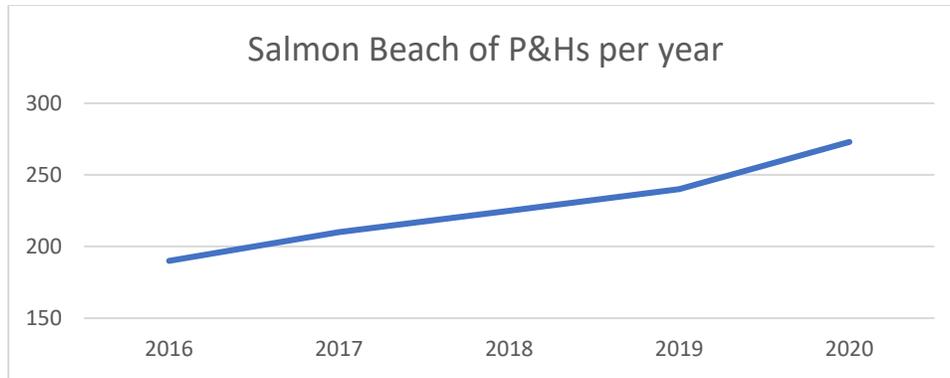
The current design volume for the two septic fields is 36,624 litres/week. This is a total maximum capacity of approximately 8 P&Hs per week assuming no volume from self-hauling is applied to the system. The 2018 H2O report stated that in 2012 there were approximately 198 holding tanks producing a total estimated flow of 17,794 litres/week. This flow rate was used to calculate a future build-out design total flow rate of 32,200 litres/week which is within the current system capacity. However, the flow data from recent years shows that the demands have increased significantly (27,139 litres/week) and are expected to continue to increase.

Total capacity of the system is expected to increase to 47,611 litres/week when the type 2 treatment system is constructed (approx. 30% increase in capacity). This will increase the number of allowable P&Hs per week to 11.5. The lifespan of the two septic fields is currently at about 20-25 years, with the proposed new Type 2 treatment expected to increase the lifespan to 40 or more years.

The current P&H contract and schedule is limited to 24 P&Hs per month over the year to ensure that the system capacity is not exceeded. However, this limit is not being adhered to and the community is requesting an increase for the number of P&Hs each week. The current contract limits the total available P&Hs in the community to 288 per year. This would be an average of 1.31 pumps per property (assuming 219 properties with holding tanks). The number of P&Hs could be increased to a maximum of 8 per week (416 per year) until additional pre-treatment is added to the system. This does not include self-hauled sewage.

Current and Near-term Demands

Development has been increasing year over year in this area with an estimated 210 holding tanks (including 5 double tanks) now in the community (and an additional 14 to be installed in the near future) with an estimated average flow of 27,139 litres/week and peak summer demand in August 2020 of 37,973 litres/week. Five years ago, the number of P&Hs per year were 190. Since then the numbers have increased annually to 273 P&Hs to-date(November) in 2020. The waiting time for P&H is up to 3 weeks.



The average annual increase over the past 5 years has been 10% each year. If this trend continues, the following projected peak and average demands can be expected to 2040. Yellow highlighted indicates that the volume is over the current system capacity and orange highlighted indicates that it is over the capacity with Type 2 treatment added.

Year	Properties	Average Demand (based on P&H data)	Peak Demand (based on P&H data)	Limited Demand ** (Max 2 P&H/prop/year)
2019	149	19,992		
2020	158	23,100	37,973	
2021	170	25,126	41,770	22,084
2022	180	31,055	45,947	23,409
2023	191	34,160	50,542	24,814
2024	202	37,576	55,596	26,303
2027	241	50,014	73,999	31,327
2030	287	66,568	98,492	37,311
2035	376	107,209	158,623	49,930
2040	376	172,661	255,463	65,734

**Limited demand would allow a maximum of 2 P&H/year and assumes that 30% of the properties will only require 1 P&H/year until 2035. 2040 shows all properties requiring 2 P&H/year.

The current system capacity has been reached with peak demands in 2020. However, this can be managed by limiting the number of P&Hs allowed each week to 7-8. The average demand is not expected to exceed capacity of the system with type 2 treatment until 2027. The table also shows what the demand on the system would be if sewage production is limited to 9,091 litres per property per year (2 P&H per year). If demand is limited, the system can manage capacity until 2030. However, full-build

out even with limited P&Hs restricted to 2 per year will produce 65,734 litres/week which will exceed the capacity of the system with type 2 treatment installed by 2035.

Summary

The current P&H demands are estimated at 27,139 litres/week with a peaking rate of 37,973 litres/week. This exceeds the current capacity of the system at 36,624 litres/week. The addition of type 2 treatment will increase capacity to 47,611 litres/week. However, this capacity is expected to be exceeded by 2023 peak demands or 2027 average demands if current growth rates continue. The current system with the addition of type 2 treatment will have capacity to serve the community until 2030 if P&Hs accepted per property are limited to 2 per year.

Recommendations:

The following is a list of steps that should be taken immediately to verify the current estimated flow into the system, allow for design projections to be refined and better manage current P&H requests:

1. Do not permit more than 7 P&Hs per week until flow measurements are installed, so that capacity of the system is not exceeded.
2. Lock access to the septic field to control and measure self hauled materials to ensure that all effluent entering the system is recorded and the capacity of the system is not exceeded.
3. Install flow measurement when the treatment upgrades are made and proceed with planned treatment to increase system capacity.

If the septic fields are operated above the design volume this creates hydraulic overloading and can drastically diminish the system's ability to treat wastewater. When this happens, it can result in contamination of water sources and reduce the lifespan of the septic fields. The weekly flow into the current system must be limited to its design capacity.

The following are options available to address the current peak demands and future demands that cannot be serviced by the existing system with pre-treatment installed:

Option 1 - Limit P&H to within current system capacity

Option 2 - Haul excess sewage to an external treatment system.

Option 3 - Expand capacity for sewage treatment in salmon beach.

Option One – Implement A Demand Management Strategy

This will ensure that the capacity of the system is not exceeded. This can be accomplished by having a fixed number of pump and hauls allowed per property or establishing an increasing rate system.

A. Increasing Rate System

Rates would need to be determined (and updated to ensure they are cost recovery) but an example is:

1st P&H - \$150

2nd P&H - \$200

3rd P&H - \$300

4th or more - \$400 per P&H

This is an equitable and de-incentivized system that has been proven effective for demand management. This will encourage property owners to reduce their generation of sewage and will generate revenues required to cover operational costs, invest in infrastructural renewal and potentially pay for hauling off-site if capacity is met.

Hauling double tanks would constitute 2 hauls or each service will need to be limited to a maximum volume of 4,545 litres, to ensure equitable charges. Rates per litre will also need to be established and charged for those that self-haul volumes to the system which could be around \$5 per 100 litres with a minimum \$5 charge.

B. Fixed Allocation of P&H per Property

Alternately, the number of P&Hs allowed from each property could be set at a fixed number. There are currently approximately 210 properties with holding tanks (expected to increase to 224 in 2021). Distributing the current available capacity equally would result in 2 P&Hs per property per year (will increase to 3 P&Hs when pre-treatment is added). This equal distribution will continue to decrease as an increasing number of properties install tanks.

Option 2 - Haul excess P&Hs to an external treatment system.

The community currently owns a P&H truck that is not necessarily limited to transporting sewage to the on-site septic field. The demand can be met by increasing the number of P&Hs completed each week (in theory, to probably 15 per week) and taking all requests over the capacity of the system to a neighbouring treatment facility. Further research would be required to ensure that the current vehicle and contractor meets required certifications and to determine the costs for hauling outside of the community. The overall combined costs could set a new higher flat rate for external hauling or establish an increasing rate system to ensure proportional costs are recovered from those with higher demand and causing higher cost off-site disposal needs.

Option 3 - Expand capacity for sewage treatment in Salmon Beach.

The existing system is constrained by the capacity of the fields and available land. The volume that can be applied to the fields can change depending on the treatment upstream. Adding Type 2 treatment is expected to increase capacity by approximately 30%. There is potential for installing Type 3 treatment which could increase capacity by 75%. Detailed investigation would be required to determine available technology that will be effective for the sewage concentrations and cost estimates for this option. Alternately, advanced wastewater treatment options could be explored.