



Manual - Part 1 - Process



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Part One: Process

Chapter 1. Site Evaluation

Site evaluations are required for approval of all parcel and subdivision maps and for construction of on-site wastewater systems. Site evaluations are not required for on-site wastewater system modification or replacement, although elements contained in this section, such as soil analysis, may be incorporated into the process for permitting the construction of said modifications or replacements.

- A. Site Preparation and Application
 - 1. With the exception of Water Well Reports and complaint information, LEA parcel files are accessible to the public and customers are encouraged to review their property file before applying for a Site Evaluation.
 - 2. Site Evaluation applications will only be accepted when determined by the LEA to be complete, including the following information:
 - a. All portions of the application form are completed and legible
 - b. Clear, written directions to the site accompanied by a vicinity sketch
 - c. Dimensional site plan that includes location of soil test holes in relationship to property boundaries, and landmarks as necessary
 - d. For other than single family residential systems, information indicating the estimated amount of soil disturbance (in acres) and grading (in cubic yards).
 - e. Signature of the applicant
 - f. Fees as specified in county code
 - 3. Site Evaluation applications are not considered complete until the test holes have been excavated and are ready for inspection and the site is flagged at the road and at the test hole location. Flagging tape is provided by the LEA at the time of application.

- B. Soil Test Hole Excavation
 - 1. Number and Location of Test Holes

Unless otherwise approved by the LEA, a minimum of 4 test holes will be required for each parcel, with two holes excavated in the primary and two holes excavated in the replacement drainfield areas. At the discretion of the LEA, additional test holes may be needed to adequately characterize site conditions or fewer test holes may be allowed based on considerations such as space limitations on smaller parcels or uniformity of area soil characteristics.



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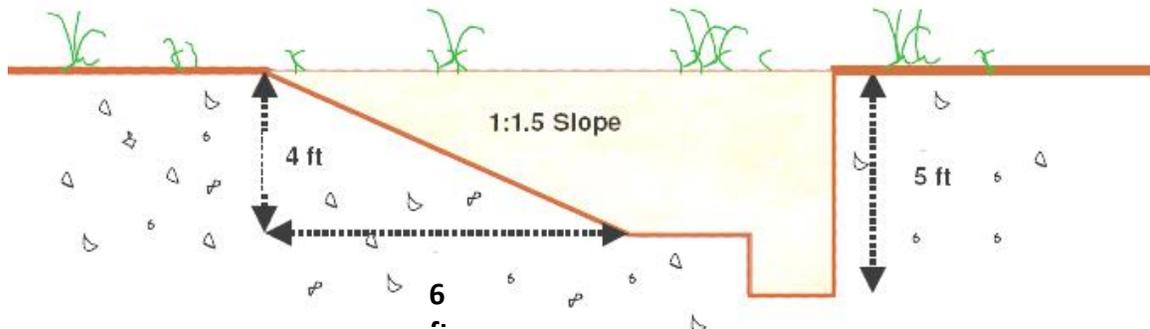
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For legally created parcels five acres or greater in size, the LEA shall accept soil data recorded at the time of parcel creation in lieu of excavating and evaluating new test holes at the time of site evaluation.

2. Dimensions of Test Holes

- a. The holes are generally excavated by a backhoe, but hand dug holes are acceptable when dug to proper dimensions and with adequate spoils pile setback. Test holes only need to be dug into the restrictive layer. When a restrictive layer is not identified during test hole excavation, test holes must be dug a minimum of 5 feet deep. The reason for this depth is to verify that the site can accommodate a 2 foot deep drainfield with an additional 3 foot of vertical separation.
- b. Excavator requests for test holes shallower than 5 feet (without encountering a restrictive layer) due to site specific concerns such as soil sloughing characteristics and access to the site by children or animals, will be considered on a case-by-case basis. The LEA will work to identify ways to meet the excavator's concerns other than digging shallow test holes, such as arranging to meet the excavator on site so the holes can be immediately covered.
- c. All holes should be excavated to Cal-OSHA standards, but at a minimum the test holes need to be dug a minimum of 5 feet deep or into the restrictive layer, whichever is shallower. The holes must be 2 feet wide, and long enough for an entrance ramp. The ramp must be no steeper than 1 foot vertical to 1.5 foot horizontal. If the hole is deeper than 4 feet, a platform must be constructed at the 4 foot depth to allow the inspector to complete the test hole inspection while standing no deeper than 4 foot deep. The toe of the spoils pile must be 2 foot from the test hole.



- d. In some cases hand dug test holes may be preferred by the applicant or designer. Hand dug test holes might be preferable for sites that have a shallow restrictive layers or sites where



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construction equipment could damage the usable soil. Nevertheless, in all cases, hand dug test holes must be dug to the specifications listed above.

C. Site Inspection and Evaluation

1. Phase One Review

a. LEA staff will inspect the site, log the soil test holes, and make an initial determination of whether site conditions are suitable for a standard, gravity system, based on the following factors:

- (1) 4 ft of native effective soil
- (2) Slope less than 30%
- (3) Soils in Soil Groups A-E, as identified in Part 3, Chapter 1 of this Manual

b. Site Evaluations will provide the applicant with soil profiles, the depth of effective soil, the application rate, a statement of whether the wastewater system would be conventional gravity or require consultant review and possible supplemental treatment

2. Phase Two Review

a. If site conditions are not suitable for a standard gravity system, the applicant will be asked to select a certified design consultant, who will contact LEA staff to arrange a joint site evaluation

- (1) The LEA may request joint site evaluation without initially evaluating the site in cases where site conditions are known to be outside of the range described as suitable for standard, gravity systems as identified in Part 3, Chapter 1 of this Manual.
- (2) After joint site evaluation, sites may be approved for standard gravity systems where there is less than 4 ft of native, effective soil provided 3 ft vertical separation can be maintained.

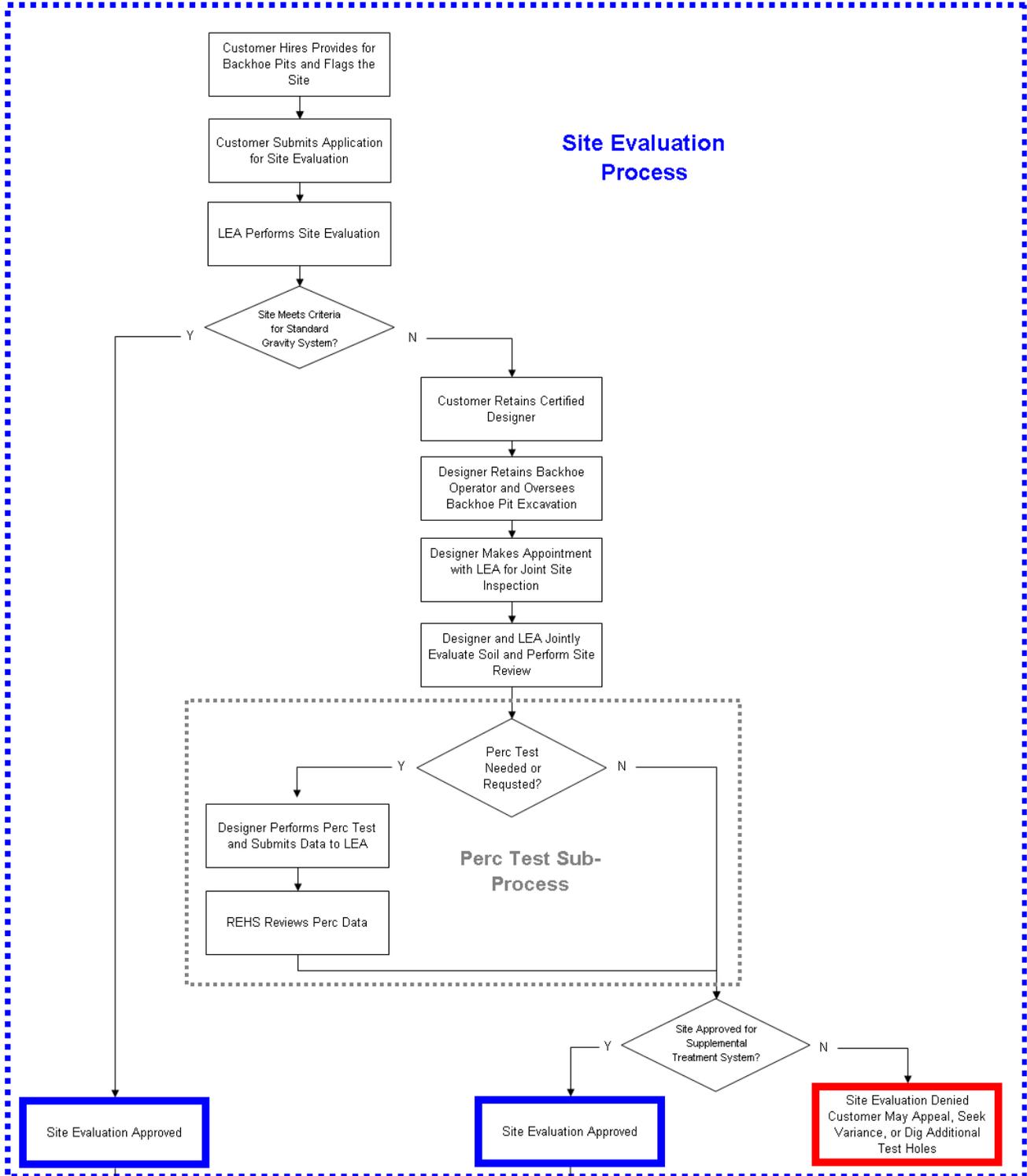
D. Expiration

Site Evaluations have no expiration date, except for when there is a change in site conditions adversely affecting the drainfield area or when there has been a change in regulatory requirements.



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Butte County Hybrid Model





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E. Groundwater Monitoring

1. Purpose

- a. The LEA routinely requires groundwater monitoring information for projects in groundwater concern areas to determine if on-site wastewater and/or subdivision ordinance requirements can be met.
- b. Unusual situations may require additional groundwater review of a specific site completed by a professional such as a California Professional Geologist, Hydrogeologist, or Civil Engineer.

2. Area Identification

Parcels with suspected seasonal groundwater issues requiring rainy season monitoring include:

- a. Valleys, Ravines, Swales
- b. Waterways
- c. Confined and Unconfined Sand and Gravel Strata
- d. Shallow Topsoil Areas
- e. Springs or other indications, such as swampy/marshy appearance or presence of water-loving vegetation such as cattails, willows, perennial grasses
- f. History of seasonal groundwater in the vicinity of the project
- g. Visual indication of seasonal groundwater, such as mottling or gleying in soil profiles

3. Application and Coordination

Groundwater monitoring may be conducted in the following circumstances:

- a. As part of a pre-application review for a land use project;
- b. As a condition for preliminary map approval for land use applications, where the owner has signed a disclosure document for concurrent review;
- c. As a condition for site evaluation approval or as a stand-alone review, where the applicant has agreed to payment of the LEA's hourly rate.
- d. In all cases, the certified designer will discuss the monitoring plan ahead of time with the LEA, and provide the LEA with a map showing the number and location of monitoring wells.

4. Groundwater Observation Period

- a. The groundwater observation period is November through April.

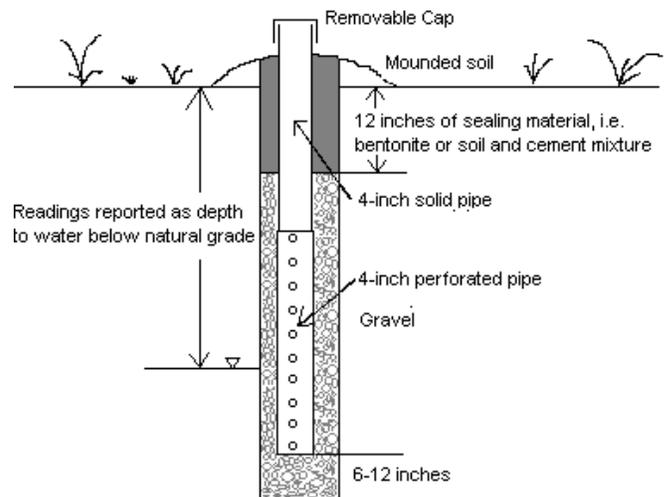


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- b. The LEA may allow the certified designer to install and initiate observation of monitoring wells after November, on a case-by-case basis, provided there is reasonable likelihood that maximum groundwater elevations may still be observed during the remainder of the groundwater observation period.
 - c. Snow pack influenced areas may require observation through the entire spring snowmelt.
5. Collection of Rainfall Data
- a. Observation data shall be collected by the certified designer at least every two weeks during the monitoring period;
 - b. Additional readings shall be taken by the certified designer within 2 days following a significant rain, such as when there has been 1 or more inches of rainfall within a 24-hour period;
 - c. Daily observations by the certified designer may be necessary during elevated groundwater periods to identify maximum groundwater levels;
 - d. Confirmatory observations will be made periodically by the LEA.
6. Monitoring Well Design
- a. Monitoring well depth should be equal to or greater than the required depth to groundwater necessary for project approval. The usual depth is eight (8) feet. For larger flow systems, deeper wells may be required to assess ground water mounding.
 - b. Monitoring well design should generally be as shown in this diagram. Holes will be constructed using an auger and 4-inch diameter pipe shall be used. However, approval of alternate designs will be considered on a case-by-case basis by LEA staff.
 - c. Monitoring wells must be staked and flagged so that they can be readily located by LEA staff.





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7. Certification Criteria

a. Rainfall Data Source

Unless the certified designer justifies another source of rainfall data acceptable to the LEA, the following site will be used for tracking daily and monthly rainfall and for determining average rainfall:

<http://www.cimis.water.ca.gov/cimis/info.jsp>

Note: The California Irrigation Management Information System (CIMIS) is a program in the Office of Water Use Efficiency (OWUE), California Department of Water Resources (DWR) that manages a network of over 120 automated weather stations in the state of California. CIMIS was developed in 1982 by the California Department of Water Resource and the University of California at Davis to assist California's irrigators manage their water resources efficiently.

b. Minimum Rainfall for Certification

(1) Minimum rainfall shall be 80% of average for the observation months of November through April for sites where, based on geographical location, absence of restrictive layer, and absence of visual evidence of seasonal watertable, there appears to be 36 inches or more of effective soil.

(2) Minimum rainfall shall be 90% of average for the observation months of November through April for sites where, based on geographical location, presence of a restrictive layer, or visual evidence of seasonal watertable, there may be less than 36 inches of effective soil.

(3) Low Rainfall Years

(i) Lower rainfall years will normally not be certified. However, during multiple years of low rainfall, a secondary data source may be considered. After completion of at least one groundwater observation period (normally November through April) that does not reach the average rainfall requirement for certification, an applicant may submit, for consideration by the Regional Board and the LEA, a complete groundwater report prepared by a certified engineering geologist or by a certified hydrogeologist.



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- (ii) The report should contain supporting data for groundwater elevation conclusions and include an analysis of expected maximum groundwater elevations for the proposed dispersal site. Elements of the report will include:
 - Topographical and geographical characteristics of the site, including slope of the land, that could affect surface and subsurface drainage characteristics;
 - Soil classification and hydraulic conductivity of the soil;
 - Presence of restrictive layers in the soil profile;
 - Presence of visual indication of seasonal groundwater (e.g. soil mottling) within the soil profile;
 - Historical rainfall patterns and relationship to groundwater monitoring observations; and
 - Depth of observed groundwater in relationship to minimum soil depth requirements and proposed depth of trenches.
 - (iii) The Regional Board, in consultation with the LEA, must approve groundwater reports in order to determine that groundwater monitoring requirements have been met.
8. Determination of Maximum Seasonal Watertable Elevation
- a. Maximum seasonal watertable is the highest level of groundwater determined to be the **characteristic level** for the groundwater monitoring well, based on a series of observations recorded by the certified designer and verified by representative quality control observations of the LEA. To assure consistent correlation of of LEA and certified designer measurements, the certified designer will notify the LEA within 24 hours of observing high seasonal watertable in monitoring wells.
 - b. Seasonal groundwater levels are known to temporarily spike in some monitoring wells after periods of heavy rainfall. This will be allowed to occur in a limited manner (within tolerance limits)



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without affecting the groundwater level determined to be the **characteristic level** for the monitoring well, provided the following conditions are met:

- (1) The groundwater level spikes must not occur at any time above the depth proposed for the dispersal field (with the exception as noted in the table, below); and
- (2) The number of days in which the groundwater is above the **characteristic level** must not exceed that which is shown on the following table:

Rainfall as % of Average Annual Rainfall	Tolerance for Groundwater Exceeding Characteristic Level (# days within 30 day period)	
	< 5% Slope	5%+ Slope
80% - 110%	2	2
110% - <130%	7	2
130% - <200%	14	2
200%+	21 ^(*)	2

^(*) Special Exception: Groundwater may rise to a level above the proposed bottom of the dispersal field for up to 2 days.

- c. Groundwater monitoring results will be determined to be unsatisfactory when the **characteristic level** of the seasonal watertable does not meet minimum Butte County soil depth requirements.

F. Percolation Testing

Percolation tests may be performed by a Certified Installer, Certified Designer, or Certified Operation and Maintenance Specialist to provide additional on appropriate effluent application rate during the site evaluation process at the discretion of either the LEA or the designing certified designer and when soil conditions warrant. When percolation tests are utilized the following requirements will apply:

- 1. Test hole preparation requirements
 - a. Unless otherwise indicated by the LEA, there shall be a minimum of 3 percolation test holes when the disposal area and replacement area are in the same proximity as determined by the LEA; 6 percolation test holes may be required when separate areas are chosen for primary and replacement systems. Additional test holes may be required by the LEA to completely identify a suitable area.



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- b. Percolation test holes shall be 6 inches in diameter.
 - c. Unless otherwise approved by the LEA, the test hole bottom depth shall be deeper than the proposed drainfield trench bottom depth and within the most restrictive strata of useable soil beneath the dispersal field.
 - d. The percolation test hole sidewall in the test section should be roughened to remove any smearing or compaction caused by the hole excavation process. All loose soil shall be removed and 2 inches of pea gravel or other material approved by the LEA shall be placed in the bottom of the hole.
 - e. In order to prevent silting of the bottom of the hole and sidewall cave-in, a 1-inch sidewall gravel pack shall be used. The gravel pack shall be perforated plastic pipe in 12 inch (or longer) sections
2. Presoak requirement

The hole shall be filled with clean water to a minimum depth of 12 inches above the base of the hole. The presoak shall be maintained for a minimum of 4 hours.
3. Test measurement requirements
 - a. Percolation tests shall be measured to the nearest 1/8-inch from a fixed point.
 - b. The percolation test shall begin within 4 hours following completion of the presoak. Adjust the water level to 6 inches over the pea gravel bottom and begin the test. This may require adding or removing water to adjust the level.
 - c. Readings shall be taken at 30-minute intervals. Refill as necessary to maintain 6 inches of water over the pea gravel bottom at each interval. Readings shall be taken until two consecutive readings do not vary by more than ten percent per reading, with a minimum of 3 readings. The last 30 minute interval is used to compute the percolation rate. If 4 inches or more of water seeps from the hole during the 30 minute interval, readings may be taken at 10 minute intervals. Readings shall be taken until 2 consecutive readings do not vary by more than ten percent per reading with a minimum of 3 readings. The last 10 minute interval is used to compute the percolation rate.
4. Test rate determination
 - a. The following correction factor shall be used to determine the corrected percolation rate:



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<u>Hole Diameter</u>	<u>Gravel Pack Thickness</u>	<u>Correction Factor</u>
6"	1"	1.59

Calculation:

Standard percolation value (minutes per inch) =

Test percolation value (minutes per inch) X (correction factor)

Example: A six (6) inch hole is used with a one (1) inch gravel pack. The test percolation value is 25 mpi.

25 mpi (1.59) = 40 mpi

The mean percolation rate calculated from all test hole results accepted by the LEA shall be the final percolation rate (design percolation rate) assigned for sizing the system.

G. Slopes 15%-30%

The site evaluator for parcels with slopes between 15% and 30% shall observe and note any evidence of slope instabilities in the proposed dispersal field area, including such indicators as tension cracks on hillsides, old scarps or headwalls, hummocky terrain, debris deposits below open slopes or in channels, scoured stream channels or gullies, and tilted or cured tree trunks.

H. Suspected Slope Instability

The site evaluator shall identify and note areas of known or suspected slope instabilities that are within 50 feet of the proposed primary or repair dispersal field area.

Chapter 2. Construction Permit

A. Application

1. Construction Permit applications will only be accepted when determined by the LEA to be complete, including the following information:
 - a. All portions of application form completed and legible
 - b. Complete system design attached, including site plan
 - c. Payment of all applicable fees
2. The LEA will refer to the Department of Public Works, any site where it is noted by the applicant that more than one acre of soil disturbance and/or more than 1,000 cubic yards of grading will take place.

B. System Design

1. LEA design forms must be used to facilitate efficient design review
2. All required drawings and sketches must be included



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3. This portion of the design requires three items that show sufficient detail to allow the design to be reviewed and the system to be installed. Checklists are included for each drawing and all applicable items in the checklist must be shown. Plot plans, design details, and cross-sections may be combined on one or more design sheets, provided there is sufficient detail and clarity to specify components, dimensions, spacing, and setbacks as outlined in the design checklists.
 - a. Scaled Plot Plan
This drawing shows the placement of the septic system in relationship to the overall development plan for the property. The plot plan must match the building permit plot plan (the same sketch is accepted by the building department for their application), and should verify that the system can be installed in conformance with setbacks and site limitations.
 - b. Scaled Layout Sketch Detail
This item shows the detail of the drainfield layout and details of the system design. The layout detail is intended to be a close-up of the portion of the plot plan where the septic system is located.
 - c. Cross-Section Detail
This item shows the depth from original grade of the septic system components. The cross-section is intended to be used both as a guide for system construction and as verification that vertical separation and component depths meet code.
4. Design forms must be signed and dated by the contractor for standard gravity systems or by the certified designer for pressure distribution or supplemental treatment systems.
5. Special design analysis will be performed by the certified designer for on-site wastewater systems with design flows exceeding 1,500 gallons per day. The analysis will include:
 - a. Analysis of the potential localizing waste loading effects including, at a minimum, groundwater mounding and nitrogen loading;
 - b. Minimum criteria for evaluation of the results of the analysis; and
 - c. Incorporation of system design measures to address the findings of the analysis.
6. For any drainfield with a design flow exceeding two thousand five hundred (2,500) gallons per day, the LEA may utilize a Civil Engineer with experience in the design and construction of on-site wastewater systems to act as a third-party consultant on behalf of the LEA to review the system design.



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The cost for the consultant's services will be borne by the project applicant.

7. A project may be referred by the LEA to the Central Valley Regional Water Quality Control Board for consultation or for regulatory oversight if the Environmental Health Director determines that additional technical assistance or regulatory oversight is warranted due to the unique characteristics of the project or site characteristics.
8. Any proposed on-site wastewater primary or repair system within an Area of Environmental Concern designated as such due to special status species populations or habitat shall be surveyed by a qualified biologist. If the site contains a population of special status species or habitat critical to the survival of a special status species, then either an alternative site will be identified, or the biologist will identify on- and off-site mitigation that is acceptable to County and to the California Fish and Game.
9. Any proposed on-site wastewater primary or repair system within an Area of Environmental Concern designated as such due to wetlands, riparian habitat, wetlands, or oak woodlands shall be surveyed by a qualified biologist. If the site contains one or more of these habitat types, then either an alternative site will be identified, or the biologist will identify on and off site mitigation that is acceptable to County and to the California Fish and Game. Mitigation may include construction of replacement woodlands, replanting degraded riparian habitat on- or off-site, replanting oak trees, payment to the State Oak Woodlands Conservation Fund, or other measures approved by the County and State.
10. Any proposed on-site wastewater primary or repair system within an Area of Environmental Concern designated as such due to an adopted HCP/NCCP shall be surveyed by a qualified biologist to identify on and off site mitigation that is acceptable to County and to the California Fish and Game. Mitigation may include avoidance of especially critical habitat, planting of replacement woodlands, replanting degraded riparian habitat on- or off-site, replanting oak trees, or other measures approved by the County and State.

C. Design Stakeout

A Construction Permit application will not be considered complete unless the designer has first staked out and ribboned the primary and replacement drainfield areas. This will alert homeowners of these critical developmental features so that building and excavation activities can be controlled appropriately. This will also allow the LEA to confirm the adequacy of designs prior to installation of systems.



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- D. Notification, Inspection, and Final Approval
1. The installer must contact the LEA and system designer to make arrangements for an inspection of the system construction. The system must then be left open for a maximum of two working days, allowing the installation to be inspected by the designer and the LEA.
 2. The installer will leave a signed as-built drawing at the site in a sealed, zip lock plastic bag. The LEA will use the checklist on the as-built form for their inspection and approve or deny cover of the system based on the LEA's assessment of the installation.
 3. The system installation will be verified as complete and within current code, and will be given final approval by the LEA, when all the following actions have taken place:
 - a. An as-built drawing signed by both the installer and the LEA is attached to the construction permit.
 - b. The certified designer (if one was used) verifies that the system was constructed in substantial conformance with the design.
 - c. The "Installation" box at the bottom of the Construction Permit application is marked "Approved" and signed by the LEA.
 - d. If an Operating Permit is required:
 - (1) The certified designer has provided the homeowner with a system Operation, Monitoring, and Maintenance Manual as described in Part 4 of this Manual.
 - (2) The homeowner has recorded the ongoing need for an Operating Permit on the property deed.
 - (3) An Operating Permit has been issued as described in Chapter 3 of this Part.
- E. System Repairs, Replacement, Modifications, Expansions, and Septic Tank Destruction
1. When Construction Permit Required
 - a. Construction Permits are required to repair or significantly modify existing on-site wastewater systems, or to destroy a septic tank. However, these permits are not required for servicing or replacing installed mechanical or electrical parts of the systems, including:
 - (1) Float switches
 - (2) Pumps
 - (3) Electrical boxes
 - (4) Sanitary tees in the septic tanks



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- (5) Minor structural corrections to the tank
 - (6) Repair/replacement of the distribution box, or repair/replacement of the sewer line from the tank to the distribution box.
 - b. Other than replacement of septic tank inlet and outlet T's or replacement of septic tank access lids, LEA Notification and Plan Review must take place BEFORE the service is performed.
2. When Elements of Site Evaluation Required

Unless sufficient site information is available to the LEA, supplemental site information, such as soil analysis data, will typically be required for on-site wastewater system expansion, relocation, repair or replacement.
3. Special Considerations for System Repairs
 - a. A failing system must be repaired as soon as reasonably possible.
 - b. If an immediate repair cannot be accomplished, the LEA may allow a delay in making the repair. In this case, an enforcement order will be issued and the LEA will specify temporary measures required to eliminate any immediate public health hazard or pollution of ground or surface waters.

Chapter 3. Operating Permit

- A. Issuance

Operating Permits will be issued by the LEA automatically for all new pressure distribution and supplemental treatment systems, upon their certification of completion and, thereafter, upon receipt of a complete application for Operation Permit Renewal.
- B. Valid Operating Permits Required

Valid Operating Permits will be required by the LEA for verifying the adequacy of pressure distribution and supplemental treatment systems at their point-of-sale.
- C. Required Information

Operating Permit applications and Operating Permit Renewal applications will include, at a minimum, the following information:

 1. Owner name, address, and telephone number
 2. Assessor's Parcel Number
 3. TrakIt number



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4. Wastewater system description and as-built drawing
 5. General description of O&M program
 6. Specific O&M frequency based on system type
 7. Date of permit expiration
- D. Cleveland Hills Alquest-Priolo Earthquake Fault Zone
- Operating Permits shall require, for wastewater systems located within the Cleveland Hills Alquest-Priolo Earthquake Fault Zone, inspection in the event of an earthquake centered on the Cleveland Hills Fault resulting in appreciable surface fault displacement. Any damage to or deficiencies noted in the wastewater system during this inspection shall be corrected immediately.
- E. Richter Magnitude of 5.0 and Above
- Operating Permits shall require, in the event of an earthquake centered within 25 miles of the County with Richter Magnitude of 5.0 and above, post-seismic inspection. Any damage to or deficiencies noted in the wastewater system during this inspection shall be corrected immediately.

Chapter 4. Testing Septic Tanks to Assure Watertight Construction

- A. Septic Tanks in Use at Time of Testing
1. Dwelling Occupied
 - a. If the water level is at the invert of the outlet "T," then return after 24 hours to recheck the level. If there has been no measurable drop of the liquid volume in the tank, then the tank has passed the inspection.
 - b. If the water level is slightly below the invert of the outlet "T", then the tank may be leaking at the penetration (knock-out) for the outlet. All penetrations should be excavated and sealed with Quickrete or equivalent. After cement cures, fill to the invert of the outlet tee and return after 24 hours to recheck the level. If there has been no measurable drop of the liquid volume of the tank, then the tank has passed the inspection.
 - c. If the operating level is substantially below the invert of the outlet "T," or at the tank's seam (for clamshell tanks), then the tank should be cleaned, and its integrity evaluated.
 2. Dwelling Unoccupied
 - a. Bring the water level up to the invert of the outlet tee and return after 24 hours to recheck the level. If there has been no



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measurable drop of the liquid volume of the tank, then the tank has passed the inspection.

- B. New Construction or Tank Replacement
 - 1. All new tanks must be certified by the manufacturer to be watertight, allowing no more than 1% liquid volume loss over a 24 hour period.
 - 2. All tanks must be tested after installation to be watertight by the following process:
 - a. Install risers
 - b. Install and cap inlet and outlet fittings
 - c. 24 hour pre-soak for concrete tanks
 - d. Fill tank 2 inches into the riser, and no higher
 - e. Return after 24 hours. If there has been no measurable drop of the liquid volume of the tank, then the tank has passed the inspection.

Chapter 5. Implementation of Certification Requirements

- A. Installers
 - 1. The LEA will develop and maintain an informational packet and an open-book take-home exam that covers the essential elements of our local ordinance and manual related to system installation;
 - 2. The person in charge at any job site must have taken and passed the examination;
 - 3. The LEA will not distinguish between certification to install standard gravity systems from certification to install pressure distribution or supplemental treatment systems;
 - 4. The LEA recognizes that many manufacturers and distributors of proprietary products have their own certification requirements for installation of their products, but will leave enforcement of that matter between the certified designer, certified installer, and product distributor or manufacturer;
 - 5. The LEA will provide two local meetings or educational sessions each year for certified professionals and attendance of these sessions will meet the continuing education requirements for certified installers.