San Juan County Health & Community Services

Homeowner On-Site Sewage System Inspection Certification Workshop

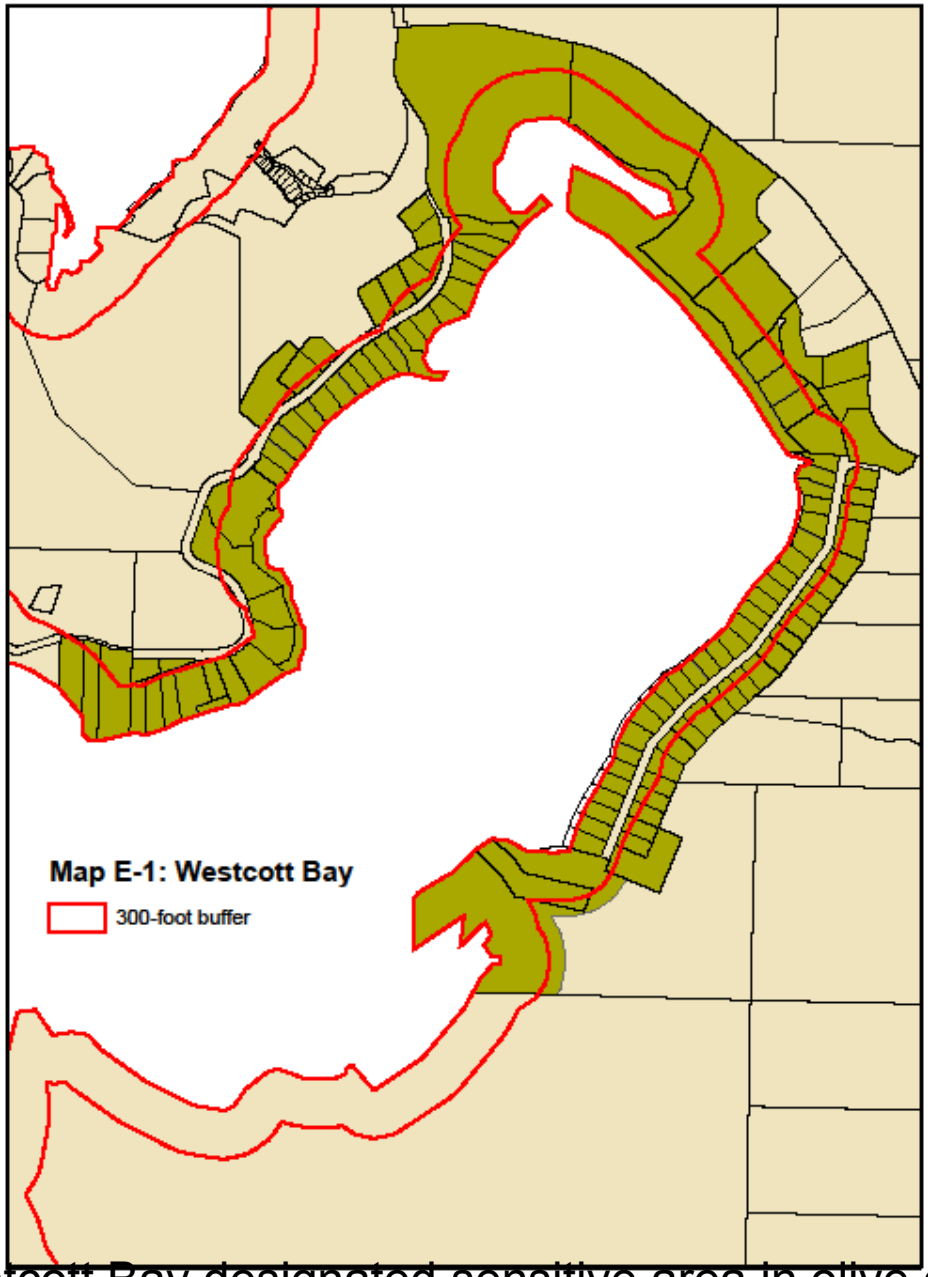
Please sign in, pick up your package, sit down and review your packet while waiting for the class to begin.

Why Inspect?

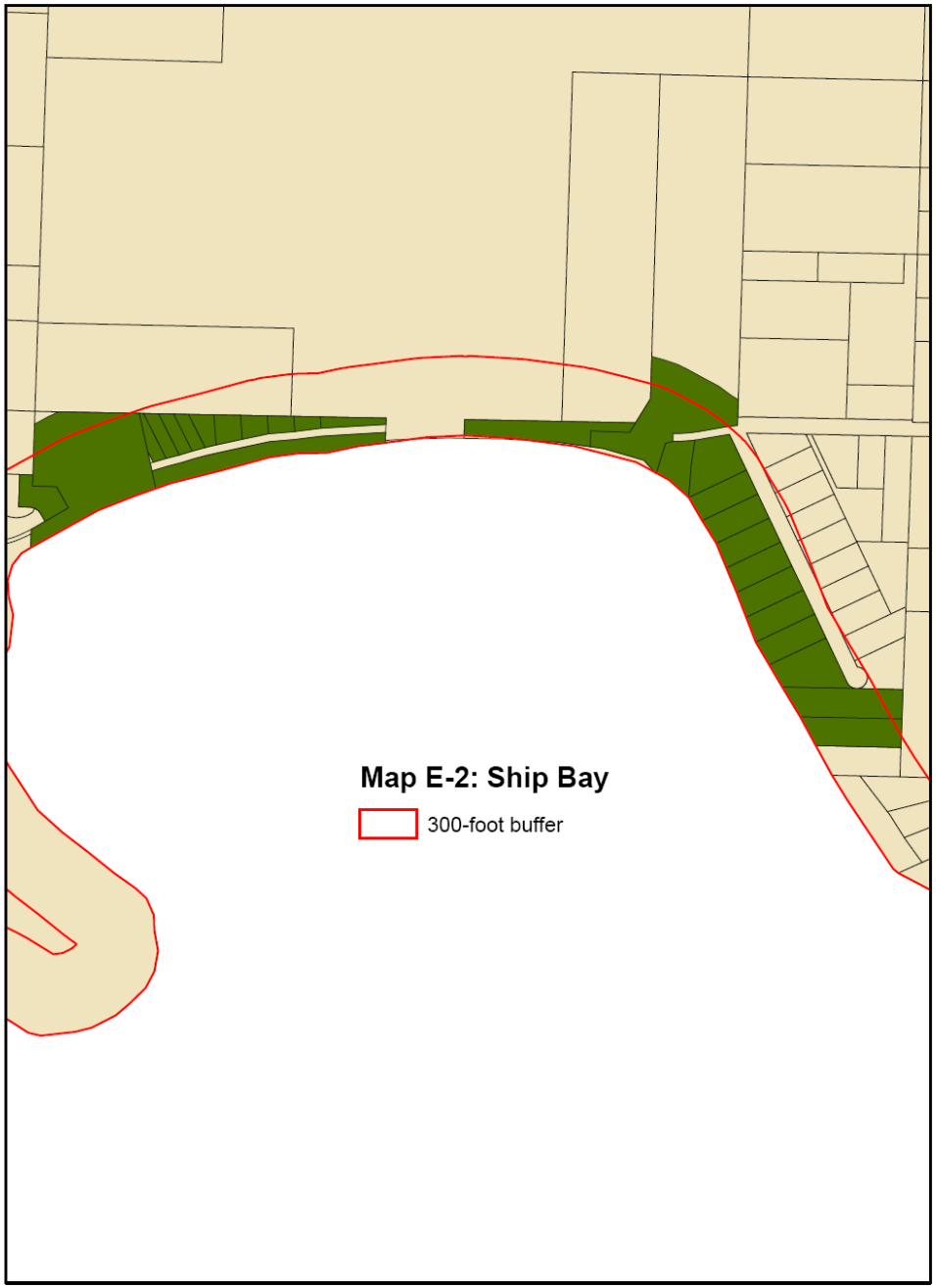
- To identify failing septic systems, prevent future failures, and avoid costly repairs.
- Failing septic systems pollute aquifers and marine and fresh surface waters and are a public health threat.
- The septic system is your most expensive home appliance. A failed septic system can cost over 20k dollars to replace.

San Juan County O.S.S. Operation and Maintenance Plan

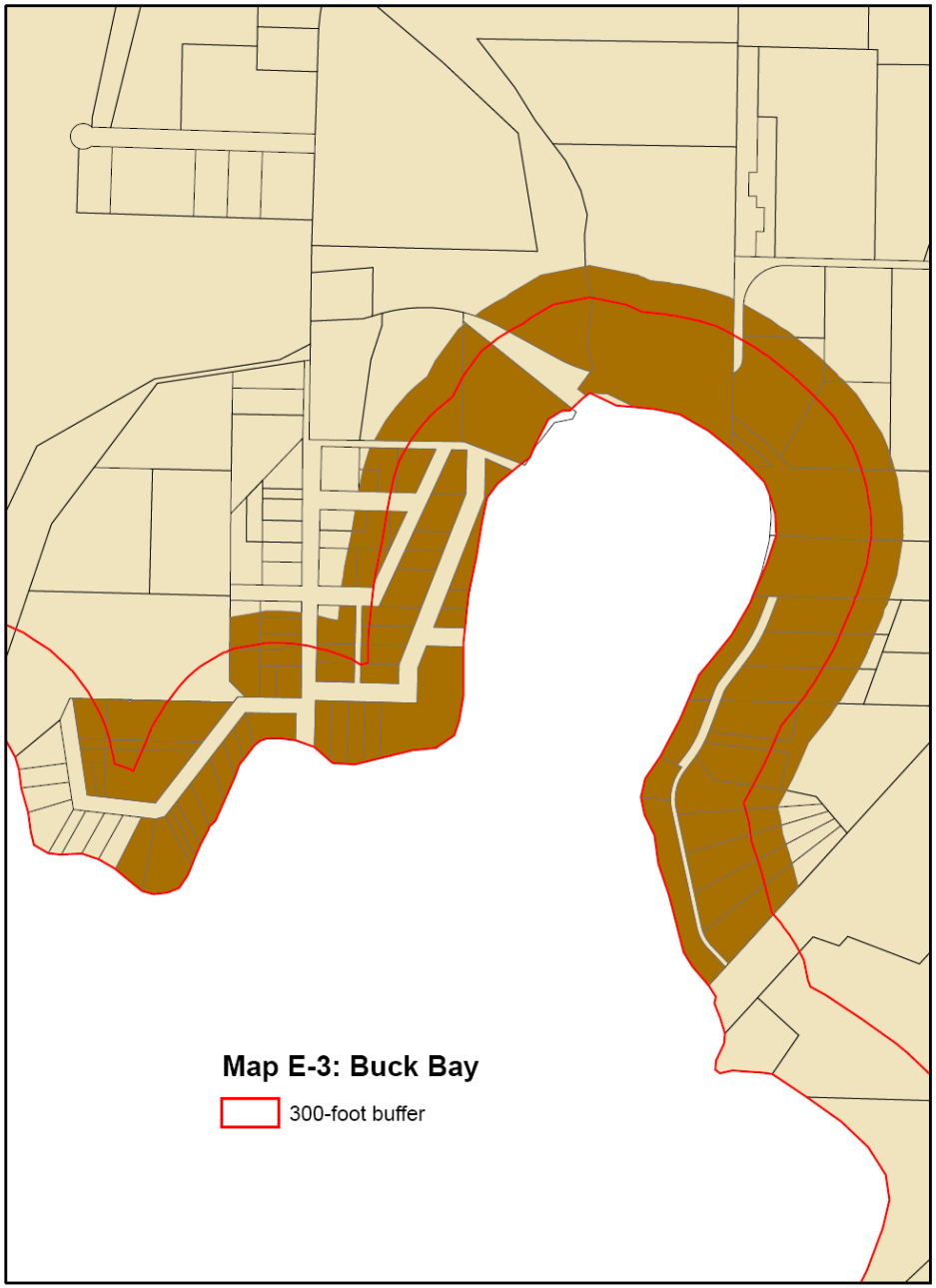
- All septic systems (i.e. gravity, pressure, aerobic, etc…) need to be inspected beginning in 2009
- Conventional gravity systems need to be inspected every three years.
- Alternative systems are required to be inspected annually (pressure distribution, mound, sand filter).
- All on-site sewage systems located in designated sensitive areas (shellfish growing areas) are required to be inspected annually regardless of the type of system.
- Aerobic treatment units (i.e. Whitewater, Multi-flo, & Nyadic) and proprietary systems (i.e. Advantex) are also required to be inspected annually but are not covered by this workshop. Contact your septic system designer to obtain information on being certified to inspect.



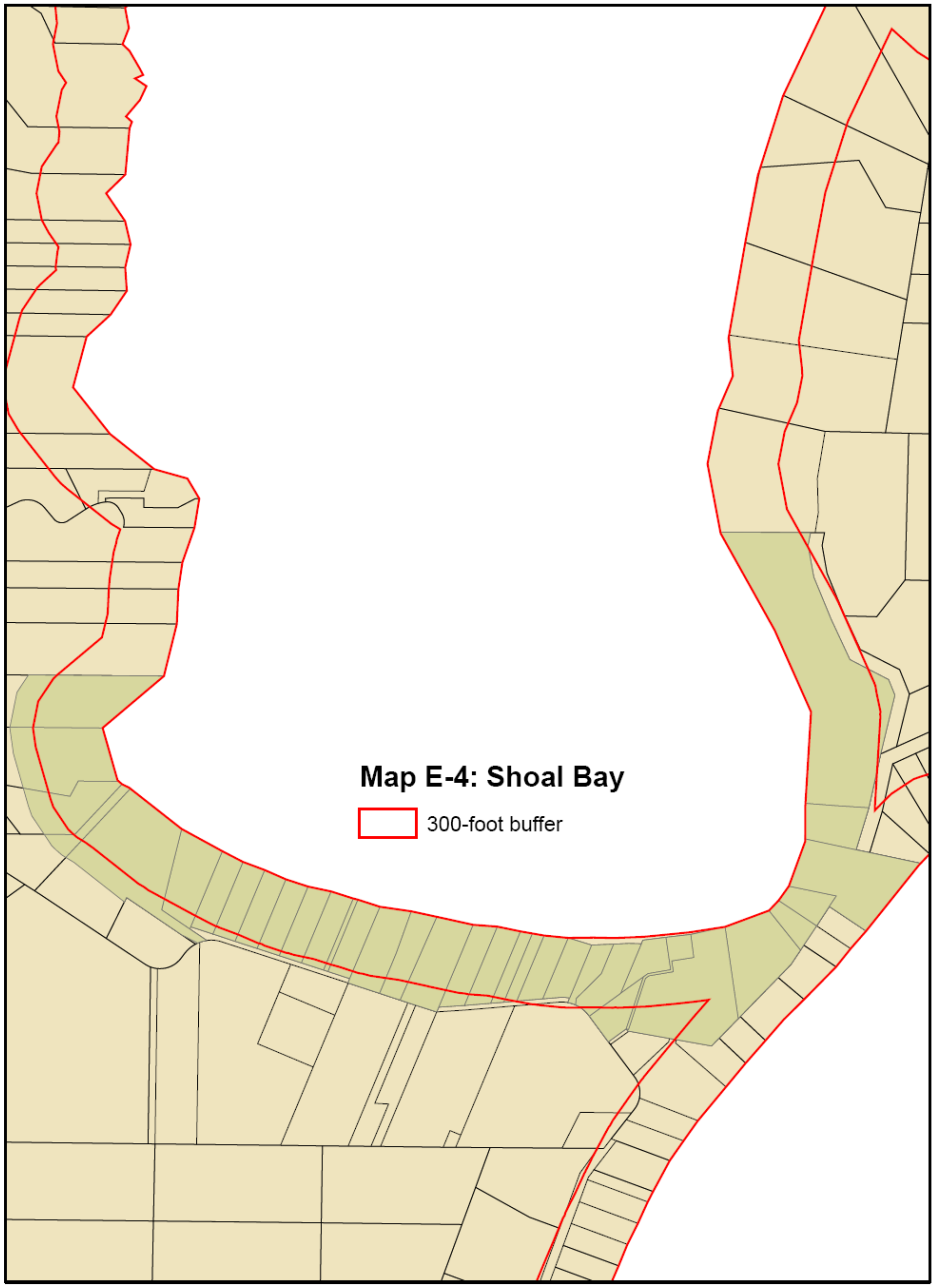
Westcott Bay designated sensitive area in olive green.



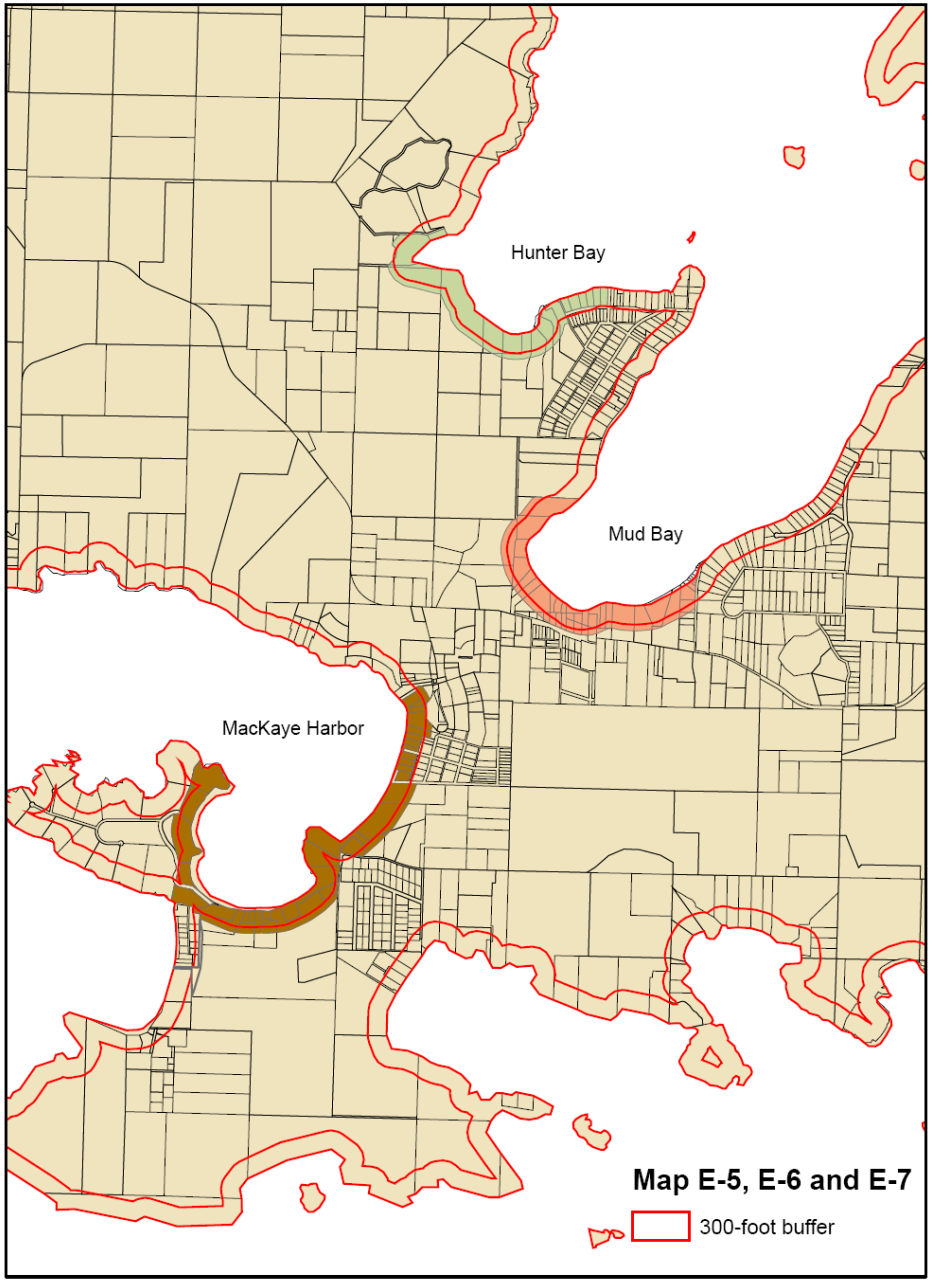
Ship Bay Sensitive Area, Orcas Island



Buck Bay Sensitive Area, Orcas Island



Shoal Bay Sensitive Area, Lopez Island



Hunter Bay, Mud Bay, MacKaye Harbor Sensitive Areas, Lopez Island

HOMEOWNER TRAINING

- You may only inspect systems on property that you own (allowances are made for certain family members).
- Let us know if you have more than one parcel with a septic system.
- There is a $25.00 filing fee due with each inspection report.

VERIFICATION OF INSPECTIONS

- Required prior to obtaining a building permit.

- Required at time of sale of property.

Homeowner Requirements

- O&M Program to be implemented in 2009.
- Homeowners are required to submit an inspection report for their septic system(s) in 2009 regardless of the type of system.
- Community systems require a licensed waste water inspector to inspect the system. Certified homeowners can inspect their own septic tank, but the inspection must be review by the licensed professional who is required to inspect the rest of the system.

Health & Community Services
San Juan County
P.O. Box 607 ◆ 145 Rhone, Friday Harbor, WA 98250
Phone: (360) 378-4474 Fax: (360) 378-7036

+1

SEWAGE DESIGN APPLICATION

Design No: 99-611-03 Fee: 300.00 Date: 11-15-99

This Application is to be used for any activity requiring a Sewage Design per SJCC 13.04. When numbered, signed, and dated, this becomes a Sewage Design. Please fill out the form completely, or it will not be accepted. Sewage Designs are valid for four years from the date of issuance. Applicant may appeal any decision pertinent to this design with the San Juan County Board of Health. An approved design is required before the issuance of a new installation permit.

PROPERTY INFOR

Tax Parcel Number: [redacted] 8

Island: SAN JUAN Subdivision: [redacted]

Property Size: 3.67AC. (acres/square feet)

Directions to Property: _____

APPLICANT INFORMATION:

Name of Applicant: TONY HALL Telephone: _____

Address: 3443 WEATHERED AVE

City: BOISE State: ID Zip Code: 83706

Application Type (✓ one)
- [X] New Residential
- [ ] New Non-residential/Commercial
- [ ] Repair
- [ ] Revision
  - Original Design #: _____
- [ ] Connection to Community System
- [ ] Privy
- [ ] Other (specify): _____

Water Supply (✓ one)
- [X] Individual Well (serves only 1 house)
- [ ] Community Water Supply
  - Water System Name: _____
- [ ] Other (specify): _____

Proposed System Type (✓ one)
- [ ] Gravity Distribution
- [X] Pressure Distribution
- [ ] Mound
- [ ] Sand Filter
- [ ] Aerobic Unit
- [ ] Other (specify): _____

Soil Registration (Log) Number for sites registered prior to January 1, 1998: _____

Proposed Number of Bedrooms: 3 BDRM.

Is any part of the project within 200 feet of the shoreline? ☐ Yes ☒ No

Is any part of the project within the service area (L.I.D or town limits) of a sewer utility? ☐ Yes ☒ No

Is application for single family residence for Applicant's own use? ☒ Yes ☐ No

I hereby certify that I have read and examined this application and know the same to be true and correct. All provisions of laws and ordinances governing this project will be complied with whether specified herein or not. I understand that the granting of this design does not presume to give authority to violate or cancel provisions of any other state or local law regulating construction or land or shoreline use.

SENT FOR: TONY HALL 11/9/99 — Signature of Applicant, Date

RICK PETRO 11/9/99 — Signature of Designer, Date

FOR OFFICIAL USE ONLY

Conditions for Approval: Note wetland setback Note: keep drainfield high on slope near upper log holes.

Rocky Cotrics signature 1-20-00

Permit Center Review: Roberta Seed Date: 11/03/99 Design Approved: [signature] Date: 11/30/99

S.J.C. PERMIT CENTER
NOV 16 1999

DESIGN

Site Plan: Attach or draw, in the space provided below, a scaled site plan showing the location of the proposed septic system including the septic tank, pump chamber, treatment component(s) and drainfield, in relation to house(s), property lines, wells, streams, slopes, ditches, swales, cuts, fills, drainage easements, trees, etc. Show north and north arrow.

Drawing Scale: Inches = 10 Feet

Septic tank size: ____

Drain field length: ____

Soil App. Rate: ____

Contain drain policy per SCDHO:
"System may need to be upgraded
to an enhanced treatment system
if the curtain drain fails to
perform adequately."

Soil Log #1	Soil Log #2	Soil Log #3	Soil Log #4
0-8"-dark brown sandy loam 8-27"-moist sand w/ some gravel over sandy hardpan	same as #1 to 36"	same as #1 to 34"	same as #1 to 45"
Water Table	Water Table	Water Table	Water Table

Attach separate sheet(s) for additional soil logs. Attach separate sheets for calculations, specifications & cross sections if necessary.

Design Checklist

- ☐ Plot Plan showing distances to components
  - ☐ Septic
  - ☐ Water line
  - ☐ Well, bldgs, bluffs
  - ☐ Wells within any adjacent property line (within 100 feet of proposed system)
  - ☐ Property lines
  - ☐ Water bodies, include streams, lakes, marsh, hydrantheads
- ☐ Slope indication (%) present?
- ☐ Timeline of septic tank treatment
- ☐ Component(s) installed & removed after
- ☐ Existing or proposed water lines
- ☐ Roads & driveways

Calculations

- ☐ Lateral length
- ☐ Orifice spacing & total # of orifices
- ☐ Orifice size
- ☐ Total pounds lime and gallons per acre

Specifications

- ☐ Pipe material, include both pipe size and type
- ☐ Plan view
- ☐ Required panels, screens & covers

Cross Sections

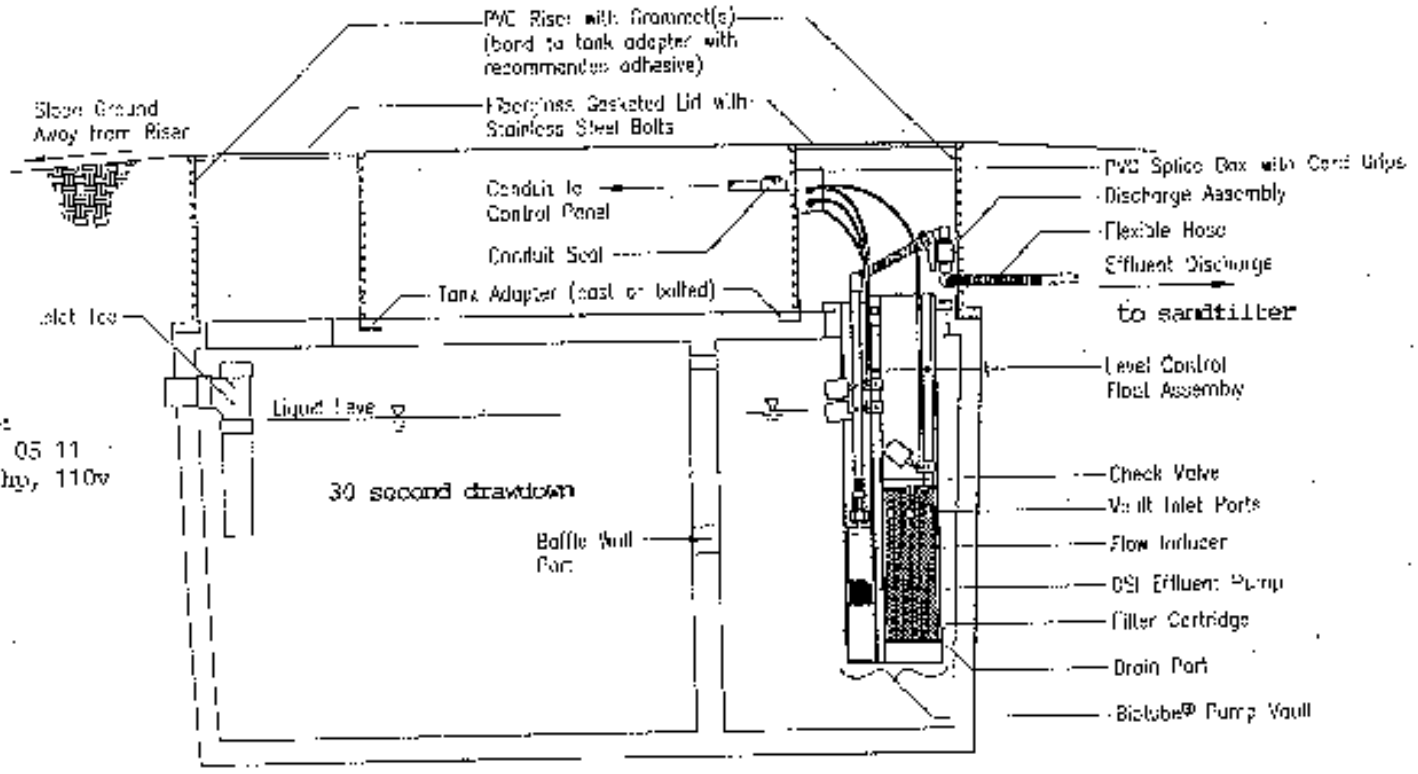
- ☐ Mound
- ☐ Sand Filter
- ☐ Curtain drain
- ☐ Trench depth from original grade, show slope & trench depth in slope, ___%
  Depth of trench ____
- ☐ Clean out, Riser & backfill not exceed ____

Effluent Pumping System - Dual Compartment Drawdown

1000 gal. septic tank

Must be watertight

Dose: 14 gallons per dose/17-18 per day
Timer setting: 30 seconds "on", 29.5 minutes "off"

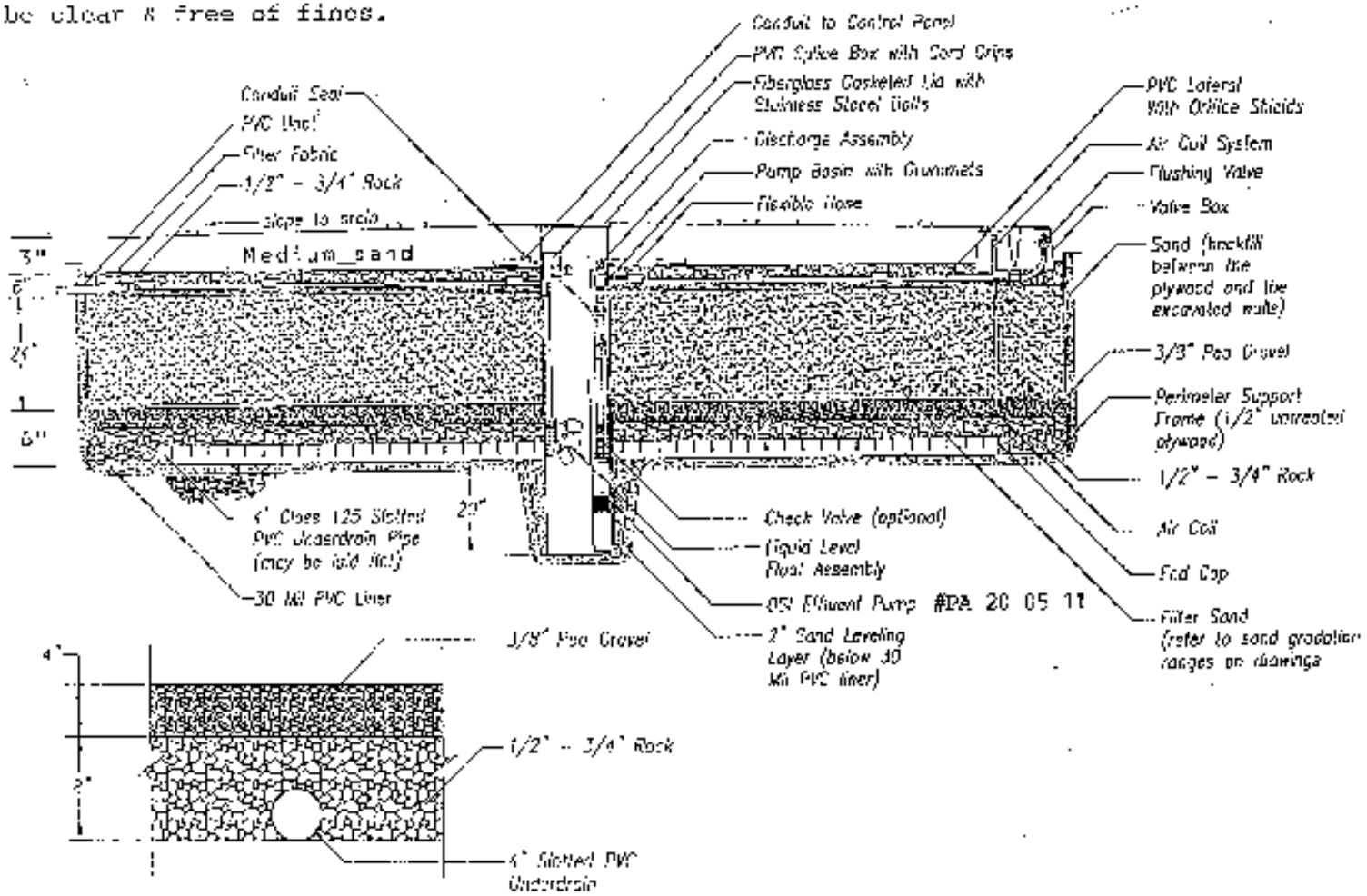


P.O. BOX 462
EASTSOUND, WASHINGTON 98245
(206) 376-2762

CALCULATED BY
DATE
CHECKED BY
DATE
SCALE
1736 42005

Typical Intermittent Sand Filter with Pump Discharge

All Sandfilter materials (filter media, distribution rock, underdrain rock) must be clean & free of fines.



UNDERDRAIN DETAIL FOR PUMP DISCHARGE

EASTSOUND, WASHINGTON 98245
(206) 376-2762

CALCULATED BY ____ DATE ____
CHECKED BY ____ DATE ____
SCALE ____

1736 4/2005

ORCAS SEWAGE DESIGN, INC.
P.O. BOX 492
EASTSOUND, WA. 98245
360/376-2762

JOB: BUCKNER
TAX PARCEL # 1736 42005

10' X 10' FASTRATE SANDFILTER

A. DAILY FLOW

1. Number Bedrooms = 2
2. Gallons Per Bedroom = 120
3. Total Gals. Per Day = 240

B. BED AREA

1. Gallons Per Day = 240
2. Fill Material Selected - 4 x 50 Sand (ASTM C-33 is unacceptable)
3. Infiltration Rate of Selected Fill = 4 gals./sq. ft./day
   Example of Fill Material: Eliminate from ASTM C-33 everything that passes a #50 mesh screen. Anything coarser is acceptable.
4. Total Square Feet - round to 100 feet
5. Bed Width = 10 feet
6. Bed Length = 10 feet

C. DISTRIBUTION NETWORK

1. Orifice Spacing = 14 inches
2. Orifice Diameter = 1/8 inch
3. Lateral Length = 8.75 ft.
4. Orifice/Lateral = 8
5. Lateral Diameter = ¾ inch
6. Number of Laterals = 8
7. Distance Between Laterals = 15 inches
8. Distance Between Lateral & Edge of Bed = 6.5 inches
9. Manifold Diameter = 1 ¼" inch
10. Manifold Length = 8.75 ft.
11. Transport Pipe Diameter 1 ½"
12. Transport Pipe Length = 10'
13. Total Gallons Per Minute = 27.7 G.P.M

ORCAS SEWAGE DESIGN, INC.
P.O. BOX 492
EASTSOUND, WA. 98245
360/376-2762

JOB: BUCKNER
TAX PARCEL # 1736 42005

10' X 10' FASTRATE SANDFILTER (CONT'D)

D. PUMP SPECIFICATIONS

1. Total Gallons per Minute Required = 27.7 G.P.M.
2. Gallons per day = 240
3. Pump Tank = 1000 gallon septic tank
4. Pump Head = 17.1 ft. with friction loss
5. Transport Pipe = 10' of 1 ½" pvc (sch40)
6. Pump : High Head Effluent Pump
   #P30 05 11
   ½ H.P., 110v
   Control Panel: MVP #SSF1 PT RO W/ ETM & CT

E. DOSING FREQUENCY

1. Doses per day = 17-18 per day
2. Dose Volume = 14 gals. per dose
3. Timer Setting = 30 seconds "on"
   29.5 minutes "off"
4. Alarm Float = 3"
5. Reserve Capacity = 402
6. Dose Volume is 10 – times the drainable interior volume.

F. DESIGN PARAMETERS - Residential Wastewater Characteristics:

For proper operation of the system the septic tank wastewater strengths must be within the guidelines set forth below:

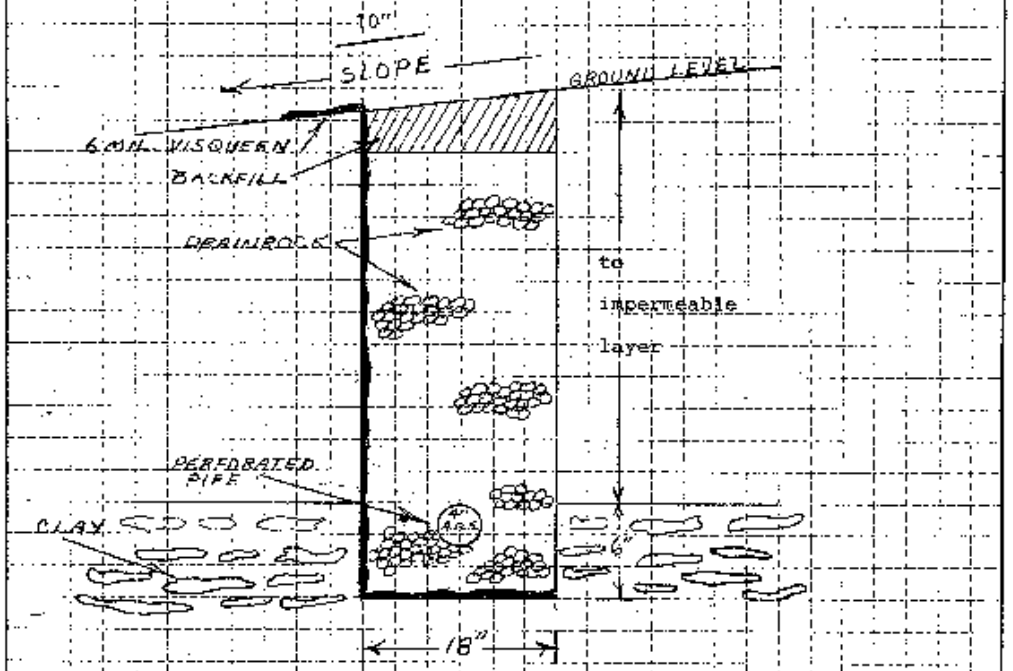
	Average	Occasional Peak
Gallons per day	120	<240
BOD	130	200
TSS	40	60
O&G (oil & grease)	20	25

ORCAS SEWAGE DESIGN, INC.
repair area
2 bdl.
1000 gal. sept tank w/vault
scum system
Top of bank
approx. shoreline
N

ORCAS SEWAGE DESIGN
P. O. Box 492
EASTSOUND, WASHINGTON 98245
(206) 376-2752

JOB Orcas
SHEET NO. 7 OF 7
CALCULATED BY DATE
CHECKED BY DATE
SCALE 1621 50017

CURTAIN DRAIN DETAIL



* INSTALL CURTAIN DRAIN 10' FROM DRAINFIELD ON ALL BOUNDARIES SHOWN. SEE SITE PLAN.

NOTE: CURTAIN DRAIN POLICY PER THE SAN JUAN COUNTY HEALTH DEPT.

"SYSTEM MAY NEED TO BE UPGRADED TO AN ENHANCED TREATMENT SYSTEM IF THE CURTAIN DRAIN FAILS TO PERFORM ADEQUATELY."

ON-SITE SEWAGE DISPOSAL PERMIT

SAN JUAN COUNTY
HEALTH DEPARTMENT

FINAL

POST AT SITE
CALL FOR INSPECTION

NO. 2520-02 issued to: JOSEPH & SARAH D. HALL

for location of: HILLVIEW TERRACE #2 S 2 T35 R3

LOT 73

TYPE OF SYSTEM PT#5502 51073

☐ NON-WATER BORNE
☐ STANDARD SEPTIC TANK DRAINFIELD
☒ SPECIAL DESIGN

other specifications:

1. 6"-12" additional cover over the system
2. CONTOURS IN THE DRAINFIELD AREA SHOULD BE CLOSELY FOLLOWED WITH THE DRAINLINES. THIS MAY NECESSITATE THAT SOME PORTIONS BE HAND INSTALLED.
3. INSTALLER SHOULD CONTACT THIS DEPARTMENT FOR PIPE SPECIFICATIONS BETWEEN TANK AND DRAINFIELD.
4. THRUST BLOCKS SHOULD BE INSTALLED AT ALL POINTS OF STRESS ALONG THE TIGHT LINE.

SPECIFICATIONS

Tank 1000 gallons
field 225 (in ft.)
6 " gravel below tile
☐ Curtain drain ——— " depth
Maximum trench bottom depth below original grade 12" "

APPROVAL Leigh Blodgett RS date 3-11-81
SANITARIAN

HEALTH DEPT. 378-4474
P.O. BOX 607 FRIDAY HARBOR, WA 98250

~~Clear [illegible]~~ 4/8/87

VOID AFTER ONE YEAR +1

Renewed until 1-23-90 KDB

Starting 4/16/87 - CL Jewett

okay to cover 4/28/87 CL

SAN JUAN COUNTY AS-BUILT

An As-Built must be finished and filed with the Health Department within ten days of completing any installation. SJC 13.04.110.

SYSTEM OWNER: Joseph & Sarah Hall Permit # 2520

SYSTEM ADDRESS: Box 861, Friday Harbor Island San Juan

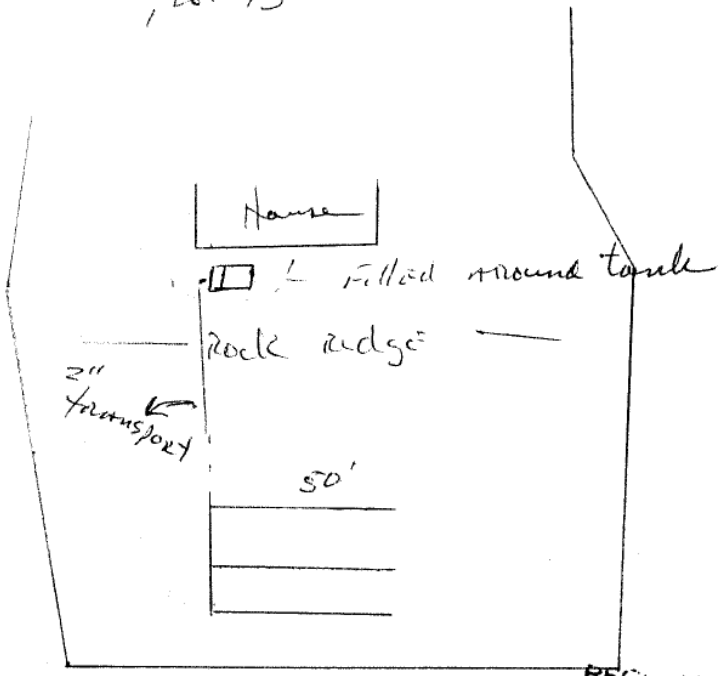
Mellowview Terrace No 2, Lot 73

LOCATION: sec: tws: R:

Greg Jewett

INSTALLER signature

Sketch actual location of house and sewage disposal system. Show dimensions of sewage system including distances from house to septic tank and fixtures. Include distances to: wells, streams, ditches, curtain drains, embankments, etc.



SEPTIC TANK: 1000 Plastic gallons.

DATE INSTALLED: 4-28-87.

DRAINFIELD LENGTH: 150 ft.

DRAINFIELD TRENCH WIDTH: 3 ft.

DATE INSTALLED: 4-29-87.

AMT OF GRAVEL USED: 10 cu yds.

Pump, alarm, and float specs. must be included.

OK
KDB
5-11-87

RECEIVED
APR 29 1987
San Juan County Health Dept.

RETURN TO: San Juan County Health Department, P.O. Box 607, Friday Harbor, Washington 98250-0607

SAN JUAN COUNTY AS-BUILT

THIS FORM IS REQUIRED TO BE PROPERLY FILLED OUT AND SUBMITTED TO SAN JUAN COUNTY HEALTH AND COMMUNITY SERVICES WITHIN TEN DAYS OF COMPLETING ANY INSTALLATION. SJC 13.04.110

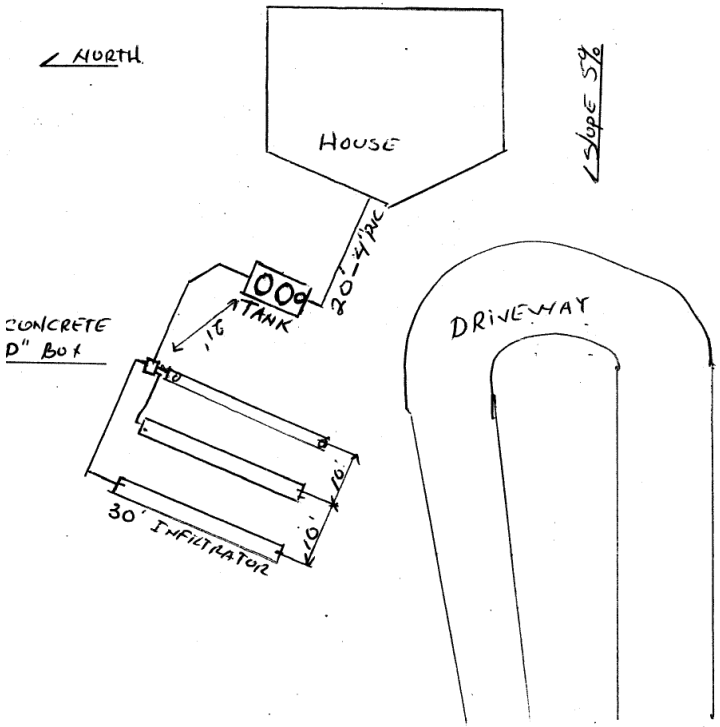
PROPERTY OWNER: JOE GOLDBERG PERMIT #: 98-DAT-155A

TAX PARCEL #: 252323004 ADDRESS: 75 ANDREWS LANE, LOPEZ

DRAW TO SCALE A DIAGRAM SHOWING LOCATION OF SYSTEM IN RELATION TO HOUSE(S), SEPTIC/PUMP TANKS, WELLS, STREAMS, DITCHES, CURTAIN DRAINS AND EMBANKMENTS. USE A NORTH SEEKING ARROW. NOTE ANY DEVIATIONS FROM THE ORIGINAL DESIGN. SCALE FROM 1 - 20 UP TO 1 - 50.

SEPTIC TANK: 1,000 GAL DATE INSTALLED 06-11-98

DRAINFIELD: FT 90 WIDTH 3 DATE INSTALLED 06-11-98



RECEIVI
MAR 1 19
HEALTH & COMMUNITY

INSTALLER NAME AND SIGNATURE: Michael D. Pate DATE: 2-10-99

APPROVED/DISAPPROVED: [illegible] DATE: 4/26/99
Office Review

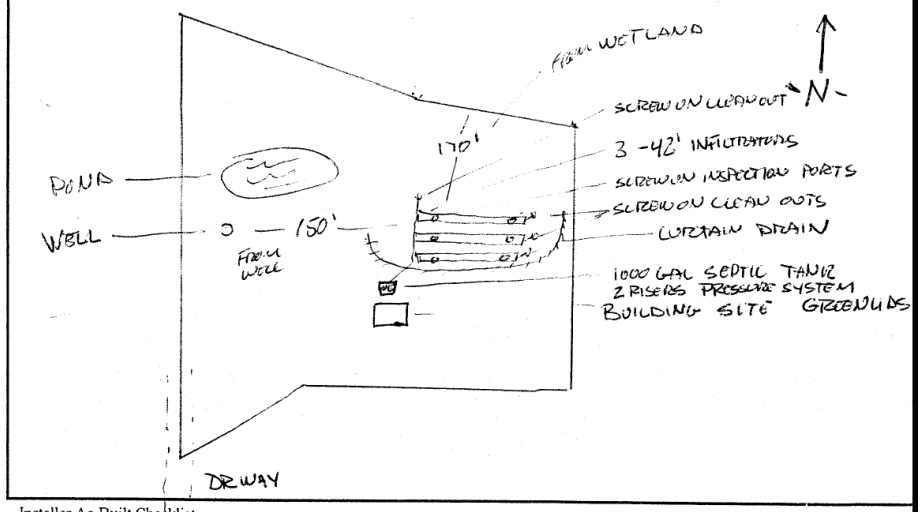
RETURN TO: SAN JUAN COUNTY HEALTH AND COMMUNITY SERVICES, P.O. BOX 607, Friday Harbor, WA 98250

AS-BUILT

Plot Plan: Attach or draw in the space provided below a scaled plot plan that indicates a diagram showing location of system (septic tank, pump chamber, treatment component(s) and drainfield) in relation to house(s), property lines, wells, streams, ditches, curtain drains, and embankments. Use a north seeking arrow. Note any deviations from the original design. SCALE FROM 1 - 20 TO 1 - 50.

Parcel Number: 3 6 1 8 - 1 4 0 0 8

Name: TONY HALL



Installer As-Built Checklist:

		Yes	No	N/A
A.	Septic Tank and Pump Chamber			
1.	The septic tank baffles and partition wall are intact and in working order?	X		
2.	Septic tank size (gallons): 1000 Pump Chamber (gallons): 400			
3.	An effluent filter or pump screen (circle one) was installed? Make: TRANKO 420 051			
4.	Risers installed on both compartments of septic tank, over effluent filter and pump chamber?	X		
B.	Drainfield - ☐ Gravity Distribution ☒ Pressure Distribution			
1.	Drainfield trench or bed bottom installed level and raked?	X		
2.	Distribution box water leveled?			X
3.	Distribution box bedded in concrete or sand (circle one)?			X
4.	Observation ports installed?	X		
5.	Total Dynamic Head in Feet (if applicable):			
C.	Treatment Component - ☐ Sand Filter ☐ Other:			
1.	Timer Installed?		X	
2.	Timer settings: Pump on (seconds): Pump off (mins or hrs):			
3.	Total Dynamic Head in Feet (if applicable):			

THIS FORM IS REQUIRED TO PROPERLY FILLED OUT AND SUBMITTED TO SAN JUAN COUNTY HEALTH AND COMMUNITY SERVICES WITHIN TEN (10) DAYS OF COMPLETING ANY INSTALLATIONS (SJC 13.04.110). I hereby certify that I have read the information submitted in this document and know the same to be true and correct. All provisions of laws and ordinances governing this project will be complied with whether specified herein or not.

INSTALLER SIGNATURE: [signature] DATE: 2-10-2000

☐ APPROVED ☐ DISAPPROVED: DATE

SAN JUAN COUNTY AS-BUILT

RECEIVED

HIS FORM IS REQUIRED TO BE PROPERLY FILLED OUT AND SUBMITTED TO SAN JUAN COUNTY HEALTH AND COMMUNITY SERVICES WITHIN TEN DAYS OF COMPLETING ANY INSTALLATION. SJC 13.04.110

2 6 1998

HEALTH & COMMUNITY SERVICES

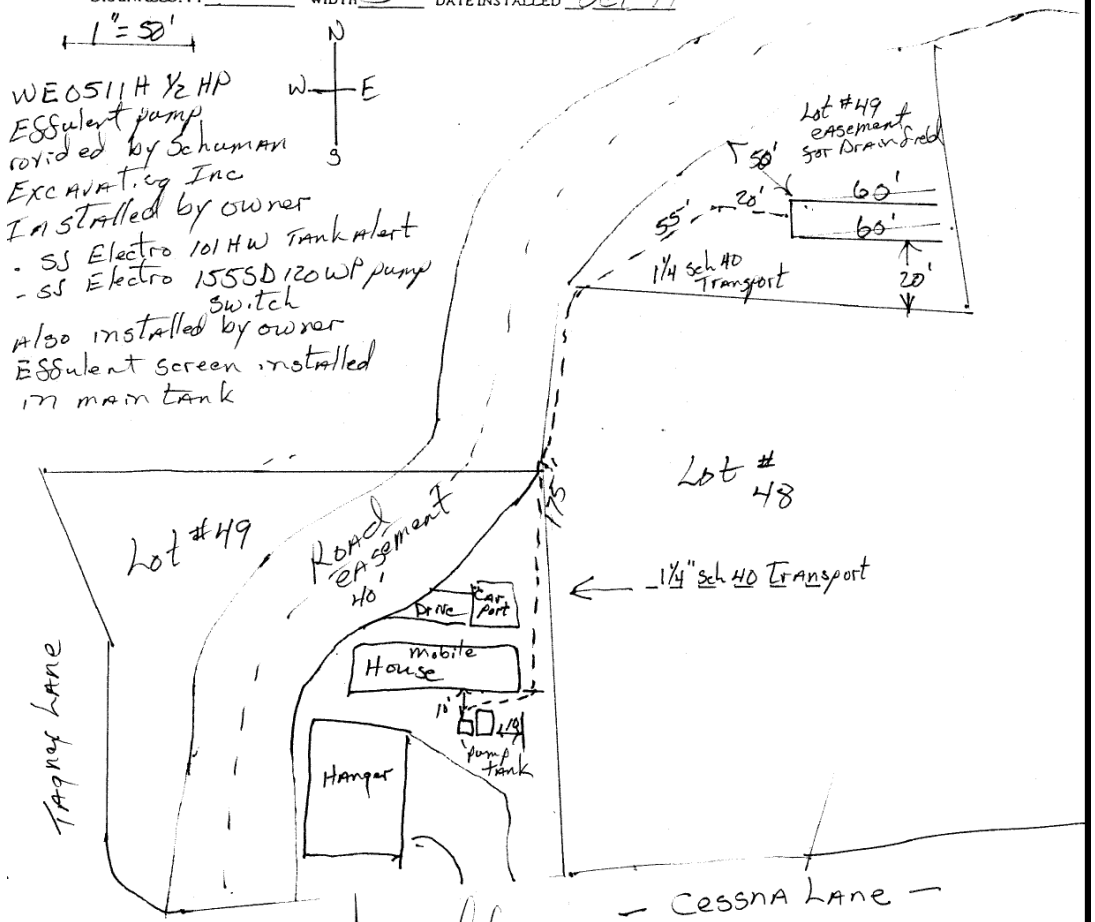
PROPERTY OWNER: Ken Pedersen PERMIT # 97-360-A3

TAX PARCEL # 461351049 ADDRESS Cessna Ave (1st to left)

DRAW TO SCALE A DIAGRAM SHOWING LOCATION OF SYSTEM IN RELATION TO HOUSE(S), SEPTIC/PUMP TANKS, WELLS, STREAMS, DITCHES, CURTAIN DRAINS AND EMBANKMENTS. USE A NORTH SEEKING ARROW. NOTE ANY DEVIATIONS FROM THE ORIGINAL DESIGN. SCALE FROM 1 - 20 UP TO 1 - 50.

SEPTIC TANK: 1,000 GAL DATE INSTALLED Existing

DRAINFIELD: FT_____ WIDTH 3 DATE INSTALLED Oct 97



INSTALLER NAME AND SIGNATURE Jim Schuman DATE 1/23/98

APPROVED ~~DISAPPROVED~~ [signature] DATE 1/27/98

RETURN TO: SAN JUAN COUNTY HEALTH AND COMMUNITY SERVICES, P.O. BOX 607, Friday Harbor, WA 98250

Health & Community Services

San Juan County

P.O. Box 607 ◆ 145 Rhone, Friday Harbor, WA 98250
Phone: (360) 378-4474 Fax: (360) 378-7050

RECEIVED JUN 30 2004 HEALTH & COMMUNITY SERVICES

SEWAGE INSTALLATION PERMIT

TO INSTALL, REPAIR OR ALTER AN ON-SITE SEWAGE SYSTEM

Unlawful to Alter or Deface this Permit
POST ON JOB SITE
NON-TRANSFERABLE

Permit No.: 2003-003-02
Design No.: 04-MCC-156
Fee: $600.00 Date Paid: 6-30-04 #189
Date Permit Issued: 6-5-4
Expires: 90 days from date issued

Walsh / Keaton

PARCEL TAX NUMBER: 3515 - 5100 1 (prev. 3515 14001)

Applicant's Name: WALSH / KEATON Phone:
Site Address: TRUMPTER LANE
Designer: JACK CORRY Phone:

1. The installer must perform all work in accordance with San Juan County Code.
2. **Occupancy of the building and use of the sewage disposal system are prohibited until an as-built is submitted to and approved by the health department. Note to contractors and homeowners – a copy of the approved as-built must be on-site prior to the building department conducting a final occupancy inspection. Final occupancy will not be granted until the as-built as been approved.**

System Site Prep: Designer: Date:
Mound Bed Prep: Designer: Date:
Pressure Test: Designer: Date:
E. H. S. [signature] Date: 6/15/04

DO NOT BACKFILL (COVER) SYSTEM UNTIL BOTH DESIGNER AND THE HEALTH DEPARTMENT (E.H.S.) HAVE (OK'd) TO BACKFILL.

OK To Backfill___ Disapproved___ Date_____ Corrections Required_____
Designer_____
OK To Backfill ✓ Disapproved___ Date 6/15/04
E.H.S. [signature]

I mark w mccutcheon Installer was present at the above property supervising placement of the final cover. Time 1130 Date 6-15-04

I have complied with all the restrictions and recommendations as listed by the system designer. I certify that all work was done under my supervision and according to prevailing community standards of workmanship.

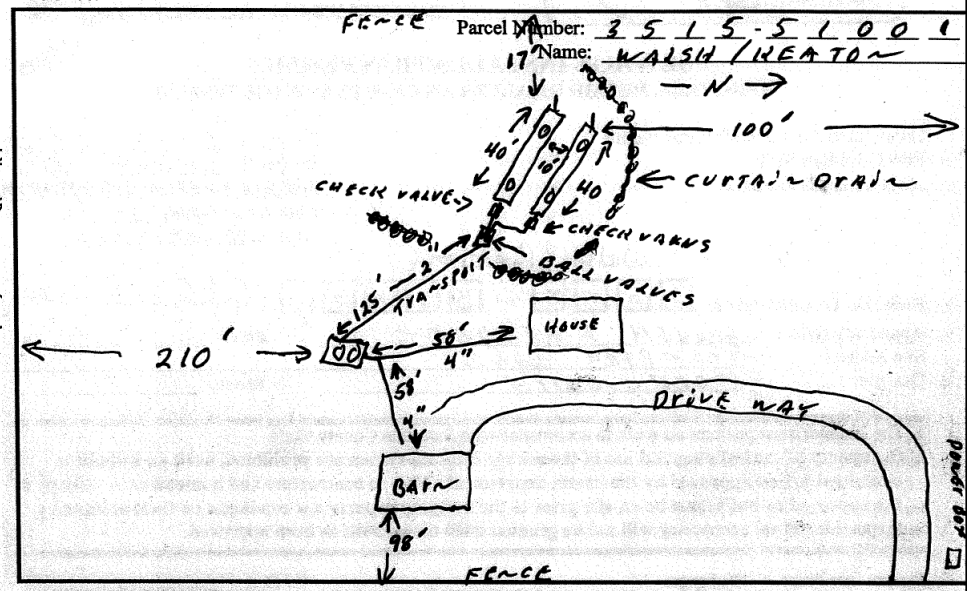
Name of Licensed Installer (Please Print) MARK MCCUTCHEON

Installer Signature: mark mccutcheon Date 6-15-04

n:\environmental hea\onsite sewage\forms\sewageinstallationpermit.doc Revised 04/22/03

AS-BUILT

Plot Plan: Attach or draw in the space provided below a scaled plot plan that indicates a diagram showing location of system (septic tank, pump chamber, treatment component(s) and drainfield) in relation to house(s), property lines, wells, streams, ditches, curtain drains, and embankments. Use a north seeking arrow. Note any deviations from the original design. SCALE FROM 1 - 20 TO 1 - 50.



Installer As-Built Checklist:

		Yes	No	N/A
A.	Septic Tank and Pump Chamber			
1.	The septic tank baffles and partition wall are intact and in working order?	X		
2.	Septic tank size (gallons): 1000 Pump Chamber (gallons):			
3.	An effluent filter or pump screen (circle one) was installed? Make: ARA-CO	X		
4.	Risers installed on both compartments of septic tank, over effluent filter and pump chamber?	X		
B.	Drainfield - ☐ Gravity Distribution ☒ Pressure Distribution			
1.	Drainfield trench or bed bottom installed level and raked?	X		
2.	Distribution box water leveled?			
3.	Distribution box bedded in concrete or sand (circle one)?			
4.	Observation ports installed?	X		
5.	Total Dynamic Head in Feet (if applicable):			
C.	Treatment Component - ☐ Sand Filter ☐ Other:			
1.	Timer Installed? ½ H.P. 110 V. M.V.P. S.I. P.T. R.O. W/EMM R.C.T.	X		
2.	Timer settings: Pump on (seconds): 2 min Pump off (mins or hrs): 28			
3.	Total Dynamic Head in Feet (if applicable):			

THIS FORM IS REQUIRED TO PROPERLY FILLED OUT AND SUBMITTED TO SAN JUAN COUNTY HEALTH AND COMMUNITY SERVICES WITHIN TEN (10) DAYS OF COMPLETING ANY INSTALLATIONS (SJC 8.16.110). I hereby certify that I have read the information submitted in this document and know the same to be true and correct. All provisions of laws and ordinances governing this project will be complied with whether specified herein or not.

INSTALLER SIGNATURE: mark mccutcheon DATE: 6-15-04

☑ APPROVED ☐ DISAPPROVED: [signature] DATE 6/30/04

n:\environmental hea\onsite sewage\forms\sewageinstallationpermit.doc Revised 04/22/03

You have a great effect on septic system performance

- Inspect and pump frequently
- Use water efficiently
- Minimize solid waste disposal
- Keep chemicals out of your system
- Additives?

Inspecting and Pumping

- Frequent inspections identify needed minor repairs that prevent costly major repairs later.
- Frequency of pumping depends upon how the system is used and maintained, the number of people in household and capacity of system (see handout).

Water Use

- Systems can fail if hydraulically overloaded.
- 120 GPD is the design standard per bedroom.
- Limiting water use to 70% of rated capacity can greatly lengthen the life of your system.

Solid Waste Disposal

- Do not use under sink disposals.
- Do not put food waste down your system.
- Fats, oils, and grease (FOG) do not break down readily in the septic environment and will require more frequent pumping and potentially damage the drainfield.
- Solid waste also does not break down easily in the septic environment and can ultimately lead to a clogged drainfield.
- Throw food waste in garbage and/or utilize composting.

Chemicals

- Avoid putting chemicals down your system.
- Chemicals can disrupt the biological component of your system.
- Do not put paints, thinners, drain cleaners, or petroleum based products into the system.
- Use of chlorine based cleansers should be limited.

Liquid Fabric Softener

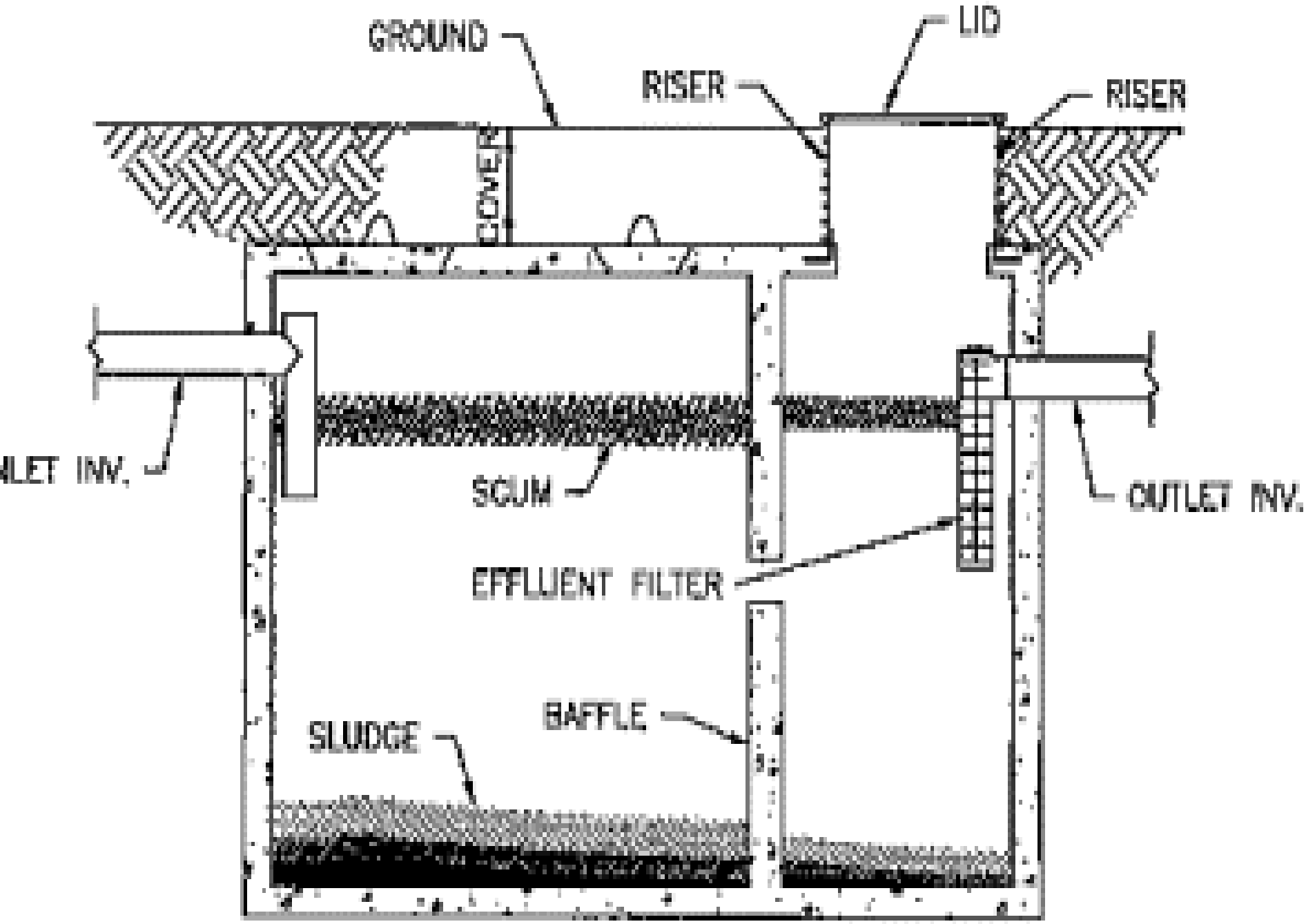
- May be the single worst thing you can put down your system
- Causes a disruption of buoyancy properties of the scum and sludge layer leading to an abundance of solids getting into the drainfield.
- Use dryer sheets instead.

Additives

- 40 years of research and there is no definitive answer on their effectiveness.
- There is no established standard testing method for all additives.
- Manufacturers and researchers debate whether an effect is actually beneficial or detrimental (liquefying/gasifying solids).
- Biologically, everything your tank needs to function is located inside your body.

Septic Tanks

- Concrete
  - Most common. Usually 1000 gallons
- Fiberglass and Polyethylene
  - Proprietary systems use these
  - 1000 and 1500 gallons
- Metal
  - Corrosion can be a safety concern.


GROUND
LID
RISER
RISER
COVER
ALET INV.
SCUM
OUTLET INV.
EFFLUENT FILTER
BAFFLE
SLUDGE

Top of Old Style Septic Tank

Poly or Plastic Style Septic Tank

05/28/2009

05/28/2009

05/28/2009

05/28/2009

Single Compartment
Old Oval Tank

Inlet Baffle – Old Style Tank

Inlet Baffle – New Style Tank

Pooling Sewage

Fixture Leaking

Inlet Baffle
Evidence of Bulking

05/28/2009

05/28/2009

Evidence of grease in first compartment of the septic tank.

03/06/2009

Outlet Baffle – Old Style Tank

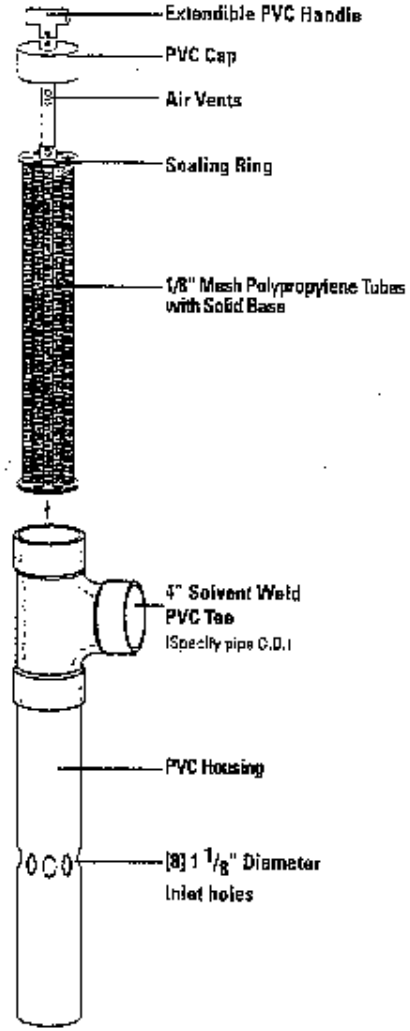
Septic Tank Leaking at Outlet Baffle

Old Style Tank Fitted with Effluent Filter – concrete baffle removed

Orenco Systems®
Incorporated

Specifications

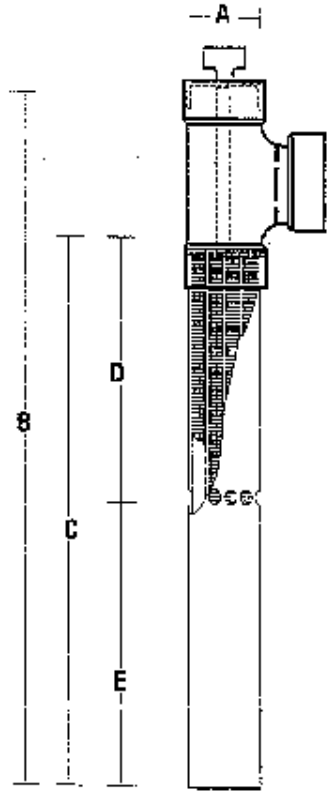
OSI Biotube™ Effluent Filter



Dimensions

		FTO444-36
A	Nominal Diameter	4"
B	Vault Height	44"
C	Invert Height	38"
D	Invert to Inlet Height	16"
E	Inlet Hole Height	22"
F	Filter Area (ft²)	5.3

Custom sizes available. Call for assistance.



© 1996 Orenco Systems, Inc.
Covered by U.S. Patent
#5,498,334

05/28/2009

Outlet Baffle with Effluent Filter – New Style Tank

Outlet Baffle After Pumping

05/28/2009

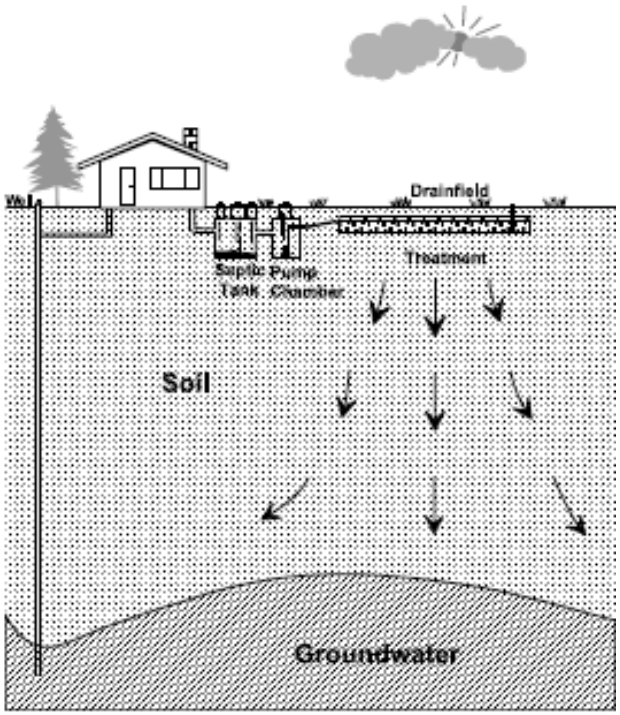
Gravity Septic System Tank Inspection & Maintenance

- ✓ Inspect tank lid for a tight seal and for root or surface water intrusion.
- ✓ Monitor inlet pipe and inlet baffle for surface water intrusion, pooling sewage and for leaky fixtures.
- ✓ Inspect center baffle if visible.
- ✓ Inspect & clean outlet baffle filter/screen.
- ✓ Monitor effluent level at outlet baffle.
- ✓ Check if effluent is draining back from the drainfield.
- ✓ Measure scum & sludge layers in all compartments.

ALTERNATIVE SYSTEMS

- PRESSURE DISTRIBUTION DRAINFIELDS
  - INCLUDES SIPHON DOSING TANKS/CHAMBERS INSTEAD OF A PUMP
  - PUMP IS IN EITHER SEPTIC TANK IN A PUMP VAULT OR A SEPARATE PUMP TANK
- SANDFILTERS
  - PUMP FROM SEPTIC TANK TO SAND FILTER
  - GRAVITY OR PRESSURE DELIVERY TO DRAINFIELD OR MOUND
- MOUNDS

Understanding And Caring for Your Pressure Distribution System



WASHINGTON STATE
DEPARTMENT OF HEALTH

WASHINGTON STATE UNIVERSITY
COOPERATIVE EXTENSION SERVICE

Septic tanks with gravity flow drainfields have been used for many years in areas not served by public sewers. Unfortunately, not all soil and site conditions are well suited for these conventional systems. To protect public health and water quality, alternative systems are often used in areas where conventional systems cannot assure safe sewage treatment.

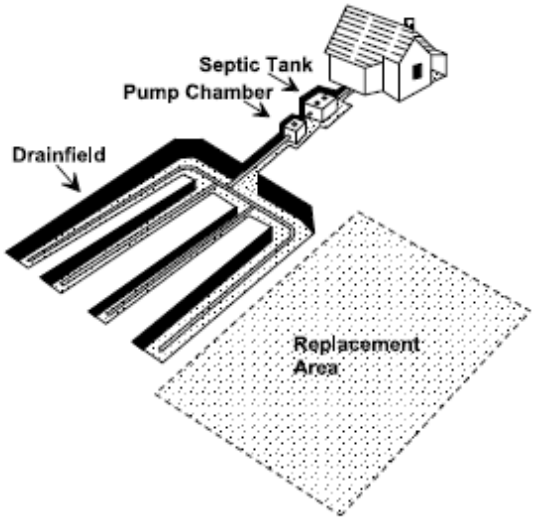
The pressure distribution system is one alterative, which provides:

- Dosing and resting cycles.
- Uniform distribution of effluent.
- Shallow placement of the drainfield.

The following information will help you understand your pressure distribution system, and keep it operating safely at the lowest possible cost.

A typical pressure distribution system has three working parts:

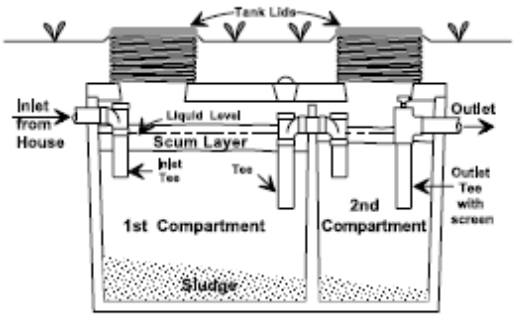
1. The septic tank.
2. The pump chamber with the pump.
3. The drainfield with its replacement area.



The Septic Tank

The typical septic tank is a large buried container made of concrete, fiberglass or polyethylene. Wastewater from your home flows into the tank. Heavy solids settle to the bottom where bacterial action partially decomposes them. Most of the lighter solids, such as fats and grease, rise to the top and form a scum layer.

The wastewater leaving the septic tank is a liquid called effluent. It has been partially treated but still contains disease-causing bacteria and other pollutants. From the tank, the effluent flows by gravity to the pump chamber.



Proper Care Includes:

1. **Inspecting your septic tank once every year and pumping it when needed.** If the tank is not pumped periodically, solids escaping from the septic tank will clog the pump and drainfield. Using a garbage disposal will increase the amount of solids entering the tank and require more frequent pumping.

2. **Avoiding the flushing of harmful material into the septic tank.** Never put materials such as grease, cooking oils, newspapers, paper towels, cigarettes, coffee grounds, sanitary napkins, solvents, oils, paint, and pesticides into the tank. For information on the proper disposal of hazardous household waste, call the Recycle Hotline, 1-800-RECYCLE.

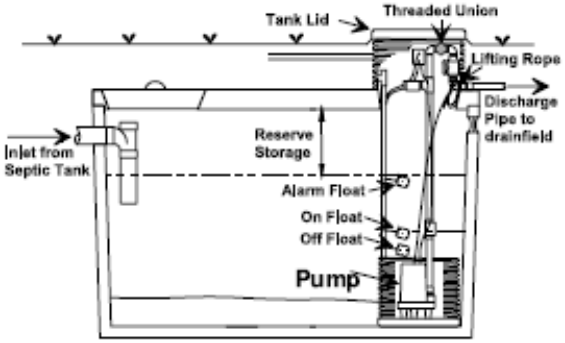
3. **Avoiding the use of any type of chemical or biological septic tank additive.** Such products are not necessary for the proper functioning of a septic tank, nor do they reduce the need for routine tank pumping.

The Pump Chamber

The pump chamber is a concrete, fiberglass or polyethylene container that collects the septic tank effluent. The chamber contains a pump, pump control floats, and a high-water alarm float. The pump action can be controlled either by the use of control floats or by timer controls. Control floats are set to turn the pump "ON" and "OFF" at levels for pumping a specific volume of effluent per dose. Timer controls are set to produce both the length of the dose and the interval or rest period between doses.

The high water alarm float starts an alarm to warn you of any pump malfunction. If pump timer controls are used, the alarm also will warn you of excessive water use in the home. The float is set to start when the effluent in the pump chamber rises above the "ON" float. The alarm should consist of a buzzer and an easily visible light. It should be on an electrical circuit separate from the pump.

The pump discharge pipe should have a union and valve for easy removal of the pump. A piece of nylon rope or other non-corrosive material should be attached to the pump for taking the pump in and out of the chamber.



Proper Care Includes:

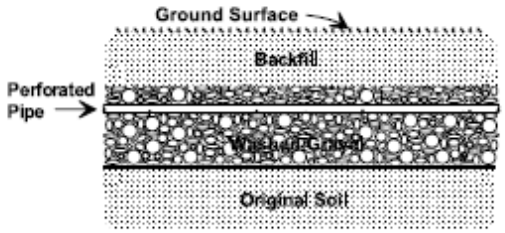
1. **Checking the pump chamber, pump and floats every year and replacing or repairing worn or broken parts.** Pump maintenance should follow the manufacturer's recommendations. Electrical parts and conduits should be checked for corrosion. If the alarm panel has a "push-to-test" button, it should be checked regularly.

2. **Installing a septic tank effluent filter or pump screen, if your system does not have one.** Screening or filtering the septic tank effluent provides an effective way of preventing solids from clogging the pump and drainfield pipes. Inspecting a screen or filter, and cleaning it, when necessary, is quick and easy, and prevents costly damage from solids entering the system.

3. **Taking action to protect the drainfield from overloading after a prolonged power outage or pump failure.** Effluent will continue to collect in the pump chamber until the pump starts operation. With additional effluent in the chamber, the pump may dose a volume more than the drainfield can handle. If all of the reserve storage in the chamber is used, the plumbing in your home can backup. When the pump is controlled by float controls and is off for more than 6 hours, the following measures can be taken to help protect the drainfield:
   (Timer controls will automatically correct this problem)
   a. Reduce your water use to a minimum.
   b. Turn off the pump at the control panel.
   c. After power is restored or pump service is completed, switch the pump on and let it run for 5 minutes maximum, and turn it off again. Repeat this manual switching every 6 hours until the effluent drops to the "OFF" float level and the pump turns off automatically. If there is little water use during the problem, the pump may automatically turn off during the first manual switching.

The Drainfield

The drainfield is a network of pipes placed in gravel-filled trenches (2–3 feet wide) or beds (up to 10 feet wide) in the soil. Effluent is pumped through the pipes in controlled doses to insure uniform distribution throughout the drainfield. The effluent leaves the pipes under low pressure through small diameter holes, and trickles downward through the gravel where it reaches the soil. The soil filters and treats the effluent, removing bacteria and other pollutants before it reaches the groundwater. Every new drainfield is required to have a designated replacement area. It must be protected should that the existing system need an addition or repair.



Proper Care Includes:

1. **Knowing where your system and replacement area are located and protecting them.** Before you plant a garden, construct a building, or install a pool, check on the location of your system and replacement area.

2. **Practicing water conservation and balancing your water use throughout the week to keep from overloading the system.** The more wastewater you produce, the more the soil must treat and dispose of.

3. **Diverting water from surfaces such as roofs, driveways, or patios away from the drainfield and replacement area.** Soil over your system should be slightly mounded to help surface water runoff.

4. **Keeping traffic, such as vehicles, heavy equipment or livestock off the drainfield and replacement area.** The pressure can compact the soil or damage pipes.

5. **Landscaping your system properly.** Do not place impermeable materials over your drainfield or replacement area. Materials, such as concrete or plastic reduce evaporation and the supply of air to the soil needed for proper effluent treatment. Grass is the best cover for your entire system.

6. **Inspecting the drainfield and downslope areas for odors, wetspots, or surfacing sewage periodically.** If your drainfield has inspection pipes, check them to see if there is a liquid level continually over 6 inches. This may be an early indication of a problem. Call your local health agency for assistance.

What If the Alarm Goes On?

If for any reason the effluent level inside the pump chamber reaches the alarm float (faulty pump, floats, circuit, excessive water use, or another problem), the alarm light and buzzer will start. By using water conservatively (avoid baths, showers, and clothes washing), the reserve storage in the pump chamber should allow you enough time to get the problem corrected. To silence the alarm, push the reset light on the alarm panel. Before calling for service or repair, check to see if the problem could be:

1. **A tripped circuit breaker or blown fuse.** The pump should have a separate circuit with its own breaker or fuse. If it's on a circuit with other equipment, that equipment can cause the breaker to trip.

2. **A pump or float switch power cord that has come unplugged.** If electrical connections are the plug-in type, be sure switch and pump plugs are making good contact in the outlet.

3. **Control floats tangled by other parts in the chamber such as the electric power cord, lifting rope, or pump screen.** Be sure floats operate freely in the chamber.

4. **Debris on floats and support cable that is causing the pump to switch off.** Lift the floats out of the chamber and clean.

CAUTION: Always turn off the power supply at the circuit breaker, and unplug all power cords before handling the pump or floats.

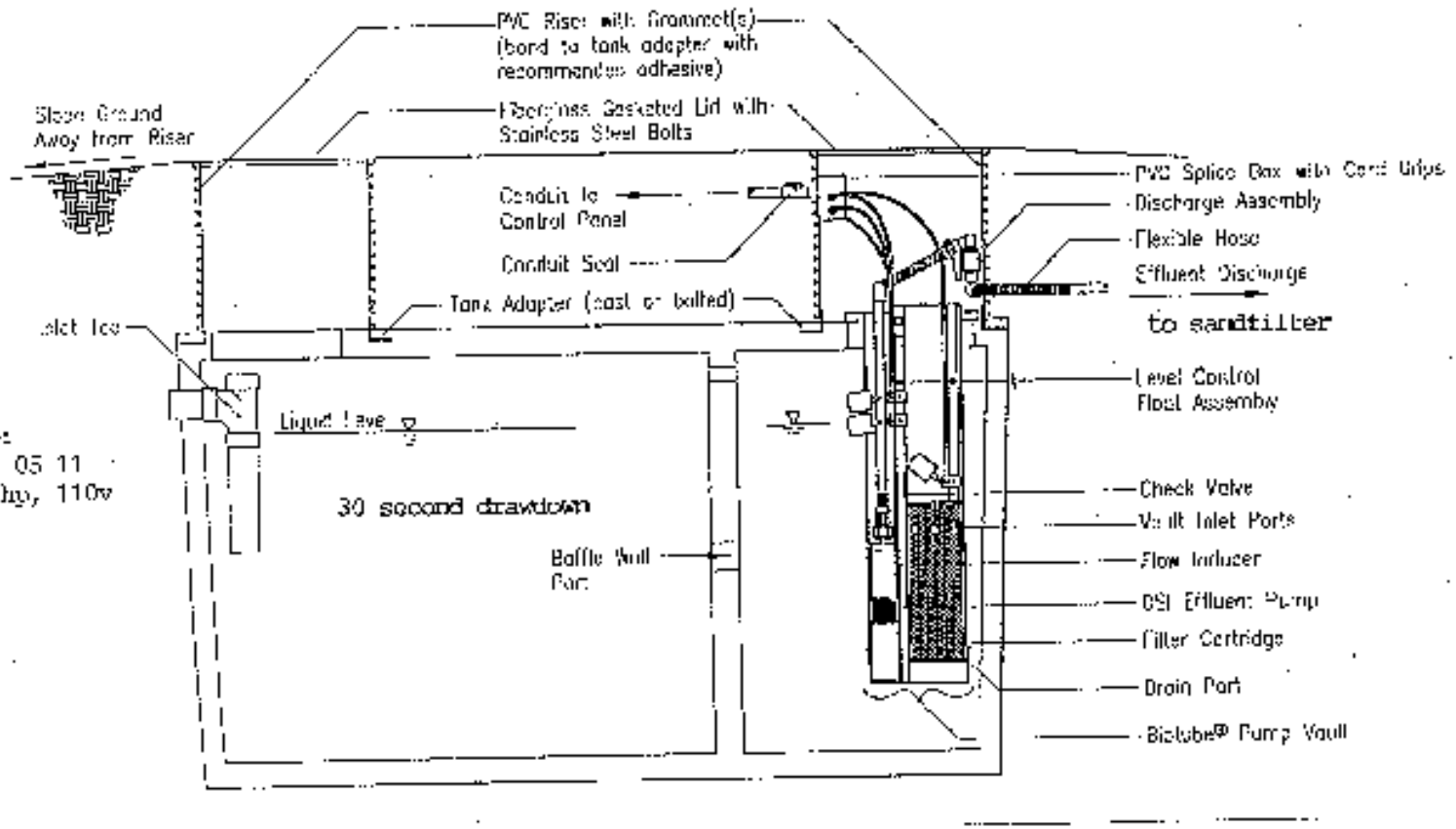
Do not enter the pump chamber. Gases inside pump chambers are poisonous and the lack of air can be fatal. If the problem cannot be located with the above steps, call your pump service person or on-site system contractor for service or repair. The service or repair of pumps and other electrical equipment must be done by an experienced person.

Effluent Pumping System - Dual Compartment Drawdown

1000 gal. septic tank

Must be watertight

Dose: 14 gallons per dose/17-18 per day
Timer setting: 30 seconds "on", 29.5 minutes "off"



P.O. BOX 492
EASTSOUND, WASHINGTON 98245
(206) 376-2762

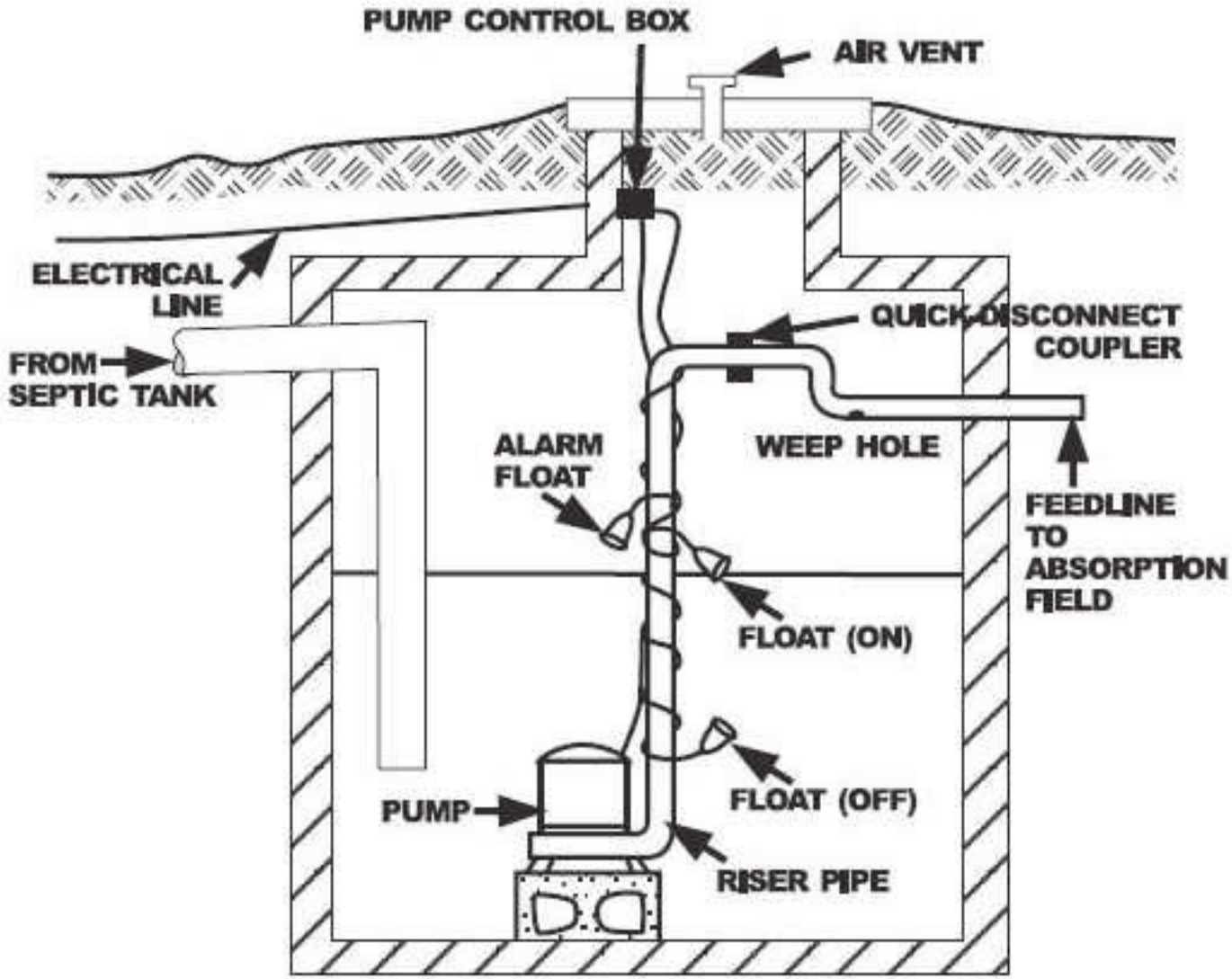
SCALE
CHECKED BY
CALCULATED BY
DATE
DATE

1736 42005

Typical Modern Pump Chamber

Typical Components Inside Old Style Pump Chamber

Pumping tank (generic)

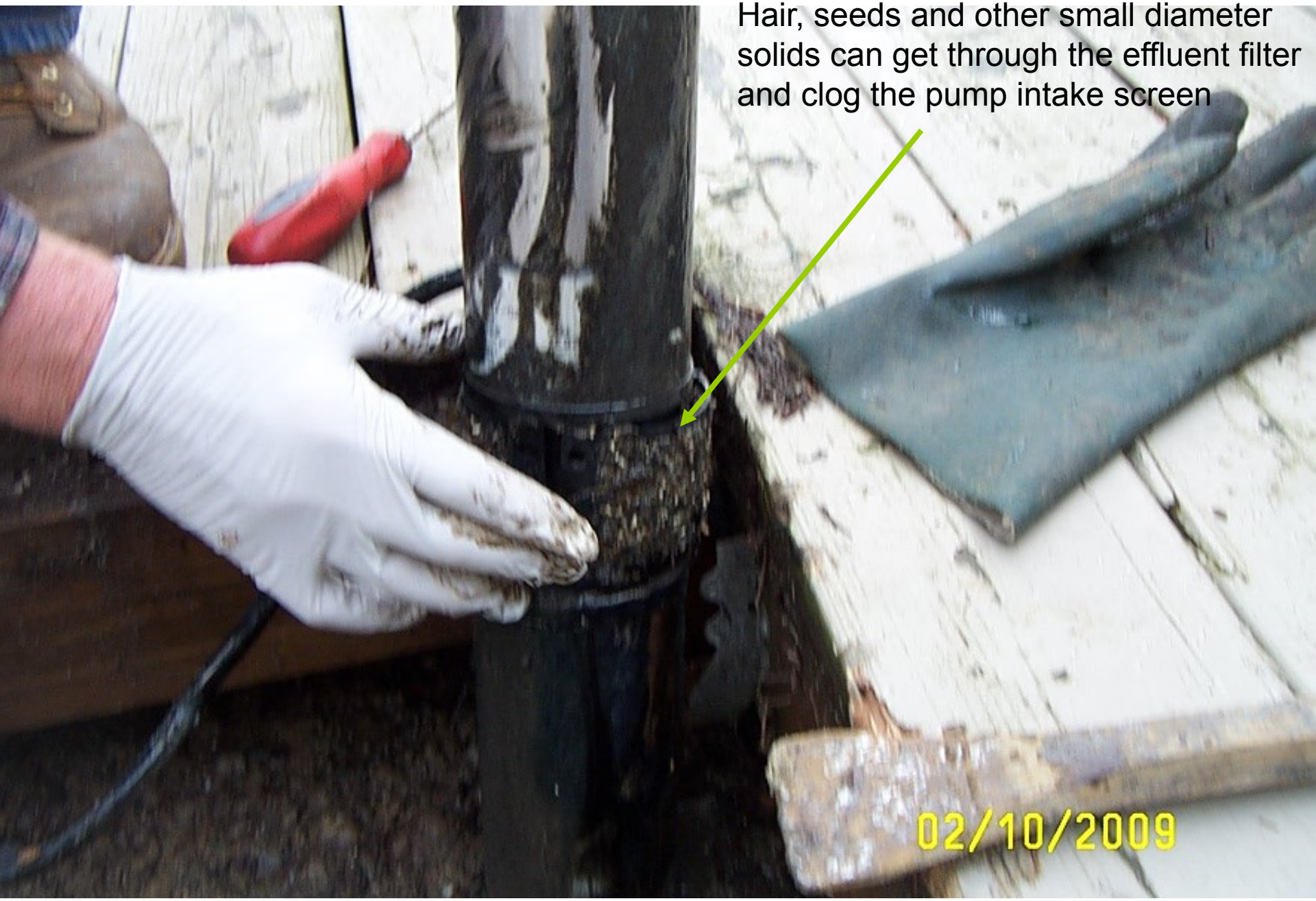


Source: US EPA, Purdue University 1990

Vaulted Pump
In Second Compartment

High Head Pump

Notice red T handle

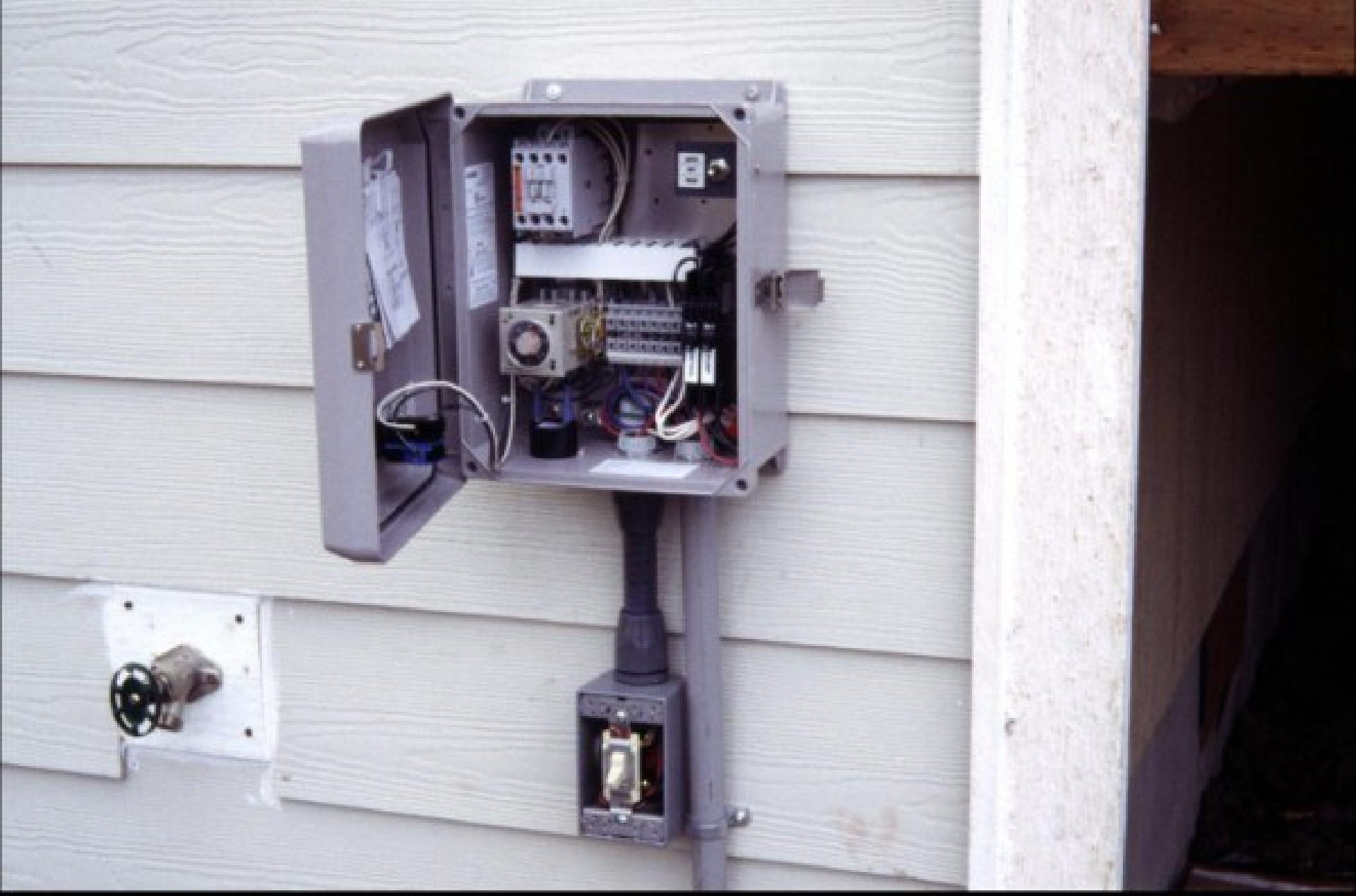

Hair, seeds and other small diameter solids can get through the effluent filter and clog the pump intake screen
02/10/2009

02/10/2009

02/18/2009

02/10/2009

MVP
Control Panel
Orenco Systems® Inc.
CAUTION!
ATTENTION!



Typical Control Panel with Timer

Orcas Sewage
Design
376-3762
SIEMENS

03/06/2009

03/06/2009

03/06/2009

03/06/2009

03/06/2009

03/06/2009

03/06/2009

03/06/2009

03/06/2009

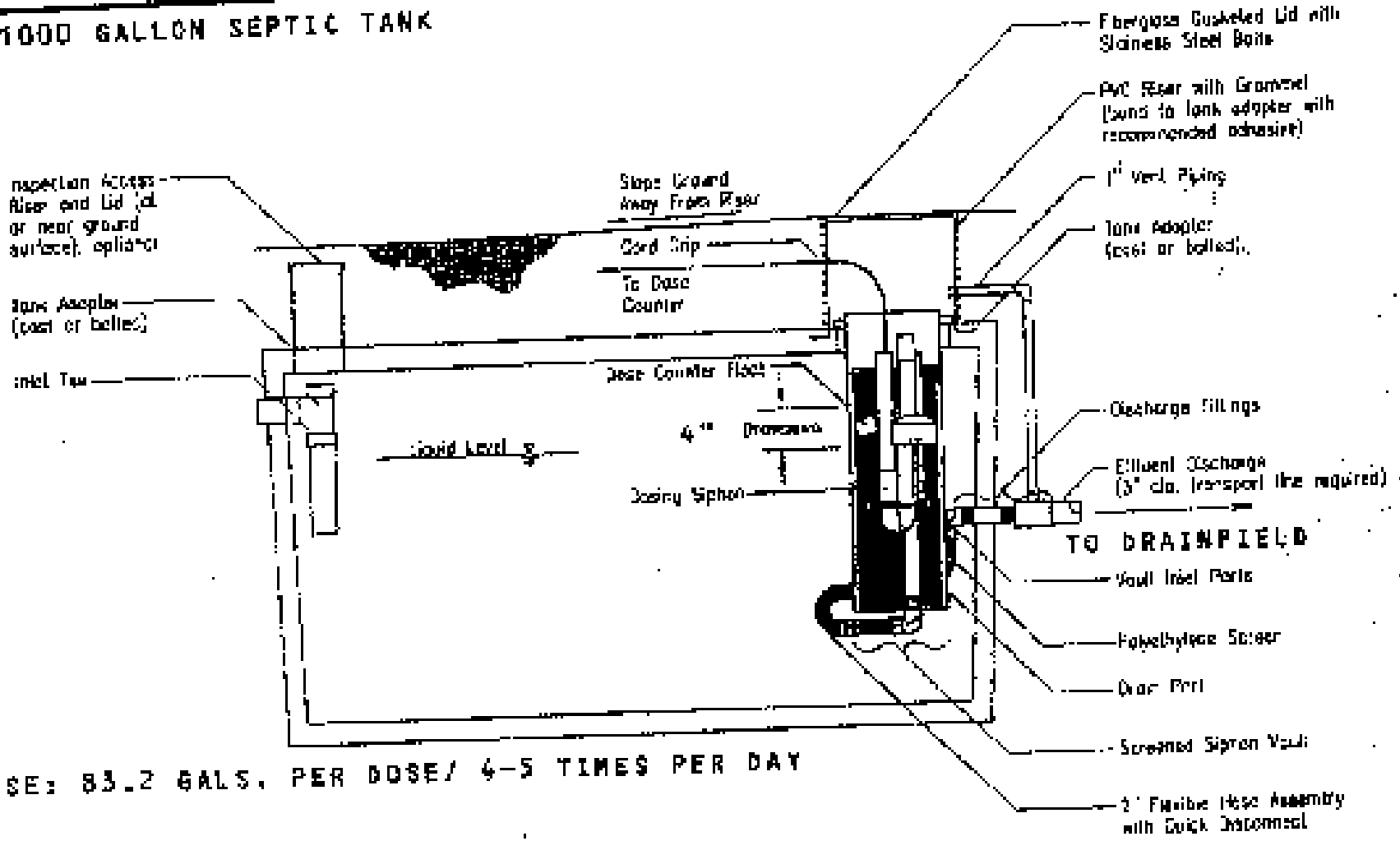
03/06/2009

Pressure System Septic Tank Inspection & Maintenance

- ✓ Inspect tank lid for a tight seal and for root or surface water intrusion.
- ✓ Monitor inlet pipe and inlet baffle for surface water intrusion, pooling sewage and leaky fixtures.
- ✓ Check center baffle if visible.
- ✓ Measure scum & sludge layers in all compartments.
- ✓ Inspect and clean pump filter/screen
- ✓ Inspect pump and clean pump intake screen if needed.
- ✓ Inspect on/off float and high/low effluent level floats and check if they are in working condition.
- ✓ Check if high/low effluent level audible/visual alarms are working.

2" Dia. Dosing Siphon System

1000 GALLON SEPTIC TANK

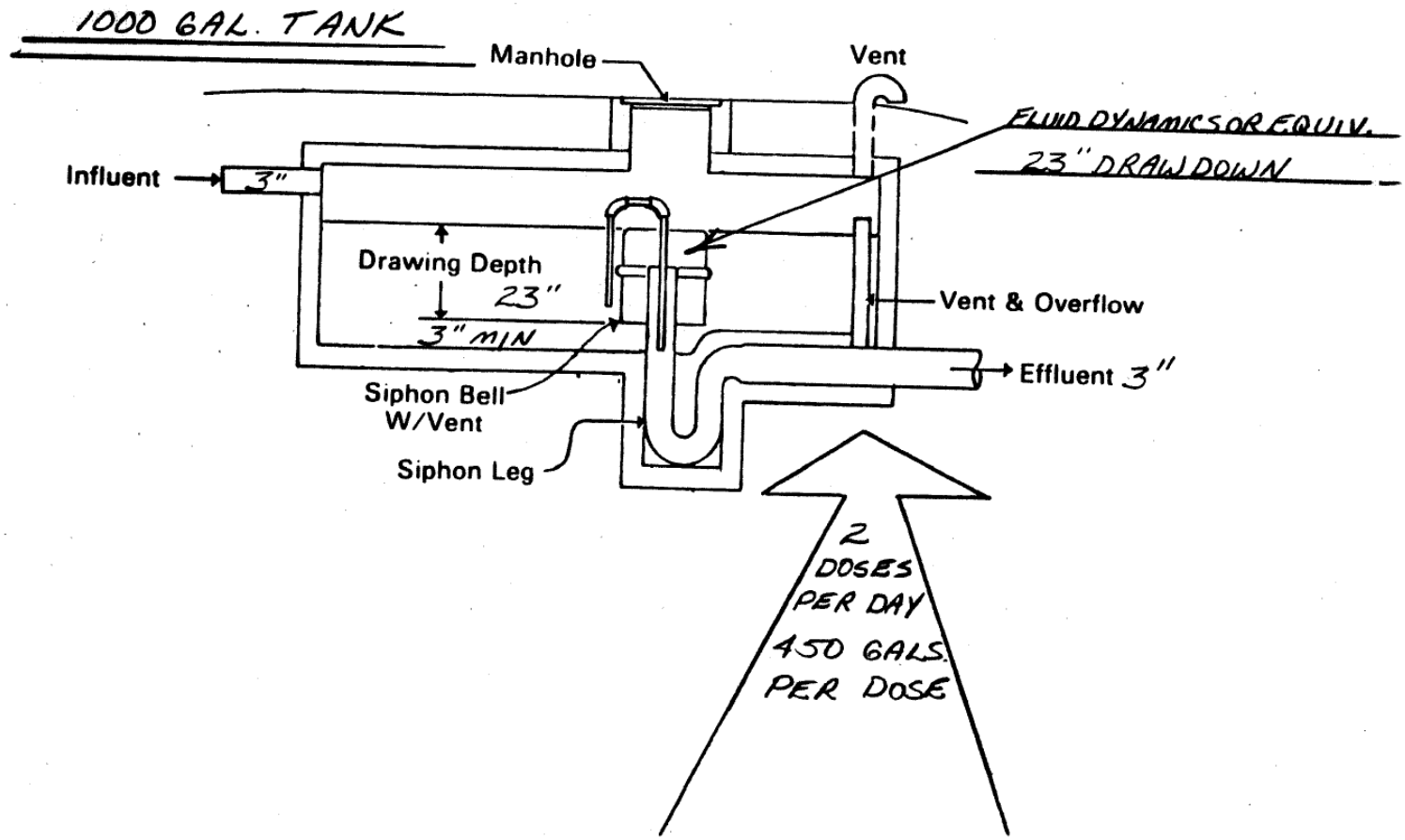


DOSE: 83.2 GALS. PER DOSE/ 4-5 TIMES PER DAY

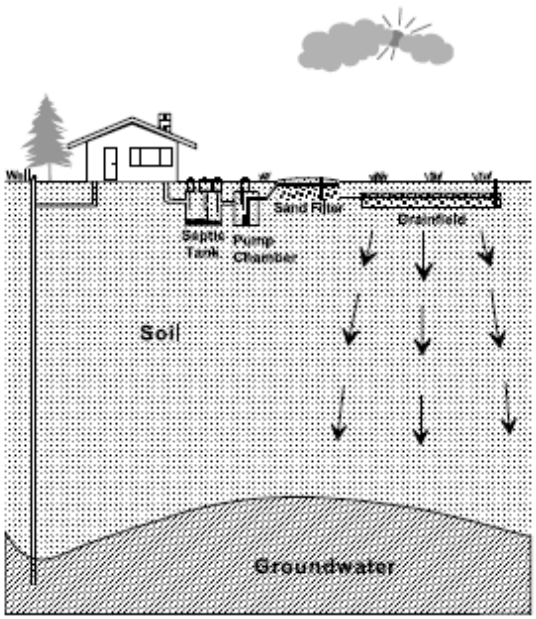
RYAN - SCHAFFER
SUNDERLAND

FIGURE 8-4

TYPICAL DOSING CHAMBER WITH SIPHON



Understanding And Caring for Your Sand Filter System



WASHINGTON STATE
DEPARTMENT OF HEALTH

WASHINGTON STATE UNIVERSITY
COOPERATIVE EXTENSION SERVICE

Septic tanks with gravity flow drainfields have been used for many years in areas not served by public sewers. Unfortunately, not all soil and site conditions are well suited for these conventional systems. To protect public health and water quality, alternative systems are often used in areas where conventional systems cannot assure safe sewage treatment.

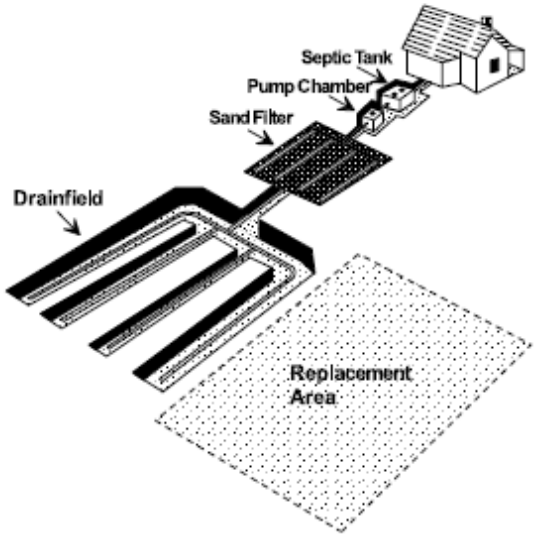
The intermittent sand filter is one alterative, which:

- Can be constructed above or below the ground.
- Provides a high level of wastewater treatment.

The following information will help you understand your sand filter system, and keep it operating safely at the lowest possible cost.

A typical sand filter system has four working parts:

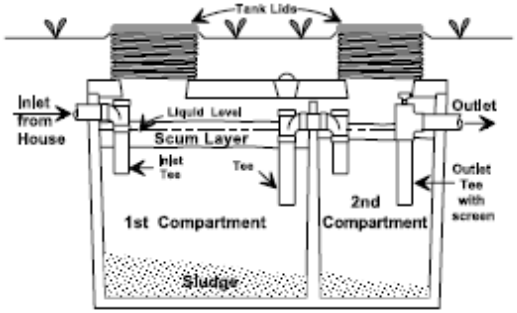
1. The septic tank.
2. The pump chamber with the pump.
3. The sand filter.
4. The disposal component including a drainfield (or possibly a mound) with its replacement area.



The Septic Tank

The typical septic tank is a large buried container made of concrete, fiberglass or polyethylene. Wastewater from your home flows into the tank. Heavy solids settle to the bottom where bacterial action partially decomposes them. Most of the lighter solids, such as grease and oils, rise to the top and form a scum layer.

The wastewater leaving the septic tank is a liquid called effluent. It has been partially treated but still contains disease-causing bacteria and other pollutants. From the tank, the effluent flows by gravity into the pump chamber.



Proper Care Includes:

1. **Inspecting your septic tank once every year and pumping it when needed.** If the tank is not pumped periodically, solids escaping from the septic tank will clog the pump, sand filter, and drainfield. Using a garbage disposal will increase the amount of solids entering the tank and require more frequent pumping.

2. **Avoiding the flushing of harmful material into the septic tank.** Never put materials, such as grease, newspapers, paper towels, cigarettes butts, coffee grounds, diapers, sanitary napkins, solvents, oils, paint, and pesticides into the tank. For information on the proper disposal of hazardous household waste, call the Recycle Hotline, 1-800-RECYCLE.

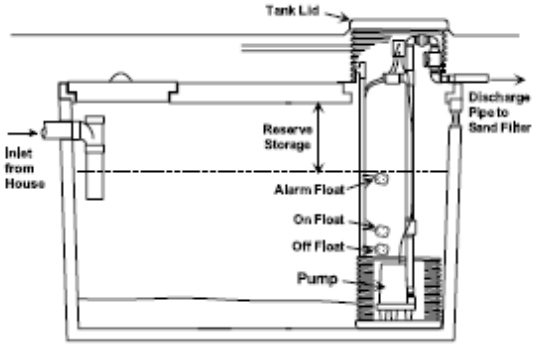
3. **Avoiding the use of any type of chemical or biological septic tank additive.** Such products are not necessary for the proper functioning of a septic tank, nor do they reduce the need for routine tank pumping.

The Pump Chamber

The pump chamber is a concrete, fiberglass or polyethylene container that collects the septic tank effluent. The chamber contains a pump, pump control floats, and a high water alarm float. The pump action may be controlled either by the use of control floats or by timer controls. Control floats are set to turn the pump "ON" and "OFF" at levels for pumping a specific volume of effluent per dose. Timer controls are set to produce both the length of the dose and the interval or rest period between doses.

The high water alarm float starts an alarm to warn you of any pump or system malfunction. If pump timer controls are used, the alarm also will warn you of excessive water use in the home. The float is set to start when the effluent in the pump chamber rises above the "ON" float. The alarm should consist of a buzzer and an easily visible light. It should be on an electrical circuit separate from the pump.

The pump discharge pipe should have a union and valve for easy removal of the pump. A piece of nylon rope or other non-corrosive material should be attached to the pump for taking the pump in and out of the chamber.



Proper Care Includes:

1. **Checking the pump chamber, pump and floats every year and replacing or repairing worn or broken parts.** Pump maintenance should follow the manufacturer's recommendations. Check electrical parts and conduits for corrosion. If the alarm panel has a "push-to-test" button, it should be checked regularly.

2. **Installing a septic tank effluent filter or pump screen, if your system does not have one.** Screening or filtering the septic tank effluent provides an effective way of preventing solids from clogging the pump and pipes. Inspecting a screen or filter, and cleaning it when necessary, is quick, easy, and prevents costly damage from solids entering the system.

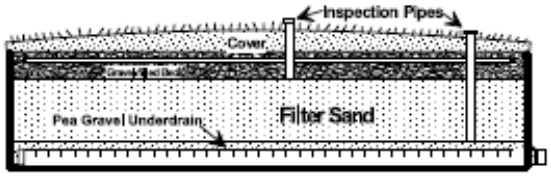
3. **Taking action to protect the sand filter and drainfield after a prolonged power outage or pump failure.** Effluent will continue to collect in the pump chamber until the pump starts. With additional effluent in the chamber, the pump may dose a volume more than the sand filter or drainfield can handle. Once the reserve storage inside the chamber is all used up, the plumbing in your home can backup. When the pump is off for more than 6 hours, the following measures can be taken to help protect your system:
   (Timer controls will automatically correct this problem)
   a. Reduce your water use to a minimum.
   b. Turn off the pump at the control panel.
   c. After power is restored or pump service is completed, switch the pump on and let it run for 5 minutes maximum, and turn it off again. Repeat this manual switching every 6 hours until the effluent drops to the "OFF" float level and the pump turns off automatically. If there is little water use during the outage or pump service, the pump may automatically turn off during the first manual switching.

CAUTION: Always turn off the power supply at the circuit breaker, and unplug all power cords before handling the pump or floats.

Do not enter the pump chamber. Gases inside pump chambers are poisonous and the lack of air can be fatal. The service or repair of pumps and other electrical equipment must be done by an experienced person.

The Sand Filter

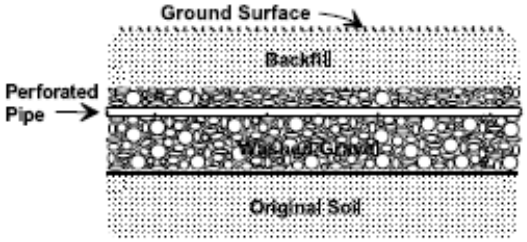
The typical sand filter is a PVC-lined or concrete box filled with a specific sand material. A network of small diameter pipes is placed in a gravel-filled bed on top of the sand. The septic tank effluent is pumped under low pressure through the pipes in controlled doses to insure uniform distribution. The effluent leaves the pipes, trickles downward through the gravel, and is treated as it filters through the sand. A gravel underdrain collects and moves the treated wastewater to either a second pump chamber for discharge to a pressure distribution drainfield or to a gravity flow drainfield. The second pump chamber may be located in the sand filter.



The Drainfield

The drainfield receives the treated sand filter effluent for disposal. It has a network of pipes placed in gravel-filled trenches 2–3 feet wide or beds (up to 10 feet wide) in the soil. The effluent leaves the pipes, trickles downward through the gravel, and into the soil.

Every new drainfield is required to have a designated replacement area. This area is similar to the size of your existing drainfield. It must be protected should the existing system need an addition or repair.



Proper Care for a Sand Filter and Drainfield Includes:

1. **Knowing where your system and replacement area are located and protecting them from damage.** Before you plant a garden, construct a building, or install a pool, check on the location of your system and replacement area.

2. **Practicing water conservation and balancing your water use throughout the week to keep from overloading the system.** The more wastewater you produce, the more the sand filter and soil must treat and dispose of. You can reduce your water use by installing water-saving devices, repairing leaky plumbing fixtures, taking shorter showers, and washing only full loads of dishes and laundry.

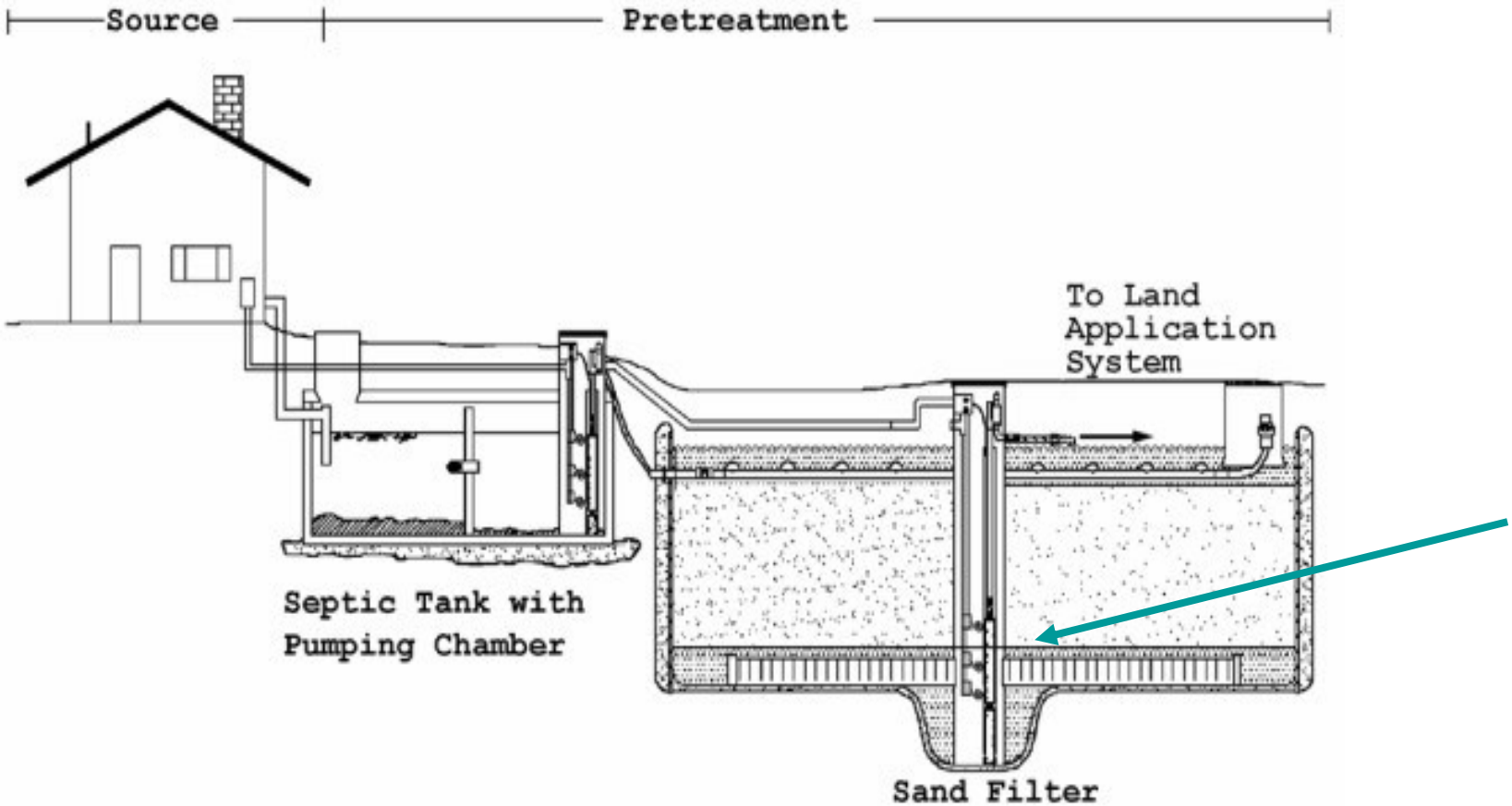
3. **Diverting water from surfaces, such as roofs, driveways, or patios away from the system and replacement area.** Soil over your system should be slightly mounded to help surface water runoff. Sprinkler systems do not belong in the area of the sand filter or drainfield.

4. **Keeping traffic, such as vehicles, heavy equipment or livestock off your system and replacement area.** The pressure can compact the soil or damage pipes.

5. **Landscaping your system properly.** Do not place impermeable materials over your system or replacement area. Materials, such as concrete or plastic reduce evaporation and the supply of air to the soil needed for proper effluent treatment. Grass is the best cover for your entire system.

6. **Inspecting the sand filter and drainfield areas for odors, wet spots, or surfacing sewage periodically.** Check your system's inspection pipes regularly to see if there is a liquid level continually over 6 inches. This may be an early indication of a problem. Call your local health agency for assistance.

Single-Pass Sand Filter System



Sand Filter Basin with Liner, Underdrain and Pump Chamber

Sand for the Sand Filter

Sand Filter Distribution Network and Drainrock

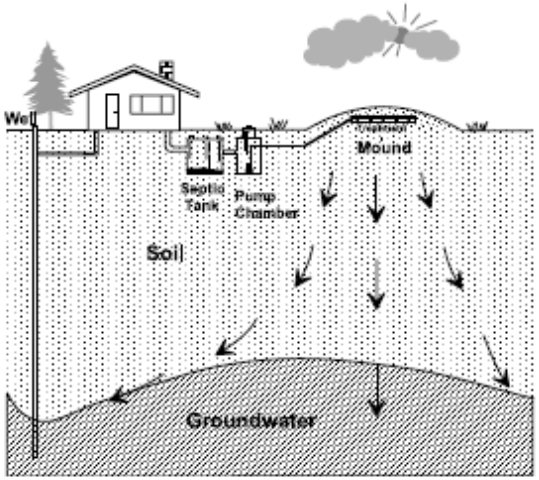
Sand Filter Maintenance & Inspection

- Inspect top of sand filter – best cover is gravel, if grass leave as is. Trees, weeds, shrubs and other vegetation should be removed.
- Flush laterals if equipped with clean-outs by opening each valve separately and manually turning on the pump in the septic tank at the control box. Wait until effluent clears up before shutting the valve.
- Inspect the pump chamber if equipped, check if pump chamber is water tight.
- Remove pump and floats and clean. Clean pump intake screen if needed.
- Inspect floats, check if on/off float and if high effluent-level float are working. Audible and visual alarm at the control panel should go off.
- Measure effluent in pump chamber. The effluent should be at or below collection pipes at bottom of pump chamber (lower gravel-sand interface).
- Measure sludge at bottom of pump chamber.
- Inspect splice box and wiring - check gasket and wiring seals. Repair if there is a build-up of moisture or if water-logged.
- Measure pressure head if system is equipped with clean-outs (recommended). Use capped pipe nipples with with 1/8” hole fitted into each clean-out to measure individual effluent spray lengths. Test each lateral at the same time. Lengths should be uniform (within 10%) and measurements compared to previous inspection amounts. Significant differences might be an indication of clogged orifices.

Mound Systems

- Takes the place of a drainfield.
- Always pressurized.
- Provides for wastewater treatment in a soil absorption system that is placed above the natural surface of the ground.
- Built above the native soil to achieve the required separation distance between the infiltration surface and the limiting soil conditions of the site and/or high groundwater level.
- The wastewater must move into unsaturated soil in order for the microbes in the soil and in the biomat to feed on the waste and nutrients in the wastewater.

Understanding And Caring for Your Mound System



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Septic tanks with gravity flow drainfields have been used for many years in areas not served by public sewers. Unfortunately, not all soil and site conditions are well suited for these conventional systems. To protect public health and water quality, alternative systems are often used in areas where conventional systems cannot assure safe sewage treatment.

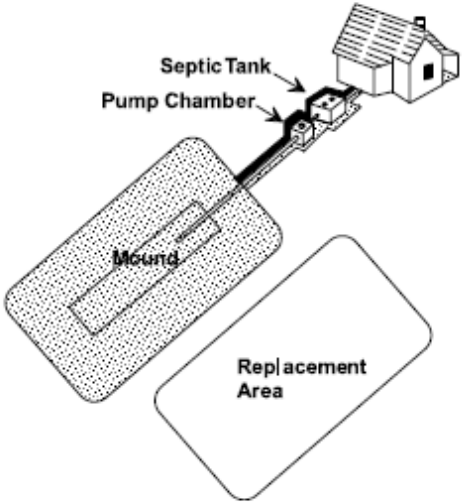
The mound system is one alterative, which provides:

- Dosing and resting cycles.
- Uniform distribution of effluent.
- Known level of sewage treatment in the sand fill before disposal.
- Greater distance for effluent to travel before reaching groundwater.

The following information will help you understand your mound system, and keep it operating safely at the lowest possible cost.

A typical mound system has three working parts:

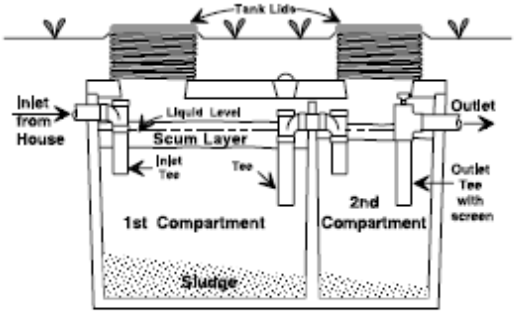
1. The septic tank.
2. The pump chamber with the pump.
3. The mound with its replacement area.



The Septic Tank

The typical septic tank is a large buried container made of concrete, fiberglass or polyethylene. Wastewater from your home flows into the tank. Heavy solids settle to the bottom where bacterial action partially decomposes them. Most of the lighter solids, such as grease and oils, rise to the top and form a scum layer.

The wastewater leaving the septic tank is a liquid called effluent. It has been partially treated but still contains disease-causing bacteria and other pollutants. From the tank, the effluent flows by gravity to the pump chamber.



Proper Care Includes:

1. **Inspecting your septic tank once every year and pumping it when needed.** If the tank is not pumped periodically, solids escaping from the septic tank will clog the pump and mound. Using a garbage disposal will increase the amount of solids entering the tank and require more frequent pumping.

2. **Avoiding the flushing of harmful material into the septic tank.** Never put materials such as grease, newspapers, paper towels, cigarettes butts, coffee grounds, diapers, sanitary napkins, solvents, oils, paint, and pesticides into the tank. For information on the proper disposal of hazardous household waste, call the Recycle Hotline, 1-800-RECYCLE.

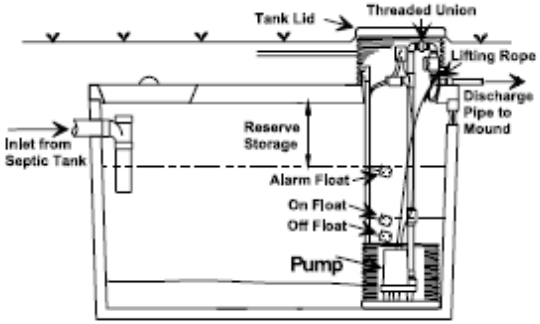
3. **Avoiding the use of any type of chemical or biological septic tank additive.** Such products are not necessary for the proper functioning of a septic tank, nor do they reduce the need for routine tank pumping.

The Pump Chamber

The pump chamber is a concrete, fiberglass or polyethylene container that collects the septic tank effluent. The chamber contains a pump, pump control floats, and a high water alarm float. The pump action may be controlled either by the use of control floats or by timer controls. Control floats are set to turn the pump "ON" and "OFF" at levels for pumping a specific volume of effluent per dose. Timer controls are set to produce both the length of the dose and the interval or rest period between doses.

The high water alarm float starts an alarm to warn you of any pump or system malfunction. If pump timer controls are used, the alarm also will warn you of excessive water use in the home. The float is set to start when the effluent in the pump chamber rises above the "ON" float. The alarm should consist of a buzzer and an easily visible light. It should be on an electrical circuit separate from the pump.

The pump discharge pipe should have a union and valve for easy removal of the pump. A piece of nylon rope or other non-corrosive material should be attached to the pump for taking the pump in and out of the chamber.



Proper Care Includes:

1. **Checking the pump chamber, pump and floats every year and replacing or repairing worn or broken parts.** Pump maintenance should follow the manufacturer's recommendations. Check electrical parts and conduits for corrosion. If the alarm panel has a "push-to-test" button, it should be checked regularly.

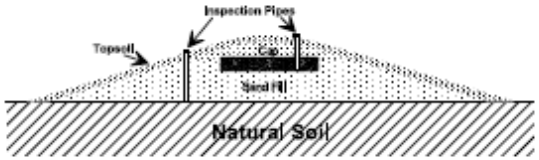
2. **Installing a septic tank effluent filter or pump screen, if your system does not have one.** Screening or filtering the septic tank effluent provides an effective way of preventing solids from clogging the pump and pipes. Inspecting a screen or filter, and cleaning it when necessary, is quick and easy, and prevents costly damage from solids entering the mound system.

3. **Taking action to protect the mound from overloading after a prolonged power outage or pump failure.** Effluent will continue to collect in the chamber until the pump starts. With additional effluent in the chamber, the pump may dose a volume more than the mound can handle. Once the reserve storage inside the chamber is all used up, the plumbing in your home can backup. When the pump is off for more than 6 hours, the following measures can be taken to help protect the mound:
(Timer controls will automatically correct this problem)
   a. Reduce your water use to a minimum.
   b. Turn off the pump at the control panel.
   c. After power is restored or pump service is completed, switch the pump on and let it run for 5 minutes maximum, and turn it off again. Repeat this manual switching every 6 hours until the effluent drops to the "OFF" float level and the pump turns off automatically. If there is little water use during the outage or pump service, the pump may automatically turn off during the first manual switching.

The Mound

The mound is a drainfield that is raised above the natural soil surface in a specific sand fill material. Within the sand fill is a gravel-filled bed with a network of small diameter pipes. Septic tank effluent is pumped through the pipes in controlled doses to insure uniform distribution throughout the bed. The effluent leaves the pipes under low pressure through small diameter holes, and trickles downward through the gravel and into the sand. Treatment of the effluent occurs as it moves through the sand and into the natural soil.

Every new mound is required to have a designated replacement area. It must be protected should the existing system need an addition or repair.



Proper Care Includes:

1. **Knowing where your system and replacement area are located and protecting them.** Before you plant a garden, construct a building, or install a pool, check on the location of your system and replacement area.

2. **Practicing water conservation and balancing your water use throughout the week to keep from overloading the system.** The more wastewater you produce, the more the mound must treat and dispose of.

3. **Diverting water from surfaces such as roofs, driveways, or patios away from the mound and replacement area.** The entire mound is graded to provide for runoff. Place structures, ditches, and driveways far enough away so that water movement from the mound is not disrupted.

4. **Keeping traffic, such as vehicles, heavy equipment, or livestock off your mound and replacement area.** The pressure can compact the soil or damage pipes.

5. **Landscaping your mound properly.** Do not place impermeable materials over your mound or replacement area. Materials, such as concrete or plastic reduce evaporation and the supply of air to the soil needed for proper effluent treatment. Grass is the best cover for the mound.

6. **Inspecting the mound and downslope areas for odors, wet spots, or surfacing sewage periodically.** Check your system's inspection pipes regularly to see if there is a liquid level continually over 6 inches. This may be an early indication of a problem. Call your local Health Agency for assistance.

What If the Alarm Goes On?

If for any reason the effluent level inside the pump chamber reaches the alarm float (faulty pump, floats, circuit, excessive water use, or another problem), the alarm light and buzzer will start. By using water conservatively (avoid baths, showers, and clothes washing), the reserve storage in the pump chamber should allow you enough time to get the problem corrected. To silence the alarm, push the reset light on the alarm panel. Before calling for service or repair, check to see if the problem could be:

1. **A tripped circuit breaker or blown fuse.** The pump should have a separate circuit with its own breaker or fuse. If it's on a circuit with other equipment, that equipment can cause the breaker to trip.

2. **A pump or float switch power cord plug that has come unplugged.** If electrical connections are the plug-in type, be sure switch and pump plugs are making good contact in their outlet.

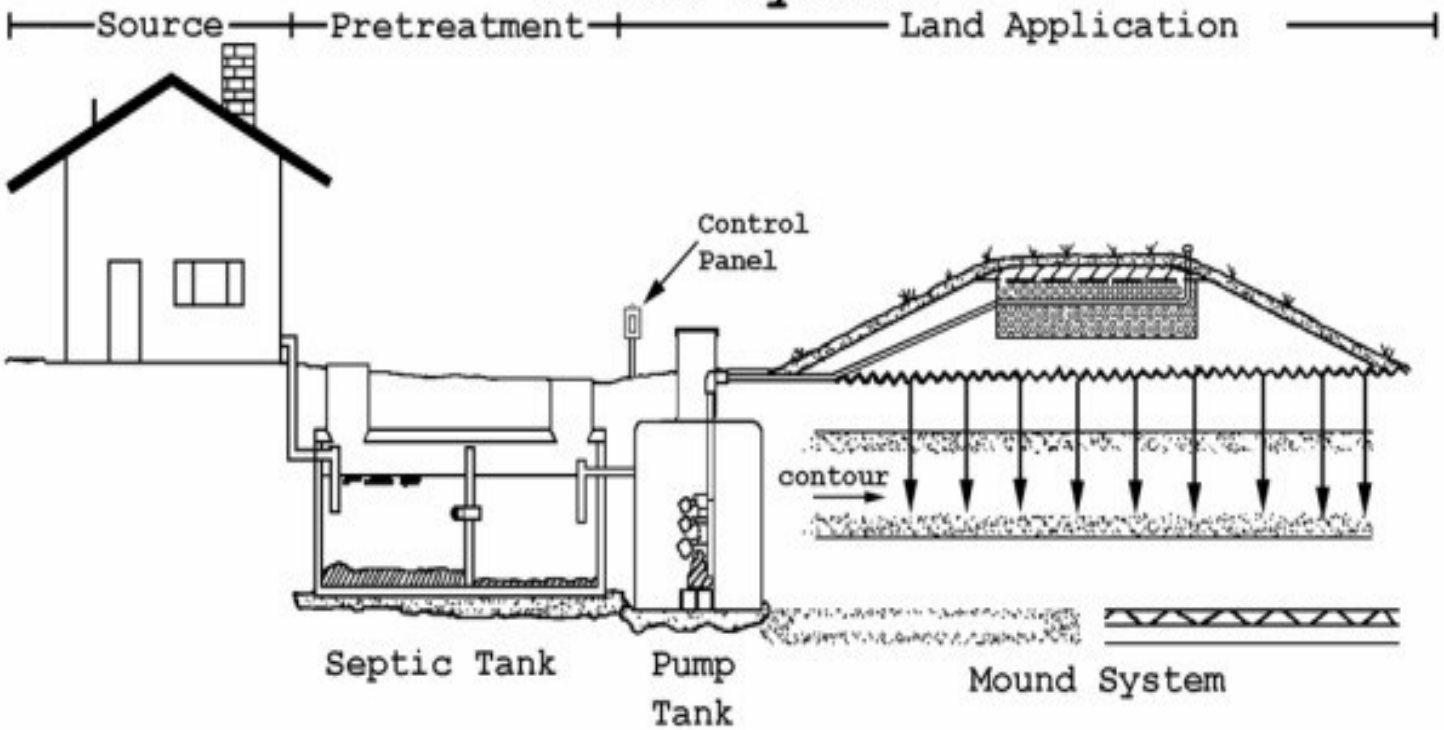
3. **Control floats tangled by other parts in the chamber such as the electric power cord, lifting rope, or pump screen.** Be sure floats operate freely in the chamber.

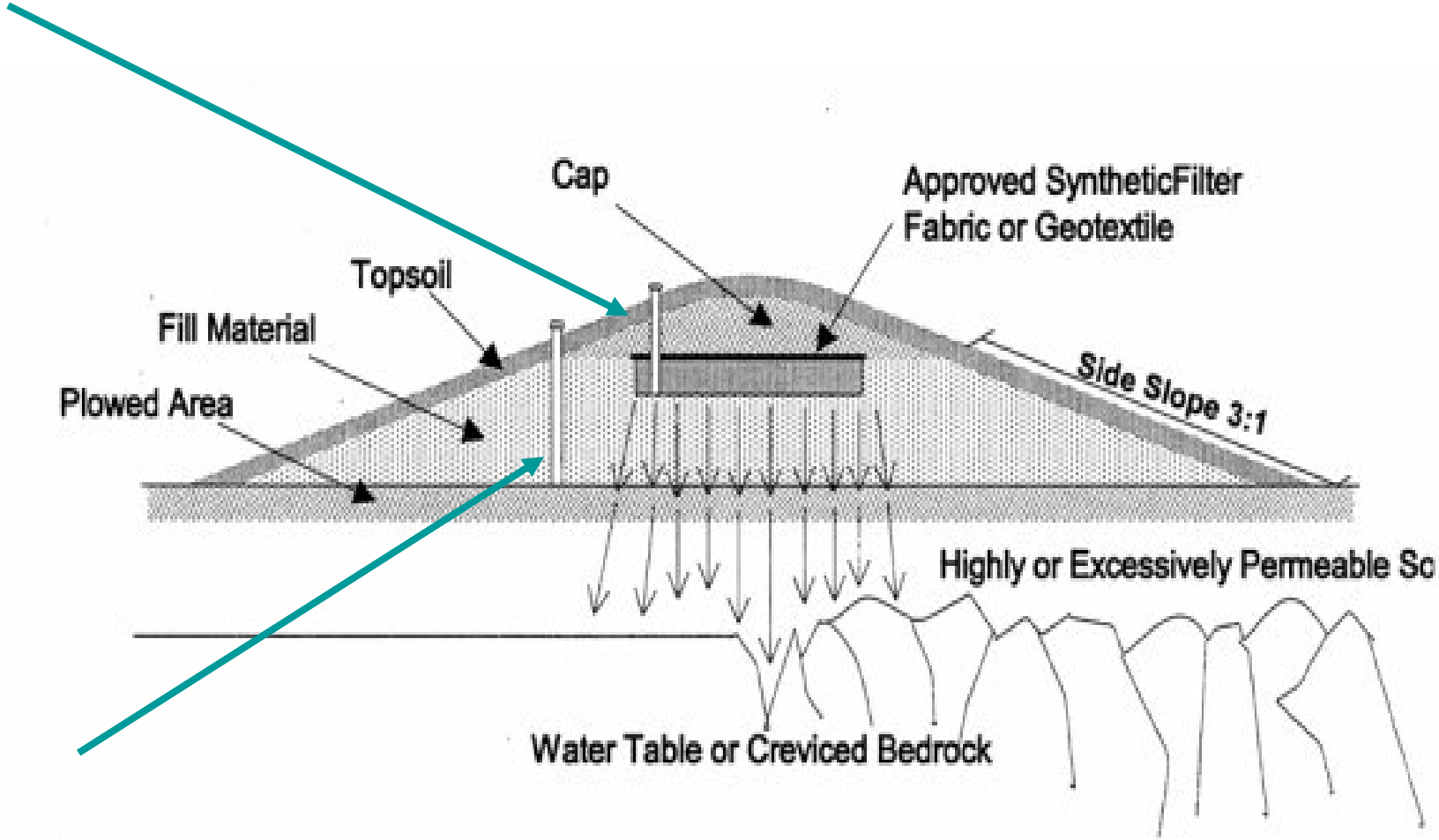
4. **Debris on floats and support cable that is causing the pump to switch off.** Lift the floats out of the chamber and clean.

CAUTION: Always turn off the power supply at the circuit breaker, and unplug all power cords before handling the pump or floats.

Do not enter the pump chamber. Gases inside pump chambers are poisonous and the lack of air can be fatal. If the problem cannot be located with the above steps, call your pump service person or on-site system contractor for service or repair. The service or repair of pumps and other electrical equipment must be done by an experienced person.

Mound System




Cap
Approved SyntheticFilter
Fabric or Geotextile
Topsoil
Fill Material
Plowed Area
Side Slope 3:1
Highly or Excessively Permeable Sc
Water Table or Creviced Bedrock

Improperly Vegetated Mound

Properly Vegetated Mound

Properly Vegetated Mound – end view

Maintenance of Mound Systems

- Inspect the mound for surfacing sewage or soggy soil – concentrate around the toe of mound and upper third where the laterals are located.
- Monitor vegetation around the mound. Vegetation should be limited to grass and trees and shrubs that existed at the time of installation.
- Check observation/monitoring ports for ponding of effluent. Use wood dowel or measuring tape to measure depth.
- Flush laterals if equipped with clean-outs.
- Measure pressure head if system is equipped with clean-outs. Use extra threaded caps with 1/8” hole on each clean-out to measure individual effluent spray lengths. Test all the lateral at the same time. Lengths should be uniform (within 10%) and measurements compared to previous inspection amounts. Significant differences might be an indication of clogged orifices.

DRAINFIELDS

- Treatment of effluent occurs in the soil before it returns to the groundwater.
- Sewage bacteria and viruses are destroyed in aerobic soils. They compete poorly with natural soil microorganisms.
- Bacteria and viruses are retained by entrapment or adsorption.
- Key to treatment is preventing solids from being pumped to the drainfield and/or hydraulically overloading it.
- Drainfields must be maintained and left undisturbed.

What is a Reserve Area (repair area)?

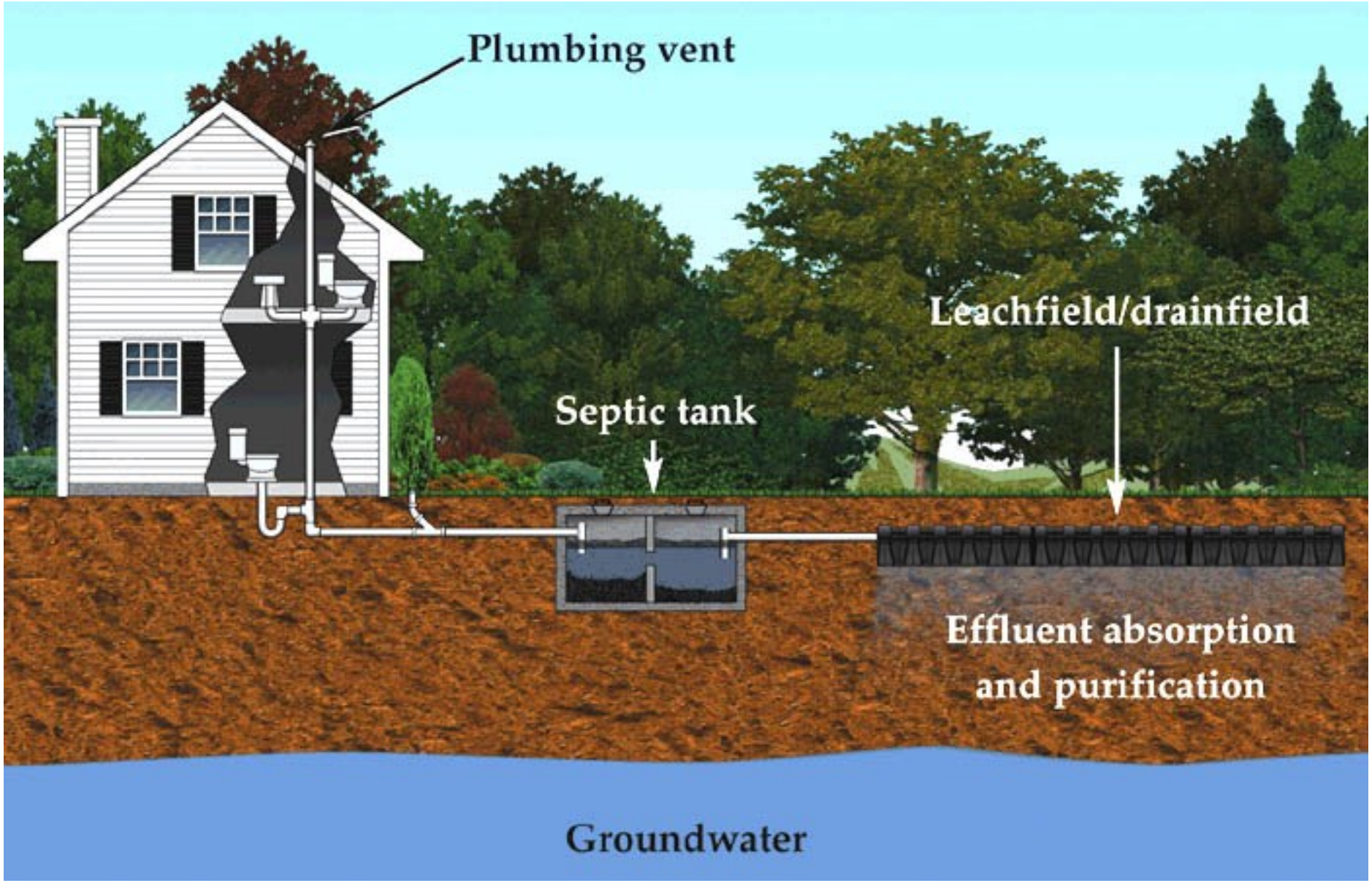
- Every new drainfield is required to have a designated replacement or reserve area.
- The reserve area must be protected as if it were a drainfield in use!
- This means the area must be maintained should you ever need to place it in service in the future.
  - Do not construct any permanent buildings over the area.
  - Do not distrub the soil in the area.
  - Do not drive on or park heavy vehicles in this area.
  - Do not pave or cover the area with impervious materials.
  - Do not remove large trees or other large root systems from the area without first consulting your system designer or a Health Department Inspector.

GRAVITY DRAINFIELDS

- Usually equipped with a distribution Box (d-box) if it has more than one lateral.

Types

- Clay tile
- Gravel and 4” perforated pipe
- Gravel-less drainfields
  - Infiltrator chambers


Plumbing vent
Leachfield/drainfield
Septic tank
Effluent absorption
and purification
Groundwater

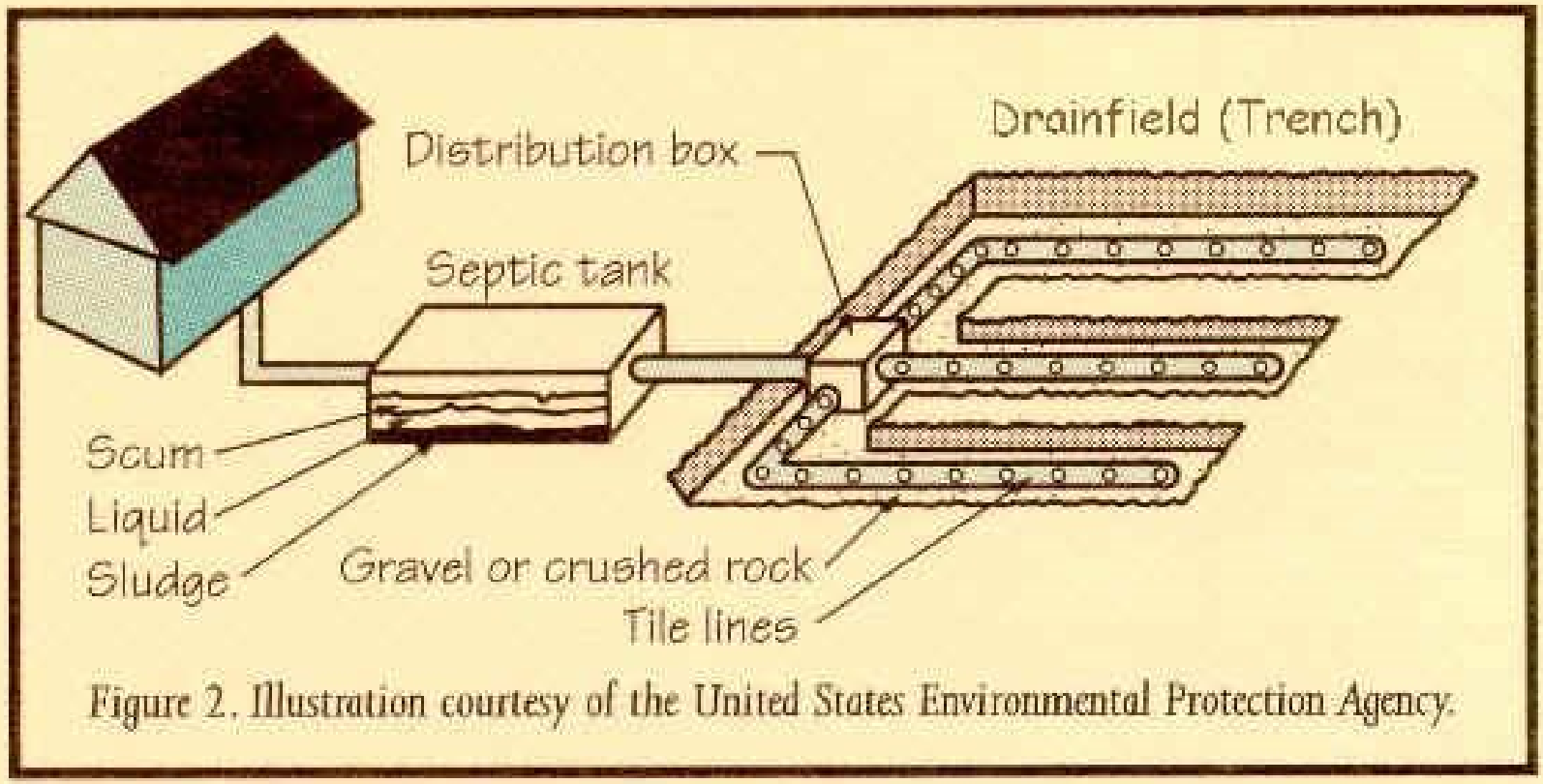
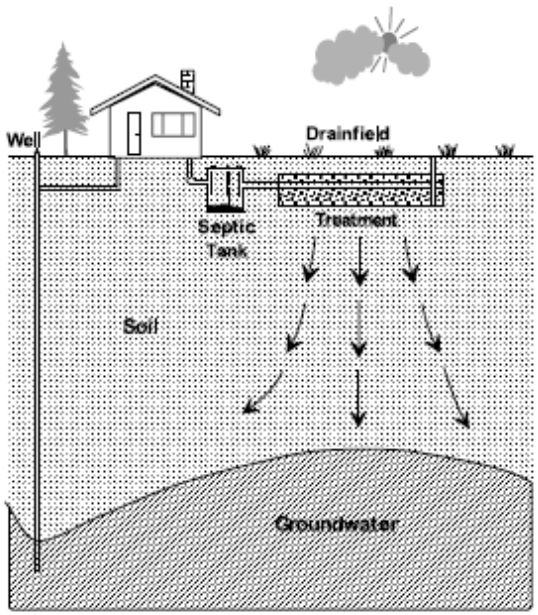


Figure 2. Illustration courtesy of the United States Environmental Protection Agency.

Schematic of a Drainfield

Understanding And Caring for Your Septic Tank System



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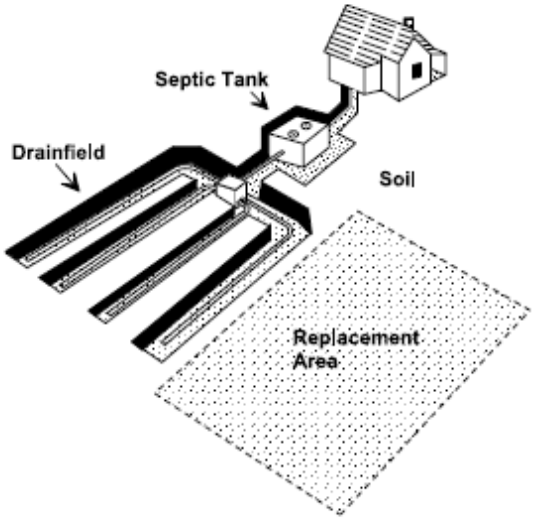
Households that are not served by public sewers usually depend on septic tank systems to treat and dispose of wastewater. A well designed, installed, and maintained septic system can provide years of reliable low-cost service. When these systems fail to operate effectively, property damage, groundwater and surface water pollution, and disease outbreaks can occur. Therefore, it makes good sense to understand and care for your septic tank system.

There are may different types of septic tank systems to fit a wide range of soil and site conditions. The following information will help you to understand a conventional gravity-flow septic tank system, and keep it operating safely at the lowest possible cost.

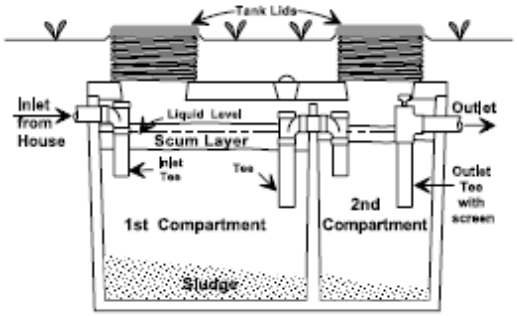
A conventional gravity-flow septic tank system has three working parts:

1. The septic tank.
2. The drainfield with its replacement area.
3. The surrounding soil.



The Septic Tank

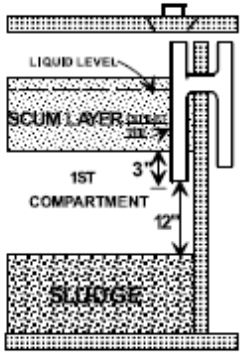
The typical septic tank is a large buried rectangular or cylindrical container made of concrete, fiberglass or polyethylene. Wastewater from your toilet, bath, kitchen, laundry, etc. flows into the tank. Heavy solids settle to the bottom where bacterial action partially decomposes them to digested sludge and gases. Most of the lighter solids, such as fats and grease, rise to the top and form a scum layer.



Septic tanks may have one or two compartments. Two compartment tanks do a better job of settling solids and are required for new systems. Tees or baffles are provided at the tank's inlet and outlet pipes. The inlet tee slows the incoming wastes and reduces the disturbance of the settled sludge. The outlet tee keeps the solids or scum in the tank. All tanks should have accessible covers for checking the condition of the baffles and for pumping both compartments. If risers extend from the tank to or above the ground surface, they should be secure to prevent accidental entry into the tank.

Solids that are not decomposed remain in the septic tank. If not removed by periodic pumping, solids will accumulate until they eventually overflow into the drainfield. Most septic tanks need to be pumped every 3 to 5 years, depending on the tank size, and the amount and type of solids entering the tank.

"Early Warning" Levels Inside Your Septic Tank



The septic tank should be pumped whenever:

- the bottom of the scum layer is within 3 inches of the bottom of the outlet tee or baffle, or
- the top of the sludge layer is within 12 inches of the bottom of the outlet fitting.

Some septic tank additives on the market with chemicals, yeast, bacteria, or enzymes claim to improve septic tank performance or reduce the need for routine pumping. Such products are not necessary for the proper functioning of a septic tank. Some can cause solids to carry over to the drainfield, which results in early soil clogging and the need for a new drainfield. Products containing organic solvents contribute to groundwater pollution.

The wastewater leaving the septic tank is a liquid called effluent. It has been partially treated but still contains disease-causing bacteria and other pollutants. Discharging effluent onto the ground's surface or into surface and ground water is against Washington State law.

The Drainfield

The drainfield receives septic tank effluent. It has a network of perforated pipes laid in gravel-filled trenches (2-3 feet wide) or beds (up to 10 feet wide) in the soil. Wastewater trickles out of the pipes, through the gravel layer, and into the soil. The size and type of drainfield depends on the estimated daily wastewater flow and soil conditions.

Every new drainfield is required to have a designated replacement area. It must be maintained should the existing system need an addition or repair.

The Soil

The soil below the drainfield provides the final treatment and disposal of the septic tank effluent. After the effluent has passed into the soil, most of it percolates downward and outward, eventually entering the groundwater. A small percentage is taken up by plants through their roots, or evaporates from the soil.

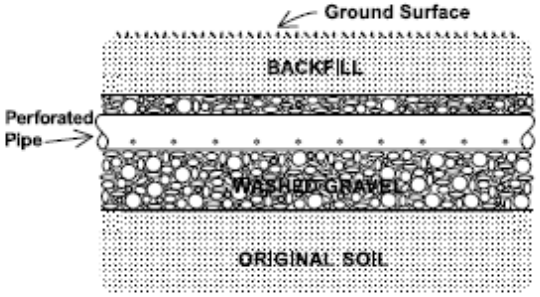
The soil filters effluent as it passes through the pore spaces. Chemical and biological processes treat the effluent before it reaches groundwater, or a restrictive layer, such as hardpan, bedrock, or a clay soils. These processes work best where the soil is somewhat dry, permeable, and contains plenty of air for several feet below the drainfield.

System Failure

Warning signs of a failure:

- Odors, surfacing sewage, wet spots or lush vegetation growth in the drainfield area
- Plumbing or septic tank backup
- Slow draining fixtures
- Gurgling sounds in the plumbing system

If you notice any of these signs or if you suspect your septic tank system may be having problems — contact your local health agency for assistance.



Caring For Your System — The Ten Essentials

1. **Practicing water conservation.** The more wastewater you produce, the more the soil must treat and dispose. By reducing and balancing your use, you can extend the life of the drainfield, decrease the possibility of system failure, and avoid costly repairs.

   To reduce your water use:
   - Use water-saving devices.
   - Repair leaky faucets and plumbing fixtures.
   - Reduce toilet reservoir volume or flow.
   - Take shorter showers.
   - Take baths with a partially-filled tub.
   - Wash only full loads of dishes and laundry.

2. **Keep accurate records.** Know where your septic tank system is and keep a diagram of its location. Records of its size and location may be available at your local health agency. It is also wise to keep a record of maintenance on the system. These records will be helpful if problems occur, and will be valuable to the next owner of your home.

3. **Inspect your system once every year.** Check the sludge and scum levels inside your septic tank to assure that the layers of solids are not within the "early warning levels." Also check the tank to see if the baffles or tees are in good condition. Periodically inspect the drainfield and downslope areas for odors, wet spots, or surfacing sewage. If your drainfield has inspection pipes, check them to see if there is liquid level continually over 6 inches. This may be an early indication of a problem.

4. **Pump out your septic tank when needed.** Don't wait until you have a problem. Routine pumping can prevent failures, such as clogging of the drainfield and sewage back-up into the home. Using a garbage disposal will increase the amount of solids entering the septic tank, requiring more frequent pumping.

5. **Never flush harmful materials into the septic tank.** Grease, cooking oils, newspaper, paper towels, rags, coffee grounds, sanitary napkins, and cigarettes cannot easily decompose in the tank. Chemicals such as solvents, oils, paints and pesticides are harmful to the system's proper operation and may pollute the groundwater. Septic tank additives are not necessary for the proper functioning of a septic tank, nor do they reduce the need for routine pumping. For information on the proper disposal of hazardous household waste, call the Recycle Hotline, 1-800-RECYCLE.

6. **Keep all runoff away from your system.** Water from surfaces such as roofs, driveways, or patios should be diverted away from the septic tank and drainfield area. Soil over your system should be slightly mounded to help surface water runoff.

7. **Protect your system from damage.** Keep traffic, such as vehicles, heavy equipment, or livestock off your drainfield or replacement area. The pressure can compact the soil or damage pipes. Before you plant a garden, construct a building, or install a pool, check on the location of your system and replacement area.

8. **Landscape your system properly.** Don't place impermeable materials over your drainfield or replacement area. Materials, such as concrete or plastic, reduce evaporation and the supply of air to the soil for proper effluent treatment. They can also hinder getting to the system for inspection, maintenance, or repair. Grass is the best cover for your system.

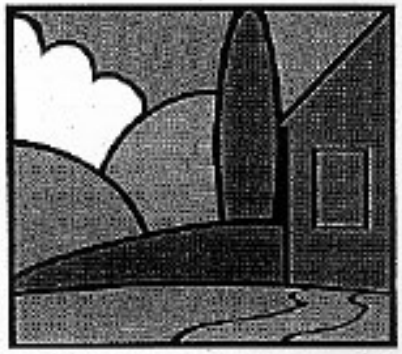
9. **Never enter any septic tank.** Poisonous gases or the lack of air can be fatal. Any work to the tank should be done from the outside.

10. **Check with your local health agency for help with system problems.** Although some malfunctions may require complete drainfield replacement, many problems can be corrected with a minimum amount of cost and effort.

Plumbing the Parts Together is Next

Speed levelers – adjustable to maintain an equal flow of the effluent to each drainfield lateral.

LANDSCAPING YOUR DRAINFIELD



Is your septic system drainfield an eyesore? Are you unsure how to garden and care for it?

This brochure will guide you through the do's and don'ts of landscaping your drainfield...

Your drainfield represents a substantial investment. Treating it right, and protecting it from damage, can save considerable time, work and money.

1. What can I plant over my drainfield?

Grass is the ideal cover for drainfields. Grasses can be ornamental, mowed in a traditional lawn, or in an unmowed meadow. Or, you can try groundcovers and ferns (see questions 11 and 12 for more details.) The key to planting over the drainfield is to select shallow rooted, low-maintenance, low-water-use plants. For those whose tank-covers are buried, keep in mind that plantings over the tank – from inlet to outlet – will have to be removed every 3-to-4 years for inspection and pumping.

2. How close can trees and shrubs be to the drainfield?

Trees or large shrubs should be kept at least 30 feet away from your drainfield. If you do plan to plant trees near a drainfield, consult an expert to discuss your ideas and needs. Trees and shrubs generally have extensive root systems that seek out and grow into wet areas, such as drainfields.

3. Can I plant a vegetable garden over my drainfield?

No. Growing vegetables over a drainfield is not recommended. Vegetables need watering, and excess water in the soil reduces its ability to treat wastewater. The deep roots of some vegetables may damage drainfield pipes. Bed preparation, such as rototilling or deep digging, can also damage pipes.

4. What about landscape plastic or fabric under mulch?

No. Plastic reduces the necessary air exchange in the drainfield soil. Even mulch or bark over the drainfield is not recommended, because it reduces air exchange and retains water.

5. Can I build a carport or camper pad over the drainfield? How about a tennis court or a nice hot tub?

No, for two reasons. First, you should avoid driving over the drainfield; the pressure of vehicles and heavy equipment compact the soil and can damage pipes. Second, impermeable materials such as concrete and asphalt reduce evaporation and the supply of oxygen to the soil. Oxygen is critical to the proper breakdown of sewage by soil microorganisms.

6. How about putting my carport over the replacement area?

No. The designated drainfield replacement area (reserve area) should be left undeveloped and protected from compaction.

7. Can cattle graze over the drainfield? Just one horse?

Livestock should be kept off of drainfields. In the winter, livestock trample and muddy the soil; in the summer they compact it. Again, this is not good for the soil's ability to exchange oxygen. So, sorry, even one horse is not recommended.

8. Rain water is directed onto my drainfield. Is this a problem?

Yes. Downspouts and stormwater from surfaces such as driveways and patios should be diverted off the septic tank and drainfield. A small trench uphill from a drainfield can help direct water away.

9. How close to the drainfield can I install a sprinkler system?

Water lines should be at least 10 feet from all components of the septic system. Be sure all sprinkler lines are fitted with approved backflow prevention devices.

10. ... and can I put a retaining wall and drains back there?

If you are planning to put drains (interceptor, French, curtain) or retaining walls within 30 feet of ANY PART of the septic system, check with the Thurston County Health Department (786-5490). Never cut through drainfields for drains, walls or irrigation lines. French drains are notorious for carrying pollution from septic systems into water bodies or streets.

11. Okay, you've told me everything I can't do. What can I do to improve the appearance of my drainfield?

Planting your drainfield will be much different from other experiences you may have had landscaping. First, it is unwise to work the soil, which means no rototilling. Parts of the system may be only six inches under the surface. Adding two-to-three inches of topsoil should be fine, but more could be a problem. Second, the plants need to be relatively low-maintenance and low-water use. You will be best off if you select plants for your drainfield that once established will not require routine watering.

Following are three lists of shallow-rooted plants you can grow on standard drainfields or mounds, including groundcovers, ferns, and ornamental grasses.

DEEP SHADE (receives no direct sun)

Carpet Bugle (*Ajuga reptans*): an aggressive groundcover with blue flowers in the spring.

Japanese Spurge (*Pachysandra terminalis*): an aggressive evergreen groundcover; once established, it forms a thick cover, minimizing weeds.

Periwinkle (*Vinca minor*): an evergreen groundcover with periwinkle blue flowers in the spring. Moderately drought tolerant in shady areas.

Sword Fern (*Polystichum munitum*): a native evergreen fern that in a shady location is very tolerant of our dry summer months. Easy to grow.

Irish Moss (*Sagina*): not a true moss, but a good look-alike and much easier to grow. Does best when mixed with ferns and other plants.

Note: Do not mix carpet bugle, Japanese spurge and periwinkle – select one.

PARTIAL SUN AND SHADE

(receives about four hours of afternoon sun)

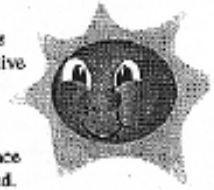
Blue Star Creeper: an attractive, fast-growing groundcover with tiny blue flowers.

Vaccinium "Well's Delight" (*Vaccinium crassifolium*): shiny, dark evergreen leaves with dainty pinkish flowers. A good, three-inch-tall groundcover for partial sun.

Creeping Rubus (*Rubus pentalobus*): this is a species of ornamental bramble, but its leaves and small flowers are much more decorative than its thorny cousins. The rooting carpet of stems can easily grow four feet a year.

Carpet bugle and sword fern (see above) are also suitable, but the fern will not be as drought tolerant as in the shade.

SUN (receives full sun all day or about eight hours)



Kinnikinnick (*Arctostaphylos uva-ursi*): a native evergreen groundcover known for its drought tolerance once established. Requires a well-drained soil; not tolerant of wet areas.

Blue-silver fescue (*Festuca cinerea*): an ornamental grass with blue-silver blades. A short, clumping grass requiring a well-drained soil, not drought tolerant.

Blue oat grass (*Helictotrichon sempervirens*): an ornamental grass with stiff evergreen blue blades. Requires well-drained soil.

Fountain grass (*Pennisetum alopecuroides*): an attractive fountain grass with arching stems bearing soft, bottlebrush clusters of fuzzy flowers. Grows to about 1½-to-2 feet and is tolerant of moist soils, unlike some other ornamental grasses.

Vaccinium "Wells Delight" and **Creeping rubus**, noted above, are also suitable.

12. How can I make the drainfield area look natural?

A meadow with a mix of native grasses and shallow-rooting flowers can be very attractive, and good for wildlife, too. The use of wildflowers with bulbs is an easy way to landscape the drainfield and have two-to-three seasons of color. Daffodil and crocus bulbs are easy to naturalize and both are reasonably drought tolerant and will return year after year.

When selecting wildflower seed, there are several important considerations:

- Be sure the seed is viable and not leftover from the previous year. Many mixes currently available may not be well suited for our Northwest climate.
- As with the plant lists above, seed selection must be based on the amount of sun. Applewood Seed Company (see "Resources") has a variety of native seed mixes for all types of sun-shade situations.
- The seed mix needs to be a blend of annual and perennial seeds. Avoid wildflower seeds that contain knapweed, hawkweed, or other noxious weeds. Packets of wildflowers from out of state may contain weeds considered a nuisance here in Washington. Look for Washington state-labeled packages that say "no noxious weeds" or "no detectable weeds."
- If your drainfield currently has grass, you cannot just spread the seed over the grass and expect it to grow. Remove the grass in small areas, six inches or so in diameter, and sow the seed in those areas. The grass needs to be kept out of the area until the seed has germinated and is large enough to compete with the grass.

- May is generally the best month to sow wildflower seeds, when we still get enough rain to keep the seeds moist during germination. If we have a dry month, sprinkle the seeds with water twice a week.

08/22/2008

Improperly vegetated drainfield

08/22/2008

08/22/2008

02/11/2009

Drainfield Inspection & Maintenance

- ✓ Inspect observation/monitoring ports if equipped. Check for ponding – measure using a wood dowel or tape measure. Compare to previous inspections.
- ✓ Walk drainfield area – look for surfacing sewage.
- ✓ On pressure drainfields - flush laterals if equipped with clean-outs.
- ✓ Measure pressure head if system equipped with clean-outs. Use extra threaded caps with 1/8” hole on each clean-out to measure individual effluent spray lengths. Test each lateral at the same time. Lengths should be uniform (within 10%) and measurements compared to previous inspection amounts. Significant differences might be an indication of clogged orifices.
- ✓ Check if drainfield and reserve drainfield area (repair area) are being properly maintained and covered with appropriate vegetation.
- ✓ Locate and inspect “d-box” on gravity systems. Check if box is level and equal amount of effluent is flowing to each lateral.

MAINTENANCE OF D-BOX

- Locate & mark location
- Install riser with lid if buried to protect from surface water intrusion.
- Evaluate the D-box for:
  - Uneven settling
  - Levelness of inverts of outlets
  - Uniformity of outlet flow – install speed levelers if not uniform
  - Depth of effluent
  - Solids accumulation
  - Surface water and/or root intrusion

MAINTENANCE COMPONENTS

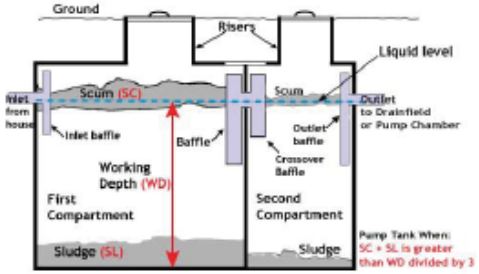
- Required at time of sale include the following:
  - Access risers with water-tight lids on all access hatches on the septic tank and pump tank.
  - A riser on “d-box” or location marked.
  - Observation/monitoring ports in the drainfield at both ends of each lateral.
  - Observation/monitoring ports in the mound to monitor the native material/sand interface and either at the sand/gravel interface or at both ends of each lateral if equipped with infiltrators (gravel-less).
  - Observation/monitoring ports in the sand filter to monitor the bottom of the underdrain and upper gravel/sand interface. The pumpwell may be used to monitor underdrain.
  - Cleanouts on pressure distribution laterals in the drainfield and mound.
  - Cleanouts on each sand filter laterals .
  - High effluent level audible and visual alarms on all pumps.
  - Effluent filters on the outlet baffle on gravity systems and/or either an effluent filter or screen around the pump on pressure systems.

The Stick Test

Septic tanks are mainly settling chambers. They allow time for solids and scum to separate from the wastewater, so clear liquid can safely go to the drainfield. Over time, the scum and sludge layers get thicker, leaving less space and time for the wastewater to settle before passing to the drainfield.

For every gallon entering the tank, one gallon is pushed out to the drainfield. So it is important to keep the level of scum and sludge from building up and nearing the inlet or outlet baffles, where the scum or sludge could plug them up or be carried out to the drainfield.

Septic tanks should be checked for buildup every 1 to 3 years until you can get on a predictable pumping schedule. Most septic tanks need pumping every 3 to 5 years. How often depends on the size of the tank, the number of people in the household, and the amount and type of solids entering the tank.

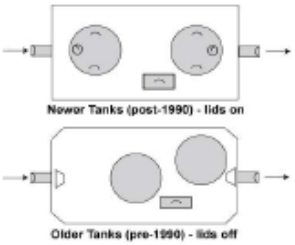


TYPICAL SEPTIC TANK WITH RISERS

You can hire a professional or inspect your septic tank yourself. The "stick test" procedure below will guide you through the steps of measuring the amount of scum and sludge in the tank, discovering the working capacity of the tank, and determining whether the tank needs pumping. A more complete inspection includes inspecting the condition of the baffles and the pipe seals into and out of the tank (see Step 4).

Step 1

First uncover and remove the first manhole cover. Some systems have "risers" that make this job easier by bringing the tank lids up to the ground surface. (We encourage you to have risers installed so you won't need to dig down each time you inspect.)



The diagram at left shows the tops of the two most common septic tank configurations. The upper figure is found on newer tanks and the bottom one is usually found on older septic tanks. In most cases, the hole to the left is the first compartment, the hole to the right is the second compartment, and the rectangular cover is to the crossover baffle. (Some tanks, 25 years or older, may have only one compartment that is round, oval, or square.)

Step 4 — Inspect the Baffles

Remove the covers over the inlet, outlet, and crossover baffles. Inspect the baffles to ensure they are present and not severely corroded. If the baffles are concrete and molded into the rest of the tank, venting holes should be present and unobstructed.

- The inlet baffle should be unobstructed and the pipe sealed to the tank.
- The outlet baffle should be unobstructed and the liquid level should be at the bottom of the pipe, not below the pipe or above the bottom of the pipe. The pipe must be well sealed to the tank.
- The crossover baffle should also be free of obstruction.

In this picture, looking down an outlet baffle, the effluent is below the pipe, indicating a bad seal.

Safety and Cleanup

- **Wear gloves.**
- **Discard soiled gloves and sludge toweling in a plastic bag.**
- **Rinse sticks with bleach water to disinfect before storing.**

Talk to your septic system Designer or installer for more answers to your questions, or call San Juan County Health & Community Services at (360) 378-4474.

San Juan County Health & Community Services
P.O. Box 607
145 Rhone Street
Friday Harbor

Inspecting Your Septic Tank

It's not so bad... really!

Step 2 — Measuring the Scum Level

This procedure determines the thickness of the scum level (SC).

1. Make the *scum stick* — Cut one of the 10-foot PVC pipes to 6 feet. Glue a 90° elbow to one end. Cut a 6-inch piece of PVC pipe and glue to elbow (see below). Place end caps on open ends.

2. Lay a board or stick across the top of the hole, manhole, or riser.

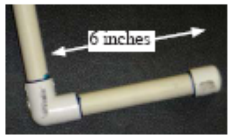
3. Place the scum stick down the manhole of the first compartment of the tank until it rests on top of the scum layer (see Figure 1) and mark the scum stick where it crosses the reference point (A).

4. Work the stick through the scum layer, leading with the elbow end. Push straight through the scum layer, turn the stick 90°, pull up on the stick until you feel the bottom of the scum layer.

5. Mark the scum stick where it crosses the reference point (B).

6. Remove the scum stick and measure the distance between the two marks. This is the thickness of the scum layer (SC).

Scum stick is 6 feet long with a 6 inch leg. Sludge stick is two 5 foot sections screwed together. *NOTE: Scum and sludge sticks can be any length up to 10 feet.*



WHAT YOU NEED TO DO THE STICK TEST

- two 10-foot PVC pipe*
- four end caps*
- one 90° elbow*
- PVC cement (blue cement used in rain and wet)
- two adapters, SxMPT, threaded*
- one coupler, threaded*
- three feet of white rag or old towel or old gym sock
- string or duct tape
- pencil or waterproof marker
- rubber gloves
- disinfecting solution made of 1/4 cup bleach per gallon of water in a bucket
- plastic bag for disposal of towel, rag/sock, gloves

* all PVC materials are 1/2-inch Schedule 40 PVC plastic

CAUTION:

NEVER enter a septic tank—fumes can be fatal!

NEVER leave an open tank unattended. Keep kids and pets away. Cover with a large board, if needed.

Step 3 — Measuring the Sludge Level

This procedure determines the thickness of the sludge level (SL).

1. Make hole in scum – do not stain the sludge stick with scum.

2. To make the sludge stick, cut the other 10-foot PVC pipe into two 5-foot sections. Glue an adapter to each stick. Screw the coupler into one of the adapters. Connect the two sections to make a 10-foot stick.

3. Tightly wrap two feet of a white rag or old towel around the bottom of the stick. Fasten it with tape or string.

WHEN TO PUMP

Pump the tank when the sludge depth, plus the scum depth, is greater than one-third of the working depth of the tank:

(a) SC _____ inches + SL _____ inches = _____
(b) WD _____ ÷ 3 = _____

If (a) is greater than (b), the tanks needs pumping.

For example, if SC = 10, SL = 8, and WD is 48":
10 + 8 = 18 inches and 48/3 = 16 inches...

18 is greater than 16, so the tank needs pumping.

4. Carefully lower stick through the hole in scum in first compartment until it rests on top of the liquid layer. Mark the stick where it crosses the opening of the manhole or riser (C in Figure 1).

5. Lower the stick to the bottom of the tank. Hold the stick in the tank for at least five minutes to allow sludge particles to adhere to the towel.

6. Mark the sludge stick where it crosses the board (D in Figure 1). The distance between the two marks (C and D) is the working depth of the tank (WD).

7. Carefully remove the stick. There should be a distinct dark stain on the rag. Measure the height of the stain. This is the depth of the sludge layer (SL).

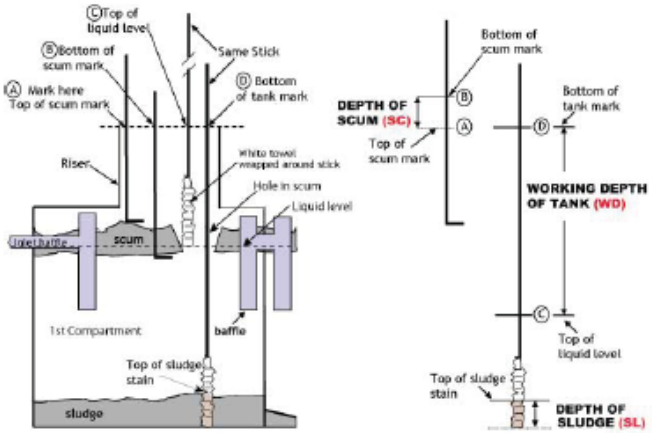


FIGURE 1 - SCUM DEPTH (SC), SLUDGE DEPTH (SL) AND WORKING DEPTH OF TANK (WD)

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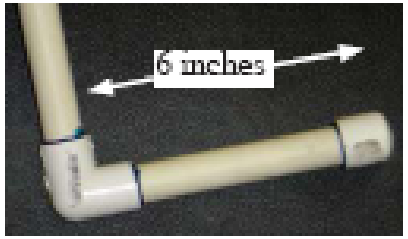

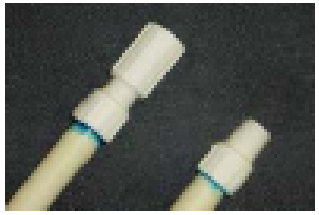

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The Stick Test

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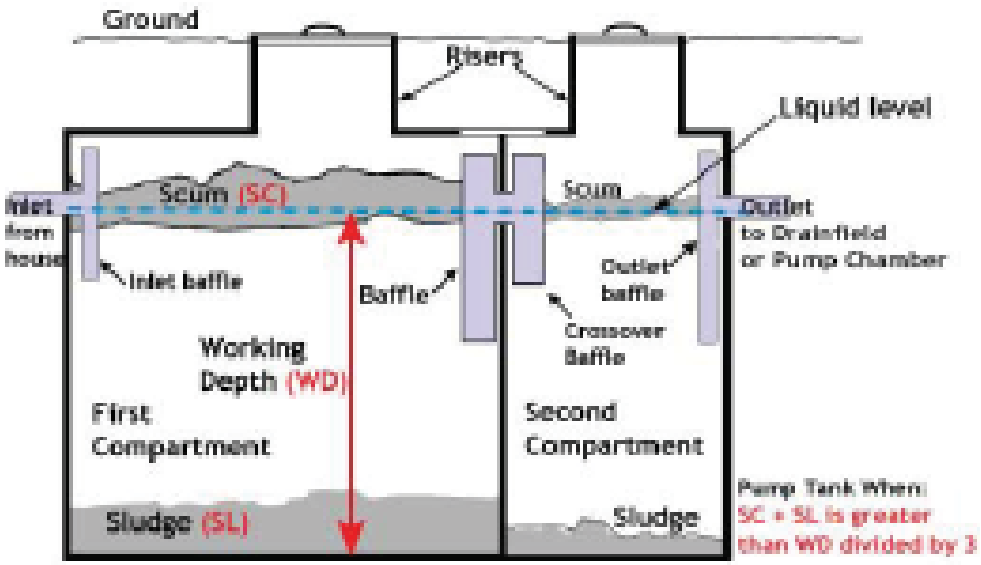
For every gallon entering the tank, one gallon is pushed out to the drainfield. So it is important to keep the level of scum and sludge from building up and nearing the inlet or outlet baffles, where the scum or sludge could plug them up or be carried out to the drainfield.

Septic tanks should be checked for buildup every 1 to 3 years until you can get on a predictable pumping schedule. Most septic tanks need pumping every 3 to 5 years. How often depends on the size of the tank, the number of people in the household, and the amount and type of solids entering the tank.



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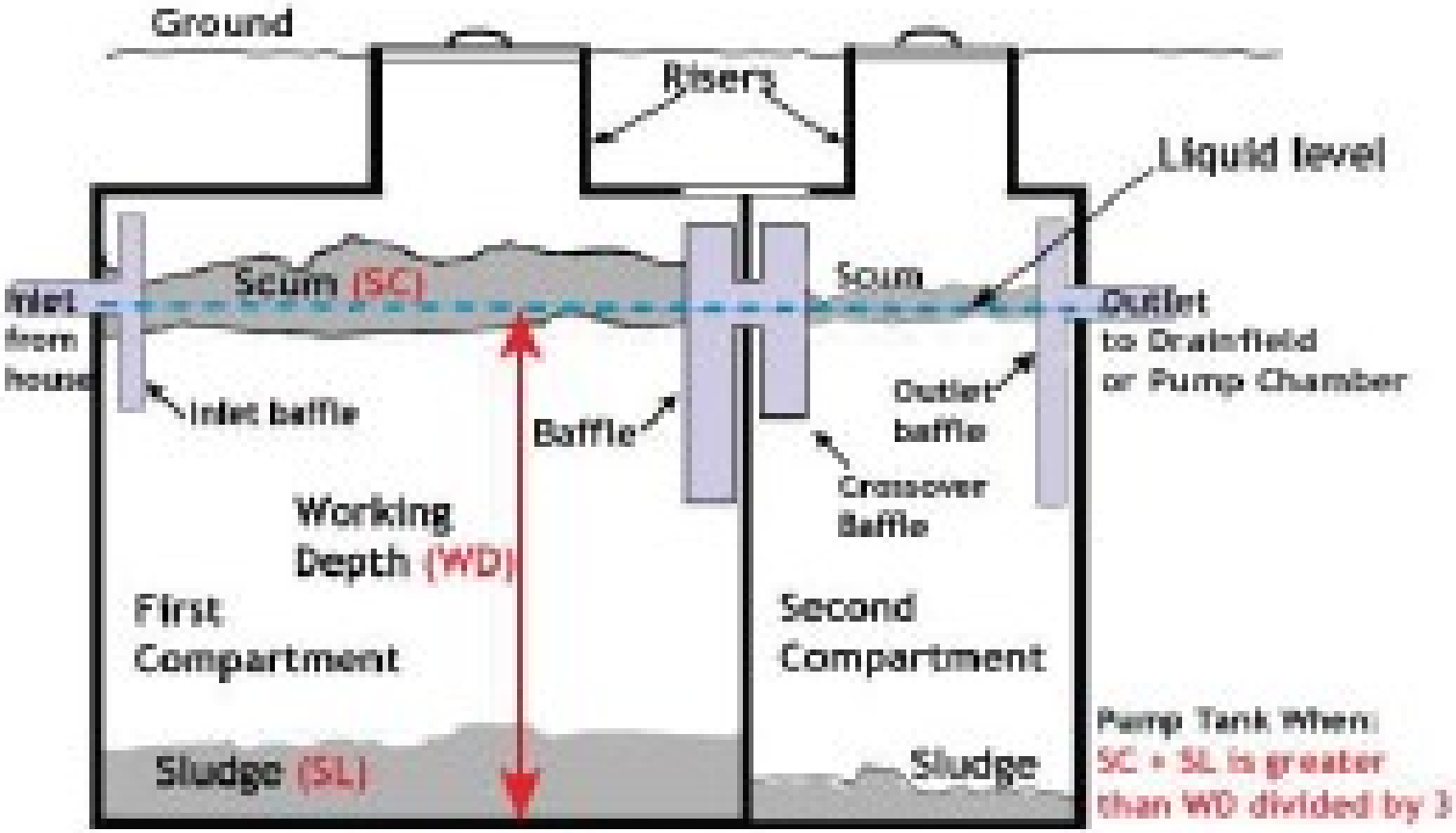

TYPICAL SEPTIC TANK WITH RISERS

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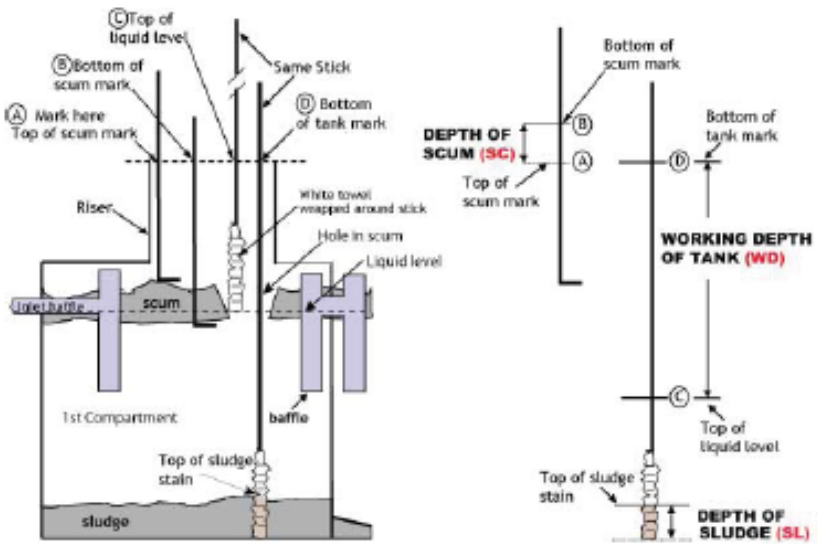
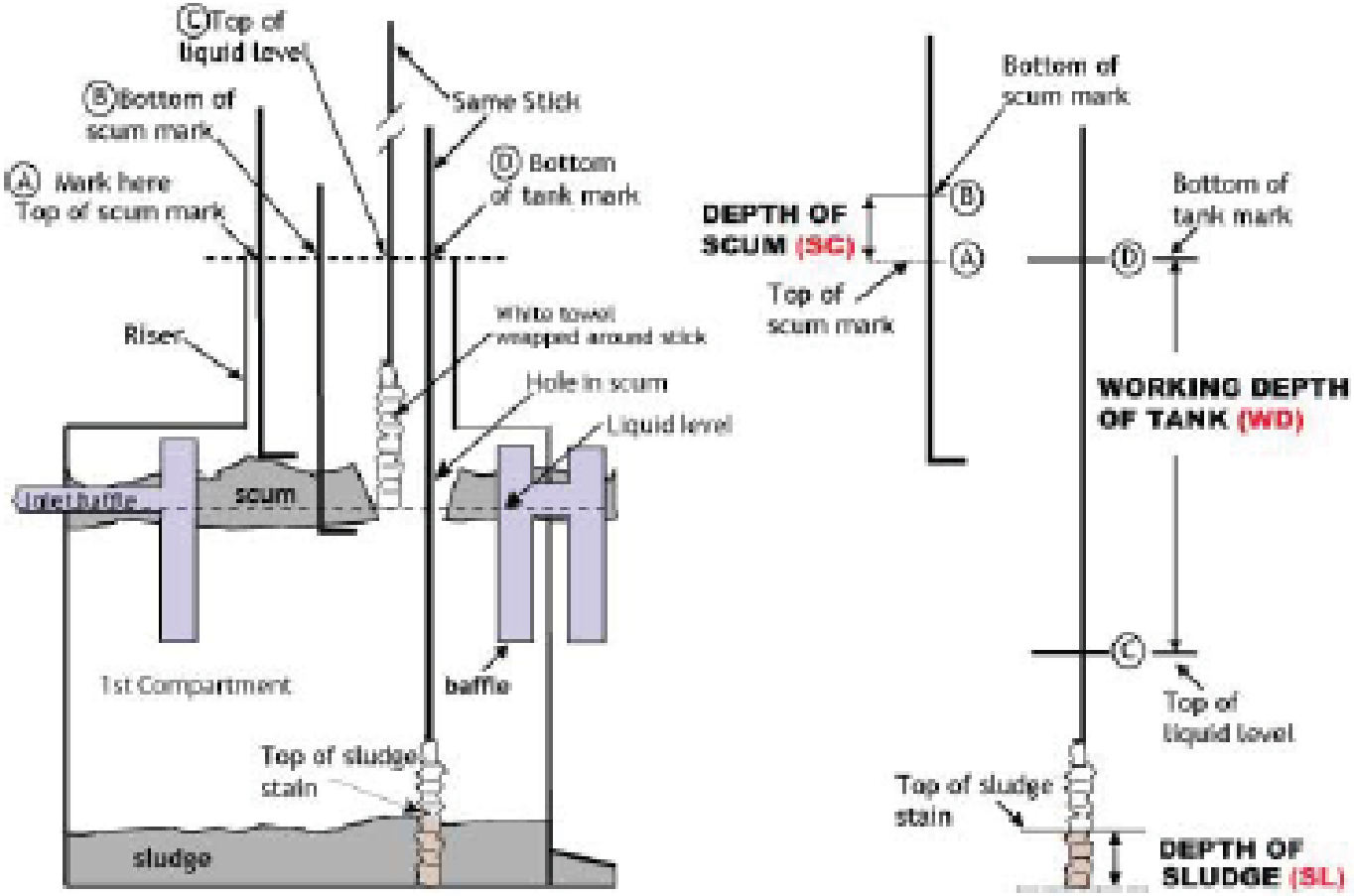


FIGURE 1 - SCUM DEPTH (SC), SLUDGE DEPTH (SL) AND WORKING DEPTH OF TANK (WD)



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Step 4 — Inspect the Baffles

Remove the covers over the inlet, outlet, and cross-over baffles. Inspect the baffles to ensure they are present and not severely corroded. If the baffles are concrete and molded into the rest of the tank, venting holes should be present and unobstructed.

- The inlet baffle should be unobstructed and the pipe sealed to the tank.
- The outlet baffle should be unobstructed and the liquid level should be at the bottom of the pipe, not below the pipe or above the bottom of the pipe. The pipe must be well sealed to the tank.
- The crossover baffle should also be free of obstruction.

In this picture, looking down an outlet baffle, the effluent is below the pipe, indicating a bad seal.

Safety and Cleanup

- Wear gloves.
- Discard soiled gloves and sludge toweling in a plastic bag.
- Rinse sticks with bleach water to disinfect before storing.

Health & Community Services

San Juan County

P.O. Box 607 ◆ 145 Rhone, Friday Harbor, WA 98250
Phone: (360) 378-4474 Fax: (360) 378-7036

ON-SITE SEWAGE SYSTEM INSPECTION FORM APPLICATION GUIDE & INSTRUCTIONS

Homeowners and Wastewater Inspectors completing inspections of on-site sewage systems will need to complete and submit an On-site Sewage System Inspection form. The Inspection form will be reviewed for completeness and entered into the department's database. This application guide and instruction sheet is intended to aid both the homeowner and Wastewater Inspector in providing complete inspection information. Listed below are instructions and specific inspection information for the various on-site septic systems. The Inspection form is attached.

Instructions:

1. **Obtain septic records and identify the type of septic system serving the property.**
2. **Complete Property Information, Owner Information and General Information on the Inspection form.**
3. **Identify appropriate checklist below and complete all required Inspection Information on the form.**
4. **Sign & Date Inspection form.**
5. **Submit completed inspection form along with the appropriate filing fee to San Juan County Health & Community Services (for filing fee amount contact this department or visit county website - http://www.sanjuanco.com/health/ehswaste.aspx)**

I. Gravity Distribution Systems:

In addition to completing the Property, Owner and General Information Sections, please complete the following sections under the Inspection Information:

1) Septic Tank
3) Drainfield

Please note that if the system includes an effluent filter or baffle screen the filter/screen **must** be removed, inspected and cleaned. In addition, if the system utilizes a distribution box, it is highly recommended that the box be located and inspected for equal distribution.

II. Pressure Distribution (This includes systems that utilize a pump **or siphon** to pressurize the drainfield):

In addition to completing the Property, Owner and General Information Sections please complete the following sections under the Inspection Information:

1) Septic Tank
2) Pump Vault
3) Drainfield
4) Pressure Distribution

Please note that if the system includes an effluent filter, baffle screen, and/or pump chamber screen the filter/screen **must** be removed, inspected and cleaned. In addition, if the drainfield laterals are equipped with clean-outs then the distribution lines **must** be flushed. Finally, it is strongly recommended that the pressure head be measured to insure equal distribution.

III. Sand Filter Systems – Gravity Distribution from Sand Filter

In addition to completing the Property, Owner and General Information Sections please complete the following sections under the Inspection Information:

1) Septic Tank
2) Pump Vault
3) Drainfield
5) Sand Filter

Please note that if the system includes an effluent filter, baffle screen, and/or pump chamber screen the filter/screen **must** be removed, inspected and cleaned. If the sand filter laterals are equipped with clean-outs then the laterals **must** be flushed. In addition, it is strongly recommended that the pressure head be measured to insure equal distribution. Finally, if the drainfield following the sand filter utilizes a distribution box, it is highly recommended that the box be located and inspected for equal distribution.

IV. Sand Filter Systems – Pressure Distribution from Sand Filter

In addition to completing the Property, Owner and General Information Sections please complete the following sections under the Inspection Information:

1) Septic Tank
2) Pump Vault
3) Drainfield
4) Pressure Distribution
5) Sand Filter

Please note that if the system includes an effluent filter, baffle screen, and/or pump chamber screen the filter/screen **must** be removed, inspected and cleaned. If the sand filter laterals are equipped with clean-outs then the laterals **must** be flushed. In addition, it is strongly recommended that the pressure head in the sand filter be measured to insure equal distribution. In addition, if the drainfield laterals are equipped with clean-outs then the distribution lines **must** be flushed. Finally, it is strongly recommended that the pressure head be measured to insure equal distribution.

V. Mound Systems

In addition to completing the Property, Owner and General Information Sections, please complete the following sections under the Inspection Information:

1) Septic Tank
2) Pump Vault
3) Drainfield
4) Pressure Distribution
5) Sand Filter (if equipped)
6) Mound

Please note that if the system includes an effluent filter, baffle screen, and/or pump chamber screen the filter/screen **must** be removed, inspected and cleaned. In addition, if the laterals are equipped with clean-outs then the distribution lines **must** be flushed. Finally, it is strongly recommended that the pressure head be measured to insure equal distribution.

VI. Aerobic Systems

Aerobic treatment systems must be inspected by a licensed wastewater inspector. However homeowners that been trained and certified by the manufacturer or their designee may inspect their own systems (certification must be submitted with report).

Health & Community Services
San Juan County
P.O. Box 607 ◆ 145 Rhone, Friday Harbor, WA 98250
Phone: (360) 378-4474 Fax: (360) 378-7036

ON-SITE SEWAGE SYSTEM INSPECTION FORM

PROPERTY INFORMATION:

Parcel Identification Number (PIN): ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

Island: _____ Physical Address: _____

OWNER INFORMATION:

Name of Property Owner: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____ Telephone: _____

GENERAL INFORMATION:

Type of System (✓ One): ☐ Gravity ☐ Pressure Distribution ☐ Mound ☐ Sand Filter ☐ Other: _____

Inspection done by: ☐ Homeowner ☐ Wastewater Inspector (Print): _____ # Bedrooms: _____

Date of Inspection: _____ Date of Last Inspection: _____

Macerator Grinder: ☐ Yes ☐ No Date of Last Pumping: _____ Septic Design #: _____

INSPECTION INFORMATION:

1) Septic Tank (complete a separate report if system has second tank – page 1 only)

Type of tank: ☐ Concrete ☐ Fiberglass ☐Poly ☐Steel

Size of tank: _____ gallons. # of compartments: _____ Access riser(s) present: ☐ Yes ☐ No # of risers: _____

Depth of scum layer in first compartment: _____ Depth of scum layer in second compartment: _____

Depth of sludge in first compartment: _____ Depth of sludge in second compartment: _____

Condition of inlet baffle: ..... ☐ OK ☐ Damaged ☐ N/A
Condition of center baffle: ..... ☐ OK ☐ Damaged ☐ N/A
Condition of outlet baffle: ..... ☐ OK ☐ Damaged ☐ N/A
Outlet baffle screened or equipped with an effluent filter ..... ☐ Yes ☐ No ☐ N/A
If yes, was screen/filter cleaned **(required)**, if no, explain in comment section... ..... ☐ Yes ☐ No ☐ N/A
Indication of surface water or root intrusion ..... ☐ Yes ☐ No
Indications of water levels above/below (circle applicable) outlet invert ..... ☐ Yes ☐ No ☐ N/A
If yes, measurement above / below outlet baffle: _____
Is effluent draining back from drainfield ..... ☐ Yes ☐ No ☐ N/A
Was septic tank pumped ..... ☐ Yes ☐ No

2) Pump/Siphon Vault (Complete for all systems that utilizes a pump or siphon)

Does system have a separate pump/siphon tank: ☐ Yes ☐ No If yes, size of tank: _____. Riser present: ☐ Yes ☐ No

Depth of scum in pump/siphon tank: _____ Depth of sludge in tank: _____ Pump make/model_____

Timer Settings (if applicable) On: _____ Off: _____ Event counter reading (if applicable): _____

Pump/siphon chamber screened or equipped with a effluent filter..... ☐ Yes ☐ No
If yes, was the screen/filter cleaned **(required)**, if no, explain in comment section ..... ☐ Yes ☐ No
Electrical connections in good conditions ..... ☐ Yes ☐ No ☐ N/A
On/Off floats in working condition ..... ☐ Yes ☐ No ☐ N/A
High/low level floats & audible/visual alarms (circle all applicable) in working condition ..... ☐ Yes ☐ No ☐ N/A
Pump/siphon in good working condition ..... ☐ Yes ☐ No

3) Drainfield (complete for all systems: gravity, pressure distribution, mound and sand filter):

Observation Ports Present: ☐ Yes ☐ No If yes, depth of ponding observed in lat 1: _____ lat 2: _____ lat 3: _____
Evidence of surfacing sewage: ☐ Yes ☐ No
Primary area properly maintained (i.e.: no roads, buildings or livestock pens etc…) ☐ Yes ☐ No
Reserve area properly maintained (i.e.: no roads, buildings or livestock pens etc…) ☐ Yes ☐ No
Flow diversion device ((i.e.: distribution box ("D" box), cam valve, tee etc)) accessible: ☐ Yes ☐ No ☐ N/A
If yes, is device operational (Note: "D"box should be located and inspected): ☐ Yes ☐ No

4) Pressure Distribution (complete for all systems equipped with a pump or siphon):

Drainfield/mound equipped with clean-outs ☐ Yes ☐ No
If yes, were laterals flushed (**required**) ☐ Yes ☐ No
If not flushed, explain why: _____
Pressure head measured (recommended) ☐ Yes ☐ No
If yes, indicate head of each lateral: Lat. 1: _____ Lat. 2: _____ Lat. 3: _____ Lat. 4: _____
Indications that orifices were plugged ☐ Yes ☐ No
If yes, were laterals cleaned ☐ Yes ☐ No

5) Sand Filter (complete only if applicable):

Distribution method from sand filter to drainfield/mound: ☐ Pumped ☐ Gravity
If pumped, is the pump vault accessible: ☐ Yes ☐ No If yes, depth of sludge level in vault: _____
Pump vault water tight: ☐ Yes ☐ No ☐ N/A
Monitoring ports present (pump vault can be utilized to monitor effluent levels) ☐ Yes ☐ No
If yes, is the effluent above the lower gravel/sand interface (collection pipes) ☐ Yes ☐ No
Clean-out valves present: ☐ Yes ☐ No
If yes, were laterals flushed (**required**) ☐ Yes ☐ No
If not flushed, explain why: _____
Pressure head measured (recommended) ☐ Yes ☐ No
If yes, indicate head of each lateral: Lat. 1: _____ Lat. 2: _____ Lat. 3: _____ Lat. 4: _____
Lat. 5: _____ Lat. 6: _____ Lat. 7: _____ Lat. 8: _____
Indications that orifices were plugged: ☐ Yes ☐ No
If yes, were distribution laterals cleaned ☐ Yes ☐ No

6) Mound (complete only if applicable):

Monitoring ports present ☐ Yes ☐ No
If yes, depth of ponding at the gravel/sand or infiltrator/sand interface: _____
If yes, depth of ponding at the sand/native soil interface (base of the mound): _____
Evidence of sewage seeping around the toe of the mound: ☐ Yes ☐ No

7) Miscellaneous Items (complete only if applicable)

Type of disinfection unit: ☐ Chlorinator ☐ Ultraviolet ☐ Other: _____
Disinfection unit operational ☐ Yes ☐ No ☐ Repaired
Chlorine residual: _____

Additional Comments / Observations: _____

_____

_____

_____

_____

_____ _____
Printed name/signature (Homeowner or Licensed Wastewater Inspector) Date

ON-SITE SEWAGE SYSTEM INSPECTION FORM

PROPERTY INFORMATION:

Parcel Identification Number (PIN): ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

Island: _____ Physical Address: _____

OWNER INFORMATION:

Name of Property Owner: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____ Telephone: _____

GENERAL INFORMATION:

Type of System (✓ One): ☐ Gravity ☐ Pressure Distribution ☐ Mound ☐ Sand Filter ☐ Other: _____

Inspection done by: ☐ Homeowner ☐ Wastewater Inspector (Print): _____ # Bedrooms: _____

Date of Inspection: _____ Date of Last Inspection: _____

Macerator Grinder: ☐ Yes ☐ No Date of Last Pumping: _____ Septic Design #: _____

INSPECTION INFORMATION:

1) Septic Tank (complete a separate report if system has second tank – page 1 only)

Type of tank: ☐ Concrete ☐ Fiberglass ☐Poly ☐Steel

Size of tank: _____ gallons. # of compartments: _____ Access riser(s) present: ☐ Yes ☐ No # of risers: _____

Depth of scum layer in first compartment: _____ Depth of scum layer in second compartment: _____

Depth of sludge in first compartment: _____ Depth of sludge in second compartment: _____

Condition of inlet baffle: ..... ☐ OK ☐ Damaged ☐ N/A
Condition of center baffle: ..... ☐ OK ☐ Damaged ☐ N/A
Condition of outlet baffle: ..... ☐ OK ☐ Damaged ☐ N/A
Outlet baffle screened or equipped with an effluent filter ..... ☐ Yes ☐ No ☐ N/A
If yes, was screen/filter cleaned **(required)**, if no, explain in comment section… ..... ☐ Yes ☐ No ☐ N/A
Indication of surface water or root intrusion ..... ☐ Yes ☐ No
Indications of water levels above/below (circle applicable) outlet invert ..... ☐ Yes ☐ No ☐ N/A
If yes, measurement above / below outlet baffle: _____
Is effluent draining back from drainfield ..... ☐ Yes ☐ No ☐ N/A
Was septic tank pumped ..... ☐ Yes ☐ No

2) Pump/Siphon Vault (Complete for all systems that utilizes a pump or siphon)

Does system have a separate pump/siphon tank: ☐ Yes ☐ No If yes, size of tank: _____. Riser present: ☐ Yes ☐ No

Depth of scum in pump/siphon tank: _____ Depth of sludge in tank: _____ Pump make/model_____

Timer Settings (if applicable) On: _____ Off: _____ Event counter reading (if applicable): _____

Pump/siphon chamber screened or equipped with a effluent filter..... ☐ Yes ☐ No
If yes, was the screen/filter cleaned **(required)**, if no, explain in comment section ..... ☐ Yes ☐ No
Electrical connections in good conditions ..... ☐ Yes ☐ No ☐ N/A
On/Off floats in working condition ..... ☐ Yes ☐ No ☐ N/A
High/low level floats & audible/visual alarms (circle all applicable) in working condition ..... ☐ Yes ☐ No ☐ N/A
Pump/siphon in good working condition ..... ☐ Yes ☐ No

3) Drainfield (complete for all systems: gravity, pressure distribution, mound and sand filter):

Observation Ports Present: ☐ Yes ☐ No If yes, depth of ponding observed in lat 1: _____ lat 2: _____ lat 3: _____

Evidence of surfacing sewage: ..... ☐ Yes ☐ No

Primary area properly maintained (i.e.: no roads, buildings or livestock pens etc…) ..... ☐ Yes ☐ No

Reserve area properly maintained (i.e.: no roads, buildings or livestock pens etc…) ..... ☐ Yes ☐ No

Flow diversion device ((i.e.: distribution box ("D" box), cam valve, tee etc)) accessible: ..... ☐ Yes ☐ No ☐ N/A

If yes, is device operational (Note: "D"box should be located and inspected): ..... ☐ Yes ☐ No

4) Pressure Distribution (complete for all systems equipped with a pump or siphon):

Drainfield/mound equipped with clean-outs ..... ☐ Yes ☐ No

If yes, were laterals flushed (**required**)..... ☐ Yes ☐ No

If not flushed, explain why: _____

Pressure head measured (recommended) ..... ☐ Yes ☐ No

If yes, indicate head of each lateral: Lat. 1: _____ Lat. 2: _____ Lat. 3: _____ Lat. 4: _____

Indications that orifices were plugged..... ☐ Yes ☐ No

If yes, were laterals cleaned..... ☐ Yes ☐ No

5) Sand Filter (complete only if applicable):

Distribution method from sand filter to drainfield/mound: ☐ Pumped ☐ Gravity

If pumped, is the pump vault accessible: ☐ Yes ☐ No If yes, depth of sludge level in vault: _____

Pump vault water tight: ..... ☐ Yes ☐ No ☐ N/A

Monitoring ports present (pump vault can be utilized to monitor effluent levels) ..... ☐ Yes ☐ No

If yes, is the effluent above the lower gravel/sand interface (collection pipes) ..... ☐ Yes ☐ No

Clean-out valves present: ..... ☐ Yes ☐ No

If yes, were laterals flushed (**required**) ..... ☐ Yes ☐ No

If not flushed, explain why: _____

Pressure head measured (recommended) ..... ☐ Yes ☐ No

If yes, indicate head of each lateral: Lat. 1: _____ Lat. 2: _____ Lat. 3: _____ Lat. 4: _____

Lat. 5: _____ Lat. 6: _____ Lat. 7: _____ Lat. 8: _____

Indications that orifices were plugged: ..... ☐ Yes ☐ No

If yes, were distribution laterals cleaned ..... ☐ Yes ☐ No

6) Mound (complete only if applicable):

Monitoring ports present ..... ☐ Yes ☐ No

If yes, depth of ponding at the gravel/sand or infiltrator/sand interface: _____

If yes, depth of ponding at the sand/native soil interface (base of the mound): _____

Evidence of sewage seeping around the toe of the mound: ..... ☐ Yes ☐ No

7) Miscellaneous Items (complete only if applicable)

Type of disinfection unit: ☐ Chlorinator ☐ Ultraviolet ☐ Other: _____

Disinfection unit operational ..... ☐ Yes ☐ No ☐ Repaired

Chlorine residual: _____

Additional Comments / Observations: _____

_____

_____

_____

_____

AS-BUILT

Plot Plan: Attach or draw in the space provided below a scaled plot plan that indicates a diagram showing location of system (septic tank, pump chamber, treatment component(s) and drainfield) in relation to house(s), property lines, wells, streams, ditches, curtain drains, and embankments. Use a north seeking arrow. Note any deviations from the original design. SCALE FROM 1" 20' TO 1" 50'.

Parcel Number: ___ ___ ___ ___ ___ ___ ___ - ___ ___ ___

Design #: _____

Name: _____

		Yes	No	N/A
A.	Septic Tank and Pump Chamber			
1.	The septic tank baffles and partition wall are intact and in working order?			___
2.	Septic tank size (gallons). Pump Chamber (gallons).			
3.	An effluent filter or pump screen (circle one) was installed? Make.	___	___	
4.	Risers installed on both compartments of septic tank, over effluent filter and pump chamber?	___		
B	Drainfield - ❑ Gravity Distribution ❑ Pressure Distribution			
1.	Drainfield trench or bed bottom installed level and raised?	___	___	
2	Distribution box water leveled?	___		___
3	Distribution box bedded in concrete or sand (circle one)?		___	___
4.	Observation ports installed?		___	
5.	Total Dynamic Head in Feet (if applicable): _____			
C.	Treatment Component: - ❑ Sand Filter ❑ Other:			
1.	Timer installed?	___		
2.	Timer settings: Pump on (seconds) ___ Pump off (mins or hrs): _____			
3.	Total Dynamic Head in Feet (if applicable):			

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Homeowners without septic permits on file should create an “as-built” during your inspection that locates all the major components of your septic system with precise measurements that will assist you in future inspections and future owners. A copy of the “as-built” should be submitted to the Health Dept. with your inspection report

The End