LASSEN COUNTY
Health and Social Services Department

D3

☒ HSS Administration
☐ Public Guardian
336 Alexander Avenue
Susanville, CA 96130
(530) 251-8128

☐ Grant and Loans Division
336 Alexander Avenue
Susanville, CA 96130
(530) 251-2683

☐ Behavioral Health
555 Hospital Lane
Susanville, CA 96130
(530) 251-8108/8112

Chestnut Annex
1400-A & B Chestnut Street
Susanville, CA 96130
(530) 251-8112

☐ Patients' Rights Advocate
1445 Paul Bunyan Road
Susanville, CA 96130
(530) 251-8322

☐ Public Health
1445 Paul Bunyan Road
Susanville, CA 96130
(530) 251-8183

☐ Environmental Health
1445 Paul Bunyan Road
Susanville, CA 96130
(530) 251-8183

☐ Community Social Services
336 Alexander Avenue
Susanville, CA 96130

LassenWORKS
Business & Career Network
PO Box 1359
1616 Chestnut Street
Susanville, CA 96130
(530) 251-8152

Child & Family Services
1600 Chestnut Street
Susanville, CA 96130
(530) 251-8277

Adult Services
PO Box 429
1445 Paul Bunyan Road
Susanville, CA 96130
(530) 251-8158

☐ HSS Fiscal
PO Box 1180
Susanville, CA 96130
(530)251-2614

Date: January 21, 2020

To: David Teeter, Chairman
Lassen County Board of Supervisors

From: Barbara Longo, Director
Health and Social Services

Subject: Approval of Draft Local Area Management Plan (LAMP) for Onsite Wastewater Treatment Systems (OWTS)

Background:

The California Water Code authorizes the State Water Resources Control Board (SWRCB) to regulate all discharges that could affect the quality of the waters of the state. The policies of the SWRCB are implemented locally through nine Regional Water Quality Control Boards (RWQCB). Historically, each Regional Board developed "Basin Plans" that outlined water quality objectives in their respective jurisdictions as well as policies and programs to achieve those objectives.

Discharges are regulated using Waste Discharge Requirements that act as discharge permits. With regards to the regulation of wastewater in Lassen County, the Lahontan Regional Water Quality Control Board and the Central Valley Regional Water Quality Control Board issue discharge permits to the municipalities and special districts that operate wastewater (sewage) treatment plants in the county. In addition, they issue storm water permits to the incorporated cities and to the County as well as permits for the use of recycled water.

In June 2012, the SWRCB adopted the Water Quality Control Policy for Siting, Design, Operation and Maintenance of Onsite Wastewater Treatment Systems (OWTS) hereinafter referred to the as the State Policy or the Policy. This Policy was developed and adopted to comply with California Assembly Bill 885 (AB 885). The Policy became effective in May 2013 and for the first time, established a statewide, risk-based tiered approach for the regulation and management of OWTS.

Under the tiered approach of the Policy, Tier 1 establishes minimum standards for low risk new or replacement OWTS. Tier 2 allows local agencies to develop customized Local Agency Management Programs (LAMP) that address the conditions specific to that jurisdiction, superseding those

statewide requirements established in Tier 1. These LAMPs must be approved by the appropriate Regional Water Quality Control Board. Tier 3 applies special, enhanced standards to both new and existing OWTS located near a water body that has been listed as impaired due to nitrogen or pathogens pursuant to Section 303(d) of the Clean Water Act. Tier 4 applies to systems that have or are failing. The purpose of the LAMP is to allow the continued use of OWTS within the jurisdiction of Lassen County as well as to expand the local program to permit and regulate engineered or supplemental OWTS while protecting water quality and public health. The LAMP also applies to OWTS on federal, state, and tribal lands to the extent authorized by law or agreement.

The LAMP is designed to protect groundwater sources and surface water bodies from contamination through the proper design, placement, installation, maintenance, and assessment of individual OWTS. This plan develops minimum standards for the treatment and ultimate disposal of sewage though the use of OWTS in Lassen County.

Fiscal Impact:

There is no impact to County General Funds.

Action Requested:

1) Approve the Draft Local Area Management Plan for submission to the Lahontan Regional Water Quality Control Board (LRWQCB) for review and approval.

LASSEN COUNTY ENVIRONMENTAL HEALTH DEPARTMENT

Local Agency Management Program (LAMP)

Onsite Wastewater Treatment Systems

DRAFT

12/12/2019

Chapter 1

Introduction (OWTS Policy 9.2)

The California Water Code authorizes the State Water Resources Control Board (SWRCB) to regulate all discharges that could affect the quality of the waters of the state. The policies of the SWRCB are implemented locally through nine Regional Water Quality Control Boards (RWQCB). Historically, each Regional Board developed "Basin Plans" that outlined water quality objectives in their respective jurisdictions as well as policies and programs to achieve those objectives.

Discharges are regulated using Waste Discharge Requirements (WDRs) that act as discharge permits. With regards to the regulation of wastewater in Lassen County, the Lahontan Regional Water Quality Control Board (LRWQCB) and the Central Valley Regional Water Quality Control Board (CVRWQCB) issue discharge permits to the municipalities and special districts that operate wastewater (sewage) treatment plants in the county. In addition, they issue storm water permits to the incorporated cities and to the County as well as permits for the use of recycled water.

The State's regulatory authority extends to individual Onsite Wastewater Treatment Systems (OWTS). Therefore, general guidelines for the siting, design and construction of new OWTS were part of each Regional Board's Basin Plan. The SWRCB and the Regional Boards recognized the advantages and efficiencies of regulation of such systems by local agencies. Consequently, while the Regional Boards retained primacy over large and some specialized systems, direct regulatory authority for individual OWTS has been delegated to individual counties through Memorandums of Understanding (MOU).

In June 2012, the SWRCB adopted the Water Quality Control Policy for Siting, Design, Operation and Maintenance of Onsite Wastewater Treatment Systems hereinafter referred to the as the State Policy or the Policy. This Policy was developed and adopted to comply with California Assembly Bill 885 (AB 885). The Policy became effective in May 2013 and for the first time, established a statewide, risk-based tiered approach for the regulation and management of OWTS. Please refer to the State OWTS Policy (Appendix II or online at http://www.waterboards.ca.gov/water_issues/programs/owts/docs/owts_policy.pdf) to review the complete text of the Policy.

Under the tiered approach of the Policy, Tier 1 establishes minimum standards for low risk new or replacement OWTS. Tier 2 allows local agencies to develop customized Local Agency Management Programs (LAMP) that address the conditions specific to that jurisdiction, superseding those statewide requirements established in Tier 1. These LAMPs must be approved by the appropriate Regional Water Quality Control Board. Tier 3 applies special, enhanced standards to both new and existing OWTS located near a water body that has been listed as impaired due to nitrogen or pathogens pursuant to Section 303(d) of the Clean Water Act. Tier 4 applies to systems that have or are failing The purpose of the LAMP is to allow the continued use of OWTS within the jurisdiction of Lassen County as well as to expand the local program to permit and regulate engineered or supplemental OWTS while protecting water quality and public health. The LAMP also applies to OWTS on federal, state, and tribal lands to the extent authorized by law or agreement.

The LAMP is designed to protect groundwater sources and surface water bodies from contamination through the proper design, placement, installation, maintenance, and assessment of individual OWTS. This

plan develops minimum standards for the treatment and ultimate disposal of sewage though the use of OWTS in Lassen County. The LAMP does not include the following which require individual WDRs, or a waiver of individual WDRs issued by the RWQCB (see also Chapter 5 Not Allowed or Authorized in LAMP):

- Any OWTS with a projected wastewater flow of over 10,000 gallons per day (gpd).
    - Note: Depending on threat to water quality, Lassen County may consult with the RWQCB on a case-by-case basis for OWTS with projected flows greater than 3,500 gpd.
- Any OWTS that receives high-strength wastewater, unless the waste stream is from a commercial food service facility.
- Any OWTS that receives high-strength wastewater from a commercial food service facility with a BOD higher than 900 milligrams per liter (mg/L), or that does not have a properly sized and functioning oil/grease interceptor.
- Any surface discharges, either land or water.

It is the intent of the Board of Supervisors, in adopting this plan, to ensure that OWTS are constructed, modified, repaired, abandoned, operated, maintained, inspected and serviced in a manner that prevents environmental degradation and protects the health, safety and general welfare of the people of the county. This LAMP conforms to all the applicable Tier 2 criteria listed in Section 9 of the State Policy including adherence to the "prohibitions" contained in Section 9.4.

The standards for existing and new OWTS are specified in the State Water Resources Control Board's Policy, the California Plumbing Code and in this Lassen County LAMP.

OWTS, including conventional systems, require routine maintenance in order to ensure that they function properly and to extend the life of the system. While this LAMP does not require mandatory maintenance for conventional systems, regular maintenance and reporting conditions, will be required for all other types of systems.

The provisions of this LAMP will apply to the unincorporated and incorporated (Susanville) areas of Lassen County.

While every effort was made to make this a comprehensive plan, it is likely that it will be necessary to modify it in the future for several reasons. Section 9.3.3 of the Policy requires that a jurisdiction complete an evaluation of its monitoring program every five (5) years to determine if water quality is being impacted by OWTS and whether modifications must be made to its LAMP to address any noted water quality impacts. In addition, modifications or revisions will be needed as technology, conditions and experience change over time. When it has been determined changes are necessary, those changes will be made after consultation with the Lahontan Regional Water Quality Control Board and if changes are substantive, the Lassen County Environmental Health Department (EHD) will return to the Lassen County Board of Supervisors for approval.

Chapter 2
Definitions

"As-built drawing" means a drawing that depicts the final placement of an on-site wastewater treatment system once it has been installed.

"At-grade system" means an OWTS dispersal system with a discharge point located at the preconstruction grade (ground surface elevation). The discharge from an at-grade system is always subsurface.

"Average annual rainfall" means the average of the annual amount of precipitation for a location over a year as measured by the nearest National Weather Service station for the preceding three decades. For example, the data set used to make a determination in 2012 would be the data from 1981 to 2010.

"Basin Plan" means the same as "Water Quality Control Plan" as defined in Division 7 (commencing with Section 13000) of the Water Code. Basin Plans are adopted by each Regional Water Quality Control Board, approved by the State Water Board and the Office of Administrative Law, and identify surface water and groundwater bodies within each Region's boundaries and establish, for each, its respective beneficial uses and water quality objectives. Copies are available from the Regional Water Boards, electronically at each Regional Water Boards website, or at the State Water Board's Plans and Policies web page (http://www.waterboards.ca.gov/plans_policies/).

"Bedrock" means the rock, usually solid, that underlies soil or other unconsolidated, surficial material.

"Cesspool" means an excavation in the ground receiving domestic wastewater, designed to retain the organic matter and solids, while allowing the liquids to seep into the soil. Cesspools differ from seepage pits because cesspool systems do not have septic tanks and are not authorized under this Policy. The term cesspool does not include pit-privies and out-houses which are not regulated under this Policy.

"Chemical toilet" means a watertight, portable, self-contained toilet which may contain an environmentally safe bactericide and/or deodorant. A chemical toilet serves the same purpose and has the same meaning as a portable toilet.

"Clay" means a soil particle; the term also refers to a type of soil texture. As a soil particle, clay consists of individual rock or mineral particles in soils having diameters <0.002 mm. As a soil texture, clay is the soil material that is comprised of 40 percent or more clay particles, not more than 45 percent sand and not more than 40 percent silt particles using the USDA soil classification system.

"Cobbles" means rock fragments 76 mm or larger using the USDA soil classification systems.

"Community Water System" means a water system regulated by the State Water Resources Control Board,

Division of Drinking Water pursuant to Division 4, Part 12, Chapter 4, Article 1, §116275(i) of the California Health and Safety Code.

"Cut/Slope" means any slope greater than 60% or man-made contour that exposes the vertical soil profile. Cuts and slopes require a 4-foot horizontal setback for every 1 foot of vertical height to any dispersal system.

"Dispersal system" means a leach field, leach bed, mound, subsurface drip field, or other type of system for final wastewater treatment and subsurface discharge.

"Domestic wastewater" means wastewater with a measured strength less than high-strength wastewater and is the type of wastewater normally discharged from, or similar to, that discharged from plumbing fixtures, appliances and other household devices including, but not limited to toilets, bathtubs, showers, laundry facilities, dishwashing facilities, and garbage disposals. Domestic wastewater may include wastewater from commercial buildings such as office buildings, retail stores, and some restaurants, or from industrial facilities where the domestic wastewater is segregated from the industrial wastewater. Domestic wastewater may include incidental RV holding tank dumping but does not include wastewater consisting of a significant portion of RV holding tank wastewater such as at RV dump stations. Domestic wastewater does not include wastewater from industrial processes.

"Domestic well" means a groundwater well that provides water for human consumption and is not regulated by the California Department of Public Health.

"Engineered system" means an OWTS that utilizes one or more special design features, such as pressure distribution or mound dispersal that provides alternative disposal methods other than leach lines to address site specific constraints.

"Earthen material" means a substance composed of the earth's crust (i.e. soil and rock).

"Effective absorptive area" means sidewall or bottom area of a disposal field bed, trench or seepage pit, located below the point at which effluent is released from the disposal field piping, and consisting of undisturbed native soil strata having acceptable percolation rates and/or soil texture classifications meeting the requirements of this Manual.

"Effluent" means sewage, water, or other liquid, partially or completely treated or in its natural state, flowing out of a septic tank, aerobic treatment unit, dispersal system, or any other OWTS component.

"Equivalent Dwelling Unit (EDU)" a metric used to size development density for new and existing lots utilizing OWTS based on the amount design waste from that development. EDUs within this LAMP shall be

based on the Lahontan Regional Water Quality Control Board's Basin Plan definition of EDU: 250 gallons per day. For purposes of this criteria, a single-family dwelling is equal to one EDU.

"Existing OWTS" means an OWTS that was constructed and operating prior to the effective date of this Policy (May 13, 2013), and OWTS for which a construction permit has been issued prior to the effective date of the Policy.

"Flowing water body" means a body of running water flowing over the earth in a natural water course, where the movement of the water is readily discernible or if water is not present it is apparent from review of the geology that when present it does flow, such as in an ephemeral drainage, creek, stream, or river.

"Groundwater" means water below the land surface that is at or above atmospheric pressure.

"High-strength wastewater" means wastewater having a 30-day average concentration of biochemical oxygen demand (BOD) greater than 300 milligrams-per-liter (mg/L) or of total suspended solids (TSS) greater than 330 mg/L or a fats, oil, and grease (FOG) concentration greater than 100 mg/L prior to the septic tank or other OWTS treatment component.

"IAPMO" means the International Association of Plumbing and Mechanical Officials.

"Impaired Water Bodies" means those surface water bodies or segments thereof that are identified on a list approved first by the State Water Board and then approved by US EPA pursuant to Section 303(d) of the federal Clean Water Act.

"Local agency" means any subdivision of state government that has responsibility for permitting the installation of and regulating OWTS within its jurisdictional boundaries; typically, a county, city, or special district.

"Major repair" means either: (1) for a dispersal system, repairs required for an OWTS dispersal system due to surfacing wastewater effluent from the dispersal field and/or wastewater backed up into plumbing fixtures because the dispersal system is not able to percolate the design flow of wastewater associated with the structure served, or (2) for a septic tank, repairs required to the tank for a compartment baffle failure or tank structural integrity failure such that either wastewater is exfiltrating or groundwater is infiltrating.

"Mottling" means a soil condition that results from oxidizing or reducing minerals due to soil moisture changes from saturated to unsaturated over time. Mottling is characterized by spots or blotches of different colors or shades of color (grays and reds) interspersed within the dominant color as described by the USDA soil classification system. This soil condition can be indicative of historic seasonal high

groundwater level, but the lack of this condition may not demonstrate the absence of groundwater.

"Mound system" means an aboveground dispersal system (covered sand bed with effluent leach field elevated above original ground surface inside) used to enhance soil treatment, dispersal, and absorption of effluent discharged from an OWTS treatment unit such as a septic tank. Mound systems have a subsurface discharge.

"New OWTS" means an OWTS permitted after the effective date of this Policy.

"NSF" means National Sanitation Foundation, or National Sanitation Foundation International, a not for profit, nongovernmental organization that develops health and safety standards and performs product certification.

"Oil/grease interceptor" or "**grease trap**" means a passive interceptor that has a rate of flow exceeding 50 gallons-per-minute and that is located outside a building. Oil/grease interceptors are used for separating and collecting oil and grease from wastewater.

"Onsite wastewater treatment system(s)" (OWTS) means individual disposal systems, community collection and disposal systems, and alternative collection and disposal systems that use subsurface disposal. The short form of the term may be singular or plural. OWTS do not include "gray water" systems pursuant to Health and Safety Code Section 17922.12.

"Percolation test" means a method of testing water absorption of the soil. The test is conducted with clean water and test results can be used to establish the dispersal system design.

"Permit" means a document issued by a local agency that allows the installation and use of an OWTS, or waste discharge requirements or a waiver of waste discharge requirements that authorizes discharges from an OWTS.

"Person" means any individual, firm, association, organization, partnership, business trust, corporation, company, State agency or department, or unit of local government who is, or that is, subject to this Policy.

"Pit-privy" (a.k.a. outhouse, pit-toilet) means self-contained waterless toilet used for disposal of non-water carried human waste; consists of a shelter built above a pit in the ground into which human waste falls.

"Policy" (State Policy, OWTS Policy) means this Policy for Siting, Design, Operation and Management of OWTS.

"Pollutant" means any substance that alters water quality of the waters of the State to a degree that it may

potentially affect the beneficial uses of water, as listed in a Basin Plan.

"Pressure dosed on-site wastewater treatment system" means a standard on-site wastewater treatment system utilizing pressure dosing technology to distribute septic tank effluent throughout the disposal field.

"Projected flows" means wastewater flows into the OWTS determined in accordance with any of the applicable methods for determining average daily flow in the USEPA Onsite Wastewater Treatment System Manual, 2002, or for Tier 2 in accordance with an approved Local Agency Management Program.

"Public water system" is a water system regulated by the California Department of Public Health or a Local Primacy Agency pursuant to Chapter 12, Part 4, California Safe Drinking Water Act, Section 116275 (h) of the California Health and Safety Code.

"Public water well" is a ground water well serving a public water system. A spring which is not subject to the California Surface Water Treatment Rule (SWTR), CCR, Title 22, sections 64650 through 64666 is a public well.

"Qualified Inspector": means a registered Environmental Health Specialist, registered California Civil Engineer, Qualified Installer/Contractor, or an individual that meets the requirements of the OWTS Policy. Additionally, a septic-pumping company registered with Lassen County (as defined in Chapter 9) shall be permitted to inspect OWTS, when servicing the system.

"Qualified Installer": means a Licensed General Engineering Contractor (Class A), General Building Contractor (Class B), Sanitation System Contractor (Specialty Class C42), or Plumbing Contractor (Specialty Class C-36), and shall install all new OWTS and replacement 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 (Plumbing Code). Additionally, if permitted by EHD a property owner may install their own OWTS as an owner/builder.

"Qualified Professional" means an individual licensed or certified by a State of California agency to design OWTS and practice as professionals for other associated reports, as allowed under their license or registration. Depending on the work to be performed and various licensing and registration requirements, this may include an individual who possesses a registered environmental health specialist certificate or is currently licensed as a professional engineer or professional geologist. For the purposes of performing site evaluations, Soil Scientists certified by the Soil Science Society of America are considered qualified professionals. Lassen County EHD reserves the right to determine if any person is qualified for a specific task.

"Qualified service provider" means a person capable of operating, monitoring, and maintaining an OWTS

in accordance with the State Water Board OWTS Policy. The individual must also be certified and/or trained extensively by the manufacturer of an OWTS with supplemental treatment to install, maintain, service, and repair the specific model/type of OWTS.

"Regional Water Board" is any of the Regional Water Quality Control Boards designated by Water Code Section 13200. Any reference to an action of the Regional Water Board in this Policy also refers to an action of its Executive Officer, including the conducting of public hearings, pursuant to any general or specific delegation under Water Code Section 13223.

"Repair" is any action that modifies/replaces the existing dispersal system, replaces an existing septic tank, or modifies/replaces a major component of the onsite wastewater treatment system. Repairs require the issuance of a Septic Repair Permit by the County of Lassen-Department of Environmental Health (EHD) and must be inspected by EHD staff.

"Replacement OWTS" means an OWTS that has its treatment capacity expanded, or its dispersal system replaced or added onto, after the effective date of this Policy.

"Sand" means a soil particle; this term also refers to a type of soil texture. As a soil particle, sand consists of individual rock or mineral particles in soils having diameters ranging from 0.05 to 2.0 millimeters. As a soil texture, sand is soil that is comprised of 85 percent or more sand particles, with the percentage of silt plus 1.5 times the percentage of clay particles comprising less than 15 percent.

"Seepage Pit" means a drilled or dug excavation, three to six feet in diameter, either lined or gravel filled, that receives the effluent discharge from a septic tank or other OWTS treatment unit for dispersal.

"Septage" means materials accumulated in septic tanks, cesspools, vault privies, portable toilets, holding tanks, or any other sewage holding apparatus that receives bodily waste or wastewater from plumbing fixtures. Septage does not include sewage sludge from municipal or community sewage treatment plants.

"Septic tank" means a watertight, covered receptacle designed for primary treatment of wastewater and constructed to: 1. Receive wastewater discharged from a building; 2. Separate settleable and floating solids from the liquid; 3. Digest organic matter by anaerobic bacterial action; 4. Store undigested solids; and 5. Clarify wastewater for further treatment with final subsurface discharge.

"Silt" means a soil particle; this term also refers to a type of soil texture. As a soil particle, silt consists of individual rock or mineral particles in soils having diameters ranging from between 0.05 and 0.002 mm. As a soil texture, silt is soil that is comprised as approximately 80 percent or more silt particles and not more than 12 percent clay particles using the USDA soil classification system.

"Site" means the location of the OWTS and, where applicable, a reserve dispersal area capable of disposing of 100% of the design flow from all sources the OWTS is intended to serve.

"Site evaluation" means an assessment of the characteristics of the site enough to determine its suitability for an OWTS to meet the requirements of this Policy.

"Soil" means the naturally occurring body of porous mineral and organic materials on the land surface, which is composed of unconsolidated materials, including sand-sized, silt-sized, and clay-sized particles mixed with varying amounts of larger fragments and organic material. The various combinations of particles differentiate specific soil textures identified in the soil textural triangle developed by the United States Department of Agriculture (USDA) as found in Soil Survey Staff, USDA; Soil Survey Manual, Handbook 18, U.S. Government Printing Office, Washington, DC, 1993, p. 138. For the purposes of this Policy, soil shall contain earthen material of particles smaller than 0.08 inches (2 mm) in size.

"Soil texture" means the soil class that describes the relative amount of sand, clay, silt and combinations thereof as defined by the classes of the soil textural triangle developed by the USDA (referenced in the definition above)

"State Water Board" is the State Water Resources Control Board.

"State Small Water System" means a water system regulated by the State Water Resources Control Board, Division of Drinking Water pursuant to §116275(n) of the California Health and Safety Code.

"Substandard system" means any existing OWTS that does not conform to the accepted requirements related to system sizing, setbacks, groundwater separation, or allowable cover.

"Supplemental treatment system" means 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.

"System evaluation" means an expression of professional opinion stating that an existing on-site wastewater treatment system, wastewater holding tank, or vault privy is constructed and operating in compliance with the standards set forth in this LAMP. Evaluations shall be performed by a licensed installer or other individual (qualified service provider) approved by the Environmental Health Department and shall not constitute a warranty or guarantee either expressed or implied.

"TMDL" is the acronym for "total maximum daily load." Section 303(d)(1) of the Clean Water Act requires each State to establish a TMDL for each impaired water body to address the pollutant(s) causing the impairment. In California, TMDLs are usually adopted as Basin Plan amendments and contain

implementation plans detailing how water quality standards will be attained.

"Waste discharge requirements" or **"WDR"** means an operation and discharge permit issued for the discharge of waste pursuant to Section 13260 of the California Water Code.

Chapter 3
Lassen County OWTS Background (OWTS Policy 9.1 and 9.2)

Existing Septic System Practices

Since 1981, onsite sewage disposal systems in Lassen County have been regulated by the County Public Health Department, Environmental Health Division (EHD). Prior to that, the Lassen County Department of Planning and Building Services regulated onsite systems.

Lassen County regulations for onsite sewage disposal systems are contained in Chapter 12 of the County Code. These regulations set forth specific requirements related to (a) adoption of the Unified Plumbing Code; (b) requiring connection to public sewers when available; (c) minimum lot size requirements; and (c) variance procedures. Standards pertaining to system sizing and construction are contained in the California (Uniform) Plumbing Code, and the *United States Manual of Septic Tank Practices,* as well as the Basin Plan guidelines and Memorandums of Understanding (MOU). Additional requirements for onsite systems in Lassen County may be adopted as part of Community Plans or as project-specific mitigation measures or conditions applied to development proposals.

Septic System Usage in Lassen County

There are an estimated 8,500 properties in unincorporated areas with approximately 6,200 (73% of 8,500) served by septic systems, plus additional unknown parcels within sewer districts that also have septic systems. Approximately one-third of the entire county is served by OWTS.

Permit Files

One of the main sources of septic system information is County permit files. Since 1981, permanent septic system permit files have been maintained by the EHD in the office in Susanville. Prior to that, permits were issued and maintained by the Lassen County Department of Planning and Building Services. There is permit information on file with the Health Department for the majority of the septic systems in the County.

A review of permit files was completed. From this data it was determined that permits issued over the past 10 years included 690 total permits, 311 new construction, 379 modifications, repairs, abandonment, and tank only installations for community STEP systems. This is an annual average of 69 total permits, 31 new constructions and 38 modification, repair, abandonment and tank only permits. The great majority of systems are standard leach line systems. 38 modification/repair permits per year would represent a failure rate of about 0.6 percent of the estimated total 6,200 systems. Since the 2008 financial recession, EHD issues, on average, approximately 11 new and 35 replacement/repair OWTS Permits.

Complaint Files

The EHD maintains records of complaints that are received about various public health or sanitation matters. Septic system surfacing and nuisance odor problems can be a complaint issue. During the period of 2006 through 2016, there were a total of 11 sewage complaints with 5 related to septic systems.

OWTS Inspection

Previously Lassen County EHD inspected OWTS for bank mortgage transactions. This practice was discontinued by County resolution so no further information can be gleaned from that practice. That data was not compiled and is only filed in the appropriate Assessor Parcel Number property file. However, a few systems in failed or failing conditions have been identified, while the great majority have been identified to be in satisfactory operating condition. A few have had to have minor repairs, such as sanitary T's, lids, removal of roots, or the like.

As a requirement of this LAMP, for new owners to obtain a permit for continued uses of their OWTS, where an inspection was performed for a sale of a property, a copy of the inspection report must be supplied to EHD.

Surface Waters

Lassen County contains 5 principal watersheds: Pitt River, Hamilton Branch/Feather River, Susan River, Willow Creek and Long Valley Creek. Susan River, Willow Creek and Long Valley all flow into the Honey Lake enclosed basin. Eagle Lake and Madeline Plains represent two larger enclosed basins with no major perennial streams flowing into them. There are several other smaller enclosed basin watersheds. Hamilton Branch/Feather River and Pitt River eventually flow into the Sacramento River. There are other smaller associated streams to these watersheds. Agricultural water is the primary source of surface water usage. The surface waters within Lassen County are subject to water quality objectives set in both the LRWQCB's and the CVWQCB's Basin Plans.

Surface Water Quality Impacts

There have been no comprehensive water quality sampling studies directed specifically at septic system impacts to surface waters within the County, and there are no water bodies identified in Attachment 2 of the State OWTS Policy as impaired for nutrients and/or pathogens suspected impacted by OWTS.

Groundwaters

Groundwater basins pretty much coincide with portions of the surface watersheds listed above. There are areas within and between these basins that do not have well defined groundwater basins or aquifers where groundwater is found locally within fracture zones of bedrock and similar conditions. Overall, groundwater supplies are sufficient and provide a great majority of Lassen County's residential, commercial, industrial, and agricultural water.

In the LRWQCB's Basin Plan, a water quality objective for Honey Lake Valley Basin exists to not alter the taste or odor the groundwater.

Groundwater Quality Impacts

The Septic System evaluation for Lassen County did not include any field investigation or testing of groundwater quality. General knowledge of private and public water system testing throughout the county have not indicated any suspected or known areas of groundwater contamination from OWTS within the

County. A few wells in the Johnstonville area have shown elevated levels of nitrates. The source of these nitrates has not yet been determined but is assumed to be a combination of relatively shallow wells, proximity to an open irrigation ditch, and surrounding agriculture. A relatively high density of residences with OWTS could possibly be a contributor.

Local Problem Areas

The LRWQCB's Basin Plan prohibits the discharge of waste from leaching or percolation systems within the Cady Springs Area. Additionally, the Basin Plan prohibits the new discharge of waste within the Eagle Drainage Hydrologic Area, including: the Spalding Tract, Stones-Bengard subdivisions, and Eagle's Nest Tract.

No local problem areas associated with OWTS impacts specifically have been identified in Lassen County. However, some areas have unique problems for on-site systems and require special attention in siting and designing OWTS. These include Cady Springs area (area above City of Susanville's spring water source), Stones and Spaulding areas (Eagle Lake Basin), Madeline Plains (seasonal flooding and some areas with hardpan), Lake Forest Subdivision (small lots, density), Leavitt lake (some areas with seasonal groundwater), and Clear Creek (high ground water surface waters), Johnstonville (high nitrates), and Doyle (dense development with individual wells and OWTS). Qualified Professionals are required to evaluate and design OWTS in these areas.

Projected Onsite Wastewater Demand

Lassen County is a very rural county with nearly 34,000 people. Nearly one-half the population is within the City of Susanville, the only incorporated city in the County and the County seat. The City of Susanville is serviced by a public community sewage disposal system. Population growth has been much below state and national averages. Since 2000, Lassen County has had a reduction of 1.4 percent in its population as of 2014. In that same time period, California has had an increase of 12.39 percent, and the US an increase of 11.61 percent. Lassen County's growth is among the lowest of California Counties.

Many of the larger small unincorporated communities are serviced by community sewage disposal systems. It is estimated that approximately 1/3 of the County population is serviced by individual OWTS's. About 73% of the unincorporated area is serviced by OWTS's.

State law requires that all cities and counties adopt a comprehensive, long-term general plan that outlines physical development of the county or city. The general plan consists of several mandated elements that cover a local jurisdiction's entire planning area so that it can adequately address the broad range of issues associated with the city or county's development. One of the mandated elements is the Housing Element. The Housing Element of the General or Comprehensive Plan guides the determination of housing needs and establishes policy that facilitates the development of housing for all economic segments in the County. The California Department of Housing & Community Development requires that the Housing Element be updated every 8 years.

Using these criteria as a guideline and historical data, this LAMP includes a good faith effort to make a 10-

year projection of future OWTS demand. While these are linear projections, the actual numbers could vary significantly as a result of economic conditions and or regulatory changes.

Using data obtained from the EHD, during the years from 2006-2015, there were 690 applications to construct OWTS. This equates to an average 69 applications/year. Only 311, or 31 per year, were for construction of new systems.

It is reasonable to assume that permits for approximately 31 new OWTS will be approved in any given year in the future. Furthermore, extrapolating this figure out over a ten-year period, it is reasonable to assume that approximately 310 new OWTS will be constructed over the course of the next 10 years. This represents an increase of approximately 5% in the total number of OWTS while the percentage of residents that use an OWTS will remain at about 36% (73% of the unincorporated area). The increase in the number of OWTS may be offset by properties that connect to sewer as it becomes available and abandon existing onsite systems.

This number is in general conformity with the Housing Element of the County's Comprehensive Plan. The Housing Element predicted an unincorporated housing unit growth of 40 per year. If 73% of those are served by individual OWTS's, that represents approximately 29 new septic systems per year, or 290 over the next 10 years.

Land Development and Subdivisions

Land developments and subdivisions consisting of less than one hundred lots may be processed entirely by the health officer. Tentative maps for land developments or subdivisions involving five or more lots shall be transmitted to the Regional Board or the health officer along with sufficient information to determine that the proposed subdivision meets the requirements of this chapter. The Regional Board or the health officer may require a maintenance entity, if potential water quality or public health problems are anticipated. Tentative maps for subdivisions containing one hundred lots or more shall be transmitted to the Regional Board. The map shall be accompanied by a Report of Waste Discharge and sufficient information to demonstrate that the proposed subdivision will meet the requirements of this chapter. A maintenance entity may be required prior to any discharge of waste.

Chapter 4
Data Collection Reporting and Notifications

As a condition of EHD oversight of OWTS within Lassen County, EHD has certain responsibilities related to data collection and reporting to the Lahontan and Central Valley Regional Water Quality Control Boards (Regional Boards) as well as in some instances to the owners of water systems and the State Water Resources Control Board Division of Drinking Water (DDW). This Chapter will detail the data that must be collected and the procedure for reporting to the Regional Boards and notifications to owners of water systems and SWRCB.

Reporting to the Regional Boards (OWTS Policy 3.3 & 9.3.1)

On an annual basis, EHD will collect data for and report in tabular spreadsheet format the following information. A copy of the report will be provided to both the Regional Boards by February 1.

- The number and location of complaints pertaining to OWTS operation and maintenance, and identification of those which were investigated and how they were resolved;
- The applications and registrations issued as part of the local septic tank cleaning registration program pursuant to Section 117400 et seq. of the California Health and Safety Code, and Chapter 9 of this LAMP;
- The number, location, and description of permits issued for new and replacement OWTS and which Tier the permit was issued. The reported information should include the parcel size (square-feet) and the design sewage flow rate (gallons per day);
- The number, location and description of permits issued for OWTS where a variance from the approved LAMP was granted. The reported information should include the parcel size (square-feet) and the design sewage flow rate (gallons per day);
- The number of existing OWTS known and regulated by the County.

The annual report will include a summary of whether any further actions are warranted to protect water quality or public health.

Water Quality Assessment Program (Water Quality Monitoring) (OWTS Policy 9.3.2 & 9.3.3)

EHD must maintain a water quality assessment program to determine the general operation status of OWTS and to evaluate the impact of OWTS discharges and assess the extent to which groundwater and local surface water quality may be adversely impacted. The assessment program will include monitoring and analysis of water quality data, review of complaints, failures and OWTS inspections. The water quality data can be obtained from the flowing sources:

a. Random well samples,
b. Well samples taken to establish a well as a potable source,
c. Routine real estate transfer samples,

d. Routine water samples taken by Community Water Systems and State Small Water Systems and food facility water systems tested by EHD for bacterial contamination and tested by the operator for nitrate and nitrite.
e. Data from the Groundwater Ambient Monitoring and Assessment and Geotracker databases, and
f. Any other sampling data deemed relevant or necessary for the protection of ground/surface water supplies.

A summary of the data shall be submitted on an annual basis on or before February 1st. An evaluation of the monitoring program and an assessment of whether water quality is being impacted by OWTS shall be performed every 5 years. The first report will commence one year after approval of the LAMP. In areas where densities are greater than one OWTS per acre, Lassen County will monitor water well data available to evaluate nitrate and pathogen transport toward receptor wells. For communities that have OWTS more densely spaced than tier-one criteria, Lassen County will track the number of parcels already developed and the number of undeveloped parcels approved for development during the last five years.

Permit Records (OWTS Policy 3.4)

The EHD shall retain permanent records of all applications and permits for OWTS within the county. The records for each permit shall reference the Tier under which the permit was issued.

Notifications to Owners of Water Systems and DDW (OWTS Policy 3.5)

Existing or proposed OWTS in close proximity to public water wells and surface water drinking water supplies have potential to cause an impact on the water quality from that water source; the owner of that system, or DDW if the owner of the system cannot be identified, will be notified under the following conditions:

1. Prior to issuance of a permit to install a new or replacement OWTS that is within a horizontal sanitary setback to the public well; or within 1,200 feet of an intake point for a surface water treatment plant for drinking water, in the drainage catchment in which the intake point is located, or located such that it may impact water quality at the intake point, to allow the water system owner to provide comments to EHD. Notification will be done electronically or in writing by EHD with a copy of the permit application that includes:
    a. A topographical plot plan for the parcel showing the OWTS components, property boundaries, proposed structures, physical address, and name of property owner.
    b. The estimated wastewater flows, intended use of proposed structure generating the wastewater, soil data, and estimated depth to seasonally saturated soils.
    c. An advisement that the public water system owner or SWRCB shall have 15 days from receipt of the permit application to provide recommendations and comments to EHD.
2. Lassen County shall notify the owner of a public well (or water intake) and the DDW as soon as is practicable, but not later than 72 hours, upon verification of a major failure, as defined in OWTS

Policy 11.1 and 11.2 and within setbacks in Policy sections 7.5.6 through 7.5.8. Under these OWTS Policy sections, OWTS would no longer meet the primary purpose of protecting public health and require major repair of OWTS components within:

a. 150 feet from a public water well where the depth of the effluent dispersal system does not exceed 10 feet (Policy 7.5.6);
b. Where the effluent dispersal system is within 1,200 feet from a public water systems' surface water intake point, within the catchment of the drainage, and located such that it may impact water quality at the intake point such as upstream of the intake point for flowing water bodies, the dispersal system shall be no less than 400 feet from the high water mark of the reservoir, lake or flowing water body (Policy 7.5.7);
c. Where the effluent dispersal system is located more than 1,200 feet but less than 2,500 feet from a public water systems' surface water intake point, within the catchment of the drainage, and located such that it may impact water quality at the intake point such as upstream of the intake point for flowing water bodies, the dispersal system shall be no less than 200 feet from the high water mark of the reservoir, lake or flowing water body (Policy 7.5.8);

Chapter 5
Not Authorized in LAMP (OWTS Policy 9.4)

EHD's oversight of OWTS is limited to those systems as defined in this LAMP. Limitations exist for the use of OWTS related to the amount and type of wastewater flows that will be generated, types of systems, availability of public sewer and setbacks to public water supplies. The following are not allowed to be authorized by EHD and any such system or deviations can only be approved by the RWQCB:

1. The discharge of waste from leaching or percolation systems within the Cady Springs Area, as prohibited by the LRWQCB's Basin Plan.
2. The new discharge of waste within the Spalding Tract and the Stones-Bengard subdivisions, as prohibited by the LRWQCB's Basin Plan.
3. The discharge of wastes from septic systems within the Eagle's Nest Tract for more than a five-consecutive-month period each calendar year, as prohibited by the LRWQCB's Basin Plan.
4. The discharge of wastes containing nutrients from any subsurface disposal system on a lot with an elevation of less than 5,130 feet within the Eagle Drainage Hydrologic Area, as prohibited by the LRWQCB's Basin Plan.
5. The discharge of waste within the Eagle Drainage Hydrologic Area that exceeds one single family dwelling equivalent (250 gpd) per 20-acres, as prohibited in the LRWQCB's Basin Plan.
6. Cesspools of any kind or size.
7. OWTS receiving a projected flow over 10,000 gallons per day.
8. OWTS receiving a projected flow over 3,500 gallons per day must either utilize a supplemental treatment system certified by the National Sanitation Foundation (NSF) or a third party tester as capable of achieving 50 percent total nitrogen reduction when comparing the 30-day average influent to the 30-day average effluent; or submit an evaluation to the County EHD completed by a Qualified Professional that determines whether or not the discharge from the OWTS will adversely affect groundwater quality.
9. OWTS that utilize any form of effluent disposal that discharges on or above the post installation ground surface such as sprinklers, exposed drip lines, free-surface wetlands, or a pond.
10. Slopes greater than 30 percent without a slope stability report approved by a registered professional.
11. Decreased leaching area for International Associate of Plumbing and Mechanical Officials (IAPMO) certified chamber dispersal systems using a multiplier less than 0.70.
12. OWTS utilizing supplemental treatment without requirements for periodic monitoring or inspections.
13. OWTS dedicated to receiving significant amounts of wastes dumped from RV holding tanks.
14. Separation of the bottom of dispersal system to groundwater less than 2 feet, except for vertical seepage pits, which shall not be less than 10 feet.
15. Installation of new or replacement OWTS where public sewer is available. Public sewer availability is defined as follows:

a. The property on which the structure is located abuts a public sewer.
b. The property is within the boundaries of the sewer district or annexation has been approved by the sewer district.
c. A waiver of the connection to sewer can be considered where such sewer is located more than 200 feet from the building or plumbing stub out, the connection fees and construction costs are greater than twice the total cost of the OWTS and an OWTS can be installed that will meet the minimum requirements of this LAMP and not affect groundwater or surface water to a degree that makes it unfit for drinking or other uses.

16. Except as provided for in Item 18 and 19, new or replacement OWTS with minimum horizontal setbacks less than any of the following:
    a. 150 feet from a public water well where the depth of the effluent dispersal system does not exceed 10 feet in depth.
    b. 200 feet from a public water well where the depth of the effluent dispersal system exceeds 10 feet in depth.
    c. Where the effluent dispersal system is within 600 feet of a public water well and exceeds 20 feet in depth, the horizontal setback required to achieve a two-year travel time for microbiological contaminants shall be evaluated by a Qualified Professional. In no case shall the setback be less than 200 feet.
    d. Where the effluent dispersal system is within 1,200 feet from a public water system's surface water intake point, within the catchment of the drainage, and located such that it may impact water quality at the intake point such as upstream of the intake point for flowing water bodies, the dispersal system shall be no less than 400 feet from the high water mark of the reservoir, lake or flowing water body.
    e. Where the effluent dispersal system is located more than 1,200 feet but less than 2,500 feet from a public water system's surface water intake point, within the catchment of the drainage, and located such that it may impact water quality at the intake point such as upstream of the intake point for flowing water bodies, the dispersal system shall be no less than 200 feet from the high water mark of the reservoir, lake or flowing water body.
17. For replacement OWTS that do not meet the horizontal separation requirements in Item 16 above, the replacement OWTS shall meet the horizontal separation to the greatest extent practicable. In such case, the replacement OWTS shall utilize supplemental treatment for both nitrogen and pathogens (to standards in Policy sections 10.9 and 10.10) 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.
18. For new OWTS, installed on parcels of record existing before May 13, 2013 which is the effective date of the State's OWTS Policy, that cannot meet the horizontal separation requirements in Item 16 above, 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 of the State's OWTS Policy and any other mitigation measures prescribed by EHD.

Chapter 6
Requirements for Existing OWTS (Tier 0)

Existing Functioning Onsite Wastewater Treatment Systems

Consistent with the criteria outlined in Tier 0 of the State Policy, systems that are functioning properly will not be affected by this LAMP for as long for as they continue to do so. Nevertheless, regular inspection and maintenance is necessary to ensure that an OWTS continues to operate satisfactorily and to extend the life of the system. OWTS that fail will be repaired consistent with the criteria outlined in Tier 4 of the Policy and Chapter 11 of this LAMP.

Existing functioning OWTS are eligible for coverage under Tier 0 of this LAMP if they meet the following requirements:

- Projected flow of 10,000 gpd or less,
- Receive only domestic wastewater flow from residential or commercial buildings, or high-strength wastewater from commercial food service buildings that does not exceed 900 mg/L BOD and has a properly sized and function oil/grease interceptor,
- Continue to comply with any previously imposed permitting conditions (i.e., Lassen County Code),
- Do not have prohibited conditions outlined in Chapter 5,
- Do not require supplemental treatment under Tier 3,
- Do not require corrective action under Tier 4, and
- Do no consist of a cesspool as a means of wastewater disposal.

The RWQCB and/or Lassen County will deny OWTS coverage under Tier 0 if the OWTS is not in compliance with the aforesaid requirements. Additionally, the OWTS may be denied coverage if the OWTS is unable to adequately protect water quality of the water of the State, as determined by the RWQCB. Existing OWTS currently under WDRs or individual WDRs will remain under those orders until notified in writing by the RWQCV that they are covered under this LAMP.

Onsite Wastewater Treatment System Repairs/Upgrades

Some repairs/upgrades will not require obtaining an OWTS Permit from EHD. Those include:

- Replacement of piping/plumbing to the tank
- Replacement or repairs to risers
- Replacement of sanitary T's within the tanks

Onsite Wastewater Treatment System Evaluation/Modification

Existing functioning OWTS that would otherwise be expected to continue to function properly may become overtaxed when homes are remodeled or expanded in a manner that increases the sewage flow or changes

the characteristics of the sewage generated. When a building remodel will increase the flow, the OWTS shall be evaluated by a Registered Professional to determine if the anticipated new flow can be received, treated, and disposed of properly. An example of a change that would result in an increased flow to the system is an addition of a bedroom, bathroom, or laundry room. Additionally, improvements on a property that could potentially intrude upon the physical location of the OWTS and the expansion area for the dispersal system would trigger the need for review.

The determination for the need for a system modification is made as part of an evaluation of the existing system by EHD. As part of the evaluation, EHD reviews the proposed changes or project, any EHD records of the existing system, as well as any additional information/data provided by the applicant. If it is concluded that there is no impact or that the existing system is adequate, no modification is required.

Accessory Dwelling Units (ADUs) proposed to be added to existing developments utilizing OWTS will be reviewed for approval by EHD. To add an ADU to an existing, installed OWTS, the system must be verified by a Qualified Professional to be adequately designed and sized, and meet all applicable requirements provided here in this LAMP, including the minimum lot size requirements and Equivalent Dwelling Units (EDU). If a new OWTS is proposed in addition with an ADU or to accommodate an ADU, the system will be treated as a new development and must meet all the requirements provided herein, including protection of groundwater.

Chapter 7

Onsite Wastewater Treatment System Permitting Process and Siting (OWTS Policy 7.0 and 9.1)

This Chapter describes how OWTS are reviewed and permits issued in Lassen County. The document also summarizes key siting criteria for these systems.

System Design Considerations

The most common type of OWTS found in Lassen County consists of a septic tank connected to leach lines. Variations of this system may include a septic tank connected to a leach bed. In some applications, the disposal field is at a higher elevation than the building site. In this instance, a pump-system is used to deliver the sewage to a standard disposal field where it is distributed by gravity flow. All these examples would be considered a conventional OWTS because no further sewage treatment is performed between the septic tank and the disposal field. In all cases, the sewage effluent is discharged below the ground surface, and is digested by bacteria in unsaturated soil zones for treatment of the sewage underground. These systems are designed to operate in all weather conditions with minimal maintenance, other than periodic septic tank pumping to remove sludge from the septic tank.

In addition to conventional OWTS, the County also allows the use of engineered or OWTS with supplemental treatment. These systems are generally used for those sites that cannot support a conventional OWTS due to site specific constraints, such as shallow groundwater, poor soils, or inadequate parcel size. An Engineered system means and OWTS that utilizes one or more special design features, such as pressure distribution or mound dispersal that addresses site specific characteristics that are not suitable for a conventional system (leach lines). A supplemental treatment system means any OWTS that is designed to perform additional wastewater treatment to meet a predetermined performance level prior to discharge.

The size and type of OWTS needed for a building project will be a function of the following factors:

Soil Permeability:	Permeability determines the degree to which soil can accept sewage discharge over a period of time. Permeability is measured by percolation rate, in minutes per inch (MPI).
Unsaturated Soil Interval:	The distances between the bottom of the OWTS dispersal field and the highest anticipated groundwater level or the shallowest impervious subsurface layer at a site.
Peak Daily Flow:	The anticipated peak sewage flow, typically represented in gallons per day (gpd). The number of bedrooms, and/or persons for a proposed home may be used as an indicator of peak daily flow.

Net Usable Land Area: The area available that meets all setback requirements from structures, easements, watercourses, or other geologic limiting factors for the design of an OWTS.

In determining suitability for conventional, engineered, or supplemental treatment OWTS, and during future 5-year reviews of this LAMP and possible amendments, the County will also consider:

- Degree of vulnerability to pollution from OWTS due to hydrogeological conditions.
- High quality waters or other environmental conditions requiring enhanced protection from the effects of OWTS.
- Shallow soils requiring a dispersal system installation that is closer to ground surface than is standard.
- OWTS is located in area with high domestic well usage.
- Dispersal system is located in an area with fractured bedrock.
- Dispersal system is located in an area with poorly drained soils.
- Surface water is vulnerable to pollution from OWTS.
- Surface water within the watershed is listed as impaired for nitrogen or pathogens.
- OWTS is located within an area of high OWTS density.
- A parcel's size and its susceptibility to hydraulic mounding, organic or nitrogen loading, and whether there is sufficient area for OWTS expansion in case of failure.
- Geographic areas that are known to have multiple, existing OWTS predating any adopted standards of design and construction including cesspools.
- Geographic areas that are known to have multiple, existing OWTS located within either the pertinent setbacks listed in the Setbacks section below, or a setback that the local agencies finds is appropriate for that area.

These areas and conditions require that all onsite systems will be evaluated and designed by a Licensed Engineer. Some conditions may occur in limited or isolated circumstances and are evaluated on a case by case basis.

The Permit Process and Site Evaluation

The design and construction of an individual sewage disposal system must conform to the specifications of the Uniform Building Code, California Plumbing Code, as well as the OWTS Policy and this LAMP. Approval by the EHD is not a guarantee that the proposed installation will operate successfully, but merely that the system meets the minimum requirements. However, a system properly designed, installed, monitored and maintained should continue to operate throughout the life of the project, while protecting surface water, groundwater and the environment.

A completed permit application, including a to-scale plot plan, must be submitted to the EHD for any construction that requires the installation of a new, or the replacement/repair of an existing OWTS. Permitting shall be done in accordance with current Lassen County permitting procedures.

Certifications on Parcel and Subdivision Maps

This permitting process detailed herein must be completed even if a lot has previously been "certified" by the County for a septic system. Typically, any such prior certification will be noted in land use records (e.g., through a map or plan notation that the lot is "approved" or "certified" for a septic system, or in a separate County-issued "certificate of compliance"). These notes and certificates may also state conditions for an acceptable OWTS, such as a minimum required leach line length. No matter how detailed and final they appear to be, these map and plan notations and certificates of compliance are not OWTS permits, and they do not assure that an OWTS permit can be issued. Certifications, while not a guarantee that an OWTS permit will be issued, may still be relevant at many sites.

Steps in the Permitting Process

The EHD OWTS permitting process, set out in the steps below, is valid for new and existing lots, new and existing OWTS, and OWTS that have failed:

1. If a percolation test is needed, as determined by EHS, the applicant shall submit a percolation test and design (see Appendix I of this LAMP for current percolation test procedures) as performed by Qualified Professional with experience in onsite wastewater disposal. In some cases, at the discretion of the EHD, a new percolation test may not be needed at (e.g., if the EHD certified a prior test during the subdivision or lot split process, and more recent information raises no new concerns or issues). Percolation test design approvals from EHD are valid for one year. A percolation test may be required when:
    - No previous EHD approved percolation test was provided for the lot or parcel;
    - Grading or other soil disturbance has occurred in the proposed OWTS location;
    - The system is being shifted out of a previously tested area; or
    - An OWTS other than a system previously considered is being proposed.
2. Submit an application including:
    - An application form as provided by EHD,
    - A site plan of the proposed disposal system (3 copies) (see Plot Plan Section below)
3. Obtain onsite EHD approval of the proposed OWTS by providing soil profiles and flagged location of OWTS components. Additionally, a minimum of two (2) soil profiles is required for each OWTS system. The Qualified Professional must support their express conclusion that the highest anticipated groundwater elevation will not encroach upon the minimum separation (see groundwater separation requirements later in this Chapter) from the bottom of the proposed OWTS. The supporting data shall include, but not be limited to, data on the site's topography, soils, geology, basin studies, hydro geologic studies, and groundwater-monitoring data from the onsite and offsite observation wells through a normal rainfall year
4. Conduct any required percolation tests and submit the results to the EHD.
5. After review, if it appears likely that the proposed OWTS can be permitted at the site, EHD will provide an approval for the application and plot plan. The approved application form expires after one year.

EHD may require additional testing before providing this approval. In some cases, this additional testing will include depth to groundwater measurements during a normal average rainfall year, delaying EHD approval for a year or more. During periods of below normal average rainfall, or after periods of drought where there has not yet been sufficient ground water recharge, the absence of groundwater in soil profile excavations in areas where groundwater is suspect may not mean that approval to issue a septic tank permit can be granted. It may be necessary for EHD and the Qualified Professional to utilize alternative measures such as observation of the highest extent of soil mottling identified in the soil profiles or monitoring groundwater with the installation of piezometer(s) during wet weather periods. Monitoring, if required, must be conducted during the course of an average or above average annual rainfall year and during the months of the highest anticipated groundwater (usually April, May, June) (Wet Weather Testing). If groundwater has been documented to rise to a level that would violate the requirements of the RWQCB, a permit for the OWTS will not be issued.

If the EHD determines that a site is not suitable for a conventional system, the applicant may proceed with the process for an engineered or supplemental treatment system. In some cases, EHD may conclude that a conventional, engineered, or supplemental treatment OWTS cannot be safely used on the lot.

Because of the potential for delays or disapproval, EHD recommends that applicants submit an application, plot plan, and obtain an approval before incurring costs for detailed building plans and architectural fees. Furthermore, to assure that property development complies with all applicable codes, a septic system application must be approved by this department prior to approving a well application for the property.

6. If the requirements set out above have been met, a permit to construct the OWTS will be issued by the Lassen County Department of Planning and Building Services. Fees for the application and permit will be collected by the Planning and Building Services at this time. This permit expires after one year; however, if an owner submits to the EHD an application for a permit extension for a sewage disposal system while the permit is still valid, the health officer shall grant one extension of the permit for a period of one year for the sole purpose of allowing the owner to complete construction and obtain final approval of the system.
7. Once the permit to construct the OWTS has been obtained, the OWTS can be installed. 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 replacement OWTS in accordance with California Plumbing Code. A property owner may also install his/her own OWTS if the as-built diagram and the installation are inspected and approved by the RWQCB or EHD prior to any OWTS component being backfilled
8. The system must be inspected by EHD prior to the system being backfilled. If that inspection is satisfactory, EHD will approve the OWTS permit. Occasionally, EHD will hold final approval on the OWTS permit pending specific conditions to be met.

9. If a building permit relies on an OWTS, the Lassen County Department of Planning and Building Services will require EHD approval of a layout design and a valid permit to construct the OWTS before building plans are approved or a building permit is issued.
10. The Lassen County Department of Planning and Building Services typically requires that the OWTS inspection be completed and the OWTS permit be made final by EHD before occupancy permits are issued.

Changes in Design or Location

Any proposed changes in design or septic system location must be approved by the EHD prior to installation. The applicant must pay the permit fees at the Lassen County Department of Planning and Building Services prior to construction and installation of the system. No work shall begin until a permit has been obtained. If any unexpected problems occur during the installation, consult with EHD for advice. Any engineered or supplemental treatment OWTS (defined in next Chapter) must be designed by a Qualified Professional and submitted for approval. While the permitting process will be subject to the requirements detailed above in the *Permitting Process* section, the following inspections by the EHD will be required and shall be called for by the person or firm constructing the disposal system:

1. An initial inspection for site approval.
2. The final inspection shall be made when the complete system has been installed, but prior to any backfilling. Final inspection must be done before the premises can be occupied.
3. An inspection at the completion of the excavation for the septic tank and drain field, and before actual installation of the facilities may be required.

The responsibility for the satisfactory operation of the sewage disposal system rests with the property owner. The sewage must be kept underground. In the event of a sewage system failure the property owner is solely responsible for the cleanup and repair of the system.

Special Conditions

Certain conditions such as building in a flood plain, high ground water, less permeable soils (percolation rates slower than 60 MPI), limited parcel size, or excessive rock may necessitate that the septic system be designed by a Qualified Professional. NOTE: Use of an engineered or supplemental treatment OWTS does not guarantee EHD acceptance or approval of the OWTS design submitted. Some existing properties may be unsuitable for the use of individual onsite sewage disposal systems for a variety of reasons.

The Plot Plan

A plot plan of the proposed building construction and OWTS is required. This drawing should be prepared to scale on 8.5” x 11” or larger size paper. While preparing the plot plan, consider all required setbacks (see Setbacks section below).

The plot plan shall contain as much of the following information as can be determined:

- Site Address;

- Tax Assessor's Parcel Number;
- Vicinity Map, Scale, North arrow;
- Property Lines and lot dimensions;
- Roads adjoining property (and names of same);
- General slope of the area indicating by percent slope and direction of fall;
- Dimensional outlines and locations of all existing or proposed improvements, including: buildings, decks, patios, driveways, walks, water sources, etc.;
- Proposed OWTS design detail (location of proposed and alternate OWTS components, and reserve locations, including: septic tank, leach field, house sewer outlet, cleanouts, etc.);
- Proposed grading with 4:1 setback from cut bank shown along with any impacts to the site and/or adjacent property;
- Location of any existing tree to remain in place which may affect the location of the septic tank or leaching trench;
- All known, recorded easements on or within 20 feet of lot boundaries (open-space, utility, road, waterline, etc.);
- Location of all public waterlines on or within 20 feet of property lines;
- Location of any streams, ponds, irrigation ditches, or drainage channels within 100 feet of the proposed OWTS;
- Location of all existing or proposed wells, whether in use or abandoned, on or within 100 feet of the proposed OWTS;
- Location and nature of any existing sewage disposal system on the property; and
- Location of all soils testing information, such as deep soil profile excavations or percolation tests
- Information on the layout shall also include the OWTS certification and associated siting information found in one of the following documents: Recorded Map, Parcel Map, Division of Land Plat, Boundary Adjustment, Certificate of Compliance, approved Percolation Test or a Layout with a waiver of percolation testing.

Primary and Reserve Area Requirements

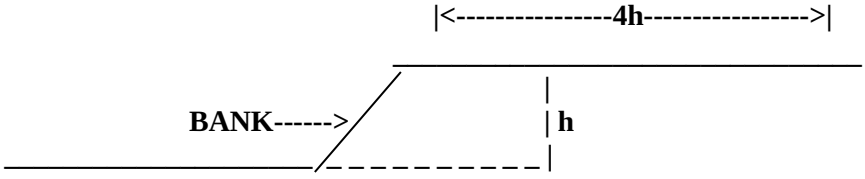
In addition to primary system design criteria, all OWTS design proposals, for both new construction and additions to an existing structure, must show a 100% reserve area for the active OWTS. Any parcels once created must meet current design standards with 100% replacement.

Setbacks

Setbacks in plot plans refer to the required horizontal spacing from components of the OWTS to structures, property lines, easements, watercourses, wells, or grading. The location of the septic system must be approved by the EHD and not be in an area in which there is high ground water, filled ground, a proposed improvement, an easement, or sloping ground in excess of 30 percent. Specific setback requirements will vary based on the type of system design and site conditions and are specified in Table 7-1 below.

Table 7-1: Required Setbacks for OWTS Components

Minimum Horizontal Distance [ft.] Required from:	Building Sewer	Leach Trench/Disposal System	Septic Tank
Building/Structure[1]	2	8	5
Property Line[4]			
-With Wells	25	50	50
-Without Wells	25	5	5
Private Wells/ Monitoring Wells[3]	50	100[5]	100[5]
Public Water Wells[3]	100	150[5]	150[5]
Lake, Reservoir, Wetlands (measured from high-water line)	50	200	200
Flowing Water Body	50	100	100
Water Line	1	5	5
Pressurized Public Water Main	10	25[2]	25[2]
Unstable Land Mass/Earth Slides	100	100	100
Ephemeral Streams	25	50	25
Cut Bank	10	4x height[6]	25
Distribution Box	-	5	5
Large Trees	-	10	10

1. Distance requirements shall include porches and steps, breezeways, roofed porte-cocheres, roofed patios, carports, covered walks, covered driveways, and similar structures or appurtenances.
2. Per California Code of Regulations Title 22 section 64572(f).
3. There are additional setback requirements for disposal systems included in Chapter 5, Item 16 with respect to drinking water wells and surface water intakes.
4. Any lot that is 30,000 square-feet (SF) or more in size must set all components of the OWTS back at least 50-feet from all property lines. Where feasible, this setback shall be implemented to prevent infringement of the adjacent parcel's development. In those cases where a parcel is too narrow to achieve full 50-foot setback, the setback shall be implemented to the greatest extent possible while continuing to adhere to the setbacks listed in Table 7-1, above. Half the width of a county road adjacent to the property may be used as part of the setback on that side.
5. For any system discharging 5,000 gpd or more, DDW shall be consulted to determine adequate setbacks.
6. 

Lot Size Requirements

The EHD has had a minimum lot size requirement of 1 acre, since 1981, for lots proposed to be created and developed based on the use of OWTS. In accordance with Lassen County Code Section 12.12.020 -Minimum Lot Size for the Installation of Private Sewage Systems, if the lot is to be served by a single connection well for the source of domestic water and the sewage disposal is by means of a septic tank system, then the lot size shall not be less than one acre. Further, no OWTS shall be installed on any parcel of land unless, in the opinion of the EHD, adequate area and soil conditions exist for the proper installation of the necessary septic tank system.

On Existing Parcels of Land

Any owner of a legally created parcel of land or a lot with less than one acre may apply for a variance; however, no variance shall be granted for parcels having a net area of less than fifteen thousand square feet. For developments proposing more than two Equivalent Dwelling Units (EDUs) per acre without prior approval by the applicable RWQCB. Existing legally created lots, which are less than one acre in size may be developed if the applicant has demonstrated to the EHD, through the variance process, that adequate area and on-site soil conditions exist for the proper installation of the OWTS.

In determining the adequate lot area for all parcels (both over and under an acre in size), development density shall not be exceeded. Development density is limited to two (2) Equivalent Dwelling Units (EDU) per acre. An EDU is defined as 250 gallons per day (gpd); therefore, the development density of 2 EDUs per acre is limited to 500 gpd per acre (or equivalent to a three-bedroom house per acre, if sizing by bedrooms). For those residences proposing greater than a three-bedroom house, the development density may be increased to 3 EDUs/acre (750 gpd/acre), or 5 bedroom/acre equivalent with supplemental treatment certification of NSF 245, or equivalent certification (see Chapter 8 for supplemental treatment OWTS). The EHD shall also consider the area required for the original septic tank installation and the area available for future replacement/reserve area of the system.

For those areas served by individual private wells as the water source and OWTS for waste discharge and/or those areas with historical evidence or possibility for nitrate MCL exceedance or pathogen contamination, the development density for conventional OWTS will be limited to 1.2 EDUs/acre (300 gpd/acre); this is equivalent to a two-bedroom single-family residence per acre. Alternatively, the development density can be increased to 2.4 EDUs/acre (600 gpd/acre), 4 bedrooms/acre equivalent, for OWTS with supplemental treatment certification of NSF 245, or equivalent certification (see Chapter 8 for supplemental treatment OWTS).

New Parcels and Subdivisions: The average density for any subdivision of property made pursuant to the Subdivision Map Act proposing to use OWTS shall not exceed the allowable density values (2 EDUs/acre) as specified in Lassen County Zoning Codes and herein this LAMP.

Those parcels where an individual water well and an OWTS are proposed, water quality sampling shall be done prior to the well's approval and installation. The testing shall characterize the suitability of the groundwater as a suitable, long-term, and healthy source by identifying, at a minimum, relevant constituents, including: bacteria indicators, general minerals and ions, metals, and organics. The State Water Board's Groundwater Ambient Monitoring and Assessment Program (GAMA) has recommendations for minimum water quality testing for minimum wells.

Soil and Percolation Test Requirements

Backhoe excavations and percolation tests are used to demonstrate that the dispersal site is located in an area of uniform soil and that no conditions exist which could adversely affect the performance of the system or result in groundwater degradation. While percolation testing shall be performed in accordance with the test procedures found in Appendix I of this LAMP, the following are the minimum soil and percolation testing requirements:

1. At least three percolation test holes at each dispersal system location must be provided to represent soil types at the depth of the proposed leach lines.
2. At least two backhoe excavations must extend to a depth of at least 8 feet, or to a depth that ensures there is the proper amount of separation of natural unsaturated, permeable soil between the bottom of the dispersal system and any bedrock, hard pan, or impermeable soil layer. See the next section for more information on groundwater separation requirements for various systems. The distinction between bedrock and soil is that soil is susceptible to extraction by pick and shovel. Rock fragment content of native soil surrounding the dispersal system shall not exceed 50 percent by volume for rock fragments sized as cobbles or larger and shall be estimated using either the point-count or line-intercept methods. Dispersal systems shall not be allowed in fill material, unless that material has been certified by a civil engineer to be appropriate for such use and that wastewater will not affect the fill or surface at the base of such material.
3. Additional backhoe excavations may be required to demonstrate uniformity of soil throughout the leach field area(s).
4. Leach line dispersal systems are limited to slopes of 30 percent or less unless the requirements under the section titled Leach Lines on Steep Slopes d later in the next Chapter are met.

Groundwater Separation Requirements for Onsite Wastewater Treatment Systems

Groundwater Separation

This section is to be used for determining groundwater levels when siting and designing OWTS with the purpose to:

- Protect the groundwater quality by ensuring proper treatment of the sewage effluent prior to its entering into the groundwater.
- Protect the public health from failing OWTS caused by high groundwater.

- Provide a methodology for the evaluation of potential building sites using OWTS with regards to maintaining minimum groundwater separation requirements with the use of an OWTS.

For conventional systems, the minimum depth to the anticipated highest level of groundwater below the bottom of the leaching trench, and the native soil depth immediately below the leaching trench, shall not be less than prescribed in Table 7-2. Leach line systems are limited to soils with percolation rates of 60 minutes per inch (MPI) or less, and more than 1 MPI. Percolation rates in excess of 60 MPI or faster than 1 MPI are unsuitable for the use of a conventional OWTS dispersal system; however, engineered or supplemental treatment systems may be used if permitted. For all engineered or supplemental treatment system the required separation between high level groundwater and disposal system is 2-feet minimum. Any seepage pit must maintain a minimum of 10-feet of separation from the bottom of the pit to the highest anticipated groundwater level.

Table 7-2: Required Minimum Depths from the Bottom of the Dispersal System to Groundwater for Conventional Systems

Percolation Rate	**Minimum Depth**
Percolation Rate < 1 MPI	Conventional OWTS Not Authorized. Engineered or Supplemental Treatment System only.
1 MPI≤ Percolation Rate <5 MPI	Twenty (20) feet or Engineered or Supplemental System
5 MPI≤ Percolation Rate ≤ 60 MPI	Five (5) feet
60 MPI < Percolation Rate ≤120 MPI	Conventional OWTS Not Authorized. Engineered or Supplemental Treatment System only.
Percolation Rate > 120 MPI	No OWTS Permitted.

Groundwater typically fluctuates seasonally depending on local geology and rainfall amounts. Groundwater levels fall in response to drought, well extraction, and rise in response to rainfall, and in some cases, increased irrigation, agriculture and residential development.

Experience has shown that there are instances where the absence of groundwater in a ten, fifteen or even twenty foot deep observation boring on a lot does not guarantee that groundwater will not rise to within five feet from the bottom of the proposed OWTS during periods of normal or above normal rainfall. In some cases, the only certain way to determine depth to high groundwater on a site is to observe the groundwater depth during or immediately after an above average rainfall season. If groundwater has been documented to rise to a level that would violate the requirements of the RWQCB, a permit for the OWTS will not be issued.

Soils testing data approved by Lassen County's EHD over 1 year old and performed by Qualified Professionals may be accepted on a case-by-case basis and will be valid in the use of the system design,

unless site conditions change. If a site review reveals any evidence of groundwater changes, including but not limited to; plant growth, ponding water, new information on adjacent lots or OWTS failures in the area, additional groundwater test soil profile excavations may be required. EHD staff will specify the depth and the locations of the additional test soil profile excavations in consultation with the project's Qualified Professional.

Chapter 8
Minimum OWTS Design and Construction Standards (Tier 2)

A Licensed General Engineering Contractor (Class A), General Building Contractor (Class B), Sanitation System Contractor (Specialty Class C42), or Plumbing Contractor (Specialty Class C-36) shall install all new OWTS and replacement 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 (Plumbing Code). A property owner may also install his/her own OWTS if the as-built diagram and the installation are inspected and approved by the EHD at a time when the OWTS is in an open condition (not covered by soil and exposed for inspection).

Septic Tanks

All conventional OWTS require the use of a septic tank to allow for the removal of solids in the wastewater prior to being discharged to the dispersal field. Engineered or supplemental OWTS also require a septic tank unless a settling chamber is a component of the treatment unit. This Chapter will provide the minimum design specifications and requirements for septic tanks.

1. Septic tanks must be certified by the IAPMO or stamped and certified by a California registered civil engineer as meeting the industry standards. All new or replacement septic tanks and new or replacement oil/grease interceptor tanks shall comply with the standards contained in the California Plumbing Code.
2. The tank shall be watertight and possess two chambers.
3. Septic tanks shall be certified by the manufacturer to allow for burial without being water filled to allow for routine maintenance or to be used as a holding tank as needed.
4. Septic tanks shall be installed per the manufacturer's instructions.
5. The bottom of the excavation for the tank shall extend into native or compacted soils to eliminate potential settling issues and shall be level.
6. Septic tank location must consider maintenance and pumping requirements including vehicle access; and distance and elevation lift to pumper truck.
7. Inlet tees must be uncapped and must extend at least 12 inches below the liquid level.
8. Outlet tees must be uncapped and must extend at least 12 inches below the liquid level.
9. The outlet elevation shall be between 2 and 6 inches lower than the inlet elevation to ensure proper fall without a significant loss of volume.
10. Septic tank to leaching trenches shall be a distance of at least 5 feet.
11. Installation of new septic tanks with greater than 6 inches of cover must have watertight risers to within 6 inches of finished grade. Risers and lids that are at or above grade must be watertight and adequately secured (require tools to be opened).
12. Septic tank risers must have a current IAPMO certification. The interior diameter of the riser shall be a minimum of eighteen (18) inches.

13. Septic tanks installed in areas of vehicular traffic must be certified to withstand the proposed loads or have an engineered traffic slab installed to accommodate the proposed loads.
14. Minimum septic tank size/volume is 1,000 gallons.
15. Septic tanks shall be sized according to anticipated wastewater flows from the structure(s) as specified in the California Plumbing Code. Commercial and Multiple Dwelling Units shall also be sized according to the design criteria specified in the California Plumbing Code. The following standard sizes shall apply to single family dwellings:

Table 8-1: Required Capacity of Septic Tanks

No. of Bedrooms[1]	Design Flow Rate [gpd]	Minimum Septic Tank Volume Required [gallons]
1 – 3	0 – 400	1,000
4	401 – 500	1,200
5-6	501 – 700	1,500
-	>700	1,125+(.75*design flow [gpd])

1. Each additional bedroom above 6, shall increase the volume of the septic tank by 150 gallons.

16. Minimum slope of the building sewer to the septic tank shall be ¼ inch per foot or alternative slope as allowed in the California Plumbing Code. A two way clean out shall be installed within 2 to 5 feet of the house. Additional clean outs shall be required at intervals not to exceed 100 feet in straight runs and where changes in alignment or grade occur.

Leach Line Systems

Leach lines systems are the primary means of effluent dispersal for the majority of OWTS within Lassen County and this Chapter will establish procedures for the design and construction of leach line dispersal systems. The amount and type of disposal field required will be determined by the EHD and will be based upon the percolation test data submitted by the applicant. The procedures are specific for leach lines and do not apply to other types of dispersal systems. No system shall be installed on filled ground unless the fill is designed, evaluated, and approved by a Licensed Civil Engineer. For leach lines on slopes exceeding 30% slope, refer to the Leach Lines on Steep Slopes section later in this Chapter.

Soil Cover Requirements

1. The maximum soil cover allowed over the top of the infiltrative surface is 48 inches, measured from the top of the leach rock/chamber/etc. to the ground surface.

2. The minimum cover required over the top of the infiltrative surface is 12 inches. Preferred depth of earth cover over leach lines is 18 inches.
3. Soil cover requirements must also conform to those allowed by the manufacturer of any gravel-less/chamber design.
4. The top of a new leaching trench shall be hand tamped (not by machine) and shall be over filled with 4 to 6 inches of earth to allow for settlement.

Dimensions

1. Leach lines are to be installed according to the permit specifications for location, length, width, and depth.
2. Leach lines will normally be 30-36 inches deep. Deep trenches (or seepage beds) will only be approved in limited situations.
3. Minimum spacing between trenches or leaching beds shall be not less than 4 feet plus 2 feet (610 mm) for each additional foot of depth in excess of 1 foot below the bottom of the drain line.
4. Leach lines shall be installed with a width of no less than 18 inches and no more than 36 inches. The standard width for residential systems in Lassen County is 36 inches.
5. Maximum length of any leach line shall be 100 feet, and all leach lines in a system must be of equal length.
6. A 100% reserve area shall be required for all leach line systems.

Materials and Construction Considerations

1. All piping and materials used in leach line systems including gravel-less/chamber systems must have UPC and IAPMO approval and must be approved by EHD prior to installation.
2. The standard size of chamber approved for use in Lassen County is twelve (12) inches high and thirty-four (34) to thirty-six (36) inches wide.
3. Leach lines that utilize gravel shall be filled with clean, washed leach line rock to a point at least 2 inches above the top of a 4-inch perforated pipe and shall have a minimum of 12 inches of gravel below the pipe. The rock shall be graded with rock size of ¾ of an inch to 2 ½ inches in size and shall be covered with straw, untreated building paper or a geotextile fabric prior to backfill to prevent the infiltration of soil into the rock. The ends of leach pipes must be capped.
4. Leach lines may not be placed under impermeable surfaces. Leach lines that are later covered by impermeable surfaces may not be considered as viable for purposes of determining primary and reserve area requirements.
5. Leach line trenches shall be installed with the trench bottom and materials used (perforated pipe, chambers) being level with a maximum fall of 3 inches per 100 feet.

DISTRIBUTION BOXES

Where two or more drain lines are installed, an approved distribution box of sufficient size to receive lateral lines shall be installed at the head of each disposal field. The distribution box outlets shall be level and the inlet shall be at least one inch above the outlets. Distribution boxes shall be designed to ensure

equal flow and shall be installed on a level concrete slab in natural or compacted soil. Five feet of natural or compact soil shall separate the distribution box from the leach trench.

Leach Lines on Steep Slopes

The following requirements must be met for the installation of leach line trenches on slopes exceeding 30 percent without necessitating the grading of terraces. The design parameters are applicable only to slopes exceeding 30 percent and are not intended to be used in any other situation.

1. The maximum slope allowed for leach line trenches is 40 percent.
2. All leach lines on steep slopes shall be installed in 5-foot-deep trenches with 12 inches of leach rock below the leach pipe or with approved chambers or other gravel-less system.
3. The design of disposal systems on steep slopes requires the experience and expertise to address conditions relative to soil, slope stability, and subsurface conditions which require professional judgment and technical knowledge. Designs for steep slope systems will only be approved when submitted by a Qualified Professional registered in the State of California.
4. Testing must provide data representative of the entire disposal area and demonstrate that conditions are uniform below the entire disposal area. The minimum testing required is:
    a. Six percolation tests at a depth equal to the proposed trench depth.
    b. Two percolation tests five feet below the proposed trench depth.
    c. Percolation testing must show rates of 60 minutes per inch or less.
    d. A minimum of two soil profile excavations to a depth of 10-feet, demonstrating uniform conditions throughout the disposal area below the proposed trench depth.
5. Design reports must include the following:
    a. Cross section(s) hillside soil profile(s).
    b. Detailed boring logs of all test holes and soil profile excavations.
    c. Scaled layouts and profiled designs based on accurate topography.
    d. Any grading proposed on the site in the disposal area.
    e. A signed, stamped slope stability report or statement from a Registered Qualified Professional.

Sizing

1. Maximum application rates (square feet per bedroom) for residential leach line systems shall be determined from stabilized percolation rate with sizing in accordance with Percolation Conversion Chart as provided in Table 8-2, or from Maximum Soil Application Rate (gallons per day per square foot) based on soil texture and structure determination as provided in Table 8-3.
2. No reduction for chamber dispersal systems will be allowed for new systems. The 0.70 Reduction may be considered on a case-by-case basis for replacement or repair.
3. Non-residential leach line systems shall be designed by a Qualified Professional and shall conform to the criteria in the California Plumbing Code for non-residential systems.

4. A conventional system shall be designed to receive all domestic sewage from the drainage system. No basement, floating or surface drainage, shall be permitted to enter any part of the system.

Table 8-2: Percolation Rate Conversion Chart

as Determined from Stabilized Percolation Rate

Required square feet per bedroom of leach area	
5 min/in = 125 sq.ft/bdrm	33 min/in = 260 sq.ft/bdrm
6 min/in = 130 sq.ft/bdrm	34 min/in = 265 sq.ft/bdrm
7 min/in = 140 sq.ft/bdrm	35 min/in = 270 sq.ft/bdrm
8 min/in = 150 sq.ft/bdrm	36 min/in = 275 sq.ft/bdrm
9 min/in = 160 sq.ft/bdrm	37 min/in = 275 sq.ft/bdrm
10 min/in = 165 sq.ft/bdrm	38 min/in = 280 sq.ft/bdrm
11 min/in = 170 sq.ft/bdrm	39 min/in = 280 sq.ft/bdrm
12 min/in = 175 sq.ft/bdrm	40 min/in = 285 sq.ft/bdrm
13 min/in = 180 sq.ft/bdrm	41 min/in = 285 sq.ft/bdrm
14 min/in = 185 sq.ft/bdrm	42 min/in = 290 sq.ft/bdrm
15 min/in = 190 sq.ft/bdrm	43 min/in = 290 sq.ft/bdrm
16 min/in = 195 sq.ft/bdrm	44 min/in = 300 sq.ft/bdrm
17 min/in = 200 sq.ft/bdrm	45 min/in = 300 sq.ft/bdrm
18 min/in = 205 sq.ft/bdrm	46 min/in = 300 sq.ft/bdrm
19 min/in = 210 sq.ft/bdrm	47 min/in = 305 sq.ft/bdrm
20 min/in = 215 sq.ft/bdrm	48 min/in = 305 sq.ft/bdrm
21 min/in = 220 sq.ft/bdrm	49 min/in = 310 sq.ft/bdrm
22 min/in = 220 sq.ft/bdrm	50 min/in = 315 sq.ft/bdrm
23 min/in = 225 sq.ft/bdrm	51 min/in = 315 sq.ft/bdrm
24 min/in = 230 sq.ft/bdrm	52 min/in = 320 sq.ft/bdrm
25 min/in = 230 sq.ft/bdrm	53 min/in = 320 sq.ft/bdrm
26 min/in = 235 sq.ft/bdrm	54 min/in = 320 sq.ft/bdrm
27 min/in = 240 sq.ft/bdrm	55 min/in = 325 sq.ft/bdrm
28 min/in = 245 sq.ft/bdrm	56 min/in = 325 sq.ft/bdrm
29 min/in = 245 sq.ft/bdrm	57 min/in = 325 sq.ft/bdrm
30 min/in = 250 sq.ft/bdrm	58 min/in = 330 sq.ft/bdrm
31 min/in = 255 sq.ft/bdrm	59 min/in = 330 sq.ft/bdrm
32 min/in = 255 sq.ft/bdrm	60 min/in = 330 sq.ft/bdrm

(Percolation Rate Conversion Chart –Based on from Sizing from *Manual of Septic Tank Practice*)

Table 8-3: Design Soil Application Rates

Soil Texture (per the USDA soil classification system)	Soil Structure Shape	Grade	Maximum Soil Application Rate (gallons per day per square foot)[1]
Coarse Sand, Sand, Loamy Coarse Sand, Loamy Sand	Single grain	Structureless	0.8
Fine Sand, Very Fine Sand, Loamy Fine Sand, Loamy Very Fine Sand	Single grain	Structureless	0.4
Coarse Sandy Loam, Sandy Loam	Massive	Structureless	0.2
	Platy	Weak	0.2
		Moderate, Strong	Prohibited
	Prismatic, Blocky, Granular	Weak	0.4
		Moderate, Strong	0.6
Fine Sandy Loam, Very Fine Sandy Loam	Massive	Structureless	0.2
	Platy	Weak, Moderate, Strong	Prohibited
	Prismatic, Blocky, Granular	Weak	0.2
		Moderate, Strong	0.4
Loam	Massive	Structureless	0.2
	Platy	Weak, Moderate, Strong	Prohibited
	Prismatic, Blocky, Granular	Weak	0.4
		Moderate, Strong	0.6
Silt Loam	Massive	Structureless	Prohibited
	Platy	Weak, Moderate, Strong	Prohibited
	Prismatic, Blocky, Granular	Weak	0.4
		Moderate, Strong	0.6
Sandy Clay Loam, Clay Loam, Silty Clay Loam	Massive	Structureless	Prohibited
	Platy	Weak, Moderate, Strong	Prohibited
	Prismatic, Blocky, Granular	Weak	0.2
		Moderate, Strong	0.4
Sandy Clay, Clay, or Silty Clay	Massive	Structureless	Prohibited
	Platy	Weak, Moderate, Strong	Prohibited
	Prismatic, Blocky, Granular	Weak	Prohibited
		Moderate, Strong	0.2
Source: USEPA Onsite Wastewater Treatment Systems Manual, February 2020			

[1]Soils listed as prohibited may be allowed under the authority of the Regional Water Board, or as allowed under an approved Local Agency Management Program per Tier 2

Leach Trenches

For leach line trenches in excess of one-foot, sidewall depth in excess of the first foot may be used towards the infiltrative area. This credit is given for the added absorption area provided in the deeper trenches and allows for a resultant decrease in length of trench required. This credit shall be given in accordance with Table 8-4.

Table 8-4: Length Percentage of Standard Leach Line for Deep Trenches

Depth of Gravel Below Pipe [inches]	18-inch Trench Width	24-inch Trench Width	36-inch Trench Width
18	64	66	71
24	54	57	62
30	47	50	55
36	41	44	50
42	37	40	45
Calculation: $Percent\ of\ length\ standard\ trench = \frac{w+2}{w+1+2d}$ Where: w = width of trench [ft] d = depth of gravel below pipe [ft]			
Source: *Manual of Septic Tank Practice, Table 3*			

Disposal Beds or Seepage Beds

Disposal beds or seepage beds may be used when lot size and/or setbacks prohibit installation of standard leach lines. Disposal beds or seepage beds are dispersal systems having trenches wider than 3 feet. Disposal bed construction is similar to standard leach lines except for sizing and spacing of lateral piping.

- Disposal beds will be sized with 1.5 times the infiltrative area calculated for leach lines (calculated by Table 8-1 or Table 8-2), utilizing bottom area only, no infiltrative area credit is given for the side walls.
- Distribution piping will be spaced not greater than 6 feet apart and not greater than 3 feet from the bed sidewall with distribution piping either capped at the ends or looped (interconnected) at the far end.
- The minimum separation from the bottom of the disposal/seepage bed to the highest anticipated level of groundwater shall be determined using Table 7-2.

Low Pressure Distribution (Pressure Dosed System)

When site conditions preclude the use of dispersal by gravity flow, effluent may be distributed to a dispersal field under pressure.

1. The pump chamber or tank shall meet industry accepted standards, have a capacity equal to six hours of peak flow or 375 gallons, whichever is greater.
2. Be equipped with an audible and visible high-water alarm.
3. There must be at least six (6) inches of soil cover over the distribution system.

Engineered or Supplemental Treatment Systems

Other OWTS systems (Engineered and Supplemental Treatment) may only be authorized for existing parcels and for repairs or replacements where siting and design limitations require mitigation. All such systems must be designed by a Qualified Professional.

Engineered Wastewater Treatment Systems

Engineered wastewater treatment systems (Engineered Systems) are OWTS utilizing dispersal fields consisting of components other than a conventional system, designed to address unfavorable site conditions such as high groundwater, impervious soil formations, unacceptable percolation rates, and disposal field size limitations. Examples include, but are not limited to: mound systems, at-grade systems, and sand filters. All Engineered OWTS's must be designed and installed according to the California Plumbing Code and manufacturer's suggestions.

Supplemental Treatment Systems

Supplemental Treatment Systems (STS) are 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 Wastewater Treatment Systems may be utilized to address conditions in 303 (d) list "Impaired Water Bodies" designated areas (see Tier 3).

The EHD must approve any proposed method of Supplemental Treatment prior to installation. All Supplemental Treatment systems must be tested and certified by an independent testing organization, such as NSF, to meet a predetermined level of treatment. Part of the testing must include an evaluation of the system's effectiveness in reducing Total Suspended Solids (TSS), Bio-chemical Oxygen Demand (BOD) and Total Nitrogen (TN). Any supplemental treatment system shall be listed by testing organization and treatment standard before being considered for permitting.

The treatment objectives dictated by the site limitations will determine which standard or standards may be applicable:

- For OWTS receiving a projected flow of 3,500 gpd or more, the system must either utilize a supplemental treatment system certified by NSF capable of achieving a 50-percent reduction in total nitrogen when comparing the 30-day average effluent to the 30-day average influent, or submit an evaluation by a Qualified Professional that determines whether or not the discharge from the OWTS will adversely impact groundwater quality.
- For OWTS that are in areas where elevated levels of nitrogen have been detected, the OWTS must be certified to achieve a 50-percent reduction in total nitrogen when comparing the 30-day average effluent to the 30-day average influent.
- For those communities/lots that cannot meet the minimum density requirements of one-acre minimum, or 2 EDUs per acre, the OWTS shall be certified to meet the minimum requirements of NSF 245.

- For those OWTS in situations where the minimum setbacks cannot be met (excluding water supply setback requirements set forth in the State Policy), or there are inadequate soils for the allowance of conventional systems, and no other impairing conditions such as high groundwater, supplemental treatment components of STS must be certified by the NSF to meet the minimum requirements of NSF 40.
- OWTS that cannot meet the setbacks required in Chapter 5, item 17, for proximity to public water supplies will need to utilize supplemental treatment for pathogens and nitrogen as required by §10.8 of the State Policy.

Because Supplemental Treatment is usually provided as a mitigation factor, it is essential that the treatment system receive regular inspection, maintenance and servicing by a qualified technician to ensure that it is operating as designed. Therefore, EHD requires that a maintenance agreement be signed and in place prior to the systems installation. This agreement is to remain in force for the life of the Supplemental Treatment system.

Supplemental Treatment OWTS owners shall be provided with an informational operation and maintenance document by the system designer or installer. This document shall provide the homeowner with clear and concise procedures to ensure operation and maintenance of the system and instructions for repair and/or replacement of critical items within 48 hours following failure.

Design Criteria for Engineered or Supplemental OWTS

1. Engineered or STS may only be authorized for existing parcels and for repairs or replacements where siting and design limitations require further mitigation.
2. All systems must be designed by a registered civil engineer or Qualified Professional in conformance with the California Plumbing Code.
3. All systems proposed within 2,500-feet of a public water supply (surface water or groundwater) must be submitted to DDW for review and comments prior to approval for permit and construction.
4. Treated effluent from all STS shall be discharged to a subsurface dispersal system consisting of leach lines, leach beds or pressurized dispersal systems.
5. Sizing for dispersal systems that utilize leach lines or leach beds shall follow the same requirements detailed herein this LAMP for conventional OWTS.
6. A minimum 2-foot separation between the bottom of the dispersal system to the highest anticipated level of groundwater is required for both Engineering and Supplemental OWTS
7. The STS shall be equipped with a visual and audible alarm.
8. The system designer shall provide the property owner with a design, operations, monitoring and maintenance manual fully describing all components of the system and the proper and necessary operations, monitoring and maintenance of all components.
9. To ensure that the system continues to function properly, it is to be inspected at least annually by a Qualified Inspector. Inspection reports shall be submitted to EHD detailing the findings of the inspection within thirty days, unless the system is determined to be failing, in which case, the EHD

will be notified within 48-hours of the inspection. This agreement is to remain in effect for the life of the Supplemental Treatment system.

10. For those systems designed to meet a predetermined level of effluent performance, a sample of each design constituent shall be sampled during the annual inspection to ensure continued performance is met. The results of the samples shall be submitted to EHD within 30-days of the inspection.

Special Permitting for Engineered or Supplemental Treatment Systems:

1. An application for a permit to construct an Engineered or a STS shall include:
    a. A report by a Qualified Professional knowledgeable in the proposed Engineered or STS that describes the proposed OWTS and the relevant physical conditions of the site, including all calculations, and
    b. All reports, calculations, and design documents must be accompanied with a valid California Professional Engineer's stamp and signature.
2. For the purpose of inspecting or monitoring any system, the EHD may enter any area of any property on which any system exists, without notice, during normal hours of operation, or based on reasonable cause to believe that there exists a condition related to the system that poses an imminent threat to public safety, health or welfare.
3. The EHD shall have the right to approve any consultants retained by the facility operator in connection with the management or operation of the on-site sewage facility. It is understood and agreed by and between the parties hereto that such right of approval shall in no way lessen, limit or otherwise affect the duties or obligations of the facility operator hereunder or the services to be performed by the EHD hereunder. Any changes or modifications to facility operator agreements or contracts shall be submitted to the county for review and compliance with the regulations contained herein.
4. Prior to final approval, if a STS is utilized, the property owner shall record at the Lassen County Clerk-Recorder's office, a notice stating that a supplemental treatment system has been installed on the property. This "Notice to Property Owner" shall run with the land and will serve as constructive notice to any and all future property owners that the property is served by an STS OWTS and is therefore subject to a contract for regular maintenance, monitoring, sampling and reporting requirements. A copy of the recorded document shall be provided to EHD.
5. Operating Permits will be required for all Engineered and STS OWTS. These permits will require notification, within time frames specified, of any failure or upset conditions with the permitted system. Additionally, EHD will require that an operations and maintenance plan be prepared for each system by the Qualified Professional designing the system. This document shall be provided to the property owner and will include (as will the EHD issued Operating Permit) procedures to ensure maintenance, repair, or replacement of failing critical items within 48 hours following discovery. To assist system owners in providing proper maintenance and repairs to their system and in reporting upset conditions, we will have available on our website a list of service providers, in addition to the

list of Qualified Professionals currently on our website. This will include 24-hour contact numbers when available.

Subsurface Drip Systems

Subsurface drip systems are a special category of pressure distribution. When site conditions warrant, a subsurface drip system may be utilized in lieu of a standard dispersal field.

All wastewater discharged to a drip system shall have supplemental treatment. The drip lines must be placed in native soil, as level as possible and parallel to elevation contours. Up to twelve inches of fill may be placed over the drip lines in order to meet the minimum cover requirements. The amount of soil cover may be reduced to six inches if the wastewater has been treated to a tertiary level.

Chapter 9

Septage Management (OWTS Policy 9.2.6)

Septage management is difficult in Lassen County. No local sewage treatment plants have the capacity or permits to accept the material. Therefore, all septage goes to one local drying facility in Westwood, or to out of County sewage treatment plants. Dried septage is taken to an approved landfill. If 10 percent of all septic systems in the county were pumped annually for a 10-year pumping cycle, which is probably not the case but would be desirable, the estimated septage generated would be about 744,000 gallons per year or 62,000 gallons per month. The County continues to pursue approved alternatives or additional resources for septage disposal.

Lassen County has a septage truck registration program as provided below:

Registration requirements for cleaning or disposal of the cleanings from septic tanks, chemical toilets, cesspools, holding tanks, and sewage seepage pits.

Tanks shall be of metal construction, welded or riveted, and shall be watertight and splash proof. The capacity in gallons shall be shown conspicuously on each side of the tank in letters at least four inches high.

Pumps shall be constructed to prevent leakage, spillage, or splashing. On all diaphragm or similar open pump types, a tight metal hood shall be provided over the pump.

Discharge gates or valves shall be leak proof and so constructed as to discharge their contents in a manner that will not create a nuisance. All inlets and outlets shall be provided with a cap to prevent dripping.

Adequate hoses shall be provided to pump contents from septic tanks or cesspools to truck tanks without spillage on surface of the ground. Hoses are to be cleaned on premises without any spillage of contents on the ground. A ¾ inch hose at least 50 feet long shall be carried with the equipment for cleaning purposes.

Racks for carrying equipment on the truck shall be provided. All parts of the truck and equipment shall be easily cleanable, with no pockets which can accumulate waste.

Cleanings shall be disposed of only at an authorized area approved by the department of environmental health. All persons who are registered to clean septic tanks, chemical toilets, cesspools, holding tanks and seepage pits (or to dispose the cleanings thereof) are required to file a letter with this office stating that the wastes are being legally accepted. This letter must be signed by the owner(s)/operator(s) of the receiving facility.

Registration (operating permit) shall be carried in the vehicle at all times. Applications for renewal shall be made to the Department of Environmental Health.

Notifications of changes in equipment shall be made at the time of the change.

Notification of change in address shall be reported in writing within two days after said change of address.

To receive a permit to operate a septic pumper truck(s) in Lassen County, the Lassen County Environmental Health Department requires that:

All trucks permitted in Lassen County must be physically inspected, and must meet, at a minimum, the nine above mentioned registration requirements.

Documentation must be provided for acceptance of pumpings from all facilities accepting the disposal of the cleanings from septic tanks, chemical toilets, cesspools, holding tanks, and sewage seepage pits that you are currently utilizing.

All pumping receipts must indicate the size of the septic tank(s), the quantity in gallons pumped, the type of tank (plastic, concrete, steel, etc.), the number of compartments, the absence/presence of inlet and outlet sanitary tees and baffles and the conditions of the tank, baffles, and tees.

At the end of each quarter, the operator must submit the **Septic Pumper Quarterly Report** form to the Lassen County Environmental Health Department.

Chapter 10
Impaired Water Bodies (Tier 3)

Currently, there are no water bodies in Lassen County listed on Attachment 2 of the OWTS Policy as impaired pursuant to the federal Clean Water Act.

Advanced Protection Management Plan

The State Policy stipulates that existing, new and replacement OWTS that are located near a water body that has been listed as impaired due to nitrogen or pathogens pursuant to Section 303(d) of the Clean Water Act may be addressed by a TMDL and its implementation program, by special provisions contained in a LAMP or by the specific requirements of Tier 3.

If a water body in the county is designated by the Water Board as "impaired" or significantly degraded as a result of the use of OWTS, Lassen County will develop an Advanced Protection Management Program (APMP) in accordance with the established TMDL. In the absence of an approved TMDL, the APMP will be developed in close consultation with the Regional Water Quality Control Board and may include but not be limited to requirements for supplemental treatment for existing systems and mandatory, routine inspections as determined by the Water Board in order to be consistent with the Policy. In the absence of a TMDL or an APMP approved by the Water Board, the provisions of Tier 3 of the Policy shall apply to OWTS adjacent to water body segments listed in Attachment 2 of the State Policy.

Chapter 11
Repairs and Substandard Systems (Tier 4)

Failed Onsite Wastewater Treatment Systems

All OWTS have the potential to fail due to age, misuse or improper design. The failure may result in wastewater being discharged to the surface of the ground or wastewater backing up into plumbing fixtures. These failures will require corrective action to mitigate any risk to public health or contamination of the environment.

An OWTS failure that has pooling effluent, discharges wastewater to the surface, or has wastewater backed up into plumbing fixtures, because its dispersal system is no longer adequately percolating the wastewater is deemed to be failing, no longer meeting its primary purpose to protect public health, and requires major repair, and as such the dispersal system must be replaced, repaired, or modified so as to return to proper function and comply with the appropriate Tier (Policy 11.1).

Any OWTS septic tank failure, such as a baffle failure or tank structural integrity failure such that either wastewater is exfiltrating or groundwater is infiltrating is deemed to be failing, no longer meeting its primary purpose to protect public health, and requires major repair, and as such shall require the septic tank to be brought into compliance with the requirements outlined in Chapter 8 of this LAMP (Policy 11.2).

All repairs to an existing OWTS must be performed by a Qualified Installer or Professional must meet current standards and must be completed under permit and inspection by the EHD. In cases of a failure that creates a health and safety hazard or nuisance where effluent is discharging to the surface of the ground, repairs must be made immediately.

When it has been determined that a dispersal system is failing or has failed and EHD has a permit record, the replacement dispersal field is to be the same type, and the same size or larger than the existing field. All requirements of this LAMP will be met as practicable.

A replacement system that meets the requirements of this LAMP shall be installed in those instances when the OWTS has failed and where previously permitted or considered legal non-conforming, but the site is severely constrained. If site conditions preclude the installation of a replacement system (high nitrates, high development density, etc.), an engineered or supplemental treatment systems shall be installed, to provide treatment equivalent to the adopted standard.

Onsite Wastewater Treatment System Abandonment Standards

Unless properly abandoned, an OWTS that is no longer used may represent a safety hazard; therefore, EHD makes it a priority to ensure that these structures are properly abandoned to prevent such accidents.

An existing OWTS or a portion thereof shall be properly abandoned, under the following conditions:

- Upon the discovery of a cesspool,
- When the structure is connected to the public sewer, or

- When the structure served by the OWTS is demolished unless the owner demonstrates their intention to use the system again.

The abandonment standards for a septic tank include:

- The tank or pit must be pumped to remove all contents,
- A tank may be removed entirely, or
- If left in place, the top is removed, the bottom punctured or cracked to allow for drainage and the shell filled with inert material such as clean soil, sand, cement, etc.

Standards for abandoning the dispersal field include:

- Leach lines composed of gravel and pipe may be abandoned in place.
- If hollow chambers were used, the chambers must be removed, and the trench backfilled. Hollow leaching chambers may remain in place with EHD approval.

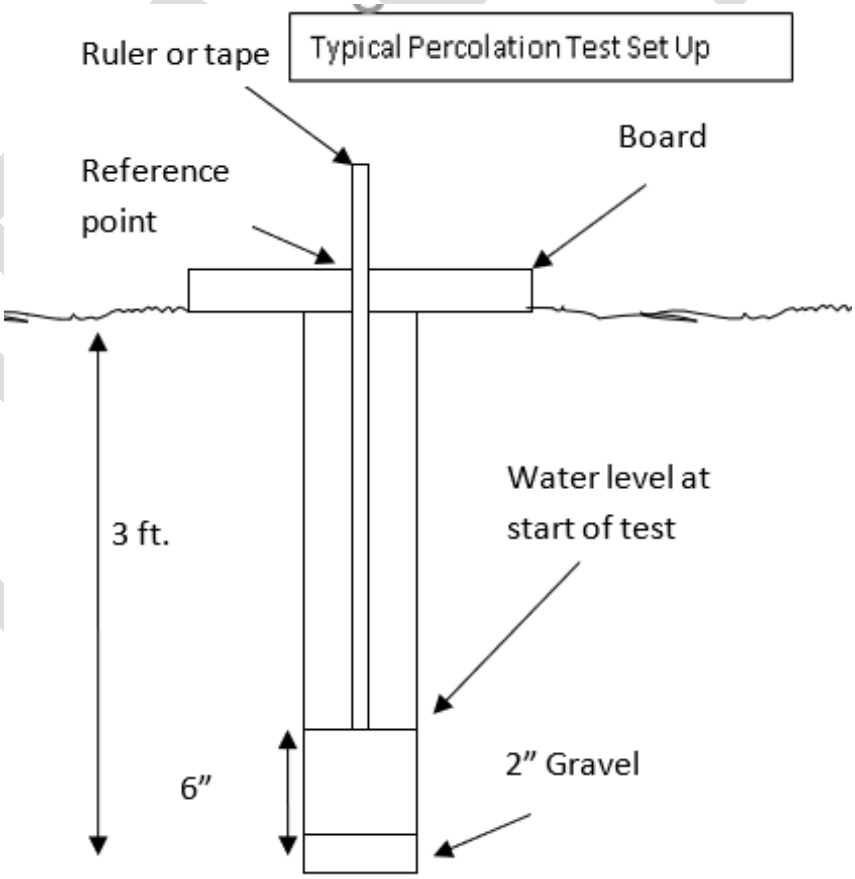
Appendix 1

Percolation Test Procedure

This Appendix is to be used to establish clear direction and methodology for percolation testing in Lassen County. The objective is to size the OWTS with adequate infiltration surface area based on an expected hydraulic conductivity of the soil and the rate of loading, and to provide for a system intended to allow for a long-term expectation of satisfactory performance.

All percolation testing for dispersal systems in Lassen County shall be conducted using the following procedures; any deviation shall be authorized only after receiving written approval by EHD. The testing shall be performed and reviewed by or under the direct supervision of a Qualified Professional. Percolation tests will occur after EHD has approved the location of the proposed leachfield area. The percolation test results are to be submitted with the plot plan to the EHD at the time of the onsite inspection of your property. Soil profiles are required to determine the depth and composition of the soil and the distance to ground water.

Percolation Test Holes



Number of Percolation Test Holes

1. A minimum of three test holes are required.

2. Additional test holes may be necessary on a site-specific basis for reasons that include, but are not limited to the following:
    a. Unacceptable or failed tests,
    b. Areas of the disposal field requiring defined limits for exclusion,
    c. The disposal system is located out of a concentrated area (i.e. limited historical data), and
    d. Soil conditions are variable or inconsistent.

Depth of Testing

1. Test holes shall be representative of the dispersal system installation depth.
2. Conditions which may require testing deeper than leach line depth:
    a. Shallow consolidated rock or impervious soil layers,
    b. Slope exceeds 30%, and
    c. Other factors as might be determined by sound geotechnical engineering practices.

Soil Classification

1. All test holes and excavations shall have soil types described according to the American Society for Testing and Materials (ASTM) or the USDA Soil Classification System (Unified).
2. All excavations are to be reported, including any which encountered groundwater or refusal. Comments about consolidation and friable characteristics are encouraged.

Location of Percolation Test Holes

Test holes shall be representative of the dispersal area demonstrating site conditions throughout the entire sewage disposal system with equal consideration of primary and reserve leach fields, and at least 30 feet apart.

Identification of Test Holes

1. Staked and flagged so the test holes can be located.
2. Identified with:
    a. A test hole number or letter
    b. The depth of the test boring.
    c. Lot/parcel number or letter if associated with a subdivision or lot line adjustment.

Drilling of Borings for Test Holes

1. Diameter of each test hole shall be a minimum of 6 inches.
2. If a backhoe excavation is used, a test hole at 12–14 inches in depth shall be excavated into the bottom of the trench.

Preparation of Test Holes

1. The sides and bottom of the holes shall be scarified to remove the areas that became smeared by the auger or other tool used to develop the hole.
2. All loose material should be removed from the hole.
3. Two inches of fine gravel should be placed in the hole to prevent bottom scoring.

Presoaking the Test Holes

Procedure

1. Carefully fill the test hole with 12-14 inches of clear water.
2. Maintain 12-14 inches of clear water for a minimum of four (4) hours. After four hours, allow the water column to drop overnight. Testing must be done within 15-30 hours after the initial four-hour presoak.
3. Overnight Option: If clay soils are present, it is recommended to maintain the 12-14 inches of water overnight. A siphon can be used to maintain the supply at a constant level.
4. In highly permeable sandy soils with no clay and/or silt, the presoak procedure may be modified. If, after filling the hole twice with 12-14 inches of clear water, the water seeps completely away in less than 30 minutes, proceed immediately to Case 2 and refill to 6 inches above the pea gravel. If the test is done the following day, a presoak will be necessary for at least an hour in order to reestablish a wetted boundary.

Saturation and Swelling

1. Saturation means that the void spaces between soil particles are full of water. This can be accomplished in a short period of time.
2. Swelling is caused by the intrusion of water until the individual soil particles are full of water. This is a slow process, especially in clay-type soil and is the reason for requiring a prolonged soaking.

Use of Inserts

1. If sidewalls are not stable or sloughing results in changing depth, the test hole may be abandoned or retested after means are taken to shore up the sides. The holes shall be re-cleaned prior to resuming the test.
2. Options for shoring or maintaining test hole stability:
    a. Hardware cloth (1/8-inch grid),
    b. Perforated pipe or containers, and
    c. Gravel pack.

Determination of Percolation Rates

Depending on the soil type and permeability, and the results of the presoak, variations in the procedures used for determining percolation rates can be allowed. Testing shall proceed based on the conditions outlined in the following cases.

Case 1 – Water remains overnight in the test hole following the four-hour presoak (excluding use of an overnight siphon).

Case 2 – Soil with a fast percolation rate is encountered where two columns of 12-14 inches of water percolates in less than 30 minutes for each column during the presoak.

Case 3 – No water remains in the test hole 15 -30 hours after the four-hour presoak.

Case 1 Procedure

1. Adjust depth of water to 6 inches in the hole.
2. When percolation rate has stabilized, or for a period of 4-housrs, take two (2) readings at thirty (30) minute intervals and report percolation rate as the greater (slower) of the two readings.

NOTE: When a minimum amount of water remains due to a damaged hole or silting, the hole may be cleaned out and tested under Case 3, starting with the presoak.

Case 2 Procedure

1. Begin test 15-30 hours after presoak.
2. Fill the hole twice with 12-14 inches of water. Observe to see if each column of water seeps away in less than 30 minutes. If so, proceed with the percolation test. If not, go to Case 3.
3. Refill hole to 6 inches above the bottom.
4. Measure from a fixed reference point at ten (10) minute intervals over a period of one (1) hour to the nearest 1/16th inch. Add water at each 10-minute time interval.
5. Continue 10-minute readings as long as necessary to obtain a stabilized rate with the last 2 rate readings not varying more than 1/16th inch, or for a duration of four (4) hours. The last water level drop will be considered in the percolation rate.

Case 3 Procedure

1. Begin test 15-30 hours after presoak.
2. Clean out the silt and mud and add 2 inches of 3/8-inch pea gravel.
3. Adjust water depth to 6 inch above the pea gravel buffer and measure from a fixed reference point at 30-minute intervals to the nearest 1/16th inch. NOTE: It is not necessary to record data points for the first hour as this is an adjustment period and a reestablishment of a wetted boundary.
4. Refill the hole as necessary between readings to maintain a 6-inch column of water over the pea gravel. If a fall of 1 inch or less is recorded, the test can continue without refilling until the next 30-minute reading interval.
5. Continue recording readings at 30-minute intervals for a minimum of four hours.
6. The last water level drop is used to calculate the percolation rate.

Calculations and Measurements

Calculation Example

The percolation rate is reported in minutes per inch (MPI). For example, a 30-minute time interval with a 3/4-inch fall would be as follows:

$$30 \text{ minutes} \div 3/4 \text{ inch} = 40 \text{ minutes per inch (MPI)}$$

Measurement Principles

1. The time interval for readings are to reflect the actual times and are to be maintained as near as possible to the intervals outlined for the test (10 or 30 minutes).
2. Measurements to the nearest 1/16th inch should be adjusted to the slowest rate (e.g., readings observed between 3/8 inch and 5/16 inch (80 MPI and 96 MPI) would be reported as 96 MPI.)
3. Measurements on an engineering scale (tenths of an inch) should follow the same principle (e.g., a reading observed between 0.4 inch and 0.3 inch (75 MPI and 100 MPI) would be reported as 100 MPI).

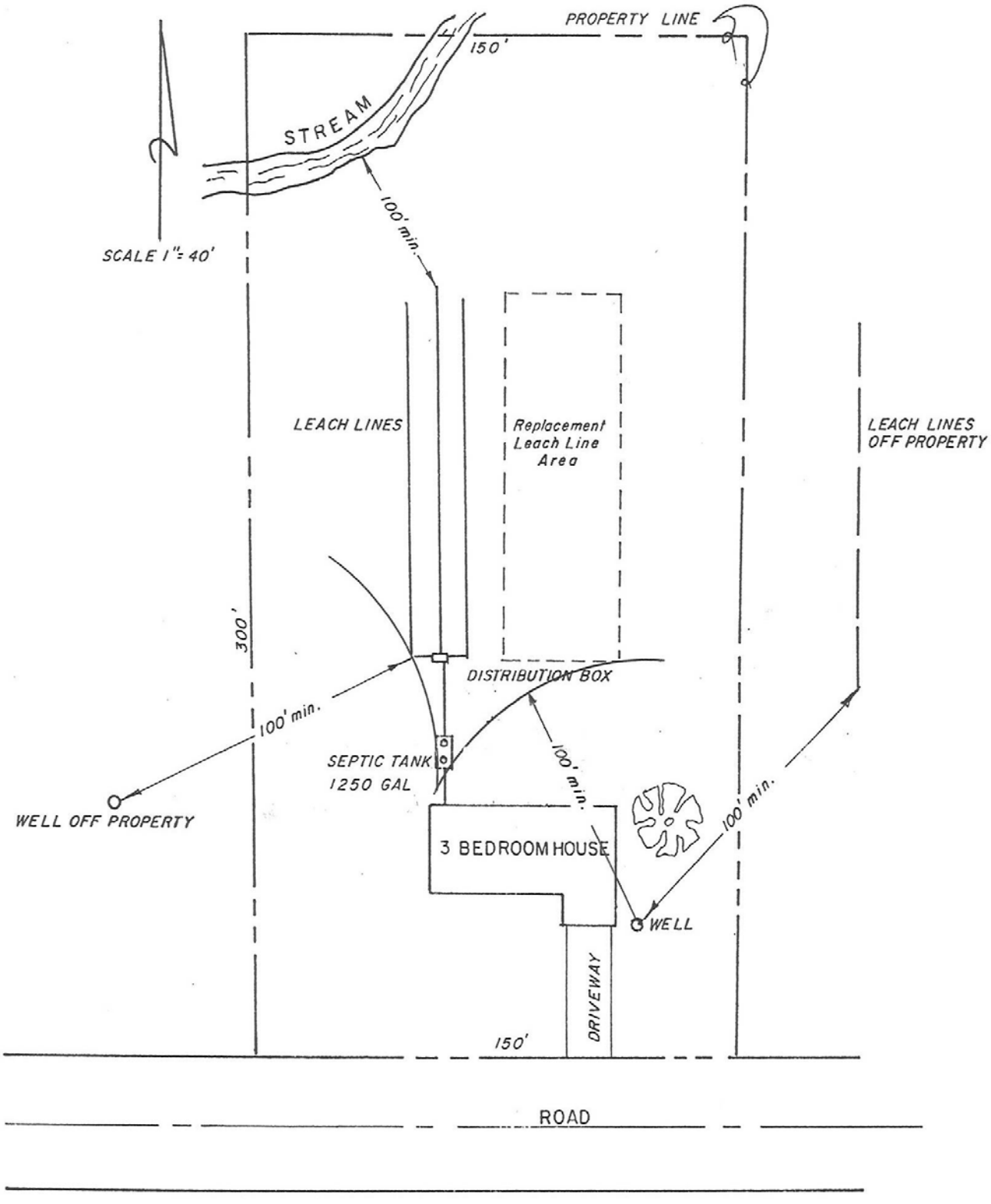
Measurements and Special Considerations

1. Measurement from a fixed reference point shall be from a platform that is stable and represents the center of the test hole.
2. Percometer devices are encouraged and required when the depth of a test hole is greater than 60-inches in depth. Accurate measurement is vital and in cases of testing deeper than 60 inches, the report shall include a description of the measurement method and how the borings were cleaned out and prepared for testing.

Reports

1. All test data and required information shall be submitted on forms approved by EHD with appended data or information as needed. A sample template for percolation test data is available from EHD.
2. Reports shall be signed and dated with an original signature by the consultant who either performed or supervised the testing.
3. All percolation testing to be performed by, or under the supervision of, a Qualified Professional. Qualified Professionals who employ technicians are responsible for the work performed by the technician. It is incumbent upon the Qualified Professional to properly train, equip, and supervise anyone performing work under his or her direction and license.
   The percolation test is only one critical factor in siting an OWTS. Site considerations may require special evaluation by a Qualified Professional to technically address and report on issues such as high groundwater, steep slope, nitrate impacts, cumulative impacts (mounding and horizontal transmissibility).

Sample Plot Map



Appendix 2

State OWTS Policy