GUIDANCE DOCUMENT FOR THE PREPARATION OF ENGINEERED
SEWAGE DISPOSAL SYSTEM & SEWAGE FEASIBILITY REPORTS

Effective immediately, notice shall be provided to Land Use Program staff of the Environmental Health Division a minimum of 48-hours in advance of any soil evaluations and/or percolation testing for engineered septic system designs within the County. Failure to provide such notice may result in the denial of design submittal and/or requirements for further soil evaluations.

The following documents may be referenced in the preparation of an engineered septic system design or sewage feasibility report for review by the Environmental Health Division of the Fresno County Department of Public Health: The 2010 Edition of the California Plumbing Code and Appendices, International Association of Plumbing and Mechanical Officials (IAPMO) Installation Standards, Fresno County Ordinance Code - Chapter 15.20 Plumbing Code, California Regional Water Quality Control Board-Central Valley Region- Guidelines for Waste Disposal From Land Developments, and the U.S. Department of Health, Education, and Welfare "Manual of Septic Tank Practice".

Engineered Septic System Design Requirements:

I. Property Identification
   a. Property owner
   b. Address of proposed/existing residences, if assigned
   c. Assessors parcel number (APN)
   d. Narrative describing the basis of the report submittal, which shall include reference to any other related County projects, if applicable.

II. Property Characteristics
   a. Area of the lot (acreage)
   b. Topographic relief
   c. Vegetation
   d. Drainage(s), Lakes, ponds, or reservoirs & flood zone plain/zone info.
   e. Map -- Map should show property boundaries, proposed and existing water well location(s) on the subject parcel and locations within one-hundred fifty (150) feet on adjacent parcels, home site, driveway(s) and parking area(s), out buildings, percolation test locations, test pit locations, proposed and existing disposal fields, proposed and existing expansion area(s), stream courses, shallow or outcropping bedrock, areas of shallow groundwater, areas of inundation, and other factors which may limit sewage disposal.
III. Soil Characteristics

a. Test Holes: Information should include a description of the soil (soil group, color, texture, percentage of rock, etc.), depth to groundwater, and depth to bedrock. If bedrock is a factor, a detailed description should be provided including, the number and orientation of fracture sets, the density of each set, the depth of each set, the fracture width, their lateral continuity, and the degree to which the fractures are filled with small debris. **Test holes must be dug with a backhoe. Soil descriptions may be supplemented with soil boring information, but will not satisfy backhoe test hole requirements.**

b. Percolation tests: The number of percolation tests performed shall be adequate to demonstrate a representative range of percolation rates within the primary disposal area as well as the required 100% expansion area.

IV. Sewage Disposal Considerations

a. Area of house and number of bedrooms
b. Estimated sewage flow
c. Average soil permeability-percolation test results
d. Stabilized infiltration rate [gallons per day per square feet (gpd/sq.ft.)]
e. Recommended loading factor (square feet per 100 gallons of septic tank capacity)
f. Designs for commercial applications shall provide calculations based upon both fixture units and proposed occupancy, for which the final design shall utilize the more conservative calculation.

V. Conclusions and Recommendations

a. Recommended method of sewage treatment
b. Minimum capacity of septic tank
c. With or without garbage disposal (grinder)
d. Leach Line /Seepage Pit construction
   1. Width
   2. Total depth
   3. Depth of leach line or inlet to seepage pit
   4. Spacing between trenches or pits
   5. Venting system (if required)
   6. Total leaching area requirements
   7. Leach area per linear feet allowed or area provided per pit
   8. Required total length of trench or number of pits

Report Preparation Guidance/Considerations:

I. Specific Criteria That Must Be Addressed in Report

a. Percolation rates greater than sixty (>60) minutes-per-inch (mpi) or less than five (<5) mpi. If applicable, a narrative shall be included that indicates how the intent of the RWQCB guidelines will be met with the design.

b. Shallow groundwater tables. (see III below)

c. Shallow bedrock areas. (see III below)
II. Sizing Leach Lines

Determination of leach line sizing for percolation rates is as follows:

a. Convert the average percolation rate (or infiltration rate) into the application rate [gallons-per-day (gpd)-per-sq.ft.] by using the following formula:

\[ Q = \frac{t}{\sqrt{t}} \]

where \( Q \) = application rate, \( t \) = average percolation rate.

**EXAMPLE:** \( t = 75 \) mpi, therefore \( Q = 0.58 \) gpd/sq.ft.

b. Using the application rate (\( Q \)), obtain the loading factor (sq.ft./100 gals. of septic tank capacity) by using the following formula:

\[ C = \frac{Q}{100} \]

where \( C \) = the loading factor

**EXAMPLE:** \( Q = 0.58 \) gpd/sq.ft., therefore \( C = 172.4 \) sq.ft./100 gals. of septic tank capacity

c. The sq.ft. of absorption area required is determined by multiplying the loading factor (\( C \)) times each hundred gallons of septic tank size required for the number of bedrooms as indicated in UPC Table I-2.

**EXAMPLE:** A four (4) bedroom house requires a 1,200 gallon septic tank. Therefore; \( 172.4 \) sq.ft./100 gals. of septic tank capacity \( \times \) (1,200/100) = 2069 sq.ft.

III. Other Criteria

Shallow Bedrock:

The design of the system must show a minimum of five (5) feet of clearance from bedrock with non-fractured, dry, filterable soils that have percolation rates of greater than five (5) mpi. If this cannot be achieved, the system design must show how it will meet the intent of the Regional Water Quality Control Board's criteria. Seepage pits are not allowed in bedrock areas.

Shallow Groundwater Table:

The design of the system must show a minimum of five (5) foot clearance (ten feet or more if seepage pits are used) from groundwater with non-fractured, dry, filterable soils that have percolation rates of greater that five (5) mpi. If this cannot be achieved, the system design must show how it will meet the intent of the Regional Water Quality Control Board's criteria.
Leachlines:

The first foot of both sidewalls underneath the drainline is not allowed to be used in calculating the sq.ft. per linear foot of trench used for determining the total length of leachline required for the absorption area.

EXAMPLE: If the design of the leachline has three (3) feet of drainrock below the drainline and the trench is two (2) feet wide, then a maximum of six (6) sq.ft. per linear foot of trench is allowed. \[ (3 \text{ ft.} - 1 \text{ ft.}) \times 2 \] + 2 \text{ ft.} = 6 \text{ sq.ft.} of absorption area/linear ft. of leachline.

IV. Review Fees

Effective July 1, 2008 the Fresno County Board of Supervisors approved fees for the review of engineered design reports. The amount of review time spent on the design review is generally dependent upon the complexity and completeness of the report. Review fees, based upon the current hourly rate, will be charged to the design engineer or firm responsible for the preparation of the report. Departmental hourly rates are subject to change and should be verified prior to submittal of the design report. Following approval of the report, the design engineer or firm will receive an invoice for the design review around the first of the next month.

Sewage Feasibility Report Requirements

It is strongly recommended that consultants contact this Department prior to initiating any work in order to discuss the scope and content relative to specific land use project applications. Completed sewage feasibility reports are to be submitted to the assigned project Planner within the Development Services Division of the Department of Public Works and Planning for routing to appropriate agencies. In general agreement with the information required for an engineered septic system design, the following shall be included:

I. Project Identification

a. Project number/name.

b. Property owner.

c. Address of any existing residences on the parcel(s)

d. Assessors parcel numbers (APNs)

e. Narrative describing the basis of the report submittal, which shall include reference of the specific County project for which the study was performed.

II. Property Characteristics

a. Area of the lot(s), existing and proposed

b. Topographic relief

c. Vegetation

d. Flood Zone information

e. Existing groundwater conditions, static and perched
f. Drainage(s) and/or Lakes, ponds, or reservoirs Test pit logs -- Logs should include a description of the soil (soil group, color, texture, percentage of rock, etc.), depth to groundwater, and depth to bedrock. If bedrock is a factor, a detailed description should be provided including, the number and orientation
of fracture sets, the density of each set, the depth of each set, the fracture width, their lateral continuity, and the degree to which the fractures are filled with small debris.

g. Map -- Map should show property boundaries, proposed and existing water well location(s) on the subject parcel(s) and locations within one-hundred fifty (150) feet on adjacent parcels, home site, driveway(s) and parking area(s), out buildings, percolation test locations, test pit locations, proposed and existing disposal fields, proposed and existing expansion area(s), stream courses, shallow or outcropping bedrock, areas of shallow groundwater, areas of inundation, and other factors which may limit sewage disposal.

III. Soil Characteristics

a. A minimum of at least one test hole per parcel shall be provided; any less must receive pre-approval by this Department. Test holes must be dug with a backhoe. Soil descriptions may be supplemented with soil boring information, but will not satisfy backhoe test hole requirements.

b. Soil permeability-Percolation test results (number of percolation tests shall be adequate to demonstrate a representative range of percolation rates for the parcel.

c. Site map shall be provided that indicates the location of all test pits and percolation tests along with a table containing the date derived from those locations.

IV. Conclusions and Recommendations

a. Feasibility of the parcels to accommodate on site disposal with recommended conditions

b. Ability of the parcels to accommodate standard systems (see note below)

c. Potential problems that may be encountered (e.g. perched groundwater, hardpan, unbuildable lots, flooding, historic high water, etc.)

d. Recommended mitigation measures to be included as a condition of project approval.

V. Review Fees

Review fees are not applicable to sewage feasibility reports as those costs are included in Health Department fees collected by the Department Public Works and Planning at the time of project application.

Note: The Fresno County General Plan, Policy OS-A.20 states, “The County shall not approve the creation of new parcels that rely on the use of septic systems of a design not found in the California Plumbing Code.” If, as a consultant, you are preparing a feasibility analysis for the creation of new parcels in an area where high groundwater or shallow bedrock are issues, it is imperative for the project that disposal fields are identified which would not necessitate the use of mound systems due to those limiting factors. Disposal fields utilizing mound systems are not recognized by the California Plumbing Code.