EL CAMINO IRRIGATION DISTRICT

GROUNDWATER MANAGEMENT PLAN

ADOPTED DECEMBER 12, 1995

--oOo--

EL CAMINO IRRIGATION DISTRICT
8451 99W Road
Gerber, California 96035

Board of Directors as of December 1995:

Marvin Hagen
William Hopper
George Christy
Jim Ballard
Mike Taylor
Cherrie Kennedy, Secretary
Marvin Lashley, Manager

William H. Baber III
Minasian, Minasian, Minasian,
Spruance, Baber, Meith & Soares
Attorneys at Law
P.O. Box 1679
1681 Bird Street
Oroville, California 95965-1679
(916) 533-2885

1.0: Introduction: Assembly Bill 3030, commonly referred to as the Groundwater Management Act, was authored by California State Assemblyman Jim Costa from Fresno and signed into law by Governor Wilson in October of 1992. The Act lists 12 components that may be included in a groundwater management plan to the extent applicable. The 12 components are considered in evaluating and operating the El Camino Irrigation District (hereinafter "ECID") so that groundwater can be managed within the District and coordinated to maximize the total water supplies available while protecting groundwater quality.

1.1: Groundwater Basin Management: Department of Water Resources Bulletin 118-80 defines groundwater basin management as including planned use of the groundwater basin yield, storage space, transmission capability, and water in storage. Groundwater basin management includes:

a. Protection of natural recharge and use of intentional recharge;

b. Planned variation in amount and location of pumping over time;

c. Use of groundwater storage conjunctively with surface water from local and imported sources; and

d. Protection and planned maintenance of groundwater quality.

1.2: Section 3, Chapter 947, Statutes of 1993: The Department of Water Resources shall, on or before January 1, 1998, prepare and publish, in a bulletin of the Department published pursuant to section 130 of the Water Code, a report on the status of groundwater management plans adopted and implemented pursuant to Part 2.75 (commencing with section 10750) of Division 6 of the Water Code.

1.3: ECID's Intention to Adopt a Groundwater Management Plan: On January 11, 1994, the Board of Directors of ECID acknowledged the completion of public hearings as to ECID's intention to adopt a groundwater management plan, which hearings were held on December 15, 1993 and again on January 11, 1994. Following completion of the second public hearing held on January 11, 1994, ECID's Board of Directors adopted a resolution of intention proposing to adopt a groundwater management plan within a period of two years as provided and set forth in Water Code Sections 10753, *et seq.*

2.0: Purpose: It is the purpose of ECID, by adopting a groundwater management plan, to manage and monitor groundwater resources existing and available within District

boundaries including a possible extended service area or expanded boundaries which are not lying within the boundaries of another public or private water purveying agency. Additionally, it is the intent of ECID to coordinate and cooperate with other local private or public water purveying public agencies for the purpose of preserving, protecting and monitoring Basin area groundwater extraction, distribution, allocation or exportation insuring compliance with Water Code Sections 1745.10, *et seq.*

3.0: History of the Formation, Operation, Acquisition, Distribution and Maintenance of Water Supplies: ECID has acquired and/or monitors the provision, transmission, operation, maintenance and distribution of water for agricultural, domestic and environmental purposes. The background of ECID in the provision of water services is set forth in paragraphs 3.1 through 3.3.

3.1: Formation of ECID: ECID was organized and formed by a vote of the electorate within the boundaries of its District on April 12, 1921. It was formed pursuant to the enabling legislation set forth in Division 11 of the California Water Code, formerly known as the Wright Act and/or Irrigation District Act. ECID's first water supply was made available by a lease from California Tehama Land Corporation during the years of 1922 and 1923. The leases were not renewed by the District and ECID became inactive until 1926. In 1926, the people within ECID voted to purchase the wells and distribution system of the California Tehama Land Corporation. ECID then petitioned the State of California to float a bond issue to make available sufficient monies to complete this purchase from California Tehama Land Corporation and finally complete the District's water distribution and conveyance system. The bond measure was approved by the State of California on September 23, 1926 and bond sales started November 1, 1926 at 6 percent interest.

3.2: History of Water Supply Acquisition Whether Surface or Ground and Distribution of Water Supplies: On February 2, 1927, ECID purchased the wells, distribution system, water rights and easements from California Tehama Land Corporation. Water rights purchased from California Tehama Land Corporation bear post-1914 rights bearing Permit Number 1278 on file with the Division of Water Rights of the State Water Resources Control Board in Sacramento. Finally, the water rights of ECID were adjudicated on December 16, 1969 in the case of El Camino Irrigation District vs. J. Sharer.

ECID is able to deliver water to approximately 5,500 of its 7,450 acres that comprise the totality of the District. ECID had a temporary contract with the CVP project for up to 2,000 acre-feet of water annually until the contract was cancelled in 1989 by the USBOR.

Water supplies are acquired from the ground by 31 of ECID's 36 irrigation wells, all of which use Pacific Gas and Electric Company power. Distribution

of pumped groundwater is then delivered by underground pipe through a network of hub gates, surges and air vents throughout the boundaries of the District.

3.3: History of Operation and Maintenance of Water Supplies: See paragraphs 3.1 and 3.2. Additionally, the District coordinates the acquisition, operation and distribution of all water utilized by District landowners and water users for agricultural production each year. Programs of water conservation are encouraged by ECID in order to lessen or at least maintain the water duty for each crop grown within the District in an effort to comply with the water conservation mandates of the State Water Resources Control Board in Sacramento.

4.0: General Location, Land Formations and Hydrogeology of ECID: Attached is a ECID location map which identifies the perimeter boundaries of ECID and the location of a monitoring well. The map is marked "Figure 1."

4.1: General Location and Formation of ECID: ECID is in the northern Sacramento Valley, about 4 miles west of the Sacramento River in Tehama County, bounded on the east by the Sierra Nevada Mountains and the Cascade Ranges, and on the west by the Coast Ranges. The Tehama Formation contains the main aquifer system underlying the District. The following is the definition and general character of this formation from Geological Survey Water-Supply Paper 1497 by F.H. Olmsted and G.H. Davis.

> "The Tehama formation is exposed in Tehama County on the northwest side of the Sacramento Valley, where Russell and VanderHoof (1931, page 12) described the formation as follows:
>
> The Tehama Formation is composed of about 2,000 feet of massive, pale, greenish gray to pale, buff sandy clays which are usually tuffaceous; intercalations of sand and gravel, often strongly cross-bedded, are present throughout. A massive course-grained pumice tuff member occurs near the base.
>
> The tuff, named the Nomlaki tuff Member from its type locality on the Nomlaki Indian Reservation in Tehama County, is near the base of both the Tehama and the Tuscan Formations.
>
> Below the surface, the Tehama Formation extends far east as the axis of the Sacramento Valley where, in the northern part, the dominantly fluviatile western-source sediments of the Tehama Formation interfinger with the clastic volcanic rocks of

the Tuscan Formation, and in the southern part, with the eastern source continental sediments of the Laguna Formation.

The structure of the Tehama Formation is broadly-homoclinal, with generally low eastward dips toward the axis of the Sacramento Valley. However, gentle northward-to-northwestward-trending folds are superimposed on the regional structure at Corning Ridge, Rumsey Hills, Capay Village, Dunnigan Hills and Plainfield Ridge. Dips of the bedding are more than 60 feet in English Hills and in the foothills between Putah and Cache Creeks, but most dips are less than 20 feet.

The Tehama Formation interfingers with the Tuscan Formation beneath the northern part of the Sacramento Valley. A pumiceous dacite tuff, the Nomlaki tuff Member, near the base of both formations has been assigned to the upper Pliocene on the basis of vertebrate fossils obtained from fine-grained sediments of the Tehama Formation, 10 feet stratigraphically above the tuff at a locality 18 miles west-northwest of Corning in Tehama County. (See VanderHoof, 1933b, page 384.)"

4.2: Hydrogeology of ECID: The Tehama Formation is one of the most important sources of groundwater for irrigation in the Sacramento Valley and will be an even more important future source when the groundwater is more extensively developed and deeper wells are drilled. The recent alluvium and Pleistocene Red Bluff Formation overlying the Tehama Formation generally are less than 50 feet thick. In the subsurface, the Tehama Formation consists mostly of massive sandy silt and silty clay, containing lenses of poorly consolidated sand and gravel. The course-grain deposits locally are abundant in the western part of ECID, Township 25 North, Range 3 West, Secs. 9, 10, 15, 16, 21 and 22, where several water wells tap a thick (from 50 to 100 feet) gravel zone at a depth ranging from about 300 to 450 feet. Wells in ECID produce large volumes of irrigation water from the permeable sand and gravel beds which may be interfingered in part with volcanic sediments of the Tuscan Formation. Production data and drillers' log show that for 20 wells belonging to ECID, well depths average 506 feet, discharge an average of 1,080 gpm and have specific capacities which average 76 gpm per foot of drawdown. Well number 25N/3W-3N1 is the deepest well in the District at 1,001 feet and encounter clay, sand and gravel of the Tehama Formation to a depth of 446 feet. Volcanic ash, clay, and volcanic gravel of the Tuscan Formation were found from 446 to 1,001 feet. The well produced 1000 gpm with 15 feet of drawdown, which indicates a specific capacity of 67 gpm per foot of drawdown. Well 25/3W-16Q1, 440 feet in depth, produced 1,030 gpm at a 6 foot drawdown for a specific capacity of 170 gpm. Well 25/3W-16Q1 and 3

other wells have specific capacities above 100, are less than 550 feet deep and produce water from the thick gravel section. The high production obtained from wells tapping sedimentary deposits of the Tehama and Tuscan Formations in ECID are not typical of wells along the west side of the Valley.

Groundwater occurs in 2 zones (unconfined and confined) beneath ECID. The USBOR built a multi-completion well in 1953 and the USBOR and the DWR have been measuring groundwater levels since this time. The 2 zones are represented by at least 1 well in the multi-completion well. The unconfined zone is from about 90 to 180 feet and is represented by well number 25N/3W-10L5. This well is perforated from 90 to 120 feet in the upper portion of the Tehama Formation. This zone provides most of the water to domestic users in ECID. Because portions of this zone are also used by the irrigation wells there is some seasonal fluctuation in the zone (see figure 2 attached).

The confined zone is below 200 feet and is represented by well number 25N/3W-10L1. This well is perforated from 251 to 400 feet in the Tehama Formation gravels. This confined portion of the Tehama Formation shows seasonal fluctuations due to the large amount of seasonal use. (See figure 3 attached.) As can be seen from the 2 hydrographs (figures 2 and 3 attached), the groundwater levels respond to climate conditions. The levels decline during periods of drought; i.e., the period from 1976 and 1977 and the 5-year extended drought from 1986 through 1992, and rise during periods of high precipitation; i.e., the period from 1978 through 1983. The overall trend shows a slight increasing seasonal fluctuation but no long-term decline in spring groundwater levels. The increase of seasonal fluctuations is a result of increased use of the groundwater supplies. The lack of long-term decline in groundwater levels shows that the area has not reached the point where groundwater extraction exceeds the safe yield of the Basin amounting to an overdraft.

Groundwater movement is from west to east moving from the foothills towards the Sacramento River (see figures 4 and 5 attached hereto). The depth to groundwater gets deeper towards the western edge as depicted in figure 4. The pumping water levels depicted in figure 5 are influenced by the location and density of operational wells and pumps.

4.3: Groundwater Supplies to District Landowners and Water Users: Groundwater provides all of the irrigation and domestic water needs and uses within ECID. There are approximately 425 domestic water users who maintain, own and operate their individual private wells. ECID owns and operates 39 wells and provides all of the irrigation water used within ECID boundaries. At present, only 31 wells are being used to provide irrigation

water services. In 1994, there was approximately 6,500 acre-feet of groundwater extracted within District boundaries for purposes of irrigating 3,200 acres of orchard, alfalfa, grains and pasture. ECID extracts approximately 30 percent of the groundwater used on the west side of the Sacramento Valley located in Tehama County.

5.0: ECID's Adoption of Groundwater Management Plan Issues Set Forth in Water Code Section 10753.7: ECID adopts components relating to a groundwater management plan which are set forth in Water Code Section 10753.7.

5.1: Control of Saline Water Intrusion: ECID is authorized to take practical, reasonable and feasible steps to insure against adverse impacts created by demonstrated saline water intrusion within that portion of the Tehama sub-basin managed by ECID. ECID believes that saline water underlies the Sacramento Valley at a depth that has intruded locally into the lower portion of the Tehama Formation under natural conditions. It is estimated that this saline water is about 1,800 to 2,500 feet below ground surface within ECID boundaries. If needed or as required, ECID will establish and maintain a regular program of groundwater quality and monitoring in order to establish a baseline quality criteria for groundwater which is available from ECID and includes an estimated saline content. Such monitoring efforts will test on a periodic basis as determined by ECID in order to insure adequate water quality and that baseline water qualities are not adversely impacted or deteriorating as a result of saline water intrusion into that portion of areas extracting groundwater from within the boundaries of ECID.

5.2: Identification and Management of Well Head Protection Areas and Recharge Areas: ECID does not manage well head protection areas and has no District operated recharge areas. In the future, should well head protection areas be established together with recharge areas; ECID shall manage such areas in order to monitor and ensure the quality of the groundwater resource within the District.

5.3: Regulation of Migration of Contaminated Groundwater: ECID will periodically test certain areas within the District to ensure that there is no saline water intrusion which will adversely impact agricultural or domestic groundwater production. Additionally, ECID will work and coordinate with the California State Regional Water Quality Control Board local offices to ensure protection of groundwater quality within the District.

5.4: Administration of a Well Abandonment and Well Destruction Program: ECID defers to Tehama County as a domestic well regulator to administer well abandonment and well destruction programs. ECID will

comply with demands for well abandonment and well destruction, particularly those that exceed an unsafe TDS level as determined by ECID.

5.5: Mitigation of Overdraft Conditions: ECID currently knows of no overdraft conditions or conditions of threatened overdraft that exist within ECID boundaries. Should conditions of overdraft or threatened overdraft occur within ECID; the District will cooperate with state and federal agencies to monitor and remedy the impacted area by learning the cause of the overdraft situation and attempt to implement factors which 1) determine and maintain a safe annual yield of groundwater for use within ECID for the growing of crops and supplying of domestic water services on lands within ECID without producing overdraft conditions; 2) develop data and information which identifies impacts on groundwater within the neighboring areas that might be affected by groundwater use within ECID which may be part of a conjunctive use program developed in cooperation with the State of California or other potential qualified water transferrees; 3) establish mitigation measures to offset identified adverse impacts of groundwater extractions; and 4) establish quantitative limitations on groundwater extractions from particular areas and establish criteria for well spacing and operations within the District to limit adverse impacts of groundwater extractions on wells within and without the District.

ECID will monitor and analyze the relationship between District groundwater extractions and those extractions which may support water transfers outside District boundaries together with impacts upon groundwater in other parts of the Tehama-Basin. Also, ECID will monitor and analyze surface or groundwater moved and transferred outside District boundaries and outside the county for impacts of overdraft or threatened overdraft upon existing District wells. As of the date of adoption of this groundwater management plan, ECID has experienced and gathered no data indicating an impact of extractions from wells within District boundaries upon any wells and pumps lying outside the District. There are no identified impacts on wells within the District from water extractions outside District boundaries.

5.6: Replenishment of Groundwater Extracted by Water Producers: ECID will encourage groundwater replenishment where such groundwater is extracted by water producers within the District to aid precipitation in the recharge of ECID Tehama-Basin groundwater aquifers. Additionally, ECID will encourage and coordinate with federal, state and other local agencies the development of data with respect to the methods and manner by which the groundwater resource available within ECID is being replenished and will maintain an active program of educating landowners and water users as to the wise use and reuse of the application of tail, drainage or run-off water.

5.7: Groundwater Level and Storage Monitoring: ECID will determine the status of the groundwater level within the Tehama sub-basin in District boundaries on an annual basis. Monitoring of the groundwater storage will also be pursued on an as-needed basis to ensure that an overdraft condition described in Water Code Section 1745.10 does not and will not exist. Groundwater monitoring data within Tehama sub-basin between the years 1990 and 1994 is attached hereto and marked "Figure 6."

5.8: Development of Relationships with State and Federal Regulatory Agencies: ECID is a member of the Northern California Water Association and Tehama-Colusa Water Users Association and through such associations, ECID shall maintain a close liaison in cooperation with the California Department of Water Resources as well as other state and federal agencies that pursue an active interest in the groundwater resources available for development within the boundaries of ECID. Finally, ECID shall continue to coordinate monitoring, exchange of data and cooperative efforts to protect the Tehama Basin groundwater resources with other local districts both in and outside of Tehama County including all neighboring landowners within and outside the boundaries of ECID.

5.9: Facilitating Conjunctive Use Operations: Groundwater supplies available within ECID are recharged annually by numerous factors including, but not limited to, precipitation and the application of extracted groundwater supplies for the irrigation of crops. The quantity and timing of recharging ECID's service area as a sub-basin of the Tehama-Basin depends upon a number of factors, many of which are within the control of landowners, water users and the District Board of Directors.

5.9.1: District Water Shortages: Current District bylaws, rules and regulations and governing acts statutes allow ECID to distribute available water supplies to District landowners in the event of shortages on a pro rata basis which ECID's Board of Directors determine based upon numerous factors including types of crops grown, timing of agricultural water needs, available groundwater supplies, etc. See Water Code Sections 22252.3, *et seq.* The terms of any District landowner agreement regarding quantities of groundwater, maintenance and operation of facilities, term, compensation and distribution are the subjects of negotiations between ECID and the landowners.

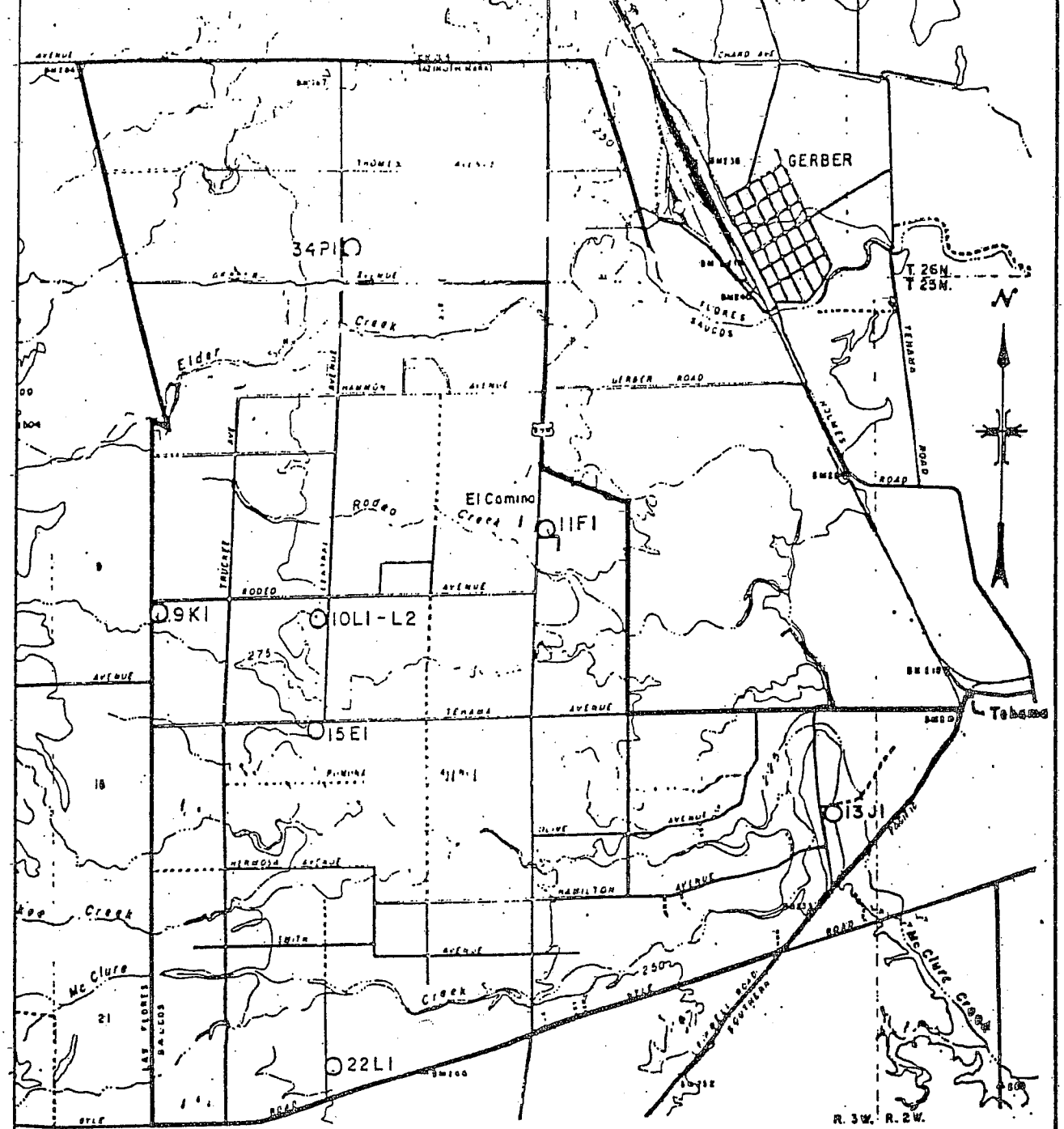
5.9.2: District Water Transfers: The District will continue to reserve the operational flexibility to engage in the transfer of its groundwater resources in order to assist another District or landowner in need of water provided that such transfer does

not result in 1) conditions of overdraft or otherwise fail to comply with provisions of California Water Code Section 1745.10; 2) shortage of groundwater supplies for landowners and water users within ECID; 3) uncompensated adverse impacts on neighboring landowners impacted by the program; and 4) exceed the safe annual yield of the aquifer.

5.9.3: District Approval of New Wells: To facilitate the monitoring of groundwater extraction and use within the District subsequent to January 1, 1996, any landowners desiring to construct a well within ECID may be required to prepare a written request specifying 1) size of the well to be constructed; 2) identify the location of the well; 3) the approximate distance in feet from all other existing wells within 3,000 feet of the proposed installation of the new well (inside or outside District boundaries); 4) capacity of the well; 5) depth of the well; and 6) service needs. The written request shall be delivered to ECID's Board of Directors for approval or disapproval at the next regular or special District Board meeting. All irrigation wells are subject to ECID's bylaws, rules, regulations, existing statutory enabling act legislation, state or federal applicable EPA, CWA, ESA or SWRCB regulations.

6.0: Implementation of Groundwater Management Plan: ECID shall continue to implement this groundwater management plan and develop a groundwater management program which further elaborates upon the contents of this plan and engages in continuing cooperation and coordination with other Tehama-Basin groundwater users.

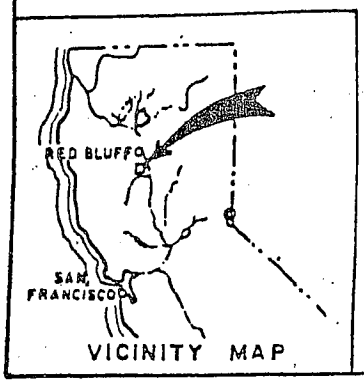
6.1: Annual Coordination Meeting: Pursuant to California Water Code Section 10755.3, ECID shall meet with other local agencies within the Tehama-Basin at least annually to coordinate groundwater management programs.



EXPLANATION

District Boundary

09K1 Location of monitoring well



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT
SACRAMENTO RIVER DIVISION
SACRAMENTO CANALS UNIT-CALIF.

EL CAMINO IRRIGATION DISTRICT
LOCATION MAP.

DRAWN W.R.C. SUBMITTED William P. Gerber
TRACED RECOMMENDED W.E. Gudgeon
CHECKED D.G.S. APPROVED R.E. Trefzger
SACRAMENTO, CALIF APRIL 1966 602-208-1239

Figure 1

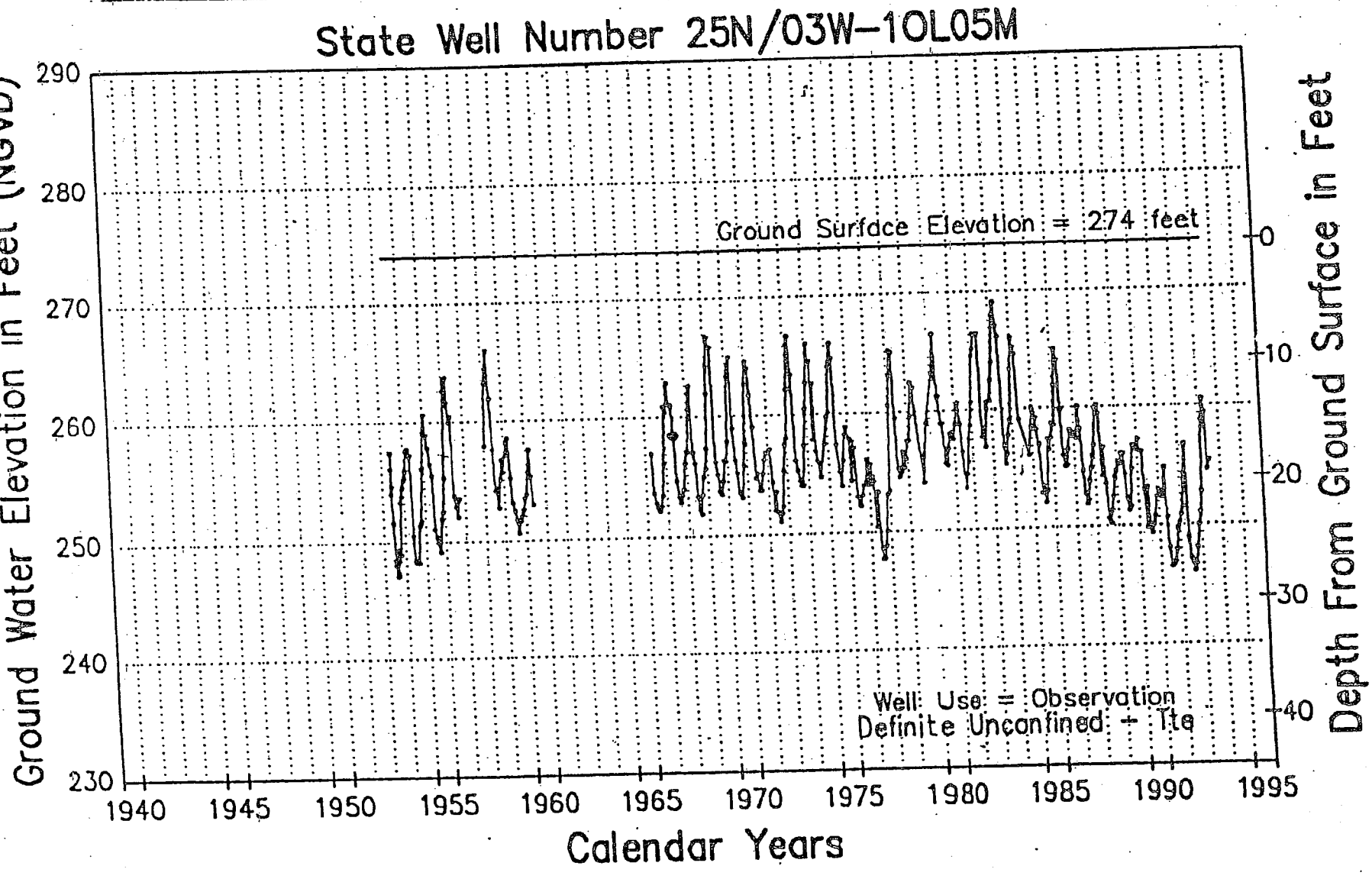

State Well Number 25N/03W-10L05M
Ground Water Elevation in Feet (NGVD)
290
280
270
260
250
240
230
Ground Surface Elevation = 274 feet
Well Use = Observation
Definite Unconfined - Tte
0
10
20
30
40
Depth From Ground Surface in Feet
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
Calendar Years

Figure 2

Sacramento Valley Ground Water Basin
Tehama County

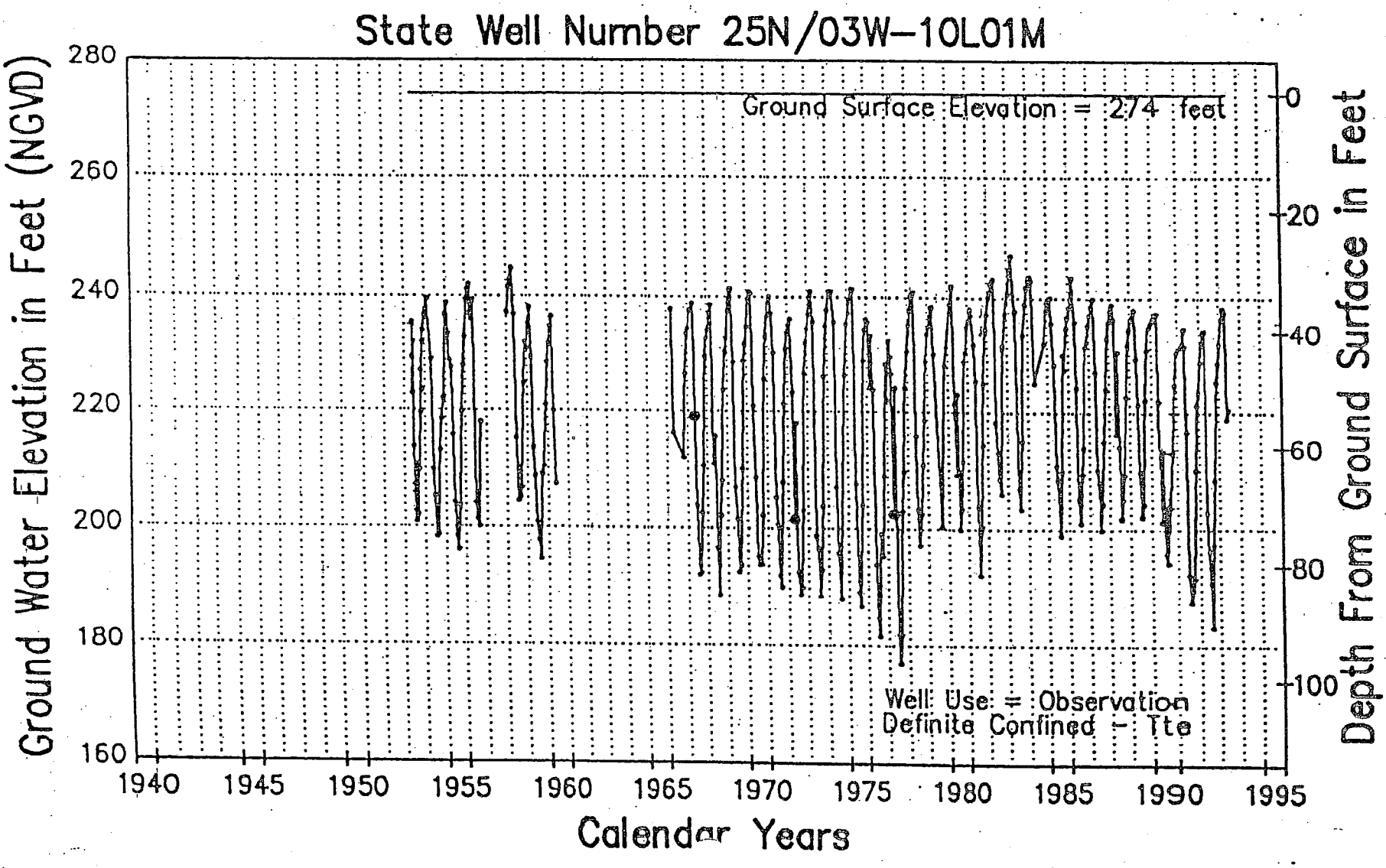
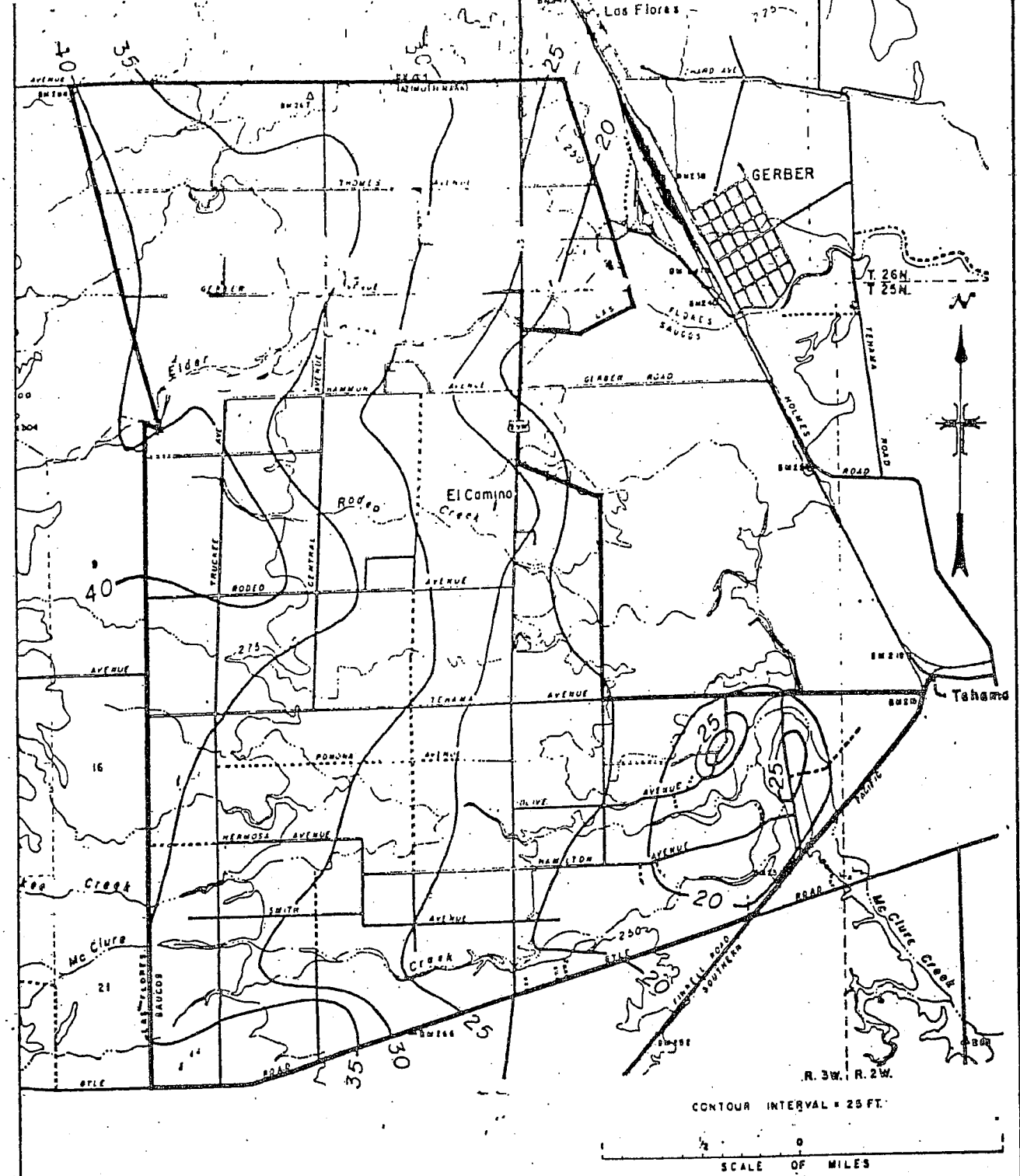


Figure 3



EXPLANATION

District Boundary

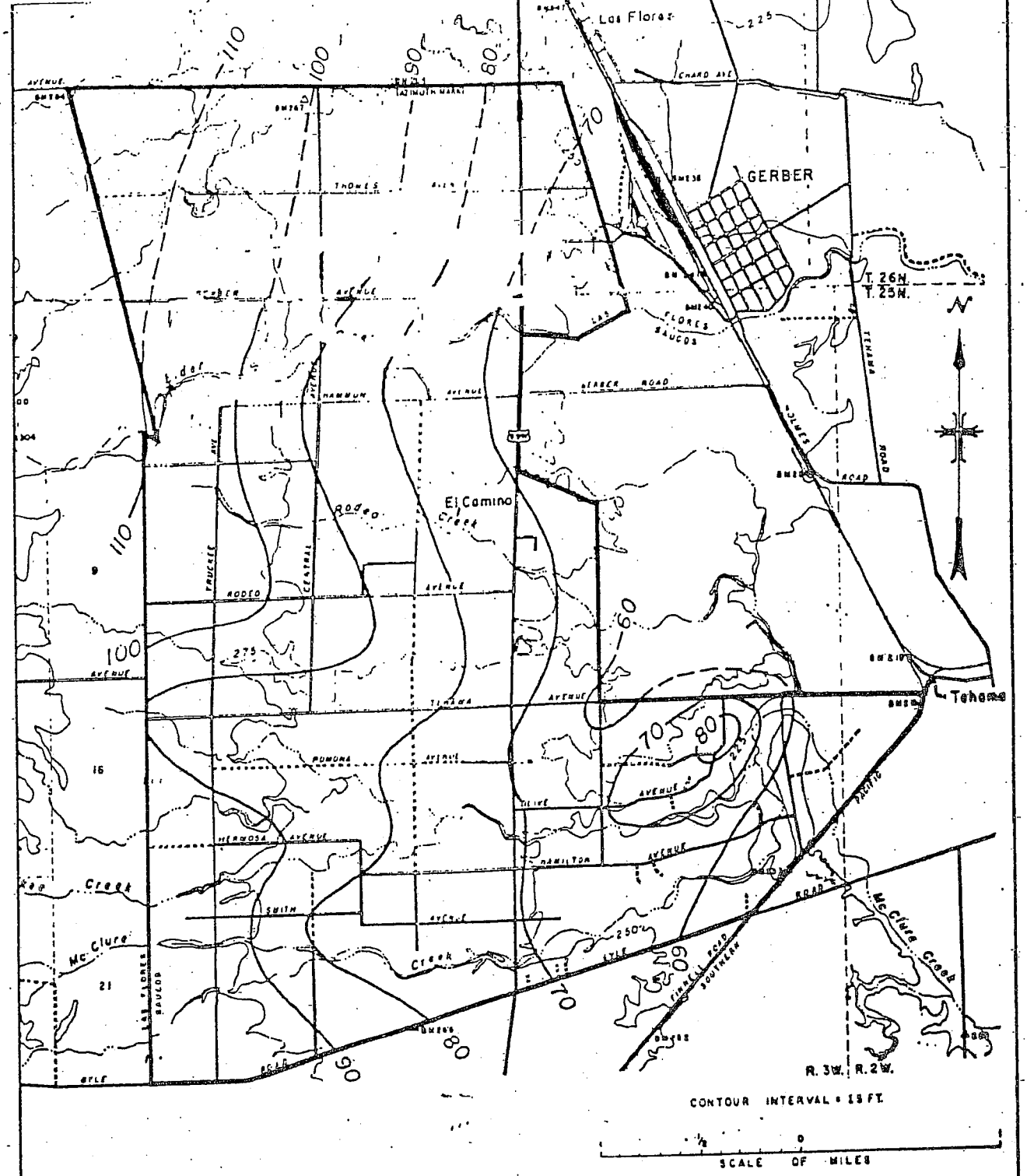
— 30 — Water-Level Depth Contours (ft)
(Contours on pressure surface of deep zone).

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT
SACRAMENTO RIVER DIVISION
SACRAMENTO CANALS UNIT-CALIF.

EL CAMINO IRRIGATION DISTRICT
GENERALIZED DEPTH TO WATER
DEEP ZONE SPRING 1966

DRAWN W.R.C. SUBMITTED William R. Cooke
TRACED RECOMMENDED H.E. Richardson
CHECKED D.C.L. APPROVED R.E. Trefzger
SACRAMENTO, CALIF APRIL 1966 602-208-1243

Figure 4



EXPLANATION

District Boundary

—200— Water - Level Depth Contours (ft)
(Contours on pressure surface of deep zone)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CENTRAL VALLEY PROJECT
SACRAMENTO RIVER DIVISION
SACRAMENTO CANALS UNIT - CALIF.

EL CAMINO IRRIGATION DISTRICT
PUMPING DEPTHS
DEEP ZONE JULY 1965

DRAWN W R C SUBMITTED William R. Gordon
TRACED RECOMMENDED W. E. Rinehart
CHECKED APPROVED R. E. Trelease

SACRAMENTO, CALIF APRIL 1966 602-208-1242

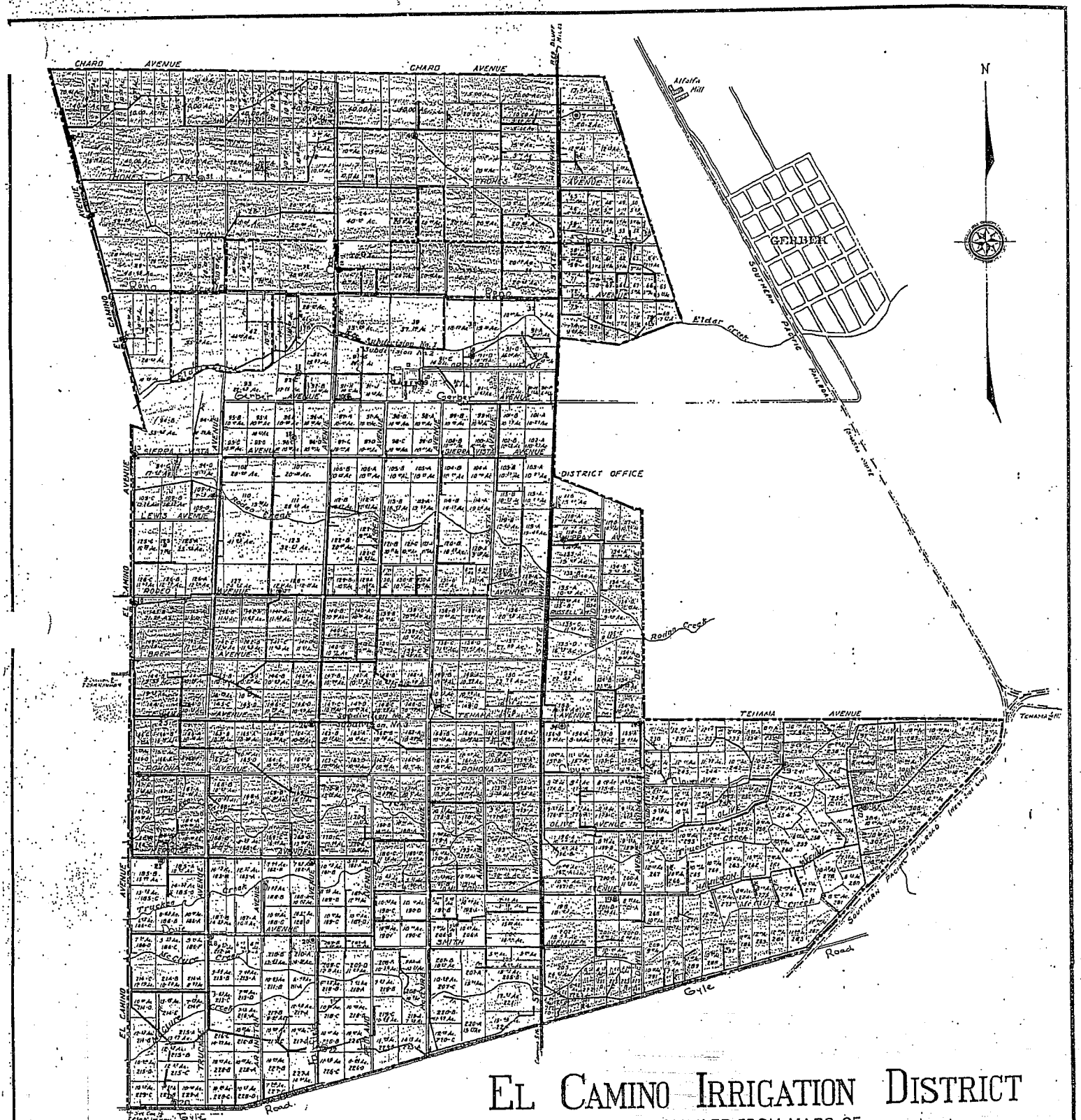
Figure 5

WELL PRODUCTION DATA
1990-1994 YEARS

DATE	PUMP	GPM	SWL	DRAW DOWN	PWL	A/F PER YR.
AUG. 1990	4	1171	80.2	12.6	92.8	284
AUG. 1990	5	1299	98.3	10.2	108.5	338
AUG. 1990	24	844	28.6	5.8	34.4	217
AUG. 1990	30	1105	40.3	12.8	53.1	232
AUG. 1990	33	1110	72.2	18.8	91.0	151
AUG. 1990	35	781	98.2	9.6	107.8	165
JULY 1991	4	1217	74.1	11.5	85.6	272
JULY 1991	5	1226	77.7	26.5	104.2	440
JULY 1991	24	853	28.6	4.2	32.8	218
JULY 1991	30	1080	58.0	23.8	81.8	378
JULY 1991	33	1079	66.2	18.8	85.0	172
JULY 1991	35	785	95.5	10.4	105.9	260
AUG. 1992	4	1127	84.3	14.0	98.3	245
AUG. 1992	5	1206	43.8	31.2	75.0	514
AUG. 1992	24	852	28.6	5.6	34.2	220
AUG. 1992	30	968	37.0	6.0	43.0	435
AUG. 1992	33	1020	66.2	18.8	85.0	78
AUG. 1992	35	738	105.5	9.3	114.8	235
JULY 1993	4	1221	66.0	17.6	83.6	205
JULY 1993	5	1280	76.0	12.8	88.8	389
JULY 1993	24	868	62.9	23.1	86.0	149
JULY 1993	30	1015	58.9	6.0	52.9	244
JULY 1993	33	1046	72.8	11.8	84.6	64
JULY 1993	35	909	89.5	6.3	95.8	120
MAY 1994	4	1287	57.3	16.6	74.0	237
MAY 1994	5	1408	64.5	16.0	80.5	433
MAY 1994	24	865	58.4	9.3	67.7	183
MAY 1994	30	1114	38.9	15.2	54.1	192
MAY 1994	33	1127	56.1	14.2	70.3	159
MAY 1994	35	984	71.8	14.7	86.5	271

GPM - Gallons Per Minute
SWL - Standing Water Level
PWL - Pumping Water Level
A/F PER YR. - Acre Feet Per Year

Figure 6



EL CAMINO IRRIGATION DISTRICT

COMPILED FROM MAPS OF
SUBDIVISIONS Nos. 1, 2, 3 & 4 OF
THE EL CAMINO RANCHO

TEHAMA COUNTY, CALIFORNIA

—LEGEND—

- Boundary of El Camino Irrigation District
- Boundaries of Lots & Ownerships
- Existing Pipe Lines
- Existing Drainage Ditches
- Existing Wells
- Proposed Pipe Lines
- Proposed Wells

June 1930
Scale: 1"=1000'
Surveys: O.R. Smith, Engr.

Scale in Feet

1 Mile