



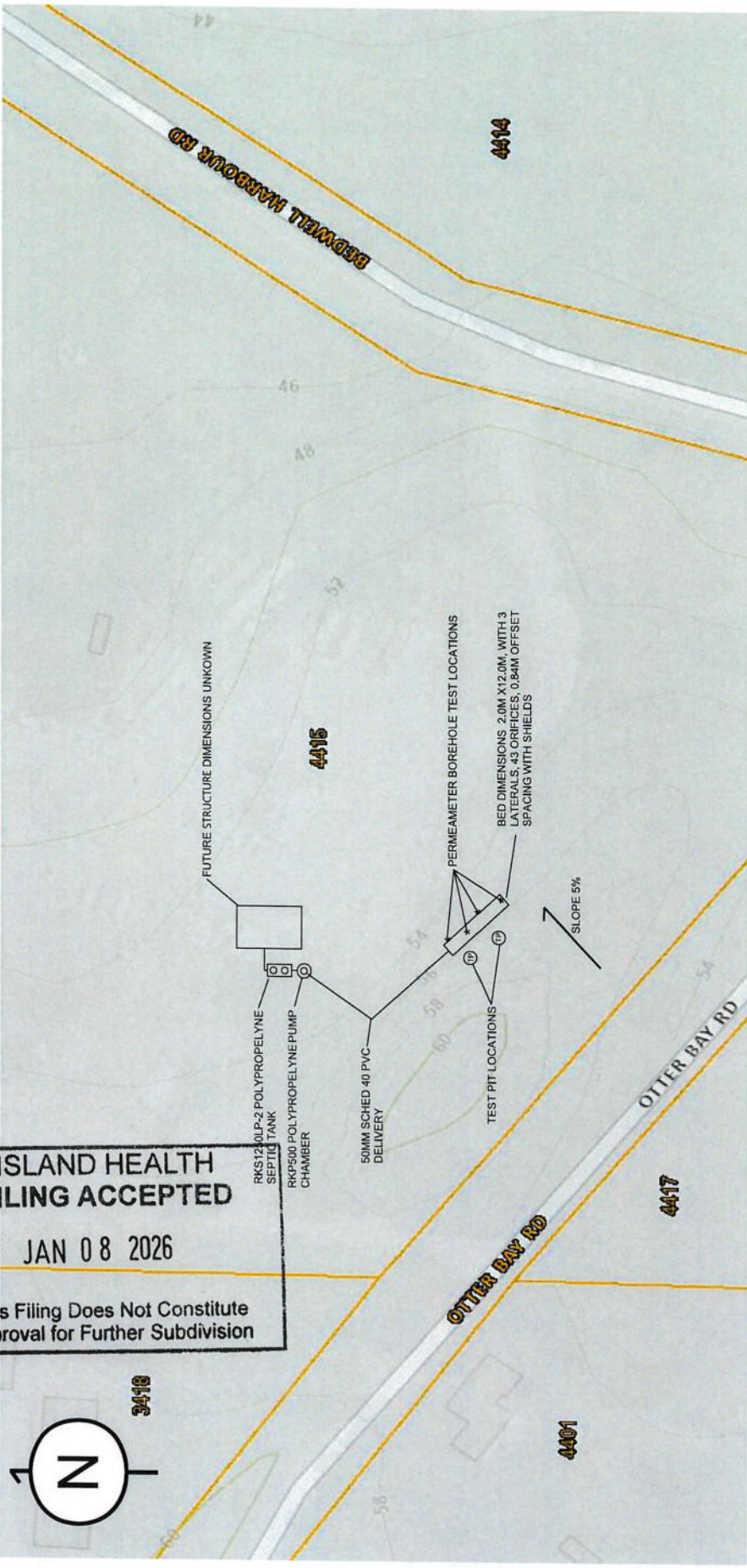
RECORD OF SEWERAGE SYSTEM

		Filing # (OFFICE USE ONLY) Gv26/005	
1. Property Information	<input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Alteration <input type="checkbox"/> Repair <input type="checkbox"/> Amendment – Original Filing #		
	Tax Assessment Roll #		PID # 018-948-421
	Legal Description (Plan, Lot, District Lot, Block Numbers) LOT 1, SECTION 18, PENDER ISLAND, COWICHAN DISTRICT, PLAN VIP59806		
Street (Civic) Address or General Location 4415 Bedwell Harbour Rd.		City Pender Island	
2. Owner Information	Name of Legal Owner BARBARA JEAN GRIMMER		Mailing Address 2310 GRIMMER ROAD
	Phone 250-222-3817	City Pender Island	Prov BC
		Postal Code V0N2M1	
3. Authorized Person Information	Name of Authorized Person Christopher Carrier		Mailing Address 2202 Clam Bay Rd.
	Phone 778-688-9165	City Pender Island	Prov BC
			Postal Code V0N2M1
Registration # ow0691		Email ecosourcesepctic@gmail.com	
4. Structure Information	Sewerage System Will Serve:		
	<input type="checkbox"/> Single Family Dwelling <input checked="" type="checkbox"/> Other Structure (specify) <u>Office</u> <input type="checkbox"/> Other Dwelling (specify) _____		
The sewerage system is designed for an estimated minimum daily domestic sewage flow of (check one)			
<input checked="" type="checkbox"/> Less than or equal to 9,100 litres <input type="checkbox"/> More than 9,100 litres but less than 22,700 litres			
5. Site Information	Depth of native soil to seasonal high water table or restrictive layer (cm) 45CM		Information respecting the type, depth and porosity of the soil is attached <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
	GPS Location of System (decimal degrees) Latitude <u>48.79602</u> Longitude <u>-123.28461</u>		
	Horizontal Accuracy (m) <u>CRD WebMap</u>		<input checked="" type="checkbox"/> Recreational GPS <input type="checkbox"/> Differential GPS
6. Drinking Water Protection	Will the sewerage system be located less than 30 m from a well? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
	If yes, attach a professional's report and specify the intended distance _____ (m) Distance of proposed sewerage system to the closest body of surface water <u>>30M</u> (m)		
7. System Information	Sewerage treatment method <input checked="" type="checkbox"/> Type 1 <input checked="" type="checkbox"/> Type 2 <input type="checkbox"/> Type 3		
8. Legal or Regulatory Considerations	<input checked="" type="checkbox"/> Construction of the proposed sewerage system will not conflict with legal instruments registered on the property.		Is this filing submitted as the result of an order from the Health Authority? <input type="checkbox"/> Yes (attach a copy of the order) <input checked="" type="checkbox"/> No
	<input checked="" type="checkbox"/> Plot Plan (to scale) and specifications are attached <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> The plans and specifications are consistent with Standard Practice Source of Standard Practice: <input checked="" type="checkbox"/> Ministry of Health Standard Practice Manual <input type="checkbox"/> Other		
10. Authorized Person's Signature	Signature Christopher Carrier -- ROWP - ASTTBC Date January 7, 2026		OFFICE USE ONLY Filing Accepted Date Jan 8/26 Receipt Number 2601CMC.7566
	Digitally signed by Christopher Carrier -- ROWP - ASTTBC Date: 2026.01.07 10:49:30 -08'00'		

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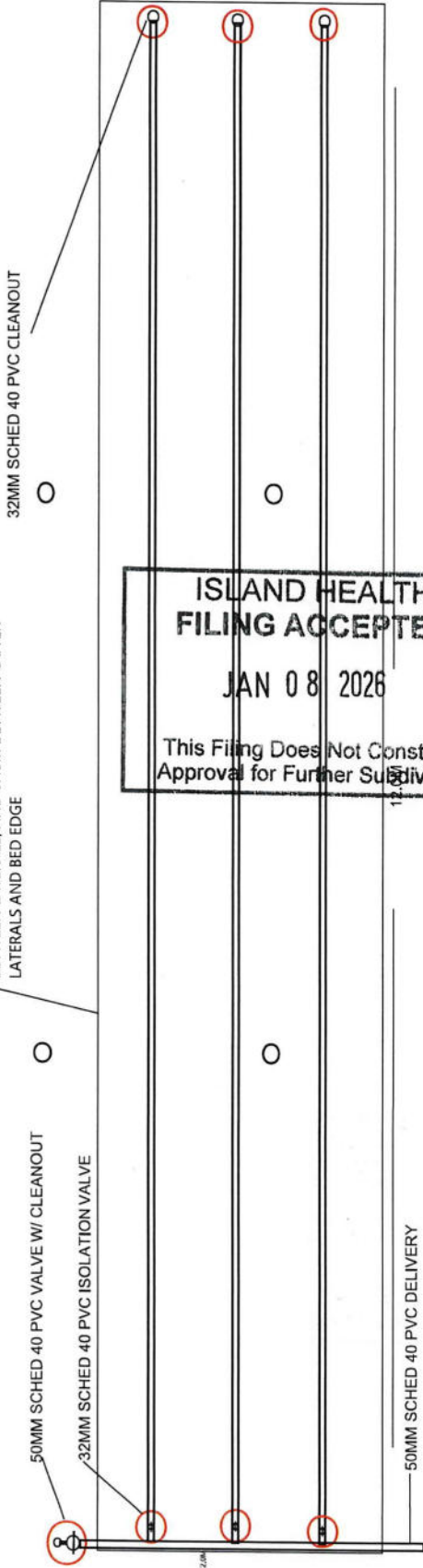
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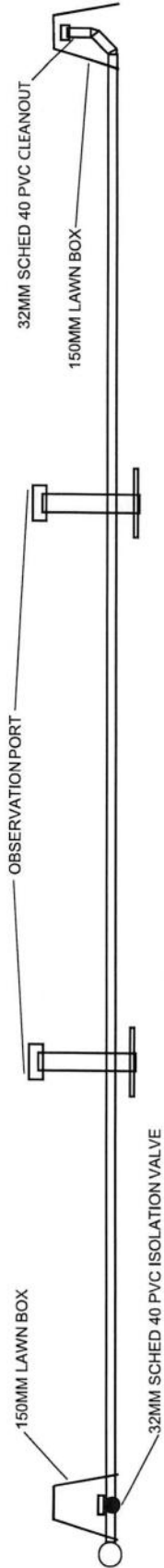
PLAN VIEW

- 300MM LAWN BOX
- 150MM LAWN BOX
- 100MM OBSERVATION PORT

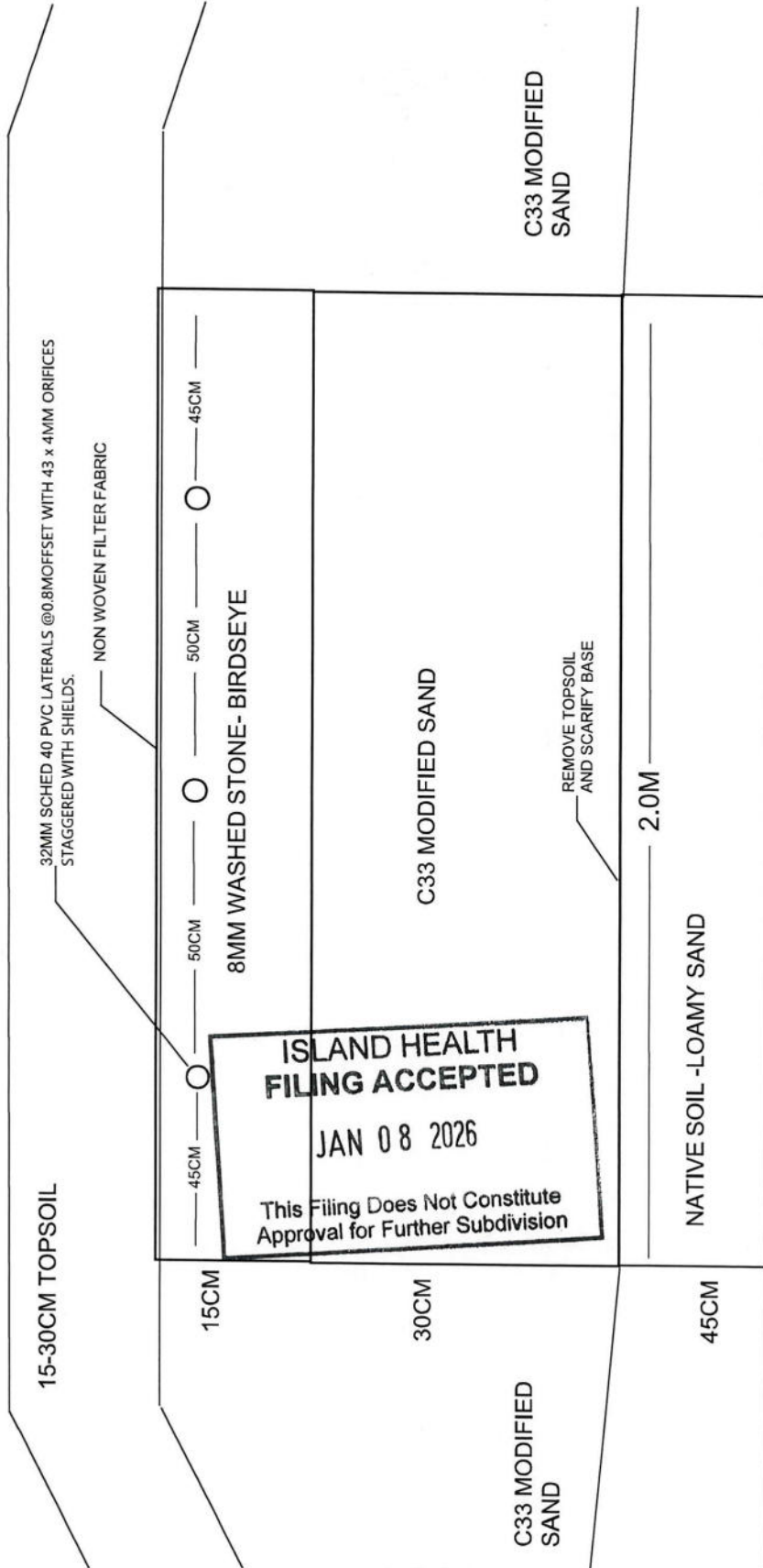
BED DIMENSIONS 12.0M X 2.2M
 32MM SCHED 40 PVC LATERALS @0.84M OFF SET, 43 x
 4MM ORIFICES STAGGERED WITH SHIELDS. WITH 0.5M
 BETWEEN LATERALS, AND 0.45M BETWEEN OUTER
 LATERALS AND BED EDGE



SIDE VIEW



<p>Plan-VIP59806, Lot-1, Section-18, District-Cowichan Land PID 018-948-421</p> <p>4415 Bedwell Harbour Rd, Pender Island, BC V0N 2M1</p>	<p>ECO SOURCE SEPTIC AND GULF EXCAVATING LTD PO BOX 85 PENDER ISLAND BC V0N2M1 office@gulfexcavating.com</p>	<p>JOB NAME GULF-4415 BEDWELL HARBOUR</p> <p>DRAWING TYPE SITE PLAN-FIELD-PROFILE</p> <p>CLIENT NAME BARBARA JOHNSTONE-GRIMMER</p> <p>DATE OCTOBER 30 2025</p>
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JOB NAME GULF-4415 BEDWELL HARBOUR RD	DRAWING TYPE SAND MOUND - CROSS SECTION	PROPERTY OWNER BARBARA JOHNSTONE GRIMMER	DATE OCTOBER 30 , 2025
Plan-VIP59806, Lot-1, Section-18, District-Cowichan Land PID 018-948-421	4415 Bedwell Harbour Rd, Pender Island, BC V0N 2M1		

EcoSource Septic and Gulf Excavating Ltd.

PO box 85 Pender Island BC V0N2M1
office@gulfexcavating.com

Health Authority Initial Filing For Construction of Sewerage System:
Site investigation report, record of design and specifications

Date: October 30, 2025

Legal Land Description: Plan-VIP59806, Lot-1, Section-18, District-Cowichan Land
PID 018-948-421

Street Address: 4415 Bedwell Harbour Rd, Pender Island, BC V0N 2M1

GPS: LAT. 48.79602 LONG. -123.28461

Property Owner: Barbara Johnstone Grimmer

Summary of Proposed Works: (also see attached site plan)

New onsite wastewater system to accommodate the continued use of an industrial area currently using portable toilets as means of sanitary controls. The system will be oversized and able to accommodate a bathroom from the neighbouring industrial parcel.

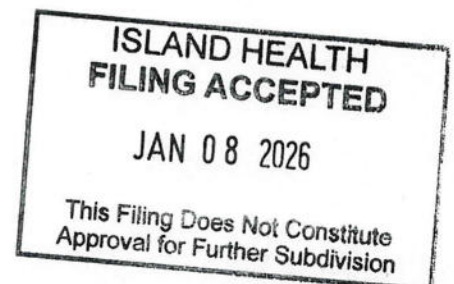
Proposed Wastewater System:

- * Daily Design Flow (DDF) 960 L/day
- * Type 1 Effluent
- * Will install a new 5682L RKS1250LP/2 - 2 chamber polypropylene septic tank, A Polylok effluent filter with check ball will be installed on the outlet.
- * New Canwest Tanks 2273L RKP500 pump chamber
- * Pressure Distribution with timed dosing using a Shinmaywa effluent pump (3/4HP/115V manual) using a C-Level transducer and Rhombus Simplex control panel
- * Pressure dispersal to a sand mound measuring 2.2m x 12.0m with a 0.30m layer of Mound Sand and 0.15m of 8mm pea gravel.

Site Information:

Total parcel size: 56731.4748m

Potable Water Source: Drilled Well



Topography:

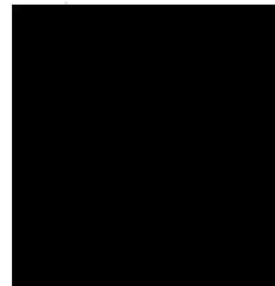
The proposed dispersal area is on contour, with a 5% slope to the bed center line.

General Description:

The proposed dispersal field will be situated at the top of an undisturbed slope to the south of the industrial area, and the septic tank and pump chamber will be located on the border of the two industrial parcels to accommodate shared use.

Horizontal Separation

There are no HS restrictions associated with the proposed dispersal field.



Site/Soil Evaluation: (see attached drawings for test pit locations) Native Soil in area of dispersal field:

Test pit #1:

0-7 cm	Dark brown loamy sand with high organic content (topsoil) Moderate Granular structure with friable consistence, moist and with 20% coarse fragments
8-52 cm	Light brown loamy sand, Strong Granular with friable consistence and with 20% coarse fragments
53 cm	Shale

The limiting condition in test pit #1 is Shale at 49cm

Test pit #2:

0-5 cm	Dark brown loamy sand with high organic content (topsoil) Moderate Granular structure with friable consistence, moist and with 20% coarse fragments
6-64 cm	Light brown loamy sand, Moderate Granular with friable consistence, moist and with 15% course fragments
65 cm	Shale

The limiting condition in test pit #2 is Shale at 65 cm

Hydraulic soil conductivity of the 'B' horizon in KFS is 7980mm/day

Vertical Separation (VS) Design Limit

The VS design limit elevation is selected based on the shallowest limiting condition within the proposed dispersal area, indicated by Test Pit #1

*After topsoil is removed from the dispersal area 45cm of Native Soil remains

45 cm Native Soil + 30cm Mound Sand = 75 cm as constructed VS

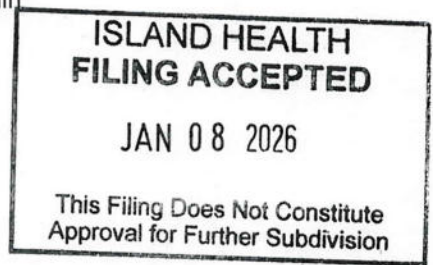
Key Constraints and Design Rationale

Constraints

- * Sand to 49cm depth with strong structure and friable consistence in the infiltrative area

Mitigating Strategies

Soil allows for Microdosing with 75cm VS which exceeds minimum VS as per table II-17 SPM v3 of 60cm for Loamy Sand



DDF (Daily Design Flow):

DDF is determined using SPM v3 table III-11, Non-residential Average Daily Flow Rate Guide. Under "Open Site (e.g. quarry) without canteen" at 60L per day per person at 16 employees (currently only 8 employees combined between the two industrial parcels.)

$$16 \times 60 = 960 \text{ L DDF}$$

HLR (Hydraulic Loading Rate)

The HLR for type 1 will be applied to the mound sand and the loamy sand. The infiltrative surface is size based on an HLR of 40L/day/m2 for type 1 effluent applied to Mound Sand as per SPM table II-23. The basal area is sized based on type 1 effluent applied to Loamy Sand at 30L/day/m2

AIS (Area of Infiltrative Surface)

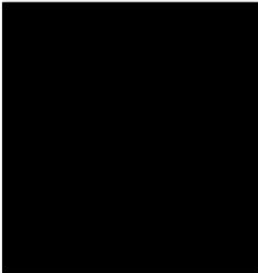
calculation of

$$960 \text{ L DDF} / 40\text{L/day/m}^2 = 24.0\text{m}^2$$

Basal AIS

calculation of

$$960 \text{ L DDF} / 30\text{L/day/m}^2 = 32.0\text{m}^2$$



LLR (Linear Loading Rate) calculation of Minimum System Contour Length (MCL) The minimum system length on contour, based on an LLR of 85L/m for 5 % slope, 45cm depth of Sand with favourable structure category as per SPM v3table II-27 is

$$960 \text{ L DDF} / 85 \text{ L/m} = 11.29 \text{ MCL}$$

Configuration of Dispersal System

2.0m x 12.0m x 0.3m Mound Sand with 10cm pea gravel under and 5cm over laterals providing 24.0m2 AIS, meeting the minimum required area.

With 3 Laterals, 12m long, end feed manifold with 0.5m separation between laterals, and 0.45m from outer laterals to bed edge.

Total length of laterals for calculation of orifice spacing:

$$12.0\text{MCL} \times 3 \text{ Laterals} = 36.0\text{m}$$

Number Of Orifices:

Based on SPM standard (table II-43) of 0.56m2 effective AIS per orifice

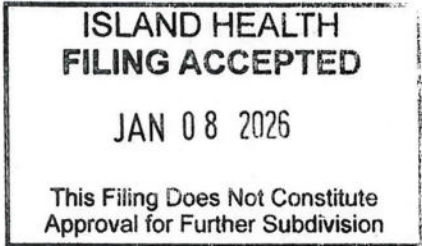
$$24.0\text{m}^2 \text{ AIS} / 0.56\text{m}^2/\text{orifices} = 43 \text{ orifices}$$

to be divided by 3 laterals ... with 14 orifices per each 12m outer lateral sections, and 15 orifices in the center lateral.

Orifice Spacing:

Total length of laterals / total number of orifices ...

$$42\text{m} / 50 \text{ orifices} = 0.84\text{m orifice spacing}$$



Dosing Volume:

Soil dose frequency check, to meet SPM Table II-12 'Micro Dosing' dose category: Type 1 effluent applied to 30cm Mound Sand is 28 Doses per Day. As the DDF is low, and Average Daily Flow is used to determine dose volumes, this would result in a dose volume of 17.8L, which is insufficient volume for even distribution. As such, 18 DPD will be used, still strongly reflecting with Table II-12, yet with sufficient volume to attain uniform distribution.

$$480L \text{ ADF} / 18\text{DPD} = 26.7L \text{ dose}$$

Reserve Volume

$$67\% \text{ of DDF, } 960 \text{ L} \times 0.67 = 643 \text{ L}$$

Alarm Reserve volume

$$50\% \text{ of DDF, } 960 \text{ L} \times 0.5 = 480 \text{ L}$$

Transducer Settings

Alarm setting

To provide 50% DDF alarm reserve above alarm on. **49cm**

Pump on setting:

To provide 67% DDF reserve volume **25cm**

Total Dynamic Head (TDH) and pump sizing

Required pump flow based on 4.0mm orifices is 2.44LPM (from Module 109A - Friction Loss Tables -Table A.1.B2 per WACOWMA) for desired 1.5m squirt height.

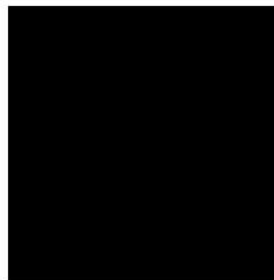
$$(43 \text{ lateral orifices} + 1 \text{ pump chamber orifice}) \times 2.44 \text{ LPM/orifice} = 107.4 \text{ LPM}$$

Total Dynamic Head:

The friction loss is determined per Module 109A Friction Loss Table A.1.C.2, and Table A.1.C.6 per WACOWMA

Friction loss of 0.523m per 30.5m length sched 40 PVC x total length of equivalent pipe for friction loss

- Lift Head is approximately = 5m
- 51mm force main allowance, 100m/30.5m = 3.28m
- 51mm fitting allowance, 25.5m/30.5m= 0.84m
- Orifice pressure loss total = 0.3m
- = 9.42m TDH



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Pump required for 107LPM to 9.42m head based on manufacturers pump curve is a Shinmaywa 3/4 hp effluent pump.

Duty point is approximately equivalent to minimum required performance, 107LPM, resulting in squirt height of approximately 1.5 m from lateral elevation.

Construction Specifications: _____ (also see attached drawings)

Sand Mound

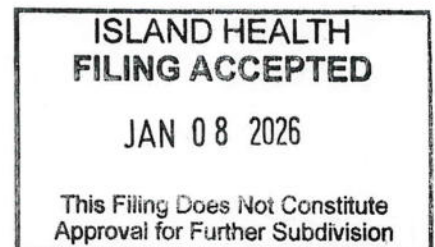
- * Minimum Bed Dimensions are 2.0m x 12.0m ... 3 laterals, an end feed manifold, 0.5m between laterals, with outer laterals 0.45m from bed edge.
- * Excavate bed to design soil level and add 0.3m layer of Mound Sand.
- * Cover with 10 cm depth of 8mm birdseye.

Install four 100mm PVC infiltrative surface observation ports within the bed

- * One port at either end of the bed, approximately 6m from the end. *
- * Install two ports in the receiving area in the same orientation as above.
- * Place the bottom of the ports at a depth approximately 5 cm below the infiltrative surface.
- * Drill several holes at bottom of solid PVC pipe to a height of 15cm above infiltrative surface.

Install the dispersal piping network:

- * With 3 - 32mm diameter laterals, 12.0m long, and an end feed manifold.
- * Manifold requires vertical 51mm cleanout at the distal end of the manifold ... using 2 x 45-degree fittings with a short stub to bring the c/o threaded cap to slightly below surface grade, with access provided by 15cm lawn box.
- * Install 3 - 32mm diameter ball valves at the manifold for isolation of each lateral section. For each valve, provide an irrigation box allowing hand access to the valves.
- * At the far end of each lateral, install vertical cleanouts, using 2 - 45-degree elbows or long radius sweeps, extended to about 5 cm below finished grade, with lawn boxes for access.
- * Ensure 0.5m separation between laterals
- * Lowest orifice on each lateral to be positioned 180 degrees opposed to the rest to drain the laterals to prevent freezing.
- * Laterals drilled with 4mm holes at 12 o'clock orientation, 0.84m spacing between orifices, with the first and last (staggered between laterals 1 and 2) orifice at approximately 40 cm spacing from either end of each lateral section ... ensure exactly 14 orifices per outer lateral section, and 15 in the center lateral, total of 43 orifices in the dispersal area.
- * Install dispersal piping as level as possible (level within 2.5cm) to minimize draining volume and to ensure timely pressurization
- * Include an orifice shield for every orifice used



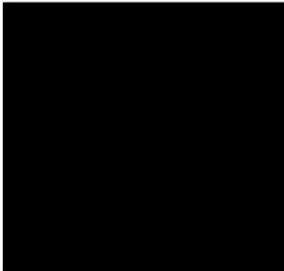
- * Place minimum 5 cm 8mm round birdseye over the laterals and orifice shields
- * Cover gravel with hydrophilic geotextile fabric.
- * Place cover soil
- * Cover the fabric with 15cm - 30cm soil
- * Achieve a well graded, sloped surface with positive drainage and no potential ponding on surface.

Aggregates:

- * Birdseye gravel must be <8mm round and thoroughly washed with minimal silt
- * Cover soil should be "topsoil" or lawn sand suited for grass growth.
- * Bedding material under the tanks must be free of coarse fragments larger than 25mm. Care must be taken to avoid large rock in the native soil from contacting the tanks.

Pipe

- * 100mm sewer connections must be CSA PVC drain line or better.
- * Ensure minimum 1% fall from sewer service to septic tank and to pump chamber
- * Force main and manifold to be 50mm PVC sched 40
- * Laterals to be 32mm PVC sched 40



Septic tank

- * Install a new RKS1250LP/2 - 2 chamber polypropylene septic tank
- * Select the excavation to ensure at least 1% fall from the outlet of the tank AND with consideration of riser heights to ensure the lids are flush with the desired finished grade.
- * In the new tank, install an outflow effluent filter with handle extended to within 15 cm of access lid.

Pump Chamber

- * New Canwest Tanks RKP500 pump chamber
- * Select an excavation elevation to ensure at least 1% fall from the outlet of the new septic tank AND in consideration of riser height to ensure lids are flush with desired finished grade.

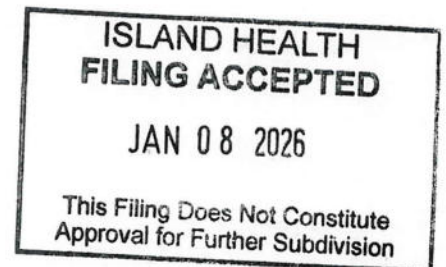
Pump, Alarm, Transducer Settings

- * Shinmaywa 3/4 hp effluent pump
- * Extend the vertical pump discharge pipes upwards into the access riser to bring the valves and unions within 15cm below the lid height, elbowed back down to the discharge point.
- * Include 50mm valve union and check valve at the top of the force main within the pump chamber (on the horizontal leg no more than 15 cm below the lid height) to allow easy removal of pump.
- * Be sure to include a pump lifting rope.
- * Drill a 4mm hole in the vertical pipe to act as an air removal

orifice

- * Install a transducer
- * Set transducer levels as follows

Redundant off	17cm
Timer on	25cm
Alarm on	49cm
Timer override	50cm



Electrical

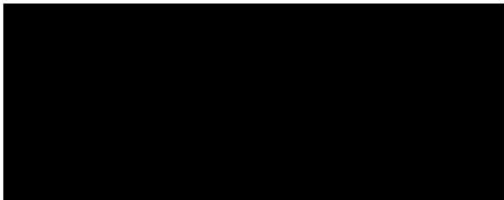
- * All electrical work is to be performed by a qualified electrician, as per applicable codes.
- * Provide two separate electrical circuits, one for the alarm (115V), and a second circuit for the pump (115V). This will prevent power failure to the control alarm if there is a pump failure or other condition that trips the pump power breaker.
- * A junction box must be installed at surface within 30 cm of pump chamber access lid.
- * The wiring from the pump chamber to the junction box must be encased in conduit with adequate size to enable easy replacement of transducer wiring or pump power supply.
- * Any conduit used for wiring from the pump chamber to the junction box must be sealed to prevent corrosive gases and moisture passing from the pump chamber.
- * There must be no electrical connections or junctions inside the pump chamber.

Miscellaneous Specifications

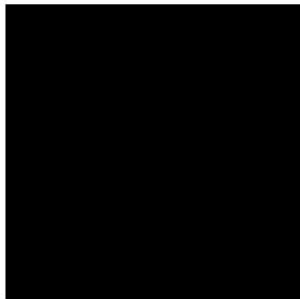
- * Prevent excessive disturbance, compaction and smearing of the original soil in the dispersal area, do not back trucks onto area, scarify to a shallow depth only 10 cm max. Take care to protect the receiving down grade area of the dispersal area from compaction. Do not install in wet conditions.
- * Install all tanks level, with consistent support, with no coarse fragments larger than 25mm.
- * All piping is to be adequately bedded with 12mm minus (hydro sand). compacted thoroughly to prevent distortion or misalignment by settling.
- * Flush all lines prior to performing squirt test, start with the force main, then each lateral individually. * Perform squirt test with all laterals open and confirm minimum 1.5 m squirt height from all laterals.
- * Ensure owner promptly or at soonest practical opportunity seeds the dispersal area with grass or similar shallow rooted cover.
- * Ensure The dispersal area and tanks are protected from traffic, heavy loads, surface and subsurface flows of water. This may require fencing, rock barriers or other suitable means to restrict access, and may require drainage systems such as swales and/or interceptor drains.

Declaration

These plans and specifications are consistent with standard practice with regard to the Sewerage System Regulation and the Sewerage Systems Standard Practices Manual v3(2015) of the B.C. Ministry of Health. I have conducted a site evaluation and exercised due diligence.



Prepared by Aaron Grimmer



Approved by

