BEST BEST & KRIEGER LLP
ERIC L. GARNER, Bar No. 130665
JEFFREY V. DUNN, Bar No. 131926
STEFANIE D. HEDLUND, Bar No. 239787
5 PARK PLAZA, SUITE 1500
IRVINE, CALIFORNIA 92614
TELEPHONE: (949) 263-2600
TELECOPIER: (949) 260-0972
Attorneys for Cross-Complainant
LOS ANGELES COUNTY WATERWORKS
DISTRICT NO. 40

OFFICE OF COUNTY COUNSEL
COUNTY OF LOS ANGELES
ANDREA ORDIN, Bar No. 38235
COUNTY COUNSEL
WARREN WELLEN, Bar No. 139152
PRINCIPAL DEPUTY COUNTY COUNSEL
500 WEST TEMPLE STREET
LOS ANGELES, CALIFORNIA 90012
TELEPHONE: (213) 974-8407
TELECOPIER: (213) 687-7337
Attorneys for Cross-Complainant LOS ANGELES
COUNTY WATERWORKS DISTRICT NO. 40

EXEMPT FROM FILING FEES UNDER GOVERNMENT CODE SECTION 6103

SUPERIOR COURT OF THE STATE OF CALIFORNIA

COUNTY OF LOS ANGELES – CENTRAL DISTRICT

ANTELOPE VALLEY GROUNDWATER CASES

Included Actions:
Los Angeles County Waterworks District No. 40 v. Diamond Farming Co., Superior Court of California, County of Los Angeles, Case No. BC 325201;

Los Angeles County Waterworks District No. 40 v. Diamond Farming Co., Superior Court of California, County of Kern, Case No. S-1500-CV-254-348;

Wm. Bolthouse Farms, Inc. v. City of Lancaster, Diamond Farming Co. v. City of Lancaster, Diamond Farming Co. v. Palmdale Water Dist., Superior Court of California, County of Riverside, Case Nos. RIC 353 840, RIC 344 436, RIC 344 668

Judicial Council Coordination No. 4408

CLASS ACTION

Santa Clara Case No. 1-05-CV-049053
Assigned to The Honorable Jack Komar

EXHIBITS 1 THROUGH 10 IN SUPPORT OF PHASE 3 TRIAL BRIEFS

EXHIBIT 1

Overdraft-Related Undesirable Effect:
Land Subsidence and Ground Fissuring (Antelope Valley)

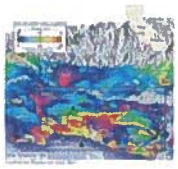
(from Water Education Foundation, Layperson's Guide to Groundwater, 2003)

EXHIBIT 2

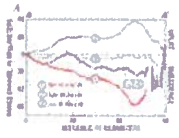
Measuring Human-Induced Land Subsidence from Space

Satellite Interferometric Synthetic Aperture Radar (InSAR) is a revolutionary technique that allows scientists to measure and map changes on the Earth's surface as small as a few millimeters. By bouncing radar signals off the ground surface from the same point in space but at different times, the radar satellite can measure the change in distance between the satellite and ground (range change) as the land surface uplifts or subsides. Maps of relative ground-surface change (interferograms) are constructed from the InSAR data to help scientists understand how ground-water pumping, hydrocarbon production, or other human activities cause the land surface to uplift or subside. Interferograms developed by the USGS for study areas in California, Nevada, and Texas are used in this Fact Sheet to demonstrate some of the applications of InSAR to assess human-induced land deformation.

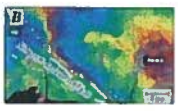
LOS ANGELES, CALIFORNIA



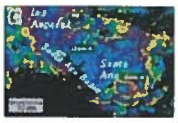
Los Angeles, California. Terrain and InSAR image of Los Angeles and Santa Ana Basin shown as a location map for InSAR images B, C, D, E, and graph, A.



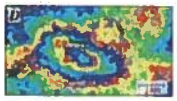
Seasonal Deformation. Widespread ground-water pumping in the summer produces large (about 60 mm) seasonal fluctuations in the land-surface elevation with 20 mm of net annual subsidence (April 1998 to May 1999).



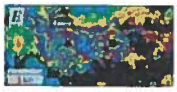
Ground-Water Barriers. Faults and geologic structures often impede the flow of ground water and can be recognized as linear InSAR features where ground-water levels decline on one side of the fault or rise on the other side of the fault.



Multi-Year Subsidence. As water levels decline near Santa Ana, the land surface subsides at a rate of about 20 mm per year (Oct. 1993–Oct. 1998).



Hydrocarbon Production. The pumping of oil is often imaged as a "bull's-eye" feature, such as the 58 mm of subsidence measured in the Beverly Hills Oil Field (5 years: Oct. 1993–Oct. 1998).



Localized Subsidence. More than 180 mm of ground-water-pumping induced subsidence (1993–95) resulted in cracked building foundations near Pomona.

InSAR provides invaluable spatial information needed to assess and mitigate human-induced subsidence.

In metropolitan Los Angeles, InSAR imagery found wide-spread seasonal and annual human-induced surface deformation related to both ground-water and hydrocarbon production. The largest feature in the May–September 1999 interferogram (center) is the 40-km (kilometer) long Santa Ana Basin. Ground-water pumping and artificial recharge are producing as much as 60 mm (millimeter) of seasonal uplift and subsidence with 20 mm of net basin subsidence (April 1998–May 1999) (Fig. ***A***). The Newport-Inglewood Fault bounds the southwest margin of the Santa Ana Basin; InSAR shows that there is about a 2-km offset between the mapped trace of the fault and the subsurface ground-water barrier (Fig. ***B***). Many of the deformation features are long lasting (Fig. ***C***) and can exhibit significant surface deformation as shown by the examples of hydrocarbon production in Beverly Hills (Fig. ***D***) and property damage near Pomona (Fig. ***E***). Additionally, the human-induced land deformation produces horizontal surface motion that obscures, and in some cases mimics, the tectonic signals expected from the blind thrust faults beneath Los Angeles (Bawden and others, 2001).

How to read an Interferogram:

1. Count the number of InSAR fringes between two points on the interferogram, where one fringe is one complete color cycle (i.e. yellow, red, blue, green, yellow).

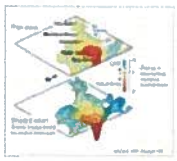
2. Multiply the number of fringes by 28.3 mm (1.1 in).

3. Determine if the ground moved closer (uplift) or farther away (subsidence) from the satellite by matching how the colors change between the two points with the InSAR scale bar. (i.e. yellow, red, blue, green shows relative subsidence).

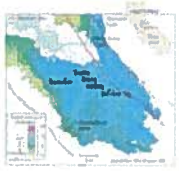
SANTA CLARA VALLEY, CALIFORNIA

InSAR was used to evaluate seasonal and multi-year deformation patterns, which are critical for implementing appropriate water-management strategies that may include subsidence mitigation. Santa Clara Valley was the first area in the Nation (1940) where land subsidence (nearly 5 m) associated with ground-water withdrawal was recognized. A 5-year interferogram (Sept. 1992–Aug. 1997) shows a small amount (510 mm) of regional uplift. The uplift corresponds to a period of water-level recovery throughout the valley. An 8-month interferogram (Jan.–Aug. 1997) shows seasonal subsidence of about 30 mm near San Jose and corresponds to about a 10-m decline in water levels. The lack of subsidence between 199297 indicates that the seasonal subsidence was temporary (Galloway and others, 1999).

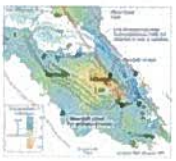
InSAR imagery identified new faults and geologic structures in the Santa Clara Valley. The ***A–A'*** cross section on the 8-month interferogram (bottom-right) shows that the location of the steep subsidence gradient is offset about 1 km from the mapped trace of the Silver Creek Fault. The USGS Earthquake Hazards Team conducted a seismic reflection/refraction survey across the InSAR feature and identified it as a previously unrecognized fault (Catchings and others, 2000).



Silicon Valley Subsides. An 8-month interferogram (Jan.–Aug. 1997) shows seasonal subsidence of about 30 mm near San Jose and corresponds to about a 10-m decline in water levels.



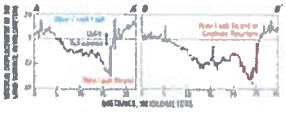
Strand5–10 millimeters of multi-year uplift. The lack of subsidence between 1992–97 indicates that the seasonal subsidence was temporary (Galloway and others, 1999).



30 millimeters of seasonal subsidence. The ***A–A'*** cross section on the 8-month interferogram shows that the location of the steep subsidence gradient is offset about 1 km from the mapped trace of the Silver Creek Fault.

InSAR Finds New Fault Strand

The ***B–B'*** cross section (right) shows a steep subsidence gradient in an area where there are no mapped faults, revealing a previously
unrecognized structure or fault that also acts as a ground-water flow barrier. Mapping faults and geologic structures in an aquifer system is crucial for understanding ground-water flow, regional subsidence patterns, and potential seismic hazards.



LAS VEGAS VALLEY, NEVADA

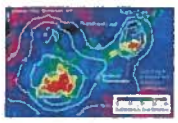
200 millimeters of multi-year subsidence. A 5-year interferogram (Apr. 1992– Dec. 1997) (left) shows the full extent of the aquifer system and shows 190 mm of localized subsidence in a distinct bowl in the northwest part of the valley.

This well in Las Vegas Valley now extends about 2 meters above the land surface because of subsidence.

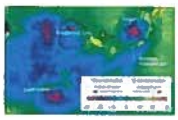
InSAR determined the spatial extent of subsidence and how the subsidence might affect urban development. Las Vegas Valley is one of the fastest growing areas in the Nation. Since the 1950s, ground-water pumping has resulted in water-level declines of more than 100 m. These large water-level declines have resulted in nearly 2 m of subsidence, which has caused fissures and damaged wells. A 5-year interferogram (Apr. 1992– Dec. 1997) shows the full extent of the aquifer system and shows 190 mm of localized subsidence in a distinct bowl in the northwest part of the valley. The southeastern margin of the bowl is structurally controlled by the Eglington Fault.

A borehole extensometer (an instrument to measure aquifer-system compaction) was constructed in 1995 to precisely measure the subsidence. However, interferograms show that the maximum subsidence is located north of the extensometer site. If the InSAR imagery were available prior to extensometer construction, it may have been constructed in the area of maximum subsidence. While extensometers measure subsidence at only one location, InSAR measures subsidence at thousands of points.

ANTELOPE VALLEY, CALIFORNIA



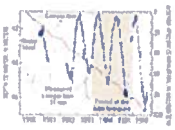
InSAR and computer model roughly agree... During 1993–95, InSAR measured about 40 mm of subsidence at an extensometer site in the Antelope Valley; the extensometer measured 31 mm.



but residuals show added complexities. A residuals image shows that although the computer model simulated the subsidence reasonably well, it overestimated the subsidence in some areas.

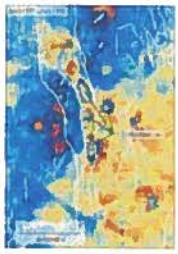
InSAR provides new techniques to calibrate scientific instrumentation and develop sophisticated ground-water models. Extensive pumping in Antelope Valley since the 1940s

contributed to nearly 2 m of subsidence in Lancaster and more than 1 m south of Rogers Lake, Edwards Air Force Base. During 1993–95, InSAR measured about 40 mm of subsidence at an extensometer site in the Antelope Valley (upper left); the extensometer measured 31 mm. This disparity indicates that 20% of the subsidence occurred below the maximum depth of the extensometer (256 m). InSAR imagery was also used to evaluate a computer model that simulated land subsidence and ground-water flow. A residuals image (upper right) (InSAR observations subtracted from the modeled subsidence) shows that although the computer model simulated the subsidence reasonably well, it overestimated the subsidence in some areas. These results highlight the potential use of InSAR measurement to better constrain computer models of land subsidence (Galloway and others, 1998; Hoffmann and others, 2003).

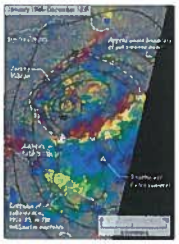


This disparity indicates that 20% of the subsidence occurred below the maximum depth of the extensometer (256 m).

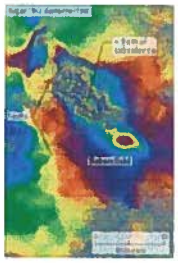
Additional examples of human-induced surface deformation measured with InSAR



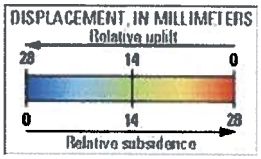
Yucca Flat Nuclear Test Site, Nevada.
InSAR monitoring shows fault-controlled deformation from the dissipation of residual ground-water pore-fluid pressure changes in response to past underground nuclear weapons testing.



NW Suburban Houston, Texas.
InSAR monitoring shows ground-water subsidence continues to follow historical patterns in the northwest Houston area.



Bakersfield, California.
InSAR imagery shows a complex subsidence pattern associated with hydrocarbon extraction north of Bakersfield and shows that faults play a vital role in subsidence.



Advantages of InSAR

InSAR is ideally suited to measure the spatial extent and magnitude of surface deformation associated with fluid extraction and natural hazards (earthquakes, volcanoes, landslides). It is often less expensive than obtaining sparse point measurements from labor-intensive spirit-leveling and Global Positioning System (GPS) surveys and can provide millions of data points in a region about 10,000 square kilometers. By identifying specific areas of deformation within broader regions of interest, InSAR imagery can also be used to better position specialized instrumentation (such as extensometers, GPS networks, and leveling lines) designed to precisely measure and monitor surface deformation over limited areas.

Land subsidence measuring techniques

METHOD	Component displacement	Resolution[1] (millimeters)	Spatial density[2] (samples/survey	Spatial scale (elements)

Spirit level	vertical	0.1-1	10-100	line-network
Geoimeter	horizontal	1	10-100	line-network
Borehole extensometer	vertical	0.01-0.1	1-3	point
Horizontal extensometer:				
Tape	horizontal	0.3	1-10	line-array
Invar wire	horizontal	0.0001	1	line
Quartz tube	horizontal	0.00001	1	line
GPS	vertical horizontal	20 5	10-100	network
InSAR	range	5-10	100,000-10,000,000	map pixel[3]

[1]Measurement resolution attainable under optimum conditions. Values are given in metric units to conform with standard geodetic guidelines. (One inch is equal to 25.4 millimeters and 1 foot is equal to 304.8 millimeters.)

[2]Number of measurements generally attainable under good conditions to define the spatial extent of land subsi-dence at the scale of the survey.

[3]A pixel on an InSAR displacement map is typically 30 to 90 square meters on the ground.

Radar data used to produce the interferograms shown in this fact sheet were obtained from the European Space Agency, distributed through Eurimage Corporation for the purposes of research and development.

- G.W. Bawden, M. Sneed, S.V. Stork, and D.L. Galloway

References

Amelung, F., Galloway, D.L., Bell, J.W., Zebker, H.A., and Laczniak, R.J., 1999, Sensing the ups and downs of Las Vegas—InSAR reveals structural control of land subsidence and aquifer-system deformation: Geology, v. 27, p. 483486.

Bawden, G.W., Thatcher, W., Stein, R.S., Hudnut, K.W., and Peltzer, G., 2001, Tectonic contraction across Los Angeles after removal of groundwater pumping effects: Nature, v. 412, p. 812815.

Catchings, R.D., Goldman, M.R., Gandhok, G., Rymer, M.J., and Underwood, D.H., 2000, Seismic imaging evidence for faulting across the northwestern projection of the Silver Creek Fault, San Jose, California: U.S. Geological Survey Open File Report 00-0125, 29 p.

Galloway, D.L., Hudnut, K.W., Ingebritsen, S.E., Phillips, S.P., Peltzer, G., Rogez, F., and Rosen, P.A., 1998, Detection of aquifer system compaction and land subsidence using interferometric synthetic aperture radar, Antelope Valley, Mojave Desert, California: Water Resources Research, v. 34, p. 2,573–2,585.

Galloway, D.L., Jones, D.R., and Ingebritsen, S.E., 1999, Land subsidence in the United States: U.S. Geological Survey Circular 1182, 175 p.

Galloway, D.L., Jones, D.R., and Ingebritsen, S.E., 2000, Measuring land subsidence from space: U.S. Geological Survey Fact Sheet 051–00, 4 p.

Hoffmann, J., Galloway, D.L., Zebker, H.A., 2003, Inverse modeling of interbed storage parameters using land subsidence observations, Antelope Valley, California: Water Resources Research, v. 39, no. 2, SBH 5.

For additional information on InSAR measured surface deformation, please contact:

Gerald Bawden (gbawden@usgs.gov)
U.S. Geological Survey—Placer Hall
6000 J Street
Sacramento, California 95819–6129

http://ca.water.usgs.gov/insar

http://quake.wr.usgs.gov/research/deformation/modeling/socal/la.html

---

Download the report (PDF, 1.1 mb)

Document Accessibility: Adobe Systems Incorporated has information about PDFs and the visually impaired. This information provides tools to help make PDF files accessible. These tools convert Adobe PDF documents into HTML or ASCII text, which then can be read by a number of common screen-reading programs that synthesize text as audible speech. In addition, an accessible version of Acrobat Reader 5.0 for Windows (English only), which contains support for screen readers, is available. These tools and the accessible reader may be obtained free from Adobe at **Adobe Access**.

Send questions or comments about this report to the author, Gerald Bawden (**gbawden@usgs.gov**) 916.278.3131.

EXHIBIT 3

June 15, 2004

Growers Are Returning to L.A. County

■ A report finds the region, reversing years of urbanization, added nearly 3,600 acres of farm specialty vegetables.

By Daryl Kelley and Janet Wilson, Times Staff Writers

After decades in which cropland in Los Angeles County was used mostly to grow housing subdivisions, a new state report shows that farming is making a surprising comeback, driven, in part, by increased growing of specialty crops.

The increased farming of baby carrots, organic onions, potatoes and parsnips in the Antelope Valley near Lancaster was the most unexpected news in a new report on changes in Southern California land use, state officials said Monday.

"It's heartening and interesting to see this uptick in Los Angeles County," said Darryl Young, director of the State Department of Conservation. "It's encouraging that high-value specialty crops are being grown close to their market."

Ben Faber, a farm advisor with UC Cooperative Extension in Ventura, said that over the long-term, specialty farmers will continue to have a place in Southern California.

"If you are in Riverside, if you are in San Bernardino, if you are in Antelope Valley or Ventura County, you are in the right place at the right time as a farmer.... You're close enough to the consumer to deliver fresh produce 12 months a year," he said. "L.A. has a huge mouth and a huge belly, and we are always looking for something new."

From 2000 to the end of 2002, Los Angeles County added nearly 3,600

Photo:

Planting
(Stepher

Tending
(Stepher

Emerge
(Stepher

Times

Transien
Slayings

A Bumpe
Homes

O.C. Pric
Resume

Military t
Gas Fac

Panels V
LAX

Environment
Food
Health
Highway 1
Home
Kids' Reading Room
Magazine
Obituaries
Outdoors
Real Estate
Religion
Science & Medicine
Style & Culture
Sunday Opinion
Technology
Times Poll
Corrections

Editions
Print Edition
National (PDF)
Wireless

Extras
College Connection
Sweepstakes
Crossword
Horoscope
Lottery
Multimedia
Traffic
Weather
Week In Focus

Archives
Enter Keyword(s):
go
Detailed Search
SITE MAP

Los Angeles Times
HOME DELIVERY
• Subscribe
• Manage My Account
• Gift Subscription
• College Discount
• Mail Subscriptions

IN THE COMMUNITY
• Times In Education
• Reading by 9
• LA Times Books
• Student Journalism
• LA Times Family Fund
• Times-Mirror Foundation
• LA Times Events

MEDIA CENTER CLICK HERE
About The Times

PLACE
classifieds and more
• Careers
• Cars
• Homes
• Rentals
• Newspaper Ads
• Grocery Coupons
• Personals
• Times Guides
• Recycler.com

Partners

acres of prime cropland and produced the county's highest level of farming activity since the state land-use mapping began in 1984, the report said. Before the postwar population boom, the county was the largest producer of farm crops in the United States.

The new report on five counties in Southern California is one in a series set for release this year as part of the state Farmland Mapping and Monitoring Program, which documents land use on about 46 million acres of public and private land every two years.

The Inland Empire, the state's fastest-growing region for more than a decade, continued its breakneck conversion of agricultural and vacant land to urban uses, according to the study.

Riverside and San Bernardino counties, which have changed more than any other area in California since 1990, converted 20,000 acres of land to urban uses from 2000-02 as Southern California continued to fuel the state's population growth, the state reported.

"The Inland Empire ... is seeing growth pressure that has been unprecedented based on the demand for housing," Young said.

But if the trends in the Inland Empire were predictable, Los Angeles County's small shift back to farming was not, state officials said.

"This was a surprise," said Molly A. Penberth, manager of the mapping program. apparently a singular situation."

She said Los Angeles County's irrigated cropland increased by 3,600 acres to 34,2 of 2002, the highest total since 41,000 acres were in production two decades ago.

Farming in the Antelope Valley dropped sharply in the early 1980s, she said, beca water levels fell, making it too expensive to raise crops. But now the farmers are

"Everything's a function of the crop," she said. "Specialty crop value is higher, so more."

Bakersfield farmer Bob Grimm helped create that trend by leasing fallow fields a Lancaster in recent years to grow about 2,500 acres of carrots, including the Bunr miniatures now popular as snacks.

Grimm, who farms more than 3,500 acres in the Antelope Valley, said the region degree difference in temperature between daytime and nighttime that carrots need drying up in the summer.

"It's kind of a unique situation," Grimm said. "It's a higher elevation, so it doesn't Kern County. Farmers are just trying to find a niche so they can survive."

On one of Grimm's Lancaster farms Monday, manager David Rizzo said his com also moving into the Antelope Valley. "More potato growers from Bakersfield ar here," he said.

Small farmers in the Inland Empire are also switching to carrots and other special make a living.

In Riverside County, long an agricultural powerhouse, there has been surprising g certain niche farm products, especially in the Coachella Valley, said Steve Pastor, director of the Riverside Farm Bureau. "Baby carrots are very popular and Orient are very popular on a smaller scale, too," he said.

But that sort of agriculture is often only a holding action as growth sweeps towar

Transformation of Riverside and San Bernardino counties from an agricultural re sprawling megalopolis is emblematic of the overall change in California since W

Together, those two counties accounted for nearly 22% of all farm and vacant lan during the 1990s, with Riverside County alone accounting for 14%. And the story for 2000-02, except San Bernardino County surpassed Riverside County in urban

"It's not really a surprise that our farmlands are being converted into homes, beca more areas to build homes in Orange and Los Angeles counties," said Rachael Sc San Bernardino County Farm Bureau. "There's really no choice in this area ... the a lot more for houses."

The two counties accounted for 84% of the nearly 43,000 acres of grazing and cr during those two years in a five-county region including Ventura, Orange and Lo counties. San Diego County was not counted because mapping is not yet complet Empire also accounted for 78% of the 25,500 acres added to the region's cities. S County alone accounted for more than half of the region's lost agricultural land ar its urbanization.

From 2000 to 2002, San Bernardino County took more than 23,000 acres of agric mostly grazing land — out of production, compared with about 13,000 in Riversi

About 3,300 acres of agricultural land were lost in Orange County and about 2,00 County. San Bernardino County added about 12,000 acres of land to cities, while added about 8,000, Orange County added about 4,600 and Ventura County added

Prospects for the future also reflect escalating growth: About 44,000 agricultural Riverside County are slated for development, while jurisdictions in San Bernardi report withdrawal of 15,000 acres from agriculture, possibly for future developm

Officially, Los Angeles County's urban areas did not grow at all during 2000-02, reflected statistical adjustments prompted by more detailed satellite mapping, not officials said.

The purpose of the mapping program is not to oppose growth, but to provide info cities and counties better plan for growth, Young said.

"We don't have a problem with lesser-quality farmland being lost to legitimate de said. "We do have a problem with losing productive land that is necessary from a standpoint, so we don't have to rely on foreign sources."

EXHIBIT 4

RESUME

Joseph C. Scalmanini

Specialization:

Forty years of practice in groundwater development and management, and oil and gas production. Assessments of groundwater resources and implementation of groundwater basin management in various areas of California; groundwater development and management encompassing well design, construction, operation, and maintenance; groundwater monitoring as part of basin management and as part of groundwater contamination investigations; artificial groundwater recharge facilities and practices; injection of industrial waste water; utilization of brackish ground water for industrial water supply and cooling applications.

Professional Registration:

Registered Civil Engineer, California, CE 28233

Academic Degrees:

M.E. Civil Engineering, University of California, Davis, CA	1984
B.S. Mechanical Engineering, University of Santa Clara, Santa Clara, CA	1967

Professional Experience:

Luhdorff and Scalmanini, Consulting Engineers, Woodland, CA	
President	
Principal Partner	2004 - Present
Partner	1989 - 2004
	1980 - 1989
University of California, Davis, Davis, CA	
Associate Development Engineer	1973 - 1979
Shell Oil Company	
Mechanical and Facilities Engineer	1967 - 1973

Representative Professional Assignments:

Consultant to water districts and utilities, municipalities, corporate and individual farming interests, corporate and private industry, and other engineering firms on groundwater development, utilization and management, including preparation and implementation of AB 3030 and other groundwater management plans, and plans for supplemental water supply and conjunctive use management. Consultation with public agencies, corporate and private concerns regarding groundwater contamination, its identification, monitoring, and management. Consultation with legal profession on technical aspects of groundwater development and utilization, including all aspects of groundwater basin yield and management, well design and construction, and application of pumping equipment.

Mr. Scalmanini directed and conducted a ground-water basin assessment in the Santa Maria Valley, including developing plans for conjunctive use of imported SWP water, recaptured return flows and increased artificial recharge of natural stream flow. He directed the development of an alternative basin management plan for diversion of stream flow to replace coastal groundwater pumping and halt historical seawater intrusion in the Salinas Valley. He worked on developing a ground-water substitution program for Natomas Central Mutual Water Company on 50,000 acres of primarily agricultural land in Sacramento and Sutter Counties, and authored a Ground-Water Management Plan for that area.

Mr. Scalmanini serves as the court-appointed technical advisor to the Special Referee in the Chino Basin for development and implementation of an Optimum Basin Management Program to preserve and potentially increase the safe yield of the aquifer system, incorporate conjunctive use within storage limits in the aquifer, and make beneficial use of degraded water quality in the lower end of the basin by desalting ground water for future domestic water supply.

Mr. Scalmanini is directing ongoing engineering and hydrogeological analyses of local groundwater and imported State Water Project water supplies in the Upper Santa Clara River Area (Santa Clarita Valley) in Los Angeles County, including the preparation of annual water reports over the last eight years. As part of that work, Mr. Scalmanini has recently developed a cooperative technical program to integrate water resource analysis with the adjacent downstream basins, and is the primary author of the AB3030 Ground-Water Management Plan that has been adopted for the basin. He also prepared the amended Urban Water Management Plan for the State Water Contractor and all the water purveyors in the Valley to specifically address the adequacy of groundwater supplies in the wake of perchlorate contamination and plans to contain contaminant migration while restoring contaminated wells to water supply service through the installation of wellhead treatment.

Mr. Scalmanini also currently serves as Chairman of the Ground-Water Committee that is developing and analyzing the potential for development of additional ground water throughout the Sacramento Valley as part of the Settlement Agreement reached in Phase 8 of the SWRCB Bay-Delta Water Rights Hearings.

Professional Affiliations:

American Society of Civil Engineers
- Ground Water Committee, Irrigation and Drainage Division
- Water Resources Planning Committee, Water Resources Planning and Management Division

National Ground Water Association
- Association of Ground Water Scientists and Engineers

American Water Works Association
National Society of Professional Engineers
California Groundwater Association
Groundwater Resources Association of California

Public Service:

- **Yolo County Aggregate Resources Committee (1975-79)**, Alternate delegate, hydrologist - analysis of impacts and development of management plans for extraction of aggregate from Cache Creek basin.

- **California Tenth Biennial Conference on Ground Water (1975)**, Member, Planning Committee

- **Chancellor's Campus (Univ. of Calif., Davis) Water Committee (1976-78)**, Staff Engineer - analysis of water supplies and uses, projection of requirements, development of conservation and management plans.

- **City of Davis Water Planning and Conservation Committee (1977-79)**, Chairman - analysis of water supplies and uses, projection of requirements, consideration of alternative supplies, development of conservation and management plans.
- **Yolo County Water Resources Task Force (1979)**, Member - development of county-wide master water plan.
- **Pacific Gas and Electric Co. ACT^2 Irrigation Pumping Demonstration Project (1992)**, Technical Advisor
- **Association of California Water Agencies (1994-1996)**, Member - Groundwater Committee
- **Cache Creek Conservancy, (2000-2002)**, Director

Teaching Activities:

Course Coordinator and Instructor University Extension Courses, University of California, Davis:

Concepts of Ground Water Management (1974, 1976, 1978, 1981)
Legal and Policy Considerations in Ground Water Management (1975, 1976, 1980)
Water Supply Wells and Pumps (1977, 1978,1981, 1983, 1985, 1986)
Groundwater Law, Hydrology and Management (2001, 2002, 2003, 2004, 2005, 2006)

Instructor, University of California, Davis, Water Science 198, Introductory Hydraulics (1977, 1978, 1979)

Lecturer, University of California, Davis, Water Science 2, 140, 160; Ecology 230; Civil Engineering / Geology 175 (1975 - 1979)

Lecturer on Aquifer Characteristics, Well Hydraulics, and Groundwater Development, in Technical Training Classes at the U.S. Army Corps of Engineers' Hydraulic Engineering Center, Davis, CA.

Publications and Presentations:

Scott, V.H. and J.C. Scalmanini, **Water Wells and Pumps: Their Design, Construction, Operation, and Maintenance**, University of California Division of Agricultural Sciences Bulletin No. 1889, 1977.

Helweg, O.J., Scott, V.H., and J.C. Scalmanini, **Improving Well and Pump Efficiency**, American Water Works Association, 1983.

Scalmanini, J.C., and Scott V.H., **Design and Operational Criteria for Artificial Groundwater Recharge Facilities**, Water Science and Engineering Paper No. 2009, University of California, Davis, 1979.

Scalmanini, J.C., Scott, V.H., and O.J. Helweg, **Energy and Efficiency in Wells and Pumps**, presented at Twelfth Biennial Ground Water Conference, 1979.

Scalmanini, J.C., Johnson Jr., R.M., and E.E. Luhdorff Jr., **Development of a Groundwater Monitoring Program as a Basis for Coastal Groundwater Basin Management**, presented at the Fall Conference, American Water Works Association, CA-NV Section, 1983.

Scalmanini, J.C., **3030 Hindsight and 2020 Foresight, Actual Groundwater Management Experience Over the Last 15 Years, Soquel Creek Water District**, presented at the Association of California Water Agencies' Groundwater Management Conference, March 1994.

Scalmanini, J.C., **Legal and Technical Issues Related to Surface Water and Groundwater Interaction**, presented at the Groundwater Resources Association's California Ground Water & Efficient Usage for the Year 2000 and Beyond, October 1998.

Scalmanini, J.C., A. Schneider, and V. Cahill (panel presentation), **Groundwater Classification: Is the State Water Resources Control Board's Jurisdiction Over Ground Water Changing?**, presented at the Water Education Foundation's 2000 Update on Water Law and Policy, July 2000.

Scalmanini, J.C., **What the Heck's a Sub-Basin? Defining Basins and Sub-Basins**, presented at the Association of California Water Agencies' Groundwater Management: Will CalFed Help or Hinder Workshop, November 2000.

Scalmanini, J.C., **"Groundwater Law, Policy and Science: What can Be Done About The Disconnect"**, presented at the Water Education Foundation's 2005 Water Law and Policy Briefing, San Diego, July 2005.

EXHIBIT 5

Assignment

Chairman

Education

M.S., Systems Engineering, University of California, Los Angeles, 1976

B.S., Engineering, University of California, Los Angeles, 1975

Registrations

Professional Civil Engineer, California C32331

Mr. Wildermuth has 35 years of experience in water resources engineering and planning, including surface and groundwater hydrology and hydraulics, water resources planning, surface water and groundwater computer simulation modeling, water rights, surface water and groundwater quality, flood plain management, municipal recycled water discharge impacts in receiving waters, and water supply and flood control facility design. Mr. Wildermuth has extensive expertise in the development of water resource management plans for groundwater basins and watersheds in Southern California, and he has provided expert witness testimonials and opinions for litigation support and mediation in several important cases.

Prior to starting his own company, Mr. Wildermuth held responsible positions at major environmental consulting firms, including James M. Montgomery, Consulting Engineers, Inc., where he was a principal engineer from 1987 to 1990; and Camp Dresser and McKee, Inc. from 1980 to 1987. In 1990, Mr. Wildermuth started his own company to focus specifically on water resources management studies and the application of state-of-the-art technology to water resources projects. The company was incorporated as Wildermuth Environmental, Inc. in 1998 and now employs over 20 professionals.

Mr. Wildermuth received a B.S. in Engineering from the University of California at Los Angeles in 1975 and an M.S. in Water Resources Engineering from the University of California at Los Angeles in 1976. He is a member of the National Ground Water Association, the American Water Resources Association, and the Groundwater Resources Association of California. Mr. Wildermuth is a registered professional civil engineer in the State of California.

Selected Project Experience

Wildermuth Environmental, Inc. - 1990 to Present

2010 Recharge Master Plan Update, Chino Basin Watermaster

Mr. Wildermuth served as the project manager, facilitator, and lead technical analyst for the development of the 2010 Recharge Master Plan Update. This investigation was ordered by the Court and had a Court imposed deadline for completion. Mr. Wildermuth designed the investigation and the report, which were approved by stakeholders and submitted to the Court for approval. The Court subsequently approved Mr. Wildermuth's investigation plan and scope. Mr. Wildermuth managed the overall execution of the investigation, which included three other consultants. Mr. Wildermuth lead nine workshops over a 15-month period and completed the final report one month prior to the Court appointed deadline. The product of this work has been highly praised for its completeness, technical sophistication, and the transparent process in which the work was conducted. Draft sections of the report were posted on the project website, which was developed and maintained by WEI. State-of-the-art surface water models were used to estimate stormwater recharge in spreading basins and in localized recharge facilities that will be constructed to comply with the 2010 MS4 permits. The investigation also determined the existing recharge capacity for imported and recycled waters and the future recharge capacity requirements. The report included conclusions and recommendations for future recharge projects and future supplemental water supply sources, including non-Metropolitan imported water supplies. Currently, Watermaster and the stakeholders are preparing to implement the recommendations of the 2010 Recharge Master Plan Update.

2009 Production Optimization and Evaluation of the Peace II Project Description, Chino Basin Watermaster

In 2007, WEI conducted the Peace II Agreement engineering work for the Watermaster. This work considered future groundwater production projections

through 2060, the effective period of the Peace Agreement. This work concluded that the projected groundwater production patterns of the stakeholders coupled with the existing recharge assets available to Watermaster would lead to unacceptable groundwater depressions in the Chino Basin. Part of the reason for these depressions is the uncoordinated siting and pumping of wells by the stakeholders. WEI examined the projected groundwater production patterns and associated recharge plans to determine if changes could be made in the siting of future wells and if production could be redistributed among wells to reduce the magnitude of changes in groundwater levels. WEI investigated the use of different groundwater recharge schemes to balance groundwater production and recharge in the basin. WEI applied state-of-the-art groundwater models (developed by WEI for Watermaster in 2007) iteratively to optimize groundwater production and recharge patterns in the basin. These revised groundwater production and recharge patterns were then incorporated into an analysis of modifications to the Optimum Basin Management Program, which are required to expand the desalter production facilities and to meet other requirements of the OBMP. Under Mr. Wildermuth's direction, WEI staff used a series of groundwater models to estimate future groundwater elevations across the basin, groundwater elevation time histories at every municipal and many private wells, subsidence potential, impacts on riparian vegetation, impacts to stream flow, and the impact on the transport of several contaminant plumes. The resulting work was accepted by Watermaster and the Inland Empire Utilities Agency and was subsequently incorporated into the *2010 Peace II Subsequent Environmental Impact Report.*

Optimum Basin Management Plan (OBMP), Chino Basin Watermaster

Mr. Wildermuth serves as the project manager and lead technical analyst, providing as-needed engineering services to the Chino Basin Watermaster. Activities include the review of water rights applications, storage losses from over-year groundwater storage accounts, and groundwater monitoring; estimating salt offset credits and the replenishment volumes required for proposed groundwater treatment project(s); coordinating with the San Bernardino County Flood Control District and Conservation District regarding recharge and with the Metropolitan Water District regarding water rates and seasonal storage service.

As the project manager, Mr. Wildermuth architected and implemented the scope of work for the Chino Basin OBMP, which was court-ordered by the San Bernardino Superior Court. Specifically, Mr. Wildermuth developed the process used in developing the OBMP scope of work and authored the engineering and institutional scopes of work. WEI, under the direction of Mr. Wildermuth, completed engineering studies and developed the resulting management plan. The engineering scope of work included the problem definition, the development of goals, developing and analyzing management components, the integration of management components, financial analysis, and the development of an implementation strategy.

Optimum Basin Management Plan Implementation, Chino Basin Watermaster

Mr. Wildermuth is the project manager for WEI's involvement in the implementation of the OBMP. WEI's efforts include large-scale surface water discharge and water quality (20 stations), groundwater level and water quality (600 wells), groundwater recharge, InSAR, and extensometer monitoring programs. WEI also provides oversight on well siting and related impact analyses for new desalter wells.

Chino Basin Dry-Year Yield Program, Chino Basin Watermaster

Mr. Wildermuth serves as the project manager for WEI's involvement in the development of the Chino Basin Dry-Year Yield (DYY) Program. WEI assisted the Watermaster and the Inland Empire Utilities Agency in the development of the 100,000 acre-ft DYY program. WEI completed a thorough reassessment of the hydrogeologic conditions of the Chino Basin and assisted other consultants with facility planning, including well siting, water quality evaluations, and specialized

mapping. WEI developed and applied a sophisticated set of surface and ground water models to evaluate the DYY's impacts on groundwater levels, contaminant plume movement, and surface and ground water interaction in the southern part of the basin. Currently, WEI is expanding this analysis to investigate groundwater storage programs of up to 500,000 acre-ft.

Groundwater Quality Monitoring Program, Chino Basin Watermaster

Mr. Wildermuth conducted a groundwater quality monitoring program for the Chino Basin Watermaster, which involved the collection of about 70 water samples in the field and about 200 samples from cooperating agencies. This project started in 1990 and continued through 1996. Subsequently, WEI expanded this program to about 600 wells as part of the Chino Basin OBMP

Preparation of Problem Statement and Estimate of Recharge, Antelope Valley Groundwater Adjudication Process, Lagerlof and Senecal

Mr. Wildermuth participated with a panel of experts to estimate the natural recharge in the Antelope Valley adjudication area. Mr. Wildermuth's responsibilities were to estimate the change in groundwater storage during the base period and use the change in storage estimates with production estimates and artificial recharge estimates to compute natural recharge. Mr. Wildermuth and WEI staff exhaustively analyzed groundwater level records and well completion reports to develop a comprehensive groundwater storage change model. Mr. Wildermuth's work was reviewed and approved by the panel of experts and included in their report.

Recharge Master Plan, Chino Basin Water Conservation District, Chino Basin Watermaster, and the San Bernardino County Flood Control District

Mr. Wildermuth was the project manager and lead technical analyst for the recharge master plan of the Chino Basin. The objectives of the master plan were to develop a plan of recharge to meet future groundwater replenishment requirements—utilizing storm water, recycled water, and imported water—and to evaluate the change in groundwater recharge caused by the construction of San Sevaine Creek and East Etiwanda Creek flood control improvements. This study utilized a daily runoff model to estimate the magnitude and temporal distribution of storm water recharge.

Under the master plan, recycled water and imported water are recharged during periods that ensure minimum conflict with storm water recharge. New facilities and modifications to existing facilities were recommended. A second phase of the recharge master plan was completed as part of the Chino Basin OBMP, in which WEI collaborated with the Black and Veatch Corporation. Upon completion, the Chino Basin Watermaster, the Inland Empire Utilities Agency, the Chino Basin Water Conservation District began converting 19 flood retention basins to spreading basins and began building two new recharge facilities. The total cost of the recharge improvements was about $45 million.

Analyses of Recharge and Recharge Facilities, Chino Basin Water Conservation District

Mr. Wildermuth conducted studies to determine the annual average recharge at the Chino Basin Water Conservation District's storm water recharge facilities. Daily flow simulation models were developed and applied for a 41-year period. The results of this study are being used to improve operations and maintenance schedules at existing facilities. Mr. Wildermuth also developed a monitoring program to determine changes in percolation rates and subsequent maintenance practices to restore maximum percolation rates. A key component of the monitoring program was the installation of digital water level sensors with integral data loggers to measure basin water levels every ten minutes. WEI developed the analytical methods and software to convert these observations into estimates of basin inflow, outlet discharge, evaporation losses, and basin recharge.

Nitrogen / Total Dissolved Solids (N/TDS) Task Force, Santa Ana Watershed Project Authority

Mr. Wildermuth was the architect and co-project leader for a multiphase comprehensive evaluation of the fate of nitrogen and TDS in the Santa Ana Watershed. In this investigation, the Basin Plan objectives for TDS and nitrogen were reset—based on the best available data and scientific methods—and new procedures were developed to assess the availability of assimilative capacity. Phase one involved the development of procedures for evaluating TDS and nitrogen impacts from recycling projects in the Santa Ana Watershed, a massive data collection and validation effort, watershed characterization, and an initial assessment of TDS and nitrogen loads to surface water and groundwater from municipal recycled water treatment plants and non-point sources.

Phase 2A involved delineating new basin/management zone boundaries, developing groundwater storage estimates for each management unit, estimating TDS and nitrogen statistics at wells, computing volume-weighted TDS and nitrate concentrations for the new basin/management zones, and completing a new wasteload allocation analysis for the Santa Ana River and selected tributaries.

Phase 2B involved the development and implementation of a sophisticated modeling system to evaluate the then current TDS and total inorganic nitrogen (TIN) wasteload allocations for municipal recycled water plants that discharge to the Santa Ana River and its tributaries. A daily stream flow simulation model was used to estimate TDS and TIN concentrations in the Santa Ana River and its tributaries in response to recycled water discharges, storm water runoff, non-tributary discharges, and groundwater interaction.

San Timoteo Watershed Management Program, San Timoteo Watershed Management Authority

Mr. Wildermuth was the project manager and lead technical analyst in the development of a watershed management program for the San Timoteo Watershed. This effort involved designing the investigation; conducting a stakeholder process; a baseline water resource inventory and characterization; establishing the issues, needs, and wants of the stakeholders; articulating the program goals and impediments to those goals; the development of "program elements" for a watershed-scale management program to remove impediments to those goals; and the development of an implementation plan and cost estimates.

The resulting water resources management plan contained a program to expand the water supply from its current level of about 32,000 acre-ft/yr to 99,000 acre-ft/yr. WEI is currently assisting the STWMA in implementing the second phase of the program.

Beaumont Basin Adjudication, San Timoteo Watershed Management Authority:

Mr. Wildermuth provided engineering and hydrogeologic support services to the Cities of Banning and Beaumont, the Beaumont Cherry Valley Water District, the South Mesa Water Company, the Yucaipa Valley Water District, and other groundwater pumpers in the Beaumont Basin adjudication. Mr. Wildermuth developed the groundwater management concepts that were incorporated into the physical solution.

Hot Creek Fish Hatchery Spring Flow, Mammoth Community Water District

Mr. Wildermuth was the project manager and lead technical analyst for an investigation of groundwater pumping impacts on Hot Creek Fish Hatchery spring flow. This investigation, which was completed in 1995, showed that existinggroundwater production had negligible impacts on spring discharge. Subsequently, WEI reviewed newly obtained data for the 1995 through 2001 period,

verifying its 1995 findings and paving the way for increased groundwater production to support new development.

This work was revisited in 2003 due to concerns that increased groundwater production might impact springs in the Valentine reserve. Subsequent analyses by WEI demonstrated that no impacts would occur as a result of production.

Groundwater Management Plan, Eastern Municipal Water District

Mr. Wildermuth developed a groundwater management plan for the West San Jacinto Basin, consistent with the long-term water resource management goals of the Eastern Municipal Water District and agricultural water users. The plan was developed under California enacted groundwater management statutes (AB 3030) and was recently implemented. This plan received the Edmund G. Brown award from the State of California in 1995.

Menifee Basin Desalter, Eastern Municipal Water District

Mr. Wildermuth completed the design of a 3-mgd well field for the Menifee Basin Desalter, providing groundwater management consulting to the Eastern Municipal Water District.

Groundwater Modeling, Montgomery Watson (for the Santa Ana Watershed Project Authority)

Mr. Wildermuth provided hydrologic and groundwater-modeling services for the design of two 8-mgd well fields and a 12-mgd well field in the Chino Basin. These well fields were intended to feed the desalting facilities owned by the Santa Ana Watershed Project Authority. Mr. Wildermuth assisted the Chino Basin Watermaster in the development of replenishment sources for the Chino desalting facilities and in the determination of salt extraction credits for agricultural interests in the basin.

Various Projects, Montgomery Watson

Mr. Wildermuth, as a consultant to Montgomery Watson, provided water resources consulting and modeling services in the Chino, Colton, and Riverside Basins. In addition, Mr. Wildermuth directed and participated in the development of the most sophisticated groundwater model ever developed in the upper Santa Ana Basin.

Groundwater Contamination Superfund Site, Confidential Client

WEI conducted a study to determine the potential source(s) of a groundwater plume that contains volatile organic compounds (VOCs), primarily trichloroethene (TCE) and tetrachloroethene (PCE). Mr. Wildermuth was responsible for the development of groundwater flow and transport models to determine the source(s) of these contaminants and the approximate period of loading.

Surface and Groundwater Studies from Discharge of Recycled Water, City of San Bernardino Municipal Water Department

Mr. Wildermuth conducted numerous studies to evaluate receiving water impacts in surface water and groundwater from the City of San Bernardino's recycled water discharge to the Santa Ana River. These studies involved surface and ground water modeling to determine the nitrogen and TDS impacts of various recycled water discharge alternatives on surface water and the groundwater basins that are recharged by those surface waters.

Surface Water Modeling Studies, City of San Bernardino Municipal Water Department

Mr. Wildermuth conducted surface water modeling studies to estimate the discharge, TDS, and nitrogen impacts of various recycled water marketing alternatives proposed by the City of San Bernardino.

Water Use Audit and Water Resources Development, Rancho Mission Viejo

Mr. Wildermuth conducted a water use audit of Rancho Mission Viejo and developed a phased plan of study for the development of water resources for the Ranch as land is converted from agricultural to urban uses.

Preparation of Application to Divert Water, Rancho Mission Viejo

Mr. Wildermuth prepared an application to divert water by appropriation and the supporting environmental documentation. Impacts to downstream water users were evaluated and mitigation plans are being developed. Mr. Wildermuth is also involved in negotiating the sale of diverted water to local agencies.

Evaluation of Proposals, URS Consultants (for the Santa Ana Watershed Project Authority)

Mr. Wildermuth evaluated the impacts of various waste discharge proposals for the Western Riverside Regional recycled water plant on surface and groundwater resources in the upper Santa Ana Basin.

Saline Plume Management Alternatives, Kaiser Steel Resources

Mr. Wildermuth developed saline plume management alternatives in the Chino Basin for Kaiser Steel Resources. This work involved groundwater modeling and water quality sampling. Solutions included pump and treat alternatives and a salt-offset alternative.

In addition to developing the salt-offset alternative, Mr. Wildermuth assisted Kaiser in moving this solution through the regulatory process, saving Kaiser over $40 million.

Conjunctive Use Plan Study, Western Municipal Water District, San Bernardino Municipal Water District, City of San Bernardino, and Orange County Water District

Mr. Wildermuth is conducting a study to develop conjunctive use plans for the management of local, imported, and recycled water above Riverside Narrows.

Montgomery Watson (aka James M. Montgomery, Consulting Engineers [JMM]) – 1987 to 1990

Mr. Wildermuth served as the manager of Water Resources studies at JMM's Irvine office. Mr. Wildermuth was also the manager and lead-modeling specialist for the *TDS and Nitrogen Studies, Upper Santa Ana Watershed.* Responsibilities included the development of a comprehensive work plan and the modification, calibration, and use of the Santa Ana Basin Planning models to evaluate future TDS and nitrogen management plans. Mr. Wildermuth developed a series of models to simulate the fate of agricultural leachates in the vadose zone and the saturated zone for the 1900 through 2015 period and a software link between the river quality model (QUAL2E) and the Basin Planning models. Mr. Wildermuth participated in the development and evaluation of eight management plans.

Water Quality Management Plan, Western Municipal Water District, San Bernardino Municipal Water District, City of San Bernardino, and Orange County Water District

Mr. Wildermuth was the project manager for the development of a water quality management plan for the Colton and Riverside Groundwater Basins. Mr. Wildermuth developed a detailed work plan that focused on moving various water management entities towards consensus on a basin management plan. The study involved the use of groundwater flow and quality models and public participation.

Groundwater Mining Studies, Southern Nevada Water Management Study

Mr. Wildermuth was the lead-modeling specialist in the evaluation of the groundwater mining studies of the Rail Road Valley and California Wash Basins in Nevada.

Integration of Surface and Groundwater Models, Wyoming Attorney General

Mr. Wildermuth was the lead-modeling specialist for the integration of surface and ground water models of the North Platte River. The purpose of this project was to evaluate the effects of river depletions due to agriculture and to evaluate reservoir management plans.

Conjunctive use Study, City of Santa Barbara

Mr. Wildermuth was project manager and lead-modeling specialist for a conjunctive use study for the City of Santa Barbara. Mr. Wildermuth developed conjunctive use alternatives that involved recharging surface water from the Santa Ynez River (by injection and spreading), the injection of recycled water, and in-lieu recharge concepts. Mr. Wildermuth used groundwater models to evaluate the impacts of conjunctive use operations on groundwater.

Phase IV Groundwater Investigation, Kaiser Steel Resources

Mr. Wildermuth was the project manager of the Phase IV Groundwater Investigation at the Kaiser Steel Facility in Fontana, California. Mr. Wildermuth's role in this study was to develop remediation plans for two large plumes of degraded groundwater emanating from Kaiser. Mr. Wildermuth directed the study team's efforts, which included water quality sampling, drilling monitoring wells, and groundwater modeling and engineering studies.

QUAL2E Modeling Studies, Santa Ana River Dischargers Association

Mr. Wildermuth was involved in the review of the QUAL2E modeling studies performed by the Santa Ana Regional Water Quality Control Board. Mr. Wildermuth's responsibility in this study was to provide an independent review on behalf of the Santa Ana River Dischargers Association.

The key issue of this study was a determination of QUAL2E model reliability for establishing waste load allocations for point discharges with an emphasis on nitrogen species.

Camp Dresser & McKee, Inc. - 1980 to 1987

Metropolitan Water District of Southern California

Mr. Wildermuth was the project manager and lead analyst for the Chino Basin Groundwater Storage Program. Mr. Wildermuth's responsibilities included the development and implementation of state-of-the-art models for non-point source groundwater contamination and regional vadose zone modeling. The goal of this study was to estimate the long-term groundwater quality impacts of large-scale conjunctive use management programs.

TCE/DBCP investigation, Santa Ana Watershed Project Authority

Mr. Wildermuth was the project manager and lead analyst for a TCE/DBCP investigation in the Redlands area. Field studies were designed and implemented to estimate the then current TCE and DBCP conditions in the area, and a three-dimensional model was developed to predict the fate of TCE and DBCP under various management alternatives. Alternative mitigation measures were developed and evaluated.

Safe Yield and Groundwater Management Study, Cucamonga County Water District

Mr. Wildermuth was the project manager and lead analyst for a safe yield and groundwater management study for the Cucamonga Groundwater Basin. Mr. Wildermuth developed and calibrated a three-dimensional groundwater model to evaluate the impacts of artificial recharge, in-lieu recharge, and drought management programs. Mr. Wildermuth developed a detailed monthly hydrology of the Cucamonga Basin for use in safe yield estimates, groundwater model calibration, and water supply management.

Chino Basin Storage Program Feasibility Study, Department of Water Resources

Mr. Wildermuth was a project engineer for the Chino Basin Storage Program feasibility study. Responsibilities included an evaluation of the availability of surplus State Project water for conjunctive use and an evaluation of the correlation between local flood flows and surplus state project water.

Groundwater Modeling Study, Regional Water Quality Control Board

Mr. Wildermuth was a project engineer for the Santa Ana Regional Board groundwater modeling study of the 400,000-acre Upper Santa Ana Groundwater Basin. Responsibilities included a complete rewrite and calibration of the groundwater hydraulic and water quality codes. These models were used to investigate revisions to the Upper Santa Ana Basin Plan.

Water Flow and Demand Projection Study, City of Scottsdale

Mr. Wildermuth was a project engineer for a water demand and recycled water flow projection study for the City of Scottsdale. Various potential land use scenarios were analyzed to develop ultimate water demands and recycled water flows. Potential supplies included Central Arizona Project water, groundwater, and recycled water. Mr. Wildermuth developed a comprehensive and fully interactive computer model to conduct the analysis. The unit factors for indoor and outdoor water demand and the parameters defining waste flow were estimated by calibrating the computer model in a selected area of Scottsdale.

Groundwater Study, Occidental Chemical

Mr. Wildermuth was a project engineer for a detailed groundwater study of a toxic spill site near Lathrop, California for Occidental Chemical. This study involved the use of a two-dimensional, multi-layer groundwater model to predict pollutant movement with and without mitigation plans.

Shallow Groundwater Management Program, The Irvine Company

Mr. Wildermuth was the project manager for a study to develop a shallow groundwater management program for the Irvine Subbasin. This study resulted in a recommendation to control and/or mitigate shallow groundwater in an urbanized area.

Phase II Irvine Subbasin Study, The Irvine Company

Mr. Wildermuth was the project manager for the Phase II Irvine Subbasin study. This study focused on the development and analysis of water use plans for the Irvine Subbasin.

Flood Control Study, The Irvine Company

Mr. Wildermuth was the project manager and lead analyst for a flood control study of San Diego Creek in the City of Irvine. This study analyzed flood plain development and channel improvement alternatives.

Flood Control Planning Study, Army Corps of Engineers

Mr. Wildermuth was a project engineer for the flood control planning studies in support of the Central Arizona Water Control Study. Mr. Wildermuth performed the hydraulic design and cost estimates for reservoir flood outlets and levee systems on the Salt River and selected bridges on the Salt River. The impacts of sand and gravel operations within the Salt River were also evaluated.

Mr. Wildermuth also conducted numerous river-engineering studies in Southern California for the Army Corps of Engineers.

TetraTech - 1976 to 1980

HEC-1, HEC-2, & TR-20, Florida and Texas

Mr. Wildermuth was the project engineer for numerous flood insurance studies in Florida and Texas, specializing in the use of HEC-1, HEC-2, and TR-20. And, Mr. Wildermuth applied special-purpose dam flood wave routing models and the HEC-6 model for the hydrologic evaluation of flood safety for a nuclear power plant.

Los Angeles County Flood Control Department - 1974 to 1976

Studies for the Storm Drain System of the Laguna Regulating Basin

Mr. Wildermuth conducted design hydrology and hydraulic studies for a storm drain system and collaborated in a PMF spillway adequacy study for the Laguna Regulating Basin. This study included the development of runoff model parameters and the conceptual development of a serial reservoir flood routing computer model. Mr. Wildermuth also developed a semi-self-calibrating watershed model.

This conceptual model was used by the Hydraulic and Hydrology section for spillway studies in the late 1970s and early 1980s.

Affiliations / Organizations

American Water Resources Association

National Groundwater Association

Groundwater Resources Association

Vistage (formerly The Executive Committee)

EXHIBIT 6

WEST YOST ASSOCIATES
Consulting Engineers

Timothy J. Durbin, P.E.

Professional Registration

Professional Civil Engineer, 1972
California No. 20651

Professional Civil Engineer, 1989
Oregon No. 16497PE

Professional Engineer, 2009, Utah
No. 7534697-2202

Professional Civil Engineer, 2009,
Nevada No. 5015

Education

M.S., Civil Engineering, 1971
Stanford University, California

B.S., Civil Engineering, 1967
Stanford University, California

Professional Affiliations

American Society of Civil Engineers

American Geophysical Union

International Association of Hydrogeologist

National Groundwater Association

Publications

Durbin, T.J., 1974, Digital simulation of the effects of urbanization on runoff in the upper Santa Ana Valley, California: U.S. Geological Survey Water-Resources Investigations 41-73, 44 p.

Durbin, T.J., and Hardt, W.F., 1974, Hydrologic analysis of the Mojave River, California, using a mathematical model: U.S. Geological Survey Water-Resources Investigation 17-74, 50 p.

Durbin, T.J., 1975, Selected effects of suburban development on runoff in south-coastal California: in Proceedings of Second National Symposium on Urban Hydrology and Sediment Control, Lexington, Kentucky, p. 209-217.

Durbin, T.J., 1975, Ground-water hydrology of Garner Valley, San Jacinto Mountains, California – a mathematical analysis of recharge.

Tim Durbin has over 40 years of engineering experience and directs projects relating to groundwater and surface-water hydrology. Areas of expertise include design of multidisciplinary investigations, design of large-scale programs for the collection and interpretation of hydrologic data, and application of mathematical modeling to the analysis of problems in groundwater and surface-water hydrology.

Project Experience

Antelope Valley Groundwater Basin, California. The Antelope Valley groundwater basin is being adjudicated to address the overdraft within the basin. Developed criteria for defining the geographic extent of the groundwater. Developed estimate of natural recharge within adjudicated area. Work was done in support of litigation related to the adjudication. *City of Los Angeles, California.*

Seaside Groundwater Basin, California. The Seaside groundwater basin was adjudicated to balance the threat of seawater intrusion against the need for groundwater production to supply water to communities overlying the basin and within the Monterey Peninsula area. Developed a groundwater model to assess the relation between groundwater production and seawater intrusion. Work was done in support of litigation related to the adjudication. *California American Water, Monterey, California.*

Carbonate Aquifer System, Eastern Nevada. Analyzed the water-related impacts of groundwater development within the regional Carbonate Aquifer System that underlies central and eastern Nevada. The Southern Nevada Water Authority, which delivers water to Las Vegas and neighboring communities, is considering a project to import of groundwater from the Carbonate Aquifer. The analysis is focused on the possible impacts of the project on springs and phreatophytes. The work includes developing a groundwater model of the Carbonate Aquifer System. The model extends over an area covering 20,000 square miles. The work was done in support of hearings before the Nevada State Engineer on water-right applications by the Authority. The work was done also in support of the environmental compliance for the project. *Southern Nevada Water Authority, Las Vegas, Nevada.*

North Platte River, Wyoming and Nebraska. Analyzed the impacts of water-resource development and reservoir operations on water supply, streamflows, regional economics, and wildlife resources within the North Platte River Basin, Nebraska and Wyoming. Designed and directed a multi-disciplinary investigation involving agricultural engineers, groundwater hydrologists, surface-water hydrologists, agricultural economists, and environmental scientists in six different consulting firms. Work was done in support of litigation before the U.S. Supreme Court between the states of Nebraska and Wyoming. *Attorney General, Lincoln, Nebraska.*

Santa Monica Groundwater Basin, California. Analyzed the occurrence of MTBE in the Santa Monica groundwater basin, California. MTBE contamination from multiple sites has resulted in abandonment of public supply wells. An analysis of the sources and fate of MTBE within the Santa Monica groundwater basin is being conducted. Work was done within the context of State and Federal regulatory proceedings and litigation. *ConocoPhillips, Houston, Texas.*

and discharge: U.S. Geological Survey Open-File Report 75-305, 40 p.

Durbin, T.J., 1978a, Application of Gauss algorithm and Monte Carlo simulation to the identification of aquifer parameters: in Proceedings of 26th Annual American Society of Civil Engineers Hydraulic Division Specialty Conference, College Park, Maryland, p. 101-111.

Durbin, T.J., 1978b, Calibration of a mathematical model of the Antelope Valley ground-water basin, California: U.S. Geological Survey Water-Supply Paper 2046, 51 p.

Durbin, T.J., and Morgan, C.O., 1978, Well-response model of the confined area, Bunker Hill ground-water basin, San Bernardino County, California: U.S. Geological Survey Water-Resources Investigation 77-129, 39 p.

Arteaga, F.E., and Durbin, T.J., 1978, Development of a relation for steady-state pumping rate from Eagle Valley ground-water basin, Nevada: U.S. Geological Survey Open-File Report 79-261, 44 p.

Durbin, T.J., Kapple, G.W., and Freckleton, J.R., 1978, Two-dimensional and three-dimensional digital flow models of the Salinas Valley ground-water basin, California: U.S. Geological Survey Water-Resources Investigation 78-113, 134 p.

Van Denburgh, A.S., Seitz, H.R., Durbin, T.J., and Harrell, J.R., 1982, Proposed monitoring network for ground-water quality, Las Vegas Valley, Nevada: U.S. Geological Survey Open File Report 80-1286, 25 p.

Durbin, T.J., 1983, Application of Gauss algorithm and Monte Carlo simulation to the identification of aquifer parameters: U.S. Geological Survey Open-File Report 81-688, 26 p.

Katzer, T., Durbin, T.J., and Maurer, D.K., 1984, Water-resources appraisal of the Galena Creek basin, Washoe County, Nevada: U.S.

Special Master, California. Assigned as Special Master in a technical dispute between City of San Bernardino, California and the Regional Water Quality Control Board. The issue is the cause of a wastewater discharge to the Santa Ana River. The work was being done within the context of a State regulatory proceeding. *Regional Water Quality Control Board, Santa Ana, California.*

Bookman-Edmonston Engineering, Inc., Sacramento, California. Vice President (May 1998 – January 1999)

Directed projects related to groundwater and surface-water hydrology. Directed a staff of about 30 engineers, hydrologists, biologists, and geologists. Examples of such projects include:

Flooding, Arizona. Analyzed the causes of flooding near Phoenix, Arizona. Residential and commercial areas were flooded during a summer storm. The analysis involved assessing the effect of irrigation ditches and other facilities on the depth of flooding. The work was done in support of litigation.

Pipeline Break, California. Analyzed the impact of floodflows on the failure of a stream pipeline crossing within Thousand Oaks, California. A large sewer line failed owing to channel erosion during an extreme flood event. The recurrence interval of the erosion event was analyzed. The work was done within the context of a State regulatory proceeding.

Hydrologic Consultants, Inc., Sacramento, California. President (March 1989 – May 1998)

Directed projects related to groundwater and surface-water hydrology. Directed a staff of about 10 hydrologists, geologists, and engineers. Examples of such projects include:

Lake Tahoe, California and Nevada. Analyzed the impacts of urban development on the water quality of Lake Tahoe, California. Work involved the analysis of sediment and nutrient transport in streams tributary to the lake and nutrient cycling within the lake. Work was done for litigation.

Streamflow Temperature, California. Analyzed streamflow temperature within the Owens River, Owens Valley, California. Work was done to evaluate the hydrologic feasibility of reestablishing a fishery within the Owens River.

Groundwater Salinity, California. Analyzed the source and management of surface-water and groundwater salinity within the Lompoc groundwater basin. Work involved developing groundwater and surface-water models of the Santa Ynez River basin, including salinity models. Work was done in support of litigation.

Agricultural Drainage, California. Analyzed the causes and management of drainage water discharges from the Firebaugh and Central California Water District to natural watercourses and the San Joaquin River. Work was done in support of litigation.

FERC Re-licensing, California. Developed a model for the optimal use of ground water and surface water within the Turlock and Modesto Irrigation Districts for the benefit of water supply and environmental resources. Work was done in support of the FERC re-licensing of New Don Pedro Reservoir.

Seawater Intrusion, California. Analyzed seawater intrusion in the Salinas Valley. Analyzed the impacts of groundwater pumping on seawater intrusion. Analyzed the impacts of reservoir operations on streamflow recharge and seawater intrusion. Work was done in support of litigation.

Petroleum Contamination, California. Analyzed the source of soil and groundwater contamination by petroleum hydrocarbons at Santa Barbara, California. Work was done in support of litigation. Analyzed the source of soil and groundwater contamination by petroleum hydrocarbons at Oxnard,

Geological Survey Open-File Report 84-433, 59 p.

Kapple, G.W., Mitten, H.T., Durbin, T.J., and Johnson, M.J., 1984, Analysis of Carmel Valley alluvial ground-water basin, California, using digital flow model techniques: U.S. Geological Survey Water-Resources Investigation 83-4280, 45 p.

Hromadka, T.V., and Durbin, T.J., 1984, Adjusting the nodal point distribution in domain ground-water flow numerical models: in Proceedings of Fifth International Conference on Finite Elements in Water Resources, p. 265-284.

Durbin, T.J., and Berenbrock, C., 1985, Three-dimensional simulation of free-surface aquifers by the finite-element method: U.S. Geological Survey Water-Supply Paper 2270, p. 51-67.

Mitten, H.T., Lines, G.C., Berenbrock, C., and Durbin, T.J., 1988, Water resources of Borrego Valley and vicinity, San Diego County, California: Phase 2, Development of ground-water flow model: Water Resources Investigations 87-4199.

Martin, P., and Durbin, T.J., 1990, Identification of net-flux rates for ground-water models: U.S. Geological Survey Water-Supply Paper, 2340, pp. 119-130.

Hromadka, T.V., and Durbin, T.J., 1986, Two-dimensional dam-break analysis for Orange County Reservoir: Water Resources Bulletin, v. 22, n. 2, p. 249-256.

Hromadka, T.V., and Durbin, T.J., 1986, Modeling steady-state advective transport by the CVBEM: Engineering Analysis, v. 3, n. 1, p. 9-15.

Durbin, T.J., 1988, Two-dimensional simulation of ground-water flow by finite-element method: Microsoftware for Engineers, v. 2, n. 1, p. 40-48.

Azrag, E.A., Durbin, T.J., and Nour-El-Din, N.N., 1986, Two-dimensional simulation of solute transport by

California. Work was done in support of litigation.

San Bernardino Groundwater Basin, California. Analyzed the occurrence of high groundwater levels in the San Bernardino Valley, California using surface-water and groundwater models. High groundwater levels resulted from excess artificial recharge and other factors. Work was done in support of litigation.

Arkansas River, Colorado and Kansas. Analyzed the effects of groundwater pumping and other factors in the depletion of streamflow in the Arkansas River at the Colorado-Kansas state line using surface-water, groundwater, and institutional models. Work was done in support of litigation in the U.S. Supreme Court between the states of Kansas and Colorado.

Geothermal Development, California. Analyzed the effects of geothermal development on thermal-spring discharges in the Mammoth Lakes area, California using groundwater and heat-transport models. Work was done in support of litigation.

S.S. Papadopulos & Associates, Inc., Davis, California. Vice President and Manager of Davis office (October 1985 – March 1989)

Directed and conducted investigations of numerous aspects of groundwater hydrology. Examples of such projects include:

Love Canal, New York. Analyzed the migration of groundwater contaminants at the Love Canal hazardous waste site in Niagara Falls, New York using a groundwater model. The Love Canal site is a Superfund Site. Work was done in support of litigation.

Groundwater Contamination, New Jersey. Analyzed the migration of groundwater contaminants at the Lone Pine landfill near Freehold, New Jersey. The Lone Pine landfill is a Superfund site. Work was done as part of a remedial investigation.

Modeling Code. Developed a computer program for the simulation of soil-water movement within and near a land-disposal facility. Work was done for the U.S. Environmental Protection Agency in support of the preparation regulations relating to the design of cover, liner, and leak-detection systems for land-disposal facilities.

Sediment Transport, California. Analyzed the impacts of urban development on flooding and sediment transport for streams in Orange County, California. Work supported the permitting of a large residential and commercial development project.

Williamson and Schmid, Hydrotec Division, Davis, California. Manager of Davis office (July 1984 – October 1985)

Directed and conducted investigations for evaluation of groundwater resources, management of regional groundwater systems, and evaluation of hazardous waste sites. Studies involved identification of essential hydrologic issues, collection of hydrologic data, and application of quantitative methods to evaluate alternatives and to select an optimal solution. Examples of such projects include:

Groundwater Contamination, California. Developed a three-dimensional groundwater model of a physical barrier at a hazardous waste landfill in order to evaluate performance of the existing barrier and proposed modifications. Work was done for regulatory compliance.

Isotope Geochemistry, California. Analyzed a hazardous waste site using isotope geochemistry and groundwater models as investigative tools. Work was

finite-element method: Microsoftware for Engineers, v. 2, n. 3, p. 171-180.

Atkinson, L.C., Durbin, T.J., and Azrag, E.A., 1992, Estimating the effects of non-Darcian flow on inflow to a pit and slope stability: Society for Mining, Metallurgy, and Exploration 1992 Annual Meeting, Paper 92-156, 4 p.

Durbin, T.J., and Atkinson, L.C., 1993, Optimizing the design of mine dewatering systems: Society for Mining, Metallurgy, and Exploration 1993 Annual Meeting, Paper 93-103, 5 p.

Avon, L., and Durbin, T.J., 1994, Evaluation of the Maxey-Eakin method for estimating recharge to ground-water basins in Nevada: Water Resources Bulletin, v. 30, n. 1, pp. 99-112.

Durbin, T.J., Bond, L.D., 1997, FEMFLOW3D: A finite-element program for the simulation of three-dimensional aquifers, Version 1.0: U.S. Geological Survey Open-File Report 97-810, 338 p.

Hromadka, T. V., Durbin, T.J., 2000, Estimating changes in sediment transport trends due to catchment changes: in Proceedings of Floodplain Management Association Conference on Non-Structural Solutions to Floodplain Management, San Diego, Calif.

Rajagopal-Durbin, A., and Durbin, T. J., 2008, Wells are not always water follies: Sustainable groundwater policies for the American West: Water Policy, v. 10, n. 2, p. 145-164.

Durbin, T. J., and Delemos, D. W., 2007, Adaptive under relaxation of Picard iterations in ground-water models: Ground Water, v. 45, n. 5, p. 648-651.

Durbin, T. J., Delemos, D. W., and Rajagopal-Durbin, A., 2008, Application of superposition to non-linear ground-water models: Ground Water, v. 46, n. 2, p. 251-258.

Bredehoeft, J., and Durbin, T., 2009, Groundwater development – the

done for regulatory compliance.

Groundwater Salinity, Nevada. Analyzed the utilization of fresh water body overlying saline water using surface geophysical techniques and a density-dependent groundwater flow model.

U.S. Geological Survey, Water Resources Division, California District. District Chief (GS-15) (August 1982 – July 1984)

Managed California District (350 persons in 14 offices) with annual budget of $25 million (in 1995 dollars) for hydrologic investigations. Responsible for developing plans for hydrologic investigations and ensuring plans were implemented. Provided organizational and technical input to development of large scale, multi-agency investigations. Examples of such projects include:

Agricultural Drainage, California. Investigation of water quality related to agricultural drainage from the west side of San Joaquin Valley, California.

San Francisco Bay, California. Investigation of hydrodynamics of San Francisco Bay and Sacramento-San Joaquin, California Delta hydrologic systems.

Groundwater Exports, California. Investigation of the effects of exporting water from Owens Valley groundwater basin, California, including both hydrologic and biological impacts.

Central Valley Groundwater, California. Assessment of the groundwater resources of the Central Valley, California. Work was part of the Central Valley Regional Aquifer System Analysis (RASA).

Modeling Code. Development of numerical finite element codes (now used within the U.S. Geological Survey) for simulation of two- and three-dimensional groundwater flow and solute transport.

U.S. Geological Survey, Water Resources Division, Nevada District. District Chief (GS-14) (January 1980 – August 1982) and Assistant District Chief (GS-13) (July 1977 – August 1982)

Managed Nevada District (80 persons in three offices) with annual budget of $10 million (in 1995 dollars) for hydrologic investigations. Projects included:

Truckee River, Nevada. Design and organization of Truckee-Carson River Quality Assessment and Great Basin Regional Aquifer System Analysis (RASA).

Groundwater Management, Nevada. Development of groundwater and solute transport models for Washoe Valley, Galena Creek, Eagle Valley, and Carson Valley groundwater basins in Nevada.

Geothermal Development, Nevada. Design and organization of regional geothermal investigations of areas throughout Nevada including Dixie Valley, Ruby Valley, Black Rock Desert, and Carson Desert.

U.S. Geological Survey, Water Resources Division, California District. Hydrologist (GS-13) (December 1975 – July 1977), Hydrologist (GS-12) (October 1974 – December 1975), Hydrologist (GS-11) (September 1973 – October 1974), and Hydrologist (GS-9) (July 1972 – July 1977)

Served as Project Chief for numerous groundwater projects involving hydrogeologic and geophysical investigations and groundwater modeling. Conducted research in development of finite-element models for simulation of groundwater flow and mass transport. Applied results of research to solution of management problems and provided assistance to hydrologists within USGS and other public agencies in use of these models.

time to full capture problem: Groundwater, v. 47, n. 1, pp. 2-9.

Books

Hromadka, T.V., Durbin, T.J., and DeVries, J.J., 1984, Computer methods in water resources: Lighthouse Publications, Mission Viejo (California), 344 p.

Hromadka, T.V., McCuen, R.H., Devries, J.J., and Durbin, T.J., 1993, Computer methods in environmental and water resources engineering: Lighthouse Publications, Mission Viejo (California), 590 p.

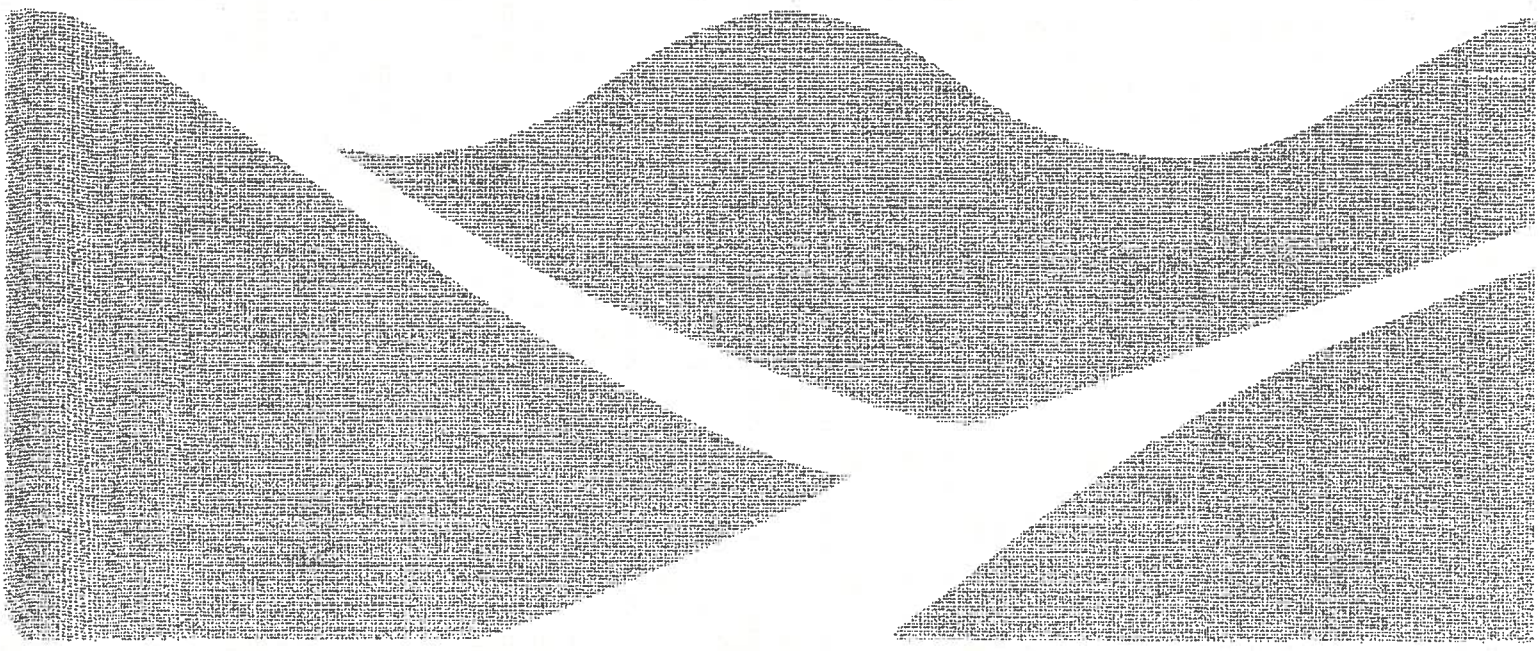


EXHIBIT 7

Resume for Robert G. Beeby

Robert G. Beeby, P. E.
B.S., Irrigation Science, University of California, Davis (1964)
Registered Civil Engineer, California #20997, Arizona #12047, New Mexico #8082, South Dakota #3663 and Washington #40199
Registered Agricultural Engineer, California #24
Work Summary

Mr. Beeby has over 40 years of engineering experience in project planning and management of water resources for a wide range of clients, including agricultural and urban water purveyors, power providers, law firms and federal, state and local governmental agencies. He has served as Principal-in-Charge and directed technical studies related to the adjudication of pumping rights of several ground water basins, served on Technical Expert Committees appointed to develop the factual aspects of ground water basins under adjudication, directed the studies leading to water management programs/exchanges between agricultural and urban interests, developed water supply plans to provide cooling water for power plants, developed regional plans for management of surface and ground water resources, directed studies relating to technical and economic feasibility of agricultural water projects and has managed the preliminary design and construction phases of major water resource facilities. Mr. Beeby has provided expert witness testimony since 1980 in numerous proceedings relating to land, water use, groundwater adjudications and water rights. He has testified before a Special Master appointed by the Supreme Court in Arizona v. California (1980), before the California State Water Resources Control Board, California Regional Water Quality Control Boards, California Energy Commission and other judicial or quasi-judicial bodies.
Representative Professional Experience

Beeby Engineering, Inc., Principal (2009- Present)

Beeby Engineering, Inc. was formed in July 2009 to continue to provide professional services in the field of water resources. Services range from technical studies to evaluate the current and future relationship between water supplies and water demands, conceptual design of facilities to increase reliability of existing water resources, evaluations of current and projected water demands of agricultural and urban areas, preparation of regional hydrologic inventories and water balances, evaluations of the water resource aspects of required environmental documentation for proposed projects that may affect the water resources of an area and litigation support related to water resources such as groundwater basin adjudications, flood damages and water rights.
Science Applications International Corporation, Principal Engineer (1998 to 2009)

Mr. Beeby served as Vice President, Engineering Services, with SAIC Engineering, Inc. and a member of the Board of Directors. He served as Program Manager with the parent company, Science Applications International Corporation (SAIC). He was Principal-in-Charge and the Business Area Leader for Water Resource Engineering in the firm's Environmental Sciences and Planning Division and was primarily responsible for the SAIC's consulting engineering activities related to water resources.
Mr. Beeby was responsible for the SAIC engineering activities associated with the planning and management of water resources in the west. His responsibilities included the management and technical direction of the engineering and technical support staff involved in regional water

resource planning, technical studies related to water supply reliability, environmental documentation and water-related litigation support. Specific activities included, but were not limited to, evaluation and implementation of water banking projects, development of exchange and transfer programs, evaluations of agricultural land and water use, irrigation practices, preparation of hydrologic inventories, analyses of unit water use values for various crops and urban development, analyses of historical hydrologic records of stream flow and diversions, evaluation of geohydrologic data to assess ground water production, analyses of water quality as a constraint on use and economic and financial analyses to assess project feasibility. Many of the water resource investigations directed by Mr. Beeby included the development of the institutional arrangements necessary for project implementation. Mr. Beeby was also responsible for client contact and has presented expert witness testimony in the fields of water rights, water use, surface and ground water hydrology and the technical and economic feasibility of irrigation projects.

Mr. Beeby directed the activities of the firm in the development of long-term water supply planning strategies for the City of Palmdale, California. Specific activities included serving on the Technical Committee for the Antelope Valley Groundwater Basin Litigation, participation in the evaluation of water supplies and demands within the Antelope Valley Groundwater Basin, direction of the engineering activities associated with the development of a ground water recharge project for the City, and serving as the technical representative of the City in the preparation of the Integrated Regional Water Management Plan for the Antelope Valley.

Mr. Beeby directed the activities of the firm in evaluations of the water supplies and demands of the Nipomo Community Services District, a hydrologic subarea of the Santa Maria Valley groundwater basin in California. Specific activities included participation in the Technical Group formed to develop the hydrologic monitoring program and annual reports to the Court on the water conditions of the Nipomo Mesa Management Area, development of water supply shortage criteria for NCSD, evaluation of existing hydrogeologic information, including historical groundwater levels, preparation of urban and agricultural water demands and preparation of hydrologic inventories.

Mr. Beeby directed the activities of the firm in the preparation of a report on the water resources within a portion of the Mojave Water Agency that might be developed for power plant cooling. Development of available water supplies must be consistent with the Mojave Basin Area Adjudication and rules and regulations established by the Court-appointed Watermaster.

Mr. Beeby directed the activities of the firm in evaluating the surface water hydrology of the upper Santa Ana River on behalf of the San Bernardino Valley Municipal Water District and the Western Municipal Water District of Riverside County, both located in Southern California. The findings of recent investigations were used to advance an application filed with the California State Water Resource Control Board by both districts to appropriate water conserved by Seven Oaks Dam, constructed by the U. S. Corps of Engineers, for flood control. The study was initiated to evaluate the potential for utilizing a portion of the inflow to the reservoir after the flood season. Specific activities included, studies related to surface water hydrology of the Santa Ana River system, analyses of the senior water right claimants, analyses of effects of Project implementation on environmental issues, evaluation of a water conservation objective, studies of reservoir operation alternatives, estimates of the amount of flow that might be put to beneficial use, and appearances before the California State Water Resources Control Board.

Mr. Beeby directed the activities of the firm in preparation of an evaluation of the water resources and development potential for a private landowner in San Diego County, California.

Specific activities included the preparation of a hydrologic inventory of the available natural water supplies, potential water demands under full development conditions and conduct of assessment of environmental resources to be addressed in the environmental documentation prior to project implementation.

Mr. Beeby directed the activities of the firm for the City of Corona, California in the evaluation of the effects of a well constructed in the Coldwater Basin outside of the boundaries established by mutual agreement on nearby production wells. Specific activities included an evaluation of the geohydrologic conditions of the basin in order to develop operational procedures so both competing entities could sustainably operate the basin. Negotiations are underway.

Mr. Beeby directed the activities of the firm for the City of Rancho Cucamonga in the hydrologic evaluation of a flood event in the City. Specific activities included an evaluation of historical rainfall/runoff relationships and for the specific storm event, effects of land development over time on runoff conditions and the adequacy of the storm water drainage system operated by the City and the private landowner whose property was damaged.

Mr. Beeby directed the activities of the firm in providing technical consulting services to the Friant Water Users Authority (FWUA), a joint powers agency that operates the Friant Division of the federal Central Valley Project (CVP). The Friant Division of the CVP includes roughly 25 water districts, encompassing about one million acres of agricultural land, generally located on the east side of the San Joaquin Valley, California. Water deliveries are about 1.2 million acre-feet annually. SAIC provided technical assistance to FWUA on a number of wide-ranging projects; some of the projects would help to resolve environmental concerns related to the operation of the Friant Division; others relate to improving the water supply reliability. SAIC staff also assisted FWUA staff in the management of consultants retained.

A separate portion of FWUA work directed by Mr. Beeby included an evaluation of a water management partnership with the Metropolitan Water District of Southern California which has the objective of improving the water supply reliability for the 25 FWUA Member Districts and improving the quality of the imported water supply delivered to Metropolitan. Studies included evaluations of additional surface and ground water storage facilities, potential for conjunctive use of surface and ground water supplies, effects of water quality on agricultural production, conveyance facilities to accomplish transfers or exchanges. Specific assignments relate to an appraisal-level evaluation of the potential for increasing the storage capacity of the Mammoth Pool Reservoir and a systems operations study of the entire Friant system and other conveyance facilities located in the San Joaquin Valley to evaluate scenarios to improve operational flexibility.

Mr. Beeby directed the activities of the firm in an evaluation of water rights of the Kern River, located in the southern end of the San Joaquin Valley in California. The specific issue addressed related to the forfeiture of a senior water right to a junior. Specific analyses included the evaluation of over 100 years of hydrologic flow and diversion data. Mr. Beeby provided expert testimony connected with this work.

Mr. Beeby directed and provided senior review for the investigation of the Practicably Irrigable Area (PIA) of a portion of the Lummi Reservation in Northwest Washington. SAIC's client was the State of Washington, Department of Ecology and the State Attorney General. In another PIA investigation, Mr. Beeby was retained as a consultant to the Metropolitan Water District of Southern California to provide historical background and technical advice relating to the continuation of Arizona v. California in which he provided expert testimony related to practicably irrigable areas in 1980.

Mr. Beeby provided senior review and direction for an appraisal-level investigation of a project that would include construction of a desalting facility on the Colorado River Aqueduct, two hydroelectric power generating facilities, penstocks and appurtenances. The overall project objectives are to reduce the total dissolved solids content of the water delivered to the Metropolitan Water District of Southern California from the Colorado River, to generate power as the reject stream is discharged to the Salton Sea and to assist in efforts underway to stabilize water levels and salinity of the Salton Sea.

Mr. Beeby directed the activities of the firm in the preparation of an evaluation of the effects of continuing the implementation of the Physical Solution adopted by the Superior Court, Riverside County, to resolve the overdraft situation in the Mojave River Basin and presented expert testimony. Specific activities included projections of the amount of imported water required to bring the five subareas of the Mojave River Basin into hydrologic balance, preparation of estimates of the number of agricultural interests that would be affected and the estimated cost. He also directed the activities of the firm in the preparation of an evaluation of technical reports relating to analyses of the effects of pumping and recharge on native vegetation.

Mr. Beeby directed the activities of the firm and provided engineering and technical assistance to the Tejon Ranch Company in support of their water rights applications submitted to the California State Water Resources Control Board to appropriate water from several local watersheds located at the southern end of the San Joaquin Valley. Analyses included preparation of estimates of historical water demands, evaluation of the amounts of water that might be captured for beneficial use, diversion amounts, design of measuring facilities and development of a management and documentation program for surface water resources available to the Ranch.

Mr. Beeby directed the activities of the firm in the preparation of an evaluation of a groundwater banking and extraction project for the Wheeler Ridge-Maricopa Water Storage District, located in the southern end of the San Joaquin Valley, California. Specific activities included evaluations of the general subsurface geology, selection of the recharge areas, analyses of the reliability of the imported water supply, preliminary system layouts, estimates of probable construction costs and estimates of projected annual costs. These data were compiled to derive the unit cost of water in dollars per acre-foot.

Mr. Beeby directed the activities of the firm in the preparation of the water plan and evaluation of the water resource aspects of a proposed expansion of High Desert Power Project I, located in the vicinity of Victorville, California and within the Service Area of the Mojave Water Agency. The task was to develop a reliable water supply for power plant cooling when water is not available from the California State Water Project. Specific activities include the direction of the hydrogeologic studies related to the effects of groundwater recharge and extraction for Project purposes on nearby wells, preliminary engineering layouts of the proposed well field and conveyance pipelines, evaluations of the use of existing water conveyance facilities and cost estimates thereof.

Bookman-Edmonston, Engineering, Inc., Principal Executive Engineer (1966 to 1998)

Mr. Beeby directed the preparation of the water plan and evaluation of the water resource aspects of the proposed High Desert Power Project to be located in the vicinity of Victorville, California. Specific activities included the direction of the hydrogeologic studies related to the effects of groundwater extractions for the Project on nearby wells, preliminary engineering layouts of the proposed well field and conveyance pipelines and cost estimates thereof. Activities also included appearances before the California Energy Commission and the Boards of Directors of local water purveyors to discuss the water supply aspects of the Project.

Mr. Beeby was responsible for preparation of a regional water management plan for the Mojave Water Agency, which encompasses about 5,000 square miles and includes communities from Hesperia to Barstow along the Mojave River in the high desert area of California. Activities included preparation of hydrologic inventories of historical conditions, estimates of future demands, identification of water marketing strategies for the imported supplies from the California Aqueduct and responsible for the technical aspects of the public involvement program. He also provided technical input to the development of the principles of the adjudication of rights to pump groundwater within that portion of the Agency that drains to the Mojave River and appeared as an expert witness and as a rebuttal witness in the trial held in Superior Court of the State of California in and for the County of Riverside.

Mr. Beeby directed the preliminary planning of the $50 million Mojave River Aqueduct Project for the Mojave Water Agency located in the high desert area of California. Specific activities included investigations to determine the size of the conveyance and groundwater recharge facilities, conceptual development of the financial program, preparation of the preliminary design, engineering report and cost estimates. He assisted the Agency staff and Board in preparation of documentation to secure federal assistance in project funding.

Mr. Beeby was responsible for studies to establish "Zones of Benefit" for the Mojave Water Agency. Activities included evaluation of imported surface and groundwater resources quality and quantity and estimated impacts of proposed recharge program.

Mr. Beeby was responsible for operational studies of a water exchange and conjunctive use program between the Metropolitan Water District of Southern California and the Arvin-Edison Water Storage District, located in Kern County, California. Activities included evaluation of capacities of joint use facilities, agricultural water demands, energy requirements, and costs associated with groundwater extraction and surface water deliveries. He also provided input data to the environmental documentation. He also provided technical assistance in developing the final agreement between the two parties and developed the groundwater operating criteria that was incorporated in the Agreement.

Mr. Beeby directed preliminary design and cost estimating for an additional 5,000 acres of irrigation service area for the Arvin-Edison Water Storage District and an additional 20,000 acres of irrigation service area to the Semitropic Water Storage District, in connection with water exchange and banking programs. He also directed the preparation of a computer model of A-E operations to evaluate the effects of the proposed program on groundwater levels.

Mr. Beeby participated in an investigation of flood damage to landowners on behalf of the Arvin-Edison Water Storage District, California. He served as construction inspector and office engineer responsible for evaluations of construction quantities and contractor pay requests.

Mr. Beeby directed the evaluation of irrigation systems in Sinaloa and Sonora Provinces of Mexico. The objective of the assignment was to recommend both structural and nonstructural improvements for rehabilitation of the conveyance and distribution systems that were constructed in the 1940s. Specific activities included field surveys, interviews with irrigation system managers, evaluations of on-farm irrigation efficiency, evaluations of system efficiencies, preparation of preliminary cost estimates and review of farm economics.

Mr. Beeby developed the water resource section of the scope of work for a proposed project in Oman for USAID. Specific activities included inspection of the existing falaj system in the project area and preliminary evaluations of hydrogeologic conditions for groundwater recharge using reclaimed wastewater and use of spreading ponds or injection wells to mitigate the effects of seawater intrusion.

Mr. Beeby was responsible for the preliminary planning and engineering studies for a 445,000-acre irrigation project, to be funded by the Inter-American Development Bank, in the Guanacaste Province of Costa Rica. Activities included forecasts of cropping patterns, estimates of water supply and demands, evaluation of surface and subsurface drainage problems and solutions, and preparation of feasibility-level designs and cost estimates of project works, including irrigation and drainage facilities, transportation network, power supply, and community development. He was also responsible for the preparation of feasibility reports and plans and specifications for project design and the development of a 2,000-acre demonstration area.

Mr. Beeby directed the evaluation of the physical and economic impacts of importation of California State Water Project water for the Wheeler Ridge-Maricopa Water Storage District. The District includes nearly 147,000 acres, of which over 88,000 acres receive imported water for irrigation. Specific activities undertaken on behalf of the District include the preparation of hydrologic inventories to determine the change in groundwater storage underlying the District and evaluation of the aquifer characteristics to determine the changes in pumping depths since Project inception in the early 1970s. These physical changes were evaluated to estimate the resulting economic impacts under historical and projected non-project conditions.

Mr. Beeby conducted studies for proposed commercial, residential and recreational developments in southern San Joaquin Valley for the Tejon Ranch Company, Kern County, and along the southern California coast. Activities included projections of future water demands for various development scenarios, evaluation of surface and groundwater supplies, and preparation of cost estimates of alternative water supply facilities.

Mr. Beeby directed the evaluation of standards established by the Arizona Department of Water Resources for Second Management Period of the Arizona Groundwater Management Act. Specific activities included evaluation of maximum conservation standards, on-farm irrigation efficiency, crop unit consumptive use values, leaching requirements, and economic studies to determine if proposed standards were consistent with prudent long-term management practices. He was appointed by the Director of the Arizona Department of Water Resources to serve on the Agricultural Technical Advisory Committee and served as Co-chairman of the Economic Subcommittee.

Mr. Beeby participated in the preparation of a feasibility study for the groundwater banking and extraction program for the Semitropic Water Storage District, Kern County, California.

Mr. Beeby investigated water use practices of the Imperial Irrigation District, located near the Salton Sea in southern California. Specific activities included evaluation of consumptive use within the District and analyses of the effects of District policies on water use efficiencies. He presented expert witness testimony before the State Water Resources Control Board, California.

Mr. Beeby directed the activities of the firm in the evaluation of historical water levels of the Salton Sea, California for the Imperial Irrigation District. Shoreline property owners claimed flooding to their holdings was due to inefficient water management practices. Specific activities related to the hydrology of the inflow to the Sea, land ownership and parcel identification and expert testimony.

Mr. Beeby conducted reconnaissance-level investigations of landowner repayment capabilities associated with the CENDAK Project, a proposed 500,000-acre irrigation project in South Dakota. Specific activities included preparation of projected farm and crop budgets and evaluation of irrigation requirements for various crop patterns.

Mr. Beeby conducted a study for the states of Arizona, California, and Nevada to evaluate claims for additional water rights made by and on behalf of five Indian reservations located along the

Lower Colorado River. Activities included classification of land for irrigated agriculture, determination of crop suitability, evaluation of agricultural production costs and returns, irrigation distribution system layout and cost estimates, and evaluation of on-farm irrigation practices. Mr. Beeby qualified as an expert witness in this case and presented testimony before a Special Master appointed by the Supreme Court of the United States in connection with the reopening of the case of Arizona v. California in 1980. .

Mr. Beeby conducted a study for the Salt River Project to determine the development potential and associated water requirements of six Indian reservations in central Arizona, encompassing a total area of approximately 3.5 million acres. Activities included evaluation of agricultural, mineral, timber, and recreational developments, evaluation of water requirements and availability of local and imported water supplies, preparation of cost estimates of water supply facilities, determination of financial feasibility and economic impact, and evaluation of the effects of upstream developments on downstream water quality.

Mr. Beeby conducted water resource evaluations of proposed agricultural development on Indian reservations located in San Diego County. Studies included investigation of Indian water rights, Practicably Irrigable Area, available surface water supplies and groundwater supplies from the Pala-Pauma groundwater basins, and water demands for irrigation, recreational, municipal, and industrial use.

On behalf of the Los Angeles Department of Water and Power, Mr. Beeby directed the evaluation of the possible Indian water rights in the Owens Valley, California. Studies of Practicably Irrigable Area included evaluations of climate and soil characteristics for crop production, crop yields and production costs, ground water supplies, capital cost estimates of on-farm irrigation systems and wells, annual costs of those facilities.

Mr. Beeby participated in an evaluation for the City of Escondido of potential for increased power generation and utilization of local water supplies that could result from revised operating procedures. He directed the technical aspects of the evaluation of the effects of operational changes on the utilization of local water supplies.

Mr. Beeby participated in the planning of projects to supply water to Castaic Lake Water Agency, Santa Barbara County Water Agency, City of Escondido, Vista Irrigation District, and other clients.

Mr. Beeby evaluated the feasibility of proposed major water distribution projects in the southern San Joaquin Valley for Arvin-Edison, Semitropic, and Wheeler Ridge-Maricopa Water Storage Districts. Activities included evaluations of the ability of farmers to pay for irrigation water from irrigation projects.

Mr. Beeby was the Construction Supervisor responsible for construction inspection and contract administration for the construction of an 11-mile, 570 cubic-feet per second, unlined canal for the Buttonwillow Improvement District, Kern County, California.

Mr. Beeby directed an assessment survey for the City and County of Yuma, Arizona, relating to management of their available supplies over the next 100 years. Water supplies, water rights, and water demands were evaluated and estimated as part of the investigation.

Mr. Beeby was responsible for the technical direction of a study performed for the U.S. Bureau of Reclamation involving the determination of salt loading to the Colorado River from the Palo Verde Irrigation District, located in Blythe, California.

Mr. Beeby conducted a hydrologic inventory and prepared input data for the conservation element of the revised general plan for Santa Barbara County, California.

Mr. Beeby evaluated water resources availability to a proposed recreational development in Cambria, California. Possible sources included both groundwater and surface supplies to be impounded by a dam.
Mr. Beeby conducted an inventory of the physical properties and assets of the Escondido Mutual Water Company, located in southern California.
Mr. Beeby participated in the investigation of the flood hazard for California State University, located in Bakersfield, California.
Mr. Beeby evaluated the surface and groundwater resources of the Tulare Lake Basin of central California. Studies included the evaluation of the quantity of surface runoff from ephemeral streams located in the San Joaquin Valley, in connection with the 5D basin studies prepared for the State Water Resources Control Board.
Mr. Beeby prepared estimates and evaluated records relating to reconstructed full natural flow for the San Luis Rey River in San Diego County, California.
Rancho Sespe, Ranch Engineer (1964 to 1966)

Mr. Beeby served as Ranch Engineer and performed irrigation efficiency studies on sprinkler-irrigated lemons and made recommendations to reduce the water application rate; assisted in design and field layout of new groves; and supervised various orchard maintenance crews for a citrus ranch in Fillmore, California.
Libby, McNeil & Libby, Agriculturist (1964)

As an agriculturalist, Mr. Beeby advised Libby, McNeil and Libby and consulted with and advised growers in Europe on irrigation methods, scheduling, and most efficient means of irrigating deciduous and citrus fruit orchards and vegetable crops.
University of California, Davis, Laboratory Assistant (1961 to 1963)

Mr. Beeby was involved in agricultural water use studies and irrigation scheduling as a laboratory assistant for the Department of Water Science and Engineering, University of California, Davis.
Gage Canal Company, Engineering Assistant (1962)

Mr. Beeby organized the pump and well testing program and collected data from local citrus farmers to be used in scheduling water deliveries for the Gage Canal Company, Riverside, California.
Specialized Training

- Seminars on presentation of expert testimony
- Seminars on water rights in California

Professional Affiliations

- Life Member - American Society of Civil Engineers
- U.S. Committee on Irrigation and Drainage
- Colorado River Water Users Association

EXHIBIT 8

RESUME

Peter M. Leffler, R.G., C.Hg.

Associate Hydrogeologist

EDUCATION: M.S. Hydrology/Hydrogeology, University of Nevada, Reno, 1989
B.S. Geology, University of Illinois, Champaign-Urbana, 1986

QUALIFICATIONS: Registered Geologist, California, No. 6475, 1996
Certified Hydrogeologist, California, No. 462, 1996

EXPERIENCE: Mr. Leffler has more than 20 years of experience performing hydrogeologic studies in California. His experience includes groundwater basin analysis and management; groundwater modeling, design and construction management for water wells, test wells, and monitoring wells; pumping tests and data analysis; evaluation of artificial recharge options, evaluation of bedrock groundwater flow and yields from bedrock wells, salt loading impacts analysis, salt water intrusion analysis, water resources planning, water quality, contaminant hydrogeology, and surface water-groundwater interaction. His responsibilities have included proposal preparation, project management, fieldwork, data analysis, modeling, report preparation, presentations, client contact, and interaction with regulatory agencies.

Mr. Leffler's project experience includes:

East Bay Municipal Utility District. Conducted a groundwater basin study in eastern Contra Costa and western San Joaquin counties. The study area encompassed approximately 250 square miles. The project included evaluation of the hydrogeology, a water balance study, a large-scale aquifer test involving 20 monitoring wells, and construction/calibration/application of a groundwater flow and solute transport model (MODFLOW/MT3D). The water balance study included evaluation of precipitation recharge, stream percolation, bedrock recharge, irrigation recharge, well pumping, and return flows. Key aspects of the model included the interaction between groundwater and the Bay-Delta system (rivers and sloughs), and potential changes to groundwater levels and total dissolved solids from proposed ASR operations. The project has also involved extensive contact and meetings with local water agencies and consultants to obtain data for the hydrogeology and water balance studies.

DERWA Watershed Salt Migration Study. Served as project hydrogeologist with responsibility for developing the hydrogeologic conceptual model. The project involved assessment of salt migration associated with irrigation from potable and recycled water. The conceptual model included evaluation of the fractured bedrock, Dublin-San Ramon groundwater basin, and Niles Cone groundwater basin, and surface water-groundwater interactions. The hydrogeologic conceptual model provided the basis and inputs for a series of vadose zone and groundwater models.

Tehachapi-Cummings County Water District. Completed a hydrogeologic conceptual model for the Cummings Groundwater Basin located near Tehachapi, California. The study involved a hydrogeologic characterization of the basin, a water balance study, groundwater quality analysis, and preparation of numerical model input files. The water balance study included evaluation of precipitation recharge, percolation of streamflow, groundwater inflow from bedrock, irrigation recharge, artificial recharge, treated wastewater percolation, well pumping, and groundwater outflow. The hydrogeologic conceptual model provided the basis for construction and calibration of a MODFLOW/MT3D groundwater flow and solute transport numerical model.

Peter M. Leffler, R.G., C.Hg.

Associate Hydrogeologist

Santa Lucia Preserve/Rancho San Carlos. Performed a comprehensive hydrogeologic study for a 20,000-acre site proposed as a housing and golf course development. The water supply for the project was developed from low yield fractured bedrock wells. Responsibilities included project management, evaluation of aquifer testing and water level data, assessment of groundwater quality data, evaluation of project impacts to on-site and off-site water resources, report writing, and interaction with county agencies.

County of San Luis Obispo Public Works Department. Phase II of the Paso Robles Groundwater Basin Study involved construction and calibration of a numerical groundwater (MODFLOW/MT3D) model. Work on the project included evaluation of the hydrologic budget (water balance) from the Phase I study to construct numerical model input files for each recharge and discharge component. Recharge components included precipitation recharge, irrigation return flow, streambed percolation, wastewater discharge percolation, and bedrock groundwater inflow. Discharge components included phreatophyte water use, groundwater pumping, and subsurface outflow. Results were summarized in an interim report.

City of Gilroy. Served as project manager for a well siting study, test well construction, and municipal well construction. A municipal well siting study was initially conducted to identify the best sites for test well construction. Field work that was subsequently conducted included the drilling, installation, and aquifer testing of eight test wells to depths of up to 1,000 feet; and drilling/construction of one municipal production well.

San Francisco Public Utilities Commission. The SFPUC is partnering with the City of Daly City, Cal Water, and the City of San Bruno to construct the Groundwater Storage and Recovery Project in northern San Mateo County. The proposed project involves in-lieu recharge of groundwater via reduced pumping of groundwater by partner agencies during average to wet years when SFPUC can deliver greater quantities of surface water to partner agencies. Fugro's involvement in the ongoing project has included peer review of nested monitoring well drilling/installation, design of test/production wells and preparation of detailed engineering well specifications, well survey and well drawdown interference study, subsidence study, and overall coordination of groundwater studies for EIR support.

SUPPLEMENTAL INFORMATION:

Mr. Leffler has been a hydrogeologist with Fugro since January 2002. Prior to joining Fugro, Mr. Leffler was Senior Hydrogeologist for a private consulting firm specializing in hydrogeologic studies, water resources, and environmental engineering.

SPEAKER, GUEST LECTURER:

Instructor, Groundwater Resources Association of California, Low Yield Aquifer Testing Seminar, April 26 and 27, 2004. Primary topic covered was conducting pumping tests on fractured bedrock wells.

PROFESSIONAL AFFILIATIONS:

National Ground Water Association
Groundwater Resources Association of California
Geological Society of America
American Geophysical Union

EXHIBIT 9

Figure 4.3-14: Change in Storage from Gravity Drainage and Compaction

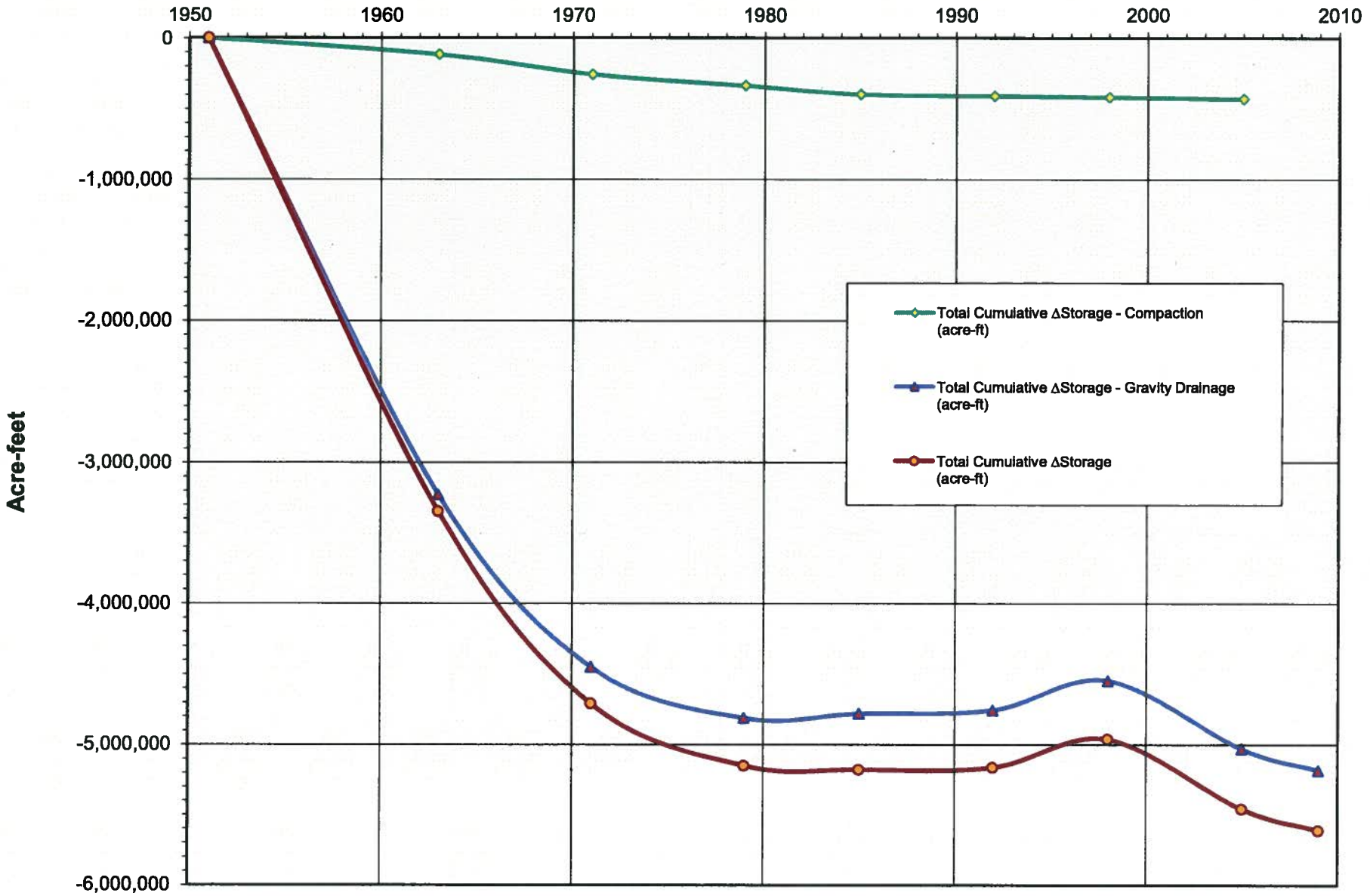
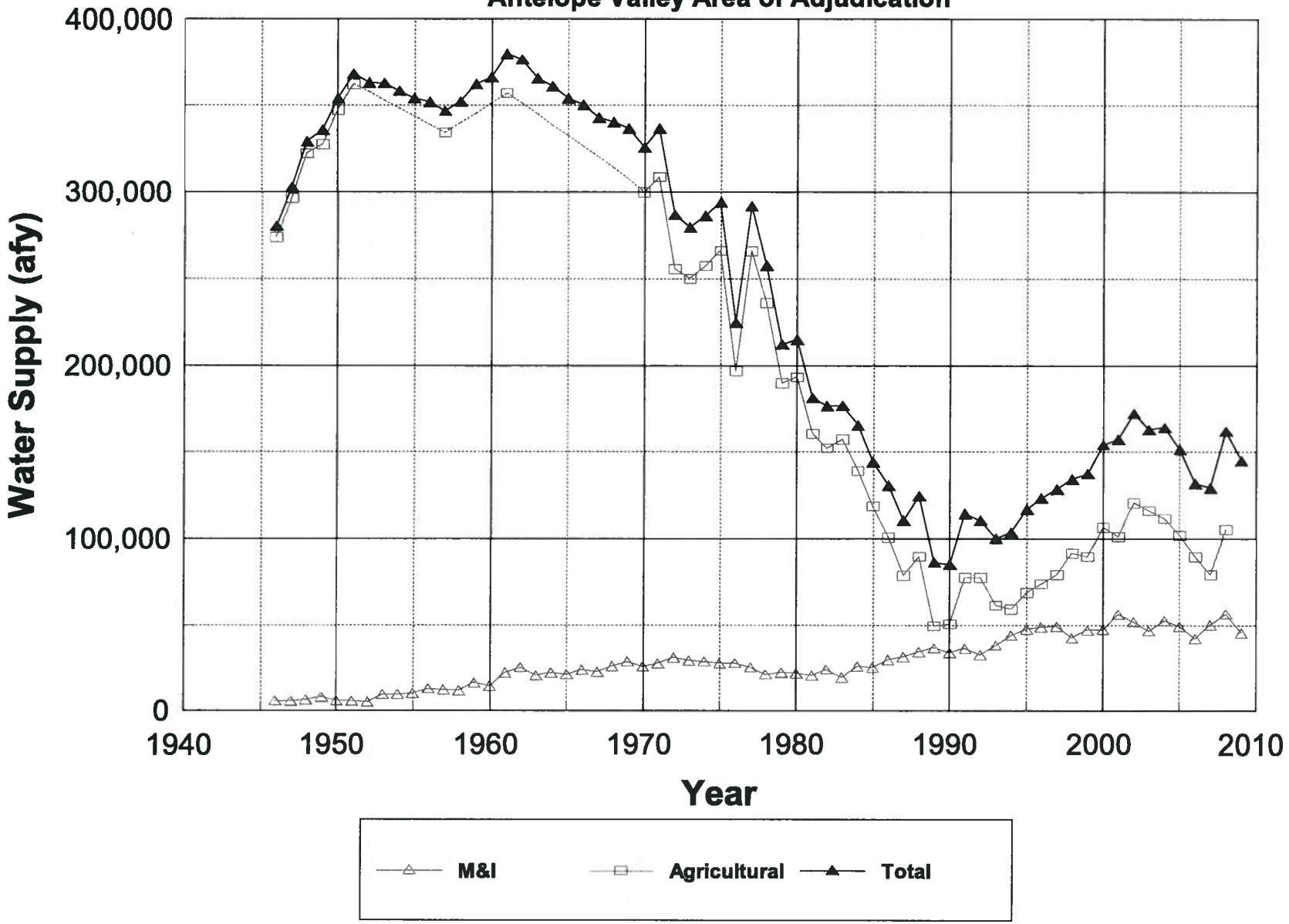


EXHIBIT 10

Figure 4.2-6
Estimated Historical Groundwater Pumping
Antelope Valley Area of Adjudication



PROOF OF SERVICE

I, Patricia Alshabazz, declare:

I am a resident of the State of California and over the age of eighteen years, and not a party to the within action; my business address is Best Best & Krieger LLP, 400 Capitol Mall, Suite 1650, Sacramento, California 95814. On December 20, 2010, I served the within document(s):

EXHIBITS 1 THROUGH 10 IN SUPPORT OF PHASE 3 TRIAL BRIEFS

☒ by posting the document(s) listed above to the Santa Clara County Superior Court website in regard to the Antelope Valley Groundwater matter.

☐ by placing the document(s) listed above in a sealed envelope with postage thereon fully prepaid, in the United States mail at Irvine, California addressed as set forth below.

☐ by causing personal delivery by ASAP Corporate Services of the document(s) listed above to the person(s) at the address(es) set forth below.

☐ by personally delivering the document(s) listed above to the person(s) at the address(es) set forth below.

☐ I caused such envelope to be delivered via overnight delivery addressed as indicated on the attached service list. Such envelope was deposited for delivery by Federal Express following the firm's ordinary business practices.

I am readily familiar with the firm's practice of collection and processing correspondence for mailing. Under that practice it would be deposited with the U.S. Postal Service on that same day with postage thereon fully prepaid in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

Executed on December 20, 2010, at Sacramento, California.

Patricia Alshabazz

26345.0000A\5776686.2