

**R317-4 OWS PLAN DESIGN  
ABSORPTION TRENCH**

**PROPOSED FIVE BEDROOM RESIDENCE**  
Address: 437 N Maple St Huntsville Utah  
Hill Country Estates Subdivision, Lot #1  
System Design #: WC-21-091-0001-0.95  
Design Date: 2021 Mar 6

**Installation**  
**Site Plan**  
Plan Dimensions Take Precedence over the Scale shown on Plans

Take **Depth** Measurements **Down Slope**  
Take All Pipe Measurements at **Invert**  
**Field Verify** all Setback Distances, Field Dimensions, and Existing Conditions  
**Minimum Setback Distances**  
UAC § R317-4-13 Table Two

**General System Requirements**  
**Final Inspections**

Health Authority May Inspect All Components in Relative Elevation Schedule before Backfilling  
**UAC R317-4-7 Construction and Installation**  
Install System in Accordance with OWS Rule and Regulatory Authority Special Requirements

**Culinary Water Lines**  
Sleeve all Culinary Water Lines Crossing any Sewer Line in Solvent Welded Sch 40 PVC Pipe at least Ten Feet beyond the Crossing  
Use Solvent-Welded Sch 40 PVC Pipe Sewers at least Ten Feet beyond the Crossing of any Culinary Water Lines

**Septic Tank Landscaping**  
Bring all Risers to the Surface per R317-4-6.7.F.1.a if Concrete or Asphalt Blocks Access

**Absorption Area Landscaping**  
Add Additional Absorption Area per R317-4-6.14.B.4.h if Oxygen Flow to Absorption System Is Blocked

**Water Softener Backwash**  
Divert Salt-Type Water Softener Backwash to an Appropriate Underground Absorption Area

**Sewers**  
**Building and Effluent Sewer**  
Install Cleanouts at least every: 100 ft 135°

Driving or Parking Areas:  
o Bed in 12" inch minus gravel  
o 4" Sch 40 PVC Pipe or better  
o If Less than 30", Insulate Pipe (≥ 2"x16" Foamboard 6" above pipe)  
o Install Traffic Rated Clean Out Access

**Building Sewer**  
Sch 40 PVC Pipe or better 4"  
Install Cleanout at Foundation  
Install Ells after Cleanouts  
Use 45 Degree Ells or less for all changes in direction  
≥ ¼" per foot drop

**Septic Tank**  
Septic Tank Size ≥1500 gallon  
Required Septic Tank Cover 6-36"

**Water Tightness Inspection**  
Fill Tanks 24 hours before Inspection  
Backfill when Approved  
If Conditions Require Shoring, Contact Regulatory Authority and Photograph  
Minimize Tank Sidewall Coverage  
Regulatory Authority May Require Tank Exposure during Inspection

**Septic Tank Effluent Filter**  
Install Effluent Filter at Septic Tank Outlet

**Effluent Sewer**  
Sch 40 PVC Pipe or better 4"  
≥ ¼" per foot drop

**Tank Risers**  
Cast-In or Bolt Down Risers  
Seal Water-tight.  
Extend all Required Risers to the Surface

**Effluent Distribution**  
Install Distribution Box and Top Manifold or Frazier Tee and Bottom Manifold

**Distribution and Drop Boxes Inspection**  
Water Level Test Required

**Distribution Device Riser**  
Bring Access Riser to Final Grade

**Distribution Method**  
Install Sequential Distribution System

**Absorption System**  
Estimated Hydraulic Flow Rate 750 gpd  
Hydraulic Loading Rate 0.9 (gpd/ft²)  
Maximum Trench Depth 18"

**Absorption System Placement**  
± 20 feet Change from Approved Design  
Change from Approved Design will Require Permission of Designer and Health Authority

**Absorption System Excavations**  
Install Shallow as Possible  
Follow Contours on Sloping Sites  
Excavate **Each** Trench or Bed Level  
Trench Spacing ≥7 ft  
Rake Smear or Compacted Surfaces  
Protect from Surface Runoff  
Install Absorption System ASAP

**Absorption System Layout**  
May Increase or Decrease Number of Trenches if Retain Overall L<sub>M</sub>

**Observation Ports**  
Install Observation Ports on Outside Distal Corners  
Diameters 4"  
SDR35 PVC or better

**Component Access**  
Install 10" Round Valve Covers for all 4" Pipe

**Chambered Trenches**  
Minimum Length of Trenches 194 ft

**Chamber Criteria**  
Type A IAPMO Standard Chambers  
Advanced Drainage Systems  
Arc36 Leachfield Chambers  
Infiltrator Systems Inc.  
Quick4 Standard Chamber  
Quick4 Plus Low Profile (No Chamber Reduction Factor, 277 lf required)

**D-Box-Chamber Effluent Inlet**  
Use **Top Port** of End Cap or Side Port Coupler  
Place Gravel or Equivalent below Effluent Inlet

**Side Port Coupler and End Cap**  
Use **Bottom Port** of End Cap or Side Port Coupler

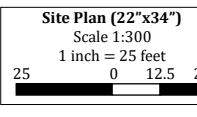
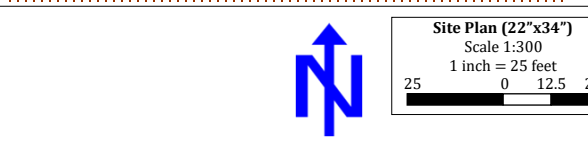
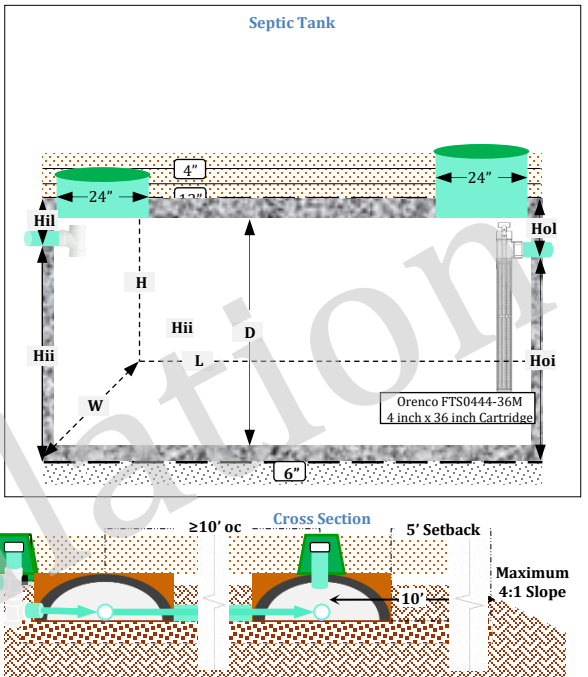
**Chamber Effluent Outlet**  
Use **Bottom Port** of End Cap or Side Port Coupler

**Chamber Installation**  
Follow Manufacturer's Recommendations  
Walk-in Soil Cover over Sidewall Louvers

**Trench Cover**  
Top Soil Preferred  
Backfill Slightly Mounded 2-3"

**Septic Tank Effluent Filter**  
Install Effluent Filter at Septic Tank Outlet

Tank	All measurements in inches											Gallons		
	L	W	H	Hii	Hil	Hoi	Hol	Drop	D	Wall	Floor	Lid	gpi	ES
Orengo - DCPD - Sutherlin Oregon														
M1500G	105	105	72	61.0	11	59	13	2.0	72	0.3	0.3	0.3	25.0	288
Roth - RMT - HDPE - Syracuse New York														
1500 gallon	177	62	51	43	8	40	11	3.0	51	0.5	0.5	0.5	37.5	231



**KEY**

- Potable Water
- Replacement Area
- Horizontal Setbacks
- GPZ
- Soil Test Pit
- Cover Soil
- Original Grade
- Undisturbed Native Soil
- Self-Compacting Gravel
- Building Sewer
- Septic/Pump Tank
- Control Panel
- Nitrogen Removal
- PBM
- Prelos Unit
- Force Main
- Two Inch Gravity Sewer
- Pump Station
- Pump to Gravity Device
- Distribution Device
- Bottom Manifold
- Barrier Material
- Standard Drain Media
- Sand Media System
- Oxygen Exchange Pipe
- Scarified Soil
- At-Grade Cover Extension
- Headworks Box

**PROPOSED FIVE BEDROOM RESIDENCE**  
Address: 437 N Maple St Huntsville Utah  
System Design #: WC-21-091-0001-0.95

**Shupe Environmental Solutions Inc**  
P. O. Box 199, Huntsville, Utah 84317  
5630685-2001  
DOP, Licensed Environmental Health Scientist  
00464-05F-3  
DQW, Certified Onsite Wastewater Level 3  
12011279-5501  
DOP, Licensed Contractor

Carl R Shupe  
801-914-3036  
cshupe01@gmail.com



## Feasibility and Plan Review

### ABSORPTION TRENCH

Address: 437 N Maple St Huntsville Utah  
 System Design #: WC-21-091-0001-0.95  
 Design Date: 2021 Mar 6

### Waiver Proposal Approval

This design is to show that a five bedroom home may be supported on this property with a primary and reserve absorption system.

**Est Hydraulic Flow Rate (HFR) 750 gpd**  
 Single Family Dwelling

five bedrooms,  
 finished basement,  
 ten people maximum sustained use

### Feasibility Assessment Record

**Hydraulic Loading Rate (HLR) 0.9 (gpd/ft<sup>2</sup>)**

Soil Profile see WMHD

**Max Absorption Trench Depth 18"**

Maximum Ground Water Design per WMHD 72"

Absorption Area Max Ground Slope ≤10%

### Flood Plain Zones

Flood Plain Zone See Map

FEMA Designation Zone X

Area of Minimal Flood Hazard 500 year



### KEY

- Flood Plain Zone
- Absorption Area
- Groundwater Protection Zone 2
- ✘ Non-Public Water Supply
- ⊗ 100 foot Groundwater Protection Zone
- ✘ Soil Test Pit

### Plan Review and Permitting

Wastewater Type Domestic

Water Supply Attached

Application see WMHD

Soil Pit Location see WMHD

### Lot Size and Dimensions

See Site Plan

### Groundwater Protection Zones



### Non-Public Water Supply Sources



The field verified wells are shown on the Site Plan

## Design Requirements

### Sewer & Septic Tank Details

#### Inlet Riser

Orenco:  
 PRTA24, Tank Adapter 24"  
 PRTA24BDKIT, Bolt Down Kit or Cast-In  
 FLD24G, DuraFiber™ Access Lid 24"  
 RR24xx **As needed**  
 Ultra-Rib™ Access Riser

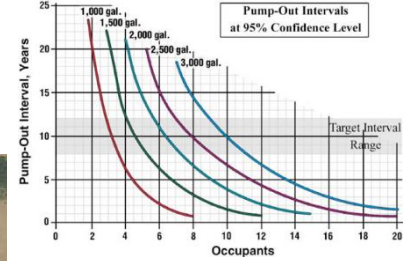
#### Outlet Riser

Orenco:  
 PRTA24, Tank Adapter 24"  
 PRTA24BDKIT, Bolt Down Kit or Cast-In  
 FLD24G, DuraFiber™ Access Lid 24"  
 RR24xx **As needed**  
 Ultra-Rib™ Access Riser

#### Effluent Filter Required

Orenco FTS0444-36, 4" x 36" Cartridge or better

#### Septic Tank Maintenance Schedule



### Absorption Trench System Details

#### Absorption Trenches

Sizing Criteria

$$\text{Effective Absorption Area (E}_{AA}\text{)} = \frac{\text{HFR}}{\text{HLR}}$$

$$= 750 \text{ gpd} / 0.9 \left( \frac{\text{gpd}}{\text{ft}^2} \right) = 833 \text{ ft}^2$$

$$\text{Reduction Factor (None)} = 1.0$$

$$\text{E}_{AA} \times \text{RF} = 833 \text{ ft}^2 \times 1.0 = 833 \text{ ft}^2$$

$$\text{Width of Media (W}_M\text{)} = 3 \text{ ft}$$

$$\text{Length of Media (L}_M\text{)} = \frac{\text{E}_{AA}}{\text{W}_M}$$

$$= 833 \text{ ft}^2 / 3 \text{ ft} = 277 \text{ ft}$$

#### Chambered Trenches

Sizing Criteria

$$\text{Reduction Factor (Chamber)} = 0.7$$

$$\text{L}_M \times \text{RF} = 277 \text{ ft} \times 0.7 = 194 \text{ ft}$$

$$\text{Media Depth} = 65 \text{ ft}$$

$$\text{Media Width} = \geq 10 \text{ ft oc}$$

$$\text{Media Length} = \geq 194 \text{ ft}$$

## Disclaimer

Due to the variability of: site soils; wastewater; the personnel that conduct feasibility studies and review plans; building construction; and, OWS system installation, this design is not intended to be a guarantee or warranty, expressed or implied, regarding the future adequacy, performance, or condition of any installed system. The designer liability is limited to the value paid for this plan.

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The designer is not responsible for the results of any changes to this plan without approval by the designer and the local health department. Any deviations shall be coordinated with the designer and local health department prior to proceeding with the related work concerning the deviation.

This design assumes installer experience or competency with the system shown herein. The designer shall not be held liable for any errors, omissions, or deficiencies in any form by the installer.

The installer shall read the notes and details in this plan.

All third party information provided including any plot plans, site plans, geographic maps, health department requirements and statements, is "as is" without any guarantee, representation, condition or warranty of any kind, either express, implied, or statutory.

Any location of utilities shown on this plan are approximate. The installer shall call the Blue Stakes utility locating company, 1-800-662-4111, for field location marking before excavating.