

SITE EVALUATION REPORT
FOR
INDIVIDUAL SEWAGE DISPOSAL SYSTEM PROPOSAL

Owner and Mailing Address:

Callie Dym
PO Box 595
Little River, CA 95456

Project Address:

7720 S. Highway 1, Little River

Assessor Parcel Number:

121-280-15

Location:

Highway 1 to the parcel on the west side of the highway, just south of the Little River Post office.
A map is attached.

Project Description:

This project was undertaken to design an on-site sewage disposal system to serve a total of 5
visitor serving units.

October 3rd, 2022

CARL RITTIMAN & ASSOCIATES, INC.

PO Box 590 • Mendocino CA 95460

Phone 707-937-0804 • Fax 707-937-0575 • e-mail andy.carlrittiman@gmail.com

SOIL CONDITIONS

MENDOCINO COUNTY Site Evaluation Report

Environmental Health

Site Address: 7720 S. Hwy 1 Site Evaluator: C. RITTIMAN
 City: LITTLE RIVER APN: 121-280-15
 Owner Name: CALLIE DYM Land Div. #: _____
 Mailing Address: PO BOX 595 Home phone: _____
 City: LITTLE RIVER Work phone: _____
 State, Zip: CA 95456

Location Description: HWY 1 TO PARCEL ON WEST SIDE OF HWY, JUST SOUTH OF POST OFFICE
 Project Description(# of bedrooms): FIVE VISITOR SERVING UNITS / 650 GPD SEE MAP
 Water Source: WELL Distance to Wastewater System: 100' ±

	Initial Area	Expansion Area
Profile #	<u>P5 + P11</u>	<u>P4, P6 + P10</u>
Slope (%)	<u>8-10</u>	<u>8-10</u>
Effective Soil Depth (IN)	<u>60</u>	<u>60</u>
Absorption System Type	<u>HIGHLINE</u>	<u>HIGHLINE</u>
Distribution Method	<u>GRAVITY/EQUAL</u>	<u>PRESSURIZED LATERALS</u>
Soil Suitability Class	<u>2C</u>	<u>2C</u>
Soil Perc Rate (MPI)	<u>-</u>	<u>-</u>
Design App. Rate (G/SF/D)	<u>0.44</u>	<u>0.43</u>
Design Flow (G/D)	<u>650</u>	<u>650</u>
Absorption Area (SF)	<u>1,477</u>	<u>1,512</u>
Linear Area (SF/LF)	<u>5.0</u>	<u>5.0</u>
Total Trench (LF)	<u>300</u>	<u>305</u>
Trench Depth (IN)	<u>15</u>	<u>15</u>
Trench Width (IN)	<u>36</u>	<u>36</u>
Effective Absorption Depth (IN)	<u>12</u>	<u>12</u>

Tanks: Septic Tank (x3) Pump Tank Treatment Tank

Volume (GAL) 1500 1500
 Construction Material CONCRETE CONCRETE

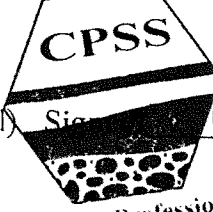
Trench Calculation: Design Flow ÷ Design App. Rate ÷ Linear Area = Total Trench(LF)
SEE ATTACHED CALC'S

Requested Waiver:(attach justification) GROUNDWATER SEPARATION

Special Design Features: _____

Site Evaluator's Statement: I hereby certify that I have examined the above designated site using approved procedures, and that to the best of my information, knowledge and belief it complies with all State and County requirements for an On-site Sewage System at the time of this evaluation.

Date: 9.30.22

(seal)  Carl Rittiman

Certified Professional
 Soil Scientist
 CARL A RITTIMAN
 02859

PRIMARY LEACHFIELD AREA:

Profile...P5 and P11

Slope...8-10%

Soil Depth...5 feet

System Design...Highline

Distribution Method...Gravity/equal

Soil Suitability Class...2C

Soil Percolation Rate...-- mpi

Design Application Rate... 0.44 gal/sq ft/day

Wastewater Design Flow... 650 gpd

Total Trench Length...300 feet

Number of Trenches...5

Individual Trench Length...	Line 1:	75 feet
	Line 2:	70 feet
	Lines 3 and 4:	60 feet
	Line 5:	35 feet

Trench Depth... 1.25 feet

Gravel Depth... 1.0 foot

Trench Width... 3.0 feet

REPLACEMENT LEACHFIELD AREA:

Profile...P4, P6 and P10

Slope...8-10%

Soil Depth...5 feet

System Design...Highline

Distribution Method... Pressurized laterals

Soil Suitability Class...2C

Soil Percolation Rate...---mpi

Design Application Rate... 0.43 gal/sq ft/day

Wastewater Design Flow...650 gpd

Total Trench Length...305 feet

Number of Trenches...5

Individual Trench Length...Lines 1 and 2: 70 feet

Line 3: 50 feet

Line 4: 60 feet

Line 5: 55 feet

Trench Depth...1.25 feet

Gravel Depth...1.0 foot

Trench Width...3.0 feet

REQUESTED WAIVER FOR:

OWNER: C. Dym
PROJECT ADDRESS: 7720 S. Highway 1, Little River
APN: 121-280-15

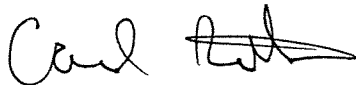
WAIVER JUSTIFICATION:

I request that the required 5 foot (60 inch) separation distance between the bottom of the leaching system and the highest level of groundwater be waived to 25 inches for the primary leachfield area and for the replacement leachfield of this project. A seasonal watertable is anticipated at 40 inches in each leachfield area. All other site criteria are met on this parcel. No springs or seeps were noticed within 100 feet downslope of these proposed leachfields. The permeable, well-drained soils beneath the proposed leaching system will adequately treat the sewage effluent before it reaches the possible temporary watertable. No wells or water sources are present within 100+ feet of the leachfield areas.

My experience in similar situations leads me to conclude that the granting of this waiver will not negatively impact useable groundwater nor give rise to a nuisance condition.

I hereby certify that the foregoing facts are true and correct to the best of my knowledge, information, understanding and belief.

Site Evaluator: Carl Rittiman, C.P.S.S.

Signature: 

Date: 9-30-22

DEPUTY HEALTH OFFICER DETERMINATION:

I have determined, based on the above statement of information and my own knowledge after reviewing the conditions on the property in question, that public health will not be endangered nor water quality impaired as a result of the issuance of this waiver.

Deputy Health Officer Signature:

Date:

SOIL PROFILE P1:

- 0-20" Black (10YR 2/1) loam/sandy clay loam, strong subangular blocky structure, friable to firm, very many very fine and fine roots
- 20-30" Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 10-15% hard angular rock fragments
- 30-48" Brown (10YR 4/3) sandy clay loam with common grayish brown (10YR 5/2) mottles, strong to moderate subangular blocky structure, friable, few very fine roots, saturated
- 48" End of observation

When described 6/17/22, the soil was dry to a depth of 30 inches and moist below this depth. No groundwater observed. Groundwater is anticipated to rise within 30 inches of soil surface based on soil mottling.

SOIL PROFILE P2:

- 0-12" Black (10YR 2/1) loam, strong subangular blocky structure, friable, many very fine and fine roots
- 12-31" Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 10-15% hard angular rock fragments
- 31-48" Dark yellowish brown (10YR 4/6) heavy sandy clay loam with many dark grayish brown (10YR 4/2) mottles, moderate subangular blocky structure, firm, few fine roots
- 48" End of observation

When described 6/17/22, the soil was dry to a depth of 31 inches and moist below this depth. No groundwater observed. Groundwater is anticipated to rise within 31 inches of soil surface based on soil mottling.

SOIL PROFILE P3:

- 0-14" Black (10YR 2/1) loam, strong subangular blocky structure, friable, many very fine and fine roots
- 14-29" Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 10% hard angular rock fragments
- 29-38" Strong brown (7.5YR 5/6) gravelly sandy clay with many brown (7.5YR 4/3) mottles, moderate subangular blocky structure, firm to hard, 20-25% hard angular rock fragments
- 38-48" Mixed yellowish brown (10YR 5/4) and brownish yellow (10YR 6/8) gravelly sandy loam, strong to moderate angular blocky structure, friable to firm, few fine roots, 25-30% hard angular rock fragments
- 48'-54" Yellowish brown (10YR 5/6) and brownish yellow (10YR 6/8) heavy sandy clay loam with many gray (10YR 6/1) mottles, strong subangular blocky structure, firm, few fine roots
- 54" End of observation

When described 6/17/22, the soil was dry to a depth of 29 inches and moist below this depth. No groundwater observed. Groundwater is anticipated to rise within 29 inches of soil surface based on soil mottling.

SOIL PROFILE P4:

- 0-10" Black (10YR 2/1) loam, strong subangular blocky structure, friable, many very fine and fine roots
- 10-40" Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 10-15% hard angular rock fragments
- 40-60 Yellowish brown (10YR 5/4) sandy loam with common pale brown (10YR 6/3) mottles, strong to moderate subangular blocky structure, friable, few very fine roots, 5-10% soft through hard weathering gravels
- 60" End of observation

When described 6/17/22, the soil was dry to a depth of 40 inches and moist below this depth. No groundwater observed. Groundwater is anticipated to rise within 40 inches of soil surface based on soil mottling.

SOIL PROFILE P5:

- 0-10" Black (10YR 2/1) loam, strong subangular blocky structure, friable, many very fine and fine roots
- 10-28" Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 10-15% hard angular rock fragments
- 28-42" Yellowish brown (10YR 5/4) sandy loam with common areas of strong brown (7.5YR 5/8) weathering gravels, moderate to weak subangular blocky structure, friable, few very fine roots
- 42-60" Brownish yellow (10YR 6/8) sandy clay loam/sandy clay with many light brownish gray (10YR 6/2) mottles, moderate angular blocky structure, hard, few fine roots
- 60" End of observation

When described 6/17/22, the soil was dry to a depth of 42 inches and moist below this depth. No groundwater observed. Groundwater is anticipated to rise within 42 inches of soil surface based on soil mottling.

SOIL PROFILE P6:

- 0-14" Black (10YR 2/1) loam, strong subangular blocky structure, friable, many very fine and fine roots
- 14-44" Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 10-15% hard angular rock fragments
- 44-57" Yellowish brown (10YR 5/4) gravelly sandy clay loam, strong subangular blocky structure, firm, few fine roots, 35-45% hard angular rock fragments
- 57-60" Strong brown (7.5YR 5/6) sandy clay with many pinkish gray (7.5YR 6/6) mottles, strong subangular blocky structure, firm, few very fine roots
- 60" End of observation

When described 6/17/22, the soil was dry to a depth of 57 inches and moist below this depth. No groundwater observed. Groundwater is anticipated to rise within 57 inches of soil surface based on soil mottling.

SOIL PROFILE P7:

- 0-11" Black (10YR 2/1) gravelly loam, strong subangular blocky structure, friable, many very fine and fine roots, 15-20% hard angular rock fragments
- 11-36" Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 15-20% hard angular rock fragments
- 36-60" Dark yellowish brown (10YR 4/6) gravelly sandy clay loam, strong subangular blocky structure, firm, few fine and medium roots, 10-15% hard angular rock fragments
- 60" Soft through hard weathering rock
End of observation

When described 6/17/22 the soil was dry to a depth of 36 inches and moist below. No groundwater observed or anticipated.

SOIL PROFILE P8:

19" to fractured rock; profile not described

SOIL PROFILE P9:

10" to fractured rock; profile not described

SOIL PROFILE P10:

- 0-10" Black (10YR 2/1) loam, strong subangular blocky structure, friable, many very fine and fine roots
- 10-33" Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 10-15% hard angular rock fragments
- 33-56" Yellowish brown (10YR 5/4) gravelly sandy clay loam, strong subangular blocky structure, firm, few fine roots 35-45% hard angular rock fragments
- 56-60" Strong brown (7.5YR 5/6) sandy clay with many pinkish gray (7.5YR 6/2) mottles, strong subangular blocky structure, firm, few very fine roots
- 60" End of observation

When described 6/17/22, the soil was dry to a depth of 33 inches and moist below this depth. No groundwater observed. Groundwater is anticipated to rise within 56 inches of soil surface based on soil mottling.

SOIL PROFILE P11:

- 0-6" Black (10YR 2/1) loam, strong subangular blocky structure, friable, many very fine and fine roots
- 6-27" Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 10-15% hard angular rock fragments
- 27-40" Mixed yellowish brown (10YR 5/4) and brownish yellow (10YR 6/8) gravelly sandy loam, strong to moderate angular blocky structure, friable to firm, few fine roots, 25-30% hard angular rock fragments
- 40-60" Yellowish brown (10YR 5/6) and brownish yellow (10YR 6/8) heavy sandy clay loam with many gray (10YR 6/1) mottles, strong subangular blocky structure, firm, few fine roots
- 60" End of observation

When described 6/17/22, the soil was dry to a depth of 40 inches and moist below this depth. No groundwater observed. Groundwater is anticipated to rise within 40 inches of soil surface based on soil mottling.

SOIL PROFILE P12:

- 0-8" Black (10YR 2/1) gravelly loam, strong subangular blocky structure, friable, many very fine and fine roots, 15-20% hard angular rock fragments
- 8-32" Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 15-20% hard angular rock fragments
- 32-42" Dark yellowish brown (10YR 4/6) gravelly sandy clay loam, moderate to strong angular blocky structure, friable to firm, 25-35% hard angular rock fragments
- 42" Soft through hard weathering rock

End of observation

When described 6/17/22 the soil was dry to a depth of 32 inches and moist below that depth. No groundwater observed or anticipated

SOIL PROFILE P13:

- 0-6" Strong brown gravelly fill material
- 6-18" Black (10YR 2/1) gravelly loam, strong subangular blocky structure, friable, many very fine and fine roots, 15-20% hard angular rock fragments
- 18-46" Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 15-20% hard angular rock fragments
- 46-64" Very dark grayish brown (10YR 3/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common fine and few medium roots, 20-25% hard angular rock fragments
- 64-" Soft through hard weathering rock

End of observation

When described 6/17/22 the soil was dry to a depth of 30 inches and moist below that depth. No groundwater observed or anticipated.

MENDOCINO COUNTY

Division of Environmental Health

Soil Profile Description

Owner Name C. Dym
Site Address 7720 Highway 1, Little River
APN 121-280-15
Subdivision #

Test Date 6/17/22
Recorded by C.A.R.
Slope 8-10%
Profile # P4

horizon depth range / color / mottles / gravel / texture / structure /
consistence / roots / pores / boundary /
[sample depth / texture zone / density /Avg. perc rate at this depth]

Soil depiction Trench depiction
0 ground surface

0-10"	
10-40"	
40-60"	
60"	
72"	
84"	
96"	
108"	
120"	

0-10" Black (10YR 2/1) loam, strong subangular blocky structure, friable, many very fine and fine roots

10-40" Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 10-15% hard angular rock fragments

40-60 Yellowish brown (10YR 5/4) sandy loam with common pale brown (10YR 6/3) mottles, strong to moderate subangular blocky structure, friable, few very fine roots, 5-10% soft through hard weathering gravels

60" End of observation

I certify the test was carried out by the procedures specified by the Mendocino County Division of Environmental Health. I declare under penalty of perjury that the foregoing is true and correct.

Signed: Carl R. R. R.

MENDOCINO COUNTY

Division of Environmental Health

Soil Profile Description

Owner Name C. Dym
Site Address 7720 Highway 1, Little River
APN 121-280-15
Subdivision #

Test Date 6/17/22
Recorded by C.A.R.
Slope 8-10%
Profile # P5

horizon depth range / color / mottles / gravel / texture / structure /
consistence / roots / pores / boundary /
[sample depth / texture zone / density /Avg. perc rate at this depth]

Soil depiction Trench depiction
0 ground surface

0-10"	Black (10YR 2/1) loam, strong subangular blocky structure, friable, many very fine and fine roots
10-28"	Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 10-15% hard angular rock fragments
28-42"	Yellowish brown (10YR 5/4) sandy loam with common areas of strong brown (7.5YR 5/8) weathering gravels, moderate to weak subangular blocky structure, friable, few very fine roots
42-60"	Brownish yellow (10YR 6/8) sandy clay loam/sandy clay with many light brownish gray (10YR 6/2) mottles, moderate angular blocky structure, hard, few fine roots
60"	End of observation
72	
84	
96	
108	
120	

I certify the test was carried out by the procedures specified by the Mendocino County Division of Environmental Health. I declare under penalty of perjury that the foregoing is true and correct.

Signed: Ced Ruth

MENDOCINO COUNTY

Division of Environmental Health

Soil Profile Description

Owner Name C. Dym
Site Address 7720 Highway 1, Little River
APN 121-280-15
Subdivision #

Test Date 6/17/22
Recorded by C.A.R.
Slope 8-10%
Profile # P6

horizon depth range / color / mottles / gravel / texture / structure /
consistence / roots / pores / boundary /
[sample depth / texture zone / density /Avg. perc rate at this depth]

Soil depiction Trench depiction
0 ground surface

12	
24	
36	
48	
60	
72	
84	
96	
108	
120	

0-14"

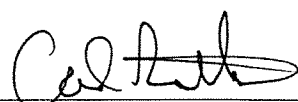
14-44"

44-57"

57-60"

- 0-14" Black (10YR 2/1) loam, strong subangular blocky structure, friable, many very fine and fine roots
- 14-44" Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 10-15% hard angular rock fragments
- 44-57" Yellowish brown (10YR 5/4) gravelly sandy clay loam, strong subangular blocky structure, firm, few fine roots, 35-45% hard angular rock fragments
- 57-60" Strong brown (7.5YR 5/6) sandy clay with many pinkish gray (7.5YR 6/6) mottles, strong subangular blocky structure, firm, few very fine roots
- 60" End of observation

I certify the test was carried out by the procedures specified by the Mendocino County Division of Environmental Health. I declare under penalty of perjury that the foregoing is true and correct.

Signed: 

Soil Profile Description

Owner Name C. Dym
Site Address 7720 Highway 1, Little River
APN 121-280-15
Subdivision #

Test Date	6/17/22
Recorded by	C.A.R.
Slope	8-10%
Profile #	P10

horizon depth range / color / mottles / gravel / texture / structure /
consistence / roots / pores / boundary /
[sample depth / texture zone / density /Avg. perc rate at this depth]

Soil depiction Trench depiction
0 ground surface

0-10"	Black (10YR 2/1) loam, strong subangular blocky structure, friable, many very fine and fine roots
10-33"	Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 10-15% hard angular rock fragments
33-56"	Yellowish brown (10YR 5/4) gravelly sandy clay loam, strong subangular blocky structure, firm, few fine roots 35-45% hard angular rock fragments
56-60"	Strong brown (7.5YR 5/6) sandy clay with many pinkish gray (7.5YR 6/2) mottles, strong subangular blocky structure, firm, few very fine roots
60"	End of observation

I certify the test was carried out by the procedures specified by the Mendocino County Division of Environmental Health. I declare under penalty of perjury that the foregoing is true and correct.

Signed: Carl Pelt

MENDOCINO COUNTY

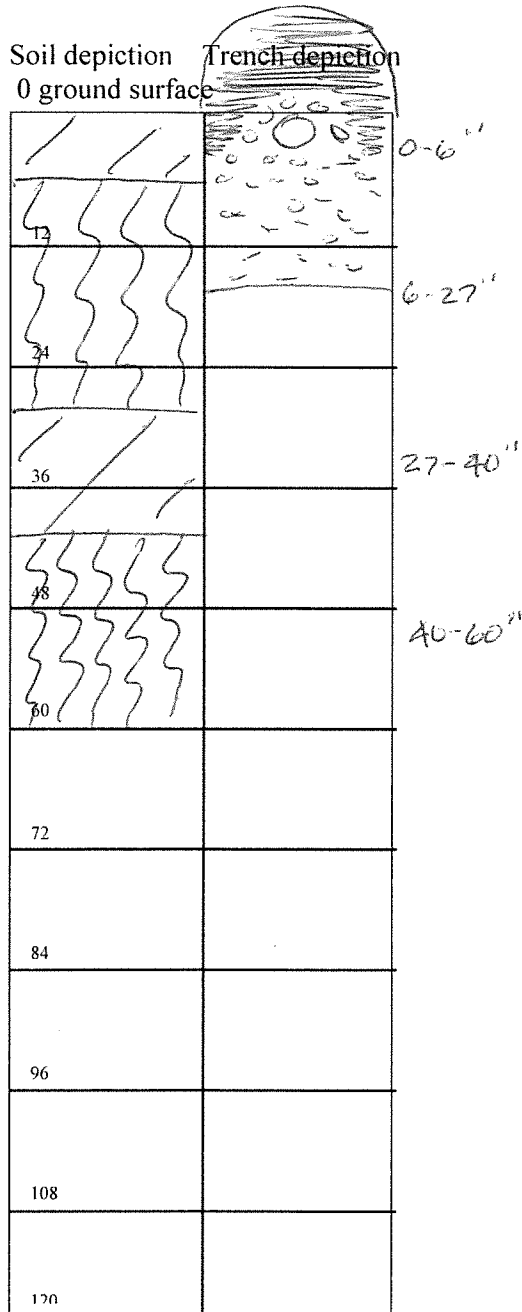
Division of Environmental Health

Soil Profile Description

Owner Name C. Dym
Site Address 7720 Highway 1, Little River
APN 121-280-15
Subdivision #

Test Date 6/17/22
Recorded by C.A.R.
Slope 8-10%
Profile # P11

horizon depth range / color / mottles / gravel / texture / structure /
consistence / roots / pores / boundary /
[sample depth / texture zone / density /Avg. perc rate at this depth]



- 0-6" Black (10YR 2/1) loam, strong subangular blocky structure, friable, many very fine and fine roots
- 6-27" Very dark brown (10YR 2/2) gravelly sandy clay loam, strong subangular blocky structure, firm, common very fine roots, 10-15% hard angular rock fragments
- 27-40" Mixed yellowish brown (10YR 5/4) and brownish yellow (10YR 6/8) gravelly sandy loam, strong to moderate angular blocky structure, friable to firm, few fine roots, 25-30% hard angular rock fragments
- 40-60" Yellowish brown (10YR 5/6) and brownish yellow (10YR 6/8) heavy sandy clay loam with many gray (10YR 6/1) mottles, strong subangular blocky structure, firm, few fine roots
- 60" End of observation

I certify the test was carried out by the procedures specified by the Mendocino County Division of Environmental Health. I declare under penalty of perjury that the foregoing is true and correct.

Signed: Ced R. R.

Site address: 7720 S. Hwy 1, Little River

Lab Test Date: 7/22/22

APN: 121-280-15

Project #:

Owner Name: Dym

Site Evaluator: Carl Rittiman

Sample ID Number	P4	P4	P4	P5	P5	P5
Sample Depth	0-10"	10-40"	40-60"	0-10"	10-28"	28-42"
Slake Test (pass or fail)	P	P	P	P	P	P

HYDROMETER TEST

A. Oven dry wt. (gm)	50	50	50	50	50	50
B. Start Time	10:10	10:11	10:12	10:13	10:14	10:15
C. Temp @ 40 sec (°F)	70.0	70.0	70.0	70.0	70.0	70.0
D. Hydrometer reading @ 40 sec (gm/l)	30.0	32.0	24.0	29.0	35.0	20.0
E. Composite correction (gm/l)	6.1	6.1	6.1	6.1	6.1	6.1
F. True Density @ 40 sec (gm/l)	23.9	25.9	17.9	22.9	28.9	13.9
G. Temp @ 2hrs. (°F)	67.0	67.0	67.0	67.0	67.0	67.0
H. Hydrometer reading @ 2 hrs. (gm/l)	20.0	16.0	10.0	18.0	19.0	11.0
I. Composite correction (gm/l)	6.7	6.7	6.7	6.7	6.7	6.7
J. True density @ 2 hrs. (gm/l)	13.3	9.3	3.3	11.3	12.3	4.3
K. % Sand = $100 - [(F \div A) \times 100]$	52.2	48.2	64.2	54.2	42.2	72.2
L. % Clay = $(J \div A) \times 100$	26.6	18.6	6.6	22.6	24.6	8.6
M. % Silt = $100 - (K + L)$	21.2	33.2	29.2	23.2	33.2	19.2

Coarse Particles

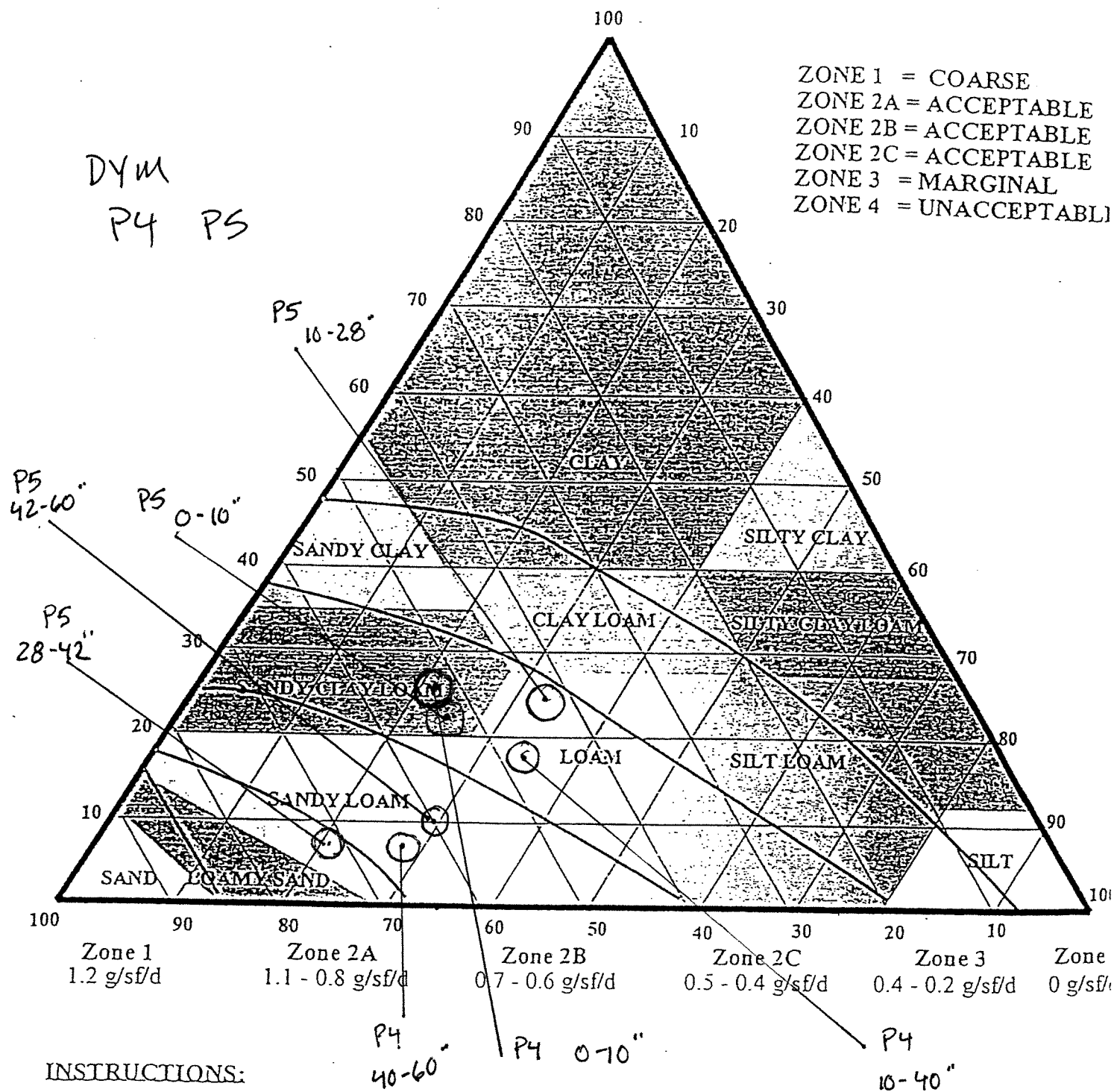
N. Wt. Coarse particles retained (gm)	115.0	102.0	18.0	81.0	103.0	49.0
O. Wt. of total sample (gm)	300.0	301.0	300.0	300.0	300.0	301.0
P. % Coarse particles = $(N \div O) \times 100$	38.3	33.9	6.0	27.0	34.3	16.3

Bulk Density

Q. Total sample wt. (gm)	300.0	301.0	300.0	300.0	300.0	301.0
R. Coarse particles wt. (gm)	115.0	102.0	18.0	81.0	103.0	49.0
S. Total sample vol. (cc)	225.0	225.0	225.0	225.0	225.0	225.0
T. Coarse particles vol.	60.5	53.7	9.5	42.6	54.2	25.8
U. Bulk Density = $[(Q - R) \div (S - T)]$ (gm/cc)	1.12	1.16	1.31	1.20	1.15	1.26
W. Adjust Sand (%)						
X. Adjusted Clay (%)						
Y. Adjusted Silt (%)						
Z. Soil Suitability Zone	2C	2C	2B	2C	2C	2A



Soil Texture Suitability Chart



INSTRUCTIONS:

1. Plot texture on triangle based on percent sand, silt, and clay as determined by hydrometer analysis.
2. Adjust for coarse particles (gravel not fractured rock) by moving the plotted point in the sand direction an additional 2% for each 10% by volume of gravels greater than 2 mm in diameter.
3. Adjust for compactness of the soil by moving the plotted point in the clay direction an additional 15% for soils having a bulk-density greater than 1.7 gm/cc.

NOTE: For soils falling in sand, loamy sand or sandy loam texture classification, the bulk density analysis will generally not affect suitability and analysis not be necessary.

Site address: 7720 S. Hwy 1, Little River

APN: 121-280-15

Owner Name: Dym

Lab Test Date:

Project #:

Site Evaluator: Carl Rittiman

Sample ID Number	P5	P6	P6	P6	P6	P10
Sample Depth	42-60"	0-14"	14-44"	44-57"	57-60"	0-10"
Slake Test (pass or fail)	P	P	P	P	P	P

HYDROMETER TEST

A. Oven dry wt. (gm)	50	50	50	50	50	50
B. Start Time	10:16	10:17	10:18	10:19	10:20	10:21
C. Temp @ 40 sec (°F)	70.0	70.0	70.0	70.0	70.0	70.0
D. Hydrometer reading @ 40 sec (gm/l)	26.0	27.0	32.0	22.0	43.0	28.0
E. Composite correction (gm/l)	6.1	6.1	6.1	6.1	6.1	6.1
F. True Density @ 40 sec (gm/l)	19.9	20.9	26.9	15.9	36.9	21.9
G. Temp @ 2hrs. (°F)	67.0	67.0	67.0	67.0	67.0	67.0
H. Hydrometer reading @ 2 hrs. (gm/l)	12.0	18.0	21.0	14.0	24.0	16.5
I. Composite correction (gm/l)	6.7	6.7	6.7	6.7	6.7	6.7
J. True density @ 2 hrs. (gm/l)	5.3	11.3	14.3	7.3	17.3	9.8
K. % Sand = $100 - [(F \div A) \times 100]$	60.2	58.2	46.2	68.2	26.2	56.2
L. % Clay = $(J \div A) \times 100$	10.6	22.6	28.6	14.6	34.6	19.6
M. % Silt = $100 - (K + L)$	29.2	19.2	25.2	17.2	39.2	24.2

Coarse Particles

N. Wt. Coarse particles retained (gm)	22.0	77.0	115.0	109.0	57.0	41.0
O. Wt. of total sample (gm)	300.0	300.0	301.0	300.0	300.0	300.0
P. % Coarse particles = $(N \div O) \times 100$	7.3	25.7	38.2	36.3	19.0	13.7

Bulk Density

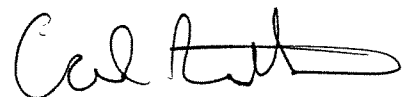
Q. Total sample wt. (gm)	300.0	300.0	301.0	300.0	300.0	300.0
R. Coarse particles wt. (gm)	22.0	77.0	115.0	109.0	57.0	41.0
S. Total sample vol. (cc)	225.0	225.0	225.0	225.0	225.0	225.0
T. Coarse particles vol.	11.6	40.5	60.5	57.4	30.0	21.6
U. Bulk Density = $[(Q - R) \div (S - T)]$ (gm/cc)	1.30	1.21	1.13	1.14	1.25	1.27

W. Adjust Sand (%)

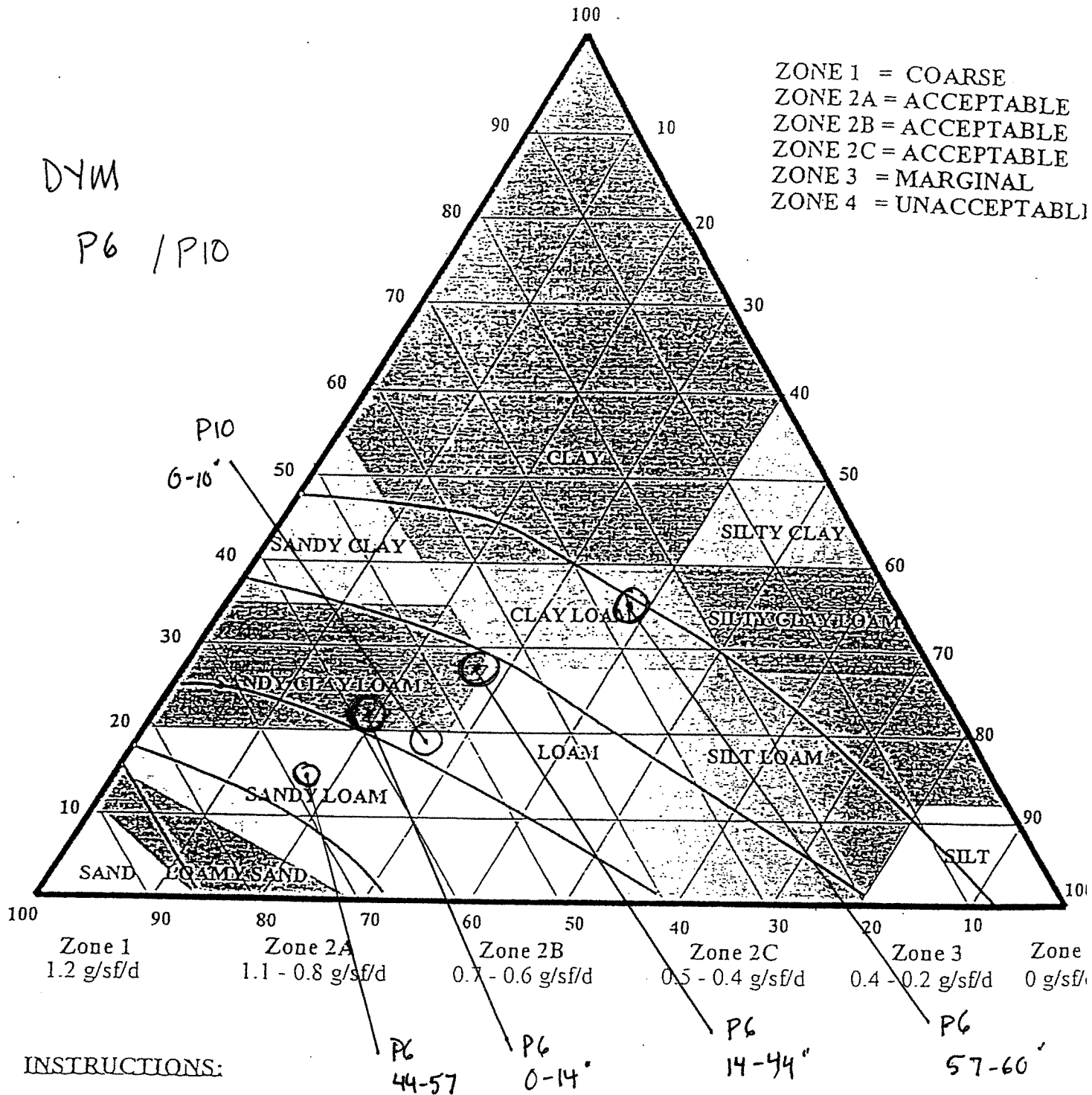
X. Adjusted Clay (%)

Y. Adjusted Silt (%)

Z. Soil Suitability Zone	2B	2C	2C	2B	3	2C
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Soil Texture Suitability Chart



1. Plot texture on triangle based on percent sand, silt, and clay as determined by hydrometer analysis.
2. Adjust for coarse particles (gravel not fractured rock) by moving the plotted point in the sand direction an additional 2% for each 10% by volume of gravels greater than 2 mm in diameter.
3. Adjust for compactness of the soil by moving the plotted point in the clay direction an additional 15% for soils having a bulk-density greater than 1.7 gm/cc.

NOTE: For soils falling in sand, loamy sand or sandy loam texture classification, the bulk density analysis will generally not affect suitability and analysis not be necessary.

Site address: 7720 S. Hwy 1, Little River

Lab Test Date:

APN: 121-280-15

Project #:

Owner Name:Dym

Site Evaluator: Carl Rittiman

Sample ID Number	P10	P10	P10	P11	P11	P11
Sample Depth	10-33"	33-56"	56-60"	0-6"	6-27"	27-40"
Slake Test (pass or fail)	P	P	P	P	P	P

HYDROMETER TEST

A. Oven dry wt. (gm)	50	50	50	50	50	50
B. Start Time	1:35	1:36	1:37	1:38	1:39	1:40
C. Temp @ 40 sec (°F)	67.0	67.0	67.0	67.0	67.0	67.0
D. Hydrometer reading @ 40 sec (gm/l)	33.0	30.0	39.0	21.0	34.0	34.0
E. Composite correction (gm/l)	6.7	6.7	6.7	6.7	6.7	6.7
F. True Density @ 40 sec (gm/l)	26.3	23.3	32.3	14.3	27.3	27.3
G. Temp @ 2hrs. (°F)	67.0	67.0	67.0	67.0	67.0	67.0
H. Hydrometer reading @ 2 hrs. (gm/l)	19.0	13.0	24.0	12.0	17.0	16.0
I. Composite correction (gm/l)	6.7	6.7	6.7	6.7	6.7	6.7
J. True density @ 2 hrs. (gm/l)	12.3	6.3	17.3	5.3	10.3	9.3
K. % Sand = $100 - [(F \div A) \times 100]$	47.4	53.4	35.4	71.4	45.4	45.4
L. % Clay = $(J \div A) \times 100$	24.6	12.6	34.6	10.6	20.6	18.6
M. % Silt = $100 - (K + L)$	28.0	34.0	30.0	18.0	34.0	36.0

Coarse Particles

N. Wt. Coarse particles retained (gm)	113.0	88.0	31.0	84.0	66.0	121.0
O. Wt. of total sample (gm)	299.0	299.0	300.0	299.0	300.0	301.0
P. % Coarse particles = $(N \div O) \times 100$	37.8	29.4	10.3	28.1	22.0	40.2

Bulk Density

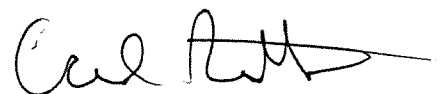
Q. Total sample wt. (gm)	299.0	299.0	300.0	299.0	300.0	301.0
R. Coarse particles wt. (gm)	113.0	88.0	31.0	84.0	66.0	121.0
S. Total sample vol. (cc)	225.0	225.0	225.0	225.0	225.0	225.0
T. Coarse particles vol.	59.5	46.3	16.3	44.2	34.7	63.7
U. Bulk Density = $[(Q - R) \div (S - T)]$ (gm/cc)	1.12	1.18	1.29	1.19	1.23	1.12

W. Adjust Sand (%)

X. Adjusted Clay (%)

Y. Adjusted Silt (%)

Z. Soil Suitability Zone	2C	2B	3	2B	2C	2C
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Site address: 7720 S Hwy 1, Little River

APN: 121-280-15

Owner Name: Dym

Sample ID Number P11

Sample Depth 40-60"

Slake Test (pass or fail) P

HYDROMETER TEST

A. Oven dry wt. (gm) 50

B. Start Time 1:41

C. Temp @ 40 sec (°F) 67.0

D. Hydrometer reading @ 40 sec (gm/l) 30.0

E. Composite correction (gm/l) 6.7

F. True Density @ 40 sec (gm/l) 23.3

G. Temp @ 2hrs. (°F) 67.0

H. Hydrometer reading @ 2 hrs. (gm/l) 20.0

I. Composite correction (gm/l) 6.7

J. True density @ 2 hrs. (gm/l) 13.3

K. % Sand = $100 - [(F \div A) \times 100]$ 53.4

L. % Clay = $(J \div A) \times 100$ 26.6

M. % Silt = $100 - (K + L)$ 20.0

Coarse Particles

N. Wt. Coarse particles retained (gm) 50.0

O. Wt. of total sample (gm) 300.0

P. % Coarse particles = $(N \div O) \times 100$ 16.7

Bulk Density

Q. Total sample wt. (gm) 300.0

R. Coarse particles wt. (gm) 50.0

S. Total sample vol. (cc) 225.0

T. Coarse particles vol. 26.3

U. Bulk Density = $[(Q - R) \div (S - T)]$ (gm/cc) 1.26

W. Adjust Sand (%)

X. Adjusted Clay (%)

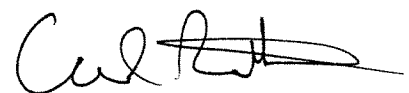
Y. Adjusted Silt (%)

Z. Soil Suitability Zone 2C

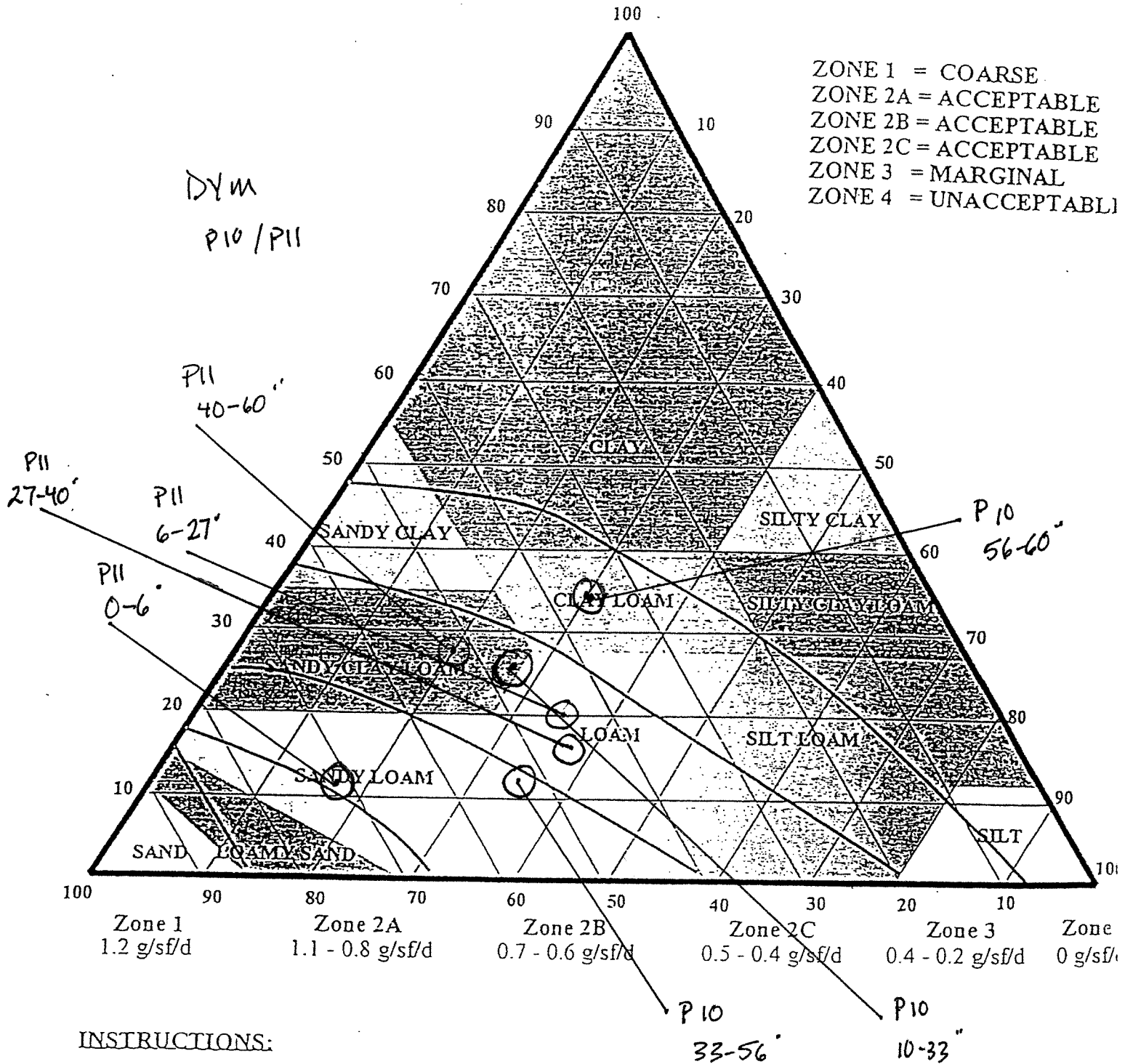
Lab Test Date:

Project #:

Site Evaluator: Carl Rittiman



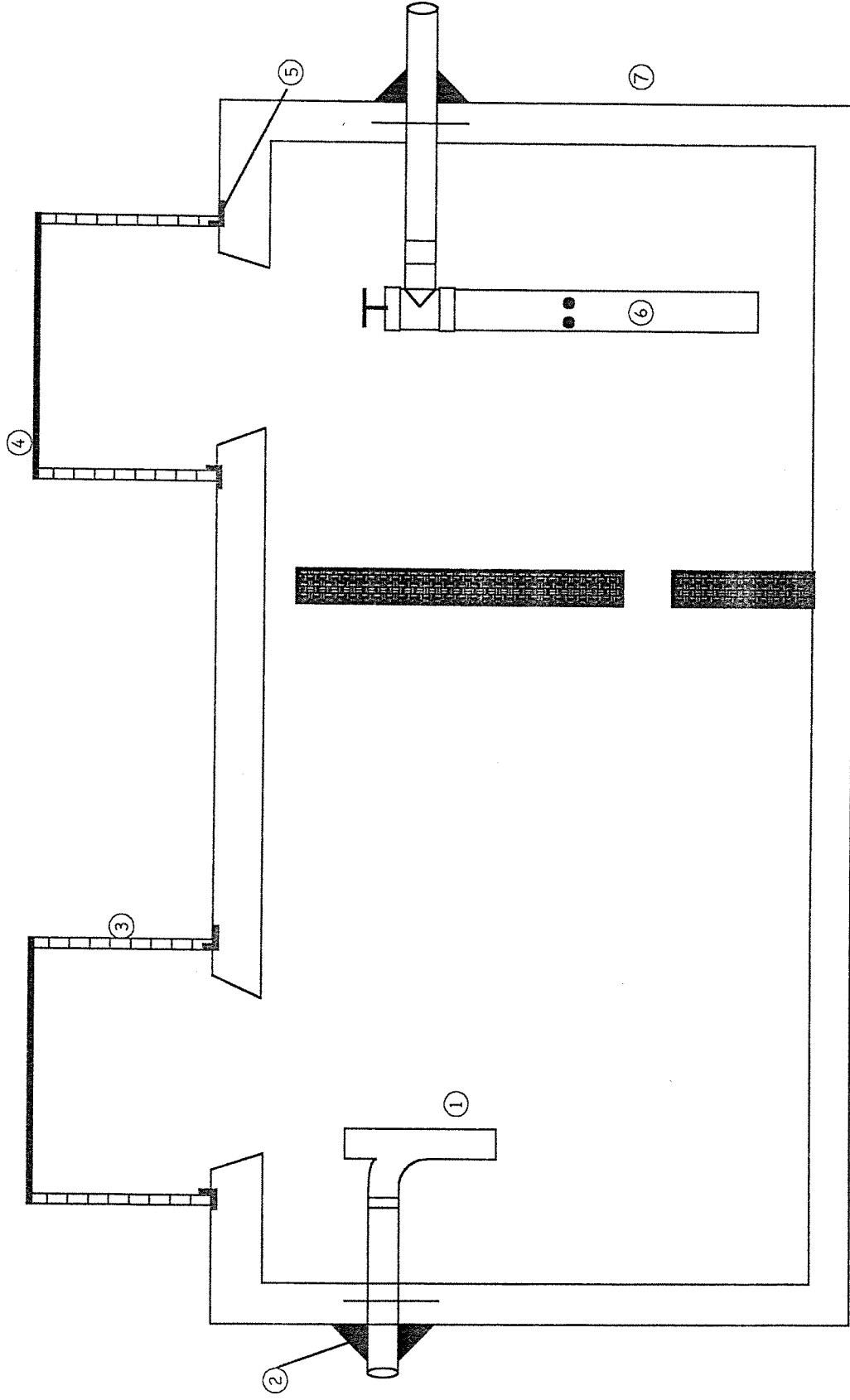
Soil Texture Suitability Chart



SEWAGE SYSTEM DETAILS

SEPTIC TANK DETAIL

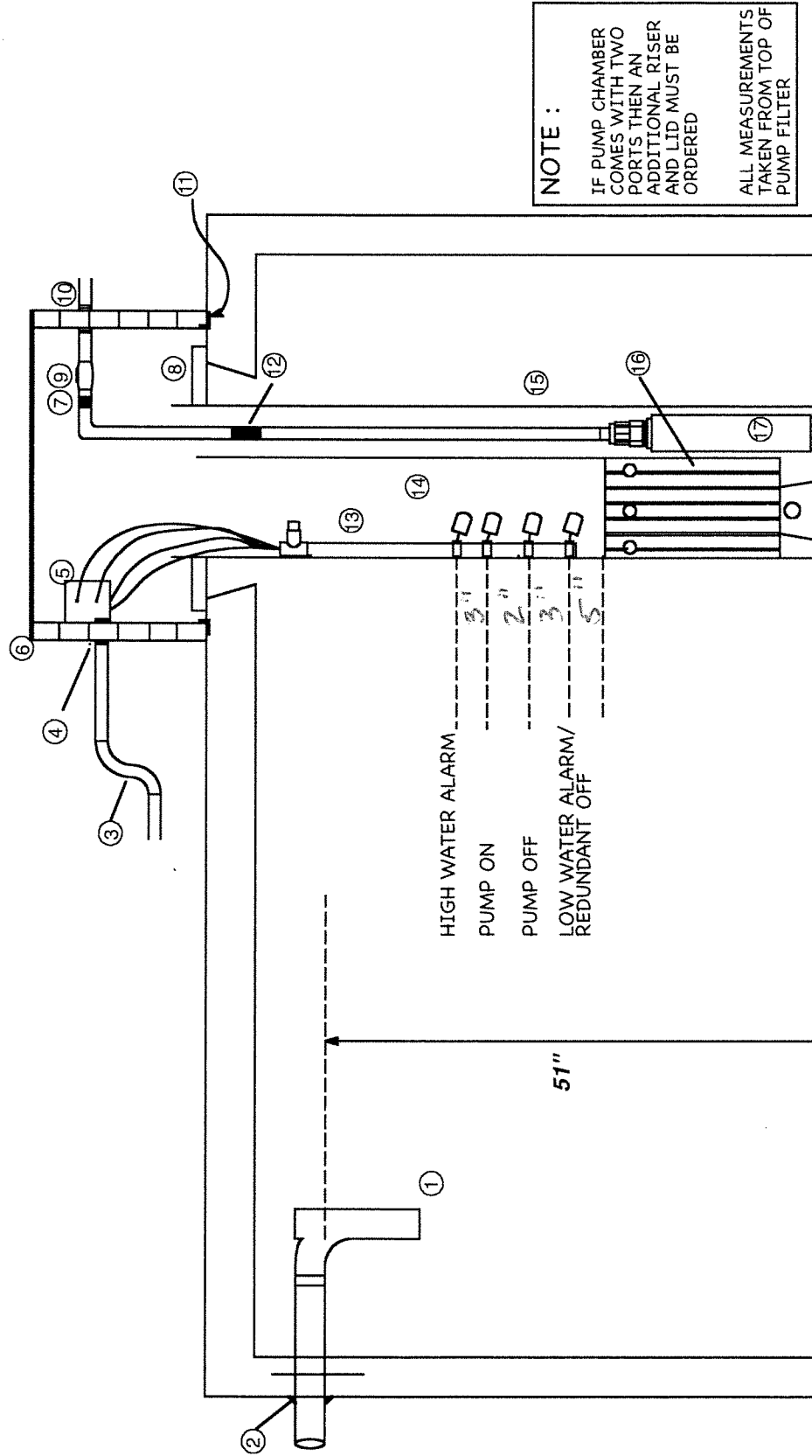
NTS



- | | |
|--|---|
| 1. STANDARD INLET TEE | 5. RISERS TO BE BONDED TO TANK IN A WATERTIGHT MANNER |
| 2. WATERPROOF HYDRAULIC CEMENT OR CAST IN COUPLING TO BE USED | 6. BIOTUBE EFFLUENT FILTER |
| 3. 24" O.S.I. PVC RISER | 7. CONCRETE SEPTIC TANK |
| 4. 24" O.S.I. FIBERGLASS LID WITH GASKET AND STAINLESS STEEL BOLTS | |

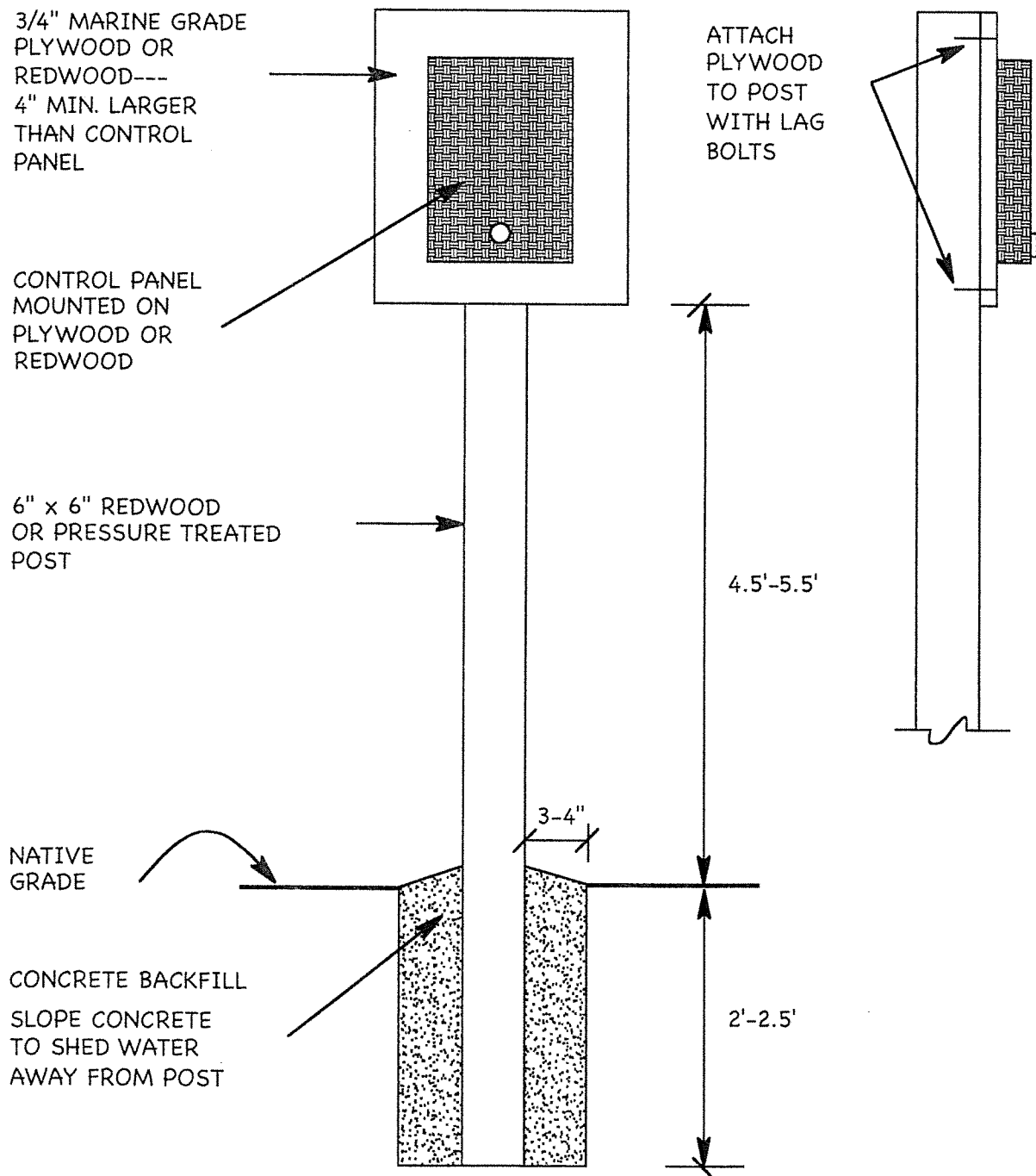
REDWOOD VALLEY 1500 GAL. CONCRETE PUMP CHAMBER WITH BIOTUBE PUMP VAULT

N.T.S.



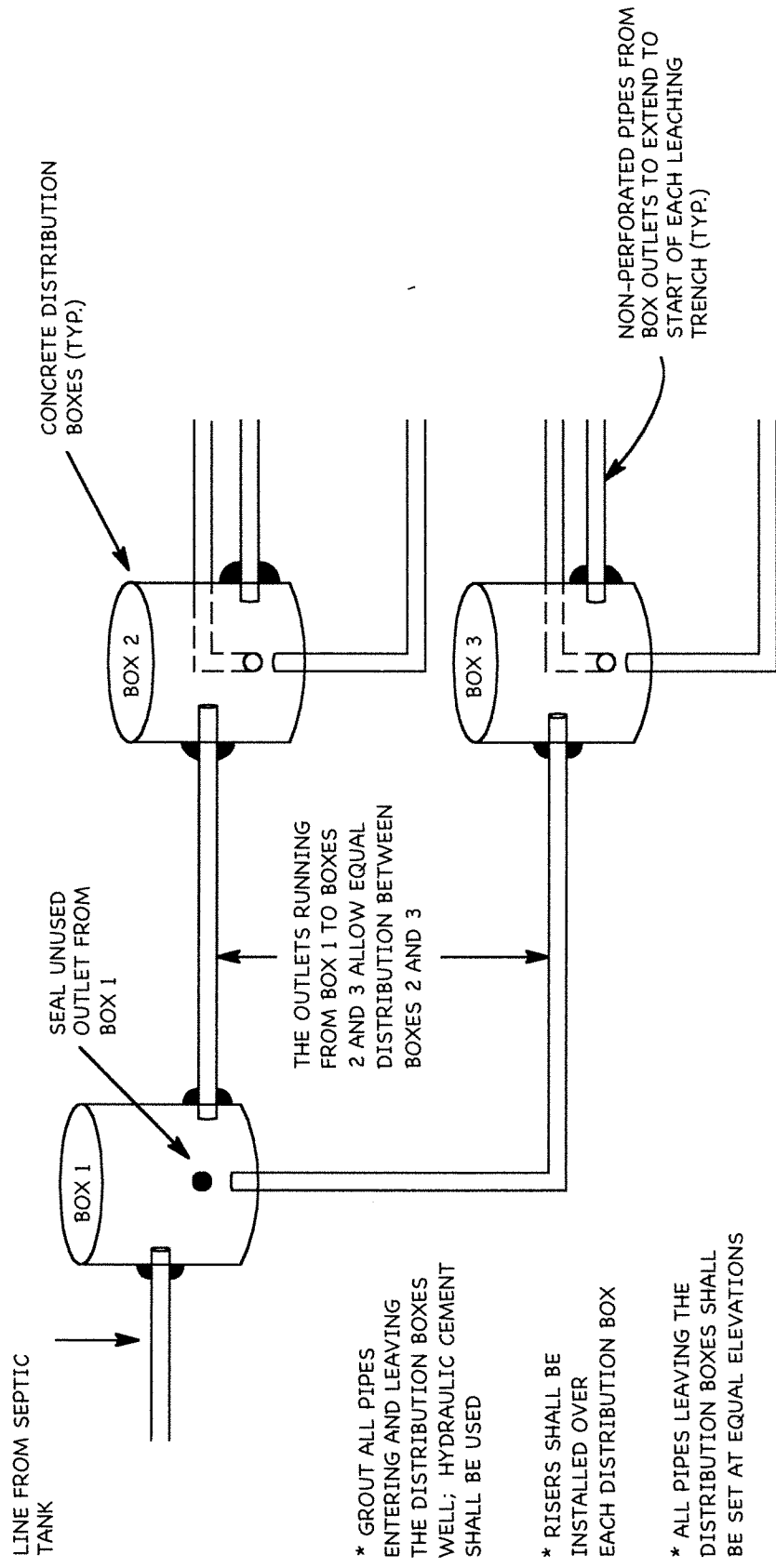
CONTROL PANEL MOUNTING

NTS

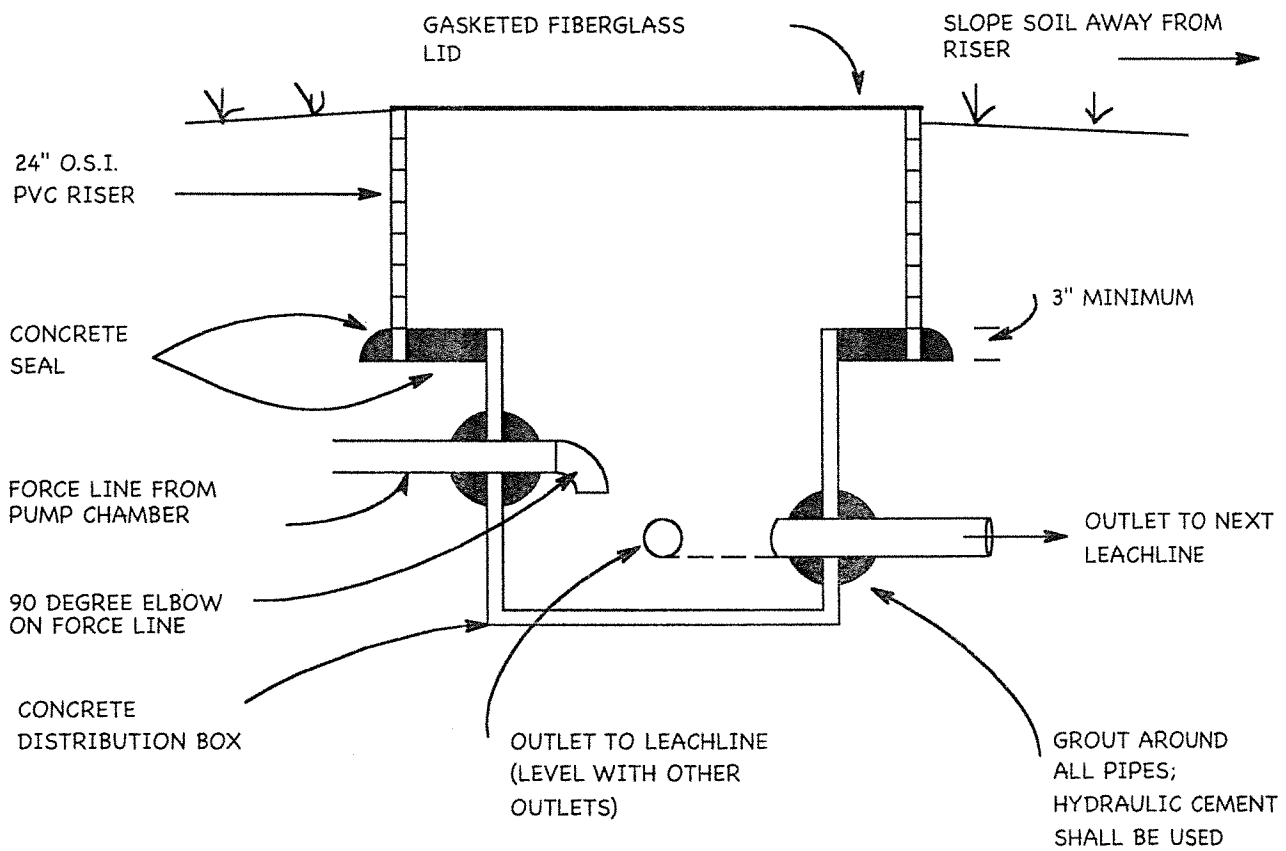


EQUAL DISTRIBUTION - 3 BOXES

NTS



- * GROUT ALL PIPES ENTERING AND LEAVING THE DISTRIBUTION BOXES WELL; HYDRAULIC CEMENT SHALL BE USED
- * RISERS SHALL BE INSTALLED OVER EACH DISTRIBUTION BOX
- * ALL PIPES LEAVING THE DISTRIBUTION BOXES SHALL BE SET AT EQUAL ELEVATIONS
- * LEACHLINES SHALL BE INSTALLED ON CONTOUR



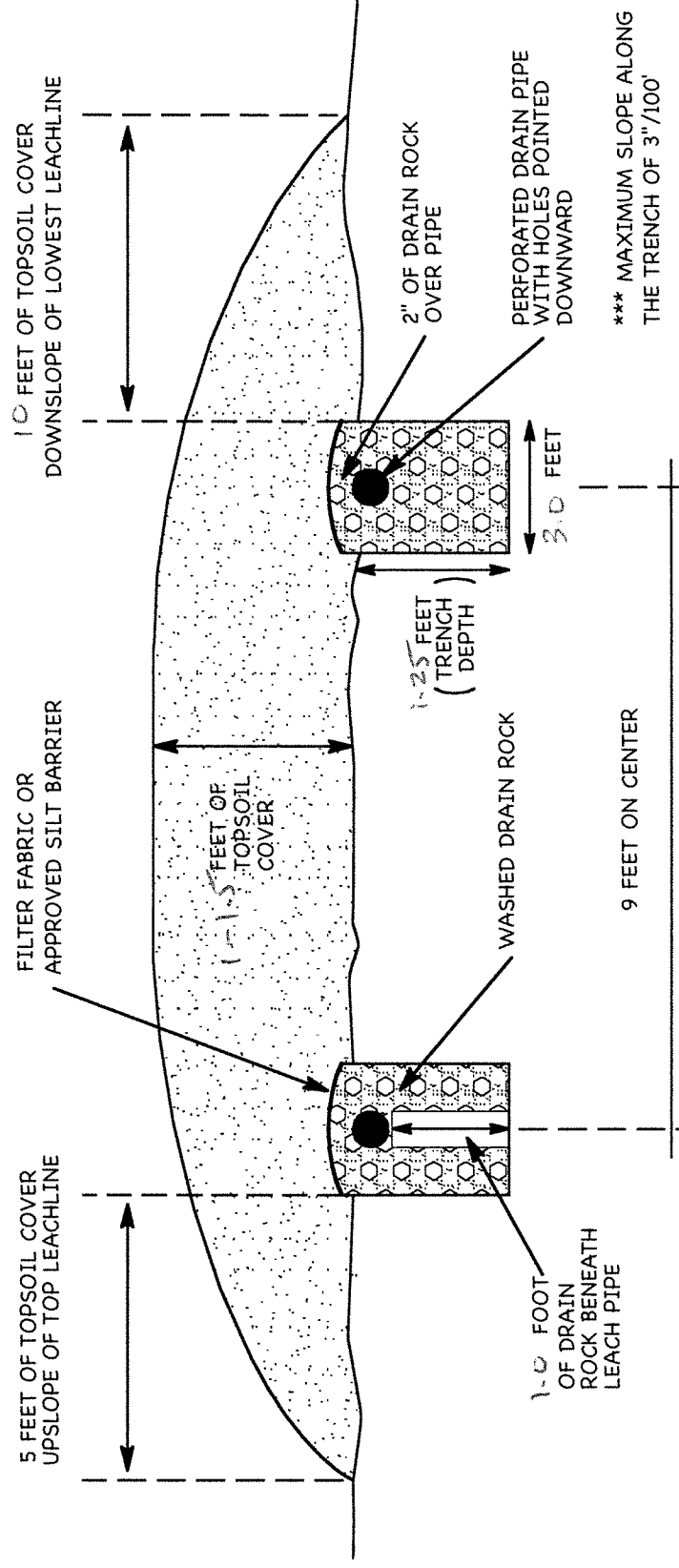
DISTRIBUTION BOX AND RISER DETAIL FOR EQUAL DISTRIBUTION

NTS

HIGHLINE LEACHFIELD

NTS

SLOPE →



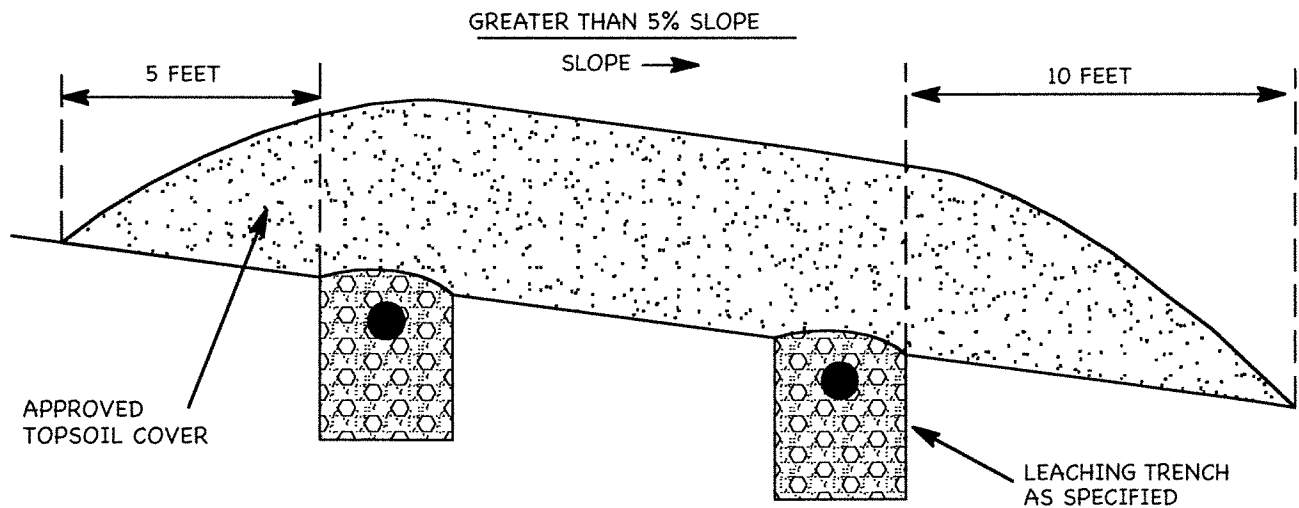
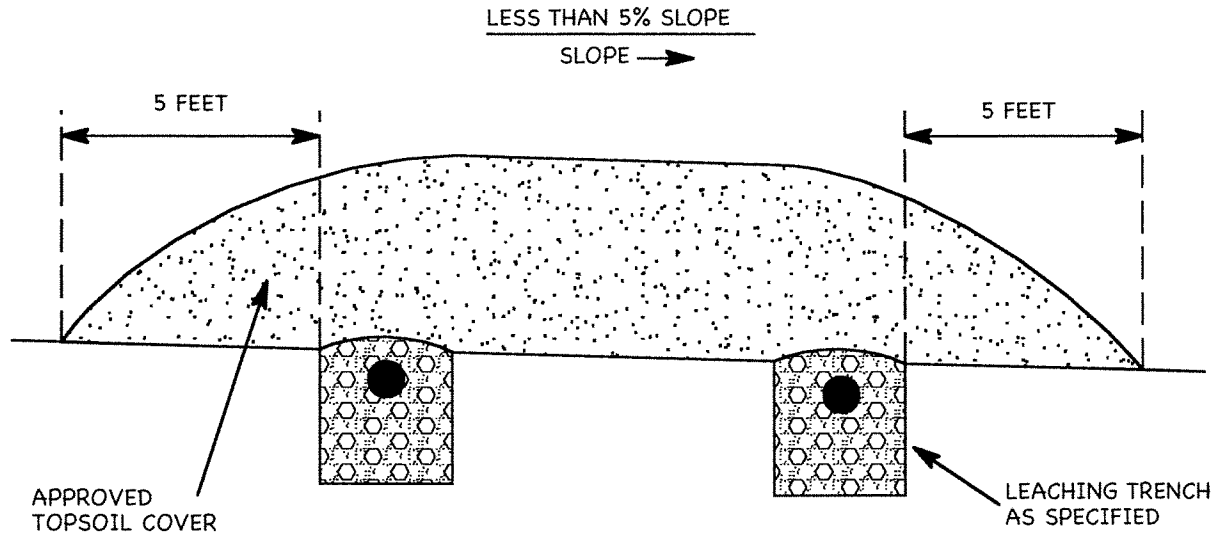
*** MAXIMUM SLOPE ALONG THE TRENCH OF 3"/100'

*** ACTUAL NUMBER OF LEACHING TRENCHES MAY VARY FROM ABOVE DRAWING. SEE PROPOSAL FOR DESIGN SPECIFICATIONS

*** REFER TO LEACHFIELD NOTES FOR ALL CONSTRUCTION SPECIFICATIONS

HIGHLINE TOPSOIL COVER DETAIL

NTS

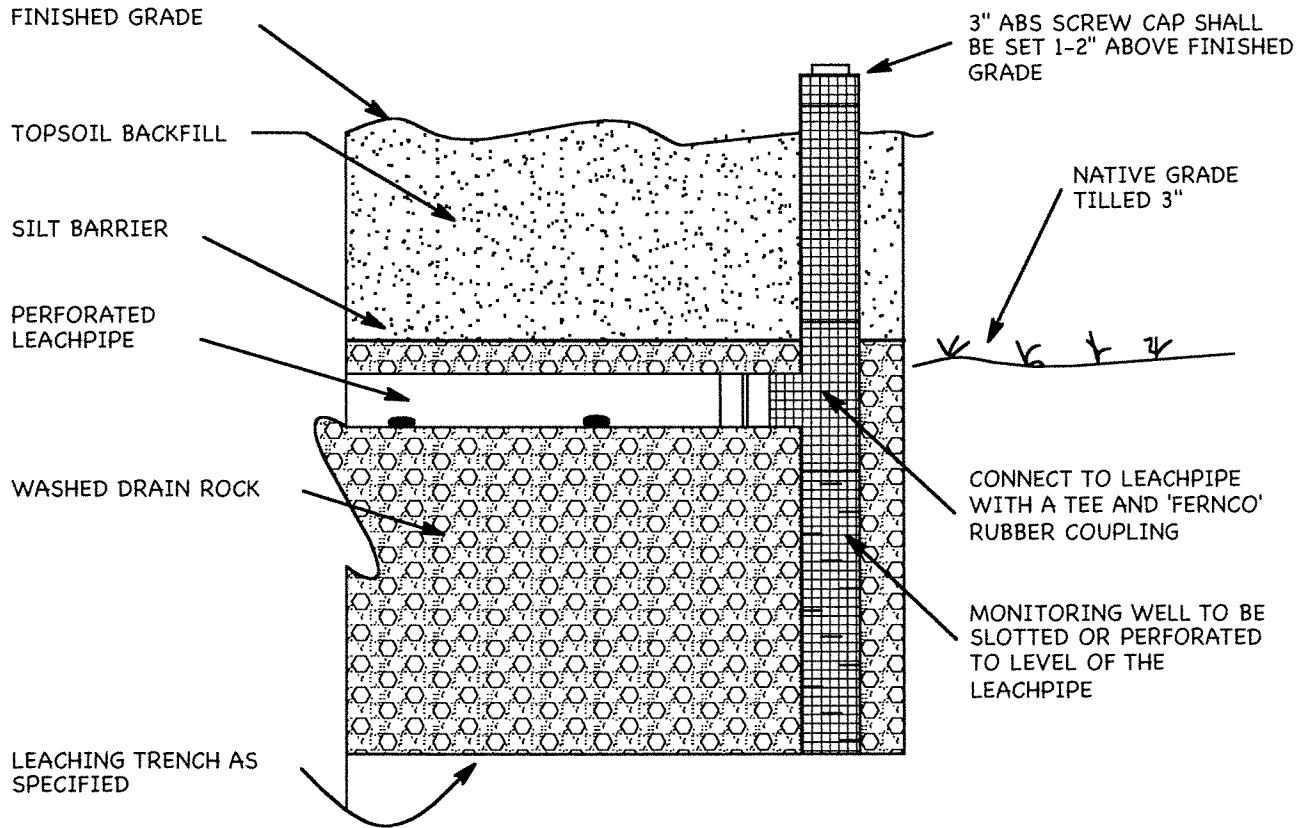


** REFER TO COMPLETE PROPOSAL FOR
TRENCH CONFIGURATION AND
TOPSOIL COVER SPECIFICATIONS

** GROUND SURFACE TO BE TILLED
PRIOR TO FILL PLACEMENT.
SEE PROPOSAL FOR
SPECIFICATIONS

** ACTUAL NUMBER OF LEACHING TRENCHES
MAY VARY FROM DRAWING. SEE PROPOSAL
FOR DESIGN SPECIFICATIONS

** REFER TO LEACHFIELD NOTES
FOR ALL CONSTRUCTION
SPECIFICATIONS



MONITORING WELL DETAIL FOR HIGHLINE TRENCH

NTS

APPENDIX A
PROPOSAL ABSTRACT

PROPOSAL ABSTRACT:

This parcel is located in Little River and is accessed off of Highway 1. The parcel is a bluff top parcel that currently supports a well and shed and is otherwise undeveloped. The slopes on the parcel are relatively gentle throughout the parcel.

The owner(s) of this project are planning to construct 5 visitor serving units (VSU) on this parcel. In addition to the 5 VSU's, a patio seating area with a restroom for the guests is also proposed. Laundry services for the proposed VSU's will occur on site.

A total of 13 soil profiles were observed on this parcel in areas available for sewage disposal. Sandy clay loam/gravelly sandy clay loam subsoils were observed in all of the profiles. Soil profiles P1-P3 were excavated to a depth of 48 inches and exhibited soil mottling at depths between 29-31 inches. Profiles P4-P6 were observed to a depth of 60 inches. Soil mottling was observed at a depth of 40 inches in P4, 42 inches in P5 and 57 inches in P6. Profile P7 was excavated to a depth of 60 inches and soft through hard weathering rock was encountered at a depth of 60 inches. Profiles P8 and P9 were exhibited fractured rock at depths of 19 and 10 inches respectively. Profiles P10 and P11 were excavated to a depth of 60 inches. Soil mottling was observed at a depth of 56 inches in P10 and 40 inches P11. Profile P12 was excavated to a depth of 42 inches and soft through hard weathering sandstone was encountered at the depth of 42 inches. Profile P13 was excavated to a depth of 64 inches and soft through hard weathering rock was encountered at the depth of 64 inches.

The soil mottling observed in the various profiles will be used to represent the highest level of winter groundwater. The presence of weathering rock at the observed bottom of profiles P7, P12 and P13 will be used to represent the effective end of useable soil depth.

A geotechnical analysis was performed on the parcel which resulted in a recommendation of maintaining a 36 foot bluff setback to any development, including on-site sewage disposal.

A gravity fed Highline leachfield is proposed at soil profiles P5 and P11 and the system is sized to accommodate a total of 650 gallons per day. Based on the location of the tankage serving the patio restroom and laundry room, effluent will need to be transferred to the leachfield area by an automatic pumping system; all necessary pump system specifications and calculations are included.

A pressurized Highline leachfield is proposed for the replacement area of this project and will be located at soil profiles P4, P6 and P10.

This proposal includes a waiver for reduced separation distance to anticipated groundwater.

APPENDIX B
CALCULATIONS

DAILY WASTEWATER FLOW ESTIMATES:

This project consists of developing 5 visitor serving units. All laundry services for the proposed units will be performed on-site.

According to Water Use and Sewage Flow Estimates set forth in Mendocino County's Local Agency Management Plan, a visitors serving unit is assigned a daily wastewater flow 80 gpd (base rate), and associated laundry services are assigned a daily wastewater flow of 40 gpd/room. A daily wastewater flow of 120 gpd will be assigned to a visitor serving unit with laundry services. The daily wastewater flow resulting from the five proposed VSU's can be calculated:

$$5 \text{ visitor serving units} \times 120 \text{ gal/day/VSU} = 600 \text{ gallons per day}$$

A daily wastewater flow of 600 gpd will assigned to the use of the visitor serving units.

A patio with an associated restroom is also proposed on the parcel and will be used by guests staying in the VSU's. A meeting was held with EH Staff regarding sewage flows resulting from use of the restroom, and it was decided that a daily flow of 50 gpd is appropriate for the proposed use.

The total daily wastewater flow resulting from the proposed uses on the parcel can be calculated:

5 visitor serving units	= 600 gallons per day
patio restroom	= <u>50 gallons per day</u>
	650 gallons per day

A total daily wastewater flow of 650 gallons per day will be assigned to this project.

LEACHING TRENCH CALCULATIONS:

Soils, which fall into Soil Percolation Suitability Zone 2C, will be assigned a soil application rate of 0.44 gallons per square foot per day. Thus, the assigned daily waste water flow of 650 gallons per day, (gpd), can be applied to the soil at this rate:

$$650 \text{ gpd} \div 0.44 \text{ gal/sq ft/day} = 1,477 \text{ square feet of infiltrative surface required.}$$

The proposed trench configuration provides an allowable 5.0 square feet of leaching area per lineal foot of trench:

$$1,477 \text{ sq ft} \div 5.0 \text{ sq ft/lineal foot} = 295 \text{ lineal feet.}$$

5 leachlines are proposed for a total of 300 feet.

PUMP SYSTEM SPECIFICATIONS: Calculations

Supply Line	1.5" PVC SCH 40*
Supply Line Length	200 feet*
Elevational Head	5 feet*
Friction Loss	4.9 feet*
Residual Head	0 feet
Total Head	10 feet*
Minimum Pump Requirements	20 gpm @ 10 feet head*
Dosing Volume	60-70 gallons
Check Valve Needed?	Yes
Anti-Siphon Needed?	No*

APPENDIX C
EQUIPMENT SPECIFICATIONS

GRAVITY and PUMP SYSTEM SPECIFICATIONS: Products

Available from:

Redwood Valley Gravel Products
11200 East Road
Redwood Valley, CA 95470
707-485-8585

Manufactured by:

Orenco Systems Incorporated
814 Airway Avenue
Sutherlin, OR 97479
800-348-9843

- | | | | |
|---|-----|-------|------------------------------|
| 1. Riser, Lid with Accessories | | | |
| PVC Riser | (6) | Model | RR2412* |
| PVC Riser with 1.5" grommet | (1) | Model | RR3015G150* |
| Fiberglass lid | (6) | Model | FL24g |
| Fiberglass lid | (1) | Model | FL30g |
| Epoxy | (7) | Model | ADH 200 |
| 2. Splice Box | | Model | SB5 |
| PVC vault with 5 cord grips and 1" outlet | | | |
| 3. Biotube Pump Vault | | Model | PVU641819L |
| PVC vault with screened vault | | | |
| 4. Mechanical Switch Float Assembly
with High Water Alarm, On, Off and
Redundant Off | | Model | MF4P |
| 5. Control Panel with Counter, Elapsed Time
Meter and Redundant Off; PANEL SET FOR DEMAND DOSE | | Model | MVP S-1**
CT
RO
ETM |
| 6. Hose and Valve Assembly
1.5" PVC with ball and check valves | | Model | HV150BCX |
| 7. Effluent Pump
Curve attached; 115 volt | | Model | PF300511 |
| 8. Biotube Effluent Filter | (3) | Model | FTS0444-36M |
| 9. Adapter Plate for Pump Tank | | Model | RRFTA 30 |
| 10. Distribution Box Riser and Lid | (3) | Model | RR2418
FL24g |

***Riser heights are listed as 12 inches for each septic tank and 15 inches for pump tank. Those heights may need to change, based on actual field measurements and the final depths of the tanks.**

**** Control panel will require that system installer change the panel mode from 'timed dosing' to 'demand dosing' and remove the terminal link between terminals 3 and 4.**

EQUIPMENT INSTALLATION NOTES:

1. A permit from the Mendocino County Building Department will be required to connect electricity to the control panel.
2. County DEH must be notified a minimum of 48 hours prior to the pump test and must be present when pump performance is demonstrated unless other arrangements are made. Contact County DEH for inspection requirements.
3. County DEH must be contacted during various phases of pressure system/pump system construction to inspect leachline construction, system performance and pump chamber equipment. Contact County DEH for inspection requirements.
4. Installer shall contact Consultant prior to ordering any of the above-specified products. Certain item numbers are based on the pump chamber dimensions and **final development plans**. Installer shall contact Consultant with the tank dimensions and the final site plans that are to be used.
5. **All equipment specifications shall be reviewed when a final site map is available.**
6. Set floats to deliver 60-70 gallons per cycle. See attached detail for float settings.
7. Set the floats to allow for a minimum of 250 gallons of reserve capacity within the pump chamber for times of power outages or equipment failure. See attached detail for float settings.
8. No driving shall take place over any of the septic tanks or the pump chamber.
9. The risers shall be set flush to grade. **The height of the risers shall be changed in order to match the site and final installation depth.** (County DEH requires a minimum of 12 inches of soil cover over a tank.)
10. Do not backfill around the risers until the epoxy has dried.
11. Slope the soil backfill around the risers in such a manner that water does not pond over the risers.
12. If no grooves or adapter rings are cast into the tops of the tank(s), then tank/riser adapter plates will be needed. The plates shall be bonded and bolted (min. of 12 bolts) to the top(s) of the tank(s) to form a watertight seal. The model number for the plates is RRFTA. **An adapter plate will be needed for the pump chamber to attach the specified 30-inch diameter riser.** It is recommended that 'swellstop' butyl strips and wedge anchor bolts be used.
13. Divert all building and site drainage away from the tanks.
14. If a 2-port pump chamber is installed, an additional riser and adapter plate will need to be ordered and installed.
15. The distribution box risers shall be set slightly above grade. See attached installation detail.

EQUIPMENT INSTALLATION NOTES CONTINUED:

16. A watertightness test will be required on all tanks. The tanks shall be filled with water, to a height of 2 inches into the concrete lid, and no drop greater than one inch in 24 hours shall be tolerated. All inlet and outlet plumbing shall be in place for the test.
17. All pump equipment shall be installed as per manufacturer's specifications.
18. The installer or electrician shall contact the Consultant or manufacturer with any pump equipment installation questions *prior* to beginning installation.
19. All electrical splices shall be made watertight.
20. The pump control panel shall receive power through the main house panel and shall be provided with two dedicated breakers within the service panel (one for the pump and one for the floats).
21. The pump alarm/control panel shall be mounted on a post or on a building between the heights of 4 and 5 feet. The panel shall be mounted at a location where it is visible from the pump chamber. Due to noise from within the panel, it is recommended that the panel be mounted on an exterior wall of a *non-visitor serving* room. The panel shall be installed in a location that is accessible to maintenance personnel at all times and is in view of the tank. The panel shall not be installed in any interior locations such as shed or utility closet etc.
22. If installer has any questions regarding this proposal, contact Consultant prior to construction.
23. Any deviation from this plan must first be cleared with Consultant and County DEH.

PVC Access Riser Installation

Installing PVC Access Risers onto Cast-In Orenco® Riser-Tank Adapters

Access risers provide access to septic tank openings, simplifying inspection and maintenance procedures. Access riser-to-tank connections must be watertight for the proper functioning of an onsite septic system or effluent sewer system. **Orenco strongly recommends watertightness testing of all access riser-to-tank connections after installation.**

Choosing Your Instruction Set

Following are instruction sets for prepping and installing access risers, installing grommets, and selecting adhesives for riser installations. Refer to the chart below to determine which instruction set to use.

Instruction Set	Page
1. Riser Preparation	1
2. Grommet Installation	2
3. Riser Installation — PRTA24-2 Adapters	3
4. Riser Installation — RRFTA, RRFTA30 Adapters	4
5. Riser Installation — PRTA24, PRTA30, and FRTA36 Adapters	5
6. Adhesive Selection and Quantities	6

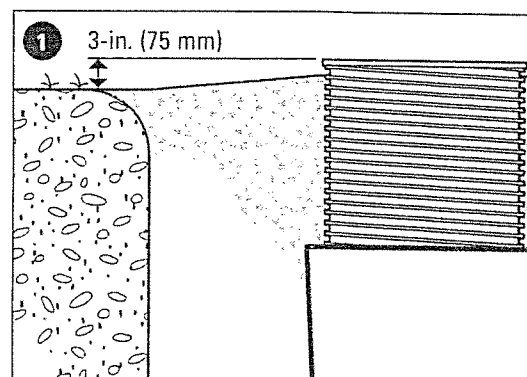
Instruction Set 1: Riser Preparation

Step 1: Determine Riser Height

Determine the necessary height for the riser. It should extend about 3 inches (75 mm) above finished grade after installation and backfilling — 2 inches (50 mm) for tank settling and 1 inch (25 mm) to ensure drainage away from the riser.

Step 2: Cut Riser to Size (if Necessary)

If the riser has not already been cut to the correct height, use a circular saw or table saw to cut the riser to size. To insure a good fit and watertight joint between the access riser and the adapter, Orenco recommends using an Orenco riser-cutting saw guide for square, even cuts.



Step 3: Dry Fit Riser to Adapter

Step 3a: Dry fit the riser to the adapter. If the riser has been pre-drilled for wiring and plumbing penetrations, make sure that the sizes and locations of the penetrations on the riser are correct.

Step 3b: If the riser stands more than about 3 inches (75 mm) above the estimated final grade, cut it to size per the instructions in step 2.

IMPORTANT: If you have to cut a riser to shorten it, always cut excess length from the bottom of the riser.

NOTE: If the riser is too short, an Orenco grade ring can be used to extend it.

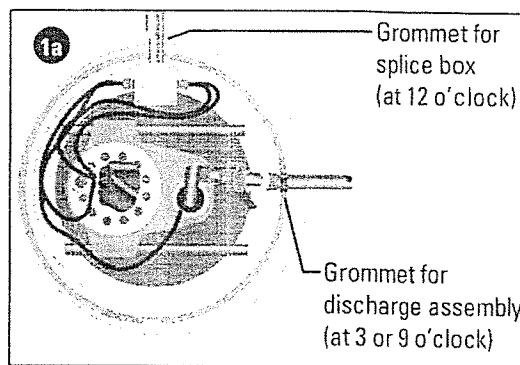
Instruction Set 2: Grommet Installation

Step 1: Mark Access Riser

Step 1a: Check site plans or drawings to determine if the riser requires penetrations and grommets. Use the plans or drawings when marking the location of riser penetrations. If no plans are available, use the drawing at left as a general guide for locating riser penetrations.

Step 1b: Mark the riser for location of the grommets.

Note: When drilling Perma-Loc™ risers, try to avoid cutting through the pipe seam — the extra thick rib — unless it is unavoidable.



Step 2: Drill and Clean Access Riser Penetrations

Step 2a: Drill holes for riser penetrations.

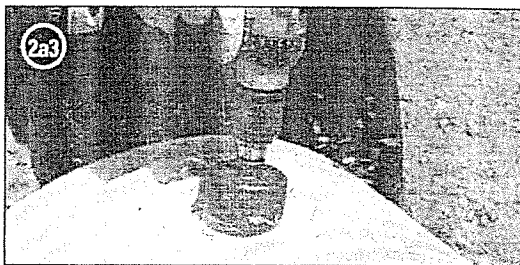
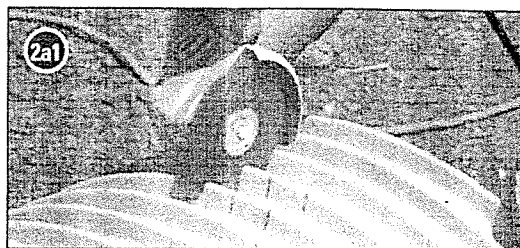
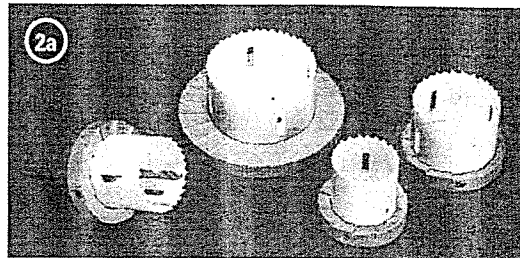
Using Orenco® RKHS Hole Saw ...

Use a correctly sized RKHS hole saw and a drill of at least 18 volts to cut the hole and grind the ribs down until there is a flat, smooth surface for installing the grommet. Do not grind too deeply into the riser — about 1/16 inch is sufficient.

Using Standard Hole Saw ...

1. Use a 4-inch (100-mm) grinder or cutting tool to notch the ribs through to the wall of the riser in an area about 1 inch (25 mm) larger than the diameter of the grommet.
2. Use a hammer and chisel to break the notched ribs off of the riser.
3. Use a grinder to remove any remaining rib material and make a flat, smooth surface about 1 inch (25 mm) larger than the diameter of the grommet.
4. Use a correctly sized hole saw to cut the hole in the center of the flat, smooth surface.

Step 2b: Use a wire brush to clean up the cut; then deburr the edges of the opening with a deburring tool or knife, being careful not to enlarge the opening.



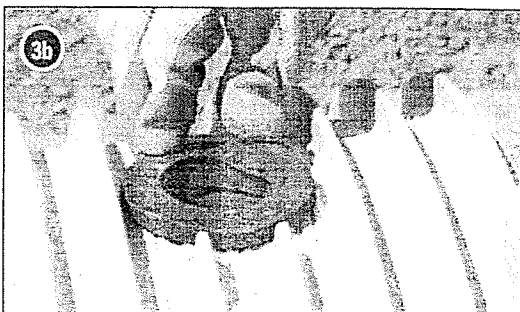
Step 3: Install Grommet in Riser Penetration

Step 3a: Apply a bead of adhesive to the groove in the grommet's outer diameter.

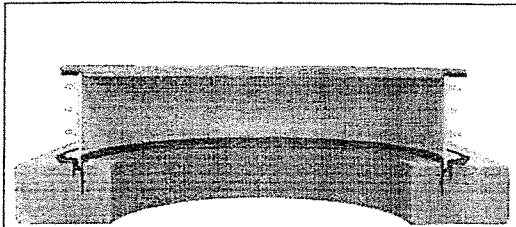
Step 3b: Firmly press the grommet into the riser penetration.

Grommet Hole Sizing Guide

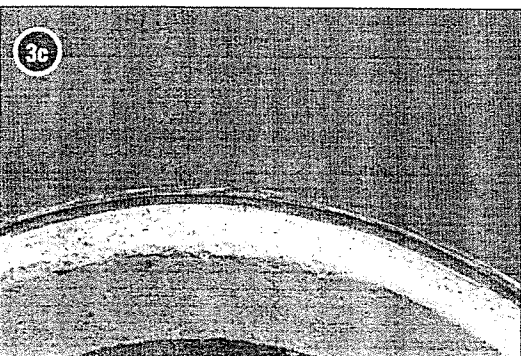
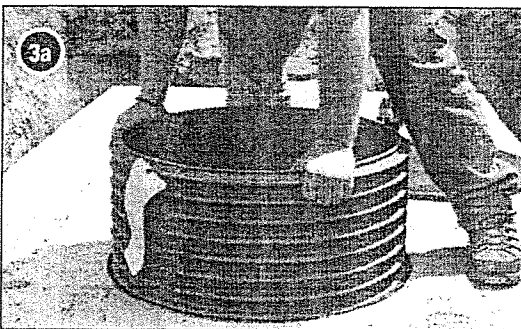
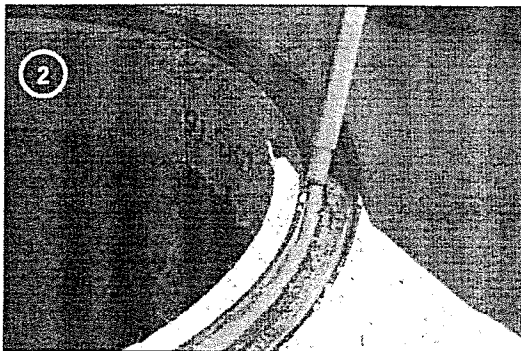
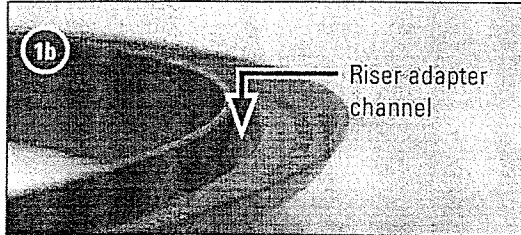
Grommet size, inches (nominal IPS pipe size)	Hole saw size
1/2	1
3/4	1-1/4
1	1-9/16
1-1/4	1-3/4
1-1/2	2-1/8
2	2-3/4
3	3-7/8
4	5



For more information on grommet dimensions and actual pipe O.D., see the Orenco Technical Data Sheet for grommets, NTD-RLA-PG-1



Cutaway view of Orenco® PRTA24-2, cast into concrete tank with 24-inch (600-mm) access riser attached



Instruction Set 3: Riser Installation — PRTA24-2 Adapters

Step 1: Clean Riser Adapter Channel and Riser Surfaces

Step 1a: For the best bond, roughen the bonding surfaces of the adapter and riser with sandpaper.

Step 1b: Use a clean cloth and acetone to remove any dirt, debris, and moisture from the tank adapter channel. The channel must be clean and dry for a good fit and watertight joint.

Step 1c: Use a clean cloth and acetone to clean the bonding surface of the riser.

Step 2: Apply Adhesive to Riser Adapter Channel

Fill the channel with methacrylate adhesive.

NOTE: Self-leveling methacrylate adhesive is recommended for this operation. If non-self-leveling methacrylate adhesive is being used, be sure to apply a large enough bead to fully fill the channel, with no voids in the adhesive.

Step 3: Install Riser into Tank Adapter Channel

Step 3a: If the riser has penetrations, align the riser correctly.

Step 3b: Firmly press the bottom of the riser into the channel while slightly twisting the riser back and forth to fully seat it and to create a good bond.

Step 3c: If using non-self-leveling adhesive, it may be necessary to use a putty knife, tongue depressor, or clean shop rag to create a continuous adhesive fillet between the tank adapter and the inside of the riser after the riser has been installed.

Step 4: Perform Watertightness Test

NOTE: Follow the tank manufacturer's instructions for backfilling and watertight testing. General guidelines for watertight testing are provided below.

Step 4a: Make sure the adhesive has set and that the tank has been backfilled according to the manufacturer's instructions — typically to the tank's midpoint.

Step 4b: Plug the inlet (and outlet, if present) of the tank with watertight plugs.

Step 4c: Fill the tank with water to a level 2 inches (51 mm) into the riser.

Step 4d: Follow the tank manufacturer's recommendations (or applicable local regulations) for wait times before inspecting the tank for leaks. Orenco recommends at least 30 minutes for its fiberglass tanks. At the end of the test, there should be no drop in liquid level and no visible leakage from seams, pin-holes, or other imperfections.

Step 4e: Once the tank is proven watertight, remove the plug(s) and drop the water level in the tank to just below the invert of the inlet or outlet, whichever is lower.

Instruction Set 4: Riser Installation — RRFTA and RRFTA30 Adapters

Step 1: Prep and Clean Tank Adapter Channel, Riser Surfaces

Step 1a: Roughen the correct tank adapter channel with sandpaper. For RRFTA adapters, the smaller channel fits 21-inch (525-mm) risers and the larger channel fits 24-inch (600-mm) risers. RRFTA30 adapters have a single channel for 30-inch (750-mm) risers.

Step 1b: Use a clean cloth and acetone to remove any dirt, debris, and moisture from the channel. The channel must be clean and dry for a good fit and water-tight joint.

Step 1c: Use a clean cloth and acetone to clean the bonding surface of the riser.

Step 2: Apply Adhesive to Adapter Channel

Fill the channel with methacrylate adhesive.

NOTE: Self-leveling methacrylate adhesive is recommended for this operation. If non-self-leveling methacrylate adhesive is being used, be sure to apply a large enough bead to fully fill the channel, with no voids in the adhesive.

Step 3: Install Riser into Tank Adapter Channel

Step 3a: If the riser has penetrations, align the riser correctly.

Step 3b: Firmly press the bottom of the riser into the channel while slightly twisting the riser back and forth to fully seat it and to create a good bond.

Step 4: Perform Watertightness Test

NOTE: Follow the tank manufacturer's instructions for backfilling and watertight testing. General guidelines for watertight testing are provided below.

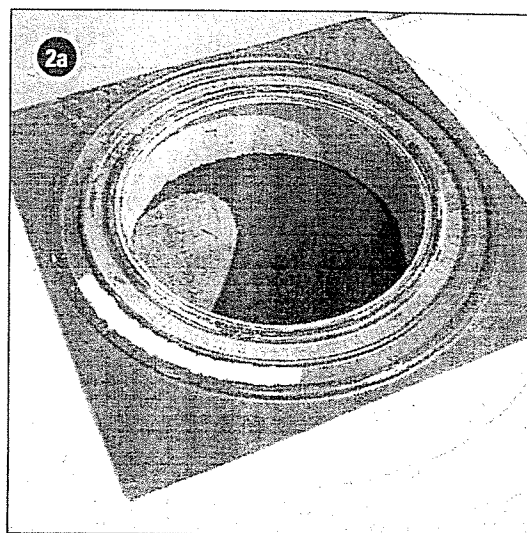
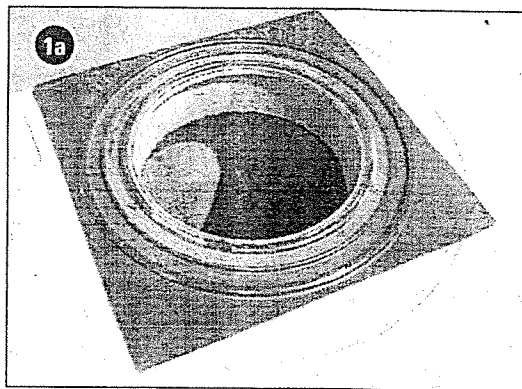
Step 4a: Make sure the adhesive has set and that the tank has been backfilled according to the manufacturer's instructions — typically to the tank's midpoint.

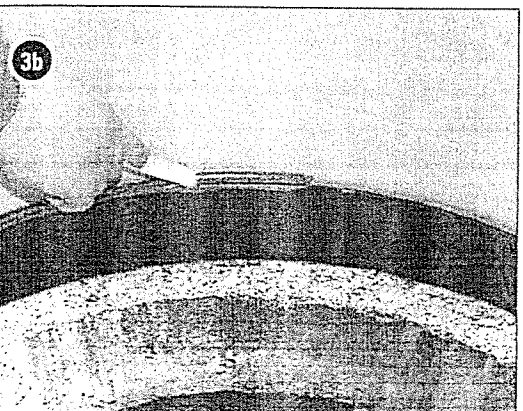
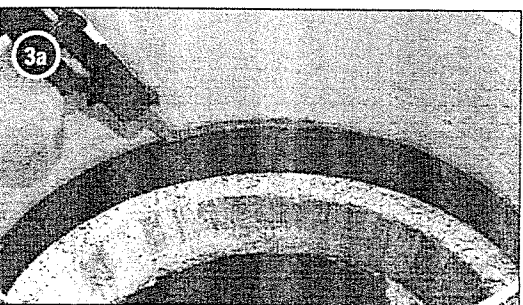
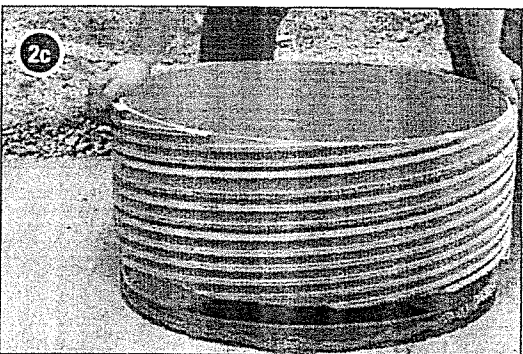
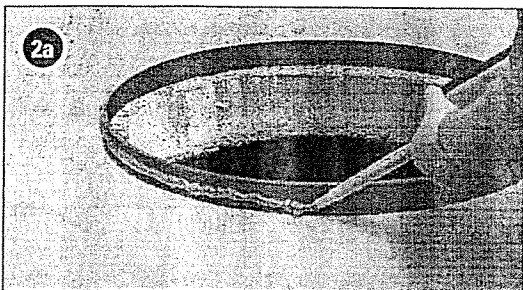
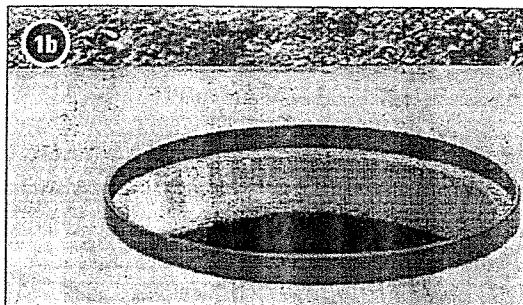
Step 4b: Plug the inlet (and outlet, if present) of the tank with watertight plugs.

Step 4c: Fill the tank with water to a level 2 inches (51 mm) into the riser.

Step 4d: Follow the tank manufacturer's recommendations (or applicable local regulations) for wait times before inspecting the tank for leaks. Orenco recommends at least 30 minutes for its fiberglass tanks. At the end of the test, there should be no drop in liquid level and no visible leakage from seams, pinholes, or other imperfections.

Step 4e: Once the tank is proven watertight, remove the plug(s) and drop the water level in the tank to just below the invert of the inlet or outlet, whichever is lower.





Instruction Set 5: Riser Installation — PRTA24, PRTA30, and FRTA36 Adapters

Step 1: Clean Tank Adapter Sleeve and Riser

Step 1a: For the best bond, roughen the bonding surfaces of the adapter and riser with sandpaper.

Step 1b: Use a clean cloth and acetone to remove any dirt and debris from the outside of the tank adapter sleeve. The adhesive surface must be clean and dry for a good fit and watertight joint.

Step 1c: Use a clean cloth and acetone to clean the bonding surface of the riser.

Step 2: Install Riser on Tank Adapter Sleeve

Step 2a: Apply a bead of methacrylate adhesive to the outside of the adapter.

Step 2b: If the riser has penetrations, align the riser correctly.

Step 2c: Firmly press the riser while slightly twisting the riser back and forth until the bottom of the riser is resting on the concrete (cast-in adapters) or the adapter flange (bolted-down adapters).

Step 3: Apply Adhesive Bead to Inside Joint

Step 3a: Apply a bead of methacrylate adhesive to the inside of the access riser-adapter joint.

Step 3b: Use a putty knife, tongue depressor, or clean shop rag to make a continuous fillet on the inside of the access riser-adapter joint.

Step 4: Perform Watertightness Test

NOTE: Follow the tank manufacturer's instructions for backfilling and watertight testing. General guidelines for watertight testing are provided below.

Step 4a: Make sure the adhesive has set and that the tank has been back-filled according to the manufacturer's instructions — typically to the tank's midpoint.

Step 4b: Plug the inlet (and outlet, if present) of the tank with watertight plugs.

Step 4c: Fill the tank with water to a level 2 inches (51 mm) into the riser.

Step 4d: Follow the tank manufacturer's recommendations (or applicable local regulations) for wait times before inspecting the tank for leaks. Orenco recommends at least 30 minutes for its fiberglass tanks. At the end of the test, there should be no drop in liquid level and no visual leakage from seams, pinholes, or other imperfections.

Step 4e: Once the tank is proven watertight, remove the plug(s) and drop the water level in the tank to just below the invert of the inlet or outlet, whichever is lower.

Instruction Set 6: Adhesive Selection and Quantities

Use the table below to select the correct adhesive and quantity for your grommet or riser installation(s). Be sure to check the expiration date on the adhesive package. If the adhesive is expired, do not use it to install Orenco components.

Note: Before installing a riser on an Orenco riser-tank adapter with an adhesive not recommended in the table below, contact your Distributor or Orenco.

Grommet and Access Riser Installation — Adhesive Recommendations

Component	Model	Adhesive Type and Approximate Usage				
		<u>MA530</u> 300/300-mL cartridge (600-mL total)	<u>MA515</u> 300/300-mL cartridge (600-mL total)	<u>MA320</u> 7-oz (200-mL) packet	<u>IPS 810</u> 1-pint (473-mL) 1-quart (946-mL)	<u>ADH100</u> 10.2-oz (300-mL) tube
Grommets	All Grommets	n/a	n/a	n/a	n/a	various quantities
Riser Tank Adapters	FRTA36	1 cartridge*	1 cartridge*	n/a	n/a	n/a
	PRTA24	½ cartridge*	½ cartridge*	1 packet	n/a	1 tube
	PRTA24-2	≥ ½ cartridge*	≥ ½ cartridge*	n/a	< 1 pint	n/a
	PRTA30	< 1 cartridge*	< 1 cartridge*	2 packets	n/a	2 tubes
	RRFTA	< 1 cartridge	n/a	n/a	1 pint*	n/a
	RRFTA30	1 cartridge	n/a	n/a	1 quart*	n/a

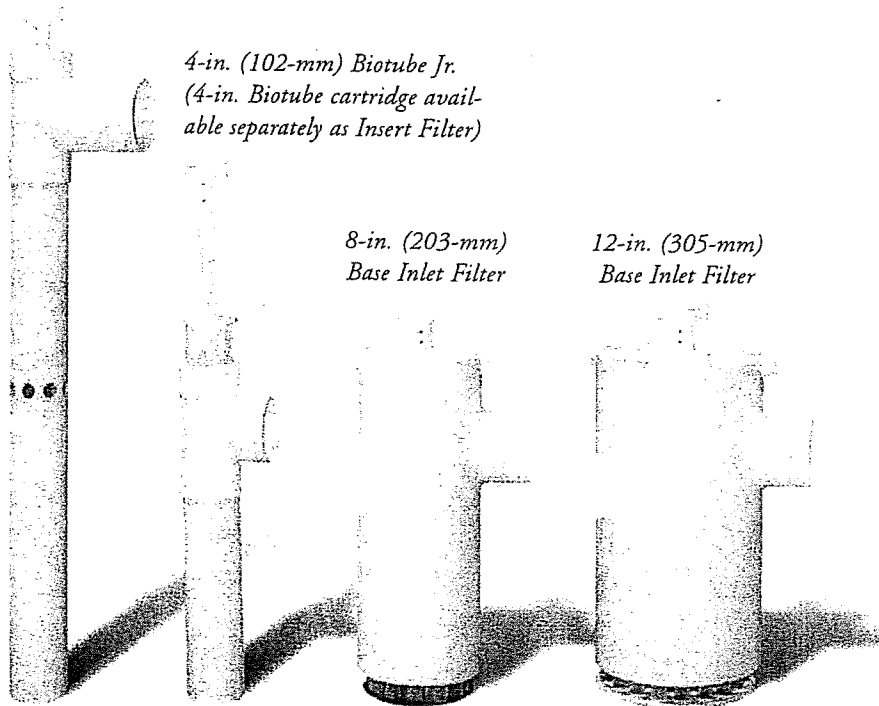
* Indicates preferred adhesive for this application

Residential Biotube® Effluent Filters

Applications

Our patented* 4-in. (102-mm) Biotube Effluent Filters, Biotube Jr., Biotube Insert Filters, and Biotube Base Inlet Filters are ideal for residential septic tanks and have a lifetime warranty. They prevent large solids from leaving the tank, dramatically improving wastewater quality and extending the life of residential drainfields.

4-in. (102-mm) Biotube Effluent Filter



4-in. (102-mm) Biotube Jr.
(4-in. Biotube cartridge available separately as Insert Filter)

8-in. (203-mm)
Base Inlet Filter

12-in. (305-mm)
Base Inlet Filter

Orenco's superior effluent filters resist clogging better than all other brands. Our standard, full-sized 4-in. (102-mm) Biotube Effluent Filter provides maximum long-term protection in a complete package, with housing. Our 4-in. (102-mm) Biotube Jr., at half the size of our standard model, has more filtering capacity than the full-sized filters sold by other manufacturers. For tanks with existing outlet tees, the Biotube Insert Filter is ideal. And for low-profile tanks, there's the Base Inlet Filter.

* Covered by patent numbers 5,492,635 and 4,439,323

To Order

Call your nearest Orenco Systems®, Inc. distributor. For nearest distributor, call Orenco at 800-348-9843 or go to www.orenco.com and click on "Distributor Locator."

APS-FT-1
Rev. 3.2 © 2/05
Orenco Systems®, Inc.

Standard Features & Benefits

- Has 5-10 times more flow area than other brands, so lasts many times longer between cleanings, increasing homeowner satisfaction
- Installs in minutes inside new or existing tanks; extendible tee handle for easy removal
- Easy to clean by simply hosing off whenever the tank needs pumping
- Removes about two-thirds of suspended solids, on average, extending drainfield life
- Corrosion-proof construction, to ensure long life
- Lifetime warranty

Optional Features & Benefits

- Alarm available, to signal the need for cleaning
- Flow modulating discharge orifices available to limit flow rate leaving tank, mitigating surges and increasing retention time
- Custom and commercial sizes available

Biotube Filtering Process

Effluent from the relatively clear zone of the septic tank, between the scum and sludge layers, horizontally enters the Biotube Effluent Filter. Effluent then enters the annular space between the housing and the Biotubes, utilizing the Biotubes' entire surface for filtering. Particles larger than the Biotube's mesh are prevented from leaving the tank.



Orenco Systems®
Incorporated

*Changing the Way the
World Does Wastewater®*

www.orenco.com

4" Biotube[®] Effluent Filter

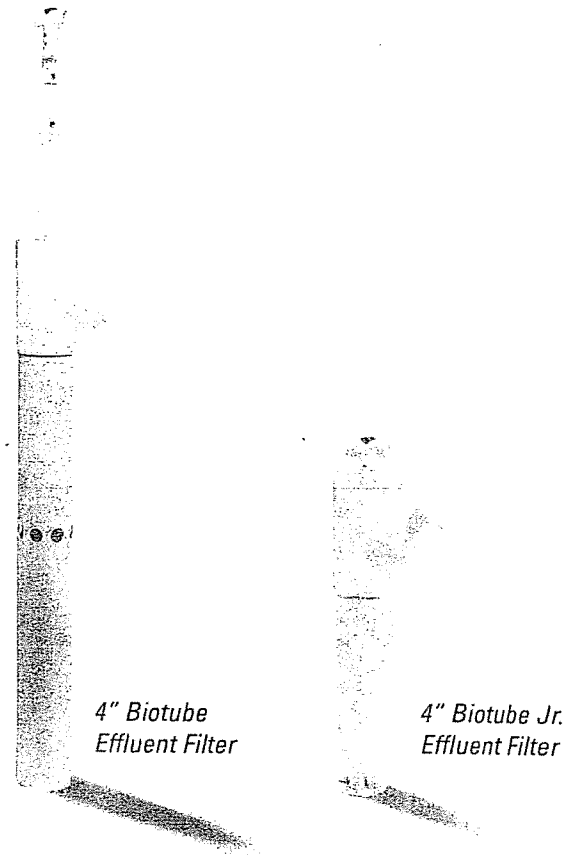


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1-800-348-9843

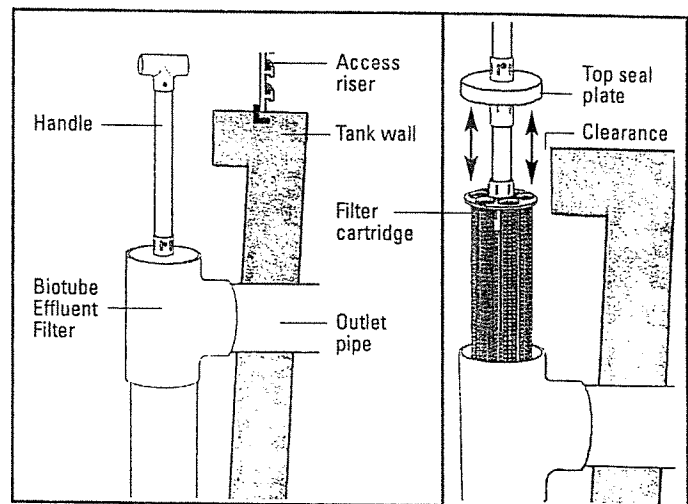
Installation and Maintenance Instructions

Biotube Effluent Filters* extend drainfield life by preventing solids from leaving the septic tank. Our 4" filter comes in its own housing, in both 36" and 28" lengths. Our 18" Jr. insert filter comes with or without its own housing. Biotube Effluent Filters install in minutes, inside new or existing tanks.



Step 1: Test-Fit the Effluent Filter

Test-fit the effluent filter on the septic tank's outlet pipe without gluing. Make sure it fits plumb. Install assembly as snug as possible to the tank wall, but ensure sufficient clearance for removing filter cartridge.



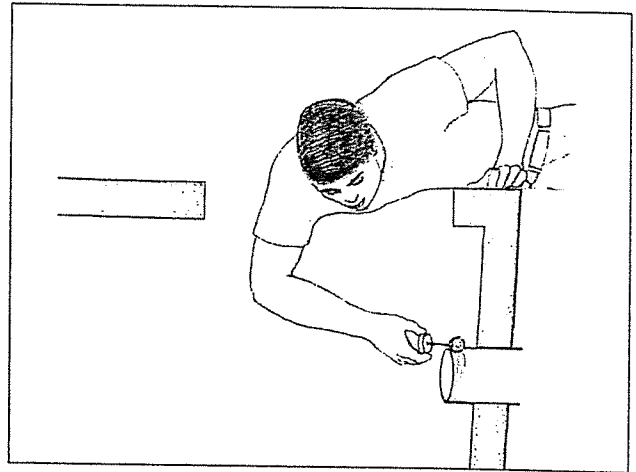
The Biotube Effluent Filter, with its housing, is suspended in the septic tank, supported by the 4" outlet pipe.

Installation Instructions (continued)

Step 2: Attaching Filter to Tank

Two attachment methods can be used:

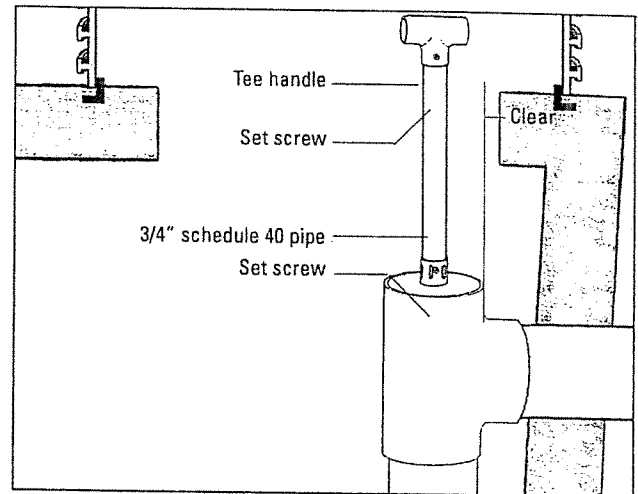
- 1) Glue the filter onto the tank outlet pipe using appropriate primer and glue.
- 2) A stainless steel set screw can be used to secure the filter instead of glue.



This illustration shows the gluing technique for installing a filter into a new septic tank. Installing a filter into an existing tank is a custom, site-specific job.

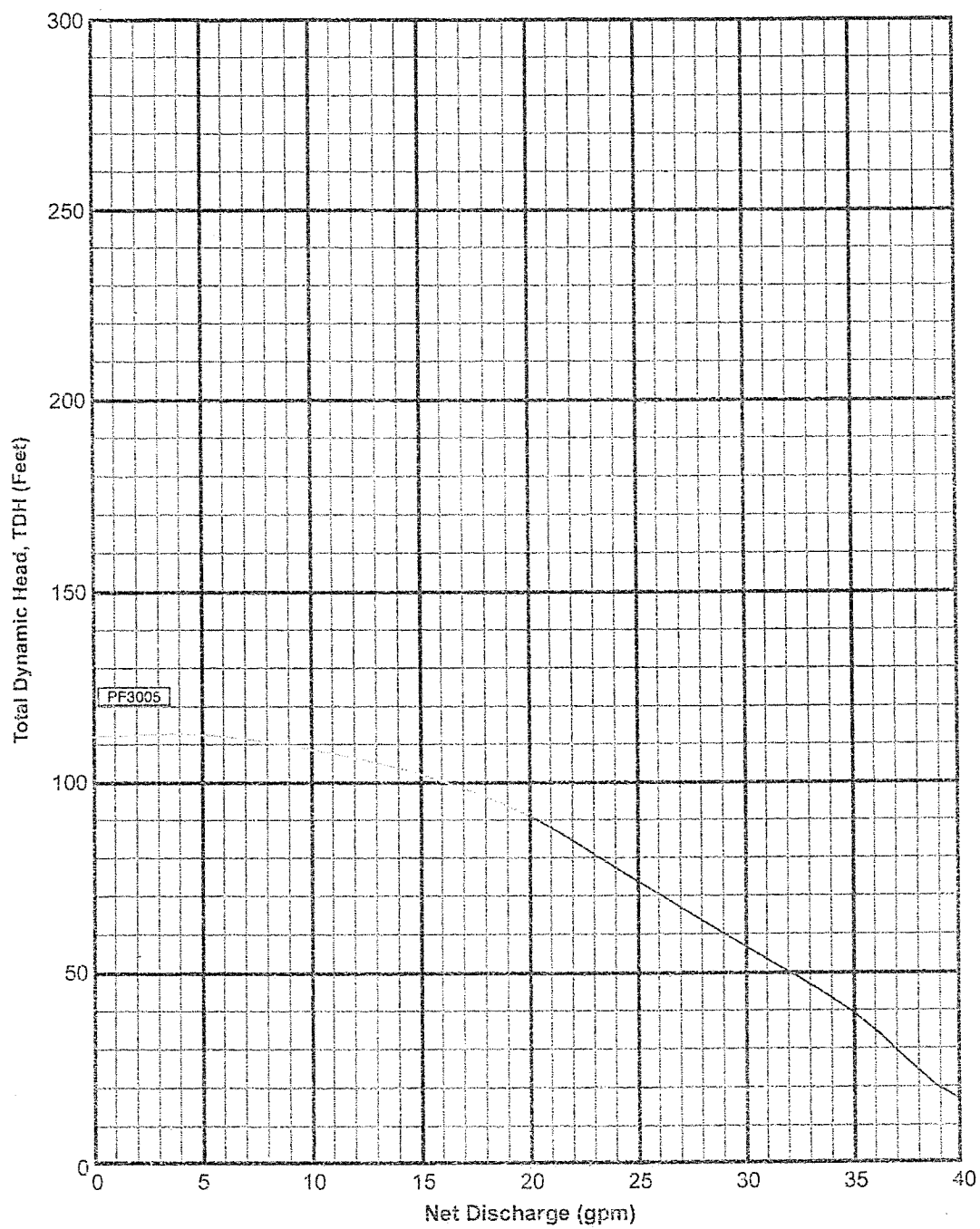
Step 3: Extending Cartridge Handle

For easier access when servicing, the cartridge handle may be extended using a longer length of 3/4" schedule 40 PVC pipe.



Cartridge handles can be extended for easier access.

Pump Curve for PF3005



APPENDIX D
OPERATION & MAINTENANCE

OPERATIONS AND MAINTENANCE:

Gravity Flow Leachfield

Operations:

This on-site wastewater disposal system includes the following:

1. Three, 1,500-gallon concrete septic tanks with an effluent filter on the outlet pipe in the second chamber of each tank.
2. A 1,500-gallon concrete pumping chamber fitted with an automatic pumping system and pump vault.
3. Pump control box for the pumping system. The control box contains both audio and visual alarms for both high and low water conditions, a pump cycle counter and a run time meter for the pump.
4. A Highline leachfield containing 300 lineal feet of leachline.

The daily operation of this on-site wastewater disposal system will perform automatically without any necessary manipulation of switches, valves or controls. Portions of the system will not operate during periods of power outages. Approximately 250 gallons of reserve capacity exists within the pumping system, which will accommodate prudent use of water fixtures during power outages. Audio alarms in pump control box may sound upon the return of power. Pushing the red light on the face of the control box can disable the audio. When power returns, check all electrical breakers at the sub-panel and in the control box. If visual alarm persists *for over 1-hour after power is restored*, contact Consultant immediately.

Maintenance:

It is important to note that harmful bacterial pathogens exist within this disposal system. All necessary safety precautions should be adhered to when conducting maintenance inspections.

A maintenance contract should be procured from a qualified individual or firm to carry out annual maintenance of this system. Maintenance is necessary to ensure the proper performance of this system. A written report, detailing all maintenance performed and any recommendations, shall be provided to the owner of the system. The maintenance program will consist of the following:

1. Ensure access risers are in place over all tank access ports and that they are in good condition. The risers are constructed of PVC, and the lids are fiberglass. The risers, lids and tanks are *not* designed for vehicular traffic. Allen-head bolts secure the lids to the risers. Keep riser lids accessible and free of debris. Do not place large objects over risers.

OPERATIONS AND MAINTENANCE:

Gravity Flow Leachfield Continued

Maintenance:

2. A qualified individual, on a yearly basis, shall conduct an inspection of the solid accumulation within the septic tanks, until an accumulation rate can be established (typically after 2 years). After the rate of accumulation is established, the accumulation inspection schedule shall be revised so that a septic tank cleaning schedule can be established.
3. The effluent filters within the septic tanks shall be inspected yearly and cleaned when needed. Minor to moderate growth on the filters is acceptable, as it serves to filter the effluent leaving the tanks to a greater extent. The filters shall be inspected yearly until an accumulation rate is established. The filters shall be cleaned (**into the inlet port of the septic tanks**) when heavy accumulation is noted. A qualified individual shall conduct the filter inspection.
4. To ensure that the system does not exceed the design flows, a qualified individual will conduct an analysis of the daily wastewater flow figures on a yearly basis.
5. An inspection and observation of the pumping system will be conducted by a qualified individual once per year for this system. The inspection will verify pump, float and alarm performance.
6. The pump filter within the pump chamber shall be cleaned as needed (as recommended during the pump tank inspection). The filter needs to be cleaned when the solid accumulation on it is impeding the flow of effluent through the filter. Remove and clean filter **into the inlet port of the septic tank**.
7. A qualified individual shall record monitoring well data (if not conducted by maintenance personnel).
8. A general inspection of the leachfield area shall take place on a yearly basis, by a qualified individual. This inspection shall include a visual inspection of the leachfield for any signs of seepage or surfacing effluent.
9. Any valves within the system shall be opened and closed annually to ensure that they move freely and are in good working order.
10. Root infiltration into the leaching trenches and pipes is a common problem. It is important to add a root inhibitor to the leachfield, through the distribution box, to aid in keeping the roots out of the system. The use of any root inhibitor shall adhere to any State or Federal guidelines. A qualified individual shall add root inhibitor.

OPERATIONS AND MAINTENANCE:
Pump System to a Gravity Flow Leachfield Continued

Maintenance:

The homeowner also has maintenance responsibilities for this system:

1. The maintenance personnel will record annually the depth of water in each of the monitoring wells (5 wells) within the leachfield. These levels shall be recorded on the forms provided by the DEH, if required for a Non-Standard System.
2. The maintenance personnel will record monthly; all pump system data including pump cycle counts from the pump control panel. All other read-out numbers in the panel shall also be recorded. This interval shall be maintained for the first year, and then the readings can be taken every 6 months. The read-out data shall be recorded on the card within the panel, as well as on the forms provided by the Department of Environmental Health (DEH) (if required for a Non-Standard System). These numbers will be used to ensure that no groundwater infiltration into the tanks is occurring and also to ensure that the in-home water flows are adhering to the design parameters.
3. Regular maintenance of this system, prudent water use and adhering to the system 'DOs and DON'Ts' (list provided in this folder) will ensure the best possible performance of this system for the longest possible time. Owner shall contact Consultant or maintenance provider to alert them of any changes of use occurring on the property or changes to the occupancy occurring at the site.

The Mendocino County Division of Environmental Health will provide monitoring forms for monitoring well levels and pump control panel read-out data, upon request. Property owners shall complete the forms and return them to the DEH, Consultant and/or service provider, in a timely manner. *Failure to perform the self-monitoring and/or required inspections by qualified individual, may be cause for revocation of the operating permit, (if required), or may lead to a problem going unnoticed.*

Maintenance Instructions

4" Biotube® Effluent Filter

How to Clean Your Effluent Filter

To ensure your effluent filter is functioning properly, it should be inspected every year. Under normal conditions, your effluent filter will function for several years before cleaning is necessary. The filter should be cleaned when it becomes clogged enough to restrict normal flows out of the septic tank. At a minimum, the filter should be cleaned whenever the tank is pumped.

Most people prefer to have a septic tank service provider take care of filter maintenance and cleaning. You can find a septic tank service provider in the Yellow Pages, under "Septic Tanks & Systems." Or you can contact your county health department for a list.

If you wish to inspect and/or clean your effluent filter yourself, be sure to dress properly. Wear full-length pants and shirt, shoes, gloves, and goggles or glasses. Then follow these instructions:

1. Remove the access lid to your septic tank by unscrewing the stainless steel lid bolts with hex head wrench provided. If your lid is above ground, it will be easy to find. If it is buried below ground, find the marker that indicates its location.
2. Remove the filter cartridge by grasping the tee handle and lifting it out of its housing (*see photo 1*).
3. Spray the cartridge tubes with a hose to remove any material sticking to them (*see photo 2*). Ensure the three orifices in the optional flow modulation plate inside the filter are clear of any debris. Make sure the rinse water runs back into the tank, but do not allow solids material to fall into the open filter housing.
4. Firmly place the cartridge back into the housing.
5. Some effluent filters come with an alarm that activates when the filter needs cleaning. If you have an alarm, check to make sure it is working by lifting the float with a stick. An audible horn should sound. The alarm panel is normally mounted on the side of the house or in the garage.

Note: If your effluent filter doesn't have an alarm system and you would like one, call your local septic system installer.
6. Record the date that you inspected and/or cleaned your filter on the form that follows. If you checked the alarm or made any other observations about the tank or system, include that information under "Notes."
7. Attach access lid by placing it on the riser, matching the openings in the lid with the bolt catches. Insert lid bolts into catches and tighten with hex head wrench provided.

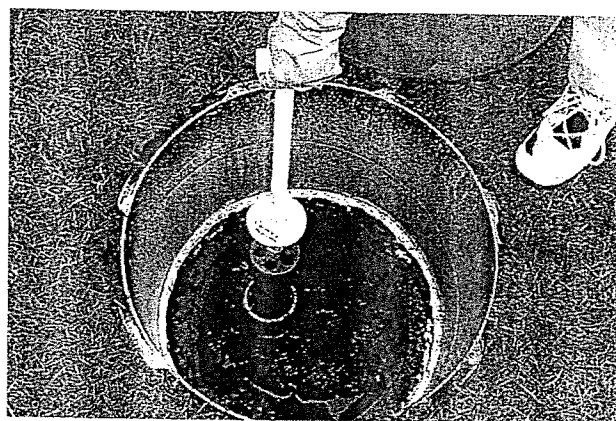


Photo 1. Remove the filter cartridge by lifting it out of its housing.

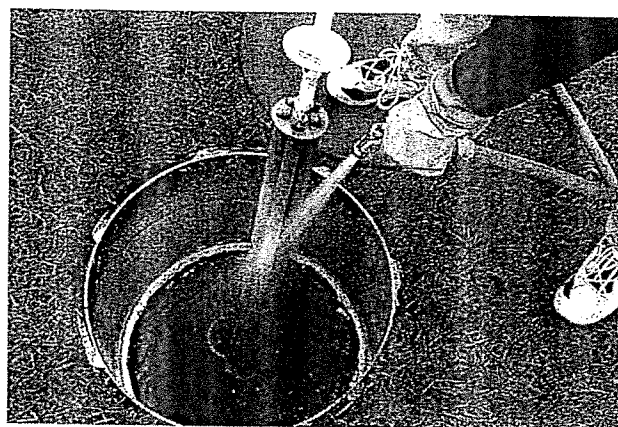


Photo 2. Spray the cartridge tubes with a hose.

APPENDIX E
CONSTRUCTION NOTES

SYSTEM DESIGN AND INSTALLATION FEATURES

General System and Construction Notes:

1. **The primary leachfield area shall be staked out at the site prior to construction. Stakes shall be used as guides. The contractor prior to construction shall measure lines to ensure they are level.**
2. **The Consultant shall be notified of any site development plans in order to confirm that the integrity of the leachfield area(s) and all system components remain in place.**
3. This system will require regular maintenance. The operation of and maintenance of the system is outlined in this proposal.
4. *This proposal does not constitute a permit to construct this system.* Following review of this plan by the County DEH, the owner will be contacted (by the County) in regards to the steps necessary to obtain a permit.
5. This proposal does not reflect any County Building and Planning Department concerns regarding development at this site.
6. **This proposal assumes that gravity feed to the leachfield will be possible from the tanks serving the visitor serving units, based on the information provided to the Consultant at the time of the evaluation.**
7. **Pumping of effluent to the leachfield area will be required from the tanks serving the patio restroom/laundry room. Pump specifications are attached.**
8. **It is recommended that a licensed surveyor accurately mark the property lines prior to construction.**
9. **The Consultant will receive a copy of the final building and development plans, *prior to any construction*, in order to determine whether any system specifications will need to be modified.**
10. No cutting of soil (greater than 6 inches below leachline elevation) shall take place within 50 feet of the perimeters of the leachfield area(s).
11. No building foundation drain or any gravel filled diversion drain shall be permitted within 50 feet downslope, or closer than 15 feet upslope, of the leachfield area(s) or tanks.
12. No large livestock will be permitted on the leachfield area(s).
13. It is recommended that low flow toilets and water fixtures be installed where appropriate.

General System and Construction Notes Continued:

14. The Consultant shall review all final site plans to ensure that the integrity of all disposal system components is still intact.
15. It is recognized that changes to this proposal may be necessary as a result of (but not limited to) County DEH review process or project development changes. Any deviation from this plan *must* first be cleared with the Consultant and the County DEH, prior to construction.
16. Should the installer have any questions regarding this proposal, please contact Consultant prior to construction.

Wasteline Notes:

1. 4" ABS/PVC will be used for the wasteline from the structures into the septic tank.
2. **Keep the wastelines as shallow in the ground as possible, to allow the tank depth to be set as high as possible, thus ensuring that gravity feed to the leachfield will be possible.**
3. The wasteline plumbing shall conform to all criteria set forth in the Uniform Plumbing Code (UPC).
4. Clean-outs shall be installed on the wastelines as per County Building Department Codes.
5. The wastelines shall be installed on a flat, undisturbed trench bottom.
6. The wastelines shall slope at a minimum rate of 1/4" per foot.
7. Any deviation from this plan must first be cleared with the consultant.
8. Should the installer have any questions regarding this proposal, please contact consultant prior to construction.

Septic Tank Notes:

1. Three new, waterproof 1,500-gallon concrete septic tanks, with cast in grooves or adapter rings to accept risers, will be used. The tanks shall be County DEH approved.
2. The septic tanks must be a minimum of 5 feet from any structure or structural support and 5 feet from property lines.
3. Any well must be a minimum of 50 feet from the septic tanks.
4. The septic tanks must be a minimum of 36 feet from the bluff edge as per the geotechnical engineering recommendations.
5. Keep the septic tanks as high in the ground as possible, still maintaining the required pipe slope from the building, in order to ensure that gravity feed to the leachfield will be possible and also to ensure that groundwater does not infiltrate the tanks.
6. A minimum of 12 inches of soil must be placed over all septic tanks.
7. **No driving shall take place over any of the septic tanks.**
8. Parking barriers (railroad ties, planters, etc.) may need to be placed around the septic tanks to ensure that no vehicular traffic damages the tanks (based on the final site development plans).
9. PVC risers will be bonded to the septic tanks over each access port to provide a watertight seal. Ordering and installation information is attached.
10. The riser heights listed on the attached product ordering form is approximate. The heights may need to be adjusted based on the final tank elevations and the desired finish grades. Riser shall be cut *flush* to grade. **The necessary riser heights will be determined at the time of construction.**
11. Do not backfill around the risers until epoxy has set.
12. Slope the soil backfill over the tanks in such a manner that water does not pond over or around the risers.
13. Divert all building and road drainage away from the septic tanks.
14. The contractor shall ensure that the tanks are watertight.
15. Grout the inlet and outlet pipes of the tanks well, to ensure that no cracks form which would act as passageways for groundwater. Hydraulic cement shall be used. **It is recommended that tanks manufactured with cast-in watertight couplings be used.**
16. The tanks shall be set in native soil, *not fill material*. The bottom of the tank excavations shall be level, undisturbed soil.

Septic Tank Notes Continued:

17. If no grooves or adapter rings are cast into the tanks, then adapter plates will be required, in order to bond the risers to each tank. The adapter plates will be bonded and bolted (min. of 12 bolts) down to the tanks to form a watertight seal. The ordering model number is RRFTA24. It is recommended that 'swellstop' butyl strips and wedge anchor bolts be used.
18. An effluent filter will be used in place of the outlet sanitary tee within each septic tank; detail is attached. After installation, extend the filter handles if necessary. Ordering and installation instructions are attached.
19. The septic tanks must be a minimum of 15 feet downslope, or 50 feet upslope, of any curtain drain.
20. Any deviation from this plan must be cleared with the Consultant and County DEH.
21. Should the installer have any questions regarding this proposal, please contact the Consultant prior to construction.

Tightline Notes:

Serving Visitor Serving Units

1. A 3-inch ABS/PVC Sch40 tightline will transfer effluent out to the leachfield area from each septic tank.
2. The tightline must be buried a minimum of 12 inches in non-traffic areas and 24 inches in traffic areas.
3. The tightlines shall be plumbed to together so only one pipe extends to the leachfield; a long sweep plumbing fitting shall be used. See attached map for suggested location of plumbing connection.
4. The tightline plumbing must conform to all Uniform Plumbing Code (UPC) criteria.
5. Take care when backfilling the tightline trenches not to damage the pipe.
6. The tightlines shall be laid on flat, undisturbed trench bottoms.
7. Backfill the tightline trenches well to ensure that they do not channel an excess of water.
8. The tightlines shall slope at a minimum rate of 1%.
9. If rocky or clayey soil conditions are encountered during the tightline trenching, the pipes shall be bedded in a minimum of 4 inches of sand and shall have an additional 4 inches of sand placed over top of them.
10. Clean-outs shall be installed every 100 feet on the tightlines

Tightline Notes Continued:

Serving Visitor Serving Units

11. Clean-out risers shall be placed in valve boxes.
12. The clean-out locations shall be permanently marked to allow for easy future identification.
13. Any deviation from this plan must first be cleared with the Consultant.
14. Should the installer have any questions regarding this proposal, please contact the Consultant prior to construction.

Tightline Notes:

Serving Patio Restroom and Laundry Room

1. A 4-inch ABS tightline will transfer effluent to the pump chamber from the septic tank.
2. The tightline must be buried a minimum of 12 inches in non-traffic areas and 24 inches in traffic areas.
3. The tightline plumbing must conform to all Uniform Plumbing Code (UPC) criteria.
4. Take care when backfilling the tightline trench not to damage the pipe.
5. The tightline shall be laid on a flat, undisturbed trench bottom.
6. Backfill the tightline trench well to ensure that it does not channel an excess of water.
7. The tightline shall slope at a minimum rate of 1%.
8. If rocky or clayey soil conditions are encountered during the tightline trenching, the pipe shall be bedded in a minimum of 4 inches of sand and shall have an additional 4 inches of sand placed over top of it.
9. Any deviation from this plan must first be cleared with the Consultant.
10. Should the installer have any questions regarding this proposal, please contact the Consultant prior to construction.

Pump Chamber Notes:

1. A new, waterproof 1,500-gallon concrete pump chamber, with a single-compartment, single-access port, and with a cast-in groove or adaptor ring to accept an access riser, will be used. If a dual-access port tank is used, then an additional PVC riser lid and adapter plate (other than listed on the equipment specification sheet) will need to be ordered and installed.
2. The pump chamber must be a minimum of 5 feet from any structure or structural support and 5 feet from any property line.
3. *Any well* must be a minimum of 50 feet from the pump chamber.
4. The pump chamber must be a minimum of 36 feet from the bluff edge as per the geotechnical engineering requirements.
5. The pump chamber must be a minimum of 15 feet downslope, or 50 feet upslope, of any curtain drain.
6. Keep the pump chamber as high in the ground as possible, in order to ensure that groundwater does not infiltrate the tank.
7. A minimum of 12 inches of soil must be placed over the pump chamber.
8. No driving shall take place over the pump chamber.
9. A PVC riser will be bonded to the pump chamber over the access port, to provide a watertight seal; detail is attached. The necessary riser height will be determined at the time of construction. The riser will be set flush to grade.
10. **A riser adapter plate will be needed for the pump chamber; a 30-inch riser is specified.** The adapter plate will be bonded and bolted (minimum of 12 bolts) down to the tank, to form a watertight seal. It is recommended that 'swellstop' butyl strips and wedge anchor bolts be used.
11. Do not backfill around the riser until the epoxy has set.
12. Slope the soil backfill over the tank in such a manner that water does not pond over or around the riser.
13. Divert all building and road drainage away from the pump chamber.
14. **A water spigot, placed on a 4 x 4 post, shall be installed near the pump chamber for future maintenance needs.**
15. The contractor shall ensure that this tank (the top joint and all plumbing connections) is watertight.
16. Grout (using hydraulic cement) the inlet pipe of the tank well, to ensure that no cracks form which would act as passageways for groundwater. **It is recommended that a tank with a cast-in watertight coupling (by the manufacturer) be used.**

Pump Chamber Notes Continued:

17. A 24-hour watertightness test will be required on this tank. The tank shall be filled with water, to a height of 2 inches into the concrete lid and no drop in the water level greater than 1 inch shall be tolerated. All inlet and outlet plumbing shall be in place for the test. Contractor shall fill out the attached form and return it to the Consultant following construction.
18. All pump equipment specifications are attached. All pump system specifications will be reviewed after the final development plans are determined. Consultant will receive the final plans, prior to any construction.
19. All pump equipment shall be installed as per manufacturers specifications.
20. All wiring splices shall be watertight.
21. The pump alarm/control panel shall be mounted on a post or on a building between the heights of 4 and 5 feet. The panel shall be mounted at a location where it is visible from the pump chamber and also at a location where it can clearly be heard ~~from within the house~~. Due to noise from within the panel, it is recommended that the panel be mounted on an exterior wall of a *non-visitor serving* room. The panel shall be installed in a location that is accessible to maintenance personnel at all times and is in view of the tank. The panel shall not be installed in any interior locations such as shed or utility closet etc.
22. The Consultant and/or County DEH *must* inspect the pump chamber and pump equipment, as well as be present for the pump test. *Any construction inspections by Consultant will be billed at the time of their need.*
23. The pump chamber shall be set in native undisturbed soil, *not fill material*.
24. All plumbing leaving the riser shall be placed through watertight grommets.
25. **All plumbing shall be installed in a manner that will allow for easy removal of the pump equipment and the pump vault.**
26. Any deviation from this plan must first be cleared with the Consultant.
27. Should the installer have any questions regarding this proposal, please contact the Consultant prior to construction.

Force Line Notes:

1. A 1.5" PVC SCH 40 force line will be used to transfer effluent to the leachfield. This force line size may change based on final house location and development plans. Provide Consultant with final site map, prior to installing the pipe.
2. The force line shall be buried a minimum of 18 inches in non-traffic areas and 24 inches in traffic areas.
3. The force line must be a minimum of 25 feet from any well or waterway.
4. Backfill the force line trench carefully so as not to damage the pipe.
5. If rocky and clayey soil conditions are encountered during the trenching, the force line shall be bedded in 4 inches of sand and shaded with 4 inches of sand also in order to protect the pipe from damage.
6. It is recommended that the force line be pressure tested prior to use.
7. **The force line shall be laid on a flat, undisturbed trench bottom. It may be necessary to hand backfill over the pipe to ensure it be protected.**
8. The force line shall be plumbed to the tightline pipe extending to the leachfield from the tanks serving the visitor serving units. See attached site plan for suggested plumbing connection location.
9. **The location of the force line shall be permanently marked and an accurate as-built map shall be prepared, in order to allow for easy future identification.**
10. Any deviation from this plan must first be cleared with the Consultant and County DEH.
11. Should the installer have any questions regarding this proposal, please contact the Consultant prior to construction.

Leachfield Notes:

1. The leachlines shall be installed on contour.
2. This proposal assumes that gravity flow to the leachfield will be possible.
3. **The Consultant shall receive a copy of the final development plans to verify that no system design specifications need to be altered.**
4. The primary leachfield area shall be staked out at the site prior to construction. Stakes shall be used as guides. The contractor, prior to construction, shall measure lines to ensure they are level.
5. Any well must be a minimum of 100 feet from both designated leachfield areas.
6. The leachfield must be a minimum of 50 feet from the bluff.
7. The leachfield shall be a minimum of 50 feet from any soil cut.
8. A total of three distribution boxes shall be used. Box #1 will be used as a splitter box and will divert the flow between boxes# 2 and #3. Box #2 will feed lines 1 and 2, and box #3 will feed lines 3, 4 and 5. See attached map and detail.
9. The distribution boxes will be set for equal distribution; detail is attached.
10. A PVC riser will be installed on each distribution box; detail is attached.
11. The distribution box risers shall be set slightly above grade.
12. No driving shall take place over the leachfield area(s).
13. No large livestock shall be permitted over the leachfield areas. If necessary, the leachfield areas shall be fenced off to ensure that they are protected.
14. No large tractors shall be permitted over either leachfield area as they may damage leachfield components and potentially compact the soil. The leachfield areas may need to be fenced off to avoid any problems.
15. This system shall be installed during the dry time of the year (May 1st to October 31st), as per County DEH guidelines. Contact the Consultant if any question of the appropriateness of construction arises.
16. The installer shall scarify the trench walls to remove any glazing caused by the equipment.
17. The entire leachfield area, including the extent of topsoil cover, shall be stripped of vegetation and ripped, or rototilled, to a depth of 3 inches prior to construction. *Rip soil along contour.*
18. 12 to 18 inches of sandy loam topsoil shall be placed over the entire leachfield area. The topsoil cover shall extend 5 feet beyond the ends of the leachlines as well as 5 feet upslope of the top line and 10 feet downslope of the bottom line.

Leachfield Notes Continued:

19. Blend the topsoil cover into the native soil well.
20. The Consultant shall receive a sample of the topsoil intended for use as cover for the field, and must approve of it, prior to its delivery to the site and its use.
21. The leachfield area shall be re-seeded with native grasses and/or mulched following construction to prevent erosion.
22. The leachlines must be a minimum of 15 feet downslope, or 50 feet upslope, of any curtain drain.
23. **Remove trees and brush necessary for the construction of the leachfield. All clearing shall be conducted *by hand*.**
24. **Stumps 5 inches in diameter and less may be removed. Stumps greater than 5 inches in diameter shall be ground down. The Consultant will determine the need for stump removal at the time of construction.**
25. It is recommended that root inhibitor be added to the leachfield (through the clean-out risers) on a regular basis to keep roots out of the system.
26. Any portion of the leachfield must be a minimum of 5 feet from the property lines.
27. Any structure or structural support must be a minimum of 8 feet from the **edge** of any leachline.
28. Monitoring wells will be installed in each leaching trench; detail is attached.
29. Any deviation from this plan must first be cleared with the Consultant and County DEH.
30. Should the installer have any questions regarding this proposal, please contact the Consultant prior to construction.

Replacement Leachfield Notes:

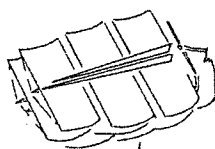
1. No building, cutting of soil, or piling of fill shall take place within the replacement field area.
2. Pumping of effluent to the replacement field may be required.
3. All construction notes for the replacement field will be provided when needed.
4. No soil cuts shall take place within 50 feet of the replacement leachfield area.
5. Take care to ensure that none of the proposed development plans encroach onto the replacement field area.

MAPS

121-28

Parcel Map C2 D17 P29
" " C2 D18 P1
" " C2 D45 P76

his Parcel



PACIFIC

OCEAN

PAGE

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NOTE: This map was prepared for assessment purposes only. No liability is assumed for the data delineated herein.

Assessor's Map
County of Mendocino, Calif.
March, 1974

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