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# Humboldt County Onsite Wastewater Treatment System (OWTS) Regulations and Technical Manual

**ISSUED AND EFFECTIVE** November 7, 2017

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## List of Acronyms

APMP	Advanced Protection Management Program
BOS	Humboldt County Board of Supervisors
DEH	Humboldt County Division of Environmental Health
HCC	Humboldt County Code
IAPMO	International Association of Plumbing and Mechanical Officials
LAMP	Local Agency Management Program
NCRWQCB	North Coast Regional Water Quality Control Board
NSF	National Sanitation Foundation
NSOWTS	Non-Standard Onsite Wastewater Treatment System
OWTS	Onsite Wastewater Treatment System
OWTS Policy	Water Quality Control Plan for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems
RTM	Humboldt County Onsite Wastewater Regulations and Technical Manual
VPA	Variance Prohibition Area

## Introduction

California Water Code section 13140 directs the State Water Resources Control Board (State Water Board) to formulate and adopt state policy for water quality control. Water Code sections 13290-13291.7 requires the State Water Board to adopt and implement regulations or standards for the permitting and operation of onsite wastewater treatment systems (OWTS).

On June 19, 2012, the State Water Board adopted the *Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems* (OWTS Policy). The policy took effect on May 13, 2013.

Humboldt County Code (HCC) Title VI Division 1 Water and Sewage provides the local authority for management of OWTS. HCC 611-1 presents the Board of Supervisors findings that the dispersal field (leach field) method of sewage treatment is the most appropriate for rural lands and is to be considered a permanent means. HCC 612-1 directs the Health Officer to issue regulations to carry out the provisions of Division 1.

Humboldt County *Onsite Wastewater Treatment System Regulations and Technical Manual* (RTM) replaces *Humboldt County Sewage Disposal Regulations* and is prepared and adopted in accordance with HCC 612-1. Terms used throughout the RTM are defined in HCC 611-2 and in the OWTS Policy. Where a definition differs, the definition in HCC applies.

The Humboldt County Department of Health and Human Services, Division of Environmental Health (DEH) is the authorized representative of the Health Officer in matters pertaining to onsite wastewater treatment system (OWTS) management in Humboldt County.

## Eligibility

A site that is greater than 300 feet from a public sewer can be evaluated for OWTS use. Suitable soil conditions and land form features are necessary for an OWTS to perform in a manner which protects public health and the environment. In some cases, parcels lacking public sewer service may not support the use of an OWTS due to poor soil conditions and/or other unsuitable features as determined by the Health Officer.

A particular building situation may not be allowed to utilize an OWTS because of:

1. Lack of suitable soil depth; or impervious or saturated soil conditions.
2. Steep slopes (greater than thirty percent slope).
3. History of failures in area.
4. Other factors that may be identified by the Health Officer.

HCC 614-1 authorizes the Board of Supervisors to declare a moratorium on the issuance of OWTS permits in areas of existing or potential community contamination problems. There are no areas in Humboldt County subject to such moratorium at the date of this document.

## **Prohibitions**

The following practices and conditions are prohibited in Humboldt County:

1. Cesspools of any kind or size.
2. Holding tanks as a permanent means of sewage management except as specified in HCC 613-4.
3. OWTS receiving a projected flow over 10,000 gallons per day unless permitted through the Regional Water Quality Control Board (RWQCB).
4. OWTS that utilize any form of effluent dispersal that discharges on or above the post installation ground surface such as sprinklers, exposed drip lines, free-surface wetlands, or a pond.
5. OWTS installed on slopes greater than 30 percent without a slope stability report approved by a registered professional.
6. Decreased leaching area for IAPMO certified dispersal systems.
7. New OWTS installation without 100% reserve area for a replacement system.
8. OWTS utilizing supplemental treatment without periodic monitoring or inspections.
9. Less than two (2) feet of separation between the bottom of dispersal system to seasonal groundwater.

## **Variance Prohibition Areas**

Variance Prohibition Areas (VPA) respond to the OWTS Policy's Tier 2 and Tier 3 requirement to provide special consideration to protect public health and water quality in areas which exhibit challenging conditions including high groundwater elevations, extremely coarse or restrictive soils, and high OWTS or water well density. VPAs are generalized areas of Humboldt County where one or more challenging conditions are known to exist (see Appendix H of this document).

Additionally, surface water bodies listed in Attachment 2 of the OWTS Policy are included as VPAs. They are further addressed through an Advance Protection Management Program (APMP) described in Tier 3 of the Humboldt County Local Agency Management Program (LAMP). An APMP, required by the State OWTS Policy, implements protective measures near impaired surface water bodies listed by the State. Other than APMP areas, VPAs are not specifically delineated or mapped.

New OWTS design proposals within VPAs must strictly adhere to these regulations. Variances (formerly known as waivers) cannot be granted for new OWTS construction. DEH must be on site for all site evaluations performed in the VPAs. The Variance Prohibition Areas are:

- The Eureka Plain Hydrologic Unit (includes the Jacoby Creek, Freshwater, and Elk River watersheds);
- Westhaven and Fieldbrook;
- The Pacific Manor subdivision in Arcata;
- The Trinidad Hydrologic Unit (covering the areas from Big Lagoon south the Little River);
- Fairhaven;
- Van Duzen River Hydrologic Unit (cover the area from Bridgeville to and including Hydesville);
- Alton;
- Petrolia;
- Benbow and Shelter Cove;
- All parcels located less than 200' from surface water drainage courses upgradient of beach shorelines between Clam Beach and Trinidad State Beach (e.g. Little River, Strawberry Creek, Mill Creek, and Luffenholtz Creek watersheds).

## **PART 1 - Site Evaluation**

Site evaluations are required for all OWTS proposals to ensure proper OWTS design and compliance with site suitability criteria. **Site evaluations conducted in the variance prohibition areas must be observed by a DEH inspector.** A DEH inspection/site evaluation report will corroborate observations and outline testing required for development in the variance prohibition areas.

Site evaluations shall be conducted by a Qualified Professional as defined in HCC 611.2(m): Qualified Professional means a Registered Civil Engineer, Environmental Health Specialist, Professional Geologist, or Certified Soil Scientist who has experience designing standard or non-standard wastewater treatment systems. Site evaluations shall be conducted in accordance with the following standards.

General site features to be determined include:

- Land area available for primary and replacement dispersal area.
- Ground slope and soil characteristics (limiting layers in soil profiles and anticipated ground water levels) in and around the dispersal field area.
- Location of cut banks, fills, or evidence of past grading activities, natural bluffs, soil landscape formations and unstable land forms within 50 feet of the dispersal field and replacement area.
- Location of wells, intercept drains, streams and other bodies of water on the property and within 100 feet on adjacent properties.
- Identification of critical setbacks to observed features

### **1.1 Soil Profiles**

Soil characteristics shall be evaluated by observing soil profiles. A minimum of one (1) backhoe excavation in the primary dispersal field and one (1) in the replacement area are required. Additional profile observations may be required to establish suitable dispersal field areas.

In cases where backhoe access is not feasible, augured test holes may be an acceptable alternative if prior approval is obtained from DEH. When this method is employed, three test holes in the primary dispersal field and three in the replacement field are required.

In the evaluation of new subdivisions, no less than two (2) soil excavations shall be made to identify a suitable primary and replacement dispersal field for each proposed parcel.

A sketch showing a typical backhoe test pit is presented in Standard Details, Appendix D.1. The following details shall be observed and reported from the ground surface to a limiting condition or to five feet below the proposed disposal field trench bottom:

1. Thickness of soil layers, and coloring (using Munsell Color Identification method) soil structure and texture description using the USDA classification method.
2. Plasticity Index (only necessary if requesting authorization for dry-weather perc testing of Zone 3 or Zone 4 soils).
3. Depth to a limiting condition such as hardpan, rock strata, fractured rock or impermeable soil layer.
4. Depth to observed groundwater.
5. Depth to and description of soil mottling and gleying.
6. Other prominent soil features which may affect site suitability, such as structure, stoniness, consistence, root zones and pores, dampness etc.

## 1.2 Soil Testing

Soil testing to demonstrate suitable dispersal field conditions shall be based on the most restrictive soil horizon encountered within three (3) feet of the anticipated dispersal trench bottom. This applies to both **textural analysis** and **percolation testing**.

Soil samples representing the most restrictive horizons within the excavated soil profile shall be collected by the Qualified Professional and analyzed for texture and bulk density at a professional laboratory. The results shall be plotted on the Soil Percolation Suitability Chart (soil textural triangle) presented in Appendix A.

Soils within Zone 1 have minimal filtration capabilities, requiring increased separation to seasonal high groundwater. See Figure 2.

Soils within Zone 2 are suitable and may not require further testing if adequate separation to groundwater exists. See Table 2 for prescriptive leachfield sizing parameters. Alternative sizing can be approved with acceptable perc results.

Percolation testing of soils falling within Zone 1 and Zone 2 may occur outside of wet weather conditions provided the test holes are adequately presoaked as described in the Percolation Test Procedures which follow.

Soils within Zone 3 and Zone 4 require percolation testing; such testing shall be conducted during wet weather conditions. DEH may authorize dry weather perc testing with pre-soak if the plasticity index of the most restrictive soil layer is less than 20 (ASTM D 4318-84).

### 1.2.1 Percolation Test Preparation

The following procedures are required for determining a stabilized percolation rate.

- a. Digging a Test Hole – After identifying the most restrictive soil type within three (3) feet of the anticipated trench bottom, dig a hole 12 inches square or bore a hole 13-14 inches in diameter into that soil. Depth of the hole must be a minimum of 12 inches.
- b. Preparation of a Test Hole – Remove any smeared soil surfaces from the sides of the hole to provide as natural a soil interface as practical to infiltrating water. Remove loose material from the bottom of the hole and add an inch or two of coarse sand or fine gravel to protect the bottom from scouring. Make sure there are no rodent burrows, cracks or root holes which may cause erroneous results.
- c. Presoaking a Test Hole – Presoaking is not required during the wet weather test period. Where a soils textural analysis indicates that a particular sample falls within the “Coarse” Zone 1 or “Acceptable” Zone 2 range of the Soil Percolation Suitability chart or DEH has authorized dry-weather testing of Zone 3 or Zone 4 soils, testing may be conducted outside of wet weather conditions provided the test hole is presoaked continuously for 12 hours or with a minimum of four complete re-fillings beginning the day prior to conducting the percolation test. Start the test 24 hours after water is first added to the test hole.
- d. Saturating the Test Hole – During the dry and wet weather testing periods, saturate the soil by filling the test hole with water to at least 12 inches above the bottom of the hole, refilling as needed to keep the full depth of the hole saturated for a one hour period. One hour after water is first added to the hole, start the test.
- e. Begin the test with 12 inches of water above the bottom of the hole. Record the drop in water level at time intervals appropriate for the observed rate of infiltration. Refill the hole to 12 inches as needed until a stabilized rate is measured for a minimum of three consecutive time intervals. Document the percolation test procedure and results on the DEH Percolation Testing Form, or equivalent.

### **1.3 Depth to Groundwater Determinations**

The anticipated highest level of groundwater shall be reported as the highest extent of soil mottling observed within the soil profile or by direct observation of groundwater levels during wet weather conditions.

#### **1.3.1 Soil Mottling**

In most cases, ground water levels and seasonally saturated soils can be predicted (summer or winter) by the highest extent of soil mottling or gleying observed in the soil profile. The most conservative approach to dispersal field design is based on the assumption that mottling levels reflect seasonal saturation.

On older North Coast landforms, mottling may be a remnant of prior geologic/climatic conditions, and may not reflect seasonal saturation. Likewise, some sites underlain by very coarse soils or gravel may not exhibit mottling even though saturation occurs every winter. For these sites, the highest extent of saturation must be determined by the **direct observation** method. Site evaluators shall use the direct observation method whenever uncertainties about groundwater levels occur.

Information about areas where transient water tables occur may be obtained from DEH Land Use staff.

#### 1.3.2 Wet Weather Criteria

The **wet weather test period** in Humboldt County begins after the cumulative rainfall in Eureka exceeds 19 inches or 10 inches of rain occurs within a thirty day period. The test period may be opened earlier if DEH determines that saturated conditions exist. Alternatively, the test period may be delayed if DEH determines, based on its own observations and the input of Qualified Professionals, that saturated conditions do not yet exist. The test period may be suspended if insufficient rain occurs shortly after the test period is opened. The season will be closed **April 1<sup>st</sup>** unless extended in writing by the Director of DEH.

Wet season percolation testing is required for sites where clay (zone 3 or 4) soils exist and within the Variance Prohibition Area(s). For sites outside the Variance Prohibition Area(s), soil testing results confirming a low shrink swell potential (Plasticity Index of less than 20, ASTM D 4318-84) may remove the wet weather requirement. Testing must be completed in the most restrictive layers within effluent absorption or treatment portions of the proposed dispersal system including the trench side wall and/or soils within 3 feet of proposed trench Percolation testing of more than one horizon may be necessary to determine which of the layers is most restrictive.

#### 1.3.3 Direct Observation Method

Since groundwater levels may fluctuate throughout the wet season, it is necessary to monitor the levels over an extended period of time. The monitoring is accomplished by the installation of monitoring wells (at least one in the proposed dispersal field and one in the proposed reserve area. Measurements must be taken at least once each week for at least three (3) consecutive business weeks during the wet weather testing period. For accurate determinations of the highest extent of groundwater, the duration of monitoring should include at least one substantial rainfall event totaling more than 0.5" of rain in a 24 hour period. Direct observation is required for sites within the Variance Prohibition Area(s).

#### 1.3.4 Monitoring Well Construction

The construction of monitoring wells must conform as closely as possible to Appendix D.2, Typical Observation Well Construction detail.. The wells must be augured, drilled,

or bored. The placement of pipes in backhoe pits may be acceptable if supervised by a Qualified Professional. The depth of wells must be sufficient to verify appropriate groundwater separation from the bottom of proposed dispersal trenches. Wells of shallow depth maybe required to identify perched seasonal water/saturation in upper soil horizons. Certain sites may require more than two (2) wells. Sufficient well depth and spacing between wells must be provided to obtain valid results.

The “Notification of Wet Weather Monitoring Well Installation” form and the appropriate fee shall be submitted to DEH within (5) days of monitoring well construction. Uniquely identified, well locations, assessor’s parcel number, cross-section diagram of as-built wells, and soils profile must be included. Applicants are encouraged to install observation wells as early in the season as possible to ensure completion of monitoring requirements prior to the typical April 1<sup>st</sup> deadline. The notification form is available at DEH or <http://www.humboldt.gov/730/Land-Use-Program>

#### **1.4 Reporting of Data**

Monitoring well measurements must be recorded in tabular form. Every measurement taken shall be included. Appendix B provides a typical observation well reporting form to record data collected during the wet weather period. This data must be submitted with the proposed OWTS design and permit application.

#### **1.5 DEH responsibilities for monitoring well notifications**

DEH will verify that all required information is complete and accurate and will make a minimum of one site visit to measure and record water levels in each monitoring well reported.

## PART 2 - Design

The completed site evaluation will address each of the following site criteria and establish appropriate OWTS design parameters intended to protect water quality and prevent health hazards and nuisance conditions arising from the improper discharge of wastewater. All OWTS shall be designed, constructed and operated in a manner which ensures discharged effluent does not surface at any time and does not adversely impact groundwater.

### 2.1 Wastewater Flow Rates

Estimates of wastewater flows for the design of conventional **domestic** OWTS shall be based on 150 gallons per day per bedroom up to three (3) bedrooms; additional bedrooms will be considered to generate 75 gallons per day (gpd). Residential OWTS shall be sized for a minimum flow of 300 gallons per day projected flow.

Estimated flow rates for systems receiving wastewater **flows greater than 1500 gallons per day and/or from commercial** establishments shall take into account peak loading rates and the chemical characteristics of the wastewater. Estimates of wastewater flow expected from various types of establishments are listed in Appendix C.

### 2.2 Septic Tank Sizing

Septic Tanks shall be sized in accordance with Table 1 – Septic Tank Sizing Requirements, below. Septic tanks shall be constructed and installed as specified in Part 4, Section 4.3.

**Table 1 - Septic Tank Sizing Requirements**

Required Tank Volume	Intended Use
750 gallons	1 Bedroom Cabin/Mobile Home
1200 gallons	2 Bedroom Residence
1500 gallons	3-4 Bedroom Residence
Three Times Daily Flow	Other Applications (E.g. commercial, multi-family, etc.)

### 2.3 Standard (Gravity) OWTS

#### 2.3.1 Application Rates

The design of a conventional **gravity-flow dispersal system** (leachfield) shall be based on the estimated daily flow set forth in the section 2.1 and soil application rates derived from either stabilized percolation rates and/or soil texture as listed in the Table 2. Sites where sufficient depths of Zone 2 soils occur may not require percolation testing to complete a dispersal system design. The application rates associated with the soil texture as shown in the table below can be used to calculate dispersal system size.

**Table 2 - Soil Application Rates**

<b>Percolation Rate(mpi)</b>	<b>Soil Application Rate gpd/ft<sup>2</sup></b>	<b>Zone 2 Soil Texture</b> (for use when no percolation testing conducted)
5	0.732	
10	0.554	
15	0.481	Loamy Sand
20	0.425	
25	0.389	Sandy Loam
30	0.363	
35	0.344	Sandy Clay Loam
40	0.323	
45	0.305	Silt Loam
50	0.296	
55	0.285	
60	0.277	

As described in Part 1 – Site Evaluation, soil application rates for sizing OWTS dispersal field trenches shall be based on percolation testing and/or textural analysis of the most restrictive soil group encountered in the 36 inch soil column beneath the trench bottom.

Soils having percolation rates faster than 5 minutes per inch or slower than 60 minutes per inch may not be suitable for the installation of a standard (gravity-flow) dispersal system and require consideration of a Non-Standard (pressurized) dispersal system.

2.3.2 Dispersal Field Sizing – Graveled Trench

To calculate the required length of trench for a typical gravel and perforated pipe, gravity-flow dispersal field:

- a. Divide the projected **daily flow** by the appropriate **soil application rate** – this yields the **total square footage of absorption area** required in the dispersal field.

Example:            **Daily flow** = 450gpd / **Application rate** = 0.5gpd/ft<sup>2</sup>  
 $450/0.5\text{ft}^2 = 900\text{ft}^2$

- b. The **total lineal feet of dispersal field trench** needed is determined by dividing the **total square footage of absorption area** required (900ft<sup>2</sup> from above) by the **useable square footage of trench sidewall per lineal foot of trench** (as measured beneath the perforated pipe).

Soil conditions allowing use of 3 feet of drain-rock beneath the perforated pipe would result in **6ft<sup>2</sup> of absorption area per lineal foot of trench** (3ft<sup>2</sup> x 2 = 6ft<sup>2</sup> ; trench has two sidewalls – see Figure 1, below).

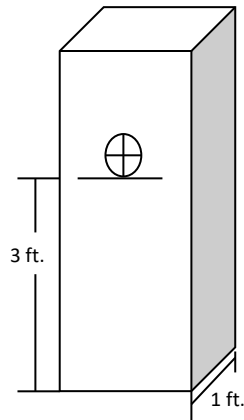


Figure 1 – Dispersal Field Trench Section illustrating 6 ft<sup>2</sup> of effective absorption area per lineal foot of trench

- c. With 6ft<sup>2</sup> absorption area per lineal foot of trench, the 900ft<sup>2</sup> of required absorption can be achieved by a dispersal field length of 150 feet. (Simply divide 900ft<sup>2</sup> by 6ft<sup>2</sup> per lineal foot which gives 150 lineal feet of trench; again the ft<sup>2</sup> units cancel.

### 2.3.3 Dispersal Field Sizing – Gravel-less Chambers

Gravel-less chambers may be suitable for certain sites. The dispersal field is sized similarly to graveled trenches, however the width of the dispersal trench bottom shall be considered as the effective absorption area per lineal foot of trench. For example: a trench 50 foot in length containing 3 foot wide chamber sections would yield a total of 150 ft<sup>2</sup> effective absorption area.

### 2.3.4 Dispersal Field Siting

Gravity flow dispersal trenches shall be placed within native soils; the use of fill materials is prohibited.

All dispersal trenches shall be oriented parallel to the natural ground contour.

Trench depth shall not exceed five (5) feet; with a maximum gravel column height of four (4) feet.

Trench width shall not exceed two (2) feet when drain-rock is used in trenches; the maximum trench width for use of gravel-less chambers is three (3) feet.

Trench spacing shall be twice the trench depth as measured from the centerline of the trench but shall never provide less than 3 feet between subsequent trench walls.

Dispersal field trenches shall not exceed seventy (70) foot in length.

Effluent shall be evenly distributed among trenches by use of DEH-approved distribution boxes that may be equipped with speed levelers or comparable devices.

Dispersal fields and tanks shall meet minimum horizontal separation distance from structures, property lines, surface waters, wells, steep slopes, public water intakes, and

other physical site features. The complete list of setback requirements is provided in Appendix E.

#### 2.3.5 Ground Slope and Stability

Natural ground slope in all areas intended for dispersal field placement shall not exceed 30 percent. All soils to be utilized for dispersal field placement shall be stable. DEH may require slope stability reports from qualified professionals for sites exhibiting unstable landform features.

#### 2.3.6 Soil Depth

Soil depth is measured vertically to the point where bedrock, hardpan, impermeable soils or saturated soils are encountered. Soils tested with percolation rates faster than 60 minutes per inch shall have a minimum of 3 feet of soil depth below bottom of trench.

In cases where there is at least 3 feet of soil beneath the trench bottom and soil percolation rates are slower than 60 minutes per inch a Non-standard OWTS will be required (see section 2.4).

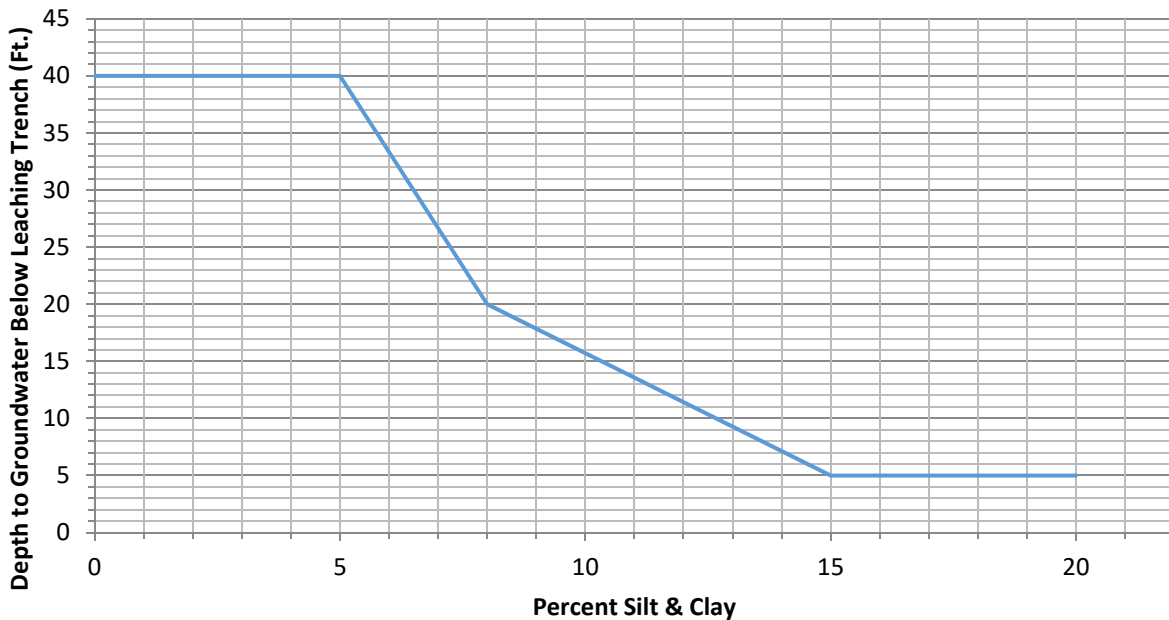
In no case shall any type of OWTS be placed where there is less than 2 feet of unsaturated soil beneath the bottom of the dispersal area and/or where soils have a percolation rate slower than 120 minutes per inch.

#### 2.3.7 Depth to Groundwater

The minimum depth to groundwater required below the bottom of the dispersal trench is determined based on the combined percentage of silt and clay occurring in the soil below the proposed trench bottom.

As shown in Table 3, where soils contain a combined percentage of **silt and clay of 5% or less, a 40 foot separation** between the trench bottom and seasonal high groundwater is required to protect groundwater. Where soils contain **15% or greater combined silt and clay, a 5 foot separation** between the trench bottom and seasonal high groundwater is required.

**FIGURE 2 MINIMUM DEPTH TO GROUNDWATER BELOW LEACHING TRENCH**



**2.3.8 Replacement Area**

A suitable area to accommodate the installation of a replacement OWTS equivalent to and separate from the initial dispersal system shall be demonstrated as a condition of OWTS permit approval or subdivision parcel approval. Replacement area sizing shall accommodate a system designed appropriately for the soil conditions identified during testing. The area designated for the replacement OWTS shall meet the required horizontal setbacks and remain unencumbered and undisturbed.

**2.4 Non-Standard OWTS**

The use of gravity-flow dispersal fields is not feasible in many areas of the county due to the occurrence of one or more of the following conditions:

1. Soil Percolation rates slower than 60 minutes per inch.
2. Seasonal high groundwater within three (3) feet of the dispersal field trench bottom.
3. Restrictive or impermeable soil layers such as hardpan or cementation etc. within three (3) feet of the dispersal field trench bottom.
4. Rapidly permeable coarse soils with percolation rates faster than five (5) minutes per inch.

On certain parcels where site conditions listed above prevent the use of a gravity-flow dispersal field a **Non-Standard OWTS** may be considered if a Qualified Professional can demonstrate that the following minimum requirements are met:

1. Soil percolation rates are not slower than 120 minutes per inch.
2. Seasonal high groundwater is at least 24 inches below the dispersal field trench bottom or basal area.
3. Restrictive soil layers such as hardpan or cementation are at least 24 inches below the dispersal field trench bottom or basal area.
4. Setbacks described in Appendix E are maintained.
5. Surface and ground water will not be impacted.

Non-standard OWTS normally require the use of a pump chamber, effluent pump and electrical appurtenances to achieve uniform discharge of effluent into a dispersal area. Because of the increased oversight and maintenance necessary, Humboldt County maintains an operating permit and inspection program for all non-standard OWTS. HCC Title VI Div 1 Chapter 6 sets forth requirements for the program. Upon installation of a non-standard OWTS, a property owner will receive notification of enrollment in the program. An inspection once every three years is required to maintain an operating permit to confirm proper operation.

As detailed in the following sections, the common Non-standard OWTS used in Humboldt County include:

- Pressure Distribution - shallow in-ground trenches with pressurized discharge
- Wisconsin Mound - dispersal occurs into an above ground mound of specialized sand
- Wisconsin At-Grade - dispersal occurs in a low gravel bed on the ground surface
- Supplemental Treatment – wastewater treated to prescribed levels prior to dispersal

Proposals for non-standard systems other than those listed above may be considered if sufficient information is provided to demonstrate compliance with minimum site conditions described above and adequacy of the system for the proposed application. A statement from a qualified service provider indicating a service contract can be established for the ongoing operation and maintenance of the system may also be required.

## 2.4.1 Pressure Distribution Systems

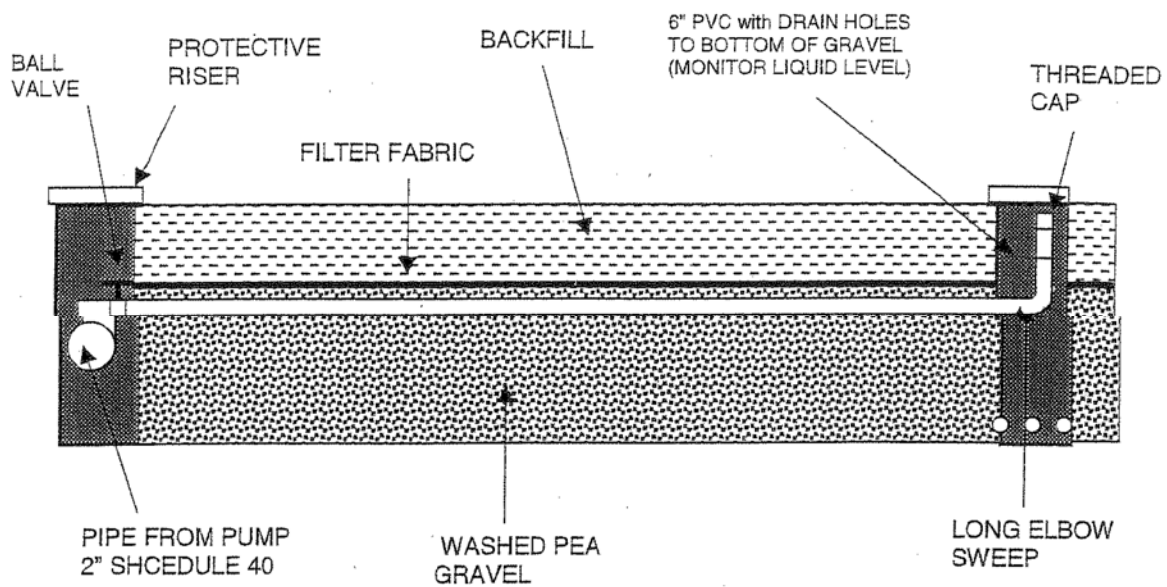


Figure 3 - Typical Pressure Distribution System

A pressure distribution system may be used if the following criteria can be met:

- A minimum of twenty four (24) inches of unsaturated permeable soil exists between the trench bottom and high groundwater.
- A minimum of twenty four (24) inches of unsaturated permeable soil exists between the trench bottom and impermeable soil such as hardpan, fractured or consolidated rock, etc.
- Percolation rates must not be slower than 120 minutes per inch.
- The native ground slope shall not exceed 30%

The design of the Pressure Distribution dispersal field shall be based on both the estimated peak daily flow and soil application rates from Table 3, *Pressure Distribution Soil Application Rates*.

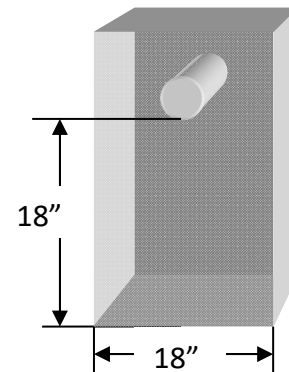
**Table 3 - Pressure Distribution Soil Application Rates**

Percolation Rate (MPI)	Soil Application Rate (GPD/ft. <sup>2</sup> )
5	0.732
10	0.554
15	0.481
20	0.425
25	0.389
30	0.363
35	0.344
40	0.323
45	0.305
50	0.296
55	0.285
60	0.277
70	0.243
80	0.211
90	0.179
100	0.147
110	0.115
120	0.083

The **effective absorption area** credited per **lineal foot** of pressurized dispersal trench shall be calculated by adding the bottom width of the trench to the total height of sidewall beneath the pressurized pipe; **not to exceed 5 ft.<sup>2</sup> effective absorption area per lineal foot of trench.**

Figure 4

Example: An 18 inch wide trench with 18 inches of sidewall beneath the pressurized pipe yields 4.5 ft.<sup>2</sup> of absorption area per lineal foot.



Soil application rates for sizing pressure distribution systems shall be based on percolation testing and/or textural analysis of the most restrictive soil group encountered below the pressurized dispersal pipe including the 24 inch soil column beneath the trench bottom.

A complete design shall include the following information:

- a. A site plan showing accurate location details of all system components
- b. The length of laterals and transport line shall be provided
- c. Pump chamber detail showing float switch locations, elevations etc.
- d. Size and type of all piping, valves, fittings and lateral access ports

- e. A dimensioned cross section of the pressurized dispersal trench
- f. Pump selection including pump curve
- g. Pump Control details
- h. Location and design of, at least, three (3) permanent performance wells of a depth equal to the proposed leach trench: (1) centered 10' upslope of highest pressure line, (2) centered 75% down the leachfield, (3) 25' downslope of the lowest pressure line.
- i. Any other information deemed necessary by DEH.

#### 2.4.2 Wisconsin Mound System

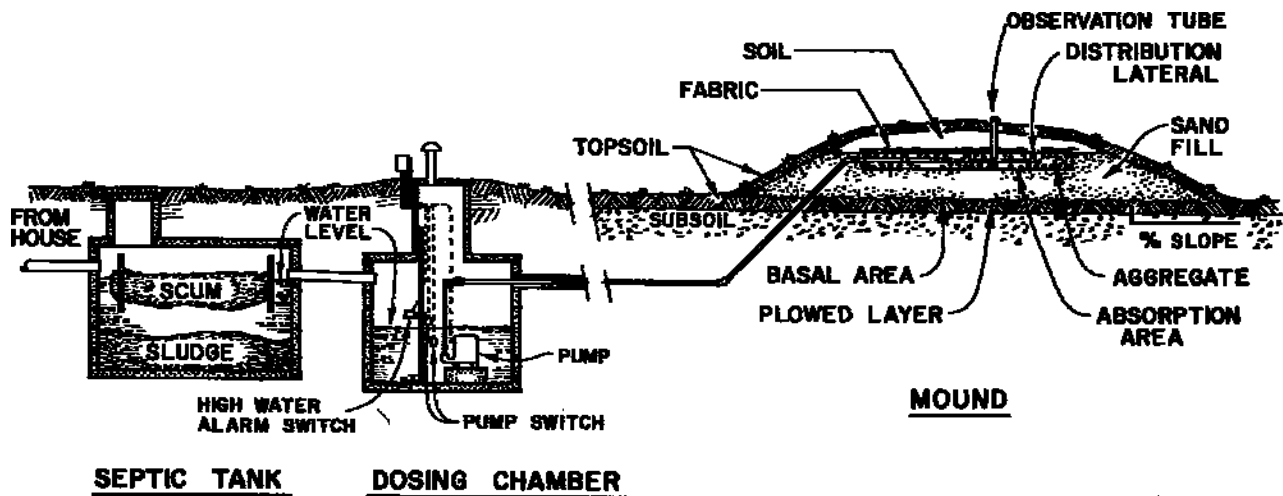


Figure 5 - Typical Mound System

A Wisconsin Mound requires a minimum of 24 inches of separation between high groundwater and basal area (ground surface).

Percolation rates shall not be slower than 120 minutes per inch.

Three (3) percolation test holes are required for the design of both the primary and reserve mound areas.

Installation is limited to slopes no greater than 12 percent.

Specifications and design for a Wisconsin Mound shall be based on the *Design and Construction Manual for Wisconsin Mounds, Small Scale Wastewater Management Project, Univ. of Wisconsin (January 2000)*.

### 2.4.3 At-Grade Systems

#### Cross Section of Wisconsin At-Grade System

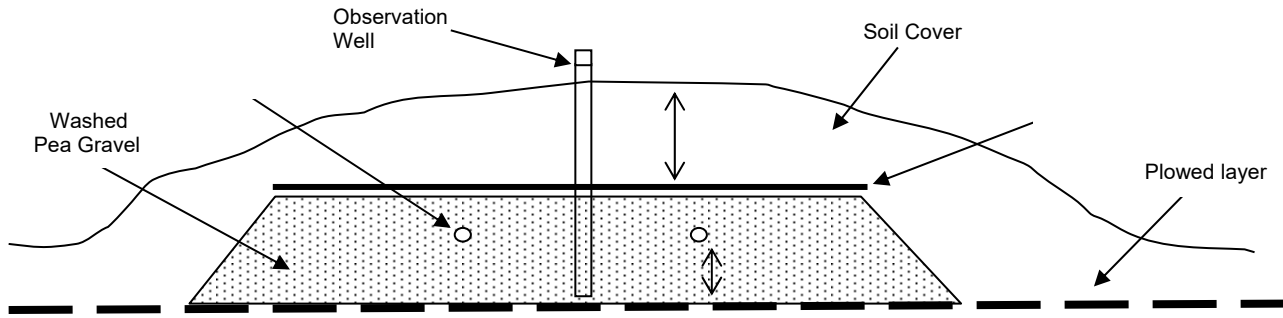


Figure 6 - Typical At-Grade System

At-Grade systems shall have a minimum separation between seasonal high groundwater and the basal area (ground surface) of 36 inches.

Percolation rates shall not be slower than 120 minutes per inch.

Maximum ground slope for installation is 25%.

Specifications and design for a Wisconsin At-Grade system shall be based on the *Wisconsin At-Grade Soil Absorption System Siting, Design and Construction Manual, Univ. of Wisconsin (January 1990)*.

### 2.4.4 Supplemental Treatment Systems

Supplemental Treatment is defined in the OWTS policy as “any OWTS or component of an OWTS, except a septic tank or dosing tank, that performs additional wastewater treatment so that the effluent meets a predetermined performance requirement prior to discharge of effluent into the dispersal field”. Supplemental treatment levels for Nitrogen and pathogens shall meet or exceed the criteria in Sections 10.9.1 and 10.10.1 of the State OWTS Policy:

#### Supplemental Treatment Requirements for Nitrogen

*10.9.1 Effluent from the supplemental treatment components designed to reduce nitrogen shall be certified by National Sanitation Foundation (NSF), or other third party tester, to meet a 50 percent reduction in total nitrogen when comparing the 30-day average influent to the 30-day average effluent.*

Supplemental Treatment Requirements for Pathogens.

*10.10.1 Supplemental treatment components designed to perform disinfection shall provide sufficient pretreatment of the wastewater so that effluent from the supplemental treatment components does not exceed a 30-day average Total Suspended Solids of 30mg/l and shall further achieve an effluent fecal coliform concentration less than or equal to 200 Most Probable Number(MPN) per 100 milliliters.*

A Supplemental Treatment system may be considered and/or required under the following conditions:

1. New or replacement OWTS within Tier 3 Advanced Protection Management Program areas (see Tier 3 and Figures 1-5 of LAMP).
2. New construction, repair or replacement OWTS on parcels where unfavorable site conditions necessitate a level of treatment greater than a standard (gravity) OWTS or other non-standard OWTS can provide.
3. New construction, repair, or replacement OWTS on parcels with unfavorable site conditions where the surrounding environment requires enhanced protection.

Any supplemental treatment system proposed for use must have undergone testing and certification from a recognized independent third party testing laboratory, such as NSF. Any supplemental treatment system proposed shall be listed by testing organization and treatment standards. Listing standards include but are not limited to:

*NSF Standard 40 – Residential: Onsite Systems*

*NSF Standard 245 – Nitrogen Reduction*

*NSF Standard 46 – Components and Devices*

The target treatment criteria for a specific supplemental treatment system (bacteria, nitrogen or both) will depend on site specific conditions.

Any application for a supplemental treatment system must be prepared by a Qualified Professional competent in the design of such systems.

All supplemental treatment systems require regular service and maintenance by a qualified service provider. The OWTS application must propose an appropriate ongoing monitoring schedule for the system. The permit, with the design approved by DEH will include the approved monitoring schedule. Prior to DEH issuing construction approval, a copy of a signed maintenance contract with a Qualified Service Provider to perform the required maintenance and monitoring for a duration of, at least, three (3) years must be provided.

## **2.5 Intercept Drains (Curtain Drain)**

1. Intercept drains are gravel filled trenches with perforated pipe installed up gradient from the dispersal field area for the purpose of intercepting, diverting, and discharging perched groundwater away from the dispersal field. The use of an intercept drain may be proposed in conjunction with a site specific OWTS design requiring perched groundwater to be lowered.
2. The use of an intercept drain to lower perched groundwater for the purpose of establishing a dispersal field will be considered when all of the following criteria can be met:
  - a. The native ground slope exceeds 5%.
  - b. Soil profile examination shows the presence of impermeable material upon which groundwater will perch.
  - c. The trench bottom of the intercept drain can be tied into the impermeable material.
  - d. Monitoring to demonstrate that the intercept drain is lowering of the perched water level sufficiently for the intended dispersal field is required. This shall be accomplished through the placement of monitoring wells in the area between the intercept drain and the upper most portion of the dispersal field.
  - e. No portion of an intercept drain shall be located less than 15 feet up gradient, 25 feet laterally, or less than 50 feet down gradient from any septic tank or dispersal field, replacement area, or less than 5 feet from any property line.

## **2.6 Design Submittal**

A complete site evaluation and OWTS design package is required for all applications, must be signed and stamped by the Qualified Professional, and shall include the following elements:

1. Project description explaining the intended use or uses of the property; indicate the number of dwelling units and total number of bedrooms. If a nonresidential use is proposed, an estimate of the quantity of sewage flow and the method used to arrive at the estimate shall be provided.
2. General description of the waste stream; indicate if the system will be serving a single-family residence, multiple structures, commercial or industrial uses.
3. Project Location providing detailed directions with map and instructions to access property.
4. A scale map of the lot showing: appropriate landmarks; steep slopes; roads; surveyor's landmarks; lot dimensions; existing and proposed easements for road or utility purposes; wells, water bodies or drainage swales; and existing, proposed, or abandoned onsite wastewater treatment systems.

5. A scaled site plan or detail of the proposed OWTS showing the area of the work, the average cross slope, the structure served, roads, parking areas, and all items in 4 (above) within 150 feet of the project.
6. Site description stating the landform type, geologic features or formation encompassing the area of the proposed dispersal field. Indicate landscape/drainage features (such as rock outcrops, erosion or artificially disturbed areas) which occur in the vicinity of proposed OWTS.
7. A written summary of the site evaluation results and all soils testing (profile description, percolation testing, and groundwater data) with findings presented in a legible format.
8. Explanation of proposed OWTS Design.
9. Complete OWTS design calculations.
10. Appropriate, most current design manuals referenced where applicable.
11. Detailed schematic drawings and specifications for all OWTS Components.
12. Installation Instructions for proposed OWTS.
13. Design submittals to permit OWTS previously installed without a permit shall also include details of the installed system including the size and condition of the septic tank; length, depth, spacing, and type of dispersal trenches; determination of adequate sizing; and recommendations for modifications necessary to meet the requirements of these regulations.

## PART 3 - Permitting

Humboldt County Code (HCC) section 612-2.

(a) *“Permit Required. No person shall construct, reconstruct, repair, abandon, operate or excavate for any kind of onsite wastewater treatment system or any portion thereof without having first obtained a permit to do so from the Health Officer.*

Application forms and current fee sheets can be provided upon request in hard copy or electronic format, are available at the DEH office, and can be found online at <http://www.humboldt.gov/730/Land-Use-Program>.

An approved application is valid for one year from the date of the approval (one year from the date of Building Permit issuance for new construction). If the work has not been completed within that time, the applicant may request in writing a 1-year extension. Such request must state that the construction is expected to be completed within one year and that the project has not changed. Extensions require a minimal fee, are valid for one year; only one extension will be granted. Making this request after a permit has expired constitutes a Permit Renewal and is subject to additional cost.

### 3.1 New Construction

**NOTE: New construction proposed within the variance prohibition area(s) requires DEH presence during site soil investigation.**

OWTS Permit application packages must be submitted to Humboldt County Building Division at 3015 H Street, Eureka. Applicants have two options:

The first option requires the applicant to provide an OWTS design proposal based on a site evaluation conducted by a Qualified Professional. The site evaluation and OWTS design proposal must be submitted with the OWTS permit application.

The second option allows the applicant to have DEH staff meet onsite with a backhoe (provided by the applicant) to conduct a site evaluation. The OWTS permit application must be submitted to the Building Division prior to DEH meeting onsite. If there are sufficient depths of well drained Zone 2 soils found in the backhoe excavations, DEH staff can complete a site evaluation, prepare an OWTS design and approve the permit application provided all other siting criteria are met.

**Note:** If backhoe excavations reveal clay rich soils and/or indications of high groundwater the applicant must employ a Qualified Professional to complete wet weather soils testing, design and submit an OWTS application package.

The Building Division will forward the application to DEH for review. All applications will be field inspected. If questions arise, DEH will contact the applicant. When the application package is approved, it will be returned to the Building Division to be issued as part of the Building Permit. In cases where DEH is unable to approve a permit application, the applicant will be provided a written explanation for the permit denial.

### **3.2 Repair Permit**

Owners of OWTS requiring a repair are encouraged to consult with DEH staff as soon as possible after noticing a failure. Repair designs must be prepared by a Qualified Professional as defined in Part 1.

Applications must be submitted to the DEH (not the Building Division) with the appropriate fee.

1. DEH may design standard and non-standard OWTS repairs on sites that support simple repairs. If a site qualifies for a “DEH prepared OWTS repair permit”, DEH staff will conduct a site evaluation and prepare a design to conform as closely as possible to current standards. Difficult sites require the applicant to secure the services of a Qualified Professional outside DEH to perform testing and/or OWTS design work.
2. An application for a repair permit shall only propose changes to a failing OWTS serving an existing structure; it shall not propose changes to accommodate increased development or intensified use of the property.
3. Repair permits submitted in association with property transactions must include a description of the testing performed to identify the failure. The repair must be designed by a Qualified Professional.
4. A copy of the approved OWTS repair permit and system design/plans will be sent to the applicant. Issued repair permits are valid for 12 months from the date of approval.
5. Only plans approved by DEH may be used for an OWTS repair. A copy of the signed, approved plans shall be kept on site during all phases of repair construction.

### **3.3 Modification Permit**

Individuals shall obtain an OWTS **modification** permit when an **existing** OWTS is not suitable or sized appropriately to accommodate a current or proposed use. This policy applies when there is an existing OWTS, which is not exhibiting signs of failure.

Examples of an OWTS modification include the following:

1. The addition or replacement of a septic tank, pump chamber or grease trap.
2. The addition or replacement of distribution boxes, valves or components of a non-standard OWTS.

3. The addition or reconfiguration of dispersal field trenches supported by valid soils testing.

Development of secondary dwelling units, multi-family dwellings or commercial facilities to be served by an OWTS may require more extensive evaluation and design than is appropriate to the scope of a **modification** permit. In those instances, application and payment for new construction of an OWTS will be required.

Any new or replacement component installation shall conform to and the requirements of Part 4, Construction and Installation.

**Procedure:**

1. If the OWTS modification is associated with a building permit, applicants shall apply for the OWTS **modification** permit at the Humboldt County Planning & Building Department, Building Division and pay the appropriate fee.
2. If the OWTS modification permit is not associated with other work permitted through the Planning and Building Department, applicants shall apply for the permit directly through DEH.
3. DEH will review the modification permit application and evaluate the **application** in accordance with the *Policy on the Use of Existing OWTS*, Appendix F to determine if sufficient information is available to proceed with a modification or if additional soils testing is required.
4. In the absence of soil testing data and an installation permit for the existing system, soil testing shall be completed as outlined in the *Policy on the Use of Existing OWTS*.
5. Once DEH staff determines sufficient information exists, and site has capacity to support proposal DEH will prepare plans for the modification.. In cases where an OWTS modification has been prepared by a qualified consultant DEH will review the proposal for compliance with applicable state and county regulations.
6. When the Modification Permit Application and plans are approved by DEH, they will be issued from DEH or sent back to the Building Division to be issued as appropriate. Approval of installation is valid for 12months from the date of issuance.

**3.4 OWTS Installed Without Permit**

1. Applicants seeking an OWTS permit (in conjunction with a residential building permit) for a system installed without the benefit of agency review/approval may submit an OWTS permit application through the Humboldt County Building Division with the appropriate **consultant prepared** fee (either Standard or Non-standard depending upon the OWTS as-built). The application shall include site evaluation and soils testing

information completed by a Qualified Professional and an as-built description of the OWTS. Wet Weather soils testing may be required for certain parcels.

2. DEH staff shall review the information submitted for conformance to applicable siting/design criteria.
3. If DEH determines that the OWTS as-built description or design proposal submitted is adequate a site inspection will be scheduled. The applicant will be asked to expose portions of the system including but not limited to the septic tank, distribution box and ends of dispersal field lines. If the system utilizes a pump, the pump chamber will need to be exposed.
4. DEH shall inspect the site to determine if the site and system installation is adequately represented in the submittal package and if it complies with siting and design requirements.
5. If the DEH inspection finds the OWTS installation and site conditions reported are in compliance with siting and design requirements, the permit application shall be approved. Note: Construction approval of the OWTS permit shall not be granted until the actual building permit for the project has been issued.
6. If an OWTS installation or the site conditions do not meet siting and design requirements, DEH shall provide the applicant with written notification of the deficiencies found and corrective measures needed to obtain approval.

### **3.5 Structure Remodel, Replacement or Change in Use**

The use of an existing OWTS for new or remodeling construction or changes in use, will be acceptable if it can demonstrated with acceptable documentation or site inspections that the OWTS septic tank and dispersal field are sized appropriately and functioning properly for the expected daily wastewater discharge of the proposed project, and a 100% reserve dispersal field area is available. Remodeling construction which will not increase the daily wastewater discharge or impact the availability of a 100% reserve dispersal field area can be approved with an existing OWTS provided there are no detectable signs of system failure.

Determinations will be made in accordance with the *Policy for the Use of Existing OWTS*, Appendix F. Generally for a proposed remodel, structure replacement, or change in use, DEH must be able to determine the following:

- Soil testing and groundwater elevation information as described in Part 1 of this document is available for the existing OWTS and designated reserve area.
- The existing OWTS is sized and installed appropriately to support the proposed project.
- Reserve area is not impacted by the proposed project.
- The existing OWTS is functioning properly with no evidence of failure.

If the project has the potential to increase the wastewater flow to the existing OWTS, the owner shall apply for a Modification Permit to make necessary improvements to an existing system.

### **3.6 Septic Tank Destruction/Abandonment**

Abandoned septic tanks shall be destroyed in accordance with HCC 611-6.

- (a) Every abandoned building sewer or part thereof shall be plugged or capped in an approved manner within five feet (5') of the property line.*
- (b) Every abandoned septic tank shall have the sewage removed therefrom and be completely filled with earth, sand, gravel, concrete, or other approved material. The cover of the septic tank shall be removed before filling. The filling shall not extend above the top of the vertical portions of the sidewalls or above the level of any outlet pipe until an inspection has been completed by the Health Officer. After such inspection the septic tank shall be filled to the level of the top of the ground.*
- (c) No person owning or controlling any septic tank shall fail, refuse, or neglect to comply with the provisions of this section upon receipt of notice from the Health Officer.*
- (d) Where an OWTS is abandoned consequent to connecting with a public sewer, the property owner or his/her authorized representative making the connection shall fill the abandoned septic tank as required by the Health Officer within thirty (30) days from the time of connecting to the public sewer.*

#### **Procedure:**

1. If the septic tank destruction is associated with a building permit, applicants shall apply for the **Septic Tank Destruction** permit at the Building Division and pay the appropriate fee.
2. If the septic tank destruction is not associated with other work permitted through the Planning and Building Department, applicants shall apply for the permit directly through DEH.

### **3.7 Grease Interceptors**

All structures served by an OWTS that produce wastewater containing oil, wax, fats or grease shall utilize an approved grease interceptor. Plumbing fixtures having the potential to receive fats, oils, wax, and/or grease shall be connected to the grease interceptor. These include, but are not limited to:

- Three compartment sinks
- Floor sinks
- Mop sinks
- Some dishwashing machines

Toilets, urinals, showers, and similar fixtures shall not discharge through an interceptor.

Any facility served by an OWTS, except those serving drinks and/or prepackaged food only, must demonstrate to the satisfaction of DEH that an adequate grease interceptor is in use prior to approval of an operating permit and/or business license.

For new construction, the grease interceptor shall be permitted as a component of the OWTS in accordance with the procedure outlined in section 3.1. Existing structures served by permitted OWTS shall obtain a Modification Permit for the addition of a grease interceptor. Note that any necessary changes to existing interior plumbing are permitted through the Humboldt County Planning & Building Department.

### **3.8 Additional Considerations**

#### **3.8.1 Holding Tanks**

The use of holding tanks is prohibited except where DEH determines that:

1. It is necessary to abate an existing nuisance or health hazard; or
2. It is for transient use at a campground or similar public facility where use of a permanent OWT is not feasible and maintenance is performed by a public agency or similar entity.

#### **3.8.2 Cumulative Effects**

The potential cumulative effects on ground and surface waters from OWTS usage include, but are not limited to, groundwater mounding and nitrate loading. The need for a cumulative impacts study will be considered for development served by OWTS when one or more of the following situations occur:

- The anticipated daily flow exceeds 1500 gallons.
- Wastewater strength exceeds that of domestic wastewater.
- OWTS is located in an area where site conditions increase potential for contamination.
- OWTS is located in close proximity to multiple existing OWTS with cumulative flows in excess of 1500 gallons/day.
- Other situations as deemed necessary.

#### **Groundwater Mounding Analysis**

Groundwater mounding analysis shall be used to predict the highest rise of the water table and shall account for background groundwater conditions during the wet weather season. The maximum acceptable rise of the water table for short periods of time during the wet season, as established from groundwater mounding analysis, shall be as follows:

- For systems with design flows of less than 1500 gallons per day, groundwater mounding beneath the dispersal field shall not result in more than a 50 percent reduction in the minimum depth to seasonally high groundwater as specified in these regulations.

- For systems with design flows exceeding 1500 gallons per day, a minimum groundwater clearance of 24 inches shall be maintained beneath the dispersal field trench bottom.

#### Nitrate Loading

Analysis of nitrate loading effects shall be based, at a minimum, on an estimate of annual chemical-water mass balance. Minimum values used for the total nitrogen concentration of septic tank effluent shall be: 40 mg/l as N (for average flow conditions) for residential wastewater, or as determined from sampling comparable systems or from acceptable scientific literature. OWTS shall not cause the groundwater nitrate concentration to exceed 10.0 mg/l as N at any source of drinking water on the property nor on any potential off-site drinking water source.

#### 3.8.3 Variance Policy

If a proposed design cannot meet any standard contained in the Humboldt County OWTS Regulations and Technical Manual or applicable state policy, the application must identify the unmet standard. For DEH to consider a variance to any standard, the applicant must submit an OWTS Variance Application. Variances may be granted when the applicant can demonstrate that water quality will not be impaired and public health will not be impacted as a result of the variance. Variances cannot be granted to parcels within the Variance Prohibition Area(s).

#### 3.8.4 Limitations

The following conditions are regulated by the RWQCB. Owners must notify the RWQCB via submittal of a Report of Waste Discharge, Form 200, available from the RWQCB.

- a. A new or replacement OWTS that does not meet the conditions and requirements set forth in these regulations;
- b. any OWTS, not under individual waste discharge requirements or a waiver of individual waste discharge requirements issued by a Regional Water Board, with the projected flow of over 10,000 gallons-per-day;
- c. any OWTS that receives high-strength wastewater, unless the waste stream is from a commercial food service building;
- d. any OWTS that receives high-strength wastewater from a commercial food service building: (1) with a BOD higher than 900 mg/L, or (2) that does not have a properly sized and functioning oil/grease interceptor.

## **PART 4 - Construction and Installation**

### **4.1 General Installation Requirements**

1. Only a qualified professional shall design all new/replacement Onsite Wastewater Treatment Systems (OWTS) and modifications to existing OWTS where the treatment or dispersal system will be expanded. A qualified professional employed by a local agency, while acting in that capacity may design or review and approve a design for a proposed OWTS.
2. A Licensed General Engineering Contractor (Class A), General Building Contractor (Class B), Sanitation System Contractor (Specialty Class C-42), or Plumbing Contractor (Specialty Class C-36) shall install all new OWTS and replaced OWTS in accordance with California Business and Professions Code Sections 7056, 7057, and 7058 and Article 3, Division 8, Title 16 of the California Code of Regulations. A property owner may also install his/her own OWTS under approval of DEH with the provision that the components remain exposed for inspection and approval by DEH.
3. OWTS shall be installed in accordance with the design plans approved by the Division of Environmental Health (DEH). Any proposed changes to approved plans must be reviewed and re-approved through DEH.
4. All wastewater from each building or place shall be discharged into an approved OWTS or approved graywater system (Appendix G), where applicable.
5. No OWTS, or part thereof, shall be located on any lot other than the lot which is the site of the building or structure served by such system.
6. No rain, surface, or subsurface water shall be connected to or discharged into any OWTS.
7. The OWTS shall start at a point two (2) feet from the foundation of a building or outside wall of a mobile home.
8. OWTS shall not be permitted under walks, driveways, parking lots, surface roadways, compacted soils or gravel in most cases. Variance to this requirement may require aerobic pretreatment.
9. All dispersal systems (leach fields) shall be covered with at least twelve (12) inches of soil.

### **4.2 Building Sewer Requirements**

1. Type and size of building sewers used in OWTS shall be in accordance with the most recent revision of the California Uniform Plumbing Code, as adopted by the County of Humboldt.
2. Building sewers shall be run in practical alignment and at a uniform slope of not less than one-fourth (1/4) inch per foot toward the point of disposal. Where it is impractical, due to the depth of the street sewer or to the arrangement of any building or structure, to obtain a slope of one-fourth (1/4) inch per foot, a slope of not

less than one-eighth (1/8) inch per foot may be approved by DEH if the building sewer is at least four (4) inches in diameter.

3. Building sewer piping shall be laid on a firm bed throughout its entire length. Any such piping placed on fill shall be laid on a bed of approved materials and shall be adequately supported to the satisfaction of DEH.
4. There shall be a minimum of twelve (12) inches of earth fill over all building sewers.
5. Cleanouts shall be placed in every building sewer at the junction with the building drain and at intervals not to exceed one hundred (100) feet in straight runs.
6. Every change in alignment or grade in excess of twenty-two and one-half (22 ½) degrees in a building sewer shall be served by a cleanout.
7. Each cleanout shall be installed so that it opens in a direction opposite to the flow of sewage or waste or at right angles thereto and vertically above the flow of the pipe.
8. Cleanouts installed under concrete or asphalt paving shall be made accessible and shall be adequately protected.
9. Approved manholes may be installed in lieu of cleanouts if approved by DEH.
10. Gravity building sewers constructed of materials approved for use within a building may be located within the same trench as a private water line as long as the water line is installed above all sewer lines. Existing sewer lines constructed of materials not approved for use within a building must maintain a one (1) foot vertical and one (1) foot horizontal separation to all water lines.
11. Pressure sewer lines shall be installed in a separate trench at least one (1) foot horizontally from the water line trench.

#### **4.3 Septic Tank Requirements**

1. New and replaced septic tanks shall be limited to those approved by the International Association of Plumbing and Mechanical Officials (IAPMO) or stamped and certified by a California registered civil engineer as meeting the industry standards and their installation shall be in accordance with manufacturer's instructions.
2. New septic tanks shall be designed to prevent solids in excess of three-sixteenths (3/16) of an inch diameter from passing to the dispersal system. Septic tanks that use a National Sanitation Foundation/American National Standard Institute (NSF/ANSI) Standard 46 effluent filter shall be deemed in compliance with this requirement.
3. Septic tanks shall be of two-compartment construction having watertight risers over each access opening with riser tops set within 6 inches of finished grade. The first compartment shall be twice the capacity of the second.
4. The outlet and inlet shall be at least equal in diameter to the building sewer pipe.
5. Septic tanks shall be water and odor tight.
6. Septic tanks shall be sized according to the Septic Tank Sizing Chart, Section 2.2.
7. All septic tanks shall be equipped with an effluent filter located in the outlet compartment in such a manner to be easily serviced.
8. Reinforced concrete, standard weight reinforced concrete blocks or similar material not subject to excessive corrosion or decay and which will produce a water-tight tank shall be used.

9. Wood and metal septic tanks are not acceptable.
10. Septic tanks shall be installed in a location that allows for practical access and servicing.
11. Excavations for all septic tanks shall be made according to tank manufacturer's requirements. Such excavations shall provide a level, uniform load bearing surface free of imbedded rock or boulders. Wet or unstable beds shall be over-excavated, backfilled and compacted with an approved material suitable to stabilize and support the tank.
12. The separation between any two tanks shall be at least two (2) feet.
13. All septic tanks shall be completely watertight. DEH may require a watertight test on any new or existing septic tank. When required, the septic tank shall be filled to a level specified by DEH and left for twenty four (24) hours. Following the twenty-four (24) hour period the tank shall be refilled to the original level. If there is no measurable loss for one (1) hour, the tank is considered water-tight.
14. In some cases, DEH may require water-tight certification from the OWTS designer.
15. Septic tanks installed in areas of known seasonal groundwater at six (6) feet or less from original grade shall be made non-buoyant according to the manufacturer's recommendations or other methods approved by DEH.

#### **4.4 Grease Interceptors**

1. Grease interceptors shall be sized in accordance with the most current version of the California Plumbing Code, but shall not be less than 750 gallon capacity.
2. Grease interceptors shall be constructed and installed in accordance with Section 4.3 – Septic Tank Requirements except that the sanitary tees shall extend to a depth of 12 inches above the bottom of the tank. Effluent filters are not required.
3. All interceptors shall have risers installed over each access port.
4. Interceptors shall be located outside the structure and as close as possible to the fixtures served.
5. Grease interceptors shall be cleaned regularly to ensure proper operation. Cleaning shall be performed by a qualified grease pumper possessing applicable licenses and permits as issued by the State of California and the County of Humboldt.

#### **4.5 Pump Tank / Pump / Control Requirements**

1. The pump tank shall be single chamber, pre-cast concrete, and shall have the floors and walls of the tank monolithically poured. Other tanks may be approved for use if they can demonstrate current IAPMO approval listing.
2. The pump tank shall have a minimum capacity of 500 gallons. If site conditions prevent a tank of this size, other size proposals may be considered.
3. Concrete tanks shall be sealed with a heavy cement- based waterproof coating, Thoroseal or approved equal.
4. Excavations for tanks shall be in accordance with manufacturer's requirement. Such excavations shall provide a level, uniform load bearing surface free of imbedded rock

- or boulders. Wet or unstable beds shall be over-excavated, backfilled and compacted with an approved material suitable to stabilize and support the tank.
5. Tanks shall have adequately sized access opening with water-tight risers extending to the ground surface.
  6. Concrete tanks shall be tested for water tightness by the method described for septic tanks.
  7. Pump tanks installed in areas of known seasonal groundwater at six (6) feet or less from original grade shall be made non-buoyant according to the manufacturer's recommendations or other methods approved by DEH.
  8. A minimum two (2) foot separation shall be maintained between the pump tank and septic tank.
  9. Pump tanks shall receive clarified effluent that has been treated by a septic tank equipped with an effluent filter or other approved pretreatment device.
  10. Plans detailing the proposed use of a pump tank, pump and all appurtenant components complete with control switch elevations shall be prepared by a qualified professional and provided to DEH for review prior to permit approval.
  11. The emergency storage volume available in a pump tank shall be 150 gallons or 1/3 of the design flow, whichever is greater. The storage volume will be considered the liquid capacity between the invert of the inlet tee and the point of high water alarm activation.
  12. Dosing tanks shall be vented back through the septic tank, or have a separate vent.
  13. Only UL approved pumps designed for sewage effluent shall be used.
  14. The pump discharge line shall be equipped with a check valve designed for wastewater effluent unless the dispersal area is located down slope of the pump in which case a siphon relief hole shall be drilled in the discharge line.
  15. The pump shall be placed so that it remains submerged to allow for cooling and does not contact sewer gas. In no case shall the pump be set less than four (4") from the bottom of the tank.
  16. The connection between the pump and the force main shall allow for ease of pump removal and maintenance.
  17. Float control switches shall be UL and/or CSA listed and set securely in accordance with manufacturers' specifications. Switches shall not be attached to the pump discharge assembly.
  18. The high water alarm float switch shall be set to activate two (2") inches above the pump "on" switch.
  19. The alarm float switch shall activate an audible and visible alarm which remains on once activated until shut off by the property owner or maintenance personnel.
  20. The pump and alarm shall be powered by separate circuits.
  21. The pump, pump control panel and all associated components shall be installed as per the National Electrical Code (NEC) and inspected/approved by the local Building Department.
  22. Splice boxes shall be external to and attached to the tank riser, watertight, corrosion proof, resistant to UV exposure and adequately sized to accommodate multiple wiring configurations.

#### **4.6 Distribution Boxes**

1. In every dispersal field on level terrain an approved distribution box shall be used.
2. On sloping terrain distribution boxes shall be used and may require “speed levelers” or similar device to evenly distribute effluent.
3. The size and type of distribution box shall be included in design proposal.
4. Distribution boxes shall be set level on a competent base.
5. The use of more than one distribution box may be required in certain situations.
6. Wood and metal distribution boxes are unacceptable.
7. Other types of distribution boxes may be proposed for DEH approval.

#### **4.7 Gravity OWTS**

1. Gravity OWTS shall be a subsurface dispersal field (leachfield) designed using not more than 6 square-feet of infiltrative area per linear foot as the infiltrative surface. Trench width shall not exceed 3 feet.
2. Dispersal field trenches shall be placed in natural earth or properly prepared earth fill under approval of DEH.
3. Dispersal field trenches on sloping ground shall follow surface contours.
4. Dispersal field trenches shall not exceed seventy (70) feet in length.
5. The bottom of the dispersal field trench shall be level to within a tolerance of two (2) inches in 100 feet.
6. All smeared or compacted soil surfaces in the sidewalls or bottom of dispersal field trenches shall be scarified to the depth of the smearing or compaction and the loose material removed prior to placement of drain rock.
7. Dispersal field trenches shall be evenly filled with  $\frac{3}{4}$ ” to 2-1/2” washed river rock, gravel or other approved hard rock. Rock that easily decomposes is prohibited.
8. Effluent sewer, header pipe, dispersal line and fittings shall be a minimum three (3) inch diameter, watertight and one of the following: (A) Schedule 40 PVC that meets the most current ASTM D-1785 for three (3) inch pipe and D-2672 for minimum four (4) inch pipe; (B) Schedule 40 Acrylonitrile-Butadiene-Styrene (ABS) that meets the most current ASTM Specification D-2468; (C) ASTM SDR 35 with solvent-welded or rubber-gasketed joints; or (D) Other material approved by the DEH.
9. The first five (5) feet of pipe extending from the septic tank and from the distribution box shall be solid, non-perforated pipe.
10. Perforated dispersal line shall have two (2) rows of holes spaced one hundred-twenty (120) degrees apart and sixty (60) degrees on either side of a centerline.
11. Dispersal field trenches shall not exceed a maximum depth of 5 feet as measured from the ground surface to the bottom of the trench.
12. All new OWTS shall have a 100 percent replacement area available that will serve the development if the primary dispersal field fails.
13. No dispersal field or replacement area shall be covered by any type of impermeable surface.

14. Once an OWTS is installed, the soils in the dispersal field area and replacement area shall remain undisturbed and not subject to vehicular traffic or confined animal use.
15. Setback requirements for conventional gravity OWTS are listed in Appendix E.

#### **4.8 OWTS Construction Inspection**

DEH staff inspectors shall perform OWTS construction/installation inspections to ensure conformance with applicable standards and all terms and conditions contained within the OWTS permit.

Installers shall provide at least 24 hours advance notice to DEH staff inspectors prior to reaching specified construction steps. Notification must include applicant's name, assessor parcel number and site location. Failure to provide sufficient notice may cause delays in the construction of the OWTS.

The inspection steps required for a particular OWTS installation will vary with the type and complexity of the approved OWTS design. Specific inspections required for Non-standard OWTS will be listed and included as part the approved permit.

DEH staff inspectors may combine one or more required inspections into a single site visit. The following inspections shall be required unless the applicant obtains DEH staff inspector's waiver of any inspections.

1. Preconstruction site visit to ensure proper OWTS layout.
2. Open trench inspection.
3. Septic Tank installation with risers and filter and/or pump tank and components where applicable.
4. Septic tank (Pump tank) water tight inspection.
5. Drain rock placement and piping connections from septic tank, distribution box etc.
6. Final Inspection

Electrical wiring for OWTS shall be completed under appropriate permit from the Humboldt County Building Division and will be inspected by Building Division staff.

Final inspection of the constructed OWTS occurs when all portions of the OWTS and all other construction features required by these standards or by permit conditions have been completed.

In certain cases, written verification from a Qualified Professional may be accepted and/or required in lieu of an inspection by DEH staff inspectors.

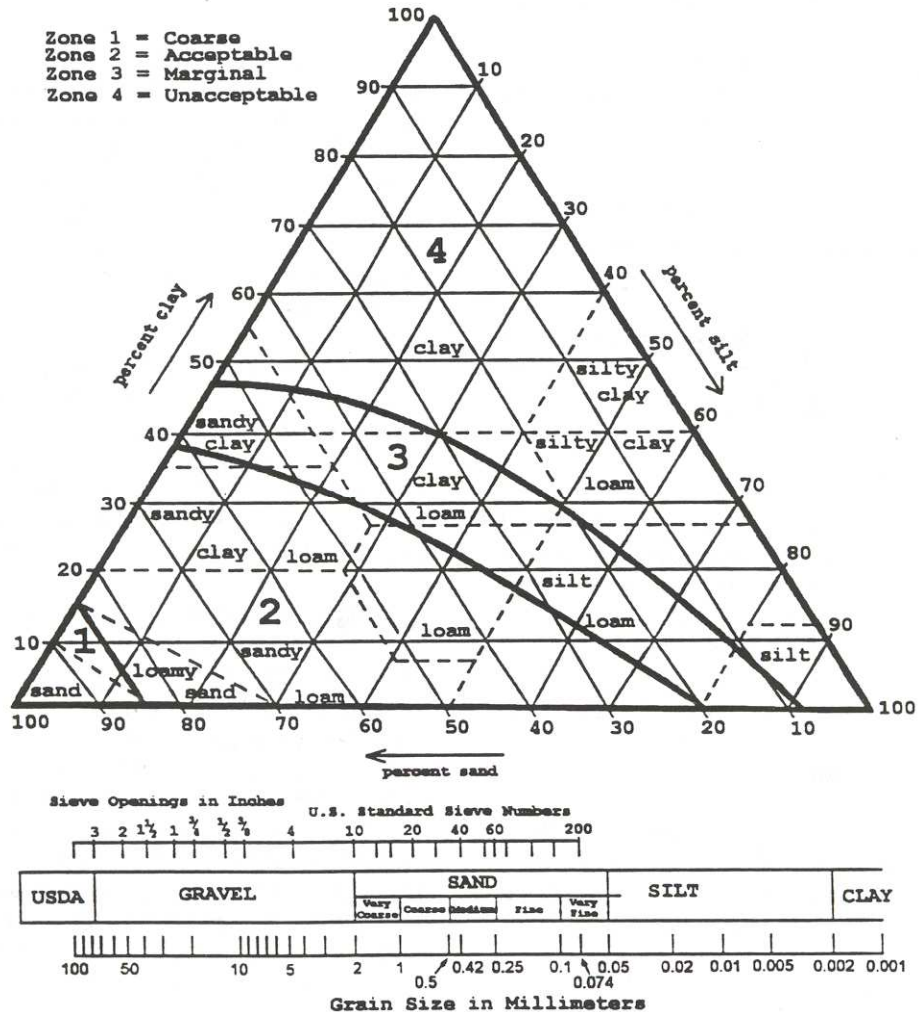
DEH staff inspectors shall sign and date the appropriate section of the OWTS permit upon satisfactory completion of inspections.

#### **4.9 OWTS Operation and Maintenance**

OWTSs benefit from routine maintenance and consideration of the types of wastes sent to them. DEH recommends the following practices to prolong the lifespan of OWTS and to prevent potential environmental impacts associated with their use:

- Only allow domestic wastewater to enter the system. Other substances such as pesticides, strong solvents, non-household chemicals, etc. can harm the septic tank and may contaminate groundwater.
- Avoid disposing of fats, oils, and greases to the OWTS. These substances can accumulate in dispersal field piping and receiving soils leading to OWTS failure.
- Inspect the depth of sludge in the septic tank every three years. Tanks should be pumped when the sludge layer is two or more feet thick.
- Dispersal fields, including reserve areas, shall be protected. Soil compaction can reduce their ability to receive wastewater. Do not drive vehicles, build, or place heavy equipment over dispersal field areas. Hoofed animals such as goats, sheep, horses, and/or cattle can compact soils and shall be prohibited from dispersal fields.
- Trees and shrubs shall not be planted in the dispersal area because roots can become invasive and cause clogging.
- Divert water run-off away from dispersal field areas.

## APPENDIX A - SOIL PERCOLATION SUITABILITY CHART FOR OWTS



### Instructions:

1. Plot texture on triangle based on percent sand, silt, and clay as determined by hydrometer analysis.
2. Adjust for coarse fragments by moving the plotted point in the 100 percent sand direction an additional 2% for each 10% (by volume) of fragments greater than 2mm in diameter.
3. Adjust for compactness of soil by moving the plotted point in the 100 percent 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 classification bulk density analysis will generally not affect suitability, and analysis is not necessary.

APPENDIX B

OBSERVATION WELL REPORTING LOG

(Example)

JOB# \_\_\_\_\_

Project \_\_\_\_\_

AP # \_\_\_\_\_

Test Hole # \_\_\_\_\_

Elevation of Rim \_\_\_\_\_

Depth of Well \_\_\_\_\_

Date	Time	Depth to Water Surface	Total Rainfall (to date)*	Rainfall Past 24 hours*	Comments

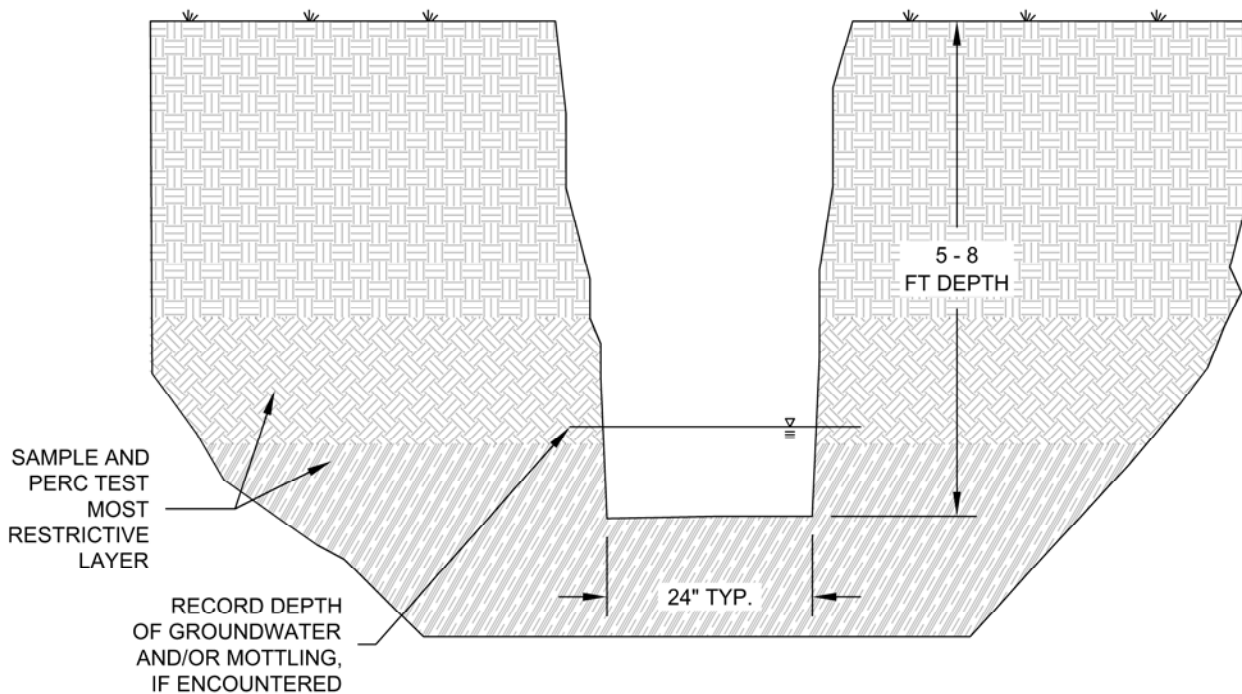
\*Data from NOAA's National Weather Service, <http://w2.weather.gov/climate/index.php?wfo=eka>

## APPENDIX C – EXPECTED DAILY WASTEWATER FLOWS

<b>Type of Establishment</b>	<b>Gallons/person/day</b> <b>(unless otherwise noted)</b>
Apartments, multiple family (per resident).....	60
Bathhouses and swimming pools.....	10
Camps:	
Campground with central comfort stations.....	35
With flush toilets, no showers.....	25
Construction camps (semi-permanent).....	50
Day Camps (no meals served).....	15
Resort camps (night and day) with limited plumbing.....	50
Luxury camps.....	100
Cottages and small dwellings with seasonal occupancy.....	50
Country clubs (per resident member).....	100
Country Clubs (per non-resident member present).....	25
Dwellings:	
Boarding houses.....	50
Additional for non-resident boarders.....	10
Luxury residence and estates.....	150
Multiple family dwellings (apartments).....	60
Rooming houses.....	40
Single family dwellings (per bedroom, up to 3).....	150
Hospitals (per bed space).....	250+
Hotels with private baths (2 persons per room).....	60
Institutions other than hospitals (per bed space).....	125
Laundries, self service (gallons per customer).....	50
Mobile home parks (per space).....	250
Motels, with kitchen (per bed space).....	50
Motels, (per bed space).....	40
Picnic Parks (toilet wastes only, per person).....	5
Picnic Parks (bathhouses, showers, toilets).....	10
Restaurants (toilets and kitchen wastes per patron).....	10
Restaurants (kitchen wastes per meal served).....	3
Restaurants, additional for bars and cocktail lounges.....	2
Schools:	
Boarding.....	100
Day, without gyms, cafeterias, or showers.....	15
Day, with gyms, cafeterias, and showers.....	25
Day, with cafeteria, but without gyms or showers.....	20
Service stations (per vehicle served).....	10
Theaters, Movie (per seat or car space).....	5
Travel trailer parks without individual sewer hook-ups (per space).....	50
Travel trailer parks with individual water and sewer hook-ups (per space).....	100
Workers, day, at schools and offices (per shift).....	15
Stores (per toilet room).....	400
Factories (gallons per person, per shift, exclusive of industrial wastes).....	35

**NOTES**

1. A TYPICAL BACKHOE TEST PIT IS 24" WIDE, 5 TO 8 FEET DEEP. THE INTENT IS TO IDENTIFY ALL SOIL TYPES PRESENT TO A DEPTH NOT LESS THAN 3 FEET BELOW THE BOTTOM OF A LEACH LINE TRENCH.
2. SOIL TEXTURAL ANALYSIS AND PERCOLATION TESTING SHALL BE PERFORMED ON THE MOST RESTRICTIVE SOIL TYPE OBSERVED.
3. IF UNDERGROUND UTILITIES POTENTIALLY EXIST IN THE AREA OF EXCAVATION, CONTACT UNDERGROUND SERVICE ALERT AT 811 48 HOURS BEFORE DIGGING.
4. COMPLY WITH CAL-OSHA AND OTHER APPLICABLE FEDERAL, STATE, AND LOCAL REQUIREMENTS WHILE PERFORMING THE WORK.



Percolation Rate (mpi)	Soil Application Rate gpd/ft <sup>2</sup>	Zone 2 Soil Texture (when no percolation testing is performed)
5	0.732	
10	0.554	
15	0.481	Loamy Sand
20	0.425	
25	0.389	Sandy Loam
30	0.363	
35	0.344	Sandy Clay Loam
40	0.323	
45	0.305	Silt Loam
50	0.296	
55	0.285	
60	0.277	



**COUNTY OF HUMBOLDT**

DIVISION OF ENVIRONMENTAL HEALTH  
LAND USE UNIT

100 H Street, Suite 100 EUREKA, CA 95501

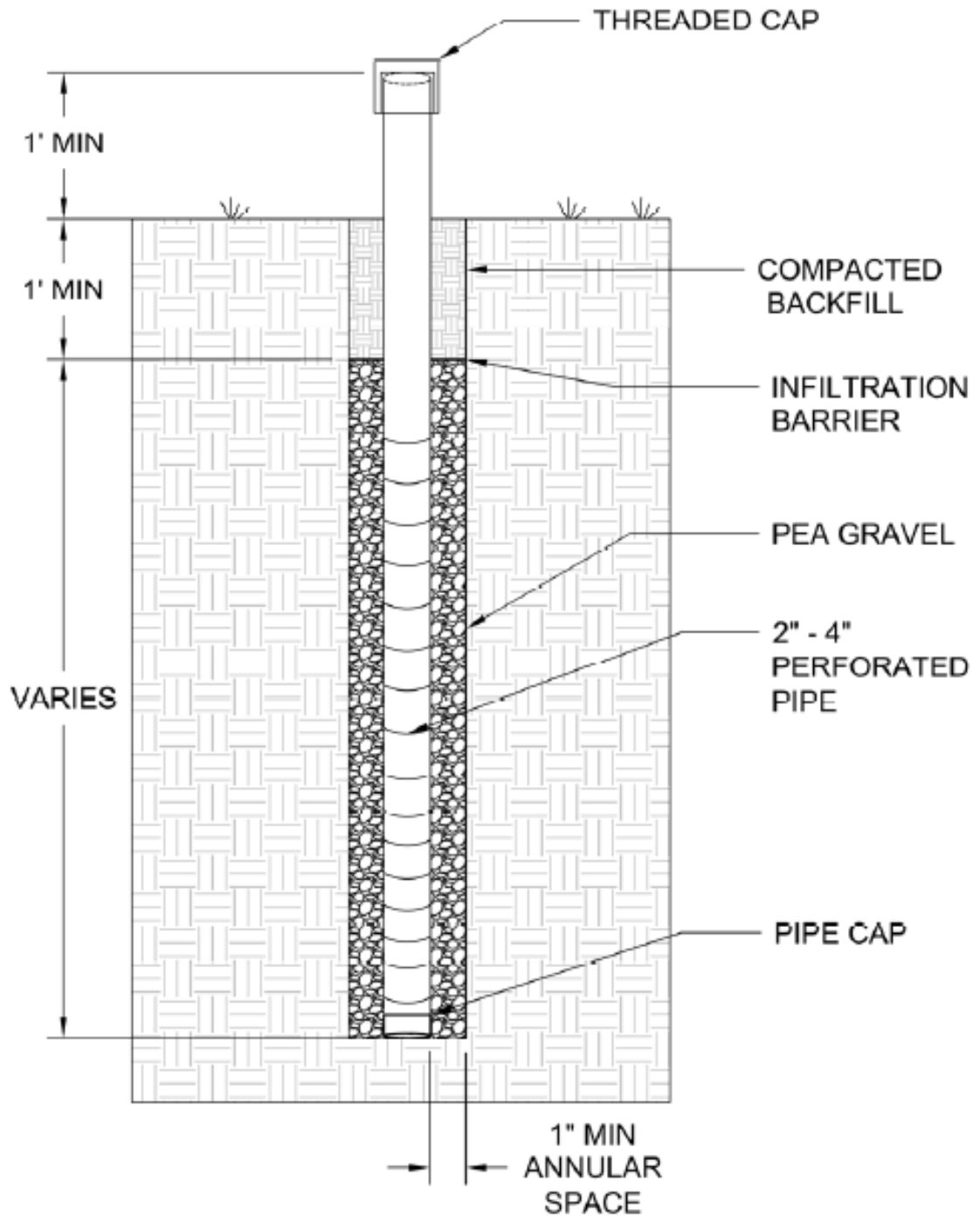
TEL (707) 445-6215 \* envhealth@co.humboldt.ca.us

**TYPICAL BACKHOE TEST PIT**

## APPENDIX D.2

### NOTES

1. WELL DEPTH MUST BE SUFFICIENT TO VERIFY APPROPRIATE GROUNDWATER SEPARATION FROM THE BOTTOM OF PROPOSED DISPERSAL FIELD TRENCHES.
2. EACH SITE SHALL HAVE A MINIMUM OF TWO WELLS TO DEMONSTRATE GROUNDWATER LEVELS IN THE PROPOSED PRIMARY AND RESERVE AREAS.
3. PROVIDE A COMPLETED "NOTIFICATION OF WET WEATHER MONITORING WELL INSTALLATION" FORM TO DEH WITHIN FIVE (5) DAYS OF WELL CONSTRUCTION.



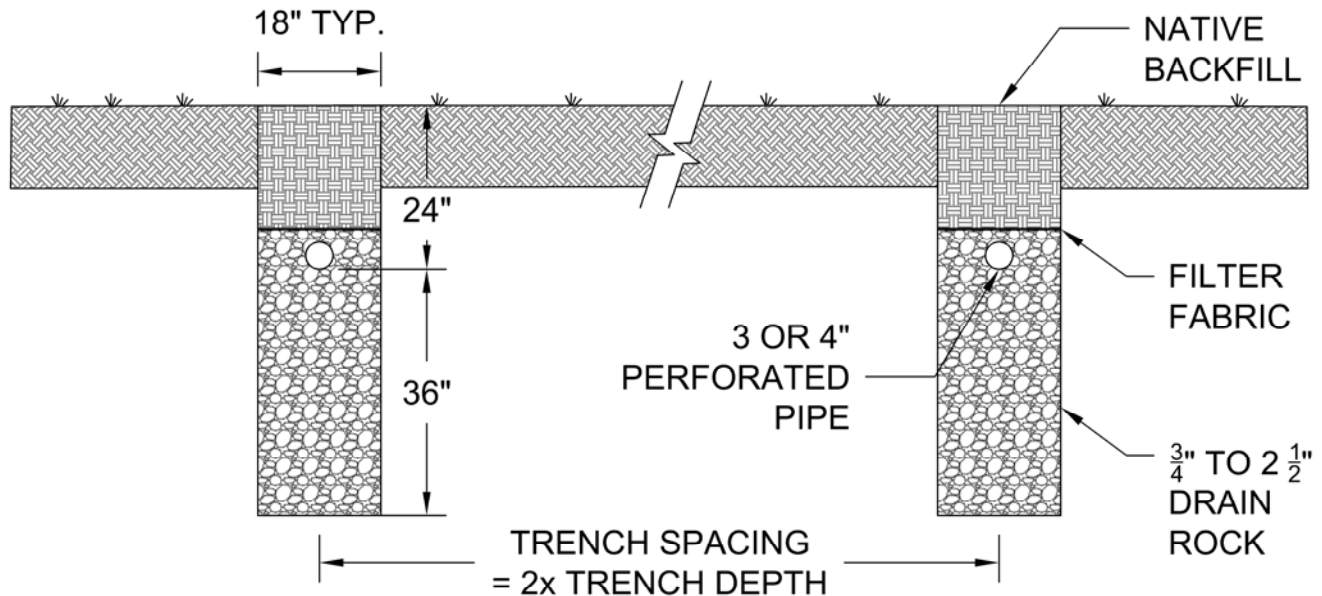
**COUNTY OF HUMBOLDT**  
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**TYPICAL OBSERVATION  
WELL**

NOTES

1. DETAILS SHOWN REPRESENT TYPICAL TRENCH CONFIGURATIONS. ACTUAL DIMENSIONS MAY VARY BASED ON SITE SOIL CONDITIONS.
2. MATERIALS SHALL BE AS SPECIFIED IN THE HUMBOLDT COUNTY OWTS REGULATIONS AND TECHNICAL MANUAL.
3. ALL SMEARED OR COMPACTED SOIL SURFACES IN THE SIDEWALLS OR BOTTOM OF TRENCHES SHALL BE SCARIFIED TO THE DEPTH OF THE SMEARING OR COMPACTION AND THE LOOSE MATERIAL REMOVED PRIOR TO PLACEMENT OF DRAIN ROCK.
4. LENGTH OF TRENCH IS BASED ON SOIL SAMPLING AND ANALYSIS. REFER TO THE HUMBOLDT COUNTY OWTS REGULATIONS AND TECHNICAL MANUAL.



**COUNTY OF HUMBOLDT**

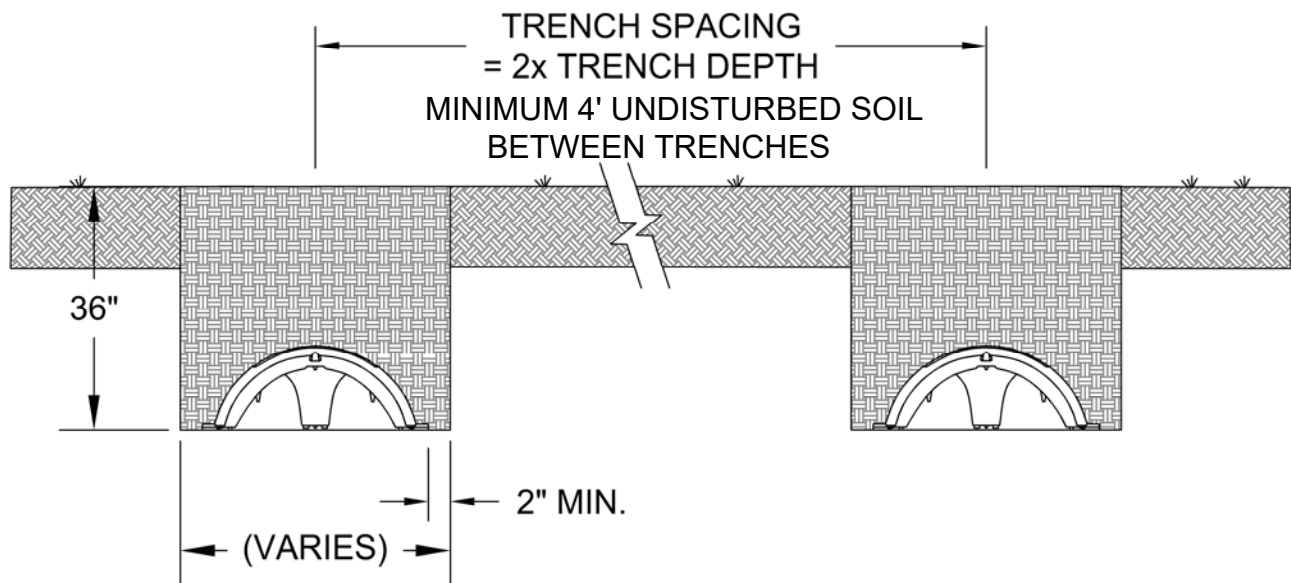
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**DISPERSAL FIELD CONSTRUCTION  
GRAVEL TRENCH**

NOTES

1. DETAILS SHOWN REPRESENT TYPICAL TRENCH CONFIGURATIONS. ACTUAL DIMENSIONS MAY VARY BASED ON SITE SOIL CONDITIONS.
2. MATERIALS SHALL BE AS SPECIFIED IN THE HUMBOLDT COUNTY OWTS REGULATIONS AND TECHNICAL MANUAL.
3. ALL SMEARED OR COMPACTED SOIL SURFACES ON THE BOTTOM OF TRENCHES SHALL BE SCARIFIED TO THE DEPTH OF THE SMEARING OR COMPACTION AND THE LOOSE MATERIAL REMOVED PRIOR TO PLACEMENT OF CHAMBERS.
4. LENGTH OF TRENCH IS BASED ON SOIL SAMPLING AND ANALYSIS. REFER TO THE HUMBOLDT COUNTY OWTS REGULATIONS AND TECHNICAL MANUAL.

**COUNTY OF HUMBOLDT**

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**DISPERSAL FIELD CONSTRUCTION  
GRAVELLESS CHAMBERS**

## APPENDIX E – OWTS SETBACK REQUIREMENTS

### Minimum Setback Distance Requirements

Tanks and dispersal fields must be located to meet the minimum setback distances shown below. See page reverse for required OWTS horizontal setbacks to public water wells and surface water intakes.

Minimum Horizontal Distance (ft.)	Public Water Well	Private Water Well	Surface Intake Public Water	Perennial Stream, Wetland & Other Waters*	Ephemeral Stream or Drainage Swale*
Septic Tank	100	100		50	25
Pump Tank	100	100		50	25
Dispersal System	150	100	200-400 (see table below)	100	50

Minimum Horizontal Distance (ft.)	Property Lines Public Water	Property Lines (Private Water)	Buildings or Structures	Cut Banks Unstable Land Steep Slopes>30%	Large Trees
Septic Tank	5	25	5	25	10
Pump Tank	5	25	5	25	10
Dispersal System	10	50	10	25	10

\* Setback distances from surface waters is determined based on the US Army Corps of Engineers' definition of Ordinary High Water Mark, 33 CFR 328.3(e).

## APPENDIX E – OWTS SETBACK REQUIREMENTS

### OWTS Horizontal Separation Distance to Public Water Wells & Surface Water Intake State OWTS Policy Section 9.4.10.1, .4, .5

	Public Water Well	Surface Water Intake
<b>New OWTS</b>	<b>150 ft.</b>	<b>400 ft.</b> from High Water mark of Water Body when: Dispersal system is within 1200 ft. of intake and, located within the catchment of the drainage such that it may impact the intake point.
<b>New OWTS</b>		<b>200 ft.</b> from High Water mark of Water Body when: Dispersal system is between 1200 ft. and 2500 ft. of intake and, located within the catchment of the drainage such that it may impact the intake point.
<b>Replacement OWTS</b>	<b>150 ft.</b>	<b>400 ft.</b> from High Water mark of Water Body when: Dispersal system is within 1200 ft. of intake and, located within the catchment of the drainage such that it may impact the intake point.
<b>Replacement OWTS</b>		<b>200 ft.</b> from High Water mark of Water Body when: Dispersal system is between 1200 ft. and 2500 ft. of intake and, located within the catchment of the drainage such that it may impact the intake point.

#### **State OWTS Policy 9.4.11**

For replacement OWTS that do not meet the above horizontal separation requirements, the replacement OWTS shall meet the horizontal separation to the greatest extent practicable. In such case, the replacement OWTS shall utilize supplemental treatment and other mitigation measures, unless the permitting authority finds that there is no indication that the previous system is adversely affecting the public water source, and there is limited potential that the replacement system could impact the water source based on topography, soil depth, soil texture and groundwater separation.

#### **State OWTS Policy 9.4.12**

For new OWTS installed on parcels of record existing as of May 13, 2013 that cannot meet the above horizontal separation requirements, the OWTS shall meet the horizontal separation to the greatest extent practicable and shall utilize supplemental treatment for pathogens as specified in section 10.8 (State OWTS Policy) and any other measures prescribed by the permitting authority.

**APPENDIX F**  
**POLICY FOR THE USE OF**  
**EXISTING ONSITE WASTEWATER TREATMENT SYSTEMS (OWTS)**

The use of an existing OWTS to serve a structure remodel, replacement, or change of use, will be acceptable if the OWTS is functioning properly, is sized appropriately for the proposed project, and the project does not impact the designated OWTS replacement area. Remodeling, replacement, or a planned change in use which will not affect the daily flow to the OWTS, and will not impact the remaining potential replacement area, will not require expansion, testing, or replacement of the existing OWTS.

The acceptability of an existing OWTS for new construction, remodeling, or change in use will be determined as follows:

1. Existing OWTS which were approved by the Division of Environmental Health (DEH) after January 1, 1980, for which soils testing in accordance with the North Coast Regional Water Quality Control Board "Basin Plan Policy" has been conducted, will be acceptable for use without further testing if: (1) the system shows no sign of failure or damage; and (2) the proposed development is compatible with the system as installed; and (3) the proposed development does not impact available OWTS replacement area.
2. Existing OWTS installed prior to January 1, 1980 will be evaluated for approval as follows:
  - a. Applicants may be requested to expose portions of an existing OWTS to verify its size and location where no record or inadequate record of the OWTS exists. Soil testing in conformance with the Humboldt County Onsite Wastewater Treatment System Regulations & Technical Manual (RTM) will be required in the primary and replacement area(s) to determine if the existing OWTS is sized appropriately for the intended use and that adequate replacement area exists. Expansion of an existing OWTS must be accomplished in accordance with the RTM.
  - b. Existing OWTS which are functioning properly and are of the appropriate size will be accepted for use if soil testing demonstrates suitability. Expansion of a system must be accomplished in accordance with the RTM.

The provisions of this policy may be waived, on a case-by-case basis, by the Department of Health and Human Services, Division of Environmental Health Director where extreme hardship, such as a dwelling destroyed by a fire, can be demonstrated.

This Policy was approved by the Humboldt County Board of Supervisors on \_\_\_\_\_.

(Prior version entitled "Policy for the Use of Existing Sewage Disposal Systems" was implemented on October 23, 1984.)

APPENDIX G  
Graywater Regulations

**Introduction**

Humboldt County Division of Environmental Health (DEH) issues permits for graywater treatment systems. These regulations provide criteria for permitting and design of these systems for new construction and for modifications of existing wastewater treatment systems.

**Reference Standards**

Graywater systems shall be designed, constructed, and operated in accordance with the 2016 California Plumbing Code (CPC) Chapter 15, Section 1502. DEH is the Enforcing Agency, and the Authority Having Jurisdiction for all components of the graywater treatment system outside of the building footprint. Modifications to interior plumbing systems are the jurisdiction of the Humboldt County Building Division.

A graywater system is not a replacement for an Onsite Wastewater Treatment System (OWTS). Graywater systems do not reduce the size of an OWTS, and all graywater must be able to be redirected to an approved OWTS or public sewer.

**Permitting**

Graywater systems are permitted using the DEH Onsite Wastewater Treatment System (OWTS) Permit Application. Clothes washer systems in compliance with 2016 CPC Section 1502.1.1 are exempt from OWTS permit. All other graywater systems require an OWTS permit. All graywater OWTS permit applications must be accompanied by a building permit application for the required internal plumbing modifications.

1. Graywater OWTS permit applications shall be submitted through the Humboldt County Building Division simultaneously with submittal of the building permit application.
2. Graywater OWTS permit applications must include a design submittal, per Section 2.6 of the Humboldt County Onsite Wastewater Treatment System (OWTS) Regulations and Technical Manual, and the appropriate fee.
3. DEH inspector may perform a pre-site inspection to verify the conditions described in the design report. If the application is complete and the design acceptable, the permit application will be approved for construction and DEH-approved plans will be provided to the applicant. DEH reserves the right to make any and all modifications to the proposed design that may be necessary to meet these regulations and/or the CPC.
4. The applicant must notify the DEH inspector a minimum of 48 hours prior to the construction of the gray water system. During construction, the DEH inspector will make a site visit to verify that the construction is consistent with the DEH approved design. Deviation from the approved design may require correction at the discretion of the inspector. If the construction is acceptable, the DEH inspector will finalize the OWTS permit and approve the construction. The Building Division retains authority for interior plumbing and other building construction permit approvals.

## Appendix H – Variance Prohibition Areas

Section 9.1 Conditions/Characteristics	Geographic Area/Hydrologic Unit (HU) Tier 1 Requirements Infeasible	Mitigation Measures that may be Considered (Wet Weather Testing in All Areas)	
		New System (No Variance)	Repair
9.1.1 Degree of Vulnerability due to Hydrogeological conditions.	Westhaven, Fieldbrook, Fairhaven, Eureka Plain HU, Van Duzen River HU	NSOWTS, Supplemental Treatment	NSOWTS, Supplemental Treatment
9.1.2 High Quality Waters/Environmental Conditions requiring enhanced protection	Trinidad HU, Eureka Plain HU, Fairhaven, Van Duzen River HU	Supplemental Treatment	Supplemental Treatment
9.1.3 Shallow Soils	Westhaven, Fieldbrook, Eureka Plain HU	NSOWTS - Mound, Supplemental Treatment	NSOWTS - Mound, Supplemental Treatment
9.1.4 OWTS in area of high domestic well usage	Van Duzen River HU, Alton, Petrolia	Supplemental Treatment & Disinfection	Supplemental Treatment & Disinfection
9.1.5 OWTS in area of fractured rock	Benbow, Shelter Cove	NSOWTS, Supplemental Treatment	NSOWTS, Supplemental Treatment
9.1.6 OWTS in area of poorly drained soils	Fieldbrook, Eureka Plain HU, Petrolia	NSOWTS - Mound	NSOWTS - Mound, Supplemental Treatment
9.1.7 Surface Water vulnerable to pollution from OWTS	Trinidad HU, Eureka Plain HU, Fairhaven, Van Duzen River HU	NSOWTS, Supplemental Treatment	NSOWTS, Supplemental Treatment
9.1.8 OWTS within Tier 3 area	Trinidad HU, Clam Beach	NSOWTS, Supplemental Treatment, APMP Special Provisions	APMP Special Provisions
9.1.9 Area of high OWTS density	Pacific Manor subdivision, Fairhaven, Van Duzen River HU	NSOWTS, Supplemental Treatment, Cumulative Impact Study, Water Efficient Fixtures	
9.1.10 Parcel size susceptible to hydraulic mounding, nitrogen loading	Fairhaven, Pacific Manor subdivision, Petrolia, Hydesville,	NSOWTS, Supplemental Treatment	NSOWTS, Supplemental Treatment
9.1.11 Multiple OWTS predating standards	Alton, Petrolia, Fairhaven, Westhaven		Conformance with RTM
9.1.12 OWTS located within pertinent setbacks	Alton	NSOWTS, Supplemental Treatment & Disinfection	NSOWTS, Supplemental Treatment & Disinfection

**Trinidad HU** covers the area from Big Lagoon south to Little River.

**Eureka Plain HU** includes Jacoby Creek, Bayside, Freshwater, Elk River.

**Van Duzen River HU** covers the area from Bridgeville west to Hydesville.

The table above lists the primary areas in Humboldt County where conditions listed in 9.1.1 – 9.1.12 occur and prevent the use of Tier 1 siting criteria for the design and installation of an OWTS.