

INYO COUNTY LOCAL AREA MANAGEMENT PLAN

TABLE OF CONTENTS

Introduction .....1

Definitions.....

Inyo County/Lahontan RWQCB Coordination .....

Requirements For Existing Onsite Wastewater Treatment Systems.....

Onsite Wastewater Treatment System Repairs/Upgrades.....

Onsite Wastewater Treatment System Evaluation/Modification.....

Onsite Wastewater Treatment System Abandonment Standards.....

Requirements For New Onsite Wastewater Treatment Systems.....

Setbacks.....

The Permit Process.....

OWTS with Supplemental Treatment and/or Alternative Systems.....

Design Criteria.....

Operation & Maintenance.....

Percolation Test Procedures.....

Percolation Test Holes.....

Septic Tanks.....

Dispersal Fields.....

Percolation Tests and Design Procedures.....

Soil Cover Requirements.....

Dimensions.....

Materials and Construction Considerations.....

Sizing.....

Application Rates From Percolation Rates.....

Professional Qualifications.....

Data Collection/Reporting/Notifications.....

Reporting to RWQCB.....

Notifications To Owners or Water Systems and SWRCB.....

OWTS Near Impaired Water Bodies.....

Onsite Maintenance Districts/Focused Areas.....

APPENDIX 1 Ordinance

APPENDIX 2 State Water Resources Control Board Onsite Wastewater Treatment System Policy

APPENDIX 3 MOU's and Related Correspondence

APPENDIX 4 Homeowner's Guide

APPENDIX 5 Lamp Completeness Checklist

**Commented [CJ1]:** Recommend that the OWTS Policy be referenced, and possibly a link included, but that the policy itself is not included as appendix just to keep your LAMP shorter.

**Commented [CJ2]:** Recommend not including the MOUs in the LAMP because they have no practical effect after May 13, 2018. You could carry over the operative requirements.

## INTRODUCTION

The Inyo County Local Area Management Plan (LAMP) is the required end result of California Assembly Bill 885, which was approved on September 27, 2000. This legislation directed the State Water Resources Control Board (SWRCB) to develop uniform, statewide standards for onsite wastewater treatment systems (OWTS) that are to be implemented by qualified local agencies. The SWRCB adopted the Water Quality Control Policy for Siting, Design, Operation and Maintenance of Onsite Wastewater Treatment Systems on June 19, 2012 (OWTS Policy) and it became effective on May 13, 2013. The OWTS Policy allows local agencies to approve OWTS, based on a local ordinance, after approval of a LAMP by the Lahontan Regional Water Quality Control Board ([Lahontan Water Board](#)).

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 management programs that address the conditions specific to that jurisdiction. These Local Agency Management Programs (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. At this time, there are no 303(d) waters in Inyo County. Once approved, the standards contained in an approved LAMP supersede the Tier 1 standards. Environmental Health acknowledges that the Tier 1 standards afford an essential level of public health and water quality protection. Accordingly, the County's local ordinance (Appendix I) includes a number of the Tier 1 standards including the site and soil evaluation requirements, effluent application rates and setbacks to groundwater. Additionally, the Tier 1 standards apply unless they are specifically addressed in the LAMP or ordinance.

There are however, certain elements in Tier 1 that would be problematic in Inyo County. Examples would include: **limits on dispersal field depth, the 2½ acre minimum parcel size for new lots on which an OWTS can be installed and the prohibition of the use of seepage pits.** There are properties throughout the county where these restrictions would preclude an individual from developing their property.

To reconcile these competing concerns, when conditions will not allow the use of a standard OWTS, the ordinance will require the use of supplemental or alternative treatment in conjunction with an operating permit, to remove the constituents of concern. Conditions of the operating permits would include

**Commented [CJ3]:** For some years now, we have preferred the term "Water Board" and if a specific board is needed to differentiate regions, then State Water Board, or Lahontan Water Board, or Central Valley Water Board.

regular system inspection, maintenance and reporting. Consequently, in those areas where the County's ordinance differs from Tier 1, the required mitigation measures would result in an equal level of public health and groundwater protection.

It is the intent of Inyo County to develop a LAMP in lieu of implementing Tier 1 standards. 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 of the applicable Tier 2 criteria listed in Section 9 of the State Policy including adherence to the "prohibitions" contained in Section 9.4. It is structured and organized in accordance with the Onsite Wastewater Management Plan Guidance developed by the [Lahontan Regional Water Quality Control Board](#) included in [Appendix 3](#).

The actual standards for existing and new OWTS are specified in the State Water Resources Control Board's Policy, the California Plumbing Code and in Article I, Chapter --- of the Inyo County Code (Ordinance). The County ordinance has been compiled so that it addresses conventional OWTS (those systems using a standard tank and dispersal field) as well as those utilizing supplemental and/or alternative systems. A complete copy of the ordinance is included in Appendix I.

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, operating permits with regular maintenance and reporting conditions, will be required for all new supplemental and/or alternative systems.

The purpose of the LAMP is to allow the continued use of OWTS within the jurisdiction of Inyo County (IC) while protecting public health and water quality. The LAMP is designed to protect groundwater and surface waters from contamination through the proper design, placement, installation, maintenance and assessment of OWTS. This plan develops minimum standards for the treatment and ultimate disposal of sewage through the use of OWTS in Inyo County. The LAMP does not include the following, which require individual waste discharge requirements or a waiver of individual waste discharge requirements from [the Water BoardLahontan](#):

**Commented [CM4]:** OWTS Policy Sec 9.4.6 requires monitoring in addition to inspections for the supplemental (advanced) treatment systems. The requirements must include constituents and frequency. Suggested constituents are BOD, total suspended solids, total Kjeldahl nitrogen, and nitrate as N to develop total effluent nitrogen concentrations.

**Commented [CJ5]:** See above comment re: shortening the LAMP.

- Any OWTS with a projected wastewater flow of over 10,000 gallons per day.
- Any OWTS that generates ~~industrial or commercial~~ high strength wastewater, unless the waste stream is from a commercial food service establishment.
- Any OWTS that generates high strength wastewater from a commercial food service establishment: (1) with a BOD higher than 900 mg/L, or (2) that does not have a properly sized and functioning oil/grease interceptor.

Commented [CJ6]: See OWTS Policy Section 2.6.2.

The Inyo County Environmental Health Services Department (EH) has managed the OWTS program in Inyo County for many decades. Permitting criteria has historically been based on both the ~~Lahontan Water Quality Control Plan for the Lahontan Region~~ (Basin Plan) and the California Plumbing Code, Appendix K. Memorandums of Understanding (MOU's) assigning areas of responsibility have been created and adhered to by ~~the Water Board Lahontan~~ and EH. After May 13, 2018, the MOUs between the Water Board and Inyo County for OWTS permitting have no practical effect.

**Inyo County is a geographically large (greater than 10,000 square miles) county, and is also a remote, rural county, with a permanent population of approximately 18,000. Additionally, more than 98% of Inyo County lands are government owned. Because of this, the County population remains steady, and it is assumed there will not be significant development and/or population growth in the future. This is backed by a review of septic permits issued over the past ten years which show an average of three conventional and one alternative new OWTS's being installed per year. There has been no indication of any significant deterioration of groundwater basins in Inyo County due to OWTS's using the existing/historical regulatory framework. This cannot be overemphasized and is the basis for maintaining the status quo as much as possible while still adhering to the minimum requirements of the State Policy.**

Most of the county's population centers are served by public sewer systems, and OWTS are not allowed in these areas. OWTS are also not allowed when located within 200 feet of existing sewer systems where feasible to connect. Public sewer systems serve the Bishop area, Rovana, Aspendell, Big Pine, Independence, Knight Manor, Lone Pine and Furnace Creek (some of these sewer systems are privately owned yet they are considered public sewers as defined by the Plumbing Code). Residential communities adjacent to the larger sewer systems, and all other rural areas in the County are served by OWTS. Due to the relatively low loading rates of the existing OWTS, in combination

with minimal new development, there has been little history of failing systems over the years. The relatively pristine groundwater aquifers and the lack of any nitrogen or bacteriological contaminated surface waters (303(d) listed) are testimony to the effectiveness of the OWTS regulatory program in Inyo County over the years. Towards that purpose, this LAMP will strive to maintain the “status quo” wherever possible, and to incorporate new requirements as directed by the OWTS Policy.

**Commented [CM7]:** We have bacteriological contamination in Bishop Creek in the vicinity of Bishop, even though the creek is not a designated 303(d) surface water. We have yet to identify the source of contamination. The Tahoe office staff of the Water Board has determined that there is sufficient information to consider listing segments of Bishop Creek as impaired. If impairment listing occurs in the near future, then the Inyo County LAMP must be revised to include the OWTS Policy Tier 3 program requirements.

## DEFINITIONS

- a. Alternative OWTS: is a type of OWTS that utilizes a wastewater treatment technology other than a conventional septic tank and/or a method of wastewater disposal other than a conventional drainfield trench/bed for the purpose of producing a higher quality effluent and improved performance of and siting options for effluent dispersal.
- b. Basin Plan: means the same as “water quality control plan” as defined in Division 7 (commencing with Section 13000) of the California Water Code. Specifically, The [Lahontan Regional Water Quality Control Plan for the Lahontan Region](#) is often referred to as the [Basin Plan](#)~~Board water quality control plan.~~
- c. Bedrock: means the rock, usually solid, that underlies soil or other non-consolidated materials.
- d. Cesspool: an excavation in the ground receiving domestic wastewater, designed to retain organic matter and solids, while allowing the liquids to seep into the soils. The use of cesspools is not allowed in Inyo County.
- e. Conventional OWTS: a type of OWTS consisting of a septic tank for primary treatment of sewage followed by a series of drainfield trenches or beds for subsurface disposal of effluent into the soil. A conventional system may use gravity flow or a pump system to convey effluent from the septic tank to the drainfield.
- f. Dispersal System: a series of trenches, beds, subsurface drip lines, or other approved method for subsurface infiltration and absorption of wastewater effluent, including all component parts such as piping, valves, filter material, chambers, dosing systems, siphons and other appurtenances.
- g. Domestic Wastewater: wastewater with a measured strength less than high strength wastewater that is typically discharged from residential

plumbing fixtures, appliances and other household fixtures including toilets, bathtubs, showers, laundry facilities, sinks, dishwashers and garbage disposals. Domestic waste may include wastewater from commercial buildings such as office buildings and retail stores but does not include industrial waste or recreational vehicle dump stations.

- h. Drainfield: a system of trenches or beds that distribute treated sewage effluent for subsurface dispersal into the soil. A drainfield is also known as a “leachfield” or a “soil absorption area”.
- i. Failure: The ineffective treatment and dispersal of waste resulting in the surfacing of raw or inadequate treated sewage effluent and/or the degradation of surface or groundwater quality.
- j. Groundwater: water below the land surface that is at or above atmospheric pressure.
- k. Holding Tank: a watertight receptacle used to collect and store wastewater prior to it being removed from the property by vacuum pump or hauling, or other approved method. The use of holding tanks in Inyo County may only be allowed if specifically approved by the local enforcement agency, for the abatement of immediate health hazards or for certain public use facilities.
- l. Intermittent Sand Filter: an alternative OWTS using a packed bed filter of medium grained sand used to treat septic tank effluent to an advanced level. The system may be either with a bottom or bottomless. The wastewater is dosed to the surface of the sand via a pressure distribution network.
- m. Mound: an alternative OWTS consisting of an above ground sand bed placed over a tilled native soil absorption area, on top of which is placed a bed of gravel for distribution of septic tank effluent, which is then covered by soil to stabilize the surface and support vegetative growth. Effluent is applied to the distribution bed using pressure distribution.
- n. Onsite Wastewater Maintenance Provider: a person possessing the minimum education, training and experience, as defined by the system manufacturer, to operate, monitor and maintain an alternative OWTS.
- o. Onsite Wastewater Treatment System (OWTS): a system of pipes, valves, trenches and other components used for the collection, treatment and subsurface dispersal of domestic wastewater on the subject lot, except in the case of clustered systems, where ultimate disposal may be on a nearby lot. For the purpose of this policy, OWTS do not include graywater systems pursuant to Health and safety Code Section 17922.12.

- p. Operating Permit: a document issued by the EH Director that sets operating and maintenance requirements for owners of alternative OWTS constructed after the effective date of this LAMP.
- q. Percolation Test: a method of evaluating water absorption of the soil. The test is conducted with clean water and test results are used in the design and sizing of the dispersal system.
- r. Installation Permit: a document issued by the EH Director that conveys approval of and sets forth applicable conditions for the installation of an OWTS, or component thereof.
- s. Pressure Distribution: a method of wastewater dispersal a pump or automatic dosing siphon and distribution piping consisting of small diameter plastic pipe with small perforations spaced uniformly along its length; it is used to achieve equal distribution of wastewater within a treatment unit, such as a sand filter, or a dispersal field.
- t. Regional Water Quality Control Board: means the California Regional [Water Quality Control Boards, or Water Boards](#), designated by Water Code Section 13200, which have authority for adopting, implementing and enforcing water quality control plans (basin plans) which set forth the State's water quality standards and the objectives or criteria necessary to protect those beneficial uses. The Lahontan [Water Board](#) ~~RWQCB~~ has jurisdiction over Inyo County.
- u. Sanitary Sewer: a system for collecting residential or municipal wastewater and directing the collected wastewater to a treatment works prior to dispersal.
- v. Septic Tank: a water tight covered receptacle designed and constructed for primary treatment to receive the discharge of sewage from a building sewer, separate solids from the liquid, digest organic matter and store digested solids through a period of detention, and allow the clarified liquids to discharge for supplemental treatment and/or final dispersal.
- w. Site: the land area occupied, or proposed to be occupied, by the OWTS, including any designated reserve areas.
- x. Soil: the naturally occurring body of porous mineral and organic materials on the land surface, which is composed of unconsolidated materials, including sands, silts and clays mixed with varying amounts of larger fragments and organic material.
- y. Supplemental Treatment: a device or system used in an OWTS to perform additional wastewater treatment functions, beyond primary treatment, and capable of reliably producing wastewater effluent of secondary quality or better, prior to discharge to the dispersal system. Secondary treatment is defined as producing effluent meeting 30 day

average concentration limits of 30 mg/l for BOD and for total suspended solids.

- z. SWRCB OWTS Policy: the State [Water Quality Control Policy](#) for Siting, Design, Operation and Maintenance of Onsite Wastewater Treatment Systems adopted by the State Water Resources Control Board on June 19, 2012, which became effective on May 13, 2013.
- aa. Waste Discharge Requirements (WDR): an operation and discharge permit issued for the discharge of waste [by the Water Boards](#) pursuant to California Water Code Section 13260.
- bb. Watercourse: A defined channel with beds and banks within which water flows either perennially, ephemeral or intermittently, including overflow channels contiguous to the main channel. A watercourse may be either natural or man-made. For purposes of this policy, watercourse also includes water bodies such as ponds, lakes, marshes and seasonal wetlands.

#### Inyo County/Lahontan [Water Board](#) [RWQCB](#) Coordination

OWTS discharge pollutants to the groundwater and are regulated by the State Water Code. Water Code Section 13282 allows the Regional Boards to authorize local agencies to issue permits for and to regulate OWTS. Inyo County and the [Water Board](#) [Lahontan RWQCB](#) entered into a [Memorandum Of Understanding](#) entitled "Septic Tank Guidelines" on February 9, 1990. The MOU states:

*It is agreed that:*

- I. *The County is authorized to issue construction permits for projects that utilize individual subsurface disposal systems without Regional Board approval under the following conditions:*
  - A. *All of the following:*
    - 1. *The onsite soil characteristics comply with the established "minimum criteria for Individual Waste Disposal Systems as adopted by Resolution 6-88-15; and*
    - 2. *The discharge is composed of domestic wastewater only; and*
  - B. *One of the following:*
    - 1. *The development consists of single family residences or multiple family residences , density does not exceed two equivalent dwelling units (EDU) per Acres ( 500 gallon/ acre/ day wastewater flow),*
    - 2. *The development consists only of a single family home on an individual lot which has a minimum net area of 15,000 square feet; or*

**Commented [CM8]:** The MOU criteria and requirements expire either on the LAMP approval date or May 13, 2018, whichever occurs first. Another problem with the MOU is the process of granting exemptions is not consistent with the Water Code. Therefore, MOU language should not be part of the LAMP. The county may, however, bring over the Basin Plan's siting criteria, including density requirements. The county also may be more restrictive. The density requirements can be summarized as:

- 15,000 net square foot minimum lot size for lots subdivided before June 16, 1988.
- ½ acre minimum density for a single family residence for lots subdivided after June 16, 1988.
- Density not to exceed 500 gallons/acre/day for all other uses.



3. The development is nonresidential or of mixed occupancy and the wastewater discharge does not exceed 500 gallons/acre/day as determined using Table I-2 and I-3 of the Uniform Plumbing Code and occupant loads as determined by Table 33A in the Uniform Building Code ; or

4. The project is in a class that has been designated exempt from Regional Board review in writing under signature of the Regional Board Executive Officer; or

5. The project/ development has been granted an exemption by the Board and complies with the County's standards for use of septic tank wastewater disposal systems.

II. The County shall not issue construction permits without Regional Board approval for the following:

A. Projects that involve domestic wastewater discharge from commercial or industrial development in excess of 500 gallons/acre/day as determined by the Board; or

B. Projects that will have industrial wastewater discharges; or

C. Projects that exceed the two EDU/acre density requirement for septic tank use (except in exempted areas); or

D. Projects that do not comply with the County's standards for use of septic tank wastewater disposal systems; or

E. Projects located within existing waste discharge prohibition areas (unless in areas exempted in I B above); or

F. Projects using package wastewater treatment plants with onsite disposal; or

G. Projects that consist of a single family home on individual lots that were created out of a subdivision before June 16, 1988 when the lot has a net area of less than 15,000 square feet.

On February 6, 1998, the Regional Board sent a written correspondence to the Inyo County Environmental Health Department, entitled "Proposed Delegation to Local Government of Additional Responsibility for Implementation of Regional Board Septic System Criteria". In this letter, Delegation – Exemptions for Alternative Systems is given "Pursuant to the conditions in the section titles "Permitting Authority" on page 4.4-20 of the Basin Plan, I am immediately delegating authority to Inyo County to approve of alternative systems. My expectation is that the County will use the "Criteria for Alternative Systems" on page 4.4-19 and 20 of the Basin Plan."

**Commented [CM9]:** This entire has no practical effect after May 13, 2018, or LAMP approval, whichever occurs first. In the LAMP, the County has the flexibility to allow mound systems within defined areas.

MOU's and related correspondence between Inyo County and [Water Board](#) are referenced in Appendix II.

**Commented [CM10]:** We suggest that the MOU criteria and requirement be excluded from the LAMP appendix because it may confuse a property owner as to which LAMP requirements are applicable. Additionally, the MOUs cease to have any effect after May 13, 2018.

## Jurisdiction

EH jurisdiction is limited, or non-existent for the following:

- Officially designated Native American Reservations
- State of California facilities
- Federal lands & facilities: This varies depending on the Federal agency and the particular situation. For the most part, Federal Agencies have deferred to EH for the regulation of OWTS. However, in certain situations, such as remote USFS lands, Federal Agencies have not been amenable to EH regulation.
- California Designated Mobile Home Parks: Although regulated in general by the CA Dept of Housing and Community Development (HCD), EH has worked closely with HCD and has assumed primary regulatory responsibility for OWTS.

## Requirements For Existing Onsite Wastewater Treatment Systems

Consistent with the criteria outlined in Tier 0 of the Policy, systems that are functioning properly will not be affected by this LAMP for as long for as they continue to function properly. 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 County standards.

Whenever an OWTS is serviced, a Qualified Inspector shall examine the tank to look for signs of deterioration, corrosion or evidence that the dispersal field has failed or is in the process of failing. A Qualified Inspector prepares a written report that includes the property owner's name, address and parcel number, a description of the system and any deficiencies noted during the inspection. The report must be submitted to EH within 30 days of the date of the servicing/inspection. In those cases where the inspection has found that the system has failed, the report must be submitted within 24 hours.

When the report is received by EH, it is reviewed and the information contained in the report is entered into the EH filing system. If the report identifies any deficiencies, a notice is generated and mailed to the property owner. Depending on the severity of the problem, the notice will either recommend that corrective action be taken or direct that corrective action be taken.

As with the installation of a new system, all repairs to an existing OWTS must be performed by a Qualified Contractor and must meet current standards where feasible. If site restraints do not allow repairs to meet current standards, all efforts must be made to comply with current standards to the extent possible. In cases of a failure that creates a health & 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 system is failing or has failed and EHS has a permit record, the replacement dispersal field is to be the same type, i.e., seepage pit or trenches, and the same size or larger than the existing field.

A replacement system that meets the requirements of the Ordinance shall be installed in those instances when the OWTS has failed and was previously permitted or considered legal non-conforming but the site is severely constrained. If site conditions preclude the installation of a new dispersal field that meets the adopted standards, supplemental treatment may be required if necessary to provide treatment equivalent to the adopted standard.

#### **Onsite Wastewater Treatment System Evaluation/Modification**

Existing functioning OWTS that would otherwise be expected to continue to function properly may become over taxed 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 should be upgraded so that the anticipated new flow can be received and treated reliably. Examples of changes that would indicate an increased flow to the system include the addition of a bedroom, increased population or fixtures.

Additionally, improvements on a property that 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 EH. As part of the evaluation EH reviews the proposed changes or project, and any EH 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.

## **Onsite Wastewater Treatment System Abandonment Standards**

Unless properly abandoned, an OWTS that is no longer used represents a safety hazard. The top and lids of a septic tank or the cement cover of a hollow seepage pit deteriorate over time and may collapse should a vehicle drive or an individual walk over it leading to a serious injury or death. Therefore, EH 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 hollow seepage pit or 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. Alternatively, the tank may be crushed in place and covered with compacted clean soil.*

Standards for abandoning the dispersal field include:

- *Seepage pits are to be excavated to a depth of 2 feet below grade and the center pipe cut. The center pipe and the excavation are then to be backfilled with clean soil or other approved fill material.*
- *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 EH approval*

## **Requirements For New OWTS**

The most common type of OWTS in Inyo County is the conventional septic tank and leach line system. This is typically a gravity flow system but may include pressure systems to pump septic tank effluent to a conventional leach field when the disposal field is located at a higher elevation than the building site.

In addition to conventional OWTS, Inyo County also allows the use of alternative systems and/or supplemental treatment. These systems are required in areas where areas cannot meet the criteria for a conventional system. Reasons for not meeting conventional system criteria include shallow depth to groundwater, inadequate soil permeability as determined by percolation tests, or insufficient land area to meet required setbacks.

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

- Soil permeability
- Unsaturated soil interval
- Peak daily flow rate
- Net usable land area

Some sites may not be acceptable for either conventional or alternative systems.

All conventional OWTS in Inyo County will require a minimum of five feet of unsaturated soil between the bottom of the dispersal system and the highest anticipated groundwater level for the site. Alternative systems require at least two feet of separation. For sites affected by a shallow impervious rock or clay layer, a minimum of five feet separation between the bottom of the dispersal area and the impervious layer.

All OWTS design proposals must show a 100% replacement area reserved for future leach field area.

New cesspools or seepage pits will not be allowed in Inyo County, except in certain instances where an existing cesspool or seepage pit has failed and there is no other viable alternative except to allow a replacement cesspool or seepage pit. These will only be allowed under the direct authorization of the EH Director.

New or replacement OWTS meeting low risk siting and design requirements are to be constructed per the State OWTS Policy (June 19, 2012) [Tier 1 requirements](#), with the following exceptions:

- Minimum Depth to Groundwater/Minimum Soil Depth: In lieu of Table 2 of the State OWTS Policy, for sites with percolation rates from 5 to 60 minute per inch (MPI) there shall exist a soil thickness layer of not less than five feet from the bottom of the leach trench to groundwater or an impervious layer such as clay, bedrock or fractured bedrock. Impervious is defined as a stratum with percolation rates greater than 120 MPI. For

**Commented [CM11]:** This sentence conflicts with Sec 9.4.1 of the OWTS Policy, which states that a LAMP may not authorize cesspools of any kind or size. It would seem that the correct approach would be to replace a cesspool with a septic tank and seepage pit.

The county should report any cesspools it finds in its annual report.

**Commented [CJ12]:** Clarify the meaning of this. Do you mean that you want to follow the Tier 1 requirements, except for the following? If so, state that.

sites with percolation rates from 1- 5 MPI, the anticipated high groundwater level shall be at least 40 feet below the bottom of the leach trench. (Refer to OWTS Policy sections 7.3 and 8.15)

- The average density for any subdivision of property made by Tentative Approval pursuant to the Subdivision Map Act occurring after the effective date of this Policy ~~and implemented under Tier 1~~ shall not exceed one single family dwelling unit, or equivalent, per 0.5 acres. The average density for any subdivision or parcel subdivided before the effective date of the Policy is ...

*(OWTS policy Table 1 would decrease onsite waste disposal system densities to 2.5 acres per single family dwelling, based on the annual precipitation guide. This LAMP proposes to maintain the historic densities allowed in the ~~Lahontan~~ Water Board's Basin Plan, mainly a maximum gross density of no more than two EDU's per acre for new developments. Historic records indicate that communities served by onsite waste disposal systems show little indication of degradation of groundwater aquifer quality due to onsite systems. Inyo County has a population of just 18,000 people over the ten thousand square miles of the County. More than 98% of Inyo County is government owned. With low population density, and little opportunity for growth, the historic standard of 2.0 EDU's per acre for new development has proven more than adequate in protecting human health and groundwater quality.)*

#### **Tier 1 Compliant Design Criteria:**

- Dispersal systems shall be a leach field, designed using a trench width of no greater than three feet. Infiltrative area shall be calculated by adding the trench depth from one foot below the leach pipe to the bottom of trench, multiplied by two (for both sides) plus the width of the bottom of the trench. This linear footage amount is then multiplied by the total length of leach line in order to obtain the total square footage of infiltrative area. For gravel-less chamber systems, no sidewall credit is given, only bottom width credit. However, for these systems, a 0.7 factor/credit of the rock and perforated pipe system infiltrative area requirements is allowed. (Refer to OWTS Policy sections 8.1.6 and 8.1.11)
- OWTS sizing for single family residences will continue to be based on an equivalent daily unit flow of 250 gallons/day (EDU's), as referenced in the Basin Plan. Septic tanks are conservatively sized based on the EDU's and septic tank effluent detention rates, with a minimum septic tank size

**Commented [CJ13]:** I think this is what you meant.

**Commented [CM14]:** The County has selected Tier 2 LAMPs, and not Tier 1.

**Commented [CM15]:** Would the density be the same, or are any size lots allowed to have an OWTS that were subdivided before the effective date of the Policy? See the comment above for the current basin Plan criteria.

**Commented [CJ16]:** What do you mean by tier 1? The LAMP is a Tier 2 program. The county may include the Tier 1 standards that it desires, but may also deviate from those standards in a Tier 2 LAMP.

**Commented [CJ17]:** Please go through the LAMP to ensure that the criteria of OWTS Policy Section 9.2 (scope) and 9.4 (prohibitions) are all included.

**Commented [CJ18]:** I think this is what you meant.

**Commented [CJ19]:** You may have said this elsewhere, but commercial and institutional OWTS sizing under the Basin Plan has been limited to 500 gal/acre/day, based on the Plumbing Code fixture unit calculations.

of 1,000 gallons. Square footage of dispersal field required is then calculated based on septic tank size and soil percolation rates.

- For existing undeveloped lots, and for replacement systems, the standards stipulated in this policy for new systems shall be upheld wherever possible. Where existing physical constraints will not allow this, systems will be installed as close to standard as possible, but in no case will be allowed where significant degradation of the environment or a threat to human health would occur.

### Setbacks

Setbacks in layout designs refer to the required horizontal distance from components of the OWTS and to structures, property lines, easements, watercourses, wells, or grading. Specific setback requirements will vary based on the type of system design and site conditions and are specified in the following table.

REQUIREMENTS		SETBACK
Component	Setback	Minimum Distance
<i>Septic Tank</i>	Structure	5 feet
<i>Septic Tank</i>	Property Line	5 feet
<i>Septic Tank</i>	Water Well	100 feet
<i>Septic Tank</i>	Leach Lines	5 feet
<i>Septic Tank</i>	Seepage Pits	10 feet
<i>Leach Lines</i>	Structure	8 feet
<i>Leach Lines</i>	Property Line	5 feet
<i>Leach Lines</i>	Water Well	100 feet
<i>Leach Lines</i>	Leach Lines	10 feet center to center distance
<i>Leach Lines</i>	Seepage Pits	15 feet
<i>Leach Lines</i>	Water Mains (Public)	25 feet
<i>Leach Lines</i>	Drainage Course	50 feet from centerline or top of bank

**Commented [CM20]:** In the event that the county authorized a seepage pit, the separation of the bottom of a seepage pit to groundwater must be ten feet or more (OWTS Policy sec 9.4.8).

<i>Leach Lines</i>	Flowing Stream/Creek	100 feet from edge of flow line or top of bank
<i>Leach Lines</i>	Pond or Lake	100 feet from spillway elevation
<i>Leach Lines</i>	Water Supply Reservoir	200 to 400 feet from the high water line 2
<i>Leach Lines</i>	Aqueduct	5:1 setback to pipeline 3
<i>Leach Lines</i>	Road Easements	10 feet from edge of ultimate easement width 4
<i>Leach Lines</i>	Cut Slopes	5:1 setback from top of cut slope 5
<i>Leach Lines</i>	Private Utility Trenches	10 feet

1. The minimum setback required to a public water well is 150 feet and increases to 200 feet where the depth of the dispersal system exceeds 10 feet in depth. The minimum setback may be increased if site conditions show the minimum setback is insufficient to protect groundwater supplies.
2. Where the dispersal system is within 1200 feet of surface water intake point, the setback shall be 400 feet. Where the dispersal system is greater than 1200 feet of the surface water intake point, the setback shall be 200 feet.
3. Maximum setback of 100 feet. A reduction in setback to 50 feet may be considered with engineering to demonstrate no risk of sewage moving laterally to pipeline trench.
4. The setback may increase if the 5:1 setback to a road cut is greater than the minimum setback.
5. This maximum 100 foot setback would also be applied to the top of an eroded bank or natural slope in excess of 60%. A reduction in setback to 50 feet may be considered with engineering to demonstrate no risk of sewage surfacing on the face of the bank or slope.



6. For trenches less than 2 feet in depth, a 5:1 setback based on the trench depth can be used.
7. Setback increases to a 5:1 setback if drainage is greater than 10 foot in depth.

### **The Permit Process**

1. Before any construction begins, an “Application to Construct Sewage Disposal System” must be submitted to and approved by the Inyo County Environmental Health Services Department (EH). All required information on the application must be filled out completely, and the application must be signed and dated by the owner of the property or properly licensed contractor. Contractors that are licensed to construct septic systems are General Engineering (A), Sanitary Systems (C-42), Plumbing (C-36), or if it is a part of a larger project, General (B).
2. Included with the application is a plot plan, which shall show the location of property lines, easements, surface waters, existing and/or proposed structures, wells and septic systems on the subject parcel and all adjoining parcels, if relevant, and the location of any other potentially contaminating activities. The plot plan shall indicate the separation distances between the proposed sewage disposal system and replacement area and all structures, property lines, easements, wells, watercourses, and existing septic systems. See Table 1 for the required separation distances.
3. The completed application, plot plan, and the application fees are to be submitted to the ICEHSD. The applicant will be issued a receipt for fees paid.
4. After receipt of the application, the registered environmental health specialist (REHS) will review the application for completeness, and a site evaluation will be conducted. When all information has been received and approved, the REHS will sign the permit application as “application approved/site evaluated” and a copy will be given to the applicant. This will then become the applicant’s authorization to begin construction.
5. It is the responsibility of the property owner to ascertain that all submitted information is factual and accurate, and that all conditions of the permit are met completely to the satisfaction of the Inyo County Environmental Health Services Department.
7. Soil profiles excavated to a depth of ten feet, and percolations tests are required. Generally two profiles and two percolation tests are required in the proposed construction area; and one profile and one percolation test is

required in the replacement area. However, the number and location of soil profiles and percolation tests will be determined by EH staff during the site evaluation. Profile trenches and percolation test requirements may be waived only at the discretion of the REHS.

8 At least one of the profiles in the proposed installation area will undergo a detailed horizontal description by EH staff. This detailed analysis will document the depth to seasonal high groundwater, soil permeability, capability of existing soil conditions to receive subsurface wastewater, and what degree of treatment is expected. Soil profiles must be excavated with one end sloped to facilitate entry to at least five feet into the profile. It is the responsibility of the property owner or his/her agent to provide soil profile excavations that are accessible and that do not jeopardize safety upon entry.

9. Where the site evaluation indicates that the proposed system area is not complicated with high groundwater, impermeable soils, insufficient leaching area, fast percolation rates, etc., percolation tests may be performed by a licensed contractor who has been approved by the EH. Where the site evaluation documents that an alternative system is required, percolation tests shall be performed by a licensed engineer, certified geologist, or a registered environmental health specialist.

10. After the site evaluation has been completed and all required information has been submitted to EH, the permit application will be reviewed by staff and the director. Within ten working days from receipt EH will respond with either the approval or denial of the permit. The director has the right to waive or extend the ten day period if appropriate.

11. Construction inspections are required during various stages of construction. It is the applicant's responsibility to contact ICEHSD to schedule construction inspections for:

- After the septic tank has been installed, in order to conduct a leak test and to assure the tank is properly located, oriented and level.
- After the leachlines have been dug and before any rock or pipe is installed, in order to verify depth and length of the trenches.
- After leachlines have been installed, in order to verify levels, including any distribution boxes.
- Alternative or engineered systems may require additional construction inspections in order to test electrical/alarm systems, verify pressure distribution systems, and verify other alternative system requirements.

12. After all construction inspections are successfully completed the application will be finalized and copies sent to the owner, the County Assessor's Office and the EH files.

### **OWTS with Supplemental Treatment and/or Alternative Systems**

OWTS with supplemental treatment (STS), or alternative OWTS, are OWTS that include some type of advanced treatment in addition to the primary treatment that occurs in a septic tank used with a conventional OWTS. STS are used to overcome specific site constraints generally having to do with high groundwater or shallow soils and provide the additional treatment necessary that will not be provided in the soil. Examples include aerobic treatment units, sand or textile filters, mound systems and pressure dosed systems. Sites that cannot meet the low risk criteria for a conventional system will be required to install an alternative OWTS. All alternative OWTS must be designed by the appropriate qualified professional.

#### **Design Criteria**

1. All supplemental treatment components of a STS must be certified by the National Sanitation Foundation (NSF) to meet the minimum requirements of NSF Standard 40 or must meet standards approved by EH and the RWQCB.
2. Percolation testing, soil depth evaluations and groundwater elevation determinations shall be performed by a qualified professional. Percolation testing will be performed at the proposed installation depth of the dispersal field.
3. Treated effluent from all STS shall be discharged to a subsurface dispersal system consisting of leach lines, leach beds or pressurized drip dispersal systems.
4. System sizing for dispersal systems that utilize leach lines or leach beds shall be the same as those used for conventional OWTS.
5. Pressurized drip dispersal systems shall be designed and installed per the manufacturer's recommendations.
6. A minimum 2 foot separation between the bottom of the dispersal system to the highest anticipated level to which groundwater could be expected to rise is required for STS.
7. The STS shall be equipped with a visual and audible alarm that alerts the owner and/or qualified service provider of system malfunctions.

#### **Operation and Maintenance**

**Commented [CJ21]:** What about density criteria? Suggest you clarify the criteria or situations for which a non-conventional OWTS is required (e.g. supplement or advanced treatment system).

**Commented [CJ22]:** In situations where minimum density cannot be met or increased protection to shallow groundwater, or nutrient reductions may be necessary, as minimum NSF 245 certified systems are recommended to ensure a 50% reduction in total effluent nitrogen levels are achieved. Please clarify which system is required in which situation.

**Commented [CM23]:** Water Board has no authority to approve the design of any treatment system (Water Code sec 13360).

1. All alternative OWTS owners shall be provided with an informational maintenance or replacement document by the system designer or installer. This document shall cite homeowner procedures to ensure maintenance, repair or replacement of critical items within 48 hours following failure. A copy shall be maintained at the site and shall be available to the qualified service provider.
2. All STS maintenance shall be performed by a qualified service provider and in some instances a maintenance contract may be required throughout the life of the STS.
3. All failures, malfunctions, service requests, alarms, or other instances where an STS requires the attention of a qualified service provider shall be reported to EH within 72 hours of the incident occurring.
4. Operating permits will be required for OWTS that utilize an alternative system or supplemental treatment to ensure that they are functioning properly and as designed. Permit conditions would require regular inspections of the system by a Qualified Inspector or a trained manufacturer's representative. In addition, a report detailing the findings of the inspection must be submitted to EHS for review.

### **Percolation Test Procedure**

This Chapter is to be used to establish clear direction and methodology for percolation testing in Inyo County. The objective is to determine the area necessary to properly treat and maintain sewage underground; 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 shall be conducted through the use of the following procedures. The test shall be performed by or under the direct supervision of a California registered professional civil engineer, geologist or environmental health specialist (qualified professional) who has demonstrated knowledge of Inyo County laws and policies relating to OWTS. Any deviation shall be authorized only after receiving written approval by EH.

### **Percolation Test Holes**

1. Number of Test Holes  
Typically, a minimum of two test holes are required to determine the design percolation rate. This may be waived at the discretion of the

**Commented [CM24]:** We suggest you require periodic sampling and reporting, and that the sample results be included with the inspection findings report. This is needed to meet OWTS Policy sec 9.4.6, which states that supplemental treatment systems must include requirements for periodic monitoring and inspections. Suggested sampled constituents are BOD, total suspended solids, total Kjeldahl nitrogen, and nitrate as N. To establish effluent total nitrogen reductions, both influent and effluent samples should be collected.

**Commented [CJ25]:** Recommend the LAMP include

Director if adequate data already exists that would help characterize the soils.

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.
- d. Soil conditions are variable or inconsistent.

## 2. Depth of Testing

Test holes shall be representative of the dispersal system installation depth. Conditions which may require testing deeper than leach line depth:

- a. Shallow consolidated rock or impervious soil layers.
- b. Slope exceeds 25%.

## 3. Drilling of Borings for Test Holes

Diameter of each test hole shall be 6 inches, dug or bored to the proposed depths of the bottom of the adsorption systems or to the most limiting soil horizon. If a backhoe excavation is used, a test hole at 12-14 inches in depth shall be excavated into the bottom of the trench.

## 4. Preparation of Test Holes

The sides and bottom of the holes shall be scarified so as to remove the areas that became smeared by the auger or other tool used to develop the hole. All loose material should be removed from the hole. Two inches of  $\frac{1}{2}$  to  $\frac{3}{4}$  inch gravel may be placed in the hole to protect the bottom from scouring action when the water is added.

## 5. Presoaking of Test Holes

- a. Carefully fill the test hole with 12-14 inches of clear water.
- b. 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).
- c. Overnight Option: If clay soils are present, maintain the 12-14 inch water overnight. A siphon can be used to maintain the supply at a constant level.
- d. 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 begin the test. 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.

#### 6. Determination of Percolation Rates

- a. 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. (Unless an overnight siphon is used.)
    1. Adjust depth of water to 6 inches in the hole.
    2. Take two (2) readings at thirty (30) minute intervals and report percolation rate as the 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 – 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.
    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 – No water remains in the test hole 15-30 hours after the four-hour presoak.
    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.

### **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. Alternative 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 International Association of Plumbing and Mechanical Officials (IAPMO) or other third party independent tester approved by EH.
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.
6. Septic tank location must take into account maintenance and pumping requirements including vehicle access; and distance and elevation lift to pumper truck.
7. All tanks must have a capped tee or a 90 degree elbow fitting on the inlet to prevent gas exchange between the tank and the house plumbing. Inlet tees must extend at least 14 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. Fall between the outlet of the septic tank and the dispersal field shall be continuous with a minimum fall that ensures the outlet pipe is 4 inches higher than the top of the first siphon in a serial system or 4

inches above the top of the leach rock or other components used in the dispersal system on a level system.

11. Septic tanks with greater than 6 inches of cover must have risers to within 6 inches of finished grade. Risers and lids that are at or above grade must be watertight and lockable or require tools to be opened.

12. Septic tank risers must have a current IAPMO certification, or equivalent, or must be reviewed and approved by DEH prior to use. Concrete risers and lids must be constructed of Type V concrete or be protected from corrosion from sewer gases. The interior diameter of the riser shall be a minimum of eighteen (18) inches.

13. Effluent filters must be IAPMO approved if they are to be installed as part of the outlet tee. 14. 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. 15. Minimum tank size is 1000 gallons.

16. Septic tanks shall be sized according to anticipated wastewater flows from the structure(s). The following standard sizes will shall apply:

- a. 1-3 bedroom single family dwelling (0-450 GPD) 1000 gallons
- b. 4 bedroom single family dwelling (451-600 GPD) 1200 gallons
- c. 5-6 bedroom single family dwelling (601-900GPD) 1500 gallons
- d. Flows greater than 900 GPD must utilize the following formula to determine minimum tank sizing:  $1125 \text{ gallons} + (.75)(\text{Flow in GPD})$ .

### **Dispersal Fields**

Leach lines systems are the primary means of effluent dispersal for the majority of OWTS within Inyo County and this Chapter will establish procedures for the design and construction of leach line dispersal systems. Dispersal fields may consist of standard perforated pipe and gravel lines/beds or gravel-less chamber systems.

### **Percolation Tests and Design Procedures**

1. Leach line systems are limited to soils with percolation rates of 120 minutes per inch or less. Percolation rates in excess of 120 minutes per inch are unsuitable for the installation of an OWTS dispersal system.
2. Leach line dispersal systems are limited to slopes of 25 percent or less.

### **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.
3. Soil cover requirements must also conform to those allowed by the manufacturer of any gravel-less/chamber design.

### **Dimensions**

1. Leach lines are to be installed according to the qualified professional's specifications for location, length, width, and depth.
2. Leach lines are to be spaced at least 10 feet apart, measured center to center.
3. Leach lines shall be installed with a width of no less than 18 inches and no more than 36 inches. Regardless of trench width or materials used, dispersal systems using leach lines shall be designed using not more than 1.5 square feet of infiltrative area per linear foot of trench as the infiltrative surface. No reduction in sizing is allowed for the use of chambers.
4. The minimum length of leach trench for a new OWTS using leach lines as the dispersal system shall be 100 feet regardless of the projected wastewater flows.
5. 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 IAPMO approval and must be approved by EH prior to installation.
2. Leach lines that utilize gravel shall be filled with clean, washed leach line rock to a point at least 4 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 at 1 to 1.5 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.
3. Where multiple leach lines are proposed on sloping ground, a serial dam and siphon must be used to connect the leach lines.

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 being level to within 2 inches per 100 feet.

### **Sizing**

The amount of leaching area needed to dispose of sewage effluent increases in direct proportion to the percolation rate of a soil. That is, the longer time it takes for water (effluent) to be absorbed into the soil the greater the area needed for absorption. The size of a leach field is calculated using two factors:

- a) capacity of septic tank (in gallons)
- b) application rate (in square feet per 100 gallons of septic tank capacity.)

The total leaching area required for a disposal system can be calculated as follows:

$(\text{Septic tank Size}) \times (\text{Application Rate}) = \text{Leaching Area}$

Example: A three bedroom structure requires a 1000-gallon septic tank. If the percolation test results averaged 18 minutes/inch then the corresponding application rate (see Table 3) is 50 sq. ft. per 100 gallons septic tank capacity. Absorption area required is therefore:

$1000 \text{ gal} \times 50 \text{ sq. ft./100gals.} = 500 \text{ sq. ft.}$

The size of the absorption area will determine the dimensions of the leaching trench (length, depth, and width.) If 500 sq. ft. will be required for absorption and the leach field is proposed to be 100 ft. long, then 5 sq. ft. of absorption area is needed for every foot in length of trench. The first vertical foot of sidewall on each side of the trench is not used in absorption area calculations.

Plot plans accompanying all permit applications must clearly designate a 100% leachfield replacement area, for future considerations.

**Table 3: Application Rates From Percolation Rates**

Percolation Rate Application Rate (minutes per inch) gals of septic tank capacity)	(sq ft per 100
5-6	25
7-9	30
10-12	40
13-18	50
19-25	60
26-30	70
31-36	80
37-42	90
43-48	100
49-54	110
55-60	120

>60 = unsuitable for on-site disposal

#### 4. Trench Length and Spacing

The maximum length of any one leach line shall be 100 feet. The separation between one or more leach lines shall be as listed below (from centerline to centerline):

<u>Depth of Rock</u>	<u>Required</u>
<u>Under Leach Pipe</u>	<u>Separation</u>
1.5 ft.	6 ft.
2.0 ft.	6 ft.
3.0 ft.	8 ft.
4.0 ft.	10 ft.
5.0 ft.	12 ft.

Leach lines shall not be constructed under asphalt, concrete or other impervious materials, or in an area subject to vehicular traffic.

All installations shall conform to ICEHS standards and Lahontan Resolution 73.5 – “Rules for Land Developments,” and the Uniform Plumbing Code.

**Commented [CJ26]:** What is this? I am not familiar with this resolution. It does not look like a Water Board Resolution that typically will have the Year followed by a dash and sequential number. Suggest deletion.

### **Professional Qualifications**

To ensure performance that is consistent with the goals and objectives of this LAMP, OWTS must be sited, designed and constructed properly. Once placed into operation, regular inspections and maintenance are necessary to keep the system functioning as designed and to prolong its useful life. Therefore, specific qualifications and licenses that are required in order to design, construct, maintain and or repair an OWTS in ~~Santa Barbara~~ Inyo County include:

- *Soil evaluations must be performed by a Registered Civil or Geotechnical Engineer*
- *OWTS must be designed by a Qualified Professional such as a Professional Engineer, Professional Geologist or a Registered Environmental Health Specialist.*
- *Construction, modification, repair and abandonment of an OWTS must be performed by a Qualified Contractor.*
- *Inspections, maintenance and servicing must be performed by a Qualified Inspector, a Qualified Contractor or Professional Engineer.*

### **Data Collection/Reporting/Notifications**

As a condition of EH oversight of OWTS within Inyo County, EH has certain responsibilities related to data collection and reporting to the ~~Lahontan Regional Water Quality Control~~ Board, as well as in some instances to the owners of water systems and the State Water Resources Control Board Division of Drinking Water. This section will detail the data that must be collected and the procedure for reporting to RWQCB and notifications to owners of water systems and SWRCB.

#### **Reporting To RWQCB**

On an annual basis, EH will collect data for and report in tabular spreadsheet format the following information. A copy of the report will be provided to the ~~Lahontan RWQCB~~ Water Board.

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.

2. The number, location and description of permits issued for new and replacement OWTS and under which Tier the permit was issued. Also include the design flow of the OWTS. The Tier designations can be found in the State Water Board's OWTS Policy.

3. The number, location and description of permits issued for OWTS where a variance from the approved LAMP was granted.

4. The applications and registrations issued for sewage haulers as part of the local septic tank cleaning registration program.

[Mustang Mesa information?](#)

[Supplemental Treatment System monitoring results?](#)

In addition, EH 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 [water quality](#) 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 water samples taken by community water systems.
- d. Any other sampling data deemed relevant or necessary for the protection of ground/surface water supplies.

[e. Data contained in the California Water Quality Assessment Database and Groundwater Ambient Monitoring and Assessment Program](#)

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 submitted every 5 years.

#### **Notifications To Owners of Water Systems And SWRCB**

Existing or proposed OWTS in close proximity to public water wells and surface water drinking water supplies have the potential to cause an impact on the water quality from that water source and the owner of that system or SWRCB, 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 replaced 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

**Commented [CJ27]:** Suggest clarification of item no. 2. Tier 0 systems are in place and operating satisfactorily. The LAMP is a Tier 2 program that replaces Tier 1. If there are impaired water bodies, the LAMP must include a Tier 3 component and Tier 4 are failed systems.

**Commented [CJ28]:** Recommend that you add specificity as how this program will be conducted with focus on areas of higher OWTS density or sensitive surface or groundwater receptors.

drainage catchment in which the intake point is located, and is located such that it may impact water quality at the intake point, or if the OWTS is within a horizontal sanitary setback from a public well, to allow the water system owner to provide comments to EH. Notification will be done electronically or in writing by EH 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 EH.

2. Upon discovery of a failing OWTS that is within 150 feet of a public water well, 200 feet of the high water mark of a surface water drinking water supply where the dispersal system is within 1,200 feet of the water system's surface water intake, within the catchment of the drainage and located such that it may impact water quality at the intake point, or 400 feet of the high water mark of a surface water drinking water supply where the dispersal system is between 1,200 and 2,500 feet of the water system's surface water intake, within the catchment of the drainage and located such that it may impact water quality at the intake point. Notification will be done electronically or in writing and will include proposed corrective action that will be taken to mitigate the failure.

### **OWTS Near Impaired Water Bodies**

Existing, new and replacement OWTS that are near impaired water bodies may be addressed by a TMDL and its implementation program, or special provisions contained in a LAMP. If there is no TMDL or special provisions, new or replacement OWTS within 600 feet of impaired water bodies listed in Attachment 2 of the State [Water Board](#)'s OWTS Policy must meet the applicable specific requirements found in Tier 3 of the State [Water Board](#)'s OWTS Policy. Currently, there are no impaired water bodies in Inyo County listed in Attachment 2 of the State [Water Board](#)'s OWTS Policy. At such time as an impaired water body is listed, EHS will follow the applicable specific requirements found in Tier 3 of the State [Water Board](#)'s OWTS Policy or

**Commented [CJ29]:** Note earlier comment re: potential listing of Bishop Creek as impaired for pathogens or nutrients.

develop and obtain approval from the [Water Board RWQCB](#) of its own Advanced Protection Management Program.

### **Onsite Maintenance Districts/Focused Areas**

On August 13, 1993 Inyo County entered into a Memorandum of Understanding with the Lahontan RWQCB and the Mesa Community Services District regarding the development and implementation of the Mustang Mesa Wastewater Management Plan for the build out of the Mustang Mesa/Alta Vista community. Highlights of this MOU are:

- The Mesa CSD shall assure routine maintenance of all alternative systems is conducted on a regular and ongoing basis.
- The Mesa CSD shall conduct a monitoring plan to assess the impacts to water quality. This shall include bacteriological and nitrate sampling on a regular basis.
- Inyo County is granted authority to issue construction permits for the construction of onsite wastewater disposal systems.

This MOU was required due to past OWTS failures. There is an abundance of Bishop Tuff, a volcanic, highly impermeable rock formation that is evident throughout the area. There are inadequate soils throughout the area for the allowance of conventional systems. The ICEHSD currently requires alternative supplemental systems, and bottomless sand filters is the recommended technology.

The Mesa CSD was defunct for several years but is now back in operation. Their Board is in the process of reinstating their part of the plan, including monitoring of a percentage of the private wells in the community each year for bacteriological and nitrate content, sites to be rotated every year. In addition, the Board is developing a plan to provide ongoing maintenance of the alternative systems by factory trained contractors. It should be noted that a review of all of the monitoring data over the first fourteen years of implementation showed no increase in either bacteriological or nitrate levels of the receiving waters.

There are several other areas in Inyo County with relatively high densities of OWTSs. These include parts of the [Wilkerson Ranch](#) area (3 miles south of Bishop), the community of Cartago and the greater Tecopa area. These areas are closely monitored by ICEHSD, with assistance from the local community residents, who are encouraged to report any septic system failures in the neighborhood. But in general, Inyo County is a very large county (greater than 10,000 square miles) with a very low population (less than 18,000) where most all of the population centers are served by sewer systems. The County is

**Commented [CJ30]:** In this area it may be appropriate to conduct periodic creek sampling for pathogens or nutrients.

fortunate in that there has been no evidence of any significant degradation of groundwaters or surface waters due to OWTSS. Any additional formalized groundwater management plans beyond Mustang Mesa are not required.

The effective date of this LAMP will be [upon approval by the Water Board](#) ~~May 18, 2018~~.