

CITY OF LODI
INFORMAL INFORMATIONAL MEETING
"SHIRTSLEEVE" SESSION
CARNEGIE FORUM
305 W. PINE STREET
TUESDAY, MARCH 16, 1999

An Informal Informational Meeting ("Shirtsleeve" Session) of the Lodi City Council was held Tuesday, March 16, 1999 commencing at 7:00 a.m.

ROLL CALL

Present: Council Members – Nakanishi and Land (Mayor)

Absent: Council Members – Hitchcock, Mann and Pennino

Also Present: City Manager Flynn, Deputy City Manager Keeter, Public Works Director Prima, City Attorney Hays and City Clerk Reimche

Also present in the audience was a representative from the Lodi News Sentinel and The Record.

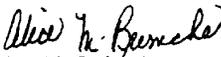
TOPIC(S)

1. Water Supply Update

ADJOURNMENT

No action was taken by the City Council. The meeting was adjourned at approximately 8:30 a.m.

ATTEST:


Alice M. Reimche
City Clerk



CITY OF LODI

COUNCIL COMMUNICATION

AGENDA TITLE: Water Supply Update

MEETING DATE: March 16, 1999 (Shirtsleeve Session)

PREPARED BY: Public Works Director

RECOMMENDED ACTION: None – Information only.

BACKGROUND INFORMATION: City staff and staff from other water agencies will be presenting an overview of water issues in San Joaquin County along with some specific items for future City Council action. The tentative presentation outline and presenters are as follows:

- | | | |
|-----------------|------------------|--|
| Introduction | Richard Prima | Overview of main problem – groundwater depletion
Introduction of participants |
| San Joaquin Co. | John Pulver | Major County-wide issues
Organizations involved
Recent Board actions and policies
American River water rights filing |
| East SJ Parties | Anthony Saracino | Activities of ESJPWA
Overview of groundwater management |
| City of Lodi | Richard Prima | Amendment to ESJPWA Memorandum of Understanding
Water Supply Master Plan
Coordination with Wastewater Treatment Master Plan
Cost issues |

Questions/Comments

Richard C. Prima, Jr.
Public Works Director

Attachments

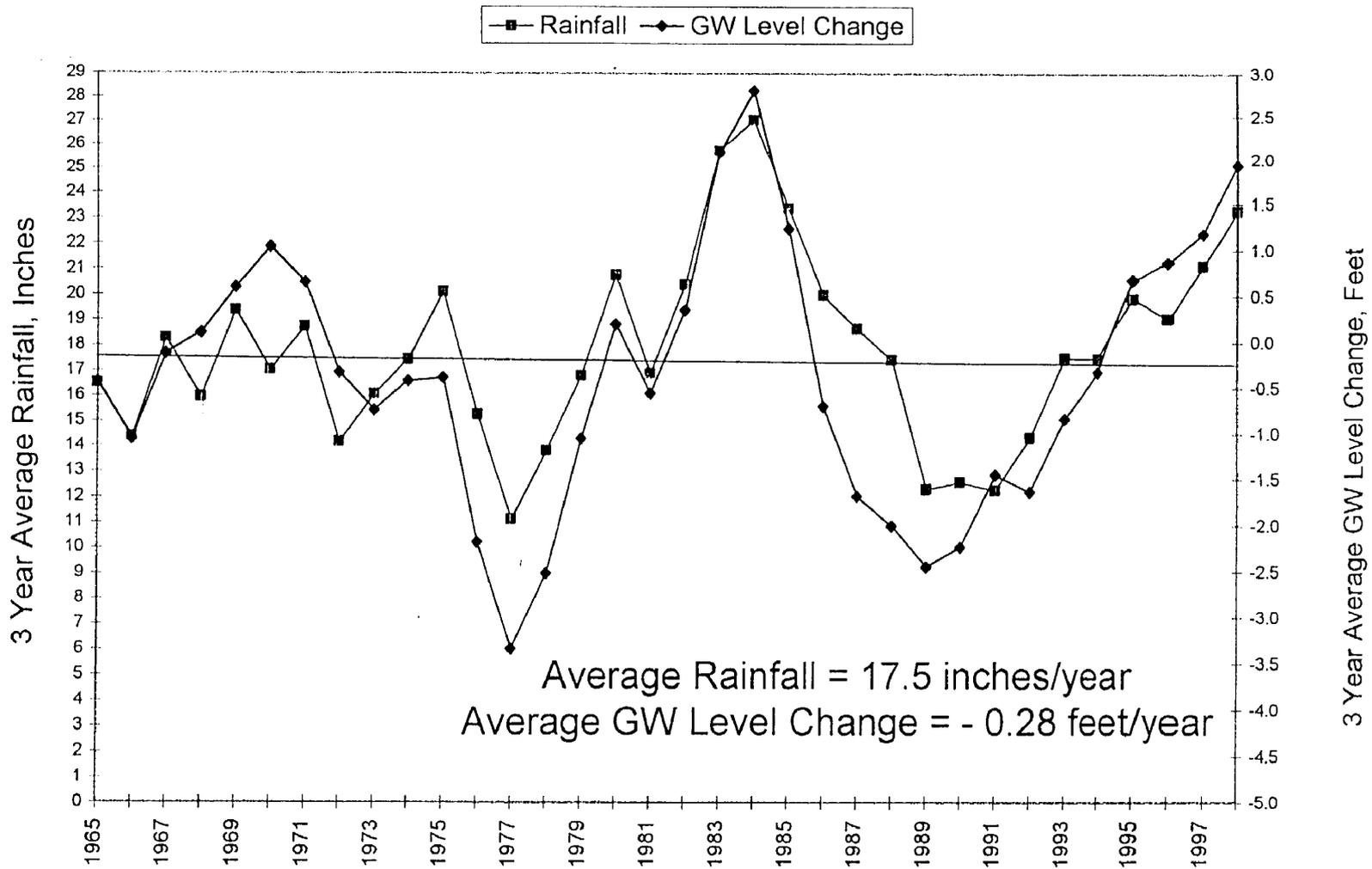
RCP/lm

- cc: Water/Wastewater Superintendent
- John Pulver, San Joaquin County Water Resources Coordinator
- Anthony Saracino, ESJPWA Executive Director
- Bob Johnson, Water Advisory Commission representative
- Lodi District Chamber of Commerce
- San Joaquin Council of Governments
- Tony Goehring, Economic Development Coordinator
- Rad Bartlam, Community Development Director

APPROVED: _____

H. Dixon Flynn -- City Manager

3 Year Average: Rainfall and Groundwater Level Change



1999 SAN JOAQUIN COUNTY WATER ISSUES

Institutional Issues

In San Joaquin County, there are 17 water districts, seven cities, 54 reclamation districts, 26 county service areas dealing with water, and the County. To find uniform positions among these entities still remains a significant challenge in dealing with water issues in San Joaquin County.

Groundwater Management

Groundwater management means a coordinated use of surface water and groundwater to meet the public need. In addition to the institutional issues involved, there is a lack of adequate scientific information regarding groundwater. Groundwater management will include the tasks to identify the supplemental source of surface water to offset the shortage of groundwater, particularly on the east side of the County.

Project Financing

All aspects of developing an adequate water supply will require significant expenditures to achieve the resolve. Cost items include: additional studies and analyses, environmental studies, public information and project financing.

State Water Resources Control Board Issues

The State Water Resources Control Board is currently in a process to obtain the water supplies necessary to meet Delta water quality standards. The hearings affect all water sources within the State. Considerable effort is being put forward to ensure that not only County water supplies, but County water quality is protected.

CALFED

The CALFED is a coalition of State and Federal agencies that are mandated by the Secretary of the Interior and the Governor of California to "fix" the Delta. Significant funding, from both State and Federal sources, has been made available to implement projects which will restore the ecological health of the Delta. As much of the Delta is within San Joaquin County, these efforts and issues will have a large impact on meeting long-term water needs for San Joaquin County.

**COMMON ORGANIZATIONS AND
ISSUES RELATED TO WATER RESOURCES/FLOOD CONTROL ACTIVITIES
FEBRUARY 8, 1999**

Advisory Water Commission (AWC) - A 19-member Board-appointed Commission that represents all water management entities, Cities, an at-large member, representative of Fish and Wild Life interests and a member of the Board of Supervisors.

San Joaquin County Staff Water and Flood Control Coordinating Committee (COORD. COM.) - This is a meeting of the staff of agencies included in the Advisory Water Commission and other interested parties. Its purpose is to identify issues of Countywide concern and, if necessary, bring the issues to the Advisory Water Commission for recommendations on policy issues.

Board Water Committee (BWC) - A Board of Supervisors appointed Committee, including two members of the Board of Supervisors, which meets to consider issues to be brought to the Board and to obtain information on current water resources/flood control issues.

East San Joaquin Parties Water Authority (ESJPWA) - An organization of seven San Joaquin County governmental organizations in the northeastern part of the County. Their mission is to develop a joint project with East Bay Municipal Utilities District and other water planning issues. The governmental organizations are Woodbridge Irrigation District, North San Joaquin Water Conservation District, the City of Lodi, the City of Stockton, Stockton East Water District, Central San Joaquin Water Conservation District and the San Joaquin County Flood Control and Water Conservation District.

San Joaquin Area Flood Control Agency (SJAFC) - A joint powers authority of the City of Stockton, San Joaquin County and the Flood Control and Water Conservation District. It has a four-member Board, consisting of two members of the Board of Supervisors and two members of the Stockton City Council. Its purpose is to complete the construction of additional flood control facilities in the Stockton Metropolitan Area.

Flood Control and Water Conservation District (FC&WCD) - The Countywide District formed under State law which is led by the Board of Supervisors.

Mokelumne River Water and Power Authority (MRWPA) - An Authority formed by San Joaquin County and the Flood Control and Water Conservation District. The Authority's mission is to develop water-related projects on the Mokelumne River.

Flood Control Zone 9 - A zone of benefit formed through the authority of the FC&WCD and approved by the voters for the purpose of maintenance of flood control facilities within the Zone. The Zone covers a large area in the central part of Eastern San Joaquin County.

Flood Control Zone 10 - A zone of benefit for the purpose of maintenance and flood control in Northeastern San Joaquin County. The District has been formed under the authority of the Flood Control and Water Conservation District.

Reclamation District No. 17 (RD 17) - RD 17 is responsible for levees protecting the area south of Stockton along the San Joaquin River. The area includes Weston Ranch, the County Hospital and jail facilities, and areas to the south. The County, under contract, provides levee maintenance services to RD 17.

Water Investigation Zone 2 (WIZ 2) - Water Investigation Zone 2 is a Countywide zone of the Flood Control District. Funds from the Zone are used for water resources coordination, special studies and investigation. The Zone expires on June 30, 2000.

County Water Policy - The County Water Policy has provided the foundation of agreement among the varied water interests within the County.

Water Implementation Plan - The Water Implementation Plan is an outline procedure that defines tasks necessary to implement the County Water Policy.

CALFED - A consortium of five State agencies and five Federal agencies with management and regulatory responsibility in the San Francisco Bay-Sacramento-San Joaquin Delta. CALFED was established to develop a long-term solution to resolve problems affecting the Bay Delta.

Department of Water Resources (DWR) - The Department of Water Resources is the primary State agency involved in Statewide water planning and the operation of the State Water Project.

State Water Project (SWP) - The State Water Project is primarily the California aqueduct with numerous other State storage and distribution facilities.

State Water Resources Control Board (State Board) - This Board is a quasi-judicial Board who has authority for the allocation of water and the enforcement of water management issues.

Regional Water Quality Control Board - There are nine Statewide Regional Boards who have the responsibility to enforce regulations related to the maintenance of water quality in the waters within the State of California. San Joaquin County is in the Central Valley region.

Corps of Engineers (COE) - The COE is the primary Federal agency involved in the construction, maintenance and provision of emergency services for flood control facilities. The COE is also responsible for the enforcement of some Federal water quality regulations.

United States Bureau of Reclamation (USBR) - The USBR is the primary Federal agency involved in conveying and providing water to the Central Valley Project customers.

Central Valley Project (CVP) - The CVP is the Federal water conveyance and storage facilities designed to meet Federal water delivery contract.

Federal Emergency Management Agency (FEMA) - The FEMA is an agency responsible for setting standards regarding flood protection and for administration and enforcement of the National Flood Insurance Program.

Federal Energy Regulatory Commission (FERC) - This Commission issues a license for hydraulic facilities which generate power. As part of the license issuance, downstream flows are established.

Environmental Protection Agency (EPA) - This is the Federal agency which administers Federal law regarding water quality requirements. The EPA sets standards for all waterways within the United States.

California Department of Fish and Game - This is the State agency which has the responsibility to protect fisheries within the water of the State of California. That responsibility is extended to include flow and water quality requirements.

U.S. Fish and Wildlife Service - This is the Federal agency which is a counterpart of the California Department of Fish and Game.

San Luis and Delta-Mendota Water Authority - An organization of water customers of the United States Bureau of Reclamation that takes water from the San Luis and Delta-Mendota Canal. The San Joaquin County office is located at the Federal Tracy Pumping Plant and the Water District in San Joaquin County, and the City of Tracy is a part of this Authority.

National Marine Fisheries Service (NMFS) - A Federal agency which deals with fishery issues. Primarily responsible for the ocean fisheries.

DeltaKeeper - A private organization independently funded, which is dedicated to the maintenance of water quality in the Delta.

State Reclamation Board - This is the State Board appointed by the governor, which generally acts as the local sponsor of Federal projects and has regulatory authority over decisions made regarding impacts on project channels.

Mokelumne River Association - A non-political association of interest and agencies which are responsible for water matter related to the Mokelumne River.

MASTER WINDOW PLAN (2000)

AB 3030
GROUND WATER MANAGEMENT
MANUAL

ELEMENTS OF A
GROUND WATER
MANAGEMENT PLAN

Produced by:

Ground Water Committee
Association of California Water Agencies

MARCH 1994

AB 3030

THE GROUND WATER MANAGEMENT ACT

GROUND WATER MANAGEMENT PLAN ELEMENTS

AB 3030, the Ground Water Management Act, authored by California State Assemblyman Jim Costa (D-Fresno) and signed into law in 1992, lists 12 components that may be included in a ground water management plan. Each component would play some role in evaluating or operating a ground water basin so that ground water can be managed to maximize the total water supply while protecting ground water quality.

Department of Water Resources' Bulletin 118-80 (pg. 9) defines ground water basin management as including planned use of the ground water basin yield, storage space, transmission capability, and water in storage. Ground water basin management includes:

- (1) protection of natural recharge and use of intentional recharge;
- (2) planned variation in amount and location of pumping over time;
- (3) use of ground water storage conjunctively with surface water from local and imported sources; and,
- (4) protection and planned maintenance of ground water quality.

The 12 components listed in Section 10753.7 of the Ground Water Management Act (AB 3030) form a basic list of data collection and operation of facilities that may be undertaken by an agency operating under this act.

Data collection will provide information to evaluate the water resources in the basin within the boundaries of the district. The construction of facilities will allow operation of the basin to protect ground water quality and to maximize the water supply by means of recharge of surface water and extraction of ground water at appropriate times and locations.

Specific comments about each of the 12 items listed in Section 10753.7 are included in the discussion that follows. For specific information about any issue, contact the Association of California Water Agencies, the California State Water Resources Control Board, the U.S. Environmental Protection Agency, or the California Department of Water Resources. Names and telephone numbers of appropriate experts are listed at the end of each discussion.

GROUNDWATER MANAGEMENT PLAN ELEMENTS AS SET FORTH IN AB 3030

10753.7 A groundwater management plan may include components relating to all of the following:

- a) The control of saline water intrusion.
- b) Identification and management of wellhead protection areas and recharge areas.
- c) Regulation of the migration of contaminated groundwater.
- d) The administration of a well abandonment and well destruction program.
- e) Mitigation of conditions of overdraft.
- f) Replenishment of groundwater extracted by water producers.
- g) Monitoring of groundwater levels and storage.
- h) Facilitating conjunctive use operations.
- i) Identification of well construction policies.
- j) The construction and operation by the local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling, and extraction projects.
- k) The development of relationships with state and federal regulatory agencies.
- l) The review of land use plans and coordination with land use planning agencies to assess activities which create a reasonable risk of groundwater contamination.

SUMMARY OF SUPPLY OPTIONS

(Subcategories, i.e. "A1", are for categorization only and do not represent a ranking of any kind)

CATEGORY A - MORE FROM CONSERVATION

A1: Keep-up Successful Water Conservation Program

- Continue enforcement measures

A2: Expand Public Information Program

- More education for general public
- More education for agriculture
- More in-school education
- More education on:
 - ⇒ plants
 - ⇒ sprinkler systems (including timers)
 - ⇒ xeriscape landscaping
- Focus on large users, i.e. restaurants
- Refer customers to others that demonstrate lower water use

A3: Expand Promotional Programs

- Offer free residential audits
 - ⇒ mandatory, if City thinks there are leaks or wastes
 - ⇒ voluntary, if owner requests it
- Offer rebates for residential upgrades to low flow toilets
- Offer commercial/industrial water audits
 - ⇒ customers should pay for the program
- Develop financial support programs to allow public customers (parks, schools, etc.) to retrofit facilities with water conserving hardware

A4: Expand Water Meter Program

- Options:
 - ⇒ institute a volunteer meter program (not a mandatory one)
 - ⇒ meters for all uses
 - ⇒ meters for luxury water users (i.e. pool owners)
 - ⇒ meters on all remaining commercial facilities
 - ⇒ meters for all new connections
 - ⇒ add meters when pipes are replaced for older homes or when service lines are replaced
 - ⇒ add meters at time of sale for residential, commercial and industrial customers
- Water rates should be based on usage
 - ⇒ have a base rate and a surcharge for flagrant water wasters

A5: Continually Evaluate Internal City Operations for Additional Conservation Potential

- Frequency of fire hydrant flushing
- Leak detection and repairs of City pipelines

CATEGORY B - RECLAMATION / RECYCLING

B1: Consider Use of Graywater

- Evaluate onsite use for irrigation
- Provide incentives for
 - ⇒ providing graywater systems with new residential, commercial and industrial construction
 - ⇒ retrofitting older homes and facilities with graywater systems

B2: Consider Use of Reclaimed Municipal Wastewater

- Evaluate a dual water system for the City
- Evaluate sending treated wastewater back to town
- Evaluate constructing one or more water stripping plants (wastewater treatment plants) in town
- Irrigate parks, schools, golf courses, median strips
- Use for construction water

Definitions

Graywater: Wastewater from sinks, showers, dishwashers, clothes washers, etc. Graywater does not include wastewater from garbage disposals, toilets or urinals.

Reclaimed (Recycled) Municipal Wastewater: Recycled water is the treated product of a municipal wastewater treatment facility, which includes all treated domestic wastewater.

CATEGORY C - LOCAL SUPPLY OPTIONS

C1: Work With Agriculture to Reduce Groundwater Use

- Support irrigation district increase use of surface water to reduce pumping
- City and/or County should pay/provide incentives to farmers to look at alternatives to using groundwater
- Purchase rights through a crop incentive program
- Develop a drip irrigation incentive for ag to promote surface water use
- Work with North San Joaquin Water Conservation District (NSJWCD) to promote ag users converting to surface water since they are Northeast of City
- Financially support ag use of surface water

C2: Encourage Surface Water Use In General

- Promote infill and discourage urban sprawl
- City to insist on maintaining greenbelt between Stockton and Lodi, keep ag on surface water
- Save winter rain water and use for non-drinking purposes
- Prohibit the construction of lakes in new developments

C3: Consider Groundwater Recharge

- Use stormwater for recharge
- Use river flood flows for recharge
- Keep Lodi Lake full year-round for recharge
- Develop a recharge program
 - ⇒ inject water in wells or percolate in basins
 - ⇒ in City and surrounding area
- Recharge facilities around the City using Woodbridge Irrigation District (WID) water

C4: Make Effective Use of WID Water

- New Woodbridge Dam
- Use WID water for parks (Lodi Lake, Beckman Parks, Peterson Park and others that are located within a reasonable distance from WID facilities)
- Take Mallard Lake (Lakeshore subdivision) off of groundwater and require them to use WID water primarily

C5: Acquire New Water Rights

- Obtain new sure water rights
 - ⇒ Look to further away places to make claims on water (mountain counties, irrigation districts, delta, etc.) to accommodate the City's future needs
 - ⇒ Look to nearby irrigation districts to obtain water rights to accommodate the City's future needs
- Aggressively pursue getting East Bay Municipal Utility District (EBMUD) pipeline water from other areas
- Acquire water rights from WID as land is annexed
- Mini dams on the Mokelumne River

CATEGORY D - BASIN-WIDE SUPPLY OPTIONS

D1: Work With Agriculture to Reduce Groundwater Use

- Work with NSJWCD
 - ⇒ District could store water underground
 - ⇒ District has surplus water rights
- Joint projects with irrigation districts

D2: Encourage Surface Water Use In General

- Toughen growth & water restrictions
- Construct holding basins or reservoirs to store available surface water

D3: Consider Groundwater Recharge

- All entities in the County should be going after water rights and evaluating recharge options

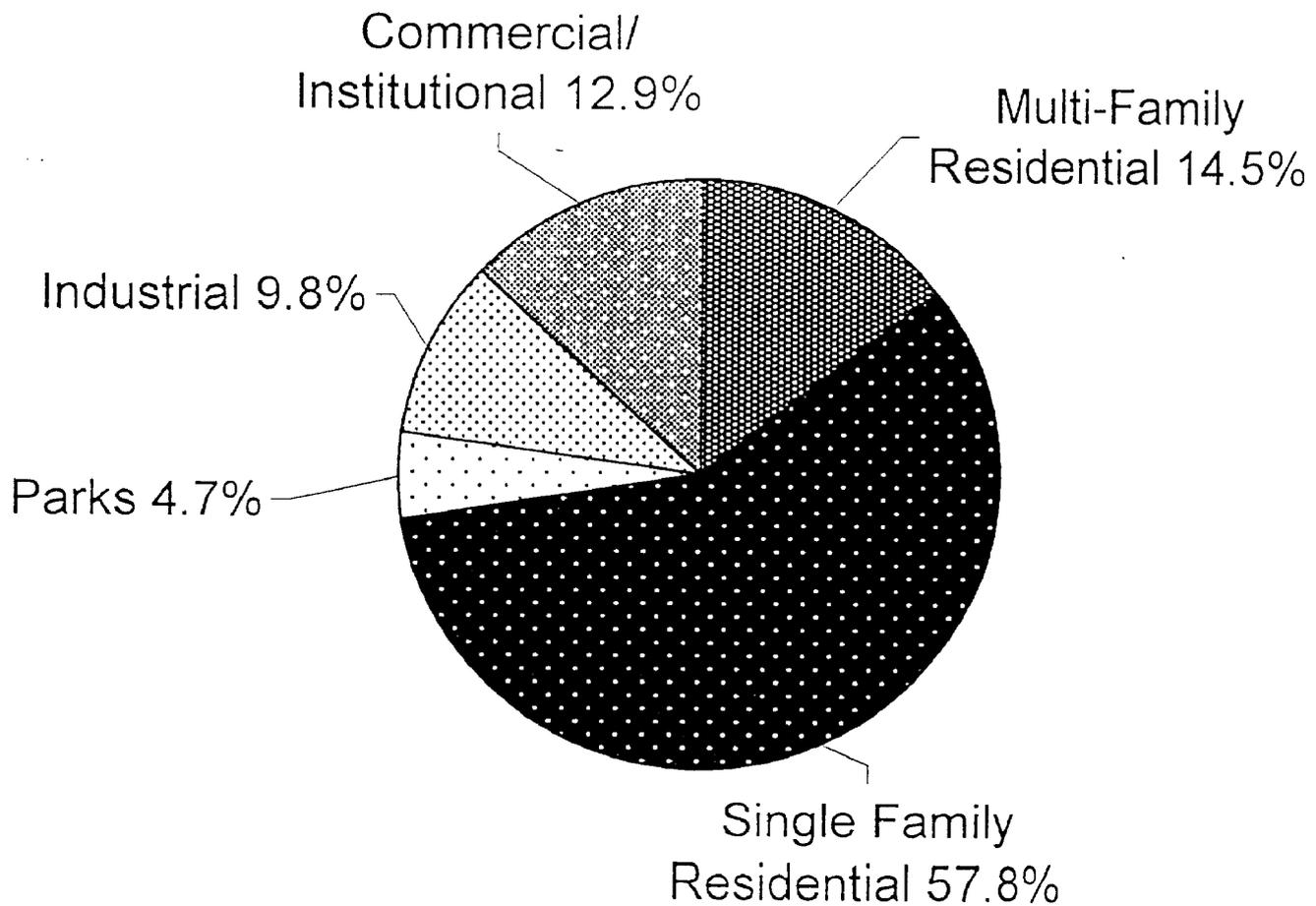
D4: Acquire New Water Rights

- Mini dams on Mokelumne River for diversion use

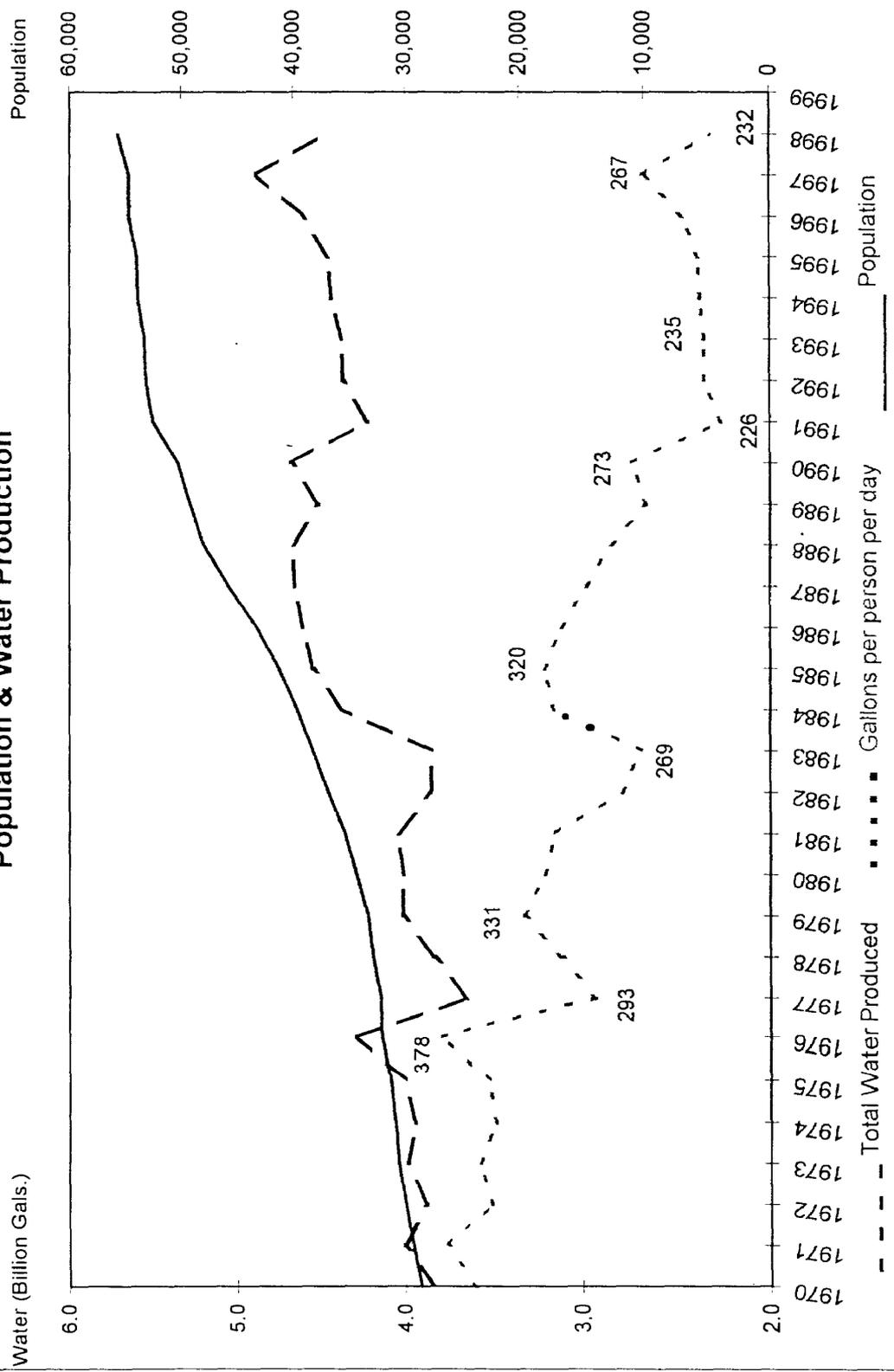
D5: Become Part of Other Agencies' Projects

- Support increasing size of Pardee and constructing Auburn Dam for storage
- Work with EBMUD or work independently to make better use of Mokelumne River flows
- Pursue American River water from EBMUD's planned pipeline for recharge
- Regional dual water system to make use of drinking water and treated wastewater
- Bring Delta water to the City
 - ⇒ need a treatment plant and pipeline
- Build water fund for future water supply and treatment projects

Composition of City Demand



CITY OF LODI Population & Water Production



City of Lodi, Public Works Department

City of Lodi's Water Conservation Program Benefits

(Condensed from a study reported to the Lodi City Council August 12, 1993.)

History

The City of Lodi's Water Conservation Ordinance and Program have been in effect since 1977. This is one of the few conservation programs in the Valley that has remained continuously in effect.

School Education Program

The popular Water Science Educational Program was introduced to Lodi elementary schools in 1986. This program supplements and advances Lodi's total effort to conserve water with science demonstrations/presentations taught in public and private elementary classrooms with the objective of teaching water awareness and water conservation techniques. 263 classes were given in 1998.

Effectiveness of Program

To more accurately determine the reduced water usage, Lodi was compared to three area communities which had only voluntary or inconsistently enforced water conservation regulations, and also had reliable water use data going back to 1980 through 1993.

The averages of these three communities were used to determine a "background level" of water use reductions due to drought publicity and minimal water conservation efforts. It should be kept in mind that Lodi probably started at a lower water use rate in 1980 than the other three communities due to Lodi's already existing water conservation efforts. The reductions in water use for the three area communities were averaged then subtracted from Lodi's total water savings. This results in a net saving of 3.52 billion gallons since 1980 or 293 million gallons per year.

Pumping Savings

The most direct conservation cost saving was in electrical costs. The 1992-93 electrical cost of pumping water in Lodi was approximately \$115 per million gallons. Therefore, from 1980 through 1992 electrical cost savings alone totaled \$404,856. Other cost savings (not quantified) include decreased maintenance, repair, and replacement costs to wells, pumps, and motors. The cost of the entire Water Conservation Program, adjusted to 1993 dollars from 1979-80 through 1991-92, totaled only \$210,342.

Reduced Number of Wells Needed

A well costs up to \$500,000 to explore, test, drill, develop, equip, and lay water mains to the distribution system (this does not include treatment costs). The 1976 and 1990 water master plans had Lodi needing approximately 26 wells with a population of 54,000. The City of Lodi has been meeting the water demands in Lodi with a total of 24 wells (22 active and 2 standby) at a population of 55,000. Therefore, if the City required the 26 wells as projected in the 1976 and 1990 water master plans there would be at least two additional wells needed at this time. At today's cost, that would be up to \$1,000,000 (without any treatment). Abandoning water conservation efforts only delay these expenditures.

Wastewater Treatment Savings

Another significant benefit of the citizens of Lodi's water conservation efforts has been the reduction of wastewater flows. These calculations show savings of nearly \$240,000 from 1987 through 1992. More significant is the effect on treatment plant capacity. Reduced wastewater flows may extend the life of the most recent \$10,000,000 expansion two to four years.

1999 SAN JOAQUIN COUNTY WATER ISSUES

Institutional Issues

In San Joaquin County, there are 17 water districts, seven cities, 54 reclamation districts, 26 county service areas dealing with water, and the County. To find uniform positions among these entities still remains a significant challenge in dealing with water issues in San Joaquin County.

Groundwater Management

Groundwater management means a coordinated use of surface water and groundwater to meet the public need. In addition to the institutional issues involved, there is a lack of adequate scientific information regarding groundwater. Groundwater management will include the tasks to identify the supplemental source of surface water to offset the shortage of groundwater, particularly on the east side of the County.

Project Financing

All aspects of developing an adequate water supply will require significant expenditures to achieve the resolve. Cost items include: additional studies and analyses, environmental studies, public information and project financing.

State Water Resources Control Board Issues

The State Water Resources Control Board is currently in a process to obtain the water supplies necessary to meet Delta water quality standards. The hearings affect all water sources within the State. Considerable effort is being put forward to ensure that not only County water supplies, but County water quality is protected.

CALFED

The CALFED is a coalition of State and Federal agencies that are mandated by the Secretary of the Interior and the Governor of California to "fix" the Delta. Significant funding, from both State and Federal sources, has been made available to implement projects which will restore the ecological health of the Delta. As much of the Delta is within San Joaquin County, these efforts and issues will have a large impact on meeting long-term water needs for San Joaquin County.

**COMMON ORGANIZATIONS AND
ISSUES RELATED TO WATER RESOURCES/FLOOD CONTROL ACTIVITIES
FEBRUARY 8, 1999**

Advisory Water Commission (AWC) - A 19-member Board-appointed Commission that represents all water management entities, Cities, an at-large member, representative of Fish and Wild Life interests and a member of the Board of Supervisors.

San Joaquin County Staff Water and Flood Control Coordinating Committee (COORD. COM.) - This is a meeting of the staff of agencies included in the Advisory Water Commission and other interested parties. Its purpose is to identify issues of Countywide concern and, if necessary, bring the issues to the Advisory Water Commission for recommendations on policy issues.

Board Water Committee (BWC) - A Board of Supervisors appointed Committee, including two members of the Board of Supervisors, which meets to consider issues to be brought to the Board and to obtain information on current water resources/flood control issues.

East San Joaquin Parties Water Authority (ESJPWA) - An organization of seven San Joaquin County governmental organizations in the northeastern part of the County. Their mission is to develop a joint project with East Bay Municipal Utilities District and other water planning issues. The governmental organizations are Woodbridge Irrigation District, North San Joaquin Water Conservation District, the City of Lodi, the City of Stockton, Stockton East Water District, Central San Joaquin Water Conservation District and the San Joaquin County Flood Control and Water Conservation District.

San Joaquin Area Flood Control Agency (SJAFCA) - A joint powers authority of the City of Stockton, San Joaquin County and the Flood Control and Water Conservation District. It has a four-member Board, consisting of two members of the Board of Supervisors and two members of the Stockton City Council. Its purpose is to complete the construction of additional flood control facilities in the Stockton Metropolitan Area.

Flood Control and Water Conservation District (FC&WCD) - The Countywide District formed under State law which is led by the Board of Supervisors.

Mokelumne River Water and Power Authority (MRWPA) - An Authority formed by San Joaquin County and the Flood Control and Water Conservation District. The Authority's mission is to develop water-related projects on the Mokelumne River.

Flood Control Zone 9 - A zone of benefit formed through the authority of the FC&WCD and approved by the voters for the purpose of maintenance of flood control facilities within the Zone. The Zone covers a large area in the central part of Eastern San Joaquin County.

Flood Control Zone 10 - A zone of benefit for the purpose of maintenance and flood control in Northeastern San Joaquin County. The District has been formed under the authority of the Flood Control and Water Conservation District.

Reclamation District No. 17 (RD 17) - RD 17 is responsible for levees protecting the area south of Stockton along the San Joaquin River. The area includes Weston Ranch, the County Hospital and jail facilities, and areas to the south. The County, under contract, provides levee maintenance services to RD 17.

Water Investigation Zone 2 (WIZ 2) - Water Investigation Zone 2 is a Countywide zone of the Flood Control District. Funds from the Zone are used for water resources coordination, special studies and investigation. The Zone expires on June 30, 2000.

County Water Policy - The County Water Policy has provided the foundation of agreement among the varied water interests within the County.

Water Implementation Plan - The Water Implementation Plan is an outline procedure that defines tasks necessary to implement the County Water Policy.

CALFED - A consortium of five State agencies and five Federal agencies with management and regulatory responsibility in the San Francisco Bay-Sacramento-San Joaquin Delta. CALFED was established to develop a long-term solution to resolve problems affecting the Bay Delta.

Department of Water Resources (DWR) - The Department of Water Resources is the primary State agency involved in Statewide water planning and the operation of the State Water Project.

State Water Project (SWP) - The State Water Project is primarily the California aqueduct with numerous other State storage and distribution facilities.

State Water Resources Control Board (State Board) - This Board is a quasi-judicial Board who has authority for the allocation of water and the enforcement of water management issues.

Regional Water Quality Control Board - There are nine Statewide Regional Boards who have the responsibility to enforce regulations related to the maintenance of water quality in the waters within the State of California. San Joaquin County is in the Central Valley region.

Corps of Engineers (COE) - The COE is the primary Federal agency involved in the construction, maintenance and provision of emergency services for flood control facilities. The COE is also responsible for the enforcement of some Federal water quality regulations.

United States Bureau of Reclamation (USBR) - The USBR is the primary Federal agency involved in conveying and providing water to the Central Valley Project customers.

Central Valley Project (CVP) - The CVP is the Federal water conveyance and storage facilities designed to meet Federal water delivery contract.

Federal Emergency Management Agency (FEMA) - The FEMA is an agency responsible for setting standards regarding flood protection and for administration and enforcement of the National Flood Insurance Program.

Federal Energy Regulatory Commission (FERC) - This Commission issues a license for hydraulic facilities which generate power. As part of the license issuance, downstream flows are established.

Environmental Protection Agency (EPA) - This is the Federal agency which administers Federal law regarding water quality requirements. The EPA sets standards for all waterways within the United States.

California Department of Fish and Game - This is the State agency which has the responsibility to protect fisheries within the water of the State of California. That responsibility is extended to include flow and water quality requirements.

U.S. Fish and Wildlife Service - This is the Federal agency which is a counterpart of the California Department of Fish and Game.

San Luis and Delta-Mendota Water Authority - An organization of water customers of the United States Bureau of Reclamation that takes water from the San Luis and Delta-Mendota Canal. The San Joaquin County office is located at the Federal Tracy Pumping Plant and the Water District in San Joaquin County, and the City of Tracy is a part of this Authority.

National Marine Fisheries Service (NMFS) - A Federal agency which deals with fishery issues. Primarily responsible for the ocean fisheries.

DeltaKeeper - A private organization independently funded, which is dedicated to the maintenance of water quality in the Delta.

State Reclamation Board - This is the State Board appointed by the governor, which generally acts as the local sponsor of Federal projects and has regulatory authority over decisions made regarding impacts on project channels.

Mokelumne River Association - A non-political association of interest and agencies which are responsible for water matter related to the Mokelumne River.



MEMORANDUM

TO: Honorable Mayor and
Lodi City Council Members

FROM: Alice M. Reimche
City Clerk

DATE: March 17, 1999

SUBJECT: 1932 "Water Fight"

This subject came up at the March 16, 1999 shirtsleeve session during the water supply update discussion. I thought you might be interested in some basic information and a recap of this incident.

AMR/JLT

cc: Public Works Director Prima

MEMORANDUM, City of Lodi, Public Works Department

TO: City Manager
FROM: Public Works Director
DATE: August 4, 1977
SUBJECT: 1932 "Water Fight"

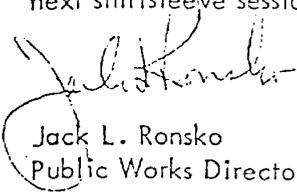
At the regular Council meeting of July 20, 1977, as part of the review of the "Water System Analysis and Master Plan Reevaluation," it appeared that some members of the City Council were not familiar with the 1932 water fight. The purpose of this memo is to inform them of this lawsuit, since it is not discussed in detail in the Master Plan Reevaluation.

The attached "MEMORANDA ON JUDGMENT AND DECREE, CITY OF LODI VS. EAST BAY MUNICIPAL UTILITY DISTRICT" is a summary of the final judgment and decree which was rendered March 17, 1938 in San Joaquin County Superior Court. This is the "legal restriction" referred to in the Water System Analysis and Master Plan Reevaluation, pages 1-1 and 5-1.

Very briefly, the "water fight," as it is called, was a suit brought by the City of Lodi against E.B.M.U.D. and P.G.& E. in the early 1930's. The complaint was essentially that E.B.M.U.D.'s and P.G.& E.'s actions regulating the flow of the Mokelumne River were detrimental to the City's water supply. The original suit was heard in 1932 and a judgment and decree made in 1933 in Lodi's favor. It was appealed to the California Supreme Court, which ordered the Superior Court to rehear the case. The attached summary is based on this second trial.

As pointed out in Chapter 5 of the Water Plan, the adequacy of the City's water supply is a topic much beyond the scope of the Report. If the City Council desires additional information of this water fight, it is felt that this topic should be set for a future shirt-sleeve session, and should not be discussed in detail at the shirtsleeve session of August 9, 1977, at which time Trotter, Yoder & Associates will be reviewing the "Water System Analysis and Master Plan Reevaluation."

It is recommended that this information be forwarded to the City Council prior to the next shirtsleeve session.


Jack L. Ronsko
Public Works Director

Attachment

MEMORANDA ON JUDGMENT AND DECREE

CITY OF LODI

vs.

EAST BAY MUNICIPAL UTILITY DISTRICT

Date of judgment March 17, 1938. This decree finds that the City of Lodi has a vested right to appropriate in maximum of 6,000,000 gallons per day, and 3600 acre feet per year from wells located within an area slightly over 6 sq. miles. This area is shown in blue on the attached map. These 3600 acre feet per year is equivalent to an average flow of 3,225,000 gallons per day. This right is superior to the rights of the Pacific Gas and Electric Company and the East Bay Municipal Utility District except as follows:

I. The Pacific Gas and Electric Company has a prior right to take and divert 75 cubic feet per second of water from the North Fork of the Mokelumne of which not to exceed 30 cubic feet per second may be conveyed and distributed "for municipal, domestic and other beneficial uses in the Cities of Jackson, Sutter Creek, and in their vicinities."

II. To take and divert from the North Fork of the Mokelumne river 135 cubic feet per second--and to convey said water and discharge the same into the so-called Petty Forebay Reservoir, and to use the said waters in the operation of the said Electra Power Plant.

III. The rights to store water in seven reservoirs and to use stored water in the operation of the Electra Power Plant:

IV. The decree specifies minimum releases to the main channel of the Mokelumne River, such minimum releases depending upon the total natural annual run-off of the stream.

The East Bay Municipal Utility District shall not be required to take any steps for the protection of Lodi's water supply, unless and until the static ground water level in Lodi's wells within the 6 sq. mile area falls to a point below sea level. This static ground water level shall be ascertained by determining the average level in wells within the area by measurements made during the first ten days of January of each year. When the static level drops below sea level for two successive Januarys, the responsibility passes to the East Bay Municipal Utility District for the maintenance of Lodi's priority. Lodi shall maintain its wells and equipment in good operating condition; and if it is unable to pump sufficient water of good quality to develop the rights referred to above, the East Bay Municipal Utility District shall supply at its own expense the differences between the amount produced by Lodi's wells within the district and in the amount decreed to the City by the court.

If the East Bay Municipal Utility District fails to comply with these provisions, the decree requires the district to release water into the Mokelumne River from its storage facilities. The amount the district shall release varies with the annual run-off of the Mokelumne River, as measured at the Mokelumne Hill Gauging Station; for annual runoffs less than 250,000 acre feet per year this release shall be not less than 117,000 acre feet; for annual runoffs equal to or greater than 300,000 acre feet the release shall be not less than 360,000 acre feet per year, in addition to

these releases the East Bay Municipal Utility District shall also release additional flows for flushing the Mokelumne channel. These flushing discharges are not required if the East Bay Municipal Utility District elects to supply the water required to bring the City of Lodi's water up to the amount specified in the decree.

The obligation of the East Bay Municipal Utility District to supply such water deficiencies or to make such releases from storage as specified in the decree shall not arise if the district establishes to the satisfaction of the court "that any fall of the static water level in plaintiff's wells (Lodi) below said danger point of sea level is caused by operations of parties other than said defendant (East Bay Municipal Utility District) under rights which are junior in priority to those of said defendant".

The East Bay Municipal Utility District has the right to take from its Pardee Dam reservoir 310 cubic feet per second or approximately 200,000,000 gallons per day. This is equivalent to approximately 224,000 acre feet per year. It also has the right to store between the first day of October and the fifteenth day of July a total of 217,000 acre feet of water from the Mokelumne River.

JUDGMENT AND DECREE

*A Decision of Paramount Importance
to the People of Northern
San Joaquin County*

Case No. 22,415

In the Superior Court of the State of California
in and for the County of San Joaquin

CITY OF LODI vs EAST BAY MUNICIPAL UTILITY
DISTRICT AND PACIFIC GAS & ELECTRIC CO

August 14, 1933

ROBERT M. SEARLS

GLENN WEST

Attorneys

No. 22,415
JUDGMENT AND DECREE

In the Superior Court of the State of California, in and for the County of San Joaquin.

CITY OF LODI, a municipal corporation, Plaintiff, vs., EAST BAY MUNICIPAL UTILITY DISTRICT, a public corporation, PACIFIC GAS AND ELECTRIC COMPANY, a corporation, et al., Defendants.

The above entitled cause having been duly and regularly tried before the Court sitting without a jury, a jury having been waived, and the Court having heretofore duly made and signed its decision herein, comprising findings of fact and conclusions of law, wherein and whereby judgment and decree were awarded to the plaintiff as hereinafter set forth.

Now, therefore, in accordance with said findings and conclusions, IT IS HEREBY ORDERED, ADJUDGED AND DECREED:

FIRST: That plaintiff, City of Lodi, a municipal corporation, by virtue of its own appropriation and by virtue of its prescriptive use as against the claims of the overlying land owners in the Mokelumne basin, has a legal vested right to appropriate, pump and divert the waters percolating through the water-bearing strata which underlies said Mokelumne basin in the County of San Joaquin, State of California, which basin is fed by the waters of the Mokelumne River, to the extent of a maximum diversion of 6,000,000 gallons per day, and 3,600 acre feet per year; that it is plaintiff's right to take and divert such water through wells situate within the limits of said City of Lodi and owned, leased or operated by said plaintiff; that such right of the plaintiff is prior in time and superior in right to any claim of appropriation that the defendants, or either of them, have to waters of the Mokelumne River, save and except the right of the defendant Pacific Gas and Electric Company as specified in paragraph Second hereof; that subject to said priorities of defendant Pacific Gas and Electric Company, as set forth in paragraph Second of this Decree, the title of plaintiff to the appropriative right hereinabove adjudged to be vested in it is hereby quieted against both defendants herein; that the defendants and each of them are hereby prohibited and enjoined from interrupting the flow of the Mokelumne River in such a manner or to such an extent as will prevent or interfere with an average annual replenishment and percolation into the Lodi area, in said Mokelumne basin equivalent to that which would occur under natural conditions, and in order to provide such an average annual percolation into said basin from the waters of the Mokelumne River as would oc-

cur under natural conditions, and, in order to avoid such interference, said defendants are severally required to regulate and release the flow of said Mokelumne River as hereinafter provided.

SECOND: That as against plaintiff, defendant Pacific Gas and Electric Company has vested rights to store, divert, release, regulate and use the waters of the North Fork of the Mokelumne River and its tributaries as particularly set forth in sub-paragraph (D) of paragraph III of the additional defense in its amended and supplemental answer, and also in paragraph V of the said additional defense, but limited and restricted as specifically found in paragraph XVII of the aforesaid findings of fact, which vested rights, as so limited and restricted, are more particularly described as follows:

(1) The right to take and divert from the North Fork of the Mokelumne River 75 cubic feet per second of the water naturally flowing in said river at all times of the year, augmented when necessary in periods of low flow by the waters impounded in the reservoirs hereinafter in this paragraph Second mentioned; to convey and distribute so much of said water as may reasonably be required (but not exceeding 30 cubic feet per second thereof as a maximum) for municipal, domestic and other beneficial uses in the Cities of Jackson, Sutter Creek, and in their vicinities; to discharge the residue of said water into its said Tabeaud Forebay Reservoir, and to use said residue in the operation of its Electra Power Plant.

(2) The right to take and divert from the North Fork of the Mokelumne River 135 cubic feet per second of the water naturally flowing in said river at all times of the year, augmented when necessary in periods of low flow by the waters impounded in the said reservoirs in this paragraph Second mentioned, and to convey said waters and discharge the same into the so-called Petty Forebay Reservoir, and to use said waters in the operation of the said Electra Power Plant.

(3) The right to store and impound at all times of the year the waters of the North Fork of the Mokelumne River and its tributaries in the following reservoirs to their full capacities, and to use the water so stored for augmenting the flow of the said North Fork of the said river; and to use said water in the operation of the said Electra Power Plant, and for distribution and sale in Jackson, Sutter Creek, and vicinity, to the

extent and for the uses aforesaid. The said reservoirs and their capacities are as follows:

- a. Upper Blue Lake Reservoir of a storage capacity of 7700 acre feet of water;
- b. Lower Blue Lake Reservoir of a storage capacity of 4340 acre feet of water;
- c. Twin Lakes Reservoir of a storage capacity of 1340 acre feet of water;
- d. Meadow Lake Reservoir of a storage capacity of 6110 acre feet of water;
- e. Bear River Reservoir of a storage capacity of 6712 acre feet of water;
- f. Tabeaud Forebay Reservoir of a storage capacity of 1153 acre feet of water; and
- g. Petty Forebay Reservoir of a storage capacity of 12 acre feet of water.

(4) The right (under the so-called Jackson and Volcano Ditch rights) to divert from Tiger Creek, Mill Creek, Antelope Creek and Panther Creek, tributaries of the North Fork of the said Mokelumne River, all the waters of said creeks at all times during the year to the extent of a maximum flow of 30 second feet of water, and to use the said water for the generation of electric power at and above the so-called Electra Power House.

That the rights of the said defendant Pacific Gas and Electric Company, in this paragraph SECOND adjudicated, are prior in time and superior to the rights of the plaintiff and the said rights of said defendant are hereby quieted against the plaintiff.

THIRD: Defendant Pacific Gas and Electric Company is the owner of certain permits granted by the Division of Water Rights, Department of Public Works, of the State of California, described in paragraph VI of the additional defense of said defendant's amended and supplemental answer, and all rights existing under and by virtue thereof, to appropriate the waters of the North Fork of the Mokelumne River and its tributaries for use in the generation of electric power, and also is the owner of the license granted by the Federal Power Commission described in paragraph VII of said additional defense of said answer. Defendant Pacific Gas and Electric Company has and shall have, subject to the conditions expressed in this paragraph and in paragraph Fourth hereof, the right, and is hereby obligated and required so long as it maintains and/or uses the Salt Springs and/or Lower Bear River and/or Deer Valley Reservoirs, (a) to impound and store, each year during periods of flood and high flow, in said Salt Springs Res-

ervoir, and in said proposed Lower Bear River and Deer Valley Reservoirs, if and when constructed, so much of the flood and seasonal high waters flowing in said North Fork of the Mokelumne River and its tributaries as may be necessary to fill said reservoirs to their capacity; (b) by means of outlets, control gates and other works already provided at said Salt Springs Reservoir, and to be provided at said Lower Bear River and Deer Valley Reservoirs, if and when constructed, to release, each year during periods of low flow, the waters impounded and stored therein; (c) by means of so impounding and storing water in, and releasing water from, said reservoirs, to regulate the flow of water in said North Fork so that such water may be economically and efficiently used for the operation of said defendant's existing and proposed electric power plants located on said North Fork at and above Electra; (d) to divert and use, when desired by said defendant for the generation of electric power at its said existing and proposed power plants, so much of the water flowing in said North Fork, including water released from its said Salt Springs Reservoir, and from Lower Bear River and Deer Valley Reservoirs, if and when constructed, as may be required for the economical and efficient operation of said power plants; and (e) to return and discharge each year into the main channel of the Mokelumne River at or above Electra all water diverted by it from said North Fork, including the water stored in all its existing and proposed reservoirs, except only the water to be conveyed to Jackson, Sutter Creek, and their vicinity in the exercise of the water rights described hereinabove in paragraph Second, and except the carry-over storage of 20,000 acre feet hereinafter mentioned.

FOURTH: In exercising the rights described in the foregoing paragraph Third and complying with the obligation imposed upon it by said paragraph Third, defendant Pacific Gas and Electric Company and its successors in interest shall have the right, and are hereby obligated and required to observe and comply with the following conditions, viz.:

1. In every year in which precipitation of rain and snow shall equal or exceed the normal amount, as defined below, said defendant (a) shall never diminish the quantity of water which would naturally flow in said North Fork of the Mokelumne River at the diversion dam for the proposed Electra Conduit to less than a daily average of 500 cubic feet per second, by impounding or diverting to storage any water in said Salt Springs Reservoir or in said

proposed Lower Bear River Reservoir or in said proposed Deer Valley Reservoir; and (b) whenever conditions of storage and run-off permit, shall release from one or more of any of its aforesaid existing and proposed reservoirs a sufficient quantity of water to make the daily average flow at the diversion dam for said Electra Conduit equal to at least 500 cubic feet per second whenever the quantity of water which would then naturally be flowing in said North Fork at said Diversion Dam shall be less than a daily average of 500 cubic feet per second; provided, however, that such release of water from storage shall not reduce the aggregate quantity of water stored in all said defendant's existing and proposed reservoirs to less than:

112,000 acre feet at the end of June
94,000 acre feet at the end of July
76,000 acre feet at the end of August
53,600 acre feet at the end of September
40,000 acre feet at the end of October
30,000 acre feet at the end of November
20,000 acre feet at the end of December
10,000 acre feet at the end of January

3. In every year in which precipitation of rain and snow shall be less than the normal amount, as defined below, said defendant (a) shall approximate, so nearly as practicable, the standards of operation specified in clauses 1 (a) and 1 (b) above; (b) shall never diminish the quantity of water which would naturally flow in said North Fork of the Mokelumne River at the diversion dam for said Electra Conduit to less than a daily average of 300 cubic feet per second during the months of May, June and July nor to less than 200 cubic feet per second in any other month, by impounding or diverting to storage any water in said Salt Springs Reservoir or in said proposed Lower Bear River Reservoir or in said proposed Deer Valley Reservoir; (c) shall release from one or more of all its aforesaid existing and proposed reservoirs a sufficient quantity of water to make the daily average flow at the diversion dam for said Electra Conduit equal to at least 300 cubic feet per second during the months of June, July, August and September, and at least 200 cubic feet per second in all other months, provided that

conditions of run-off and storage will permit, and provided further that the quantity of water stored in all said reservoirs shall not be reduced to less than 10,000 acre feet before the end of January.

3. Said defendant shall return and discharge into the main channel of the Mokelumne River at or above Electra each year, subject to the provisos in clauses 1 (b) and 2 (c) above, all water stored and to be stored by it in said Salt Springs Reservoir, and in said proposed Lower Bear River and Deer Valley reservoirs, if and when constructed, and shall before the end of each year return and discharge into said Mokelumne River all other water diverted by it from said North Fork of the Mokelumne River, except only the water which shall be conveyed to the Cities of Jackson, Sutter Creek and their vicinities for beneficial use in the exercise of the water rights described in paragraph Second hereof, and except the carry-over storage specified in Subdivision (1) of this paragraph.

(4) The amount of precipitation shall, for the purpose of this paragraph, be deemed to be normal when the average of accumulated seasonal precipitation as measured at West Point and in the vicinity of said Blue Lakes is not less than the equivalent of 13 inches of water by the end of January; 23 inches of water by the end of February; 28 inches of water by the end of March; 29 inches of water by the end of April; and 30 inches of water by the end of May. For determining the amount of precipitation at West Point the precipitation records as reported by the United States Weather Bureau Station for that place may be used, and if for any reason the United States Weather Bureau should discontinue such measurements, then said defendant shall make them each year. Said defendant is hereby directed to measure accurately the precipitation in the vicinity of Blue Lakes; provided that if, after sufficient records have been obtained, it shall appear that the measured precipitation at some other station on the Mokelumne River watershed or an adjacent watershed, or the average precipitation at more than one station on the Mokelumne River watershed or an adjacent watershed, bears a definite relation to the average of the precipitation at West Point and Blue Lakes, then the measured precipitation at the aforesaid station or stations may be substituted for

the measured precipitation at West Point and Blue Lakes as a means for determining when a season is to be deemed normal or subnormal within the meaning of this paragraph Fourth. The plaintiff and defendant East Bay District shall be furnished with copies of all records of measurements and estimates of precipitation and runoff made by said defendant as rapidly as they are completed, and shall have the right to inspect the measuring apparatus used. The obligations imposed upon defendant Pacific Gas and Electric Company under paragraph Fourth of this decree are conditions attached to its right and title and that of its successors in interest to maintain and/or use the Salt Springs, Lower Bear River and Deer Valley Reservoirs, or any of them, under the water diversion and storage permits appertaining thereto, and shall not be a continuing obligation upon said defendant and/or its successors in interest if it or they should abandon the ownership and operation of said three reservoirs in the future, and a sale or transfer of said reservoirs and water rights pertaining to the same shall relieve the vendor or transferor of such obligation and impose it upon the vendee or transferee as the case may be.

FIFTH: That the defendant East Bay Municipal Utility District is hereby ordered and directed to measure the flow of the Mokelumne River, and to release at and below its Pardee dam into the Channel of said river, the waters thereof in conformity with the following primary schedules, viz.:

(1) If the runoff of the Mokelumne River is less than 250,000 acre feet in any one calendar year, as measured at the measuring station of the United States Geological Survey immediately upstream from the Pardee reservoir, presently known as Mokelumne Hill Gauging Station, quantities of water shall be released sufficient to maintain an average daily rate of flow in the different months of each calendar year as follows:

DURING THE MONTHS OF:

January,	50	second feet;
February,	50	" "
March,	100	" "
April,	200	" "
May,	200	" "
June,	250	" "
July,	250	" "
August,	250	" "
September,	250	" "
October,	200	" "
November,	100	" "
December,	50	" "

Provided that if the total runoff so measured shall be less than 120,000

acre feet per year, the entire flow of the river shall be released during said year at rates of flow approximating the foregoing as nearly as may be.

(2) When such annual runoff, so measured, is equal to or greater than 250,000 acre feet, but is less than 300,000 acre feet, then such releases shall be maintained at the following average daily rates of flow, to-wit:

DURING THE MONTHS OF:

January,	50	second feet;
February,	50	" "
March,	100	" "
April,	200	" "
May,	200	" "
June,	250	" "
July,	300	" "
August,	300	" "
September,	250	" "
October,	200	" "
November,	100	" "
December,	50	" "

(3) When such annual runoff, so measured, is equal to or greater than 300,000 acre feet, but is less than 350,000 acre feet, then such releases shall be maintained at the following average daily rates of flow, to-wit:

DURING THE MONTHS OF:

January,	100	second feet;
February,	100	" "
March,	100	" "
April,	200	" "
May,	300	" "
June,	300	" "
July,	300	" "
August,	300	" "
September,	300	" "
October,	250	" "
November,	100	" "
December,	100	" "

(4) When such annual runoff, so measured, is equal to or greater than 350,000 acre feet, but is less than 400,000 acre feet, then such releases shall be maintained at the following average daily rates of flow, to-wit:

DURING THE MONTHS OF:

January,	100	second feet;
February,	100	" "
March,	100	" "
April,	200	" "
May,	300	" "
June,	400	" "
July,	400	" "
August,	400	" "
September,	300	" "
October,	250	" "
November,	100	" "
December,	100	" "

(5) When such annual runoff, so measured, is equal to or greater than 400,000 acre feet, but is less than 450,000 acre feet, then such releases shall be maintained at the following average daily rates of flow, to-wit:

DURING THE MONTHS OF:

January,	100	second feet;
February,	100	" "
March,	100	" "
April,	200	" "
May,	300	" "

June,	500	"	"
July,	500	"	"
August,	500	"	"
September,	400	"	"
October,	250	"	"
November,	200	"	"
December,	100	"	"

May,	500	"	"
June,	500	"	"
July,	500	"	"
August,	500	"	"
September,	500	"	"
October,	500	"	"
November,	500	"	"
December,	500	"	"

(6) When such annual runoff, so measured, is equal to or greater than 450,000 acre feet, but is less than 500,000 acre feet, then such releases shall be maintained at the following average daily rates of flow, to-wit:

DURING THE MONTHS OF:

January,	100	second feet;
February,	100	"
March,	100	"
April,	200	"
May,	400	"
June,	500	"
July,	500	"
August,	500	"
September,	500	"
October,	250	"
November,	200	"
December,	100	"

(7) When such annual runoff, so measured, is equal to or greater than 500,000 acre feet, but is less than 600,000 acre feet, then such releases shall be maintained at the following average daily rates of flow, to-wit:

DURING THE MONTHS OF:

January,	100	second feet;
February,	100	"
March,	100	"
April,	400	"
May,	500	"
June,	500	"
July,	500	"
August,	500	"
September,	500	"
October,	400	"
November,	300	"
December,	200	"

(8) When such annual runoff, so measured, is equal to or greater than 600,000 acre feet, but is less than 800,000 acre feet, then such releases shall be maintained at the following average rates of flow, to-wit:

DURING THE MONTHS OF:

January,	200	second feet;
February,	200	"
March,	200	"
April,	500	"
May,	500	"
June,	500	"
July,	500	"
August,	500	"
September,	500	"
October,	500	"
November,	400	"
December,	300	"

(9) When such annual runoff, so measured, is equal to or greater than 800,000 acre feet, then such releases shall be maintained at the following average daily rates of flow, to-wit:

DURING THE MONTHS OF:

January,	500	second feet;
February,	500	"
March,	500	"
April,	500	"

All release schedules provided for in Paragraphs (1) to (9) incl. shall be minimum schedules, provided, however, that if defendant East Bay District elects to exceed said schedules, it shall not by so doing deplete its reservoirs to such an extent as to prevent compliance with the schedule for the calendar year in question.

(10) If the total annual runoff of the Mokelumne River so measured in any calendar year is equal to or greater than 450,000 acre feet, but is less than 500,000 acre feet, and if there has not been discharged over the spillway of and/or through said Pardee dam within ten days prior to July 1st, sufficient water to produce a flow in the river at Lancha Plana Gauging Station in excess of 2,000 second feet continuing for forty-eight hours, then the releases shall be so increased as to produce a flow of 2,000 second feet for forty-eight hours, commencing on the 1st day of July; and if a like flow over the spillway of and/or through said dam has not occurred within ten days prior to August 1st, a like additional releases shall be made commencing on August 1st.

(11) If the total annual runoff of the Mokelumne River so measured in any calendar year is equal to or greater than 500,000 acre feet, but is less than 600,000 acre feet, and if there has not been discharged over the spillway of and/or through said Pardee dam within fifteen days prior to May 1st, sufficient water to produce a flow in the river at Lancha Plana Gauging Station in excess of 2,000 second feet continuing for forty-eight hours, then the release shall be so increased as to produce a flow of 2,000 second feet for forty-eight hours commencing on the 1st day of May; and if a like flow over the spillway of and/or through said dam has not occurred within ten days prior to July 1st, a like additional release shall be made, commencing on July 1st; and if a like flow over the spillway of and/or through said dam has not occurred within ten days prior to August 1st, a like additional release shall be made commencing on August 1st.

(12) If the total annual runoff of the Mokelumne River so measured in any calendar year is equal to or greater than 600,000 acre feet, and if there has not been discharged over the spillway of and/or through said Pardee dam within fifteen days prior to April 1st, sufficient water to produce a flow at Lancha Plana Gauging Station in excess of 2,000 second feet con-

tinuing for forty-eight hours, then the releases shall be so increased as to produce a flow of 2,000 second feet for forty-eight hours commencing on the 1st day of April; and if a like flow over the spillway of and/or through said dam has not occurred within fifteen days prior to May 1st, a like additional release shall be made commencing on May 1st; and if a like flow over the spillway of and/or through said dam has not occurred within ten days prior to July 1st, a like additional release shall be made commencing on July 1st; and if a like flow over the spillway of and/or through said dam has not occurred within ten days prior to August 1st, a like additional release shall be made commencing August 1st.

(13) Defendant East Bay District shall be released from the obligation to make that portion of any of the flushing releases provided for in subparagraphs (10), (11) and (12) of this paragraph Fifth which is in excess of the regular scheduled average daily release herein provided for the dates thereof if within thirty days prior to the initial date provided for each such flushing release there shall have been discharged over and/or through the Pardee dam sufficient water to produce a flow in the river measured at Lancha Plana Gauging Station of 2,000 second feet for a total of five continuous days' duration. Furthermore, defendant East Bay District is permitted at its option in any year to postpone the flushing release specified for July 1st and August 1st, respectively, until dates not later than July 15th and August 15th, respectively.

(14) In order to coordinate predictable stream flow in each year with the actual stream flow as it develops for that year, the releases of water required under paragraphs (1) to (13), both inclusive, of paragraph Fifth of this judgment, shall be accomplished in the following manner, viz.:

a. The said defendant East Bay District shall release during the months of January and February of each year a minimum of 50 second feet daily average flow; and during the month of March of each year a minimum of 100 second feet daily average flow, subject to the following provisions:

1. If, at any time during the months of January or February the waters impounded from all inflow into the East Bay Municipal Utility District's Mokolumne River Reservoirs shall increase by three thousand (3,000) acre feet or more, and the total waters then impounded in the aforesaid reservoirs shall be equal to or exceed one hundred and forty thousand (140,000) acre feet, the minimum release schedule shall be increased to one hundred (100) cubic feet

per second daily average flow for the remainder of the aforesaid months; providing that at no time shall such increase in the minimum scheduled releases deplete the quantity of water impounded in the aforesaid reservoirs below the quantity that may have been impounded therein on January first of such year, or in no instance to a quantity less than one hundred and thirty-seven thousand (137,000) acre feet.

2. If, at any time during the months of January, February or March the waters impounded from all inflow into the East Bay Municipal Utility District's Mokolumne River Reservoirs shall increase by nine thousand (9,000) acre feet or more, and the total waters then impounded in the aforesaid reservoirs shall be equal to or exceed one hundred and forty-six thousand (146,000) acre feet, the minimum release schedule shall be increased to two hundred (200) cubic feet per second daily average flow for the remainder of the aforesaid months; providing that at no time shall such increase in the minimum scheduled releases deplete the quantity of water impounded in the aforesaid reservoirs below the quantity that may have been impounded therein on January first of such year, or in no instance to a quantity less than one hundred and thirty-seven thousand (137,000) acre feet.

3. If, at any time during the months of January, February or March the waters impounded from all inflow into the East Bay Municipal Utility District's Mokolumne River Reservoirs shall increase by twenty-seven thousand (27,000) acre feet or more, and the total waters then impounded in the aforesaid reservoirs shall be equal to or exceed one hundred and sixty-four thousand (164,000) acre feet, the minimum release schedule shall be increased to five hundred (500) cubic feet per second daily average flow for the remainder of the aforesaid months; providing that at no time shall such increase in the minimum scheduled releases deplete the quantity of water impounded in the aforesaid reservoirs below the quantity that may have been impounded therein on January first of such year or in no instance to a quantity less than one hundred and thirty-seven thousand (137,000) acre feet.

b. Using the same measuring stations as required by paragraph Fourth (4) hereof to be used by the defendant Pacific Gas and

Electric Company for the basic measurements upon which its schedule of releases is herein made mandatory, and such data obtained thereat as may be furnished to it by said defendant Pacific Gas and Electric Company under the terms hereof, the defendant East Bay District shall determine and estimate as accurately as is reasonably possible through competent engineering representatives, from said data and from measurements of the accumulated precipitation of rain and snow as measured at West Point and Elcetra and in the vicinity of Blue Lakes as reported by the United States Weather Bureau Station for such locality, and from measurements by the United States Geological Survey of the flow of the Mokelumne River made at Mokelumne Hill Gauging Station, or its equivalent location, the probable total annual runoff of said stream as estimated on the first day of April of each successive calendar year, and again as estimated on the first day of July of each calendar year, furnishing copies of said estimates and computations on which they are based to plaintiff as rapidly as they are completed; provided, that if after sufficient records have been obtained of precipitation measurements at Blue Lakes it should appear that the measured precipitation at some other station on the Mokelumne River watershed or an adjacent watershed, or the average precipitation of more than one station on the Mokelumne River watershed or an adjacent watershed bears a definite relation to the average of the precipitation at West Point and Blue Lakes, than the measured precipitation at such station or stations may be substituted by either or both defendants at their options for the measured precipitation at West Point and Blue Lakes as a means for determining the respective obligations of the said defendants hereunder:

c. The primary releases to be made by said defendant East Bay District during the months of April, May and June of each year shall be in conformity with the stream flow schedule found in sub-paragraphs (1) to (13) of paragraph Fifth hereof to be appropriate for a year having a total annual runoff within ranges which include the estimates of runoff so made.

d. The flushing releases herein required to be made each year during the months of April and May, and, if at all, shall be based

on the schedule found in sub-paragraphs (10) to (13) of paragraph Fifth hereof to be appropriate for a year of annual stream flow within ranges which include said estimated total runoff prepared as aforesaid on April first of each calendar year. The said flushing release to be made commencing on July first and August first, if at all, shall be based on the range of stream flow including the total annual stream flow as re-estimated on July first of said calendar year.

e. After July 1st of each calendar year, the defendant East Bay District, having made on said date a corrected estimate of the total runoff of the Mokelumne River for such year as of said date, shall compensate for the difference, if any, between the releases required by this judgment for the first half of a runoff year corresponding to the estimate made on July first and the releases actually made in conformity with said estimate of April first, including scheduled flushing releases, by subtracting from or adding to the schedule of releases appropriate for the runoff year as determined by the July 1st estimate, an amount of water sufficient to compensate for such error in the earlier estimate; provided that such supplemental releases or subtractions shall be divided as evenly as is reasonably possible over the number of days in the months of July, August, September and October of said year; and provided further, that the total average daily releases required to be made in July, August, September and October of any year, including compensatory additions, shall not exceed 500 second feet, nor shall compensatory subtractions reduce any daily scheduled releases during said months below 450 second feet in any year where the primary schedule herein prescribed for such year specifies a greater release than 450 second feet as an average daily flow, nor below 250 second feet in any year whatever.

f. For the purpose of determining compensating releases in any given year as herein required, the defendant East Bay District may also ignore runoff caused by rainfall occurring in November or December of such year if such November and December runoff would require compensation in stream flow releases beyond the amount estimated on July 1st.

g. The measurements of stream flow showing the total amount of water flowing in the Mokelumne

River which is available for storage, diversion and release by the defendant East Bay District under the terms of this decree, shall be made at the United States Government gauging station near Mokelumne Hill; the measurements of waters released from the Pardee reservoir shall be made at the United States Government gauging station at Lancha Plana, a short distance below the Pardee dam. There is no substantial increase in the flow of the Mokelumne River between Lancha Plana Gauging Station and Clements, and a more accurate record of said releases can be kept at said Lancha Plana Gauging Station than at the Clements station, and if for any reason either of said measurement stations should be abandoned by the United States Government or the computation of daily discharge therefrom be discontinued, or if the measurement of precipitation at Electra, Blue Lakes and West Point stations should for any reason be discontinued, it is required that in the operations of defendant East Bay District it shall maintain and operate said stations at said points or at such points as may be substituted therefor under the provisions of paragraph b. of this section of the Judgment, record the measurements of precipitation and stream flow shown thereat, and shall make the computations of daily discharge, all in a manner and with accuracy similar to that of the United States Government. Said defendant shall furnish and deliver to plaintiff copies of said precipitation and stream flow estimates and measurements for each month and the data on which they are based, within 30 days from the closing day of that month.

Sixth: That the defendants East Bay Municipal Utility District and Pacific Gas and Electric Company, and each of them, their officers, agents and employees, are hereby enjoined from diverting or storing the waters of the Mokelumne River, except in substantial conformity with the terms of this decree.

Seventh: That subject to the priorities of the plaintiff as herein found and to the obligation to measure, store and release water as hereinbefore provided, defendant East Bay Municipal Utility District owns and its title is hereby quieted against plaintiff as to the following water diversion and storage rights, viz.:

(a) The right to divert from said stream at Pardee reservoir from January 1st to December 31st of each year, 310 cubic feet per

second of the flow of the Mokelumne River, and to convey the same away from said river for municipal and domestic uses, and the right to collect and store for like purposes, in said Pardee reservoir, from the 1st day of October to the 15th day of July next ensuing in each season, 217,000 acre feet of the waters of said river; provided, however, that the combined diversions from the water flowing in said stream and from storage in said Pardee reservoir shall not exceed the equivalent of 310 cubic feet of water per second, or approximately 200,000,000 gallons per day.

(b) The right to divert from the waters of the Mokelumne River flowing in said stream from January 1 to December 31 of each year, 750 cubic feet of water per second, for the purpose of developing hydro-electric energy in the power house or power houses located at the base of said Pardee dam, and the right to collect and store in said Pardee reservoir from January 1 to December 31 of each year, an additional 217,000 acre feet of water for such power use; all water diverted under such appropriation to be returned to the Mokelumne River at the base of the Pardee dam.

(c) The right to store 25,000 acre feet of the waters of said Mokelumne River from January 1 to December 31 of each year in a reservoir to be constructed and known as the Middle Bar reservoir, located immediately above said Pardee reservoir, and to divert 750 cubic feet of water per second from January 1 to December 31 of each year, said water to be used for the generation of power at a power house to be located at the base of said Middle Bar dam, and to be returned to the Mokelumne River and/or Pardee Reservoir at the tailrace of said power house.

Eighth: That the Court hereby reserves the right and jurisdiction to make such further orders as may be necessary to carry out the terms of this decree, and to cause the operations of the defendants or their successors in interest to conform reasonably therewith.

Ninth: That plaintiff recover from defendant East Bay Municipal Utility District 50% and from Pacific Gas and Electric Company 50% of its costs herein incurred.

Done in open court this 14 day of August, 1933.

BENJAMIN C. JONES,
Superior Judge.

WHAT THE CITY OF
LODI WON

*A Decision of Paramount Importance
to the People of Northern
San Joaquin County*

Case No. 22415

In the Superior Court of the State of California
County and for the County of San Joaquin

CITY OF LODI, EAST BAY MUNICIPAL UTILITY
DISTRICT AND PACIFIC GAS & ELECTRIC CO.

JANUARY 20 1933

MEMORANDUM OF DECISION AND
ORDER FOR FINDINGS

This action involves claims to rights in the Waters of the Mokelumne river, a stream which has its source near the summit of the Sierra Nevada mountains in California, and flows westerly to a confluence with the San Joaquin and Sacramento rivers at a point near where these streams join.

Along the upper reaches of the river the defendant Pacific Gas and Electric company has been operating a system of hydro electric properties over a period of time running back a great many years, with the attendant impounding and diverting works by which a portion of the flow of the stream has been impounded and diverted and used in the generation of electric power.

P. G. & E. CONSTRUCTION

More recently this defendant has constructed its Salt Springs reservoir with its impounding dam and diverting canals, and has taken certain preliminary steps requisite to the construction of additional reservoir facilities on Bear Creek, and at its lower Deer Valley reservoir site. By means of its diverting work the defendant Pacific Gas and Electric company conveys, and proposes to convey, a portion of the flow of the river to a point above Electra where the water is "dropped" through penstocks to the power house and released through the tailrace into the main channel of the stream. The activities of the defendant Pacific Gas and Electric company are confined solely to the north fork of the Mokelumne river.

Below the Electra power house the north fork of the stream unites with the middle fork and the south fork to form the main body of the Mokelumne river.

EAST BAY HOLDINGS

At a point on the river westerly from Mokelumne Hill and above Lancha Plana the defendant East Bay Municipal Utility District, hereinafter referred to as the East Bay District,

has constructed the Pardee dam and a reservoir. Below the dam it has built a power house for the generation of electrical energy by the use of water discharged through the dam. The discharge outlets through the dam and power house have a maximum capacity of approximately 750 second feet. On the south side of the river at this point the East Bay District has constructed a diverting tunnel to connect with its pipe lines leading to Oakland, which tunnel has a maximum diversion capacity of 350 second feet.

Further to the west, and near the town of Clements, the river debouches from the foot hills and flows in a general westerly direction past the towns of Lockeford, Lodi and Woodbridge. Its course from Clements is through bottom lands which are bounded by terraces of slight elevation. These terraces merge into the surrounding plains at a point on the river opposite Lodi. From Clements to Woodbridge the river channel is approximately 100 feet wide at the bottom and 200 feet wide at the top. Through this portion of its course it will carry a flow of about 2000 second feet without overflowing the adjacent bottom lands.

WOODBIDGE IRRIGATION

At Woodbridge a diversion dam has been constructed by the Woodbridge Irrigation District, and a portion of the water of the river is diverted to the south through an irrigation ditch which supplies water to a considerable area southwesterly of Woodbridge and Lodi. West of Woodbridge as the river approaches the delta lands its fall is very slight.

North of the Mokelumne river Dry Creek flows in a general westerly direction and parallel to the Mokelumne river. Its course, however, is at an approximate elevation of 4000 feet as contrasted to 10,000 feet for the Mokelumne with a consequent contribution to its runoff of but little water from melting snows. South of the Mokelumne is another stream called Bear Creek, which has its source in

the foot hills and which also flows in a general westerly direction. The course of Bear Creek is relatively short and its flows are limited to storm freshets.

CITES RESERVOIRS

Above the Pardee Reservoir is another reservoir known as the Middle Bar site with a storage capacity of approximately 25,000 acre feet, and for the use of which the defendant East Bay District has filed its application with the State Water Division. Below the Pardee Dam and above Clements is a second reservoir site commonly known as the Mehrton site, and which has a potential storage capacity of several thousand acre feet. Other than the application of the East Bay District to utilize the Middle Bar site, nothing of any consequence has been done in the development of either of these sites for storage.

The Mokelumne in its upper reaches flows generally in a deep and broad canyon, eroded in the granitic formations of the Sierras, and runs thence across the newer volcanics and the Igne formation to a point about where it is crossed by the range line between Ranges 8 and 9 East, M. D. M., where its grade diminishes perceptibly. At this point the foot hills also begin to recede.

GEOLOGISTS DIFFER

There is some difference in the geological opinion as to the manner in which the soil strata to the west of this point were laid down, but in the main the geologists are agreed upon the character of the soil structure, and that to a considerable depth it consists of depositions by stream flows of varying degrees of porosity. Dr. Tolman's computation based upon the logs of wells of varying depth gives an average of 15% of the soil strata as water bearing material. This average includes wells in the vicinity of Dry Creek and Bear Creek, and wells located in the comparatively tight Mehrton formation.

Taking wells in the immediate vicinity of Lodi, and particularly in

an area from three to four miles wide and extending southwesterly from the river a much higher percentage of water bearing material is encountered as is evidenced by the logs of various wells in that vicinity produced by different land owners. The opinions of the geologists are somewhat in conflict as to the existence of an alluvial cone in the area referred to, although they agree that the soil deposits are alluvial in character. In any event, the area to a considerable distance both north and south of the Mokelumne, and westerly from Clements, and to a considerable depth, consists of alluvial deposits of varying degrees of porosity, and in which is found an abundant water supply.

WELLS MENTIONED

The City of Lodi is situate on this alluvial plain, which, as before stated, extends for a considerable distance in all directions from Lodi, and across which the Mokelumne river flows. The City of Lodi has sunk wells at a point about one and one-half miles southerly from the Mokelumne river and extracts from the water bearing strata a considerable quantity of water which it supplies to its inhabitants for domestic and household uses. These wells are situate on parcels of land owned by the City of Lodi and within its city limits. The elevation of the surface of the ground at this point is about 50 feet above sea level, and the general surface of the underlying water table is approximately 25 feet lower.

The United States Department of the Interior through the United States Geological Survey has made an extensive study of the underground water situation in and about Lodi, and has incorporated in Water Supply Paper 619 a vast amount of the data collected. This bulletin has been introduced in evidence and is the basis of much of the expert testimony offered.

WATER DECREASES

In the area under consideration by the engineers of the Geological Sur-

vey, which area extends from Bear Creek on the south to Dry Creek on the north, the water table has been steadily dropping since 1907. Of this area there are in excess of 34,000 acres in the immediate vicinity of Lodi where the ground water is directly affected by percolation from the Mokelumne River. (East Bay Exhibit 102.) To the west of this area are the lands irrigated from the Woodbridge canals.

There are about 70,000 acres in the area lying between Dry Creek on the north and Bear Creek on the south. In all about 2,000 wells tap the underground waters in this area and deliver large quantities of water for domestic and irrigation uses on the surface of the land. Nearly all of these wells are located in the area in and around Lodi, which is hereinafter referred to as the Lodi area. The Federal Government maintains gauging stations on the river at Woodbridge, Clements and Mokelumne Hill. Other stations are also maintained at other points on the river and in the watershed for the purposes of measuring the runoff of the river and the snow and rain fall.

RUNOFF RECORDS

Since the season of 1906-07 a record has been kept by the United States Geological Survey of the runoff of the Mokelumne River, in which year the maximum seasonal runoff was 1,670,000 acre feet. In the season of 1923-24 the runoff amounted to only 182,000 acre feet. Seasonal runoff is measured beginning October 1st and extending to September 30th of the following year. The average seasonal runoff is approximately 800,000 acre feet. The runoff measured according to the calendar year is somewhat higher than the seasonal runoff.

The maximum flow of the river usually occurs in the late spring or early summer when the melting snows in the Sierras augment the flow of the stream. These annually recurring high flows constitute a part of the normal flow. The river occa-

sionally reaches a flood stage at other times in periods of exceedingly heavy rainfall, but such floods are infrequent and occasional.

STORAGE CAPACITIES

The works of the defendant Pacific Gas and Electric Company on the north fork of the river provide a storage capacity of approximately 185,000 acre feet. None of the water impounded and diverted by this defendant is taken from the watershed of the Mokelumne, except a small amount which is supplied to the cities of Jackson and Sutter Creek under an old appropriation. The Pardee Reservoir of the defendant East Bay District has an approximate storage capacity of 220,000 acre feet.

The diversion tunnels of the East Bay District, with a maximum capacity of 310 second feet constant flow, are capable of diverting 200,000,000 gallons of water daily, or 224,000 acre feet annually. There is also an additional loss of 4,000 acre feet annually by evaporation from the surface of the reservoir. At the present time the district is diverting approximately 80,000,000 gallons of water per day, or about 90,000 acre feet per annum.

OAKLAND RESERVOIRS

The district has reserve storage facilities in the vicinity of Oakland with capacities sufficient to meet all of its present needs for a period of six months without replenishment. Approximately 3,600 acre feet with a maximum rate of 12.4 second feet is the annual draft of the City of Lodi from the underground strata. Altogether there is an annual draft of about 50,000 acre feet upon the underground strata for irrigation and domestic uses in the Lodi area.

In the entire area between Bear Creek and Dry Creek the annual draft on the underground supply is approximately 70,000 acre feet. The diverting canals of the Woodbridge Irrigation District have a maximum capacity of 250 second feet and the district is now diverting from the river about 65,000 acre feet for use

upon the lands under its ditches. The area embraced within the district is approximately 20,000 acres, and there are 10,000 acres additional outside of the district which can be irrigated from its ditches.

APPROPRIATION LICENSES

The riparian owners along the river below the Pardee Dam are now pumping direct from the river for use upon their riparian land about 7,000 acre feet annually. Both defendants hold permits from the State Division of Water Rights, and also licenses from the Federal Power Commission for the appropriations which they claim. By the terms of the permits and licenses all appropriations thereunder are subject to such vested rights as may exist in the waters of the river.

The defendant East Bay District was organized in 1923, and comprises the cities of Oakland, Berkeley, Alameda, Richmond, Piedmont, Albany, San Leandro, Emeryville and El Cerrito, situate in the counties of Alameda and Contra Costa. Following its organization a study was commenced of the water supply of the Mokelumne River and in 1925 the District filed applications with the State Division of Water Rights and with the Federal Power Commission for the purpose of acquiring rights to appropriate waters of the Mokelumne so as to effect an ultimate supply of 200,000,000 gallons daily to the District.

Application was also made to the War Department of the United States, and to the Reclamation Board of the State of California, for permission to construct pipe lines across streams and works under the respective jurisdictions of these departments. In 1927 the district acquired approximately 100 miles of rights of way for its pipe lines. In 1928 proceedings were instituted for the acquisition of the distributing system of the East Bay Water Company, and on the 8th day of December, 1928, the district acquired this distributing system.

Throughout this period of time numerous hearings were had before various boards and commissions, and court actions had, relating to the rights of the East Bay District in the waters sought to be appropriated, and to condemn lands necessary for its reservoir site. Preliminary steps to actual construction work on the Pardee Dam were initiated in 1926. Commencing March 9th, 1929, and ending July 1st, 1929, the District stored and impounded a portion of the waters of the Mokelumne River in the Pardee Reservoir, commencing its diversion thereof in the month of June, 1929. In November, 1929, the water so impounded and not diverted was released, and the impounding and diverting works at Pardee thereafter completed.

LODI FILES SUIT

On December 31st, 1928, the City of Lodi filed its complaint herein praying for injunctive relief against both defendants on the ground that each is causing a diminution in its water supply by the operation of its plant. Lodi's case is stated in two separate causes of action. The action has been dismissed as to all of the defendants named in the complaint except the Pacific Gas and Electric Company and the East Bay District.

Each of these defendants has answered denying that its operations have caused, or will cause, any diminution in Lodi's water supply. In addition, each defendant has tendered certain issues by affirmative allegations contained in its answer. After setting up the defense of laches and estoppel in its second affirmative defense, the East Bay District in its third defense has declared for a quiet title as to its appropriative rights in the waters of the Mokelumne River as against the plaintiff.

PRAYED FOR RELIEF

The plaintiff in its complaint, and each defendant in its answer, has prayed for general relief. In its third separate defense the East Bay District has alleged the issuance to it of

permits by the State Water Commission and the Federal Power Commission for the appropriation of certain waters of the Mokelumne, and makes these permits the basis of its claim of title.

It has been held in the case of *Yuba River Power Co. vs. Nevada Irrigation District*, 207 Cal. 521, that an action in equity in the nature of a suit to quiet title may be maintained by the holder of permits from the State Commission to determine adverse claims to the use of water by other claimants. While the plea of ownership and adverse claim is set up by way of answer, a court of equity, nevertheless, takes jurisdiction, and having assumed jurisdiction of the subject matter and the parties will proceed, to the end of preventing a multiplicity of suits, to dispose of all the equities and priorities existing between the parties.

COURT POWERS BROAD

No matter what may be the complications or complexities, the powers of a court of equity are so broad as to adequately meet the exigencies of the case, and it may so mold its decree, and may determine the ultimate rights of the parties on either side as between themselves or the opposite party and decree accordingly.

Collier vs. Merced Irrigation Dist., 213 Cal. 554.

Wenban Estate, Inc., vs. Hewlett, 193 Cal. 575.

California, etc., Co. vs. Schiappa-Pietra, 151 Cal. 732-744.

Arthur vs. Graham, 64 Cal. App. 608-612.

The defendant Pacific Gas and Electric Company, after denying damage to the plaintiff, has alleged its ownership for more than twenty years of a system of reservoirs, ditches and canals, rights of way and divers parcels of riparian land, together with rights to the use of waters of the north fork of the Mokelumne River and its tributaries in the operation of this older portion of its system, which ownership by the said defendant has

been admitted by the plaintiff, except as to the right to divert a 75 second foot flow of water outside of the watershed of the Mokelumne to the cities of Jackson and Sutter Creek, although the right to so divert 30 second feet is conceded.

EARLY APPROPRIATION

It has been stipulated, however, that the appropriation under which the 75 second foot flow is claimed was initiated in early days, and actual diversion made upon lands which were then unoccupied and which belonged to the United States Government. There is no claim that this right was ever abandoned. The only point made is that the place of use as to 45 second feet of this appropriation has been changed from Jackson and Sutter Creek, which are outside of the Mokelumne watershed, to the Electra Power House, which is within the watershed of the Mokelumne. Under these circumstances it cannot be said that any portion of the right to divert 75 cubic feet per second of the water of the Mokelumne has been lost.

Smith vs. Hawkins, 110 Cal. 122.

Wood vs. Etiwanda Water Co., 122 Cal. 152.

South Yuba Water Co. vs. Rosa, 80 Cal. 333.

With the exception of its original appropriation of 75 second feet for diversion to Jackson and Sutter Creek, the defendant Pacific Gas and Electric Company contends that in the operation of its entire system of works it is exercising only its rights as a riparian owner on the stream, and that its operations are only in the exercise of riparian rights.

NOT RIPARIAN RIGHT

However, it has been repeatedly held in this state that the storage of water in one season for use in another is not an act in pursuance of a riparian right, but is an act adverse to riparian owners below. (*Seneca Consolidated Gold Mining Co. vs. The Great Western Power Co.*, 209 Cal. 206.) The defendant Pacific Gas

and Electric Company has, therefore, in all of its operations been exercising appropriate rights in the waters of the river. The rights to the use of the water which it has acquired in connection with the operation of its older system of works, together with the 75 second foot appropriation originally made for diversion to Sutter Creek and Jackson, are, however, paramount to any right of the plaintiff.

The defendant Pacific Gas and Electric Company further alleges in its answer an abandonment of all waters returned to the main channel of the Mokelumne below its Electra power house. This includes the water diverted through its older system of works as well as that held in its Salt Springs reservoir. All of this water so returned to the channel at Electra has its origin in the stream. None of it in the process of its use is ever carried out of the watershed of the Mokelumne, and the returned flow is in no way increased by any water brought in from a source other than the Mokelumne or its tributaries. The water which is returned at Electra is exclusively water which has been impounded and diverted at higher elevations on the stream.

WATER DELAYED

It is the same water which would flow in the same channel under natural conditions and in the same quantity and of the same quality. By the operations of the defendant it has merely been delayed in reaching any given point on the stream below. The precise question presented is as to whether in the operation of impounding, diverting and returning to the natural channel waters of the stream an impairment of a right below has been effected to the extent of the full amount of the water so diverted and returned, or only to the extent of the difference between the flow of the stream under natural conditions and the flow as modified by the operations of the defendant.

As to the effect of such operations upon riparian rights below, it may be noted that in actions to recover damages for the invasion of such rights by reason of such upper storage, riparian owners in this State are limited to the difference in the value of the riparian lands under the natural flow of the stream, and the value of the lands with the flow as modified by the construction and operation of the impounding and diverting works.

Seneca A. G. M. Co. vs. Great Western Power Co., 209 Cal. 206-222.

Collier vs. Merced Irrigation Dist., 213 Cal. 554.

CITES COLLIER CASE

This holding is based upon the theory that while the riparian right is a part and parcel of the land, it is nevertheless a usufructary one in the flow of the stream, and that the resulting difference in availability of water for use is the damage. As was said in the Collier case, supra: "Any injury short of a complete divestiture of the right leaves a quantum in kind in the proprietor thereof. If the intruder relinquished a part of the right to the channel of the stream to that extent he restored the right to its rightful owner."

Measured according to the amount of damages recoverable, the loss sustained by a lower riparian owner by the impounding and diversion above on the stream is the difference in flow under natural conditions and the flow as modified by the operations above.

The factors contributing to the change in flow in this case are the impounding and diversion of the waters. Of these two factors the impounding contributes in the greatest degree to the change in the time when the water reaches any given point on the stream below. Assume a situation on the stream where a dam, or a series of a few dams have been constructed, and which are only slightly closed so that the water will flow past with only a slight retarda-

tion at each point of observation. Could it then be said that the flow of the stream has been so changed as to make it foreign water?

Assume the number of dams to be increased and the discharge capacities reduced until the flow of the stream is regulated to an exactly even flow over a season of run off, would the resulting effect in the character of the water be any different? Assume the cumulative effect of such dams to be exactly equal to that of the impounding works of the Pacific Gas and Electric Company in this case, and does the conclusion follow that the effect of the impounding is to change the water to foreign water?

CANAL DIVERSION

The effect of the diversion canals upon the flow of the stream depends largely upon the length of the canals between the points of diversion and return, the grade, and the freedom of flow therein. If a greater time is required for the water to flow through the canals between the points of diversion and return, the effect would be cumulative to the impounding. If less time is required, the effect would be compensating.

In the latter case it would require less time for the water to flow through diverting canals than in the natural channel owing to a shortened distance and a greater freedom of flow due to lack of natural obstacles. The effect would be analogous to that obtained by removal of obstructions in the natural channel, or by straightening out the same. In either case the water would arrive at a point on the stream below earlier in time than it would arrive under natural conditions. Also, it is entirely conceivable that such a modification in the natural flow of the stream would be injurious to lower riparian owners. If the natural channel of a river were to be so altered by removal of all obstructions, such as rocks, trees, overhanging brush, drifts and the like, and all bends and turns eliminated

by cutting across, so that water coming into the channel would reach a given point below in one half the time that it would under the former conditions, would such a change in time change the flow into foreign water?

SEEPAGE NATURAL FLOW

In other jurisdictions, notably in Massachusetts, Rhode Island and Colorado, it has been held that waters which have been impounded or diverted and later returned to the natural channel form a part of the natural flow of the stream. Similarly, in California it has been held that seepage from a diverting ditch finding its way back into the natural channel becomes a part of the natural flow of the stream. (Southern California Investment Company vs. Wilshire, et al., 144 Cal. 63.)

Upon principle and authority it must be concluded that the waters of the Mokelumne stored by the defendant Pacific Gas and Electric Company, and released into the channel of the river, constitutes a part of the natural flow of the stream, and are subject to the rights of lower riparian owners, appropriators and others having vested rights in the waters thereof.

LODI'S PRESCRIPTIVE RIGHT

The City of Lodi operates its wells and disposes of the water from the same through its distributing system by virtue of a prescriptive right which it has acquired by adversely extracting water sufficient for its requirements from the strata underlying the city and surrounding territory for many years. All the elements essential to the establishment of a prescriptive title have been involved in its use of these waters. (Silva vs. Hawm, 10 Cal. App. 554-551.)

The title which Lodi holds to this right has its origin in this prescriptive use and not in any appropriation as it is ordinarily understood. As was said in San Bernardino vs. Riverside, 136 Cal. 7-13: "Appropriation . . . is but another form of prescrip-

tion." With reference to a prescriptive title the law conclusively presumes an antecedent grant by an individual to the holder of such a prescriptive title or right. (Smith vs. Hawkins, 110 Cal. 122-126; Hildreth vs. Montecito Creek W. Co., 139 Cal. 29.)

HOLDS GRANTEE POSITION

As the City of Lodi, by virtue of its prescriptive right, occupies the position of a grantee of all of the owners of lands overlying the water bearing strata of the Lodi area, any vested right of any such land owner in the waters of the Mokelumne River passed to the City of Lodi according to its appropriation. The rights of such overlying land owners as between themselves as defined in Hudson vs. Daily, 136 Cal. 617-623, as follows:

"The general rule, as now established by the decisions of this court, undoubtedly is that where two or more persons own different tracts of land, underlaid by porous material extending to and communicating with them all, which is saturated with water moving with more or less freedom therein, each has a common and correlative right to the use of this water upon his land, to the full extent of his needs if the common supply is sufficient, and to the extent of a reasonable share thereof if the supply is so scant that the use by one will affect the supply of the others. (Katz v. Walkinshaw, 141 Cal. 134, 144, 150 (Am. St. Rep. 35, 79 Pac. 653, 74 Pac. 766); McClintock v. Hudson, 141 Cal. 251 (74 Pac. 849); Cohen v. La Cenada, etc., Co., 142 Cal. 439 (76 Pac. 47); Montecito, etc., Co. v. Santa Barbara, 144 Cal. 535 (77 Pac. 1113); Burr v. Maclay, etc., Co., 154 Cal. 434 (93 Pac. 250); Barton v. Riverside Water Co., 155 Cal. 509 (101 Pac. 790)."

APPROPRIATOR RIGHTS

The rights of two appropriators from a basin are defined in San Bernardino vs. Riverside, 136 Cal. 7, where two appropriators, exercising prescriptive rights, were extracting

water from a basin in which basin there existed a surplus of water, and where neither appropriator in the exercise of its rights was in any way interfering with the use of water by the other, and where there had been no adjudication in the trial court of any priorities in either of the parties with respect to its water right, as follows:

"While the surplus continues, the condition of the respective parties as to their right to take water from the basin for public use is substantially the same as that of several appropriators from a surface stream having more than enough water for all. No injunction should issue against the taking of water while the supply is ample for all. But the respective priorities of each water right should be adjudged, so that if in the future the supply falls below the quantity necessary for all, he who has the prior right may have his preferred right protected."

It has thus been held that as between two appropriators he who has the prior appropriative right in the waters of an underground basin may have that right protected as against a subsequent appropriator when the supply of water in that basin falls below the quantity necessary for all.

CITES "INTRUDER" CASE

Furthermore, it has been held in the case of Miller vs. Bay Cities Water Co., 157 Cal. 256-279, that one who intrudes upon the stream or other source supplying water to underground strata occupies a position no different from that of an appropriator from such strata and is governed by the law applying to the latter, the court stating:

"It would present an anomalous condition of the law were it the rule that while a riparian owner may prevent an appropriator from diverting to his injury the waters of the stream for use beyond the watershed and one owner of land overlying a common stratum of percolating water may restrain another owner similarly sit-

uated from making a like diversion, the owner of lands whose underlying stratum of water is directly and clearly supplied by percolation from the waters of the stream and who will be greatly injured by a diversion is not entitled to prevent it. There is no reason or any difference in the rule between the classes and none should exist. Such landowner has a right to restrain a diversion from the stream or saturated plane or other well-defined supply, by an appropriator or any one else who seeks to divert such stream or other supplying waters from their natural percolating flow, for use elsewhere than upon lands to which, as waters of the stream, they are riparian, or which, as waters of an underground stratum, may reasonably and usefully be applied to the overlying land."

In such a case where there is no surplus of water, and the common supply is not sufficient, and the annual average replenishment to the basin is not greater than the demand for reasonable uses by the overlying land owners, an appropriator from the basin, whose rights have ripened, undoubtedly has the right to enjoin an intruder into the basin, or upon the source of supply, from extracting water therefrom for use on distant lands, even though such appropriator would have the right to take the full measure of his appropriation as against the owners of lands overlying the basin to the extent of exhausting all the water available.

APPROPRIATIONS ANALOGOUS

Appropriations from an underground basin of water are analogous to appropriations from a surface stream with sufficient water for all only when the average annual replenishment to the basin is in excess of the legitimate demands upon the basin and the analogy ceases when the common supply or recharge becomes insufficient to meet the demands of the overlying land owners and appropriators with established

rights. Any further demands upon the supply of underground water would tend to diminish the supply available for overlying land owners and appropriators alike and with common and immediate effect.

Such additional withdrawals from the underground strata would cut into the residual supply, and, if continued, would bring about a progressive lowering of the water table until the underground supply would be completely exhausted. With the progressive lowering of the residual waters appropriator and overlying land owner would be put to the common necessity of installing more powerful pumps to raise his share of the water to the surface. An appropriator under such circumstances, with an immediate injury to his right, is entitled to an immediate remedy, along with the overlying land owner, to prevent an encroachment upon the residual supply, and is not obliged to wait until the residual waters of the basin have been so far depleted that there no longer remains therein a quantity sufficient to meet the amount of his appropriation. The injury produced is common and alike to appropriator and overlying land owner, and each is entitled to the same remedy which, in the case of an overlying land owner, has been held to be immediate relief.

Katz vs. Walkinsbaw, 141 Cal. 134.

Burr vs. Maclay etc. Co., 154 Cal. 434.

RIGHT TO PERCOLATION

The right of the City of Lodi here, where the average annual replenishment through the underground strata under natural conditions is not in excess of the requirements for reasonable uses and purposes upon the overlying lands of the basin, is to have the residual supply in the underground strata maintained as near as may be by the continued percolation of as much water into the area from the Mokelumne River as would occur under natural conditions.

This right of the City of Lodi has not been lost by laches, and neither is the city estopped to assert its right against the East Bay District. The permits obtained by the East Bay District from the State Water Commission and the Federal Power Commission, were issued to it upon the representation that sufficient water would be released by the East Bay District to meet the requirements of all vested rights on the stream below. The permits by their very terms make all appropriations thereunder subject to the vested rights of all persons owning an interest in the waters of the Mokelumne.

LODI RIGHTS RECOGNIZED

The City of Lodi was entitled to assume that the defendant East Bay District, notwithstanding what representations may have been made with reference to problematical future needs for the waters of the Mokelumne based on territorial expansion and population growth, or the maximum capacity of its diverting works, would let down enough water through its Pardee Dam with its 750 second foot discharge capacity, to meet the requirements of its right. Almost from the very inception of the East Bay District's undertaking the extent and character of the plaintiff's right was disputed by it.

This controversy between the parties was carried on at public hearings and in more or less private meetings between the representatives of the district and the city. As soon as it reasonably appeared to the plaintiff that the differences between itself and the East Bay District as to the extent of its right could not be settled between them this action was begun. Where, as here, there has been a dispute between the parties as to the amount of water which should be released to meet the requirements of plaintiff's right, the defendant being in a position to meet these requirements, it cannot be said that plaintiff has been guilty of laches, or is estopped by failing to file its com-

plaint until it became reasonably apparent that the differences between the parties could not be settled, and that there would not be sufficient water let down to meet the requirements of plaintiff's right.

The major portion of the evidence in the case is directed to the amount of water percolating from the Mokelumne River into the Lodi area, both under natural conditions and under the flow of the stream as regulated by the operations of the defendants. The defendant Pacific Gas and Electric Company has set up in its answer a schedule of operations and releases to which it agrees to be bound by judgment, and which it claims will not diminish the amount of water which would normally percolate from the Mokelumne River into the Lodi area under natural conditions.

Similarly, the defendant East Bay District, by a proffered stipulation read into the record and filed in the case during the progress of the trial, has set up a schedule of operations and releases which it claims will not diminish the amount of percolation into the area occurring under natural conditions. The release proposed by the Pacific Gas and Electric Company is a constant flow of 500 second feet with provisions for a diminution therein in seasons of light rain fall and river runoff. The East Bay District's stipulation provides for a varying volume of water to be discharged through its dam, based upon various stages of river runoff and flow.

PRESUPPOSE PERCOLATION

Both of these stipulations presuppose, and it conclusively appears from the evidence, that there is a large amount of water percolating from the river into the Lodi area each year. The engineering witnesses produced by the respective parties are in accord upon the fact that the greatest rate of percolation from the river occurs when it is between the stages of flow of 400 second feet and 600 second feet. And they also agree that

the higher the temperatures of the water, the greater is the rate of percolation. Also, that the slope of the water table away from the river is greatest during the irrigation season when the pumping draft is at its highest and the draw down in the wells the greatest.

In addition, Professor Etcheverry, an eminent hydraulic engineer produced by the plaintiff, testified that under a regulated flow of the stream such as will occur under the releases proposed by the Pacific Gas and Electric Company, there will be no decrease in the percolation into the area, but that the same will probably be slightly increased. With the defendant Pacific Gas and Electric Company, presumably acting with the results of the studies of its engineering staff before it, and the principal engineering witness for the plaintiff in accord on this fact, it may fairly be concluded that a flow of the stream regulated by a constant discharge of 500 second feet at the Electra Power House, with corresponding diminutions in the flow according to seasons of light runoff and rain fall, is necessary to maintain a percolation into the Lodi area such as would occur under normal conditions of natural flow.

EXPLAINS RUN-OFFS

The operations of the Pacific Gas and Electric Company are confined solely to the north fork of the river, and in no way affect the high flows originating in the south and middle forks. In seasons when the runoff, measured below the junction of the north, south and middle forks, is one-half of normal, the total amount of water impounded by the Pacific Gas and Electric Company is less than one-half of such runoff. In such seasons of comparatively light runoff under the Pacific Gas and Electric Company plan of operations, there will occur in a large measure the usual seasonal high flows in the late spring and summer.

It is these high flows occurring when the runoff of the river is down to one-half of normal, or less, that the operations of the East Bay District wipe out. It is these high flows occurring late in the year, which the East Bay District impounds, and which by reason of their volume combined with the extended lesser flows in the summer and autumn resulting from the Pacific Gas and Electric Company releases that maintain a quantity of percolation into the Lodi area equivalent to that occurring under natural conditions.

FLOW PRESSURE IMPORTANT

The pressure exerted by these high flows is a considerable factor in determining the amount of water percolating through the lands and gravels in the bed and banks of the stream into the underground strata. This pressure, or hydraulic head, was considered a very important cause of percolation in the case of Miller vs. Bay Cities Water Co., supra. Also, such flows have an important scouring effect upon the channel.

Under the natural conditions existing before either defendant came upon the stream there was a point beyond which an increase in the volume of the flow became of less importance in so far as such increase affected percolation, and also a point in time beyond which a flow of any consequence would not occur. Under existing conditions there is a point in volume above which the amount of water running to waste can in no way be equitably balanced against any resulting benefit by way of percolation. In order to make a more complete utilization of the waters of the river and reduce unnecessary waste and still maintain the approximate natural amount of percolation the high flows should be diminished, and the time of the lesser flows extended. Even in the exceedingly dry years under natural conditions there would be a portion of the runoff contributing little to percolation.

HIGH FLOWS CAUGHT

With the East Bay District operating on the stream all of the spring and summer high flows are caught and held up to a runoff of 400,000 acre feet, its reservoir holding 220,000 acre feet and those of the Pacific Gas and Electric Company 135,000 acre feet, and all late high flows considerably modified in all seasons of runoff over 400,000 acre feet and up to the average of 300,000 acre feet runoff. With all of the high flows eliminated when the runoff is 400,000 acre feet or less, and modified in varying degrees in all seasons of runoff in excess of 400,000 acre feet, a comparatively high and uniform rate of percolation must be maintained to approximate natural conditions when a deficiency in one, or even two succeeding years, would be supplied by the late spring and summer floods of the following years.

Under the operations of the East Bay District the effects of these compensating years are nullified, and the releases as proposed for the years of light runoff are not sufficient to maintain a percolation equivalent to the natural supply of water into the Lodi area. As pointed out, the operations of the East Bay District allow no room for recovery from the deficiencies of the dry seasons, except in the very wet years. To approximate natural conditions the average annual percolation from the river into the area, must be maintained at as nearly a uniform rate as possible. The amount of this percolation has been variously testified to as from something in excess of 10,000 acre feet to something in excess of 50,000 acre feet. A careful analysis of the evidence leads to the conclusion that the latter figure is approximately correct. The releases proposed by the East Bay District will not provide any such amount of percolation in the years of light runoff, and the effect of the District's operations will be to cause a progressive decline in

the water table in the Lodi area to the extent of something more than one foot per year on the average.

STORAGE INCREASES RUNOFFS

Applying the Pacific Gas and Electric Company schedule of operations to the recorded runoff of the river by calendar years, when the runoff does not exceed 400,000 acre feet, an increase, on the average, is found over what actually occurred under natural conditions. The average runoff of the three flows under 400,000 acre feet occurring under natural conditions amounts to 252,997 acre feet, while the average runoff under Pacific Gas and Electric Company regulations amounts to 253,322, or an average increase of 10,000 acre feet. Similarly, with the five runoffs occurring between 400,000 acre feet and 500,000 acre feet, the average under natural conditions is 424,400 acre feet, and under the Pacific Gas and Electric Company regulation 447,470 acre feet, or an average increase of 23,000 acre feet. Obviously, the increases are brought about by the release of waters from storage.

The East Bay District comes on the stream with the natural flow augmented to the extent of 10,000 acre feet or the average when the runoff under natural conditions would be less than 400,000 acre feet, and augmented to the extent of 23,000 acre feet on the average when the runoff under natural conditions would be between 400,000 acre feet and 500,000 acre feet. Taking the stream in this condition of augmented flow and applying the East Bay releases to these runoffs of less than 400,000 acre feet the result is an average runoff of 33,718 acre feet, or an average decrease of 164,281 under what would have been the runoff without the Pacific Gas and Electric Company on the stream, and an average decrease of 174,607 acre feet under the flow with the Pacific Gas and Electric Company making its releases. Similarly, with the five runoffs between 400,000 acre feet and 500,000 acre

feet, the average runoff under the operations of the East Bay District is 227,464 acre feet, or an average decrease below natural conditions of 196,936 acre feet, and an average decrease in the flow as augmented by the Pacific Gas and Electric Company releases of 220,000 acre feet. (Runoff figures from East Bay Exhibit No. 19.)

PERCOLATION LOWER

If the percolation factor produced by Mr. Bonner, called as a witness for the East Bay District, is applied to the various flows of the river under natural conditions, and under the combined regulation of both defendants, the result shows a percolation into the Lodi area below that which would have occurred with neither defendant on the stream, and the greatest proportional decrease in the dry years.

Much further discussion might be had with reference to the testimony of the many witnesses called, and particularly with reference to the views of the different experts pertaining to the quantities of water reaching the water table from the rainfall on the surface of the area and from other sources, but as these matters have been carefully considered, such discussion of them here would serve no useful purpose. Likewise any extended comment on the contention of counsel for the East Bay District that the City of Lodi should change its mode of operations to meet changed conditions is unnecessary. The nature of the right with which Lodi is vested and the remedy available to it to prevent an infringement of that right renders inapplicable to the present situation the authorities which counsel have cited as being in support of their contentions.

Judgment herein should be for the plaintiff, and the decree to be prepared should provide that the defendant Pacific Gas and Electric Company maintain the schedule of oper-

ations and releases proposed in its answer, and that the defendant East Bay District release through its retaining dam or dams down stream when the runoff of the Mokelumne River is less than 250,000 acre feet in any one calendar year, measured by the United States Geological Survey at the intake of defendant East Bay District's storage works, which at present is approximately the location of the Mokelumne Hill Gauging Station, or measured as stream flows of the same magnitude are measured by the United States Geological Survey if no station is maintained by it at or near said intake, quantities of water sufficient to maintain the following constant rates of flow in the different months of each calendar year:

Month	Second Feet
January	50
February	50
March	100
April	200
May	200
June	250
July	250
August	250
September	250
October	200
November	100
December	50

Provided that when the total runoff, so measured, is down to 120,000 acre feet or less the entire flow of the river shall be released at rates of flow approximating the foregoing.

250,000 SCHEDULE

When such annual runoff, so measured, is equal to, or greater than, 250,000 acre feet, but is less than 300,000 acre feet, at the following constant rates of flow:

Month	Second Feet
January	50
February	50
March	100
April	200
May	200
June	250
July	300
August	300
September	250
October	200
November	100
December	50

When such annual runoff, so measured, is equal to or greater than 300,000 acre feet, but is less than 350,000 acre feet, at the following constant rates of flow:

Month	Second Feet
January	100
February	100
March	100
April	200
May	300
June	300
July	300
August	300
September	300
October	250
November	100
December	100

When such annual runoff, so measured, is equal to or greater than 350,000 acre feet, but is less than 400,000 acre feet, at the following constant rates of flow:

Month	Second Feet
January	100
February	100
March	100
April	200
May	300
June	400
July	400
August	400
September	300
October	250
November	100
December	100

When such annual runoff, so measured, is equal to or greater than 400,000 acre feet, but is less than 450,000 acre feet, at the following constant rates of flow:

Month	Second Feet
January	100
February	100
March	100
April	200
May	300
June	500
July	500
August	500
September	400
October	250
November	200
December	100

When such annual runoff, so measured, is equal to or greater than 450,000 acre feet, but is less than 500,000 acre feet, at the following constant rates of flow:

Month	Second Feet
January	100
February	100
March	100
April	200
May	400
June	500
July	500
August	500
September	500
October	250
November	200
December	100

Provided that if there has not been discharged over the spillway of its retaining dam within ten days prior to June 1st, sufficient water to produce a flow in the river at Clements in excess of 2000 second feet continuing for forty-eight hours, then the releases shall be so increased as to produce a flow of 2000 second feet for forty-eight hours, commencing on the 1st day of June; and if a like flow over the spillway of the retaining dam has not occurred within ten days prior to July 1st, a like additional release shall be made commencing on July 1st.

When such annual runoff, so measured, is equal to or greater than 500,000 acre feet, but is less than 600,000 acre feet, at the following constant rates of flow:

Month	Second Feet
January	100
February	100
March	100
April	400
May	500
June	500
July	500
August	500
September	500
October	400
November	300
December	200

Provided that if there has not been discharged over the spillway of its retaining dam within ten days prior to May 1st, sufficient water to produce a flow in the river at Clements in excess of 2000 second feet continuing for forty-eight hours, then the releases shall be so increased as to produce a flow of 2000 second feet for forty-eight hours commencing on the 1st day of May; and if a like flow

over the spillway of the retaining dam has not occurred within ten days prior to June 1st, a like additional release shall be made commencing on June 1st; and if a like flow over the spillway of the retaining dam has not occurred within ten days prior to July 1st, a like additional release shall be made commencing on July 1st.

When such annual runoff, so measured, is equal to or greater than 600,000 acre feet, but is less than 800,000 acre feet, at the following constant rates of flow:

Month	Second Feet
January	200
February	200
March	200
April	500
May	500
June	500
July	500
August	500
September	500
October	500
November	400
December	300

Provided that if there has not been discharged over the spillway of its retaining dam within ten days prior to April 1st, sufficient water to produce a flow at Clements in excess of 2000 second feet continuing for forty-eight hours, then the releases shall be so increased as to produce a flow of 2000 second feet for forty-eight hours commencing on the 1st day of April; and if a like flow over the spillway of the retaining dam has not occurred within ten days prior to May 1st, a like additional release shall be made commencing on May 1st; and if a like flow over the spillway of the retaining dam has not occurred within ten days prior to June 1st, a like additional release shall be made commencing on June 1st; and if a like flow over the spillway of the retaining dam has not occurred within ten days prior to July 1st, a like additional release shall be made commencing on July 1st.

When such annual flow so measured is equal to or greater than 800,000

acre feet at the following constant rates of flow:

Month	Second Feet
January	500
February	500
March	500
April	500
May	500
June	500
July	500
August	500
September	500
October	500
November	500
December	500

Provided that if there has not been discharged over the spillway of its retaining dam within ten days prior to April 1st, sufficient water to produce a flow at Clements in excess of 2000 second feet continuing for forty-eight hours, then the releases shall be so increased as to produce a flow of 2000 second feet for forty-eight hours commencing on the 1st day of April; and if a like flow over the spillway of the retaining dam has not occurred within ten days prior to May 1st, a like additional flow over the spillway of the retaining dam has not occurred within ten days prior to June 1st, a like additional release shall be made commencing June 1st; and if a like flow over the spillway of the retaining dam has not occurred within ten days prior to July 1st, a like additional release shall be made commencing July 1st.

All of said releases to be measured at the location of the United States Geological Survey gauging station at Clements, as the river runoff is measured above the reservoir of the defendant East Bay District, except that in the event of any use, interception or diversion of the waters of the river occurring below the present works of the said defendant in addition to any now existing, other than such as it may institute, the said releases shall be so measured above such intervening use, interception or diversion.

RELEASES PARAMOUNT

The decree should further provide that the defendants are the owners and holders of the permits issued to them by the State and Federal governments, and that the right of each to the use of the waters of the Mokelumne River, over and above the releases which each is required to make, is paramount to that of the plaintiff; also that any releases of water by either defendant in excess of those which it is required to make will not enlarge the right of the plaintiff, and any benefit resulting to the plaintiff by reason of any such releases, or any use which the plaintiff may make thereof, shall be permissive and not adverse to the right of either defendant.

The releases provided are deemed adequate to supply a percolation into the Lodi area as great as that occurring under natural conditions, to prevent unnecessary waste, and to meet the legitimate demands of all the parties. With the flow of the stream as in 1931, augmented to a runoff of 210,450 acre feet by the Pacific Gas and Electric Company releases, which is the lowest known flow as regulated, occurring above the Pardee Dam, 90,000 acre feet would be diverted by the East Bay District, satisfying its present needs to the full; 120,000 acre feet would go downstream, of which 7,000 acre feet would be pumped from the river by riparian owners; 65,000 acre feet would be diverted by the Woodbridge Irrigation District; and 48,000 acre feet would be left for percolation into the Lodi area. None of the released water would be wasted as the maximum releases of 250,000 second feet occur at the peak of the irrigation season when the diverting canal of the Woodbridge District, with a capacity of 250 second feet, would be taking all the water it could get.

SUPPLY ASSURED

With the East Bay District operating at its maximum capacity, and diverting 224,000 acre feet, approximately one-half of its demands would be met. It now has reserve storage facilities affording a six months' supply. It is to be assumed that as its requirements increase its reserve storage facilities will be increased proportionately. So, in the most critical years operating at its maximum capacity it will not be without an adequate supply of water.

The provisions that the East Bay District provide from its storage alone the flush flows of 200,000 second feet are equitable as they are to be made at times when the constant flow releases of the Pacific Gas and Electric Company are more than sufficient to cover the 310 second foot maximum diversion of the East Bay District. Neither can Lodi complain that they are not provided for in seasons of comparatively light runoff as in such seasons the summer releases are a drain upon carry-over storage.

COUNSEL COMPLIMENTED

Counsel for all parties are to be complimented upon the exhaustive preparation and efficient presentation made of this case, the courtesies exhibited throughout the trial which made of it a most pleasant association, and their sincere endeavor to reach a correct solution of the difficult problem of providing for the inhabitants of the City of Lodi and their neighbors an artificial supply of water as adequate as that bestowed upon them by nature.

Counsel for plaintiff are directed to prepare and present such findings of fact and conclusions of law as may be appropriate and in accordance with the views herein expressed.

Dated this 20th day of January, 1933.

BENJAMIN C. JONES,
Judge of the Superior Court

24
13

STATEMENT OF FACTS AND HISTORY RELATIVE TO
THE CITY OF LODI AND THE CONTIGUOUS RURAL VICINITY
AND
THE PROPOSED WATER AND POWER DEVELOPMENT ON THE
MOKELUMNE RIVER

I. History of Development of the City of Lodi and Contiguous Rural Vicinity.

∟ The City of Lodi is a California Municipality of the sixth class situated upon the mainline railroad of the Southern Pacific Railroad Company about fifteen miles north of the City of Stockton and about thirty-five miles south of the City of Sacramento, the California State Capitol.

The City of Lodi was founded in 1869 and was incorporated in 1906 and has grown until it now has a population of approximately 7,000 persons.

The territory contiguous to the City of Lodi is in a high state of cultivation. The area within a radius of six miles of the City of Lodi is planted almost exclusively to vines, trees, alfalfa, truck gardens and the like. Because of the abundance and quality of the Tokay grapes raised in the District, Lodi has become known as the Tokay Center of the World. There is shipped by railroad to the eastern markets annually an average of approximately 6,000 carloads of grapes from the Lodi territory. Some 3500 carloads of grapes are locally used by wineries situated in the District or in nearby communities. In addition, there are large annual shipments of orchard fruits, truck garden products and the like.

The vineyards, orchards, truck garden produce and other crops raised in the territory are irrigated in the main from wells driven into the underground water table. Lands favorably situated pump water directly from the Mokelumne River. The annual power consumption for the pumps in the territory is given by the United States Geological Survey in a recent release entitled "Pumpage of Ground Water for Irrigation in the Mokelumne Area,

California", dated November 13, 1933 (a supplement to Bulletin No. 619) at approximately 9,500,000 kilowatt hours per year. The area irrigated by ground water has progressively increased from approximately 5,000 acres in 1909 to 50,000 acres in 1927, according to government reports. The mean annual precipitation in the Lodi Mokelumne River Area is approximately eighteen inches. In addition to this, orchardists pump from 1.3 to 2 acre feet per acre on the average; vineyardists from 1.4 to 2.1 acre feet per acre; alfalfa requires from 2.2 to 4.5, while miscellaneous crops raised take from 1.3 to 2.7 acre feet per acre, depending on the season, to produce the quality of crops grown.

The mean temperature of the City of Lodi is approximately sixty degrees Fahrenheit with a mean maximum of approximately seventy-one degrees and a mean minimum of approximately forty-six degrees.

The contiguous territory generally referred to as the Greater Lodi Area, is the most thickly settled and populated Rural Area west of the Mississippi River. The population, according to the 1930 census, was approximately 18,000 persons. The area is subdivided into many thousands of small farm units, there being as high as eighty homes per square mile in parts of the territory.

II. Public Utilities of the City of Lodi.

(a) Water Works System.

Previous to the year 1910 the Water Works System serving the City of Lodi and its inhabitants was privately owned. In 1910 the City of Lodi purchased the privately owned Water Works System, and because of the insufficiency of the privately owned system, due to the rapid growth of the City, immediately increased the number of wells, pumps, fire hydrants, mains, etc., including the erection of a 100,000 gallon steel, elevated tank, and has subsequently operated the pumping and distribution sys-

tem as a municipal enterprise supplying water for municipal, commercial, industrial and domestic use within the City of Lodi. The Water Works System at the present time derives water from five wells by electrically driven pumping plants. The *distribution* system consists of a 100,000 gallon steel tank and approximately twenty-five miles of water mains, serving approximately 2,000 domestic connections, twenty-five industrial connections, 300 commercial connections and 185 fire hydrants besides serving the City Hall, fire houses and other municipal buildings and public improvements including the City Library, five grammar schools, one high school, twenty-three churches and three municipal parks located within the City Limits. The system furnishes as high as 6,000,000 gallons of water daily, and an average of about 3600 acre feet annually to the inhabitants of the City of Lodi.

The water rates within the City of Lodi are unusually low, the bulk of the service being rendered on a flat rate basis. Domestic service is rendered at a flat rate of \$1.50 per month, and other flat rates are proportionately low. Metered service for commercial, industrial, and optional domestic service is rendered at a rate of 7¢ per 1,000 gallons plus a monthly meter charge ranging from 50¢ ^{for 3/4" meter and 70¢} for ordinary service up to \$24.00 per month for large, industrial, ^{7/8"} four-inch meters. The net profit of the Water Works Department for the three years last past has been approximately \$19,000.00 per year, after deducting all operating costs, bond interest and redemption charges plus depreciation and replacement allowances *and additions to plant and system*.

The ground water table from which the system derives its supply is maintained by waters percolating from the waters of the Mokelumne River. The City of Lodi has as an appropriator of the waters percolating from and the underflow of the Mokelumne River since 1910, acquired a right to the use of

6,000,000 gallons daily and 3600 acre feet per annum.

The pumps used in connection with the Municipal Water Works System are driven by electrical energy obtained through the Municipal Electrical Distribution System of the City of Lodi.

(b) Electrical Distribution System.

The City of Lodi as a municipality acquired the Electrical Distribution System in the year 1910 and has since been distributing electrical energy to its inhabitants, industries and various municipal and public enterprises.

During the past three years the City of Lodi has purchased for distribution an average of approximately 6,000,000 kilowatt hours of electrical energy per year upon a rate basis established by the California Railroad Commission, which rate has averaged nine mills per kilowatt hour.

Besides lighting and heating municipally owned properties and operating its utilities, the City of Lodi distributes electrical energy to approximately 2400 consumers, of which approximately 2,000 are domestic, 350 commercial, and 50 industrial users. It is to be expected that with the return of normal economic conditions, the electrical energy consumption within the City of Lodi will increase particularly with the increasing numbers of light industries and the use of electrical appliances. This will be especially true if the energy rate is lowered.

Through the distribution and sale of electrical energy, the City has realized a net profit of approximately \$35,000.00 per year for the three years last past after deducting bond redemption and interest the whole sale cost of electrical energy purchased (including that used for municipal purposes) overhead and operating expenses including ^{additions to plant and repair} ~~extensions~~ depreciation and replacement charges. The consumers' electrical rates are approximately 75% of those charged by the Pacific Gas and Electric Company for similar service in neighboring cities and in the con-

tiguous rural territory.

Exclusive of the energy sold by the City of Lodi to private consumers, of the electrical energy purchased wholesale by the City of Lodi during the past three years, an average of 833,000 kilowatt hours has been used in operating the municipal pumps of its Water Works System, 265,000 kilowatt hours in operating its municipally owned ^{Activated Sludge} Sewage Disposal Plant, 282,000 kilowatt hours in lighting the streets, and 150,000 kilowatt hours in lighting and heating public buildings, and for other miscellaneous municipal purposes. At the present time about 25% of the electrical energy purchased wholesale by the municipal ^{Electric} ~~distribution~~ system is used for strictly municipal purposes recited above.

III. Electrical Development Outside of the City of Lodi.

The contemplated Rural District contiguous to the City of Lodi to be served with electrical energy subsequent to the completion of the Lodi Power Project, comprises approximately forty-four square miles and lies wholly within what is known as the Mokelumne River Area or the Greater Lodi District. The Rural District is indicated on Exhibit _____ herewith attached. There are approximately 900 consumers within the district who are now purchasing electrical energy from the Pacific Gas and Electric Company, the public service corporation now serving the area, for the operation of 865 irrigation pumps, ^{pumping} domestic water supply, lighting homes and operating other appliances. During the past five years the amount of electrical energy required by the distribution system within this Rural District has been approximately 9,000,000 kilowatt hours per year. The average rate paid by the consumers is approximately 2½¢ per kilowatt hour, amounting to some \$180,000.00 per annum on the average.

As the Rural District is brought under a still higher state of development and the population increases, the electrical service used will be increased.

IV. Geographic Conditions.

IV. Geographic Conditions.

(a) Mokelumne River Drainage Basin.

The Mokelumne River heads in the Sierra Nevada Mountains about one hundred miles Northeasterly of the City of Lodi and flows in a general Southwesterly direction to a confluence with the San Joaquin River. Like all Sierra Nevada streams the flow of the Mokelumne River varies greatly in different seasons of the year. In its natural and unregulated state, high flows of as much as 60,000 cubic feet per second have occurred, whereas the low flow is approximately 100 cubic feet per second. The high flow is usually attained in the spring months and the low flow in the summer and fall. The runoff of the stream varies from approximately 1,600,000 acre feet per year to approximately 200,000 acre feet per year averaging about 300,000 acre feet per year. The North Fork contributes the greatest snow pack runoff and the South and Middle forks contribute the more flashy and torrential flows.

The Mokelumne debouches from the foothills at Clements, approximately eleven miles easterly of the City of Lodi, and flows across the San Joaquin Valley into the Delta Region about ten miles Westerly of the said City. The Mokelumne River has built up an alluvial fan of soil known as Hanford fine, sandy loam on which the City of Lodi is situated. It is this recent geological formation that is in a great part responsible for the growth of the City of Lodi and its contiguous Rural territory.

(b) San Francisco Bay Area.

The East Bay Municipal Utility District is composed of nine municipalities situated on the San Francisco Bay easterly and across the Bay from the City of San Francisco. This district embraces Oakland, Berkeley, Alameda, Richmond, Piedmont, Albany, San Leandro, Emeryville and El Cerrito, and has a present population of approximately 500,000 persons. The said District Water Supply is transported across the San Joaquin Valley through some ninety miles of aqueduct leading from the Mokelumne River Pardee

Reservoir to several reservoirs located near the said District.

Exhibit _____.

V. Pacific Gas and Electric Company Mokelumne River Developments.

(a) Old Works.

Prior to the year 1925 the Pacific Gas and Electric Company had for some twenty years owned and operated certain hydro-electric works of minor importance on the North Fork of the Mokelumne River.

These old works consisted of five small reservoirs with a total storage capacity of some 26,000 acre feet, which were used for the purpose of storing and regulating a portion of the natural flow of the said River thereafter passing the same through the Electra Power Plant and returning the said waters to the channel of the stream, excepting a relatively small amount of such water which was diverted away from the stream for domestic and other uses.

The above-mentioned uses and diversions made by the said company have ripened into present prescriptive rights and are prior to the rights of the City of Lodi and others. However, the said rights are relatively small, representing about three percent of the average annual runoff of the Mokelumne River.

(b) New and Proposed Works.

Subsequent to the year 1925 the Pacific Gas and Electric Company obtained by Federal Power Commission Project License No. 137 and the right to use certain lands of the United States Government lying in the water shed of the North Fork of the Mokelumne River for reservoir and power house purposes.

Prior to obtaining the said Project License the said company obtained certain permits from the California Division of Water Rights, permitting diversion to storage of certain waters, and the use of the same, together with the natural flow of the said North Fork through certain existing and proposed power plants, all

water to be returned to the main channel of the said river above the Lodi Power Site.

Pursuant to the said license and permits, the Pacific Gas and Electric Company has constructed the Salt Springs Reservoir of approximately 130,000 acre feet storage capacity, together with certain pipe lines, aqueducts and power houses known as the New Works. The said company holds further licenses and permits to construct proposed Lower Bear and Deer Valley Reservoirs which, if constructed, would have a combined storage capacity of approximately 60,000 acre feet. The said Company now has a total storage capacity on the North Fork of the Mokelumne River of approximately 155,000 acre feet.

In the operation of the above reservoirs the said company proposes to store the high flows of the Mokelumne River, and to annually use the same through its power houses, for the purpose of augmenting the low flows of the River. The regulated flow of the North Fork of the Mokelumne will approximate 500 cubic feet per second except during periods of spillway discharge and extreme drought.

Under the decisions of the California Supreme Court, it has been uniformly held that these permits issued by the California Division of Water Rights are permissive only, and the the said permits have the effect of granting to the said Company no new rights. Further, the California Courts have uniformly held, and it is also definitely recited in each of the said permits, that said permits are granted subject to prior vested rights of all downstream proprietors, vested water users and appropriators.

Because all of the said Company's Mokelumne River works are situated upstream from the power site of the City of Lodi, all waters regulated and released by the said company, excepting the small diversions for domestic and other uses in Jackson, Sutter Creek and Amador City and excepting interference by the works of the East Bay Municipal Utility District, will flow down and over

the City of Lodi's Power Site.

The State of California adheres to the Riparian Rights Doctrine. The City of Lodi, as owner of the said power site, including lands in the bed and on both banks of the main Mokelumne River, below the confluence of its three principal forks, is a riparian proprietor. Therefore, such rights as may have been obtained by the Pacific Gas and Electric Company through its said permits were obtained subject to the riparian rights of the City of Lodi as appurtenant to its said lands.

The City of Lodi in pumping its municipal water supply from the underflow of the Mokelumne River within the corporate limits of the said City has acquired an appropriative right by prescription to the underflow of the said stream. Such rights as the Pacific Gas and Electric Company may have acquired through the new permits are, therefore, subject to the said appropriative rights of the City of Lodi and the right to have the underground water table replenished and maintained to the same extent as the natural underflow of and percolation from the Mokelumne River.

VI. East Bay Municipal Utility District Mokelumne River Developments.

The East Bay Municipal Utility District was incorporated in the year 1924 under a special act of the California Legislature, and by vote of the people within the said district.

In 1926 the East Bay Municipal Utility District obtained from the California Division of Water Rights its original municipal Permit which authorized the district to divert annually to storage in its Pardee Reservoir up to 217,000 acre feet from the flow of the Mokelumne River, and use the same for beneficial, municipal and domestic purposes; and further, to divert from the natural flow of the said river to the East Bay Municipal Utility District, not to exceed 310 cubic feet of water per second continuous flow during each year, the combined diversions from natural flow and

storage not to exceed 200,000,000 gallons of water per day. The amount of water which the East Bay Municipal Utility District may divert for beneficial use will not exceed 226,000 acre feet per year or practically one-fourth of the normal annual stream flow. Such waters as estimated by the District officials at the time of filing its said municipal water application, will supply a population of 2,000,000 or four times its present population.

The said Municipal Permit, as issued by the State Division of Water Rights, contains a reservation that no water taken by the said District shall be used "for other than Municipal purposes within the boundaries of the East Bay Municipal Utility District" and that "this permit is issued subject to the express condition that the use hereunder may be regulated". Subsequent to the issuance of the aforesaid municipal permit, there were two power permits issued by the Division of Water Rights, whereby said East Bay Municipal Utility District may use through its power house, at the base of the Pardee Dam, up to 750 cubic feet per second of water for the generation of electrical energy. Such water may be taken either direct from natural flow or from Pardee Reservoir storage in excess of that needed for municipal uses.

Subsequent to the issuance of the aforesaid State Water Permits, the District obtained in 1926 by Federal Power Commission Project License No. 567 authorization to use for municipal and power purposes certain lands of the Federal Government upon which the said Pardee Dam and a portion of the Reservoir have since been constructed.

The said district first stored water in its said Pardee Reservoir, in March, 1929, and the initial diversion of water through the aqueduct to the District was made shortly thereafter.

The permits issued by the Division of Water Rights to the East Bay Municipal Utility District were also expressly issued

subject to all prior vested rights. Therefore, under the very terms of the said permits and under the decisions of the Supreme Court of the State of California, the said permits granted no rights to the East Bay Municipal Utility District which were not subject to the prior riparian rights appurtenant to the power site property of the City of Lodi, and also subject to the prior appropriative rights of the City of Lodi, to pump and divert the underflow of the Mokelumne River for municipal and domestic uses.

VII. Acquisition of the City of Lodi's Power Site.

In January, 1929 the Colorado Power Company, a California corporation, transferred and conveyed to the City of Lodi in fee 207 acres more or less of land situated in Amador and Calaveras Counties, contiguous to and divided by the Mokelumne River, to which the lands are riparian. The upstream boundary of the Lodi Reservoir Area is immediately below the Pardee Dam and power house of the East Bay Municipal Utility District.

VIII. Litigation Affecting the Flow of the Mokelumne River.

(a) Colorado Power Company vs. Pacific Gas and Electric Company.

Prior to the conveyance of the Mokelumne River Power Site made by the Colorado Power Company to the City of Lodi, the Colorado Power Company commenced an action in the Superior Court of the State of California in and for the County of Calaveras against the Pacific Gas and Electric Company. This action was based upon the riparian rights attaching to the fee lands of the Colorado Power Company. In said action the Colorado Power Company sought an injunction against the Pacific Gas and Electric Company prohibiting it from storing, diverting or otherwise interfering with the natural flow of the North Fork of the Mokelumne River, other than the use and operation of the old works of the said Pacific Gas and Electric Company.

This action was tried in the Calaveras County Superior Court in December 1928 and judgment was rendered in favor of the Colorado Power Company against the Pacific Gas and Electric

Company, by the said Superior Court. An appeal from the judgment was taken by the Pacific Gas and Electric Company and after being submitted twice to the Supreme Court of the State of California, the final decision of the said Court, affirming the said judgment, was obtained in July of 1933.

The judgment thus affirmed provides that the Pacific Gas and Electric Company shall be restrained from storing any of the waters of the North Fork of the Mokelumne River and from interfering with any of the waters of the said river, excepting the operation of the Old Works, unless the Pacific Gas and Electric Company shall operate its new works to regulate the waters of said river in the manner hereinafter recited. A certified copy of said judgment is filed herewith as Exhibit _____.

Were it not for the fact that the Pardee Dam and Reservoir of the East Bay Municipal Utility District is situated between the return to the Mokelumne River Channel of the regulated flow from the Pacific Gas and Electric Company's works and the City of Lodi Reservoir Site, the regulation required under the Judgment governing the operation of the Pacific Gas and Electric Company would pass down and over the Lodi Site and be available for the generation of power by the City of Lodi.

The said judgment in favor of the Colorado Power Company against the Pacific Gas and Electric Company has inured to the City by virtue of the transfer of ownership of said lands from the Colorado Power Company to the City of Lodi.

- (b) City of Lodi vs. East Bay Municipal Utility District and East Bay Municipal Utility District vs. City of Lodi - Calaveras County Litigation.

Subsequent to acquiring the Power Site from the Colorado Power Company, the City of Lodi commenced an action against the East Bay Municipal Utility District in the Superior Court of the State of California in and for the County of Calaveras, based upon the riparian rights of the City of Lodi to the waters of the river through the ownership of the Power Site for the purpose of restraining and enjoining the East Bay Municipal Utility

District from storing, diverting, or otherwise interfering with the flow of the Mokelumne River.

Before this case could be brought to trial, the East Bay Municipal Utility District brought an action in eminent domain in the Calaveras County Superior Court against the City of Lodi for the purpose of condemning and acquiring the right to store and divert the waters of the Mokelumne River in accordance with the plans of the East Bay Municipal Utility District and the permissive rights granted by the said permits and to extinguish the said riparian rights of the City of Lodi, only insofar however, as such extinguishment might be necessary for such purposes. The purpose of said eminent domain proceeding was not to condemn the fee of the said power site, either in whole or in part, nor to condemn all of the said riparian rights, but was for the sole purpose of extinguishing the said riparian rights of the City of Lodi only to the extent that it might be necessary to consummate the plans and proposed operations of the East Bay Municipal Utility District as recited in the district's Municipal and Power Permits.

These two cases, (the City of Lodi's injunction suit, and the East Bay Municipal Utility District's condemnation suit) were consolidated and tried together. As a result of this action, it was decreed that the East Bay Municipal Utility District had the right to condemn the riparian rights of the City of Lodi to the extent only that might be necessary for the above-mentioned purposes of the said district, and an award of \$25,000.00 damages was made in favor of the City of Lodi, which has been paid to the said City. In the action the injunction sought by the City of Lodi was granted, unless the said award of \$25,000.00 be paid. The payment of the said award, therefore, had the effect of denying the said injunction.

It should be here pointed out that while the said District acquired by condemnation the right to ultimately divert up to 310 cubic feet per second continuous flow to the East Bay Cities

the amount of the present actual diversion is less than 70 cubic feet per second. From the variance between the estimated municipal requirements necessary during 1933, made at the time of filing the municipal application with the State Division of Water Rights, and the actual 1933 diversion, it is obvious that the original estimate of making beneficial use of the maximum diversion of 310 cubic feet per second in 1980 was unduly optimistic.

The effect of these two judgments is to leave the City of Lodi holding the fee of its said power site and its riparian rights intact, except to the extent that said riparian rights may be interfered with by the operations of the East Bay Municipal Utility District, as limited by the conditions of the said permits issued by the California Division of Water Rights, and further limited by the judgment rendered by the Superior Court of San Joaquin County as hereinafter referred to. A certified copy of the said Judgment of Condemnation is filed herewith as Exhibit ____.

- (c) City of Lodi vs. East Bay Municipal Utility District and Pacific Gas and Electric Company - San Joaquin County Case.

In December 1928 the City of Lodi commenced in the Superior Court of the State of California, in and for the County of San Joaquin, an action against the East Bay Municipal Utility District and Pacific Gas and Electric Company for the purpose of obtaining an injunction restraining said defendants from storing, diverting or otherwise interfering with the waters of the Mokelumne River. The City of Lodi alleged that it owned and operated a Water Works System and pumped water from the water-table underlying the City of Lodi and that said water-table was fed and maintained by the underflow of and percolation from the Mokelumne River and that the City of Lodi was therefore an appropriator of the waters of the Mokelumne River and had established its right to such appropriation by prescription, and, that the proposed joint operations of the defendants would diminish the percolation and underflow from the river into the water table then already overdrawn.

The Pacific Gas and Electric Company filed an answer setting up its proposed plan of operation and offered to be bound by the court judgment compelling it to so operate.

The East Bay Municipal Utility District filed an answer denying that the City of Lodi was an appropriator of the waters of the Mokelumne River and denying that its operations would in any way damage the said City, and alleging that there were excess waters in the river which flowed to the sea and wasted.

This case came on for trial upon the said issues in September of 1932, and lasted several weeks before submission to the Court.

In January 1933 the trial court announced its decision in favor of the City of Lodi. Thereafter findings of fact and conclusions of law were served, filed and settled and judgment was signed and filed by the trial court in August of 1933.

In the said findings and judgment the court decided that the operations of the Pacific Gas and Electric Company would, if conducted in the manner proposed, not diminish the percolation from the river into the underground water-table, and the court in the judgment directs this defendant to so operate.

The findings further decided that the so-called "Grunsky Release Plan" offered in the said case as a stipulation by the said District as how it would be willing to be bound to operate, was not sufficient to insure the City of Lodi that percolation from the Mokelumne River would be equivalent to that which would prevail under natural conditions, and therefore, enjoined the East Bay Municipal Utility District from storing or diverting any of the waters of the Mokelumne River unless it shall operate its storage works and make releases in a manner therein set forth.

A certified copy of the said San Joaquin County Judgment and Decree is filed herewith as Exhibit _____.

Since said judgment was entered both defendants have made motions for a new trial and to correct and modify the judgment, which motions have been denied. Said defendants have both per-

fecting an appeal from said judgment to the Supreme Court of the State of California.

The East Bay Municipal Utility District as heretofore recited, obtained, in the Superior Court of Calaveras County, a judgment in condemnation extinguishing, to the extent necessary for the proposed operations of the East Bay Municipal Utility District, the riparian rights appurtenant to the City of Lodi Power Site. Notwithstanding this fact it is quite obvious, from the terms of the San Joaquin County Judgment, that by reason of the country topography and the upstream boundary of the Lodi Reservoir Site and the downstream boundary of the Pardee Dam Site being coincident, (the Lodi Power Site lying downstream from the Pardee Dam of the East Bay Municipal Utility District), it is impossible for any appropriator to physically divert waters which flow over or through the said Pardee Dam pursuant to the said judgment, and said waters will necessarily flow over and across the Lodi Power Site. At the said Calaveras County trial the said District witnesses testified that the average usable daily flow at the Lodi Site under regulation by the said District Works would be from 690 cubic feet per second down to 525 cubic feet per second under successive stages of regulation by the said District as shown by the said District's Exhibit "DD", and further, that even in low flow months and with the ultimate maximum diversion of 310 cubic feet per second to the East Bay Cities the release at the Pardee Power Plant would be a daily mean of 345 cubic feet per second. The said witnesses also testified as to the favorable power output which will always be available under the District regulation as shown by the said District's Exhibits "II". Objection by Lodi counsel as to the admissibility of the aforesaid Exhibits as not being based on any contract or decree were met by the District counsel with the statement that the said District "can't operate in any other way."

We would point out again that the City of Lodi is the owner of the said judgment rendered by the Superior Court of San Joaquin County and that while said judgment is based upon rights in and to the underground water-table, nevertheless the City is in a position to enforce the said judgment. Assuming the judgment and decree in the said San Joaquin case were rendered inoperative, the quantities of water to be expected at the Lodi Power Site, on the basis of operation by the East Bay Municipal Utility District substantially as set forth in the proposed method of operation known as the "Grunsky Release Plan", might be somewhat ~~reduced~~^{altered} from that expected under the said decree, however, when checked against the operation program contemplated by the said District, the decreed method of operation as submitted by the District in the said case and known as the "Grunsky Operating Plan", Exhibit "E-19" of the said District, shows that the actual releases contemplated therein are in excess of the releases required by the said judgment and decree.

Under the Colorado Power Company vs. Pacific Gas and Electric Company judgment the latter company is bound to release into the Mokelumne River, above the Lodi and Pardee Reservoirs, an average of 475 cubic feet per second of water, for each calendar day, so long as there is water in the Pacific Gas and Electric Company's old and new storage works and/or flowing in the North Fork of the Mokelumne River. This 475 cubic feet per second exceeds by 165 cubic feet per second the maximum authorized and anticipated municipal diversion of the East Bay Municipal Utility District of 310 cubic feet per second irrespective of permitted storage in the said Pardee Reservoir of 217,000 acre feet, which of itself is sufficient to provide one year's water supply for the said East Bay Municipal Utility District irrespective of its local storage adjacent to the said District. The maximum expected diversion to the East Bay Municipal Utility District in 1935 is only 70 cubic feet per second or approximately 22 $\frac{1}{2}$ % of the ultimate diversion or

approximately six percent of the average daily flow of 1130 cubic feet per second of the Mokelumne River as measured at Clements by the United States Geological Survey during 1905 to 1928 inclusive. The difference between the aforesaid average daily flow and the proposed ultimate diversion of the said District of 310 cubic feet per second is available for re-regulation by the East Bay Municipal Utility District for use in the generation of electrical energy. It is most problematical if and when the said ultimate diversion of 310 cubic feet per second will be made to the East Bay District.

IX. Physical Characteristics of the Lodi Power Site.

In the condemnation suit entitled East Bay Municipal Utility District vs. City of Lodi, and in the case of the Colorado Power Company vs. Pacific Gas and Electric Company, both of which were tried in the Superior Court of Calaveras County as aforesaid, the Court found that the City of Lodi hydroelectric property, immediately below the Pardee Reservoir, was valuable as a power site. This finding was affirmed by the Supreme Court of the State of California. The language of said finding is as follows:

"The plaintiff and its grantor have for several years been proceeding with plans for the development upon said riparian land of a low head riparian power project. The physical characteristics of the plaintiff's lands are such as to admit of the construction thereon of a low head hydro-electric power project and the production of electric energy by means thereof. The agricultural and industrial demands for electric energy in the territory adjacent to plaintiff's proposed project are such as to economically justify its proposed power development."

This finding was based upon the natural flow of the Mokelumne River. Subsequent to the said finding being made and subsequent to the termination of the Calaveras County litigation fixing the regulations and releases herein enumerated, the City of Lodi has obtained the judgment in San Joaquin County litigation previously mentioned during which trial was tendered the "Grunsky Release Plan". With any of the foregoing regulation and release conditions together with the fact that the Pacific Gas and Electric Company and the East Bay Municipal Utility District have constructed

Mokelumne River storage in excess of 370,000 acre feet, which storage is to be used in regulating the flow of the River, such regulated flow, excepting diversions as may be made for municipal and domestic purposes previously mentioned, assures to the City of Lodi a regulated flow over its power site. Such regulated flow, actually passing over the Power site owned by the City of Lodi, will be far more beneficial for the generation of electrical energy than the use of the natural flow of the Mokelumne River; with which natural flow the Calaveras County Superior Court and the Supreme Court of the State of California found that the City of Lodi had a feasible Power Project.

In the Calaveras County case the said Superior Court further found:

"Considered solely with reference to physical effects, defendant's proposed impounding and storage of water in said Salt Springs, Deer Valley, and Lower Bear River Reservoirs and its proposed regulation of the natural flow of water in said North Fork, by means of its storage of water in said reservoirs and discharge of stored waters therefrom, as proposed by defendant in its said additional defense, will not interfere with any actual or anticipated beneficial use of the waters of the Mokelumne River by the plaintiff upon its riparian lands, or damage or diminish the value of said lands, if defendant shall actually return the regulated waters into the channel of the Mokelumne River, at or above the tailrace of said Electra Power House, in accordance with the plan of operation set forth in its said additional defense; but, on the contrary, such impounding, storage, release, regulation, and return of the waters of said North Fork will be beneficial to the plaintiff, and will increase the value of plaintiff's said riparian lands for use in the generation of electric energy, if the waters to be stored and released, as proposed by defendant in its said proposed reservoirs, shall, after their use and return to the channel of the Mokelumne River, at or above the tailrace of said Electra Power House as proposed by defendant, actually flow down the natural channel of said river to and over plaintiff's said riparian lands."

Annexed hereto and marked "Exhibit _____" is a contour map showing the exterior boundaries of the power site fee property of the City of Lodi containing 207 acres, more or less, the fee property necessary to acquire by condemnation or otherwise from one Stephen E. Kieffer together with the United States Government land the use of which is to be acquired under a license from the Federal

Power Commission, necessary to permit of the construction of a fifty-nine foot dam. The reservoir map also shows flow area contours, the dam and power house locations and various water elevations and measurements along the stream bed.

It will be noted from this plat that the property owned by the City of Lodi is in two separate parcels. The difference in elevation between the upper and lower boundaries of the lower or dam site parcel is sufficient to permit of the construction of a dam forty-nine feet high, whereas, if the two parcels are consolidated, under the present plan, by condemning the reservoir flow area of the Kieffer property and by obtaining a Federal Power Commission license permitting the use of the flow area to be flooded, sufficient reservoir area will be available for the construction of the fifty-nine foot dam.

In January 1929 the City of Lodi filed a condemnation suit in the Superior Court of Calaveras County, against the said Stephen E. Kieffer and Pacific Gas and Electric Company for the purpose of condemning the said Kieffer property and certain stream diversion rights which were then understood to be owned by the Pacific Gas and Electric Company, but which subsequently were conveyed to the said Kieffer. These so-called diversion rights have never been availed of and are merely some old ditch rights granted in anticipation of mining operations. Irrespective of any present worth of such privately held diversion rights, the application and use of such would necessitate the passage of the water diverted over and across the fee land of the City of Lodi. Under California law such a right could be obtained only by negotiation. The Kieffer land or flow area necessary to be acquired consists of seven and one-fourth acres more or less and as measured along the stream bed represents 11% of the total lineal distance of the Lodi Project Reservoir. It has a difference in elevation, between its upper and lower boundary, of 1.33 of a foot or 2.22% of the total head available for the Lodi Power Project. Individually the Kieffer property is

obviously insufficient for reservoir use and only has a nominal value for grazing purposes. The condemnation suit against the said Kieffer is still pending and the City proposes bringing it to an immediate hearing when the herein requested loan to the City is granted. Filed herewith, marked "Exhibit _____" is a certified copy of the said Kieffer complaint in eminent domain.

The United States Government land necessary and proposed to be acquired by license consists of four and one-half acres more or less, having a lineal stream bed distance of 7.66% of the entire Project and a difference in elevation of .22 of a foot.

No difficulty is anticipated in obtaining a license from the said Federal Power Commission based upon Subdivision (1) of Section 10 of the Rules of Practice and Procedure established by the Federal Power Commission, which reads as follows:

"In issuing licenses for a minor part only of a complete project, or for a complete project of not more than one hundred horsepower capacity, the commission may in its discretion waive such conditions, provisions, and requirements of this act, except the license period of fifty years, as it may deem to be to the public interest to waive under the circumstances: Provided, That the provisions hereof shall not apply to lands within Indian reservations."

Obviously the government land proposed to be flooded is only a minor portion of the major Project; therefore, the Federal Power Commission will unquestionably grant the license since the City of Lodi is the proprietor of property both up and downstream therefrom and consequently the said government land could be of no value or use to anyone other than to the City of Lodi.

X. Conclusion.

From consideration of the foregoing recitation of the major facts bearing upon the reasonableness, desirability, feasibility and economic need of the proposed hydroelectric development of the City of Lodi and the resultant benefits to be derived by the City and the contiguous Rural District, it would appear that this Project is worthy of due consideration, not only as a constructive and progressive development in and for an already highly productive community, but as a most desirable and unusual enterprise of real

economic worth, one which entails the minimum of risk and the maximum of safety in return of the improvement investment and at the same time bring a present and much needed future saving to the City of Lodi and the Rural District proposed to be served through the construction and operation of the City of Lodi Mokelumne River Project.