UKIAH OFFICE

501 LOW GAP ROAD, ROOM 1326
UKIAH, CA 95482
(707) 463-4466
FAX (707) 463-4038

HAZARDOUS MATERIALS
(707) 463-5425

FORT BRAGG OFFICE

790-A1 S FRANKLIN STREET
FORT BRAGG, CA 95437
(707) 961-2714
FAX (707) 961-2720

COUNTY OF MENDOCINO
DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Land Division Requirements

January 1, 1982
Revised February 1, 1988
Water Testing Revised June 1, 1994

FORM #26.09

INDIVIDUAL ON-SITE SEWAGE DISPOSAL SYSTEM

I. INTRODUCTION - PURPOSE

II. GENERAL SITE SUITABILITY CRITERIA

- NCRWQCB "Basin Plan" Criteria

III. SOIL TESTING PROCEDURES

A. Site testing options - Hydrometer Method vs. Percolation Tests
B. Soil Profiles
C. Soil Texture Analysis (Hydrometer Test)
D. Percolation Test Procedures
E. Spacing of Test Holes
F. "Wet Weather" Testing of Soils

IV. THE SITE EVALUATION REPORT

V. WAIVER GUIDELINES

VI. LOT SIZES

A. Public Water, Individual On-Site Sewage Systems
B. Rural & Mountainous Parcel Divisions
C. "Pygmy" Forest

VII. CUMULATIVE IMPACTS

VIII. SECOND RESIDENTIAL UNITS

NOISE

I. NOISE AND ITS EFFECT

II. GOALS OF ENVIRONMENTAL HEAL POLICY

III. COMPATIBLE USES-DETERMINING COMPATIBILITY

WATER

INDIVIDUAL ON-SITE SEWAGE DISPOSAL SYSTEM

I. INTRODUCTION-PURPOSE

The safe disposal of all human and domestic waste is of prime importance in order to protect the health of the individual, the family, and the community. To accomplish this goal, all sewage must be disposed of so it will not:

1. Contaminate any drinking water supply.

2. Give rise to a public health hazard by being accessible to insects, rodents, or other possible carriers which may come into contact with food or drinking water.

3. Give rise to a public health hazard by being accessible to persons, or animals that come in contact with persons.

4. Violate state or local laws or regulations governing water pollution contamination, or sewage disposal.

5. Pollute or contaminate the water of any lake, ocean, pond, river, or stream.

6. Give rise to a nuisance due to odor or appearance.

The first step in the design of a subsurface sewage disposal system is to determine whether the site is suitable for the absorption of septic tank effluent and, if so, how much area is required. The soil must have an acceptable percolation rate, without interference from groundwater or impervious strata below the level of the absorption system.

In the past, numerous problems with failing individual sewage disposal systems have been encountered where the site was not properly evaluated before the system was installed. These failing systems contaminated water supplies, in addition to being odor nuisances.

In order to prevent these hazards, and to provide you with a sewage disposal system that will function satisfactorily for an extended period of time, a SITE EVALUATION by a QUALIFIED PERSON OR FIRM is necessary. Many factors other than a simple soil percolation rate effect the operation of your sewage system, and they must be evaluated by a person trained and experienced in such evaluations. Some of these factors are:

1. Percolation rates
2. Soil depth
3. Depth to water table, hardpans, or bedrock (impermeable material)

4. Ground slope
5. Soil type and texture
6. Setback distances from water supplies
7. Flood plains
8. Replacement area
9. Cumulative effects

II. GENERAL SITE SUITABILITY CRITERIA

In addition to Mendocino County requirements established by County Code, the County General Plan, and Health Officer's policy, the following North Coast Regional Water Quality Control Board Basin Plan policies must be met:

1. Criteria

The following site criteria are considered necessary for the protection of water quality and the prevention of health hazards and nuisance conditions arising from the subsurface discharge of wastes from individual waste treatment and disposal systems. They shall be treated as region-wide standards for assessing site suitability for such systems.

A. Subsurface Disposal

Individual waste treatment and disposal systems shall be located, designed, constructed, and operated in a manner to ensure that effluent does not surface at any time, and that percolation of effluent will not adversely affect beneficial uses of waters of the state.

B. Ground Slope

Natural ground slope in all areas to be used for effluent disposal shall not be greater than 30 percent. Where less than five feet of soil exists below the trench bottom (see C below), ground slope shall not exceed 20 percent.

C. Soil Depth

Minimum soil depth immediately below the bottom of the leaching shall not be less than five (5) feet. A minimum depth of three (3) feet shall be permitted where ground slope is less than 20 percent.

Less soil depths may be granted only as a waiver, or for Alternative Systems. "Soil depth" is measured vertically to the point where bedrock, hardpan, impermeable soils or saturated soils are encountered.

D. Depth to Groundwater

Minimum depth to the anticipated highest level of groundwater below the bottom of the leaching trench shall be determined according to soil texture and percolation rate as follows:

Soil Texture* Percent Silt + Clay	Depth to Groundwater Below Leaching Trench (ft.)
5 or less	40
6 to 10	20
11 to 15**	10
Greater than 15**	5
Greater that 15	2***

* Must exist for a minimum of three (3) continuous feet between the bottom of the leaching trench and groundwater.

** Or a percolation rate slower than 5 MPI.

*** Granted only as a waiver or for Alternative Systems.

E. Percolation Rates

Percolation test results in the effluent disposal area shall not be less than one inch per minutes (60 MPI) for conventional leaching trenches and one inch per 30 minutes (30 MPI) for seepage pits. Percolation rates up to one inch per 120 minutes (120 MPI) may be considered only for Alternative Systems.

F. Setback Distances

Minimum setback distances for various features of individual waste treatment and disposal systems shall be as shown in Table 1.

Table 1

MINIMUM SETBACK DISTANCES

Facility	Well	Perennially Flowing Stream 1/	Ephemeral Stream 2/	Ocean Lake or Reservoir 3/	Cut Banks, Natural Bluffs & Sharp CHanges in Slope
Septic Tank	100	100	50	50	25
Leaching Field	100	100	50	100	25 4/
Seepage Pit	150	100	50	100	25 4/

1/ As measured from the line which defines the limit of 10 year frequency flood.
2/ As measured from the edge of the water course.
3/ As measured from the high-water lines.
4/ Where soil depth or depth to groundwater below the leaching trench are less than five (5) feet, a minimum setback distance of 50 feet shall be required.

G. Replacement Area

An adequate replacement area equivalent to the initial effluent disposal area shall be reserved at the time of site approval. Incompatible uses of the replacement area shall be prohibited.

H. Cumulative Effects

Possible cumulative effects on ground and surface waters shall be evaluated and considered in the Regional Board's review of subdivision developments and other facilities utilizing subsurface sewage disposal systems.

2. Methods of Site Evaluation

Site evaluations are required in all instances to allow proper system design and to determine compliance with the preceding site suitability criteria prior to approving the use of individual waste treatment and disposal systems. The responsible regulatory agency (local Health Department or Regional Board) should be notified prior to the conduct of site evaluations since verification by agency personnel may be required. Site evaluation methods shall be in accordance with the following guidelines:

A. General Site Features

Site features to be determined by inspection shall include:

1. Land area available for primary disposal system and replacement area.

2. Ground slope in the effluent disposal system and replacement area.

3. Location of cut banks, natural bluffs, and sharp changes in slope within 50 feet of the disposal and replacement area.

4. Location of wells, intercept drains, streams, and other bodies of water on the property in questions and within 100 feet on adjacent properties.

B. Soil Profiles

Soil characteristics shall be evaluated by soil profile observations. One backhoe excavation in the primary disposal field and one in the replacement area shall be required for this purpose. A third profile shall be required if the initial two profiles show dissimilar conditions.

Augered test holes shall be an acceptable alternative, upon determination of the Health Officer or Regional Board: (a) Where use of a backhoe is impractical because of access, (b) when necessary only to verify conditions expected on the basis of prior soils investigations, or (c) when done in connection with geologic investigations. Where this method is employed, three test holes in the primary disposal field and three in the replacement area shall be required.

In the evaluation of new subdivisions, enough soil profile excavations shall be made to identify a suitable disposal and replacement area on each proposed parcel.

The following factors shall be observed and reported from ground surface to a depth of at least five (5) feet below the proposed leachfield system.

1. Thickness and coloring of soil layers and apparent United States Department of Agriculture (USDA) classification.

2. Depth to and type of bedrock, hardpan, or impermeable soil layer.

3. Depth to observed groundwater.

4. Depth to soil mottling

5. Other prominent soil features such as structures, stoniness, roots and pores, dampness, etc.

C. Depth to Ground Water Determinations

The anticipated highest level of groundwater shall be estimated:

1. As the highest extent of soil mottling observed in the examination of soil profiles; or

2. By direct observation of groundwater levels during "wet weather" conditions.

Where a conflict in the above methods of estimation exists, the direct observation shall govern and the extent of soil mottling shall be considered the highest of saturated soil for the purpose of determining soil depth. (See WET WEATHER TESTING CRITERIA).

In those area which, because of parent materials, soils lack the necessary iron compounds to exhibit mottling, direct observation during wet weather conditions shall be required.

III. SOIL TESTING PROCEDURES

[redacted]

Soil testing for suitability requires one or more SOIL PROFILES, and either a SOIL TEXTURE ANALYSIS (HYDROMETER TEST) or SOIL PERCOLATION TESTS. Two (2) options exists:

Option A

Two (2) acceptable soil profiles (backhoe excavation) and six (6) acceptable percolation tests must be submitted for each lot of a proposed land division.

One (1) soil profile is to be conducted in the area where the leach field is expected to be installed and one (1) in the replacement area. Profiles are to be dug to a minimum depth of eight (8) feet, and not less than five (5) feet below the bottom of the proposed leach trench.

The six (6) percolation tests are to be performed and located throughout both areas.

OR

Option B

Two (2) backhoe excavations are to be conducted; one (1) in the proposed leach field area and one (1) in the proposed replacement area. If both excavations exhibit acceptable soil characteristics, then samples will be taken at each soil layer in the area between the top of the effluent pipe and three feet below the leach trench as shown in figure 7 of "Soil Evaluation for On-Site Sewage Disposal" (April 1980).

B. Soil Profiles

Be certain to read the previous chapter (especially 2-B) for basic information about soil profiles. The following instructions are for conducting soil profiles:

1. Soils profiles may only be interpreted by qualified SITE EVALUATORS (see latest list).

2. To perform the soil profile, dig two (2) soils profile holes to a depth of at least 8 feet. One hole is to be in the area for the initial leach field, the other in the replacement area.

3. NOTE WELL: SAFETY REGULATIONS PROHIBIT EMPLOYEES TO BE IN AN UN-SHORED EXCAVATION BELOW THE FIVE FOOT LEVEL. IT IS RECOMMENDED THAT A PLATFORM BE DUG AT THE FIVE FOOT LEVEL, AND THAT PERSONS NOT GO BELOW THIS LEVEL.

4. With a sharp instrument, dig away the smeared soil face at the side of the hole, to expose the natural soil profile.

5. Examine the soil using procedures found in the publication, "Soil Evaluation for On-Site Sewage Disposal", latest revision. At a minimum, the following must be examined, and recorded:

   A. TEXTURE -- Soil texture is classified as follows:

      Sandy, loamy sand, sandy loam, silt loam, silt, sandy clay loam, clay loam, silt clay loam, sandy clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse", "fine" or "very fine". For further information, see the soil surveys of the Soil Conservation Service, USDA.

   B. COLOR

      Soil color is very important, and must be accurately described. It is recommended that a Munsell Color Chart be used to described soil color. ESPECIALLY NOTE MOTTLING, GLEYING, AND LOW-CHROMA COLORS.

   C. SOIL SATURATION

      This determination is mandatory, and must be reported. Differentiate between seasonal saturation, and permanent water tables.

6. The following should also be noted on the report:

   A. Impermeable layers (claypans, hardpans and cementation).
   B. Depth to bedrock, fractured rock, sandstone, or other parent material.
   C. Water Seepage. If water seepage is encountered, the hole should be left open to observe water level. (You must remember that high clay soils may be saturated, and yet no seepage will occur. In this case, seasonal saturation must be determined by soil mottling and gleying.)

7. Submit a PLOT PLAN showing the locations of the soil profiles on the parcel being tested and distances from breaks-in-slope, wells, lakes, ponds, springs, drainages and all other factors which might influence the locating of a sewage disposal field. Soil profiles for land divisions should also be marked with a stake, fence post, or similar device to aid in further location of them.

C. SOIL TEXTURE ANALYSIS (HYDROMETER TEST)

Soil Hydrometer samples shall be taken at each soil layer in the area between the top of the effluent pipe and three (3) feet below the leach trench as shown in figure 7 of "Soil Evaluation for On-Site Sewage Disposal" (April 1980).

Sufficient material shall be collected to provide for a **SLAKE** test, **BULK DENSITY** test (except for soils falling in the zone of sand, loamy sand or sandy loam) and the **HYDROMETER** test.

Only Water Quality Control Board approved laboratories may perform the testing, and all tests results shall indicate the results of the Slake test and Bulk Density test along with the Hydrometer readings.

Coarse particle adjustments shall be made for gravel and cobbles only. Coarse particle adjustment may not be made for fractured rock.

Soil Hydrometer data submitted for zones outside of the sand, loamy sand or sandy loam designations and not accompanied by Bulk Density data **will not be accepted by the Division of Environmental Health.** It will be necessary for consultants to use the paraffin-coated clod method if the core sampler method cannot be used.

Soil from the limiting soil layer observed within the excavated soil profile shall be obtained and analyzed for bulk density and texture according to methods prescribed by the Regional Board. The results shall be plotted on the soil textural triangle, as per the indicated instructions.

(a) Soils falling within the "coarse" range (zone 1) shall be considered to have minimal filtration capabilities, requiring increased depths to groundwater as per Table 1, previous chapter.

(b) Soils falling within the "acceptable" (zone 2) range shall be considered suitable for effluent disposal without further testing.

(c) Soils falling within the "marginal" range (zone 3) shall require wet weather percolation testing to verify suitability for effluent disposal.

(d) Soils falling within the "unacceptable" range (zone 4) shall be considered unsuitable for conventional effluent disposal methods. The applicant may elect to perform wet weather percolation testing of zone 4 soils, as certain clay soils in zone 4 exhibit acceptable percolation.

D. SOIL PERCOLATION TESTS

Percolation tests are subject to many variables which affect the accuracy of the test. These variables include:

- **Expansive soils** - some soils swell appreciably when wet, and must be saturated, or pre-soaked to give accurate percolation results.
- **Methods of measurement** - studies have shown that the traditional "tape measure-fixed reference point" method gives results that vary over 200% from the same test hole.
- **Number of holes tested** - due to variations in individual test holes, a minimum of six (6) test holes, or more, is required.

In order to provide accurate percolation test data, the following procedure shall be required:

1. Percolation tests performed during the dry season, April 15th up til 20" of rain have fallen, shall be accompanied by **HYDROMETER TESTS** to show suitability for dry-weather testing. Zone 3 and 4 soils always require wet weather percolation testing.

2. **Location**

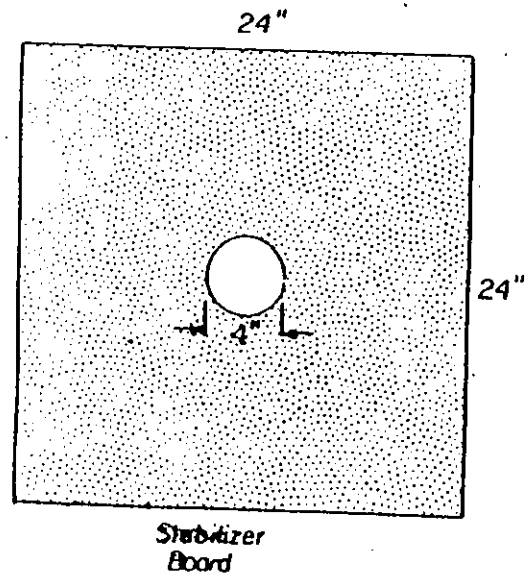
   Test holes shall be located in an area that complies with the Division of Environmental Health Building site criteria. Test holes aloneside roads or in areas where leach lines cannot be installed will not be accepted.

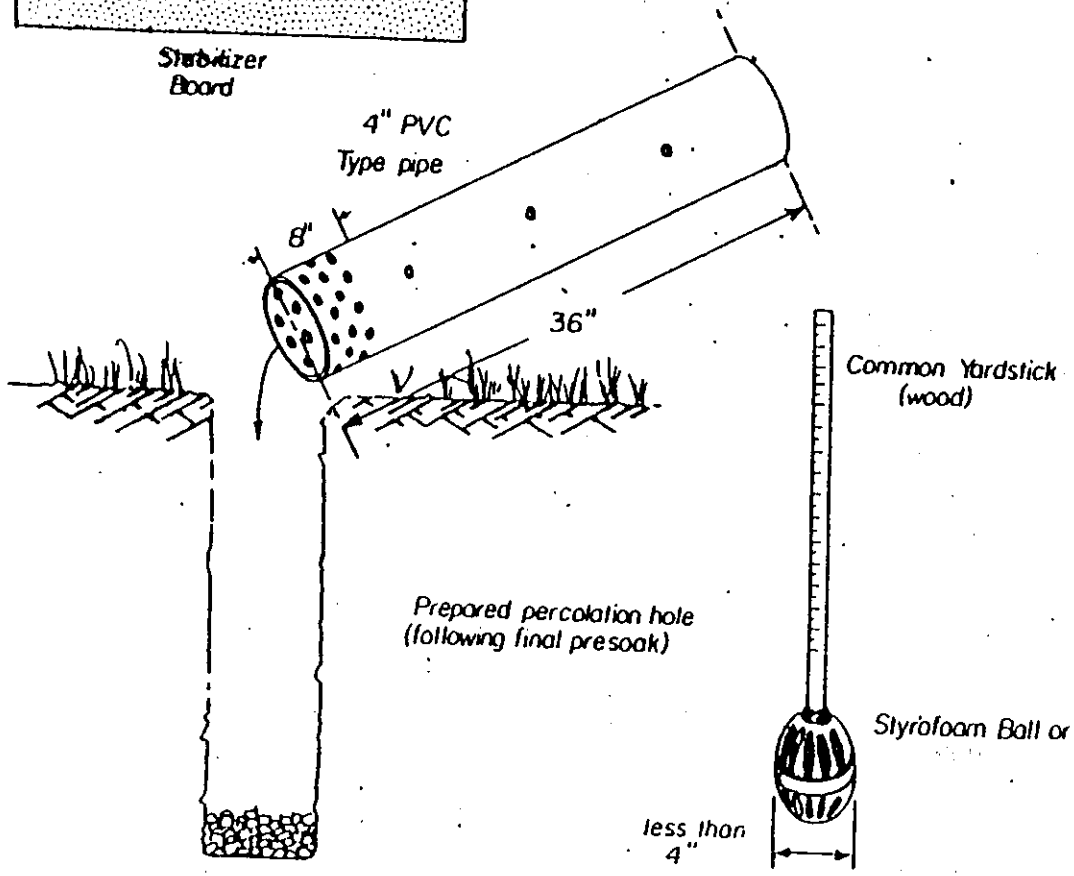
3. **Type of Hole**

   Dig or bore a hole of post hole width (4-inches in diameter), to a depth of 30-36 inches. Carefully scratch the sides of the hole to remove any smeared soil to provide a natural soil surface. Remove all loose material and add two (2) inches of coarse sand or fine gravel to the hole. Upon this gravel, rest a three (3) of four (4) inch diameter section of perforated pipe, and fill the annular space between the outside of the pipe and the wall of the hole with the same material used in the bottom of the hole. See Figure 1 for required Percolation Test Equipment.

Percolation Test Equipment

1. Cut 4" pipe into 36" long sections
2. Drill numerous large (1/2") holes in bottom 8" of pipe to permit free water movement
3. Use styrofoam toilet bowl float or any piece of styrofoam of an appropriate size and shape that will move freely in the pipe
4. Force the end of the yardstick into the styrofoam after coating the end with waterproof glue or epoxy
5. Provide stabilizer board for shallow holes or tight soils





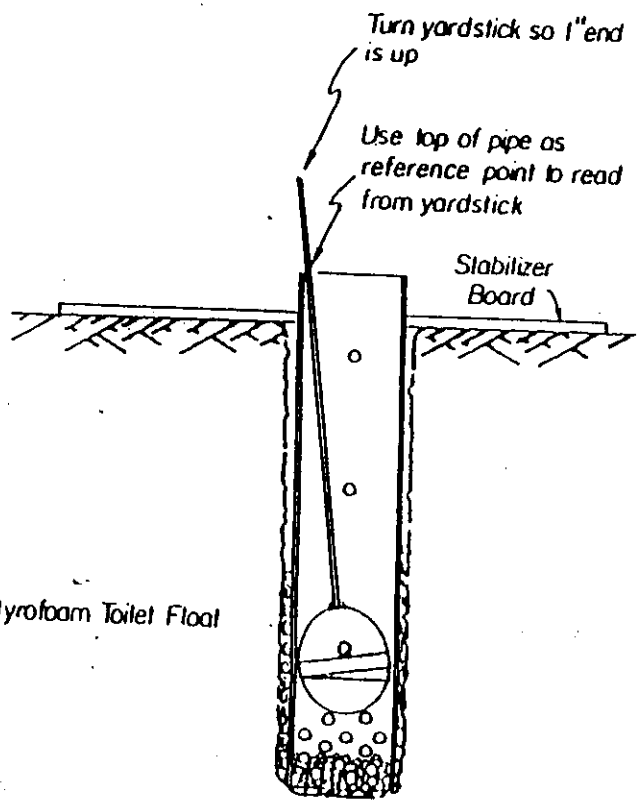


FIGURE 1

At all times, percolation tests are to be performed at the level of the sewage disposal leach field. It may be necessary to conduct percolation tests below the 30-36 inch depth. If a deep leach field is planned, then the percolation tests must be performed down to the deeper level so the percolation test data accurately reflects the percolation rate for the leach field.

4. **Presoak**

In order to approximate a subsurface effluent disposal field in operation during the winter, it is necessary to presoak the test hole to assure that the soil surrounding the hole is both saturated and swelled. Saturation means that the void spaces between soil particles are filled with water, while swelling is the process by which water intrudes into the individual soil particles. The latter process is quite slow, especially in clay type soils, and is the reason for a 24-hour presoak period.

5. **Percolation Rate Measurement**

Due to the variations in soil found in Mendocino County, slight variations in percolation rate measurement are necessary.

A. In all cases, tests must be run until a **stablized percolation rate** is reached.

B. If Water Remains in Test Hole

If water remains in test hole after the 24 hour presoak period, add clear water to a depth of six (6) inches above the gravel. From a fixed reference point, measure the drop in water level over a 60-minute period. The drop in this 60-minute period is the percolation rate.

C. If No Water Remains in the Test Hole

Add clear water to a depth of six (6) inches above the gravel. From a fixed reference point, measure the drop in water level hourly for at least four (4) hours, adding water each time to bring the level up to six (6) inches above the gravel. The amount of drop that occurs in the fourth (4th) or final period will be used to calculate the percolation rate.

D. If Water Seeps Away in Less Than 60-Minutes

Add clear water to a depth of six (6) inches over the gravel, and make measurements at regular intervals (e.g., 10, 15 or 30 minute intervals), whatever is necessary, to establish the true rate.

All test holes must be dry within 24 hours of beginning measurements. It must be pointed out that final approval of a site as acceptable for individual sewage disposal systems depends on several factors, and not solely on a percolation test result. A final determination as to the suitability of the particular site will be made by the Division of Environmental Health.

E. SPACING OF TEST HOLES

A frequently asked question is how far apart should test holes be spaced. Figure 2 provides guidance in this area.

F. WET WEATHER TESTING OF SOILS

WET WEATHER TESTING is performed for two separate and distinct purposes:

1. To determine **PERMEABILITY** during the wet season.
2. To determine the HIGHEST ANTICIPATED GROUND WATER LEVEL during the winter.

WET WEATHER TESTING TO DETERMINE PERMEABILITY

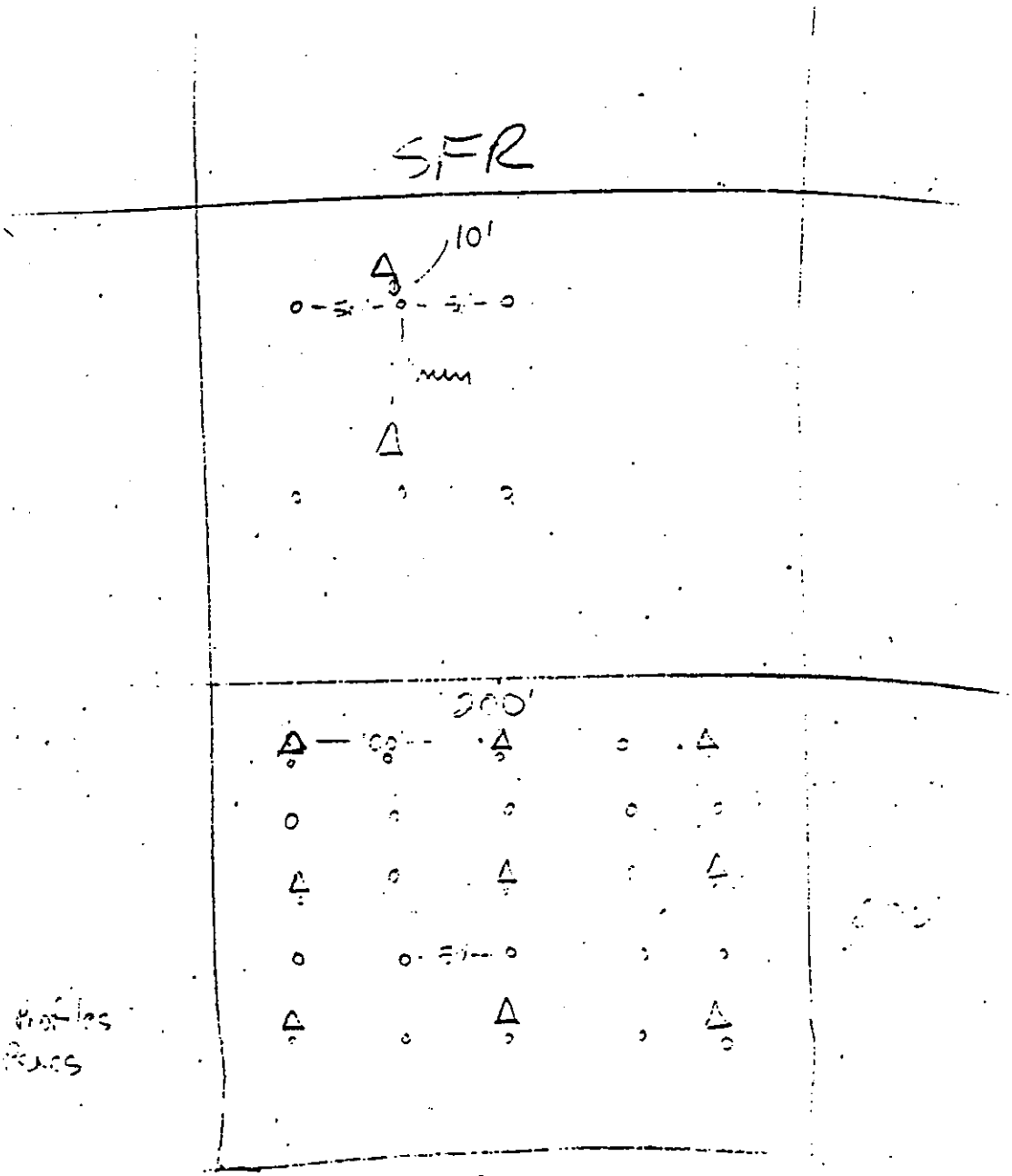
This is a percolation test done during the winter in Zone 3 and Zone 4 soils, or in expansive soils. This test can be performed during the **Wet Weather Season**, anytime after 20" of rain has fallen, up to April 15th. This period can be extended in writing by the Director of Environmental Health.

WET WEATHER TESTING TO DETERMINE HIGHEST ANTICIPATED GROUND WATER LEVEL

SOIL MOTTLING

In many cases, the highest anticipated ground water level can be determined by soil mottles and gleying; this determination can be made at any time of the year. However, it must be recognized that not all soils exhibit mottling, and highest anticipated ground water levels may have to be observed directly by means of **OBSERVATION WELLS**.

SPACING OF TEST HOLES



OBSERVATION WELL METHOD

Since ground water levels rise to a certain level during the winter, and then fluctuate following rainfall patterns, it is necessary to measure ground water levels throughout the wet weather season if high water table levels are to be accurately determined. This is accomplished by the installation of **OBSERVATION WELLS**, at least TWO (2) per lot or parcel, more for larger central or commercial systems, and by periodically recording observed water levels during the wet weather season.

MONITORING PERIOD

Water levels shall be recorded WEEKLY, AND WITHIN 48 HOURS FOLLOWING A STORM where rainfall exceeds 1 inch in 48 hours. Use rainfall data from the nearest Health Department approved rainfall gauging station. Monitoring shall be required for 60 days, or during the entire wet weather testing period, whichever is shorter. In all cases, the monitoring shall include at least three (3) storms where rainfall exceeds one (1) inch in 48 hours. During drought years, or years of unusual rainfall patterns, other requirements may be specified by the Director of Environmental Health.

OBSERVATION WELL DATA

After collection of the data, both rainfall and measured water levels shall be graphically depicted, either on a bar graph, or a line graph. This data, plus an analysis of the data by the consultant, shall be submitted to the Health Department for review.

CRITERIA FOR ACCEPTANCE OF DATA (See also graph on following page.)

1. UNACCEPTABLE

   - Ground water rises into Zone A (see following graph) for any length of time, or
   - Ground water rises into Zone B, and remains there more than 7 days; and site is NOT ELIGIBLE for waiver.

2. ACCEPTABLE WITH WAIVER

   - Ground water rises into Zone B (but not into Zone A) and remains for longer than 7 days; and site is ELIGIBLE for waiver.

3. ACCEPTABLE

- Ground water at no time rises into Zone A; ground water that rises into Zone B must fall to below Zone B within 7 days.

OBSERVATION WELL CONSTRUCTION

See Typical Observation Well drawing for **RECOMMENDED** construction. Observation Wells must be augered, drilled, or bored. Pipes in backhoe pits are generally unacceptable as observation wells, unless specified by the CONSULTANT.

IV. THE SITE EVALUATION REPORT

Once the testing phase of the site evaluation has been completed, the data must be put together into a **SITE EVALUATION REPORT** that will enable the Division of Environmental Health to (1) locate the property, (2) locate the soils testing sites on the property, and (3) determine that the site complies with all criteria.

Prior to approval by the Division of Environmental Health, all of the following data must be provided: (2 copies)

1. A **SITE EVALUATION REPORT** must be prepared by a qualified person or firm, and submitted on approved forms.

2. A **PLOT PLAN** of the parcel configuration on a scale of 1"-50' or larger.

3. A **SITE PLAN** (8 1/2" X 11" or 14") with all of the following shown:

   A. Frontage roads and easements.
   B. Distance of site to property lines and/or road easements.
   C. Location of all soil test pits, percolation tests, and length, width, and location of approved site.
   D. 100% replacement area.
   E. North Arrow
   F. Percent slope in sewage disposal areas.
   G. The location of all wells on the parcel and within 100' of the property line on adjacent parcels; rivers, streams, lakes, ponds, ditches, winter drainages, sharp breaks in slope (over 30%) and other factors effecting sewage system performance.
   H. A location map and accurate driving directions to the parcel.

4. A **cross-section** of the leach field (or other soil absorption system) showing all dimensions, plus soil depth, if other than a standard leach line.

5. A Certification by a qualified person, or firm, that this site and sewage system meets all requirements of the Water Quality Control Board Plan, and local requirements.

Failure to submit any of the above will be deemed an incomplete application, which will be returned to the Consultant and/or the property owner.

V. WAIVER GUIDELINES

The North Coast Regional Water Quality Control Board has adopted regulations designed to protect water quality, preclude health hazards, and to prevent nuisance conditions from arising from the use of on-site sewage disposal systems. Since adoption of these regulations in 1979, it has been clear that situations do arise which justify less stringent requirements. Consequently, provisions are made for the issuance of waivers of site suitability criteria where it is clear that **public health will not be endangered, nor water quality impaired as a result.**

As you consider whether or not to apply for a waiver, keep in mind that the Mendocino County Division of Environmental Health must be able to make the two findings required in the above paragraph. Therefore, only one waiver of site criteria per parcel will be considered, except under unusual circumstances; and, for new land division, minimum parcel size must be 2 acres or greater. (This minimum lot size for new land divisions is to prevent cumulative effects from occurring.)

The following Policy and Guidelines will be used for the issuance of waivers.

A. POLICY

1. Waivers may be granted by the Regional Board or County Health Officer for individual cases or for defined geographical areas.

2. In evaluating waiver situations primary consideration will be given to the prevention of health hazards, nuisances and impairment of beneficial uses of waters of the State.

3. Waivers are not intended to be issued indiscriminately, but rather with careful review and consideration.

4. Waivers will be considered only if no other reasonable alternative exists on the property in questions. Lot must be thoroughly evaluated.

C. The type of discharge situation in question (i.e., land division, commercial facility, existing lot, repair system) shall be a consideration determining the property of granting a waiver.

B. GUIDELINES

1. Soil Depth

Soil depth requirements may be waived to no less than two feet if:

I. All other standard criteria are met and soils fall within Zone 2 or Zone 3, or with passing perc tests, on the Soil Percolation Suitability Chart.

II. Waiver is substantiated by qualified consultant's report which considers and address such factors as soil depth, permeability and texture, fracture zones, springs and seeps, and direct experience in similar circumstances. (You must have data for **all** of these factors, and must address each one specifically and not generally.)

III. For New Land Divisions, parcel size must be 2 acres or more.

2. Depth to Groundwater

A. Required depths to groundwater in excess of five (5) feet (for those soils with excessive percolation rates) may be waived if an underlying impermeable soil strata (Zone 4, or percolation rate less than 1/2"/hr.) precludes direct travel of effluent to the water table. (Three (3) feet of Zone 2 or 3 soil would also meet this requirement.)

B. Minimum depth to groundwater may be waived from five (5) feet to no less than two (2) feet if:

I. all other standard criteria are met, public water exists, or private wells are required to have an annual seal, density of development in the immediate area is such that groundwater mounding or other cumulative water quality impacts are unlikely (2 acres for New Land Divisions), springs and seeps are nowhere apparent near the site, and direct experience with other installations in similar circumstances indicates no problem. You must address **all** of these factors in your report.

waiver is substantiated by a qualified consultant's report which considers and analyzes such factors as soil depth, permeability and texture, fractured rock, springs and seeps, development density, pertinent research findings, and direct experience in similar circumstances.

III. For new Land Divisions, parcel size must be two (2) acres or more.

3. Setback Distances

I. Waiver of setback from perennial streams may be reduced from 100' to no less than 50' if: **all other site criteria are met** and water quality impairment or health hazards are judged unlikely as substantiated in a report by a qualified consultant which considers and addresses such factors as: Soil depth and filtering capabilities, fractured rock, springs and seeps, ground slope, flow characteristics of the stream(s), pertinent research and direct experience in similar circumstances. You must address all of these specifically, not generally.

II. Where the 10-year flood level is not established or readily identifiable, set-back distances from perennial streams may be measured from the edge of the watercourse during normal winter flow conditions,

III. Minor variance in set-backs (up to 10%) may be permitted as a practical consideration without applying for a waiver.

IV. Waiver of set-back from wells to no less than 50' may be permitted if:

All other site criteria are met and water quality or health hazards are judged unlikely as substantiated by a report prepared by a qualified consultant which considers and addresses such factors as: Soil depth and filtering capabilities, fractured rock, springs and seeps, ground slope, pertinent research and direct experience in similar circumstances.

V. For New Land Divisions, parcel size must be two (2) acres or more.

VI. LOT SIZES

A. As per Mendocino County Code minimum lot sizes in Mendocino County, where individual on-site sewage disposal systems are used, have always been as follows:

Public Water Supply - 12,000 square feet
Individual Water Supply - 40,000 square feet

However, it must be recognized that the above lot sizes are based upon FLAT lots or parcels. Where average slope of the lot or parcel EXCEEDS 3%, the following lot sizes will be required by the Division of Environmental Health. (LOTS SERVED BY PUBLIC WATER SYSTEM):

SLOPE*	LOT SIZE
0-3%	12,000 square feet
3-5%	15,000 square feet
5-10%	18,000 square feet
10-15%	20,000 square feet
over 10% (30% is maximum)	24,000 square feet

*determined by measurement on site.

B. RURAL and MOUNTAINOUS parcel divisions, where parcels are served by INDIVIDUAL water and sewer systems, should meet the following lot sizes:

SLOPE**	LOT SIZES
up to 10%	40,000 square feet
10-20%	5 acres
20-30%	10 acres
30-50%	20 acres
50% or greater	40 acres

**from Upland Soils Maps, or from Soil Conservation Service soils maps

C. "Pygmy" Forest Soils

2 acres minimum in Noyo Soils
5 acres minimum in Blacklock Soils

VII. CUMULATIVE IMPACTS

A. Where recommended densities are exceeded, CUMULATIVE IMPACT STUDY may be required to address any of all of the following:

1. Groundwater mounding in the leachfield
2. Nitrate buildup in the water table
3. Salt, bacteria buildup in the water table

B. CUMULATIVE IMPACT STUDIES will be required for developments as follows:

1. Additional units at schools, commercial developments, etc. where sewage loading exceeds recommended levels.

2. Commercial, multi-residential where sewage flows exceed 1500 gallons per day as per standard flow-rate charts.

3. Community leach fields serving mobile home parks, subdivisions, etc.

4. Other development where deemed necessary by the Division of Environmental Health, e.g. where waivers are necessary.

VIII. SECOND RESIDENTIAL UNITS

Mendocino County has adopted zoning requirements to implement State Law regarding Second Residential Units (SRU's). Mendocino County Code Section 20-185(k) requires the Health Department to make a finding that sewage disposal and water supply are adequate before an SRU can be approved. The following information has been prepared to assist you in applying for an SRU:

1. APPLICATION INFORMATION
2. SEWAGE DISPOSAL
3. WATER SUPPLY

1. APPLICATION INFORMATION

Generally, you will apply for an SRU at the Planning and Building Services Department. They will perform a preliminary zoning check, and will advise you that you must obtain Health Department approval before final application can be accepted. There is a $25.00 application fee for Environmental Health, payable to Planning and Building Services at the time the application is filed.

2. SEWAGE DISPOSAL:

A. Individual On-Site Systems

It must be shown that there is sufficient area for both primary and replacement leach fields for the SRU, AND replacement area for the existing sewage disposal system. This requires a site evaluation by a qualified person, generally two (2) eight (8) foot deep soil profiles, and a statement certifying that the site has been examined utilizing approved procedures, and that it complies will all State and County requirements for an on-site sewage disposal system at the time of the evaluation.

B. Public Sewer Available

Submit a letter from the district indicating a willingness and ability to serve your Second Residential Unit, OR have the statement signed on the "SECOND RESIDENTIAL UNIT REPORT".

C. Lot Sizes

The Mendocino County General Plan requires that the cumulative effects of new sewage disposal systems be considered when approving new systems. Since additional sewage disposal on small lots can cause pollution problems from nitrates, chemicals, and bacteria, the following lots sizes are minimum for SRU's:

Public Sewer	Per Zoning Ordinance
Public Water, Private Sewer	40,000 square feet
Private Water and Sewer	60,000 square feet

3. WATER SUPPLY:

A. Public Water Available

Submit a letter from the water district stating their willingness and ability to supply your SRU; OR have the statement signed on the "SECOND RESIDENTIAL UNIT REPORT".

B. Private, On-Site Water System

Submit a certified statement from a qualified site evaluator stating that the basic guideline of 1 gallon/minute/connection with storage has been met.

2-A and 3-B ABOVE MUST BE PERFORMED BY A QUALIFIED SITE EVALUATOR

NOISE

I. Noise and Its Effect

II. Goals of Environmental Health Policy

III. Compatible Uses-Determining Compatibility

IV. Noise Studies

a. Consultant Qualifications

b. Contents of Study

V. Noise Mitigation

VI. Noise Standards

NOISE

I. Noise and Its Effect

Noise is defined as sound that is annoying or which has a detrimental effect on human physiologic processes. Some sounds have more adverse effects than others; the most annoying types are the loudest and highest pitched: Intermittent and irregular sound is also very disturbing, and the more random a sound occurrence, the more irritating it becomes. Noise from an uncertain cause, hidden or moving source is more annoying than readily identifiable noise. Unexpected loud sound (the sonic boom) which startles the hearer is extremely disturbing. We seldom object to the constant low-level noise of a residential neighborhood or to the noise we generate ourselves but noise which is inappropriate to our activity becomes obtrusive and annoying. In short -- noise is unwanted sound.

The effects of noise have become so serious that there is widespread public interest in controlling and reducing unnecessary sound.

Noise also interferes with safety and communication, it causes undue stress and lowers the quality of life generally. Additionally, economic values may be affected by noise. A noisy area is a less desirable place to live, work and play in than a quite one.

II. Goals

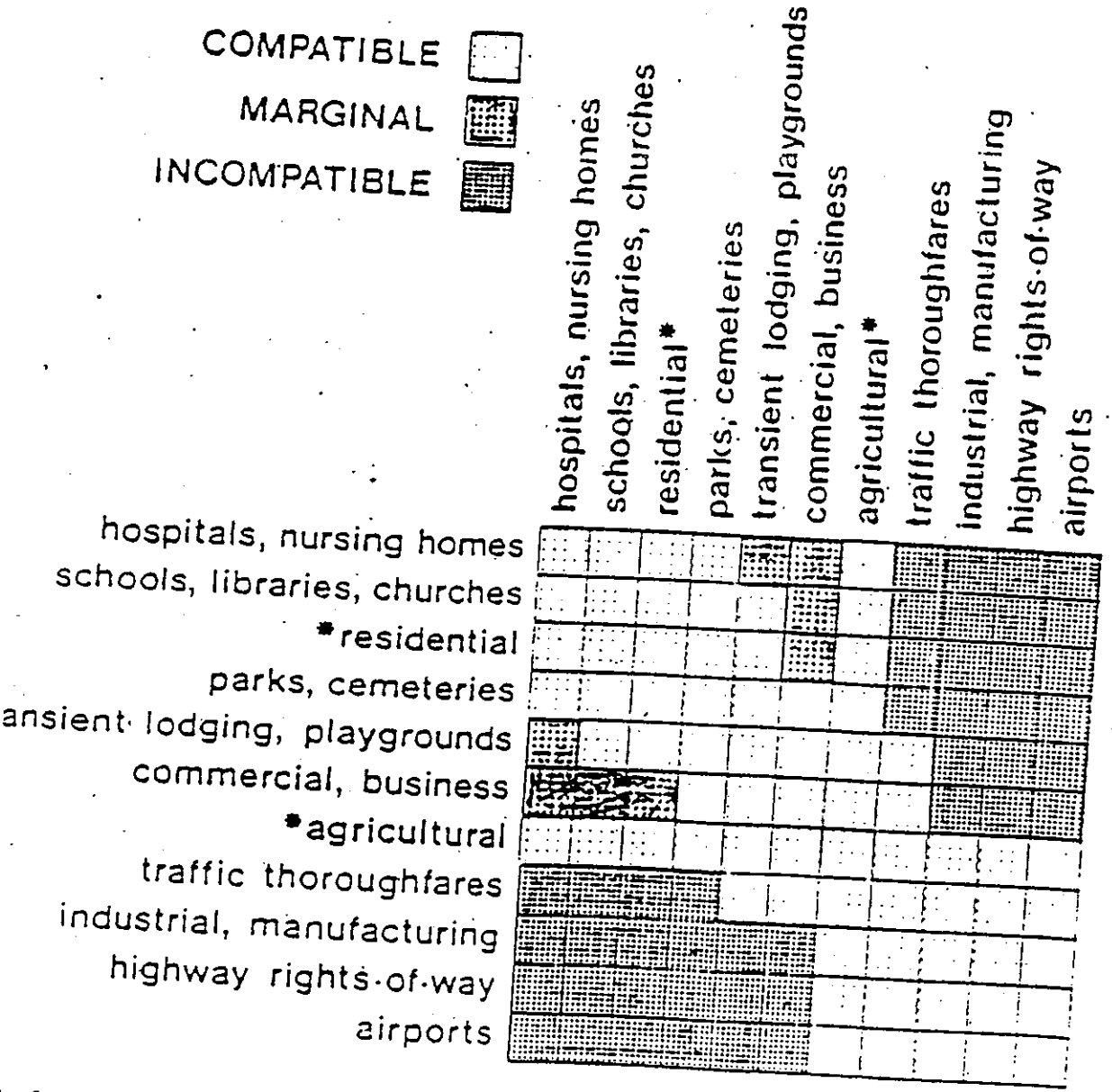
During Policy conferences held in Mendocino County many people expressed appreciation for the peace, quietness and tranquility which are so basic to the high quality of life here. The County of Mendocino desires to protect its environment from noise and has developed the following noise regulations.

All projects must show compliance with the noise element. Some projects may need the expertise of an acoustic consultant in order to show noise element compliance.

III. Compatible Uses

Some land uses are inherantly compatible while other land uses are inherantly incompatible. One example of compatible uses is a residential use and a park use. An example of incompatible uses is a residential use and an industrial/manufacturing use. It is most important to properly zone property for uses which are compatible. It is difficult and expensive to mitigate noise problems created by incompatible uses. It is much better to properly zone land for compatible uses than to require restrictive and costly conditions on a project because of incompatible uses. The following chart is to assist in zoning property for compatible uses.

Noise Compatibility of Adjacent Land Uses



* Evident only in agricultural areas where wind machines, electronic bird... are in use. Non-farm residential development and agriculture are not considered entirely compatible - see text for discussion.

Even compatible uses can have noise related problems and it may be necessary to mitigate those problems. An example of compatible uses needing noise mitigating could be an existing residential neighborhood setting and a hospital or school moving into the area with a very noisy air conditioner compressor. In this situation, noise mitigation is needed to reduce the unacceptable noise reaching the surrounding neighbors from a very noisy air conditioner compressor. It is much easier to mitigate noise if necessary between two compatible uses rather than between two incompatible uses.

IV. Noise Study

Noise studies shall be prepared by knowledgeable and experienced acoustical consultants.

The consultant shall minimally evaluate the following:

A. Site Conditions - topography, vegetation, existing structures & uses, and access.

B. Surrounding Land Uses - zoning, structures, uses of structures.

C. Project Description - complete description of project including the following, if applicable: equipment, processes, equipment/process location, anticipated hours of operation, volume of material processed, material routing, structure locations, use of structures, and access.

D. Ambient Noise Level - determine ambient noise level at project site and surrounding parcels. 20 year projections are required along major traffic throughfares.

E. Project Noise Level - if applicable, determine anticipated noise level for project at property lines and at surrounding parcel structures.

F. Mitigations - if needed, specify the type and extent of mitigation needed to bring project into compliance with the Mendocino County Noise Element and conditions of approval as may be set by the Planning Commission and/or Board of Supervisors.

It is important the consultant contact the Division of Environmental Health to discuss the project and departmental concerns prior to completing work on the study.

V. Noise Mitigation

There are many ways to mitigate noise at a project site or development. The decision on how to mitigate the noise should be made by the applicant and the applicant's consultant. They should discuss their options with both Health Department and Planning Department staff prior to making final decision. The following is a list of the most common ways in which noise effects can be mitigated; they do not offer all possibilities:

A. Hours of Operation - The hours of operation may be changed to reduce the noise impact by shifting noise generating operations or processes to less sensitive hours. An example is using noise generating equipment in midday when normal work day activities have elevated ambient noise levels, and when people in the neighborhood may be absent from the home.

B. Equipment - Purchase equipment designed to produce less noise than standard equipment, this includes retrofitting existing equipment to be less noise producing.

C. Barriers - Barriers can intercept sound before it reaches a noise sensitive use. Barriers can be constructed around a noise generating process, around the entire operation, or around the receiver.

Barrier can be made of wood, concrete, concrete block, earth, aggregate or other material as designed by an acoustical consultant.

D. Distance - The further a noise source is from a noise sensitive use the lower the received sound level.

E. Building Design - Special construction of a structure can effect noise transmission.

VI. Noise Standards

The Division of Environmental Health recommends standard noise level maximum in various frequently seen use mixes. You can use the three examples (A, B, C) to assist you in anticipating the County's recommended noise level for your project.

A. Locating Residential Development in an Existing Noisy Area

Residential development should be discouraged in the following incompatible land uses:

Airports, major traffic thoroughfares, industrial and manufacturing.

If residential development is allowed in the above identified land uses, then the maximum allowable noise level as measured at the residences shall not exceed 60 dbA Ldn.

B. Locating High Noise Use in a Quiet Area

Airports, major traffic thoroughfares, industrial and manufacturing land uses should be discouraged in the area of:

Hospitals, schools, residences, nursing homes, churches, libraries, parks and cemeteries.

If this is not possible a maximum noise level of 55 dbA Ldn at the property line shall be required.

C. Gravel Extractions, Batch Plants and Rock Quarry Uses

1. Ldn level of 50-55 dbA

2. Restricted hours of operation

3. Adjustable backup beepers

4. Residential grade mufflers on combustion engine equipment

Special conditions may be recommended. especially sensitive areas:

1. a. The noise standard for the land use as specified in Table 7-1 for a cumulative period of more than thirty minutes in any hour; or

   b. the noise standard plus 5 dB for a cumulative period of more than fifteen minutes in any hour; or

   c. the noise standard plus 10 dB for a cumulative period of more than five minutes in any hour; or

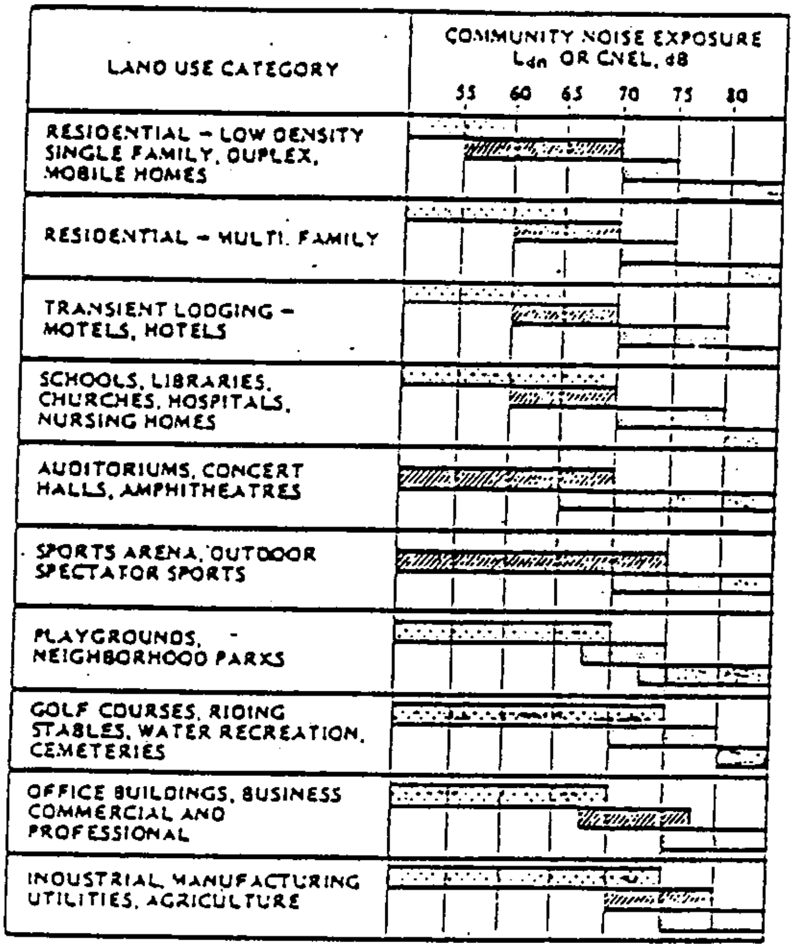
   d. the noise standard plus 15 dB for a cumulative period of more than one minute in any hour; or

   e. the noise standard plus 20 dB or the maximum measured ambient level, for any period of time.

2. Operator is to hire the services of acoustical consultant to purpose extra mitigating measures and to submit noise study to the Mendocino County Health Department, Division of Environmental Health. The operator may be required to submit a noise study at the following stages:

   a. Prior to operation starting

LAND USE COMPATABILITY FOR COMMUNITY NOISE ENVIRONMENTS



INTERPRETATION

NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

CONSIDERATIONS IN DETERMINATION OF NOISE-COMPATIBLE LAND USE

A. NORMALIZED NOISE EXPOSURE INFORMATION DESIRED

Where sufficient data exists, evaluate land use suitability with respect to a "normalized" value of CNEL or L_{dn}. Normalized values are obtained by adding or subtracting the constants described in Table 3 to the measured or calculated value of CNEL or L_{dn}.

B. NOISE SOURCE CHARACTERISTICS

The land use-noise compatibility recommendations should be viewed in relation to the specific source of the noise. For example, aircraft and railroad noise is normally made up of higher single noise events than auto traffic but occurs less frequently. Therefore, different sources yielding the same composite noise exposure do not necessarily create the same noise environment. The State Aeronautics Act uses 65 dB CNEL as the criterion which airports must eventually meet to protect existing residential communities from unacceptable exposure to aircraft noise. In order to facilitate the purposes of the Act, one of which is to encourage land uses compatible with the 65 dB CNEL criterion wherever possible, and in order to facilitate the ability of airports to comply with the Act, residential uses located in Community Noise Exposure Areas greater than 65 dB should be discouraged and considered located within normally unacceptable areas.

C. SUITABLE INTERIOR ENVIRONMENTS

One objective of locating residential units relative to a known noise source is to maintain a suitable interior noise environment at no greater than 45 dB CNEL or L_{dn}. This requirement, coupled with the measured or calculated noise reduction performance of the type of structure under consideration, should govern the minimum acceptable distance to a noise source.

D. ACCEPTABLE OUTDOOR ENVIRONMENTS

Another consideration, which in some communities is an overriding factor, is the desire for an acceptable outdoor noise environment. When this is the case, more restrictive standards for land use compatibility, typically below the maximum considered "normally acceptable" for that land use category, may be appropriate.

Table 3

Corrections to be Acded to the
Measured Community Noise Equivalent Level (CNEL)
to Obtain Normalized CNEL

Type of Correction	Description	Amount of Correction to be Added to Measure CNEL in dB
Seasonal Correction	Summer (or year-round operation).	0
	Winter only (or windows always closed).	- 5
Correction for Outdoor Residual Noise Level	Quiet suburban or rural community (remote from large cities and from industrial activity and trucking).	+10
	Quiet suburban or rural community (not located near industrial activity).	+ 5
	Urban residential community (not immediately adjacent to heavily traveled roads and industrial areas).	0
	Noisy urban residential community (near relatively busy roads or industrial areas).	- 5
	Very noisy urban residential community.	-10
Correction for Previous Exposure and Community Attitudes	No prior experience with the intruding noise.	+ 5
	Community has had some previous exposure to intruding noise but little effort is being made to control the noise. This correction may also be applied in a situation where the community has not been exposed to the noise previously, but the people are aware that bona fide efforts are being made to control the noise.	0
	Community has had considerable previous exposure to the intruding noise and the noise maker's relations with the community are good.	- 5
	Community aware that operation causing noise is very necessary and it will not continue indefinitely. This correction can be applied for an operation of limited duration and under emergency circumstances.	-10
Pure Tone or Impulse	No pure tone or impulsive character.	0
	Pure tone or impulsive character present.	+ 5

VI-77

More detailed standards covering all activity areas and land uses within the community are needed. The chart on Page VI-76 sets up acceptable ranges of noise acceptability for all land uses. It was developed after studying the standards of various cities and in consultation with the Mendocino County Health Department. The chart defines four ranges of acceptability and shall be used to determine suitability of areas for land uses of various noise sensitivities.

The Division of Environmental Health in the County Health Department has also established some preferred levels or goals for the more sensitive uses and differentiated between day and night levels.

	Preferred Level of Sound (dBA) Ldn
Residential	40 at night 50 during day
Commercial	55 at night 60 during day

The goal is lower than that deemed acceptable on the preceding table. It points up the fact that "acceptable" is not perfect and that if there is wide community agreement and determination, there is justification for aspiring to higher standards than those on the table. This fact and the need to distinguish between day and night levels will need to be considered if the County decides to pass legislation concerning noise.

The chart on Page VI-78 utilizes the proposed noise standards to form a matrix of compatibility for land uses based on noise generation and toleration levels for all activities.

In the small unincorporated towns and rural portions of the County some of the relationship recommendations implicit in the matrix will have little immediate application, yet even with the slow growth and very gradual urbanization projected for Mendocino County, potential conflicts will arise with increasing frequency and the matrix will prove a useful guide to land use and development decisions.

UKIAH OFFICE
880 NORTH BUSH STREET
UKIAH, CA 95482
(707) 463-4466

HAZARDOUS MATERIALS
(707) 463-5425

FORT BRAGG OFFICE
120 WEST FIR STREET
FORT BRAGG, CA 95437
(707) 964-4713

COUNTY OF MENDOCINO
DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Land Division Requirements. Part III:

Water Testing

January 1, 1982
Revised February 1, 1988
Water Testing Revised June 1, 1994

FORM #26.09

WATER

WATER 26.09

I. INDIVIDUAL ON-SITE WATER SUPPLY SYSTEMS: WATER QUALITY

A primary requisite for the creation of new lots or land uses centers on the ability of a water supply to provide safe and adequate water for domestic purposes. The objective of the Mendocino County Environmental Health Division is to assure that acceptable water quality can be provided and maintained within the following guidelines:

A. By location and construction of the water supply system to avoid contamination, and

B. By reasonable, durable, and economical operation and maintenance of the water supply system.

Water quality shall be tested within the framework of the "State of California Domestic Water Quality and Monitoring Regulations." As a minimum, the Environmental Health Division will require the following analyses: general mineral, turbidity, nitrate, and fluoride. Other analyses may be required where specific chemicals are known to occur. A single water quality sample shall be collected from one proposed water source for a Minor Subdivision, while a water sample shall be collected from <u>each</u> water source for a Major Subdivision or Use Permit.

Water analyses must be performed by a laboratory certified by the State of California, and the results must be submitted to the Environmental Health Division. For Land Divisions, if chemical or physical levels exceed the maximum acceptable levels, a note will appear on the final parcel map or unilateral agreement to indicate that excessive levels may exist in the water supply for the proposed property and may require treatment for domestic use.

Prior to domestic use, the Environmental Health Division recommends that a property owner test a well for bacteriological quality. If the test reveals moderate to excessive contamination of Coliform bacteria, an evaluation of the well, disinfection of the well, and a retest should be completed. If subsequent tests reveal repeated contamination, permanent installation of an automatic disinfection device is recommended.

II. INDIVIDUAL ON-SITE WATER SUPPLY SYSTEMS: WATER QUANTITY

A. Introduction: Goals and Policies.

The development of land is dependent upon the amount of water available for proposed land divisions and new uses. A goal of the Mendocino County General Plan is to assure that development is consistent within the limitation of the local water supply. To achieve this goal, the County adopted three policies in the General Plan:

6a. No development shall be allowed in the County beyond proof of the capability of the available water supply.

6b. No division of land or Use Permit shall be approved without proof of an adequate (as defined by the County Environmental Health Division) potable water supply for each parcel being created or proposed for special use.

6c. Existing water uses shall have priority over uses for new development. Appropriate planning actions for water resources shall be taken after notification and input from neighborhood residents.

In the coastal zone, where some areas are subject to greater intensity of development and a shortage of water supplies, the Local Coastal Plan (LCP) refines the General Plan policies for even greater assurance of adequate domestic water supplies:

Section 3.8-9
Approval of the creation of any new parcels shall be contingent upon an adequate water supply during dry summer months which will accommodate the proposed parcels, and will not adversely affect the groundwater table of contiguous or surrounding areas. Demonstration of the proof of water supply shall be made in accordance with policies found in the "Mendocino Coastal Groundwater Study," dated June 1982, as revised from time to time, and the Mendocino County Environmental Health Division's Land Division requirements, as revised. (Appendix 6)

Commercial developments and other potential major water users that could adversely affect existing surface or groundwater supplies shall be required to show proof of an adequate water supply, and evidence that the proposed use shall not adversely affect contiguous or surrounding water sources/supplies. Such required proof shall be demonstrated prior to approval of the proposed use.

Section 3.8-10
In order to be developed to the smaller parcel size, areas indicated on the map as having a variable density zoning classification shall be required to be served by a public water system which utilizes surface waters, and which does not impact upon the groundwater resource, or by completion of a hydrological study which supports those greater densities.

Whereas the Local Coastal Plan requires proof of an adequate water supply which will not adversely affect the groundwater table of contiguous or surrounding areas for approval of land divisions and commercial developments, the Mendocino Town Plan requires proof of an adequate water supply for all new development, including new construction:

Section 4.13-16
All new development shall be contingent upon proof of an adequate water supply during dry summer months which will accommodate the proposed development and will not deplete the groundwater table of contiguous or surrounding uses. The findings of the "Coastal Groundwater Study" of June 1982 shall be incorporated in the Mendocino Town Plan.

B. General Water Availability.

Surface water and groundwater provide the water for domestic use in Mendocino County. Surface water supplies are not acceptable for proof of water for individual on-site water sources for land development, but with treatment may be used as water sources in the design of a Public Water System. (See this document, page 48, III, Public Water Systems.)

Groundwater availability in Mendocino County is described in the "Town of Mendocino Groundwater Study," June 1985, State of California Department of Water Resources; "Mendocino County Coastal Groundwater Study," June 1982, State of California, Department of Water Resources; and "Groundwater Resources in Mendocino County, California," July 1986, United States Geological Survey, Water Resources, Investigations Report 85-4258.

These documents are used in conjunction with the General Plan, Local Coastal Plan, and the Mendocino Town Plan to determine the need and intensity of water testing for a proposed division of land, new Land Use, or Second Residential Unit.

C. Definitions.

Adequate Water Supply:
A water source is considered adequate when the source/sources has/have sufficient yield to meet the estimated maximum daily water demand.

Aquifer:
A geologic formation that stores, transmits, and yields significant quantities of water to wells and springs.

Adversely Affect:
Depletion of the groundwater supply of contiguous or surrounding parcels to the point where there is no longer an adequate water supply for the uses existing on the parcels. This definition also includes undesirable results (as defined in this section), as well as lowering of water levels in existing wells to less than adequate.

Coastal Area:
That area of investigation in the "Mendocino County Coastal Groundwater Study," June 19482, described as sufficient water resources (SWR), marginal water resources (MWR), or critical water resources (CWR).

Coastal Zone:
That area covered in the Local Coastal Plan.

Deplete:
To empty or to use up entirely. In the context of this chapter, deplete means the lowering of groundwater levels in an aquifer to the point where there is no longer an adequate water supply for existing uses.

Dry Summer Months:
That period of time beginning and including August 20 and extending through October 31, provided that such time period may be modified by the Health Officer in the case of unusual rainfall patterns.

Groundwater:
Subsurface water occurring in the zone of saturation and moving under control of the water table slope.

CWR, MWR, SWR:
Critical Water Resources, Marginal Water Resources, Sufficient Water Resources.

Hydrology:
The origin, distribution, and circulation of water through precipitation, streamflow, infiltration, groundwater storage, and evaporation.

Hydrological Study:
A study of the hydrology of a defined area.

Major Water Use:
Non-residential water use in excess of 1500 gpd (gallons per day). Water use estimates less than 1500 gpd may be considered a major water use in these areas of marginal water resources (MWR) or critical water resources (CWR), and where the parcel size is less than the recommended minimum.

Proof-of-Water:
Testing and evaluation of an aquifer to determine the existence of an adequate water supply. Similar to a hydrological study, but generally not as complex.

Qualified Hydrological Consultant:
Registered Geologist with Certification as an Engineering Geologist, or Registered Civil Engineer. All Qualified Hydrological Consultants must have at least five (5) years of experience in hydrology.

Safe Yield:
The maximum quantity of water that can be withdrawn annually from a groundwater supply under a given set of conditions without causing an undesirable result.

Second Residential Unit (SRU):
A detached or attached dwelling unit, including a mobile home, which provides permanent, complete, independent living facilities for one (1) or more persons, on the same parcel or parcels as the primary unit is situated.

Single Family Residence (SFR):
A building containing not more than one (1) dwelling unit; definition includes a converted mobile home.

Undesirable Result:
Depletion of the groundwater table of contiguous or surrounding properties, or the lowering of water levels in existing wells to levels less than adequate for existing uses, or adverse cumulative impact where a gradual lowering of the groundwater levels will eventually lead to a depletion of the supply.

D. Water Quantity Evaluation.

The degree and type of water quantity test differs, depending upon the applicable land use plan, type of water source, and type and location of project.

Uses Generally Not Requiring A Water Evaluation:

- Agriculture, as pertains to non-domestic uses.
- Land divisions located in areas where the "Coastal Groundwater Study" has determined that adequate water exists and where proposed parcel size is as follows:
  - 2 acres or greater in SWR; 4 acres or greater for an SRU;
  - 5 acres or greater in MWR; 10 acres or greater for an SRU.
- Land divisions, SRUs, and most use permits in Round Valley.
- Land divisions and SRUs for proposed parcel sizes exceeding 160 acres.
- Building permits for new Single Family Residences (SFR) in Residential Zones outside the Town of Mendocino.
- Use Permits, where the parcel size of the proposed use and adjoining parcels are greater than the minimum parcel size, as recommended in the "Coastal Groundwater Study" AND the total estimated water demand for the parcel is equal to or less than the comparable water use estimate for SFRs within the recommended density.
- For proposed parcels of Land Divisions (outside the Town of Mendocino) which have an existing, legal SFR and well, and are not subject to the restrictions of the variable density zoning classification of the LCP.

- Trade-offs: Where in certain cases, an existing land use may be changed to another use where water needs, as determined by the Health Officer, <u>will not</u> result in an increased water use. "Credit" for an existing use may be approved under the following conditions:

  - The land use must have been established prior to the effective date of this chapter.

  - The proposed use must not exceed the existing use, as determined by the Health Officer.

Elements of An Inland Water Quantity Evaluation

a. Qualifications:
Water well testing for required inland water quantity evaluations must be conducted by a Registered Geologist, a Certified Engineering Geologist, a Registered Civil Engineer, a Registered Environmental Health Specialist, or an experienced technician under the supervision of one of the above.

b. Methods:

1) **PUMP TEST METHOD:** A well may be pumped at any chosen pump rate until 1200 gallons have been pumped from the well or pumped until dry. Total drawdown and rate of recovery must be reported on a reporting form available from the Environmental Health Division. The well yield is calculated from the rate of recovery.

2) **SUSTAINED YIELD:** A well may be pumped at any rate until the water level (drawdown) is not lowered any further (sustained yield) after 1200 gallons of water have been pumped.

3) **BAIL TEST METHOD:** A well may be bailed at any rate until dry, or until 1200 gallons have been bailed from the well. Total drawdown and rate of recovery must be reportedon a reporting form available from the Environmental Health Division. The well yield is calculated from the rate of recovery. The bail test is not an acceptable method for low-producing wells, i.e., < 5 gpm.

4) **CERTAIN SEALED WELLS:** In certain instances, it may be impossible to measure drawdown and recovery rate due to construction features of the well. In these cases, the following procedures may be used:

Wells Where A Well Log Is Available:

a) Calculate the total water available in the casing and gravel pack, assuming the well is completely full.

b) Pump the well to obtain at least 1200 gallons in 24 hours, after subtracting twice the quantity calculated in Step a).

WATER 26.09

1. INLAND AREAS

All new land divisions, new land uses, and Second Residential Units outside the "Coastal Groundwater Study" area require a water quantity evaluation, (except as noted above), where development of on-site groundwater supplies are proposed.

To confirm the presence of water availability, at least one (1) test well shall be provided on each parcel proposed for a new or expanded use, or each subdivision in an area that is indicative of what to expect on other lots. If the terrain in the subdivision is not uniformly distributed on all parcels, it may be necessary to provide more than one (1) well on the subdivision; that is, one (1) well may need to be provided on each different terrain type.

Where subdivisions are greater than 10 lots, one (1) well per 10 lots and any fractional lots thereof will be required. Location(s) of well(s) may be designated by the Environmental Health Division.

Well tests shall be conducted during the period of August 20-October 31 for all shallow wells, while deep wells may be tested any time:

- Shallow wells are defined as wells less than 40 feet deep which obtain their water predominantly from alluvium or terrace deposits, or as wells less than 60 feet which obtain their water predominantly from cracks and fissures in bedrock.

- Deep wells are defined as wells greater than 40 feet deep in alluvium or terrace deposits, or as wells greater than 60 feet deep in bedrock.

Land divisions in areas which have a history of water shortages, as determined by the Environmental Health Division, shall be required to prove water on all parcels.

Spring tests may be acceptable for a water quantity evaluation under the following two conditions:

- A developable spring must be located on each parcel, and the water quantity test must be performed in late summer/early fall (August ~~1~~ 20 - ~~September 30~~ Oct 31).

Water quantity evaluation forms are available from the Environmental Health Division.

c) The person conducting the test must submit a statement certifying that the well is, in his/her opinion, indicative of water feasibility on the division.

Alternative, If No Well Log Is Available:

a) Calculate the total water available in the casing and gravel pack, assuming the well is completely full.

b) Pump the well to obtain at least 1200 gallons in 24 hours, after subtracting twice the quantity calculated in Step a). This step is to be repeated 24 hours after the first pump.

c) The person conducting the test must submit a statement certifying that the well is, in his/her opinion, indicative of water feasability on the division.

5) **SPRING TESTS:** Spring tests may be acceptable under the following conditions: a developed spring must be located on each parcel; each spring is adequately protected and not located in a defined drainage course; water quantity is measured at the source where free-flowing water emerges to the surface; and spring tests must be performed between August ~~1~~ 20 and ~~September 30~~ Oct 31.

c. Results:

If a test well produces less than 1 gallon per minute (gpm), but greater than 0.5 gpm, it will serve as proof-of-water on that parcel, but will not be acceptable as proof-of-water for the land division. Another well, on a different parcel, must be developed and tested. If that well produces more than one (1) gpm, it will serve as proof-of-water for the land division.

However, if that well is less than one (1) gpm, another well on a different parcel must be developed and tested. This procedure is continued until either

(1) a well with greater than one (1) gpm production is developed, or
(2) every parcel in the land division has one developed well on it with a minimum yield of 0.5 gpm.

Where wells or springs produce less than five (5) gpm, the Environmental Health Division recommends 2,500 gallons of storage.

2. COASTAL AREAS

Water quantity evaluations in coastal areas for new land divisions and new land uses require a Proof-of-Water test, or Hydrological Study, depending upon the Water Resource Classification and dwelling density or type of development (See Table 1, "Mendocino County Coastal Groundwater Development Guidelines," Questa Engineering), and shall be conducted during dry summer months (August 20-October 31).

Uses Requiring Proof-of-Water:

Land divisions located in areas shown on "Coastal Groundwater Study" maps where proposed lot sizes are as follows:

- Less than 2 acres in Sufficient Water Resource (SWR) areas.
- Between 2 acres and 5 acres in Marginal Water Resource (MWR) areas.
- Between 2 acres and 20 acres in Critical Water Resource upland bedrock (CWR:ub) areas.
- Any areas designated Critical Water Resource (CWR) areas, including CWR:tb areas. CWR:ub greater than 20 acres, not required.

Use permits, where a minor water use and no adverse impact on surrounding water sources are anticipated.

Second Residential Units located in areas shown on Coastal Groundwater Study maps where parcel sizes are as follows:

- Less than 4 acres in SWR.
- Less than 10 acres in MWR.
- All Parcels in CWR.

Uses Requiring A Hydrological Study:

Land Divisions located in areas shown on Coastal Groundwater Study maps where proposed lot sizes are as follows:

- Less than 2 acres in MWR.
- Less than 5 acres in CWR.

Use Permits where a major water use or an adverse impact on surrounding water sources is anticipated.

All land use changes and developments in the Town of Mendocino, where an increase in water use is anticipated.

WATER 26.09

Elements of a Proof-of-Water Test:

See "Mendocino County Coastal Groundwater Development Guidelines," prepared by Questa Engineering Corporation, July 1989.

Elements of a Hydrological Study:

See "Mendocino County Coastal Groundwater Development Guidelines," prepared by Questa Engineering Corporation, July 1989.

E. WATER USE VALUES

See Environmental Health Division Policy No. 910.6(O).

III. PUBLIC WATER SYSTEM STANDARDS

A Public Water System is a system, regardless of type of ownership, for the provision of piped water to the public for domestic use, if such system has at least five (5) service connections or regularly serves an average of at least 25 individuals daily at least 60 days of the year.

Objective

To provide water supply facilities which will deliver, under adequate pressure, a satisfactory continuous supply of water which complies with chemical, physical, and bacteriological standards of the Safe Drinking Water Act (Pl 93-523) and which will be palatable without being excessively hard or corrosive.

The State of California, Drinking Water Branch, maintains authority and jurisdiction over most public water systems in Mendocino County. However, the Environmental Health Division maintains authority for State Small Water Systems.

A State Small Water System means a public water system which meets one of the following criteria:

A. Serves from 5 to 14 service connections and less than 25 individuals any part of the year.

B. Serves from 5 to 14 service connections and 25 or more individuals less than 60 days per year.

C. Serves 15 or more service connections and any number of non-resident individuals less than 60 days per year.

Surface and groundwater testing for the creation of most State Small Water Systems in inland areas must be conducted by a Registered Geologist, a Certified Engineering Geologist, a Registered Civil Engineer, a Registered Environmental Health Specialist, or an experienced technician under the supervision of one of the above.

Surface and groundwater testing for the creation of State Small Water Systems in coastal areas must be conducted by a Registered Geologist, a Certified Engineering Geologist, A Registered Civil Engineer with a minimum of five years experience in groundwater hydrology, or an experienced technician under the supervision of one of the above.

1. Inland Well Test Procedures for Community Water Wells:

   a. Sustained Yields for Non-Hard Rock Wells:
   The conditions of a pump test used to determine sustained yield of a well shall be acceptable to the Health Department and shall include:

      1) Constant rate of water discharge from the well during the pump test

      2) Continuation of the pump test until at least four (4) measurements of water level drawdown in the well and the elapsed time since the beginning of the pump test yield a straight line when drawdown is plotted against the logarithm of the elapsed time.

      3) Elapsed time shall not be shorter than 72 hours.

      4) Where the capacity of a source varies seasonally, the source capacity shall be the capacity at the time of maximum day demand (July 15 - October 15).

   b. Sustained Yield for Hard Rock Wells:
   Hard rock wells shall be tested for sustained yield by either method 1) or 2).

      $$N = \frac{\text{Reservoir Capacity (gallons)}}{f \times 180 \text{ days}}$$

      1) 180-day test period shall be the months of June through November. At other times of the year, the groundwater is accumulating rather than depleting.

      2) N is the number of connections.

      3) f is the gallons per connection per day.

      4) To determine the Reservoir Capacity: A meter is installed on the well (with low level controls) and the total amount of water pumped out of the well is the Reservoir Capacity.

2. Coastal Well Test Procedures for Community Water Wells:
See "Mendocino County Coastal Groundwater Development Guidelines," prepared by Questa Engineering Corporation, July 1989.

3. Water Use Values:
   See Environmental Health Division Policy Number 910.6(0).

4. Quantity and Storage Requirements:
   See Environmental Health Division Policy Number 1160.

Form 26.09 Revised 06/09/94