

STATE WATER RESOURCES CONTROL BOARD  
RESOLUTION NO. 76-88

APPROVING RESOLUTION 76-7 OF THE SAN FRANCISCO BAY REGIONAL  
WATER QUALITY CONTROL BOARD AMENDING THE WATER QUALITY  
CONTROL PLAN, SAN FRANCISCO BAY BASIN (2)

WHEREAS:

1. At its April 20, 1976, meeting, the San Francisco Bay Regional Water Quality Control Board adopted amendments to the Water Quality Control Plan, San Francisco Bay Basin, which will prohibit the discharge of waste from leaching or percolation systems in the following areas:
  - o Emerald Lake Hills Area, San Mateo County
  - o Oak Knoll Manor Area, San Mateo County
2. These discharge prohibitions are reasonable and necessary in light of the evidence regarding the geologic conditions in the designated areas and the threat of contamination of surface waters.

THEREFORE BE IT RESOLVED:

That the State Board approves Resolution 76-7 of the San Francisco Bay Water Quality Control Board amending the Water Quality Control Plan, San Francisco Bay Basin.

CERTIFICATION

The undersigned, Executive Officer of the State Water Resources Control Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on July 15, 1976.

*Bill B. Dendy*  
Bill B. Dendy  
Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

RESOLUTION 76-7

AMENDMENT TO THE WATER QUALITY CONTROL PLAN SAN  
FRANCISCO BAY BASIN, PROHIBITING WASTE DISCHARGES  
TO LEACHING OR PERCOLATION SYSTEMS IN THE EMERALD  
LAKE HILLS & OAK KNOLL MANOR AREAS OF SAN MATEO COUNTY

- I. WHEREAS the Emerald Lake Hills Area and the one block area of Oak Knoll Manor, of San Mateo County as defined on the attached map and Exhibit 'A', incorporated herein and made a part of this Resolution encompass portions of Cordilleras Creek, the Emerald, Jefferson and Stulsaft branches of Redwood Creek and Arroyo Ojo de Agua all nontidal streams in the area of concern and;
- II. WHEREAS the Regional Board has adopted the Water Quality Control Plan, San Francisco Bay Basin which prohibits discharges of any wastewater, which has particular characteristics of concern to beneficial uses into any nontidal water or dead end slough or similar confined water areas or their immediate tributaries, except as part of an approved reclamation project, and prohibits the degradation of any groundwater by any controllable water quality factor, and
- III. WHEREAS the beneficial uses of the Emerald Lakes, Cordilleras Creek, branches of Redwood Creek and Arroyo Ojo de Agua and their contiguous waters are:
  - Recreational use including wading and swimming
  - Fish and wildlife propagation and sustenance, and habitat and resting for waterfowl and migratory birds
  - Esthetic enjoyment
- IV. WHEREAS 82 percent of the existing developments in the Emerald Lake Hills and Oak Knoll Manor areas have septic tanks with leaching or percolation systems for sewage disposal, and
- V. WHEREAS studies by the San Mateo County Public Health and Welfare Department found that 28.9 per cent of all leaching or percolation systems in the Emerald Lake Hills and Oak Knoll Manor areas were either failing or malfunctioning, and that most of the discharges from these unsatisfactory systems were flowing directly into Cordilleras Creek and branches of Redwood Creek, and
- VI. WHEREAS the San Mateo County Public Health and Welfare Department investigations found that failing septic tank systems in the Emerald Lake Hills area are creating a serious threat to public health.

VII. WHEREAS a soil survey of San Mateo County prepared by Earth Sciences Associates, consultant geologist found that soils in the Emerald Lake Hills area are "close to their ultimate carrying capacity" for leaching systems because of low permeability, steep slopes and shallow impervious bedrock.

VIII. THEREFORE BE IT RESOLVED that this Regional Board finds that discharges to leaching and percolation systems in the Emerald Lake Hills and Oak Knoll Manor areas are incompatible with:

- a. The prohibition against any wastewater which has particular characteristics of concern to beneficial uses into any nontidal water or dead end slough or similar confined water areas or their immediate tributaries as contained in the Water Quality Control Plan, San Francisco Bay Basin
- b. The protection of beneficial uses of surface waters in the Emerald Lake Hills and Oak Knoll Manor areas including Cordilleras Creek, the Emerald, Jefferson and Stulsaft branches of Redwood Creek and Arroyo Ojo de Aqua, and
- c. The protection of the public from nuisances, including a serious threat to public health, and

IX. BE IT FURTHER RESOLVED that the following be added to the Waste Discharge Prohibitions of the Water Quality Control Plan, San Francisco Bay Region:

The discharge of sewage-bearing wastewater to leaching or percolation systems in the Emerald Lake Hill and Oak Knoll Manor areas of San Mateo County is prohibited.

An exemption to this discharge prohibition may be granted by the Executive Officer providing the discharger is able to document County Health Department approval of the leaching or percolation system and document that the installation or continued use of leaching or percolation systems will not individually or collectively, directly or indirectly, either violate other discharges prohibitions, impair the beneficial uses specified in this Water Quality Control Plan for the affected waters, or result in threat to the public health. In the event of an adverse ruling by the Executive Officer, the matter may be appealed to the Board.

X. BE IT FURTHER RESOLVED that the above Water Quality Control Plan amendment shall be implemented in accordance with the following compliance time schedule.

- a. All new systems not discharging to leaching or percolation systems or for which a building permit had not been issued prior to the date of approval of this amendment by the State Water Resources Control Board are prohibited from discharging as of that date.

- b. Any and all systems are prohibited from discharging after October 1, 1983 unless otherwise exempted in accordance with paragraph IX above.

I, Fred H. Dierker, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, San Francisco Bay Region April 20, 1976.

  
FRED H. DIERKER  
Executive Officer


EXHIBIT A

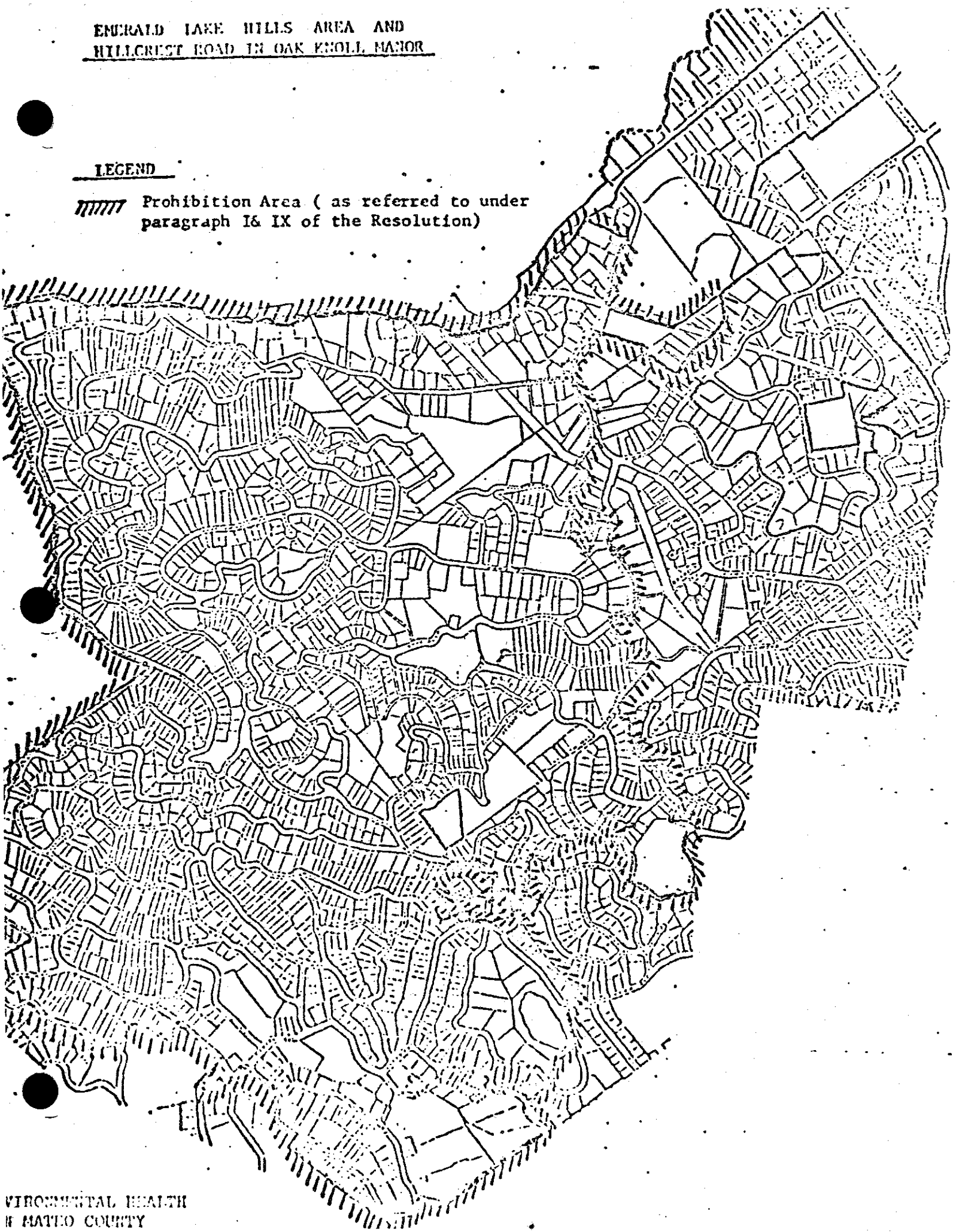
Beginning at a point in the centerline of Edgewood Road, where said centerline is intersected by the northerly prolongation of that course called "South 32° 21' 30" West 35.73 feet," in that certain annexation to the City of Redwood City by Resolution No. 1245; thence from said Point of Beginning southeasterly along the general northeasterly boundary of those annexations to the City of Redwood City by Ordinance No. 1245, Resolution No. 6425, and Ordinance No. 930 a distance of 15,000 feet, more or less, to the intersection thereof with the most westerly corner of Lot 35, Block 509, "Highlands of Emerald Lake Subdivision No. 5" (15 maps 15-18) and a point in Redwood City Annexation by Ordinance No. 861; thence northerly and northeasterly along the general northwesterly boundary of said annexation No. 861 a distance of 1,600 feet, more or less, to the intersection with the most southerly corner of Redwood City Annexation by Ordinance No. 973; thence in a general northerly direction along the Redwood City City Limits by Ordinances 973, 1323, 1096, 1436, 1392, 1049, 1247, 796, 1261, 1256, 1398, Resolution 4422, Ordinances 1142, 1166, 1343, 1271, and 1052 a distance of 14,900 feet, more or less to the northwesterly corner of Ordinance No. 1052; thence in a general easterly direction along the Redwood City Limits by Ordinance No. 1052 and continuing in a general easterly direction along the general northerly boundary of Redwood City Ordinance No. 805 a distance of 321 feet, more or less, to the centerline of Hillcrest Road; thence leaving said city limits in a general northerly direction along said centerline to the intersection thereof with the southeasterly line of Redwood City City Limits as established by Resolution No. 11319, thence in a general southwesterly direction along the Redwood City City Limits by said Resolution No. 11319, Ordinance No. 963 and Resolution No. 5125 to the intersection thereof with the southeasterly corner of Redwood City Annexation by Ordinance No. 987; thence along that course called "North 68° 35' 50" West" in that said annexation (Ord. 987) and its northwesterly prolongation 475 feet, more or less, to the intersection thereof with centerline of Edgewood Road; thence in a general westerly direction 6,000 feet, more or less, to the Point of Beginning.

Excepting therefrom those two reservoir sites annexed to Redwood City by Resolution No. 16382.

EMERALD LAKE HILLS AREA AND  
HILLCREST ROAD IN OAK KNOLL MANOR

LEGEND

 Prohibition Area ( as referred to under  
paragraph I& IX of the Resolution)



## REGIONAL BOARD STAFF REPORT

### I. DESCRIPTION OF THE AREA

The Emerald Lake Hills area is located in the middle portion of the San Francisco Peninsula within San Mateo County (Fig. 1). The area encompasses the unincorporated area bounded on the north by Edgewood Road, on the east by Redwood City, on the south by Menlo Country Club and the town of Woodside and on the west by the undeveloped State College site.

The Emerald Lake Hills area (Fig. 2) consists of widely mixed housing types built over a long period of time. The lower Emerald Lake developed as a weekend and summer home area. The initial subdivision creating the summer home development was recorded in 1925. Later building has been predominantly individual homes. The Emerald Lake Hills area contains 928 developed lots of which 751 lots are unsewered. It should be noted that a portion of the area under study is presently sewered by the Emerald Lakes Heights Sewer Maintenance District. The sewage from these residences is transported by the Hassler Health Home trunk sewer line into the City of San Carlos treatment plant.

Included in the Emerald Lake Hills study area is a one block portion of the Oak Knoll Manor area (Fig. 3). This area contains nine developed unsewered lots.

### II. HISTORY OF SEPTIC TANK PROBLEMS

#### - Long Term History And Septic Tank Survey Results

A number of surveys of Emerald Lake Hills area were conducted in the 1940's and 1950's. Attached (Attachment 1) is a 1940 letter from the Health Department recommending the creation of a sanitary sewer district.

In September, 1970 a report to the San Mateo County Board of Supervisors by the health officer (Attachment 2) recommended the immediate installation of sanitary sewers. A total of 655 residences were surveyed with 28.9% of the homes either failing or showing evidence of imminent failure. It is important to note as pointed out in the report, that the survey was completed during the dry months and that the rainy season was expected to raise the percentage of failures.

The 1970 survey also pointed out that a sewer system was built to carry wastewater from 14 homes and the country club adjacent to the lower lake, to a community septic tank below the dam on Oak Knoll Drive. This system continues to operate today, discharging directly to the Emerald Branch of Redwood Creek.

The following are observations made by the environmental staff in the 1970 survey:

Raw sewage was observed draining down hillsides; sewage was noted seeping out of banks, with children and dogs playing in these discharges; open ditches were used to spread the sewage effluent onto the ground; accumulations of liquid were noted above existing drainfields; considerable stagnant ponds were found attracting flies and mosquitoes; washing machine, kitchen sink and bathtub waters were directly discharged to the ground surface; overflow arrangements from septic tanks were seen running on the ground surface; marshy and lush green areas were evident where drainfields were located, and strong odors of sewage were practically intolerable.

In 1973 the environmental health staff resurveyed the same area (Attachment 3). Results verified the inadequacy of the individual sewage disposal systems. In addition to the resurvey, field tests designed to indicate the presence of sewage were conducted on water samples taken from drainage ditches at 19 locations throughout the Emerald Lake area. Over 50% of these tests were positive. The report indicated that conditions had deteriorated since 1970 and that a serious public health problem continues to exist. The report stated that the lack of lot area to satisfactorily repair systems in 63 cases in the unsatisfactory category is deemed most important because it promises future difficulties of a more serious nature. Two homes have also been vacated because of the inability to properly repair their failing systems.

The Environmental Health Department, in 1973 required the elimination of any sewage discharges on the ground surface, as no immediate sewerage plan was possible. Repairs were required, some of which were considered to be of limited effectiveness. In September 1973 the 14 homes and the clubhouse on the community septic tank were considered separately. San Mateo County developed a financing plan but Redwood City did not approve it. The direct discharge of septic tank effluent continues today.

During August and September of 1975, the Health Department conducted a survey of the homes which previously showed difficulties (Attachment 4). The results of this investigation and the surveys in 1973 and 1970 were summarized by the department on the attached map titled "Investigative Data on Individual Sewage Disposal Systems" (Fig. 4 & 5). The update again verifies the inadequacy of the individual sewage disposal systems.

The Health Department also prepared a map (Fig. 6) titled "Location of Creeks and Adjacent Sewage Contaminated Drainage Ditches - May 1975" which shows the locations of drainage ditch water throughout the area which were verified for the presence of sewage.

On February 10, 1976 the San Mateo County Board of Supervisors endorsed the January 10, 1976 recommendation by the Health Department to add the one block area of the Oak Knoll Manor (Fig. 2 & 3) to the Emerald Lake Hills study area. In the January 1976 Health Department recommendation, seven out of nine homes were found to have failing septic tank systems (Attachment 5).

#### -County Supervisors Action

The Board of Supervisors of San Mateo County constitutes the local governing body as Emerald Lake Hills is an unincorporated community. The staff of the various county departments is responsible for all governmental services in the area. No sanitation district or utility district exists for the community, except for the 177 developed lots sewerage in the Emerald Lake Heights Sewer Maintenance District which is served by the San Carlos wastewater treatment plant. The nearest wastewater facilities are located at Redwood City.

On October 15, 1974 the County Board of Supervisors adopted a one year moratorium on both new building permits and the subdivision of land in the unincorporated area of Emerald Lake Hills (Attachment 6). The Board also instructed the Planning Department to develop a land use plan to prevent over development and preserve the environment. The plan has been completed and adopted by the Planning Commission.

On August 5, 1975 the Board of Supervisors adopted a resolution (Attachment 7) which showed the county's willingness to enter into an agreement with Redwood City to purchase required treatment capacity in the proposed South Bayside System Unit Treatment Plant to serve the existing developed lots in the Emerald Lake Hills area.

The resolution also assured Redwood City that a construction program would be implemented to sewer 50% of the existing unsewered population by the time the new treatment plant facilities are completed and 80% of the unsewered population five years thereafter.

#### - Geological Characteristics

Elevation of the area varies from about 60 feet above sea level, at the base of the hills, to more than 800 feet above sea level. The slope of the terrain faces northeast and averages about 10 percent. The terrain is deeply cut by several steep walled ravines, among which are Cordilleras Creek and its southern tributary, the Emerald Branch of Redwood Creek in which lower Emerald Lake is situated, the Jefferson Branch of Redwood Creek in which the upper Emerald Lake is situated and Arroyo Ojo de Agua on the southeast boundary of the area (Fig. 7).

In September 1971 the firm of Earth Science Associates were retained to report on the environment and planning geology of the Emerald Lakes/Redwood City Hillside General Plan Area. The following are excerpts from the consultants report:

"...the soils in the Emerald Lake Hills area are close to their ultimate 'carrying capacity'..."

"...substantial increases in the amount of liquid waste having to be disposed of in the area will result in rapidly increasing problems of septic tank and drainfield failures."

"The limit on sewage absorption capacity of the area is because of generally low permeability of soil and rock over much of the Emerald Hills terrain."

"Unfortunately, nearly all of the upland and hillside portions of the study area are characterized by shallow soil of low permeability and/or by steep slopes, underlain by generally impermeable rock."

"Apparently half of the soils in the area have either marginal or inadequate permeability characteristics for drainfields."

"Because of the shallow impervious bedrock, even areas which have relatively favorable soil permeability characteristics nevertheless have high drainfield failure rates..."

"...ground water conditions are unsuitable for development of waterwells..." "This is fortunate because there would be a very high risk of contamination of any such locally derived supply of drinking water."

In summary, conditions are generally poor for the installation or operation of septic tank systems.

### III. ACTIONS TO BE TAKEN

At the present time the Emerald Lake Hills project is not eligible for grant funding. It is my understanding that grant funds are available for the Emerald Lake Hills project pending the documentation of a public health hazard, which would be in the form of a Basin Plan Amendment prohibiting discharges to leaching or percolation systems.

If a Basin Plan prohibition is adopted, it will be submitted to the State Water Resources Control Board for approval. If the State Board approves the amendment, the Emerald Lake Hills project will then become eligible for grant funding under section 2108,2A&B of the SWRCB Clean Water Grant Program Regulations. The San Francisco RWQCB, when and if the proposed amendment is approved by the SWRCB, will submit a request to the SWRCB to upgrade the Emerald Lake Hills project to a grant fundable category (i.e. I-B). This upgrading, if approved by the State Board, will start the facilities planning process for the project (i.e. Step 1).

A tentative schedule for the above tasks is as follows:

SFRWQCB Amend Basin Plan - April 20, 1976  
SWRCB Approve Basin Plan Amendment - May /June 1976  
SWRCB Upgrade Project to I-B - June/July 1976  
SWRCB Initiate Step 1 Planning - July/August 1976