island health

SEWERAGE SYSTEM LETTER OF CERTIFICATION

Filing#: DC 17/175 **Folio or PID#:** 001-759-531 **Date:** Sept. 9 /2017

Civic Address: 9286 Chemainus Rd. Chemainus B.C.

Legal Description: Lot A, Section 12, Range 6, Chemainus District, Plan 28538

The construction of the proposed sewerage system on the above property was completed on: Sept. 8 /2017

This system was installed:

☐ By or under the supervision* of a professional Name: _____ Registration #: _____

☑ By a Registered Onsite Wastewater Practitioner Installer Name: John Beggs Registration #: OW0168

☐ By the property Owner under the supervision* of Name: _____ Registration#: _____

I am an "Authorized Person" as defined in the Sewerage System Regulation "BC Reg. 326/2004." **The signature and seal of the undersigned on this document certifies that:**

1. The Owner has been provided with:
   - A copy of the sewerage system plans and specifications as filed with the Health Authority;
   - A maintenance plan for the sewerage system that is consistent with standard practice;
   - A copy of this Letter of Certification as filed with the Health Authority;
2. The sewerage system has been constructed in accordance with standard practice as indicated in the Sewerage System Filing Form filed on (date) Sept. 5/2017 ;
3. The sewerage system has been constructed substantially in accordance with the plans and specifications filed with the Health Authority;
4. The estimated daily domestic sewage flow through the sewerage system will be less than 22,700 liters;
5. If operated and maintained as set out in the maintenance plan, the sewerage system will not cause or contribute to a health hazard.

* Where the authorized person is a professional, "supervision" means conducting field reviews of the construction of the above system that the professional in his or her professional discretion considers necessary to ascertain whether the construction substantially complies with the plans and specifications filed with the Health Authority.

Appended to this document is a plan of the sewerage system as it was built and a copy of the maintenance plan.

Name (please print): John Beggs	**Health Authority Use Only**
Signature:	
Authorized Person's Seal	

REGISTERED ONSITE WASTEWATER PRACTITIONER ASTTBC JOHN W. BEGGS PL IN OW0168

POSTED SEP 12 2017 BMW

VANCOUVER ISLAND HEALTH AUTHORITY FILING ACCEPTED SEP 11 2017 This Filing Does Not Constitute Approval for Further Subdivision

FINAL

FAXED SEP 11 2017 Page ___ of ___ MWC

Part 2: Maintenance Plan for Maintenance Providers

Introduction

Design Flow Rate: 352 G.P.D. (1600 L.P.D)

Type of System (description): Type I Pressure

The Maintenance Provider is to perform the maintenance outlined below as required:

YES

TANKS:

☒ Measure sludge and scum levels in septic tanks and pump chamber. Pump-out and clean as required.

☒ Clean floats and pump as needed.

CONTROL SYSTEM, AND HOUSING:

☒ Test pump on/off float, the high level alarm float and the audible/ visual alarm to ensure they are operating properly. The pump on/off float is set to provide a pump draw down of 8 inches. The alarm float is set 5 inches above the pump "on" float position. Adjust floats if and when necessary.

FILTERS:

☒ Check effluent filters and clean when required.

☒ Replace filters as needed.

DISPERSAL FIELD: PRESSURIZED

☒ Check operation, cycle, test residual head.

☒ Lateral lines to be opened at clean out ends and flushed as required. Initial frequency is once every 48 months.

☒ Inspect observation ports.

☒ Check pipelines for signs of leakage.

DISPERSAL FIELD: GRAVITY

☒ Inspect observation ports.

☐ Inspect distribution box (Adjust flow/speed levelers as needed)

☒ Ensure that surface of dispersal field area is not collecting surface water

☐ Inspect diversion valve

☒ Inspect observation ports bi-annually (Observation Port is to observe biomat formation and effluent ponding at the zone of infiltration within the dispersal trench or bed.)

N/A

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N/A

YES VALVES:

☐ Check Hydrotek valve operation.

DISCHARGE MONITORING:

☐ Record flow data, accumulated run time.

Septic (Trash) Tanks (All Systems)

Septic tank pump out intervals projected to be 3 to 5 years, with effluent filter inspection and cleaning intervals expected to be 1 year(s) (6 months for the first two years), depending on use and influent quality. Tank sludge/ scum depth should be assessed annually at time of effluent filter cleaning.

Pump, Floats and Alarms

PRESSURE SYSTEMS ONLY

Annual pump check to include visual inspection, measurement of running amperage, record of run time per standard dose. Visual inspection of floats and manual test of alarm/float operation. Visual Inspection of pump chamber and cleaning as required.

Commissioning run time 1.5 mins, amperage 11.9 amps. Pump chamber "V" value 1 inch of depth per = 10.5 Gal.

Annual flow check to include record of pump starts (from counter) and run time (from pump hour meter) and manual check of counter operation.

Package Treatment Plants

Treatment plants, operations as per manufacture manual specifications.

R.O.W.P. Disclaimer:

I hereby certify that the information provided in this report is accurate and true to the best of my knowledge. I waive any and all responsibility and/or liability for the system problems malfunctions or health hazards that arise from any faulty system components, improper installation, damage resulting from misuse and/or failure to operate and maintain the system in accordance with the operation/maintenance plan.

Respectfully Submitted,

_____, R.O.W.P.

John Beggs

PRINT NAME

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Contact List

R.O.W.P. Maintenance Provider

Company Name: Coast Evironmental

Contact: OFFice

Address: Chemainus

Phone #: 250-246-3216

Tank, pump out, filter cleaning, under drain line pump out, lateral line flushing, or general service and maintenance of the system.

R.O.W.P. Installer

Company Name: John Beggs Contracting Ltd.

Contact: John

Address: Chemainus B.C.

Phone #: 250-246-9535

Questions or concerns pertaining to installation.

Package Treatment Plant Supplier

Company Name:

Contact:

Address:

Phone #:

Maintenance and servicing of package treatment plants.

Electrician

Company Name: [redacted]

Contact: [redacted]

Address: _____

Phone #: [redacted]

Questions or concerns regarding electrical components of septic system.

Tank/Pump Chamber Supplier

Company Name: Dan's Precast

Contact: Ernie

Address: Duncan

Phone #: 250-746-8400

Questions or concerns regarding concrete septic tanks, pump chambers, risers or distribution boxes.

Pump and Materials Supplier

Company Name: Coriv

Contact: Office

Address: Duncan

Phone #: 250-746-8877

Questions or concerns regarding pumps, high float alarm or system components. This is the parts supplier.

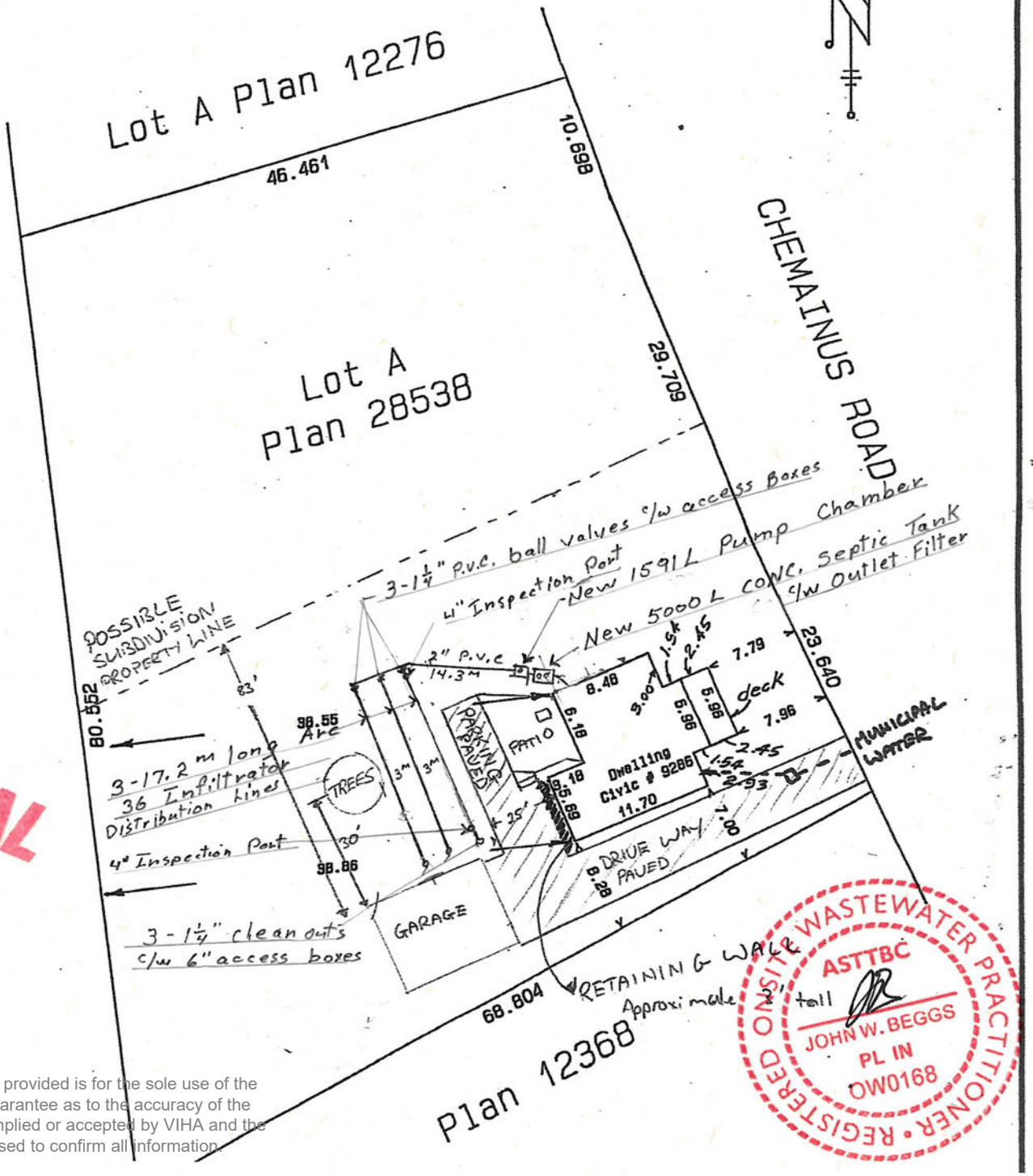
Asbuilt Dwg.

SITE SURVEY CERTIFICATE OF

LOT A, SECTION 12, RANGE 6, CHEMAINUS DISTRICT, PLAN 28538

SCALE 1:500

All distances are in metres.



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RECORD OF SEWERAGE SYSTEM

island health

Filing # (OFFICE USE ONLY) DC17/175

1. Property Information

☐ New Construction ☑ Alteration Upgrade ☐ Repair ☐ Amendment – Original Filing #

Tax Assessment Roll #: 16264.000

PID #: 001 759 531

Legal Description (Plan, Lot, District Lot, Block Numbers): Lot A, Section 12, Range 6, Chemainus District, Plan 28538

Street (Civic) Address or General Location: 9286 Chemainus Rd.

City: Chemainus

2. Owner Information

Name of Legal Owner: [redacted]

Mailing Address: 9286 Chemainus Rd.

Phone: [redacted]

City: Chemainus

Prov: B.C.

Postal Code: V0R1K5

3. Authorized Person Information

Name of Authorized Person: John Beggs

Mailing Address: 10355 Lt B. T.C. Hwy.

Phone: 250-246-9535

City: Chemainus B.C.

Prov: B.C.

Postal Code: V0R1K4

Registration #: OWO 168

Email: jkbeggscontracting@gmail.com

4. Structure Information

Sewerage System Will Serve:

☑ Single Family Dwelling ☐ Other Structure *(specify)* ☐ Other Dwelling *(specify)*

The sewerage system is designed for an estimated minimum daily domestic sewage flow of *(check one)*

☑ Less than or equal to 9,100 litres ☐ 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)*: >150

Information respecting the type, depth and porosity of the soil is attached ☑ Yes ☐ No

GPS Location of System *(decimal degrees)* Latitude 48.90190 N Longitude 123.71087

Horizontal Accuracy *(m)* +. 1 m ☑ Recreational GPS ☐ Differential GPS

6. Drinking Water Protection

Will the sewerage system be located less than 30 m from a well? ☐ Yes ☑ 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 *(m)*

7. System Information

Sewerage treatment method ☑ Type 1 ☐ Type 2 ☐ Type 3

8. Legal or Regulatory Considerations

☑ 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? ☐ Yes *(attach a copy of the order)* ☑ No

9. Plot Plan and Specifications

Plot Plan (to scale) and specifications are attached ☐ Yes ☑ No

☑ The plans and specifications are consistent with Standard Practice

Source of Standard Practice: ☑ Ministry of Health Standard Practice Manual ☐ Other

10. Authorized Person's Signature

Signature: [signature]

Date: Sept. 1/2017

OFFICE USE ONLY

Filing Accepted Date: Sept 5/17

Receipt Number: 223671

FAXED SEP 05 2017

Page ____ of ____

MWL

General Summary of the Sewage System

Date: Sept. 1 / 2017

Civic address: 9286 Chemainus Rd. Chemainus B.C.

Legal Description: Lot A, Section 12, Range 6, Chemainus District, Plan 28538

Site Assessment and Soil Evaluation Results

Total Flow Rate: 352 G.P.D., 1600 L.P.D Based on (Description): Single Family Dwellings.

# of Bedrooms Existing 2 4 Existing Floor area 1374 ft² 127.6 m² Total floor area max. 3552 sq ft, 330 sq m

Slope of site (at dispersal area): 5 % Restrictive layer depth: 760 inches, 150 cm

Restrictive layer: >150cm Bedrock
(SEASONAL HIGH WATER TABLE, LOW PERMEABILITY SOIL, OR BEDROCK)

Perk Rate Average: 3 min./inch, /2.5 cm OR — K(fs) mm/day

Soil at depth of infiltration trenches (depth 0 to 30 cm for sand mound):

Soil texture: Gravelly Sand Structure: Single Grain

Consistence (rupture resistance): Loose

Site constraints (S.C. 1-4): 1

General System Design Parameters

Tankage (Treatment Method)

System to be: Type 1, Distribution: Pressure

Septic (trash) tank to be: 1100 Imp. Gallons, 5000 Litres.

Pump Chamber to be: 350 Imp. Gallons, 1591 Litres.

Treatment Plant to be:
Manufacturer: N/A Model: N/A

Treatment capacity: — Imp. G.P.D., — L.P.D.

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Distribution Method

Depth of ASTM C33 sand below infiltration surface to be : ~~—~~ inches, ~~—~~ cm.

Total vertical separation: I.S. to restrictive layer: ≥36 inches, > 91 cm.

Hydraulic Loading Rate (HLR) = Type I system .71 G/ sq ft/day, 35 L/sq m/day

AIS = Flow Rate 1600 L.P.D. divided by HLR 35 L/sq m/day = 45.7 sq m

AIS = Flow Rate 352 G.P.D. divided by HLR .71 G/sq ft/day = 496 sq ft

Distribution area to be: 3 laterals of 55 L ft, 16.76 L m

total being 165 L ft, 50.4 L m

Width of trenches to be 36 inches (3 ft), 91 cm

Trenches to be or 10 ft, 3 m centres, and centre/end (circle one) feed.

Total Area of Infiltration Surface (AIS) = 495 sq ft, 46 sq m

Pump to be: Manufacturer: Barnes Model: SS50 Voltage: 120

Orifice Sizing to be: 3/16"

Orifice Spacing to be on: 36" centres

Piping:
Laterals to be: 1¼" Sch 40 P.V.C.

Manifold to be: 2" " " "

Force Main to be: 2" " " "

Total Flow Rate: 47.3 U.S. G.P.M. or 250 L.P.M.

Lateral Flow Rate: 15.76 U.S. G.P.M. or 71.67 L.P.M.

Design Rationale: The existing 2 bedroom home is for sale and a septic inspection was performed and showed signs of failure.

A new septic tank and drainfield will be installed to accomodate up to a 4 bedroom 3500 sq. ft. house.

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Observed Soil Conditions

Test Pit Logs

Date*: Aug. 31/2017 Site: 9286 Chemainus Rd. Logged by: J. Beggs

TP# 1 Pit Location: North Pit Slope: 5%

Soil Horizons (depths measured in cm / m / in / ft)

Depth from	Depth to	Colour	Texture	Structure	Rupture resistance (or density)	Coarse gravel (%)	Roots depth & quantity	Mottles depth & quantity	Moisture seepage
0	15	Black	Loamy Sand.	Single Gr.	Loose	0%	many	Nil	Dry
15	>150	Lt. Brown	Sandy Gravel	Single Gr.	Loose	6%	many to 125	Nil	Dry

Notes

TP# 2 South Pit.

Depth from	Depth to	Colour	Texture	Structure	Rupture resistance (or density)	Coarse gravel (%)	Roots depth & quantity	Mottles depth & quantity	Moisture seepage
0	20	Black	Loamy Sand.	Single gr.	Loose	0 %	many	None	Dry
20	>196	Lt. Brown	Sandy Gravel	Single gr.	Loose	6-7 %	many to 125	None	Dry

Notes

Based on USDA *Field Book for Describing and Sampling Soils* (2002).
* Date water table measured

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Percolation Tests

Civic Address: 9286 Chemainus Rd. Chemainus B.C. Date: Aug. 31/2017

Legal Address: Lot A, Section 12, Range 6, Chemainus District, Plan 28538

Holes pre-soaked for — hrs.

Perc. hole # 1
Location: North Pit
min. / inch 2.5
min. / inch 2.5
min. / inch 3.
min. / inch 3
Depth: 24 inches, 61 cm

Perc. hole # 2
Location: South Pit.
min. / inch 3.5
min. / inch 3.5
min. / inch 3.5
min. / inch 4
Depth: 24 inches, 61 cm

Perc. hole #
Location:
min. / inch
min. / inch
min. / inch
min. / inch
Depth: ___ inches, ___ cm

Perc. hole #
Location:
min. / inch
min. / inch
min. / inch
min. / inch
Depth: ___ inches, ___ cm

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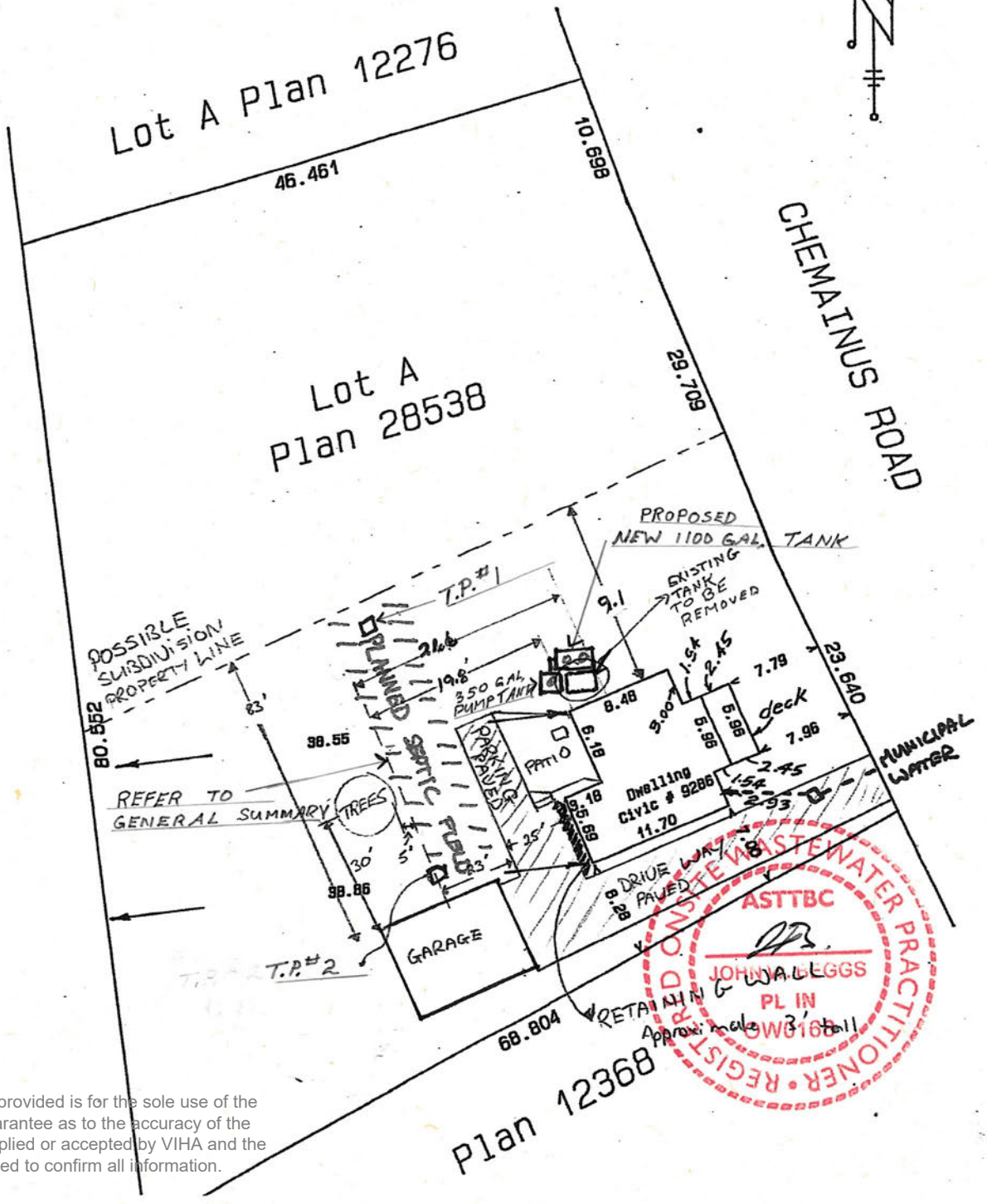
SCALE 1:500

All distances are in metres.



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Worksheet for pressure distribution system design

Based on *PRESSURE DISTRIBUTION NETWORK DESIGN By James C. Converse January, 2000 and Recommended Standards and Guidance For Pressure Distribution Washington State Department of Health*, by Ian Ralston, TRAX Developments Ltd.

Tables referred to as "WS" are from the latter and as "PD" are from the former. This is an iterative process, so each step may have to be repeated before final design.

A. Design of the Distribution Network:

1 Establish Field length

Based on loading rates and design flows select total length of dispersal unit (eg trench or bed).

DESIGN FLOW = 1600 L.P.D. (352 G.P.D)

AVERAGE FLOW = 800 L P.D (176 G.P.D.)

LENGTH OF TRENCH = 16.76 M (55 Ft.)

WIDTH OF TRENCH = 0.91 M. (3 ft.)

NETWORK TYPE (TRENCH OR BED) = Trench

2 Establish initial trench layout, Determine lateral lengths

Based on conditions of site select appropriate trench layout and initial manifold position (eg end or centre feed or no manifold).

MANIFOLD TYPE = 2" Sched 40 PVC

Based on above determine lateral lengths, if there are several lengths, choose limiting lengths for initial rough design.

LATERAL LENGTH = 16.76 m (55 Ft.)

3 Determine orifice size, spacing, position.

Start with approx 6 sqft per orifice, for 24" trench this is 36" spacing. Position affects dosing design. Orifice size, for STE start with 3/16" and adjust as necessary wrt to dose volume required and pump/force main design. For soils or situations requiring frequent dosing with filtered effluent start with 1/8".

ORIFICE SIZE = 3/16"

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ORIFICE SPACING = .91 (36")

4 Determine lateral pipe diameter and pipe class

Using tables LATERAL DESIGN TABLES WS P 39 on.

LATERAL DIAMETER = 1 1/4"

LATERAL PIPE CLASS = Sch 40 PVC

5 Determine number of orifices per lateral

Divide orifice spacing from (3) above into lateral length from (2) above and add 0.5 for center feed or 1 for end feed and round to nearest whole number.

ORIFICES PER LATERAL = 19

6 Determine lateral discharge rate

Select distal pressure (pressure at last orifice of longest lateral), start with 3 feet for 3/16" and larger or 5 feet for 1/8 and 5/32" orifices.

DISTAL PRESSURE = 3 FT.

Orifice discharge from WS – ORIFICE DISCHARGE RATE DESIGN AID

ORIFICE DISCHARGE = .86 g.p.m

Orifice discharge x number of orifices per lateral from (5) above to give

LATERAL DISCHARGE = .86 x 19 = 16.3

7 Determine number of laterals and spacing between laterals

For trench design spacing at 6 or 10 feet, for beds per design. Use information in (2) above.

NUMBER OF LATERALS = 3

SPACING BETWEEN LATERALS = 10 FT.

8 Calculate manifold length and size

Using information from (2) and (7) determine manifold length and then use WS MAXIMUM MANIFOLD LENGTHS tables to select minimum manifold size, using lateral discharge from (6) above, Orifice size from (3) above and lateral spacing from (7) above.

MANIFOLD LENGTH = 20 FT.

MANIFOLD SIZE = 2"

9 Determine distribution network discharge rate

Multiply lateral discharge rate from (6) above x number of laterals from (7) above

NETWORK DISCHARGE RATE = 49 G.P.M.

B. Design of the Force Main, Pressurization Unit (Pump or Siphon), Dose Chamber and Controls.

1. Develop a system performance curve.

Determine approximate network head requirement by multiplying Distal pressure (from (6) above) x 1.31

NETWORK HEAD REQUIREMENT = 4'

Determine static head, from off float of pump chamber to highest point of network.
If negative take steps to prevent siphoning of pump chamber and, if this is by using orifice, add orifice discharge rate to network discharge and use orifice head (3 feet min) as static head.

STATIC HEAD = 4'

SYSTEM DISCHARGE = 49 G.P.M.

Determine friction loss in force main, first select initial force main sizing, use manifold size or next pipe size up. Base on system discharge. Check that flow velocity is over 2 and under 10 feet per second using PD Table A-2. Friction loss in plastic pipe (page 15), then use that table to provide head loss for force main based on system discharge and length. Add length for fittings as required from PD Table A-3. Friction losses through plastic fittings in terms of equivalent lengths of pipe.

FRICTION LOSS IN FORCE MAIN = 6 FT.

Use this step several times for discharges either side of the system discharge to generate a system curve if desired, see example in PD page 10.

3 Select pump (or siphon)

Use pump curves and system curves to select pump.

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ITERATE UNTIL PUMP AND FORCEMAIN ARE ECONOMIC.

4 Determine dose volume

Based on soil type select type of dosing and minimum/desired dose frequency.

TYPE OF DOSING (demand or timed) = Demand

DOSE FREQUENCY = 3 to 4 per day

Determine dose volume, by dividing frequency into AVERAGE flow.

DOSE VOLUME = 64 gal.

Check dose volume against draining volume of network and any part of force main that drains. Ensure dose volume is 5-10 x the draining volume. If not, consider constraints (soil type etc) and redesign manifold location etc to achieve this. Use pipe volume data from PD Table A-4. Void volume for various diameter pipes. Page 16 or WS similar table.

DRAINING VOLUME = 6 gal.

Once satisfactory dose volume is achieved, determine pump vault size and float range required. Include drainback volume in float range if required.

PUMP VAULT SIZE = 350

AREA OF PUMP VAULT = 16 sq.ft.

VOLUME OF VAULT PER FT DEPTH = 96 gal.

DRAINBACK VOLUME = 6 gal.

FLOAT RANGE FOR DOSE = 8"

Check that vault has sufficient depth to provide reserve capacity and to space pump off vault floor. Reserve volume for timed systems should be designed per EPA manual recommendations. Add reserve for headspace above alarm float based on float range and suitable reserve volume. If required add reserve volume for drainback.

RESERVE VOLUME REQUIRED = 144 gal.

RESERVE DEPTH REQUIRED = 18"

Select alarm float and alarm float height.

After installation check that the floats switch as designed.

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