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### Physical/Political Solutions to Groundwater Management Problems: Outline

Carl F. Fossette

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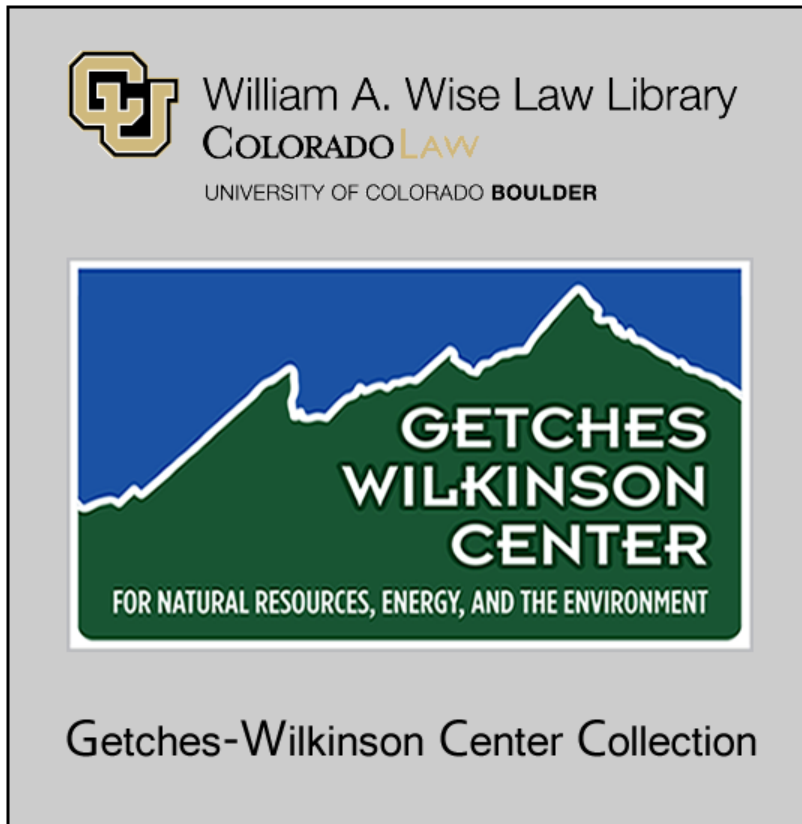
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OUTLINE  
PHYSICAL/POLITICAL SOLUTIONS  
TO  
GROUNDWATER MANAGEMENT PROBLEMS

BY  
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THE UNIVERSITY OF COLORADO SCHOOL OF LAW

JUNE, 1981

PHYSICAL/POLITICAL SOLUTIONS TO  
GROUNDWATER MANAGEMENT PROBLEMS

I Introduction

- A. The Southern California experience in groundwater management extends over the past 40 years and still continues. The objective, of course, is to insure the present and long term use of basin supply on a fair and equitable basis.
- B. All of the basins in southern California are under management control but in each instance a different approach has been used to;
  - 1. overcome political problems,
  - 2. acquire management tools;
  - 3. provide institutional control, and
  - 4. apply legal solutions to problems encountered.
- C. Each basin presents unique problems and the physical solution should be especially designed to solve them.
  - 1. To be most effective management should be developed locally and administered locally.

II The Raymond Basin Adjudication.<sup>1</sup> A land mark case

- A. The circumstances leading to litigation.
  - 1. basin overdraft and depletion
  - 2. an assured supplemental supply
  - 3. new production from the common pool.

1 City of Pasadena vs City of Alhambra et al 33  
Cal 2d 908

B. The Judgment.<sup>2</sup> entered 1944

1. The Doctrine of Mutual Prescription
2. its influence on following adjudication
3. the race to the pumping plant
4. the old rule "first in time, first in right" no longer applied
5. a new formula for determination of water rights

III The San Gabriel River watershed and its inter-connected basins.

A. The hydrology of the underlying interconnecting basins.

1. West Basin
2. Central Basin
3. Main San Gabriel Basin

B. Groundwater problems start at the end of the stream system and progressively move upstream.

1. West Basin problems in the 1940's
2. Central Basin in the 1950's
3. Main San Gabriel Basin in the 1960's

IV West Basin efforts aimed at total management.

A. Basin investigations and findings, by United States Geological Survey and others.

2. The Doctrine of Mutual Prescription was later modified in the case of City of Los Angeles vs City of San Fernando, sup. ct case no. 650079 1968, by holding the the rights of public entities may not be prescribed.

1. litigation over water rights,<sup>3</sup> Oct. 1945
2. Water Users Association formed, 1946
3. findings in the Referee's report to the Court
4. Three public elections called to form a special district and join the Metropolitan Water District.

V. Central Basin confronts its groundwater problems and profits from the West Basin experience.

- A. A water users association is formed, 1950, and it takes charge by sponsoring;
  1. successful campaign to form a special District, 1952, followed by another election to join Metropolitan Water District, 1954 (3 to 1 majority vote)
  2. special legislation to provide essential groundwater management tools
  3. formation of a water Replenishment District to manage both West and Central Basins 1959
  4. Adjudication of Central Basin water rights<sup>4</sup> in an action filed by the Replenishment District as plaintiff, 1962.

3 California Water Service Co. et al vs City of Compton et al, LA County sup. ct. case 506806

4 Central and West Basin Water Replenishment District vs Charles E. Adams et al, LA County sup. ct. case no. 78656, January 2, 1962

VI The Main San Gabriel Basin, closest to the source suffers overdraft, depletion, and related problems including the threat of litigation by the lower basin.

- A. As a step following the example of the lower basins, a water users association is formed, 1957, to survey the problems and recommend solutions including;
1. organizing a special district to be annexed to the Metropolitan Water District
  2. use of the supplemental supply thus obtained for basin replenishment
  3. a means of providing funds for the purchase of the needed supplemental water
- B. The cities of Long Beach and Compton joined by Central Basin District file a complaint against major producers in San Gabriel basin to determine their rights and obtain a fair division of the waters of the San Gabriel River between the upper and lower basins,<sup>5</sup> 1959.
1. Judgment entered under Stipulation, 1965, providing that upper area furnish "makeup" water to the lower area, or funds to purchase it.
  2. the Court retained jurisdiction and appointed a Watermaster to administer the Judgment.
5. Long Beach et al vs San Gabriel Valley Water Co., et al LA County. sup. ct. case no. 722647

C. A special district is formed in Main San Gabriel Basin, 1959, and is annexed to Metropolitan Water District in 1963.

1. the new District obtained legislation authorizing it to levy pumping assessments on basin producers to purchase "makeup" water for the lower area
2. the District filed an action to adjudicate all water rights in the main basin<sup>6</sup> 1968, and the Stipulated Judgment, 1973, allocated a percentage of the "operating safe yield" of the Basin to each of the parties in accordance with their rights.
3. the "operating safe yield" is determined each year by a Court appointed Watermaster Committee of nine members.
4. the Court authorized the Watermaster to levy a "net" pump tax on parties exceeding their pumping allotment.

VII Salt Water Intrusion in the coastal areas of Central and West Basins threatened to engulf portions of both basins because of overpumping in the 1949's and 1950's.

- A. The County Flood Control Act was amended, 1951, to authorize water conservation zones of benefit with a 5¢ maximum property tax.

6 Upper San Gabriel Valley Municipal Water District vs City of Alhambra et al, LA County sup. ct. case no. 924128



1. Zone I was formed in Central Basin to provide funds for purchase of imported water for replenishment by spreading
2. Zone II was formed in West Basin to finance construction of a fresh water barrier to repel sea water, comprising 94 injection wells, 256 observation wells over 11 miles of coastline. Cost \$20 million.

B. A second barrier was later constructed in West Basin at the mouth of Los Angeles River in the harbor area, and a third barrier was subsequently installed at the mouth of San Gabriel River in Central Basin.

1. fresh water for injection is purchased by the Replenishment District with pumping assessments funds
2. the barriers were constructed and are operated by the Flood Control District from general fund taxes
3. sea water intrusion is no longer a threat

VIII The Judgment in the first West Basin Adjudication action was entered by Stipulation of the parties in 1961 and Judgment in the second Adjudication was entered, also by Stipulation, in 1966, The original filing was in 1945, and the cost has been estimated at \$5 million.

- A. Previously, 46 major producers agreed to curtail pumping by 39% in 1955, as a means of saving the Basin. The Judgment cut back all pumpers 30%. The Court retained jurisdiction and appointed a Watermaster.

IX The Judgment in the Central Basin case was entered 1955, 2½ years after filing the action and the cost to the parties was relatively modest since the Replenishment District paid the plaintiff's costs as well as the cost of engineering services.

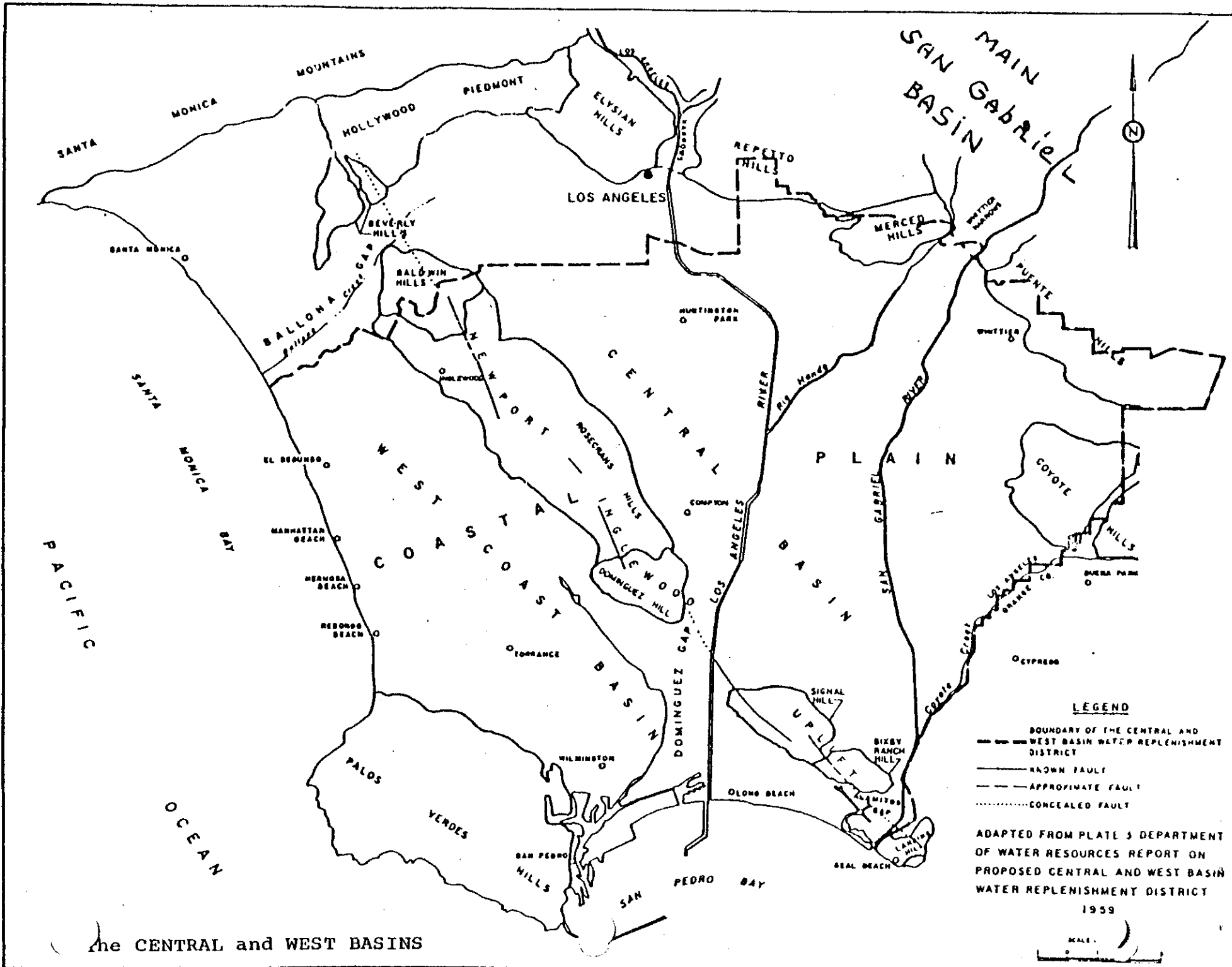
- A. Central Basin parties signed an interim agreement to voluntarily reduce pumping by 20% nine months after the action was filed and the Judgment enforced a 30% reduction in all pumping.

1. Delivery of "makeup" water by the Upper Basin combined with artificial replenishment with imported water enables Central Basin to furnish 70% of total demands from the groundwater supply. Metropolitan supplies the balance through service connections.
2. surface water requires treatment, (\$25 per acre foot) groundwater does not. The Basin serves as a distribution system, pipelines for delivery are not required.

3. the Replenishment District manages the Basin and the Court appointed Watermaster enforces provisions of the Judgment.

X The interconnected basins along the San Gabriel River are now managed by local institutions administered by locally elected Boards of Directors.

- A. The present and long term use of the basin supply on an equitable basis is assured.
  1. artificial replenishment by spreading and injection maintain water tables at safe levels.
  2. water rights are determined and protected..
  3. they have value because they can be sold or leased within the respective basins.
  4. pumping assessments provide funds to purchase imported water for replenishment.
  5. a reserve supply is stored underground in case importing aqueducts fail, or other emergencies occur.

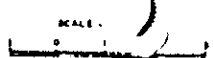


The CENTRAL and WEST BASINS

**LEGEND**

- BOUNDARY OF THE CENTRAL AND WEST BASIN WATER REPLENISHMENT DISTRICT
- KNOWN FAULT
- - - APPROXIMATE FAULT
- ..... CONCEALED FAULT

ADAPTED FROM PLATE 3 DEPARTMENT OF WATER RESOURCES REPORT ON PROPOSED CENTRAL AND WEST BASIN WATER REPLENISHMENT DISTRICT 1959



K10

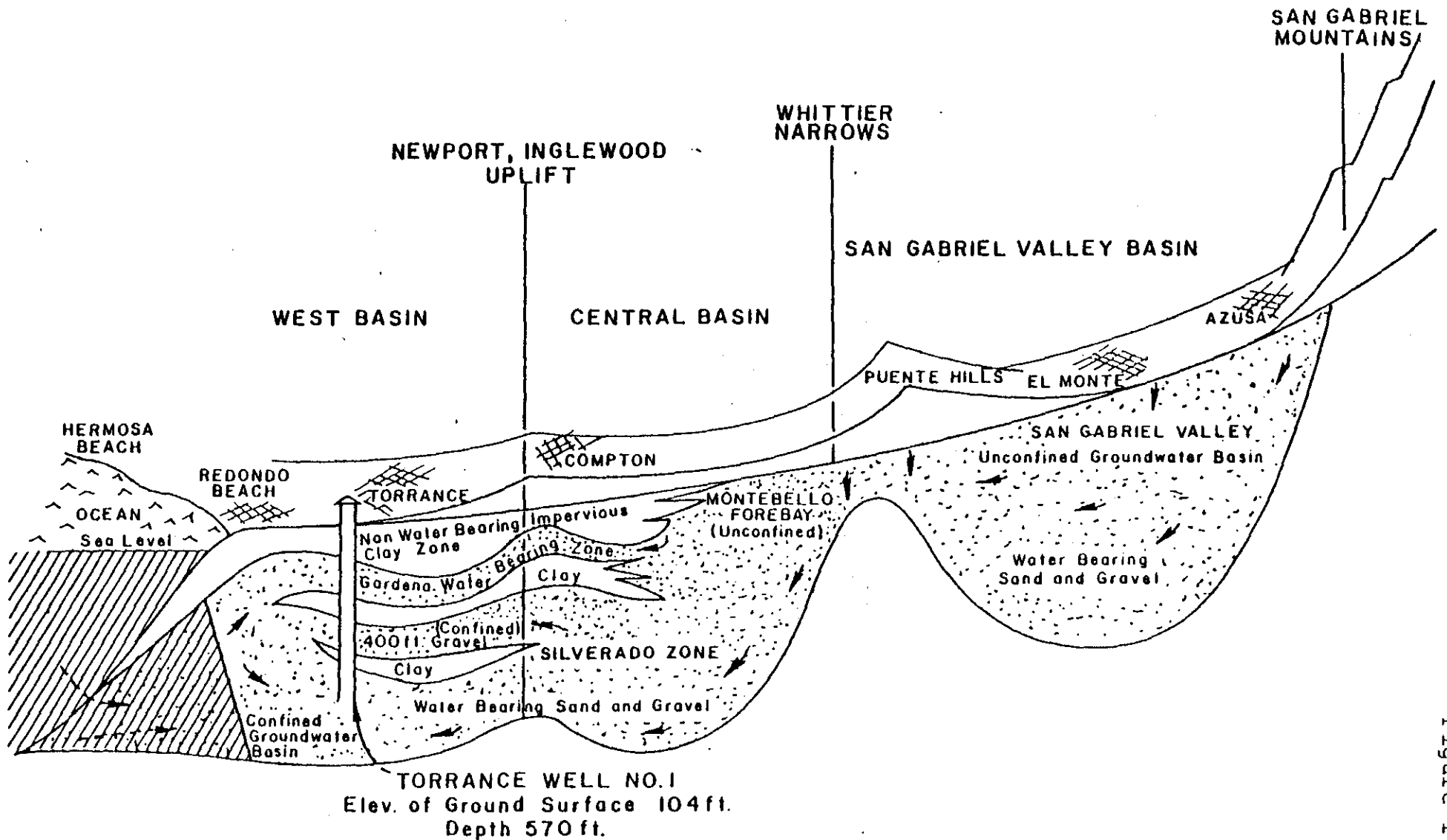
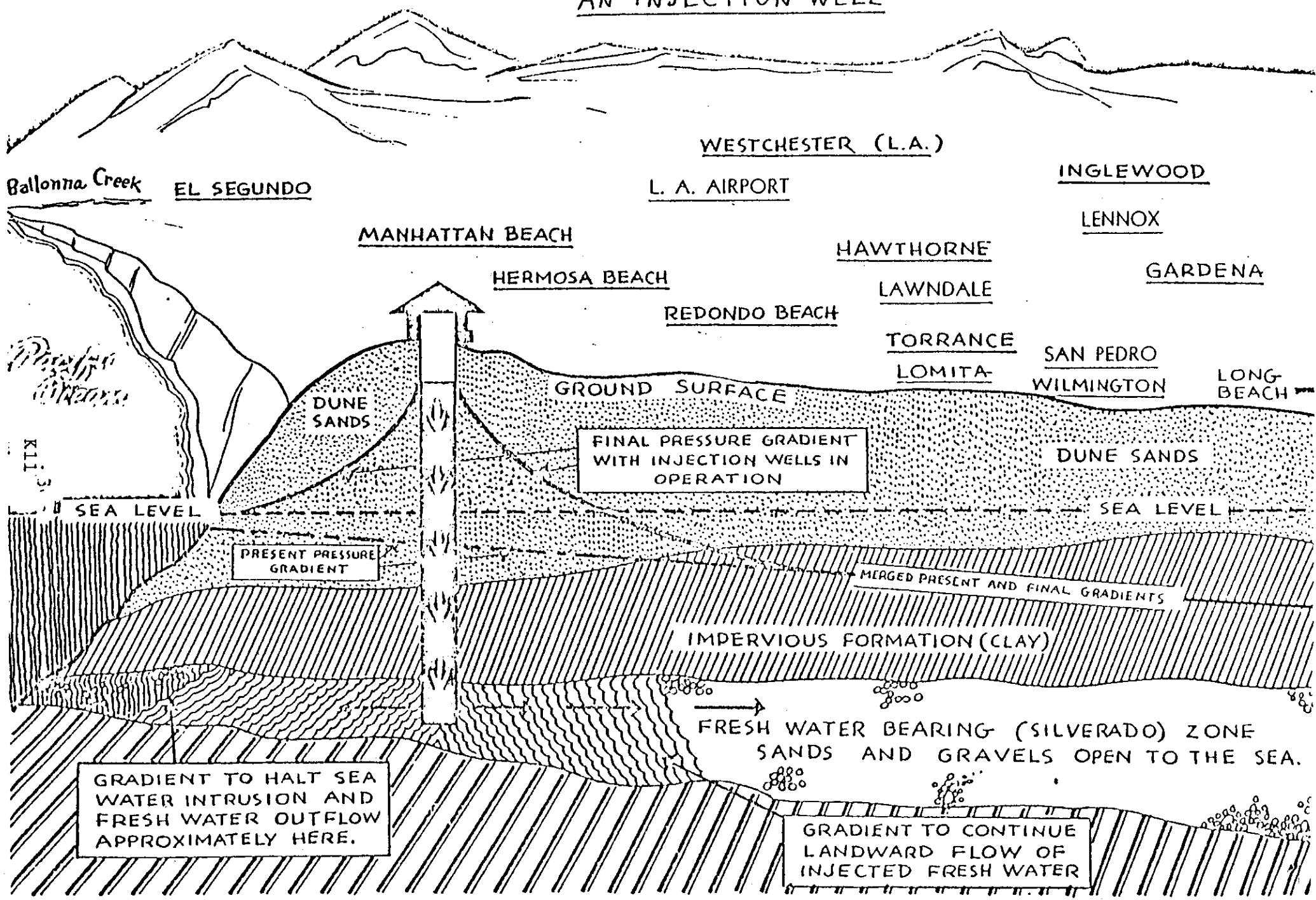


Figure 1

DIAGRAMATIC SKETCH OF THE SILVERADO ZONE IN CROSS SECTION

# AN INJECTION WELL



GRADIENT TO HALT SEA WATER INTRUSION AND FRESH WATER OUTFLOW APPROXIMATELY HERE.

FINAL PRESSURE GRADIENT WITH INJECTION WELLS IN OPERATION

MERGED PRESENT AND FINAL GRADIENTS

IMPERVIOUS FORMATION (CLAY)

FRESH WATER BEARING (SILVERADO) ZONE SANDS AND GRAVELS OPEN TO THE SEA.

GRADIENT TO CONTINUE LANDWARD FLOW OF INJECTED FRESH WATER

An Injection Well. Adapted from the West Basin Water Association, Fresh Water Dikes to Halt Sea Water Intrusion, March, 1951.