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DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Water Resources Division

CALIFORNIA DISTRICT MANUAL

WATER-WELL AND SPRING NUMBERING

By

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PREFACE

This manual has been prepared as a guide to field personnel of the U.S. Geological Survey, Water Resources Division, in assigning State location numbers to water wells and springs in California. However, because other Federal, State, and county agencies also use this system and exchange the data, the procedure should be the same for personnel of all agencies. Therefore, copies of this manual are available to other agencies upon request to:

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INTRODUCTION

The procedures for assigning State numbers to water wells and springs in California are rather complex, but, if they are not carefully followed, serious problems can result. Published water-well data contain many examples of these problems--a well assigned several different numbers or several wells having the same number.

The need for a systematic procedure for numbering wells, applied on a statewide basis, becomes obvious when one realizes that the U.S. Geological Survey, Water Resources Division; the California Department of Water Resources; the U.S. Bureau of Reclamation; and many other Federal, State, county, and local agencies use the same system for numbering wells.

A meeting was held March 21, 1963, at the offices of the California Department of Water Resources in Los Angeles at which members of the staff of that department and of the Geological Survey, Water Resources Division, discussed the establishment of uniform procedures for the numbering of wells.

The procedures agreed upon at that meeting were to pertain only to southern California. However, because those procedures were not incompatible with the problem of well numbering in other parts of the State, the Geological Survey subsequently adopted them for use throughout the State.

The Geological Survey currently uses these procedures on a statewide basis, the Southern District of the California Department of Water Resources also uses them, and the other districts of the Department use them with only slight deviations. Hopefully, they will be adopted by all agencies who use this system for numbering wells in California.

This report discusses most of the procedures involved in numbering wells, but it may not be adequate for all specific details. When questions arise that are not answered herein, they should be discussed with one's supervisor who will, in turn, coordinate a reply with the district office. Only in this way can an effective set of procedures be established on a statewide basis.

This report was prepared by the Geological Survey, Water Resources Division, under the general supervision of R. Stanley Lord, district chief in charge of water-resources investigations in California, and under the immediate supervision of Fred Kunkel, assistant district chief for projects and reports.

In compiling this report, the author drew heavily on material which originated in the California Department of Water Resources. Also, preliminary copies of this paper were reviewed by Elmo W. Huffman, Chief, Water Resources Evaluation, Division of Resources Development, California Department of Water Resources. This assistance is gratefully acknowledged.

THE NUMBERING SYSTEM

The numbering system now in common use in California has been used by the Geological Survey since 1940. Wells and springs are assigned numbers according to their location in the rectangular system for the subdivision of public land. For example, in the number 11S/17E-22A1 M, assigned to a well about a mile west of Madera, the part of the number preceding the slash indicates the township (T. 11 S.) and the number between the slash and hyphen indicates the range (R. 17 E.); the digits following the hyphen indicate the section (sec. 22); the letter following the section number indicates the 40-acre subdivision of the section as shown by figure 1. Within each 40-acre tract, the wells are numbered serially, as indicated by the final digit. The final letter, separated from the rest of the number by a space, indicates the base line and meridian. Base-line and meridian designations are as follows: H, Humboldt; M, Mount Diablo; S, San Bernardino.

The system for numbering springs is identical to that for wells except that the letter "S" is added after the letter which indicates the 40-acre subdivision. Thus, if the number described above were for a spring, it would be written 11S/17E-22AS1 M.

Latitude and longitude identification used by the Geological Survey for wells and springs is principally for correlation and retrieval of computerized data and is not considered a State location number.

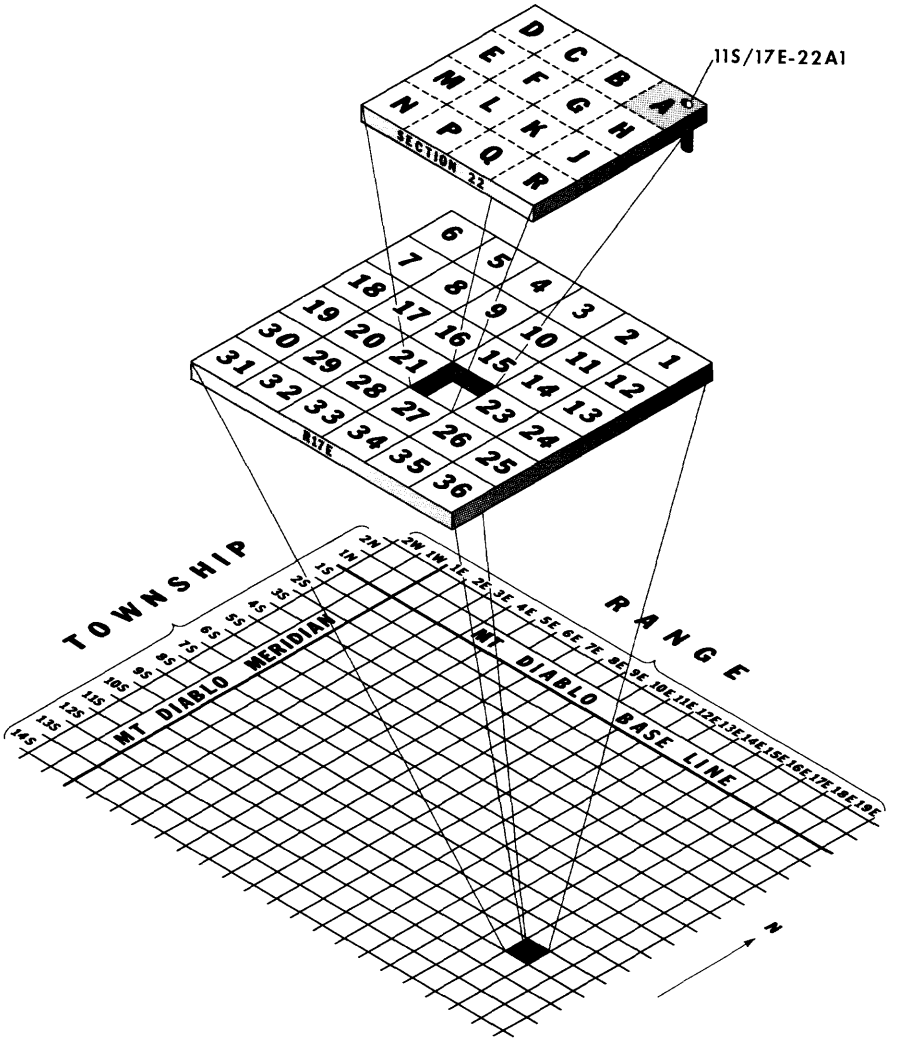

FIGURE 1.--The numbering system.

PROCEDURES FOR NUMBERING WELLS

Prime Responsibility and Authority

The prime responsibility and authority for the assignment of well numbers rests with the California Department of Water Resources. This responsibility includes the maintenance of base maps showing well locations and an index file of well numbers. Single-agency responsibility is desirable to prevent the uncoordinated numbering of wells by many agencies which inevitably results in confusion.

Delegation of Responsibility

The Department of Water Resources may delegate responsibility and authority for well numbering and the coincidental projection of section lines, as required in unsectioned areas, to other agencies by mutual concurrence. This authority will be delegated to major water agencies only. Well-numbering authority will be delegated to the Geological Survey in specific areas where it is actively engaged in studies.

When well-numbering authority is desired by the Geological Survey, the Survey must notify the Department of Water Resources. The authority will normally be transferred to the Geological Survey at the time studies are begun, and the Department will supply the Survey with a copy of that part of the Master Well File which is applicable to the project area being studied. This authority will remain with the Survey until such time as the data collected by the Survey are formally transmitted to the Department, usually in report form. Record of transfer of authority to and from the Geological Survey will be by correspondence and delineated on maps for exact definition of areal extent. Subdistricts should transmit details to the district who will officially request the authority.

From time to time an agency will need to obtain numbers located outside the area of its authority. At such times, the party needing a well number will request an assignment from the party having responsibility to assign numbers. The request should be accompanied by an exact description of the location of the well to be numbered, including a sketch map. The Department of Water Resources will use a copy of Form 274 or Form 429, "Well Data"; the Geological Survey will use the "Well Schedule" form. All forms are to be filled out as completely as possible, including sketch and detailed distances from permanent landmarks and adjacent wells.

Well-Number Changes

Well numbers used in previously published reports will not be changed. Exceptions will be made when it is determined that a well is actually located out of the section designated by its number. In such a case, a new number will be assigned and the two parties to the agreement will be notified in writing. The erroneous number used to define the well will not be assigned to another well. The Department of Water Resources will maintain a cross index of such changes in its Well Index Card file.

Projected Section Lines

In areas where section lines have not been delineated or projected on Geological Survey quadrangle maps, the Department of Water Resources will, when necessary, prepare the official projected section lines to delineate a grid of sections for well-numbering purposes. However, the projection will be a fully coordinated effort between the Geological Survey and the Department. Checks will be made with published material and with the Geological Survey to verify that conflict will not result from the projection of a section line. Further, all efforts will be made to use U.S. Bureau of Land Management procedures. If possible, projected section lines being developed by the Bureau of Land Management or the Topographic Division of the Geological Survey will be used. Previously published section lines will be used, where possible, and mutually agreeable projected sections will be used, if, for some reason, previously published section lines cannot be used. Section lines projected for well-numbering purposes will not be changed once agreed upon, even if markers that do not coincide with the projected line are subsequently found in the field. When half townships or half ranges occur, these areas will be added to the most convenient adjacent sections. For an example of this situation, refer to any of the following quadrangle maps: Paradise, 1:62,500 (1953); Richardson Springs, 1:62,500 (1952); Campbell Mound, 1:24,000 (1952).

Projected section lines should be identified in reports that include water-well data. Where the Bureau of Land Management is in the process of establishing a section grid, it would be to the mutual advantage of all agencies involved to delay projecting lines until needed for current studies. Thus, advantage may be taken of section lines printed on quadrangle maps to be published in the future.

In the delegation of well-numbering authority to the Geological Survey, there will be a concurrent delegation of authority for the projection of section lines where needed within the area. To assist in this matter, the Department of Water Resources has agreed to provide the Geological Survey with film negatives or a scale-stable positive of 15- or 7½-minute quadrangle maps, depending upon quadrangle availability or well density, showing the section lines to be used for well-numbering purposes.

In the instance of the section net in the Irvine Tract of Orange County, standard section projections will be made by the Department of Water Resources, and well numbers previously assigned by the Geological Survey in that area will be treated as local numbers by the Department.

Orientation of Template for Subdividing Sections

The Matthew Template (fig. 2) is commonly being used by fieldmen working with the Geological Survey. Copies of that template for official use by Survey personnel are available from the district office. However, any template which divides a square section into 16 equal parts may be used. Some fieldmen use no templates but measure the distance of each well north and west from the southeast corner of the section.

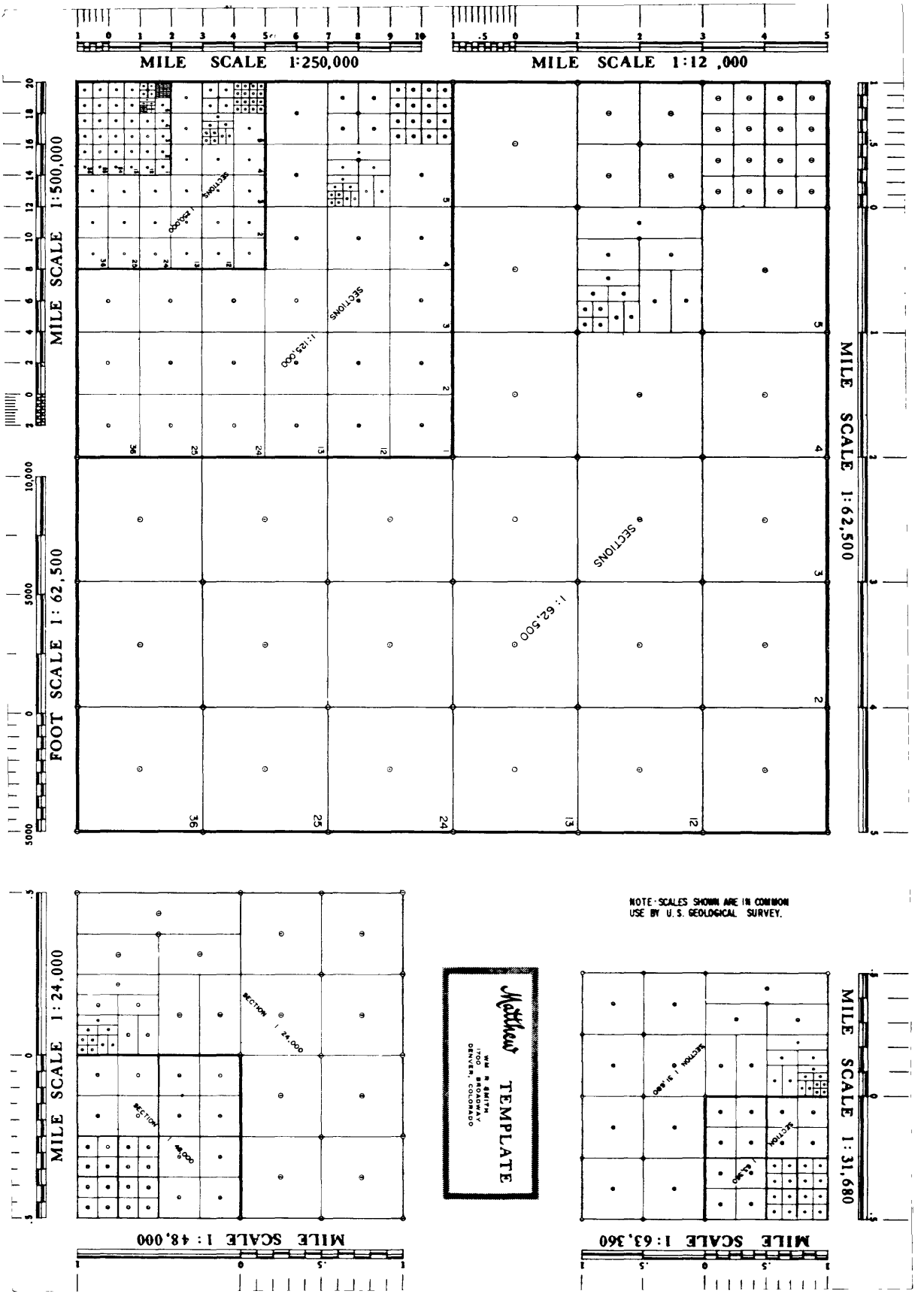

FIGURE 2.--The Matthew template. Reduced about 15 percent for inclusion in this report.

To provide consistency in the numbering of wells, the lower right-hand corner of the template for subdividing sections will be matched with the southeast corner of the section and with the vertical lines on the grid in a north-south direction. This procedure of orienting the template at the southeast corner will be used, even though quarter corner markers located in the field may suggest some other location for a corresponding grid line. This procedure will also be used on odd-shaped sections and sections more or less than 1 mile on a side. (See fig. 3.) An exception is an irregular section which has its major irregularity at the southeast corner. In this instance, the reference point will be at the discretion of the assigning individual. The east (right-hand) side of the template is still to be oriented in a north-south direction. In that case, the point determined by the assigning individual should be indicated on the project map.

Use of "X" and "Z" Numbers

Under conditions where the existence of a well is known in the field, but where the physical situation precludes its accurate plotting on a map, either because of a lack of physical features in the field or poor maps, an "X" will be used for the letter designation for such well (11S/17E-22X1 M). Thus, an "X" number will indicate that the location of the well may be in question, or that the well is plotted with poor control. The well has been visited but cannot be accurately plotted.

Under conditions where there is substantial information about a well but it cannot be field located, a "Z" will be used for the letter designation (11S/17E-22Z1 M). Thus, a "Z" number will indicate that the location of the well is in question, or that the well is plotted from unverified location descriptions. To forestall the widespread use of "X" and "Z" numbers, use of these numbers should be restricted to their specific meaning and every effort should be made to give the most accurate number possible to wells.

Use of Partial Numbers

A partial number may be assigned to uncorrelated data. Such a number may be accurate to the degree known, such as the section or 40-acre tract (11S/17E-22). Partial numbers should not be published.

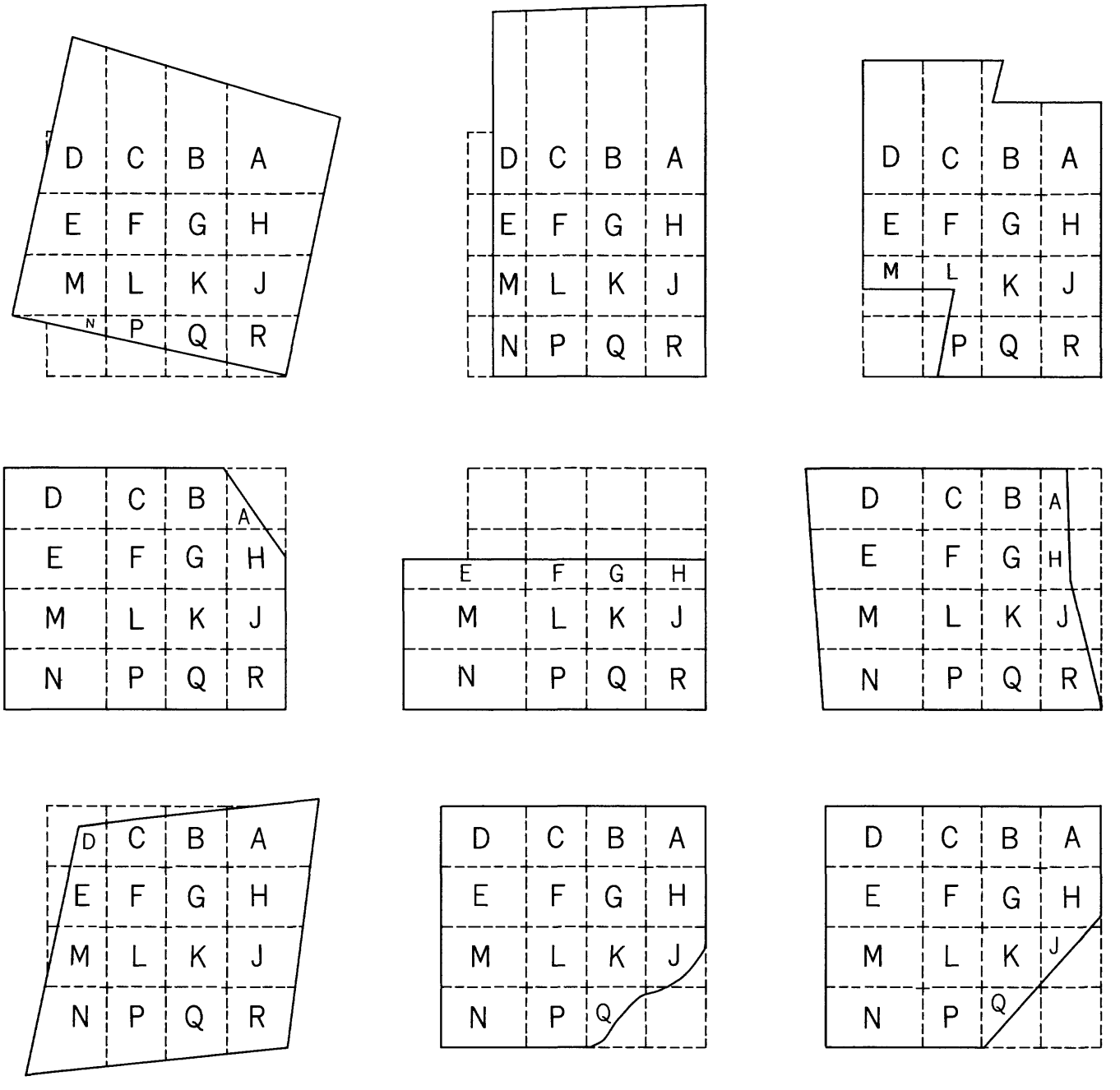

FIGURE 3.--Method of orienting template using southeast corner of section.

Numbers for Deepened Wells

Generally, once a number has been assigned to a well it will not and should not be changed. However, occasionally, after being deepened or reperforated a well will display different characteristics such as a different water level or a change in chemical quality.

Deepened or reperforated wells that have previously been assigned a State well number may be assigned a new sequence number and new data forms will be completed whenever such deepening affects the zone tapped. Specific details regarding the deepening will be noted on the forms for both the original well and the "new" (deepened) one. Minor deepening can be considered well cleaning, and no number change need be made.

Numbering Multiple-Piezometer Wells

In areas such as the San Joaquin Valley, where several aquifers may be tapped for water supplies, multiple-piezometer wells are sometimes used to monitor aquifers individually. These wells are usually deep, large-diameter wells which penetrate all the aquifers to be monitored. The wells are perforated within each aquifer and packers or plugs are installed between the aquifers so that each perforated zone reflects only the hydrologic conditions of a single aquifer. Small-diameter pipe or tubing connects each perforated zone with the surface so that measurements of water level may be made of each aquifer.

Each tube or piezometer in wells constructed in this manner is given a different well number. If there were five tubes in a well, located as shown in figure 1, they would be numbered 11S/17E-22A1, 22A2, 22A3, 22A4, and 22A5. A well-schedule form would be filled out for each tube, and the depth and perforated interval for each zone would be shown as if it were a separately drilled well.

Procedure to Keep Department of Water Resources Informed

The Department of Water Resources maintains an up-to-date record of wells for which numbers have been assigned. Therefore, the Geological Survey will transmit well records to the Department of Water Resources from time to time in a form suitable for accurate maintenance of an index of well numbers assigned and the location of these wells. The transmittal of the Geological Survey water-well data reports will satisfy this requirement, and at the same time the Department of Water Resources will make the necessary arrangements to record the field-sheet data on microfilm.

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