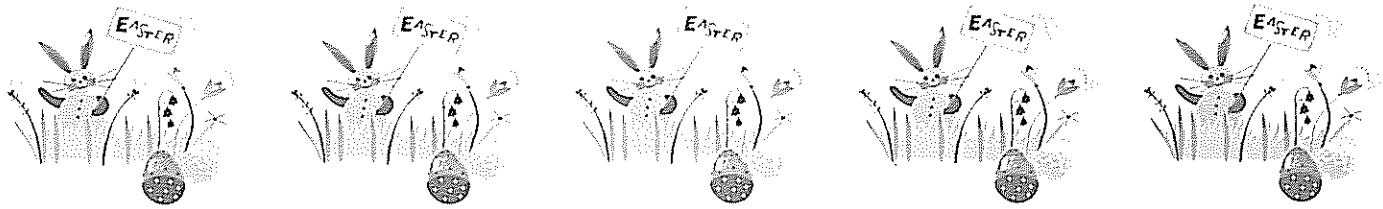


CHINO BASIN WATERMASTER

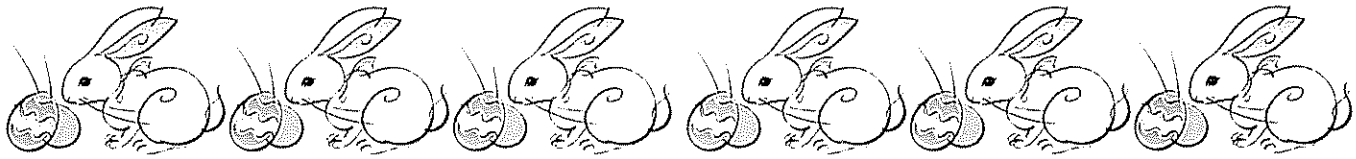
NOTICE OF MEETINGS

Thursday, April 27, 2006

9:00 a.m. – Advisory Committee Meeting
11:00 a.m. – Watermaster Board Meeting

(Lunch will be served)

AT THE CHINO BASIN WATERMASTER OFFICES
9641 San Bernardino Road
Rancho Cucamonga, CA 91730
(909) 484-3888



CHINO BASIN WATERMASTER

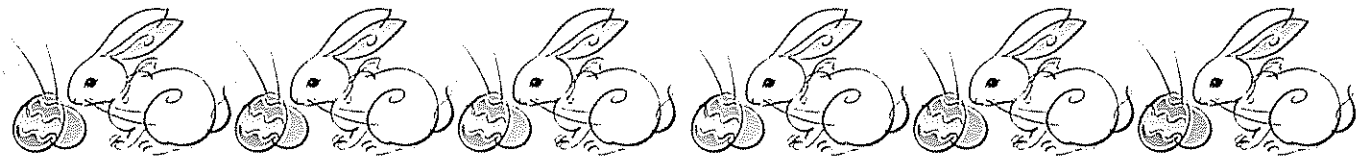
April 27, 2006

9:00 a.m. - Advisory Committee Meeting

11:00 a.m. - Watermaster Board Meeting

(Lunch will be served)

AGENDA PACKAGE



CHINO BASIN WATERMASTER
ADVISORY COMMITTEE MEETING

9:00 a.m. – April 27, 2006
At The Offices Of
Chino Basin Watermaster
9641 San Bernardino Road
Rancho Cucamonga, CA 91730

AGENDA

CALL TO ORDER

AGENDA - ADDITIONS/REORDER

I. **CONSENT CALENDAR**

Note: All matters listed under the Consent Calendar are considered to be routine and non-controversial and will be acted upon by one motion in the form listed below. There will be no separate discussion on these items prior to voting unless any members, staff, or the public requests specific items be discussed and/or removed from the Consent Calendar for separate action.

A. **MINUTES**
1. Minutes of the Advisory Committee Meeting held March 23, 2006 *(Page 1)*

B. **FINANCIAL REPORTS**
5. Cash Disbursements for the month of March 2006 *(Page 13)*
6. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through February 28, 2006 *(Page 17)*
7. Treasurer's Report of Financial Affairs for the Period February 1, 2006 through February 28, 2006 *(Page 19)*
8. Profit & Loss Budget vs. Actual July through February 2006 *(Page 21)*

C. **WATER TRANSACTION**
Consider Approval for Transaction of Notice of Sale or Transfer – Cucamonga Valley Water District has agreed to purchase from West Valley Water District water in storage in the amount of 500 acre-feet. Date of application: January 10, 2006 *(Page 23)*

II. **BUSINESS ITEMS**

A. **MZ1 SUMMARY REPORT**
Consider Approval of the February 2006 MZ-1 Summary Report *(Page 37)*

III. **REPORTS/UPDATES**

A. **WATERMASTER GENERAL LEGAL COUNSEL REPORT**
1. Peace II Process
2. Santa Ana River Water Rights Application

B. **WATERMASTER ENGINEERING CONSULTANT REPORT**
1. Update on Report on Balance of Recharge and Discharge

C. **CEO/STAFF REPORT**
1. Consequences of Non-Implementation of Peace II
2. DataX Presentation

3. Legislative Update
4. MWD Groundwater Study
5. Workshops Update
6. Storm Water/Recharge Update
7. Draft Desalter III Alternative Study Update

D. INLAND EMPIRE UTILITIES AGENCY

1. Monthly Water Conservation Programs Report *(Page 109)*
2. Groundwater Operations Recharge Summary - handout
3. Monthly Imported Water Deliveries Report *(Page 111)*
4. State/Federal Legislation Reports *(Page 115)*
5. Public Relations Report *(Page 143)*

E. OTHER METROPOLITAN MEMBER AGENCY REPORTS

IV. INFORMATION

1. Newspaper Articles *(Page 145)*

V. COMMITTEE MEMBER COMMENTS

VI. OTHER BUSINESS

VII. FUTURE MEETINGS

April 25, 2006	9:00 a.m.	GRCC Committee Meeting
April 27, 2006	9:00 a.m.	Advisory Committee Meeting
April 27, 2006	11:00 a.m.	Watermaster Board Meeting
April 27, 2006	1:00 p.m.	Boardsmanship Workshop
May 2, 2006	9:00 a.m.	Budget Workshop
May 11, 2006	9:00 a.m.	Appropriative & Non-Agricultural Pool Meeting
May 16, 2006	9:00 a.m.	Agricultural Pool Meeting @ IEUA
May 25, 2006	9:00 a.m.	Advisory Committee Meeting
May 25, 2006	11:00 a.m.	Watermaster Board Meeting

Meeting Adjourn

CHINO BASIN WATERMASTER
WATERMASTER BOARD MEETING

11:00 a.m. – April 27, 2006
At The Offices Of
Chino Basin Watermaster
9641 San Bernardino Road
Rancho Cucamonga, CA 91730

AGENDA

CALL TO ORDER

PLEDGE OF ALLEGIANCE

AGENDA - ADDITIONS/REORDER

I. CONSENT CALENDAR

Note: All matters listed under the Consent Calendar are considered to be routine and non-controversial and will be acted upon by one motion in the form listed below. There will be no separate discussion on these items prior to voting unless any members, staff, or the public requests specific items be discussed and/or removed from the Consent Calendar for separate action.

A. **MINUTES**

1. Minutes of the Annual Watermaster Board Meeting held March 23, 2006 *(Page 7)*

B. **FINANCIAL REPORTS**

5. Cash Disbursements for the month of March 2006 *(Page 13)*
6. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through February 28, 2006 *(Page 17)*
7. Treasurer's Report of Financial Affairs for the Period February 1, 2006 through February 28, 2006 *(Page 19)*
8. Profit & Loss Budget vs. Actual July through February 2006 *(Page 21)*

C. **WATER TRANSACTION**

Consider Approval for Transaction of Notice of Sale or Transfer – Cucamonga Valley Water District has agreed to purchase from West Valley Water District water in storage in the amount of 500 acre-feet. Date of application: January 10, 2006 *(Page 23)*

II. BUSINESS ITEMS

A. **MZ1 SUMMARY REPORT**

Consider Approval of the February 2006 MZ-1 Summary Report *(Page 37)*

III. REPORTS/UPDATES

A. **WATERMASTER GENERAL LEGAL COUNSEL REPORT**

1. Peace II Process
2. Santa Ana River Water Rights Application

B. **WATERMASTER ENGINEERING CONSULTANT REPORT**

1. Update on Report on Balance of Recharge and Discharge

C. **CEO/STAFF REPORT**
1. Consequences of Non-Implementation of Peace II
2. DataX Presentation
3. Legislative Update
4. MWD Groundwater Study
5. Workshops Update
6. Storm Water/Recharge Update
7. Draft Desalter III Alternative Study Update

IV. **INFORMATION**
1. Newspaper Articles *(Page 145)*

V. **BOARD MEMBER COMMENTS**

VI. **OTHER BUSINESS**

VII. **FUTURE MEETINGS**

April 25, 2006	9:00 a.m.	GRCC Committee Meeting
April 27, 2006	9:00 a.m.	Advisory Committee Meeting
April 27, 2006	11:00 a.m.	Watermaster Board Meeting
April 27, 2006	1:00 p.m.	Boardsmanship Workshop
May 2, 2006	9:00 a.m.	Budget Workshop
May 11, 2006	9:00 a.m.	Appropriative & Non-Agricultural Pool Meeting
May 16, 2006	9:00 a.m.	Agricultural Pool Meeting @ IEUA
May 25, 2006	9:00 a.m.	Advisory Committee Meeting
May 25, 2006	11:00 a.m.	Watermaster Board Meeting

Meeting Adjourn

CHINO BASIN WATERMASTER

I. CONSENT CALENDAR

A. MINUTES

1. Advisory Committee Meeting – March 23, 2006

Draft Minutes
CHINO BASIN WATERMASTER
ADVISORY COMMITTEE MEETING
March 23, 2006

The Advisory Committee meeting was held at the offices of the Chino Basin Watermaster, 9641 San Bernardino Road, Rancho Cucamonga, California, on March 23, 2006 at 9:00 a.m.

ADVISORY COMMITTEE MEMBERS PRESENT

Agricultural Pool	
Nathan deBoom, Chair	Ag Pool/Dairy
Bob Feenstra	Ag Pool/Dairy
Appropriative Pool	
Ken Jeske	City of Ontario
Robert DeLoach	Cucamonga Valley Water District
Mike McGraw	Fontana Water Company
Rosemary Hoerning	City of Upland
Dave Crosley	City of Chino
Jim Taylor	City of Pomona
Charles Moorrees	San Antonio Water Company
Mark Kinsey	Monte Vista Water District
J. Arnold Rodriguez	Santa Ana River Water Company
Mike Maestas	City of Chino Hills
Justin Brokaw	Marygold Mutual Water Company
Non-Agricultural Pool	
Bob Bowcock	Vulcan Materials Company (Calmat Division)

Watermaster Board Members Present

Ken Willis	West End Consolidated Water Company
John Anderson	Inland Empire Utilities Agency
Sandra Rose	Monte Vista Water District

Watermaster Staff Present

Kenneth R. Manning	Chief Executive Officer
Sheri Rojo	CFO/Asst. General Manager
Gordon Treweek	Project Engineer
Danielle Maurizio	Senior Engineer
Sherri Lynne Molino	Recording Secretary

Watermaster Consultants Present

Michael Fife	Hatch & Parent
Mark Wildermuth	Wildermuth Environmental Inc.
Andy Malone	Wildermuth Environmental Inc.

Others Present

Chris Diggs	Fontana Water Company
Bill Kruger	City of Chino Hills
Frank Brommenschenkel	Frank B. & Associates
Ash Dhingra	City of Pomona
Martha Davis	Inland Empire Utilities Agency
Henry Pepper	City of Pomona
Terry Catlin	Inland Empire Utilities Agency
Tom Love	Inland Empire Utilities Agency

The Advisory Committee meeting was called to order by Chair deBoom at 9:10 a.m.

AGENDA - ADDITIONS/REORDER
No comment was made regarding this item.

Added: Opening Remark

Mr. Jeske stated that Ontario Councilman Jerry DuBois who was a good friend and colleague in the water industry passed on earlier this week and will be greatly missed by many people. Mr. Jeske asked that his memory be memorialized by adjourning this meeting in his memory. It was noted the memorial service for Mr. DuBois will be held on Saturday, March 25, 2006 at 10:00 a.m. at Chaffey High School on Euclid Avenue in Ontario.

I. **CONSENT CALENDAR**

A. **MINUTES**

1. Minutes of the Advisory Committee Meeting held February 23, 2006

B. **FINANCIAL REPORTS**

1. Cash Disbursements for the month of February 2006
2. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through January 31, 2006
3. Treasurer's Report of Financial Affairs for the Period January 1, 2006 through January 31, 2006
4. Profit & Loss Budget vs. Actual July through January 2006

Motion by McGraw, second by Rodriguez, and by unanimous vote
Moved to approve Consent Calendar Items A through B, as presented

II. **BUSINESS ITEMS**

A. **CONTRACT FOR DRILLING AND CONSTRUCTION OF A NESTED PIEZOMETER**

Mr. Manning stated the monitoring equipment in the MZ1 area that has exposed subsidence has been experiencing difficulties. The centerpiece of this monitoring program is the nested piezometers which are located at the Ayala Park facility. The facility was constructed for the purpose of determining the extent of subsidence that is caused by pumping. During the course of the testing that has been performed at that this site. Periodic anomalies have caused staff to question the reliability of gathered data from these nested piezometers. It has been recommended by our consultants that staff evaluate and consider installing new piezometers so that clearer and more accurate data can be gathered to analyze and document. The subsidence issue is an important issue to all Watermaster parties and staff wants to make sure we have an adequate monitoring program in place. The contract which is in the meeting package is with the Layne Christensen Company of Fontana in the amount of $292,000. Staff is pleased with this contracting company who has done work in this area for us. Staff is recommending moving forward with this item that has been unanimously approved by the Pools. Chair deBoom inquired to the number of companies who bid on this project. Mr. Malone stated two companies came through with a bid. Mr. Jeske inquired if the City of Chino has approved the work to be performed and Mr. Malone acknowledged that this has been approved by the City of Chino. It was also noted the MZ1 Technical Committee is in full support of this endeavor. A discussion ensued with regard to the work that will be performed. Mr. Malone gave a detailed description of how the new piezometers will work more efficiently than the previous ones and noted there is a one year warranty included.

Motion by Jeske, second by DeLoach, and by unanimous vote
Moved to approve the Layne Christensen Company contract for drilling and construction of a nested piezometer at Ayala Park in Chino, as presented

B. IEUA/DWR GRANT FUNDING AGREEMENT

Mr. Manning stated in January 2005, Inland Empire Utilities Agency (IEUA) received a grant of $15,500,000 from the Department of Water Resources (DWR) through the Proposition 13 Groundwater Recharge and Storage Programs. Mr. Manning noted that the purpose of this grant was to fund IEUA's Chino Basin Conjunctive Use Expansion Program. The total project cost for this program was estimated to be $40 million with the local share being funded through IEUA's Water and Sewer Rate revenue and a combination of various State and Federal funds. Mr. Manning stated in 2002, a separate grant of Proposition 13 money was given to IEUA that was used to fund implementation of Watermaster's Recharge Master Plan. That project involved a total cost of approximately $40 million. One half of this project cost was paid through grant funds, and the one-half local share was split evenly between IEUA and Watermaster. Through the initial implementation of the Recharge Master Plan, most, but not all, of the identified recharge basin improvements were constructed; the available funding fell short of being able to fund all of the identified improvements. Mr. Manning noted that additional improvement work was identified as necessary over the course of initial project construction and over the past year of use of the facilities. IEUA has proposed using a portion of the most recent grant funding to perform further improvement work on the recharge basins. IEUA has also proposed using $5,250,000 of grant money for this purpose, using the same cost sharing arrangement that was used for the grant money that was used for initial implementation of the Recharge Master Plan. Staff is recommending moving forward with this agreement and this was approved unanimously by the Pools. Mr. Love stated this is consistent with the agreement regarding cost sharing on the first set of improvements on the $40 million dollar project, which was 50% grant funded and 50% shared equally between IEUA and Watermaster. A question was presented regarding operating and maintenance (O&M) costs and Mr. Manning stated agreements are in place that handles the O&M costs. A discussion regarding costs ensued.

Motion by DeLoach, second by Kinsey, and by unanimous vote

Moved to approve the agreement regarding recharge facilities improvements matching funds Cost Sharing Agreement between Inland Empire Utilities Agency and the Chino Basin Watermaster dated March, 2006, as presented

III. REPORTS/UPDATES

A. WATERMASTER GENERAL LEGAL COUNSEL REPORT

1. Attorney Manager Process/Discussion of Peace II Agreement

Counsel Fife stated we are at the eve of being able to put out the report that will respond to the questions that were brought up during the workshops in November and December, 2005. Wildermuth Environmental is finished with their work and there are some legal issues that counsel needs to respond to. Staff is anticipating those responses will be out within the next week. After that release, staff and counsel will be prepared to move into finishing the Peace II process. This might involve coming back to the parties with the original agreement which was distributed in October 2005, or if there is a need to modify that document, we can then discuss how we will go about that process. A question regarding confidentially was presented and Counsel Fife stated the same attorney-manager confidentially agreements will remain in place at the next round of meetings. A brief discussion ensued regarding the next set of meetings and Mr. Manning reviewed the tight timeline in order to meet the July Special Referee's workshop deadline. Mr. Manning stated there will be an item on the April agenda specifically detailing the consequences of not implementing Peace II.

B. WATERMASTER ENGINEERING CONSULTANT REPORT

1. Update on Report on Balance of Recharge and Discharge

Mr. Wildermuth stated one of the many things Wildermuth Environmental is doing for the Watermaster is this presented item which deals with certain provisions of the Peace Agreement and with Peace II. This report, as of late last night, was completed in an administrative draft form. Mr. Wildermuth stated that a "draft administrative form" is a document, for all intent and purposes, 95% to 97% complete. The report will first be circulated through the Watermaster staff and Watermaster legal counsel to ensure all the

technical questions are answered that were presented at the workshops regarding the Peace II Term Sheet. It is most likely staff and counsel will turn this document around quickly and staff is anticipating very little changes to be made and this item will be sent through the Watermaster process.

C. CEO/STAFF REPORT

1. USGS-GAMA Program

Mr. Manning stated in May this pool is going to be given a presentation on the USGS-GAMA Program which is a groundwater ambient water monitoring and assessment program. This is where the USGS comes into various groundwater basins and tests and evaluates water quality (called the GAMA Program). Mr. Manning stated he recently had a conversation with Robert Kent from USGS, who is the person who will be giving the May presentation, by letting him know that this basin is already light years ahead of other basins in data collection and data management and that we will gladly cooperate in assisting him in his quest by offering data that we have already gathered. Staff is trying to avoid letting the USGS come in and test where they want and then take incorrect or uncorroborated data back to our legislature and let legislature make assumptions against isolated tests. This is an awareness issue and a full presentation will be given in May on this item.

2. Legislative Update

Mr. Manning stated a number of people were in Washington last week talking with members of congress about issues relative to California water issues. This was the ACWA Legislative Agenda that was being discussed. This agenda gave us an opportunity to talk about the issues which are taking place within our own basin. Because of the tight schedules and the hastiness at those ACWA meetings, staff and representatives will be returning in a few weeks to talk in greater detail specifically Chino Basin issues and where we think congress can be effective in meeting our mission in delivering an affordable water supply.

Mr. Manning stated that there is a meeting being held, as we speak, with Senator Margett and Senator Dutton who are currently negotiating, on our behalf, to put money into the bond for the Chino Basin. The deadline for getting our bond issue onto the ballot is March 10, 2006. It appears by several conversations with legislatures that our interests are being protected and staff is in contact with them quite frequently.

3. SAW DMS Data Coordination

Mr. Manning stated there are a few letters provided in the meeting packet which parties have probably already received a copy of wherein SAWPA is asking to come in and talk to the parties about data at each agency. After Watermaster staff received this letter, an email was sent to Daniel Cozad at SAWPA which expressed to him that staff would like to coordinate this through Watermaster; it is preferred that SAWPA not work with all the individual parties and that there are reasons and benefits to work with Watermaster in a joint effort on this item. By working together Watermaster can eliminate a lot of duplicated work efforts and also possibly save them some money. Mr. Manning stated this is an awareness issue and that Daniel was open and receptive to the idea.

4. Department of Health Services Public Hearing on Recycled Water

Mr. Manning noted the flyer for the Department of Health Services Public Hearing on Recycled Water is available on the back table. This meeting is co-sponsored by Watermaster and Mr. Manning encouraged all members to attend this important hearing in support of recycled water. The hearing is on April 20, 2006 at 9:30 a.m. here at the Watermaster offices.

5. Monthly Recharge Update

Mr. Manning noted that by commitments made at previous meetings in which Watermaster would provide the parties with monthly recharge updates at these meetings, a copy of the

most recent update is available on the back table. Mr. Treweek stated we have been fortunate recently in having some late spring storm events. Mr. Treweek reviewed the handout in detail and noted we are pretty much on target as far as capturing water; our goal for the year is 50,000 acre-feet and in order to achieve that we need more months like February with its heavier rain storms. Some of our basins are only recharged, at this point in time, with only storm water and this recharge situation will be rectified shortly via our DWR grant for improvements.

Added Comment:

Mr. Manning stated when he came to the Chino Basin one of the first things he did was join the Ontario Kiwanis Club and one of the first people he met in that club and embraced him was Jerry DuBois. Mr. DuBois inducted Mr. Manning into the Kiwanis Club and has been a good friend ever since and Mr. Manning stated he is going to be greatly missed. Mr. DuBois was a true advocate for the City of Ontario. Mr. Manning agreed this meeting should be adjourned in Congressmen DuBois honor.

D. INLAND EMPIRE UTILITIES AGENCY

1. MWD Status Update

   Mr. Love stated the Department of Water Resources will maintain the 70% allocation on the State Water Project. This also means there will be a lot of supply available and hopefully capacity will not be reached at the Rialto pipeline in July and August. The new MWD general manager, Jeff Kightlinger, will be out for a reception which will be hosted by Eastern Municipal Water District and Western Municipal Water District, Inland Empire Utilities Agency, and others. Watermaster staff with IEUA and MWD staff met and discussed the operating plan for the DYY Program for the upcoming year; things are moving well on this program. A brief discussion ensued with regard to water deliveries.

2. Phase 2 Chino Basin Recycled Water Groundwater Recharge Project

   Mr. Love stated there a scheduled DHS & Regional Water Quality Control Board public hearing on Thursday, April 20, 2006 starting at 9:30 a.m. and is being held at the Chino Basin Watermaster office. Mr. Love offered history on the public hearing which was held in December of 2003 regarding Phase 1 basins. Mr. Love is asking all the appropriators to speak in support of this program that has broad regional benefits to the groundwater basin.

3. Regional Water Conservation Program and Proposed FY Budget

   Ms. Davis gave the IEUA Regional Water Conservation Program FY 2006/2007 Proposed Conservation Initiatives and Budget presentation. Ms. Davis reviewed the conservation programs that are currently in place which include: Conservation Rebates, Landscape Programs, School Programs, Public Information Programs, and Member Agency Support Programs. Ms. Davis also reviewed the proposed new conservation programs which include: Ultra Low Flow Toilets, new Landscape Programs, broader Public Information Programs, and more School Programs. The fiscal year 2006/2006 conservation program revenues were discussed in detail noting IEUA will continue to seek additional funds through state grants and other programs to augment the conservation budget.

4. Recycled Water Update

   Mr. Jeske stated that while at the Agricultural Pool meeting which was held prior to this meeting today, it was brought up at that meeting one of issues in getting recycled water into the ground and it taking over a year for it to go through the process. Mr. Jeske stated that perhaps that length of time is understandable where there is a regional wide groundwater basin involved; however, the City of Ontario has experienced the same familiarity on a site-by-site basis where we are proposing direct reuse of recycled water that is not making its way back in immediate recharge into the groundwater basin. Mr. Jeske spoke on permitting and landscaping watering issues.

5. Monthly Water Conservation Program Report
Mr. Love stated this report is provided in the meeting package for review.

6. Monthly Imported Water Deliveries Report
No comment was made regarding this item.

7. State/Federal Legislation Reports
No comment was made regarding this item.

8. Public Relations Report
No comment was made regarding this item.

9. Groundwater Update
No comment was made regarding this item.

E. OTHER METROPOLITAN MEMBER AGENCY REPORTS
No comment was made regarding this item.

IV. INFORMATION
1. Newspaper Articles
No comment was made regarding this item.

V. COMMITTEE MEMBER COMMENTS
No comment was made regarding this item.

VI. OTHER BUSINESS
No comment was made regarding this item.

VII. FUTURE MEETINGS

March 23, 2006	9:00 a.m.	Advisory Committee Meeting
March 23, 2006	11:00 a.m.	Watermaster Board Meeting
March 28, 2006	9:00 a.m.	GRCC Meeting
April 13, 2006	9:00 a.m.	Joint Appropriative Pool Meeting
April 18, 2006	9:00 a.m.	Agricultural Pool Meeting @ IEUA
April 27, 2006	9:00 a.m.	Advisory Committee Meeting
April 27, 2006	11:00 a.m.	Watermaster Board Meeting

Advisory Committee Meeting Adjourned at 10:00 a.m. in honor of Congressmen Jerry DuBois

Secretary: _____

Minutes Approved: _____

CHINO BASIN WATERMASTER

I. CONSENT CALENDAR

A. MINUTES

1. Watermaster Board Meeting – March 23, 2006

Draft Minutes

CHINO BASIN WATERMASTER
WATERMASTER BOARD MEETING

March 23, 2006

The Watermaster Board Meeting was held at the offices of the Chino Basin Watermaster, 9641 San Bernardino Road, Rancho Cucamonga, California, on March 23, 2006 at 11:00 a.m.

WATERMASTER BOARD MEMBERS PRESENT

Ken Willis, Chair	West End Consolidated Water Company
Sandra Rose	Monte Vista Water District
John Anderson	Inland Empire Utilities Agency
Al Lopez	Western Municipal Water District
Bob Kuhn	Three Valleys Municipal Water District
Bob Bowcock	Vulcan Materials Company
Paul Hofer	Agricultural Pool, Crops
Paul Hamrick	Jurupa Community Services District
Geoffrey Vanden Heuvel	Agricultural Pool, Dairy

Watermaster Staff Present

Kenneth R. Manning	Chief Executive Officer
Sheri Rojo	CFO/Asst. General Manager
Gordon Treweek	Project Engineer
Danielle Maurizio	Senior Engineer
Sherri Lynne Molino	Recording Secretary

Watermaster Consultants Present

Scott Slater	Hatch & Parent
Michael Fife	Hatch & Parent
Mark Wildermuth	Wildermuth Environmental Inc.
Andy Malone	Wildermuth Environmental Inc.

Others Present

Rosemary Hoerning	City of Upland
Terry Catlin	Inland Empire Utilities Agency
Ken Jeske	City of Ontario
Mark Kinsey	Monte Vista Water District
Jim Taylor	City of Pomona
Carole McGreevy	Jurupa Community Services District
Ash Dhingra	City of Pomona
Charles Moorrees	San Antonio Water Company
Dave Crosley	City of Chino
Henry Pepper	City of Pomona
Tom Love	Inland Empire Utilities Agency
David DeJesus	Three Valleys Municipal Water District

The Watermaster Board Meeting was called to order by Mr. Willis at 11:05 a.m.

PLEDGE OF ALLEGIANCE

AGENDA - ADDITIONS/REORDER

There were no additions or reorders made to the agenda.

I. CONSENT CALENDAR

A. MINUTES

1. Minutes of the Watermaster Board Meeting held February 23, 2006

B. FINANCIAL REPORTS

1. Cash Disbursements for the month of February 2006
2. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through January 31, 2006
3. Treasurer's Report of Financial Affairs for the Period January 1, 2006 through January 31, 2006
4. Profit & Loss Budget vs. Actual July through January 2006

Motion by Bowcock, second by Kuhn, and by unanimous vote

Moved to approve Consent Calendar Items A through B, as presented

II. BUSINESS ITEMS

A. CONTRACT FOR DRILLING AND CONSTRUCTION OF A NESTED PIEZOMETER

Mr. Manning stated a very extensive program for monitoring throughout this basin and one of the most extensive programs is in the MZ1 area where issues of subsidence have been detected. The centerpiece of this monitoring program is the nested piezometers which are located at the Ayala Park facility. The facility was constructed for the purpose of determining the extent of subsidence that is caused by pumping. During the course of the testing that has been performed at that this site, has shown periodic anomalies occurring causing cross contamination to occur between the different well casings. Having inconsistent data will not be sufficient for our monitoring program for MZ1. It has been recommended by our consultants that staff evaluate and consider installing new piezometers and then abandon the current site so that clearer and more accurate data can be gathered. The subsidence issue is an important issue to all Watermaster parties and staff wants to make sure we have an adequate monitoring program in place. The contract which is in the meeting package is with the Layne Christensen Company of Fontana in the amount of $292,000. Staff is pleased with this contracting company and they have done of work for us before. Staff is recommending moving forward with this item that has been unanimously approved by the Pools and the Advisory Committee. The question of what an actual piezometer is was presented. Mr. Malone gave a detailed explanation on what a piezometer is and does and how it is not properly functioning currently. A discussion ensued with regards to costs and completion dates.

Motion by Anderson, second by Hamrick, and by unanimous vote

Moved to approve the Layne Christensen Company contract for drilling and construction of a nested piezometer at Ayala Park in Chino, as presented

B. IEUA/DWR GRANT FUNDING AGREEMENT

Mr. Manning stated in January 2005, Inland Empire Utilities Agency (IEUA) received a grant of $15,500,000 from the Department of Water Resources (DWR) through the Proposition 13 Groundwater Recharge and Storage Programs. Mr. Manning noted that the purpose of this grant was to fund IEUA's Chino Basin Conjunctive Use Expansion Program. The total project cost for this program was estimated to be $40 million with the local share being funded through IEUA's Water and Sewer Rate revenue and a combination of various State and Federal funds. Mr. Manning stated in 2002, a separate grant of Proposition 13 money was given to IEUA that was used to fund implementation of Watermaster's Recharge Master Plan. That project involved a total cost of approximately $40 million. One half of this project cost was paid through grant funds, and the one-half local share was split evenly between IEUA and Watermaster. Through the initial implementation of the Recharge Master Plan, most, but not all, of the identified recharge basin improvements were constructed; the available funding fell short of being able to fund all of the identified improvements. Mr. Manning noted that additional improvement work was identified as necessary over the course of initial project construction and over the past year of use of the facilities. IEUA has proposed using a portion of the most recent

grant funding to perform further improvement work on the recharge basins. IEUA has also proposed using $5,250,000 of grant money for this purpose, using the same cost sharing arrangement that was used for the grant money that was used for initial implementation of the Recharge Master Plan. Staff is recommending moving forward with this agreement and noted this was approved unanimously by the Pools and the Advisory Committee.

Motion by Bowcock, second by Kuhn, and by unanimous vote

Moved to approve the agreement regarding recharge facilities improvements matching funds Cost Sharing Agreement between Inland Empire Utilities Agency and the Chino Basin Watermaster dated March, 2006, as presented

III. REPORTS/UPDATES

A. WATERMASTER GENERAL LEGAL COUNSEL REPORT

1. Attorney Manager Process/Discussion of Peace II Agreement

Counsel Slater stated based upon some of the comments that have been shared at the last few Watermaster Board meetings this report will be given in more detail than usual as to bring the members up to date on the historic and factual context of the Peace II process. This report is designed to bring the parties up to date on the status of the Attorney-Manager process and the discussion regarding the Peace II Term Sheet. Counsel Slater stated the Watermaster Board sits by virtue of the existence of a decree, a judgment, and the board itself is not a public agency. The Board is an extension of the judiciary, an arm of the court, to make findings of fact and decisions on things that come before you. As an extension of the court this board is not authorized or burdened by some of the requirements that might be attached to public agencies. The board has this power for two reasons; the parties to the judgment that initiated the litigation in 1978 decided to adopt a Watermaster structure, a rather complicated set of governance procedures and rules that have multiple cross checks and there are reasons and rational that go into why that was formed that may never be known to any of us. The fact is, what is left today is a contract which articulated a structure that the parties to the judgment trusted for purposes of making decisions. The Board serves at the discretion of the court because all of this while it may be a matter of contract, is still subject to the judicial review. This is why at one point in time the court said, "If certain things are not being carried out by Watermaster, I as the judge will exercise my discretion to disband this Watermaster and substitute in a new form of governance". There are two prongs in which this board sits; 1) the will of the parties under a contract, and 2) by virtue of the judicial review and consistent pleasure with your performance as an extension of the court. Watermaster's overall role is essentially to lead, guide, recommend, sometimes condition, and sometimes deny in accordance with our constitution, which is effectively the judgment. Watermaster itself, in particularly the board are somewhat constrained in how they deliberate. The affairs of Watermaster are essentially that of the court; in the extent this board is in the position to pass judgment one or more parties who ultimately come before you, the parties felt they were uncomfortable with this board being in a position to collectively deliberate confidentially among themselves about things that were to come before the board in the form of a subsequent application or conflict among their members. The boards' rules regarding confidential sessions are relatively constrained. If a subject matter is going to come before this board on the merits for which you would exercise your discretion and make a decision and ultimately carry that forward to the court, you are not entitled to hold a confidential session because the deliberation aught to be in public. This should be contrasted with a contract negotiation that you have with a third party. Mr. Slater stated that it has been asked before to counsel and staff why it is that Watermaster can't have confidential sessions about the subjects in the Peace Agreement. The reason is this way is because the discussions in the Peace Agreement are the kinds of things that routinely come before you for which you will require to exercise your discretion. This has a bearing on the origin or the genesis of the Attorney-Manager process, although, counsel understands there is discomfort with a confidential process, there is some reluctance on the part of the people who would ultimately appear before their judge and jury to confront their judge and jury about the

reasonableness of their individual stakeholder positions. Each of the members of the board represents the public generally and also represents a constituency; this is how one is ultimately appointed to the board. There has been a long standing concern, at least since 2005 that the parties themselves need to have an ability to organize, to talk privately, without predigesting "the board" with regard to positions they may take. People are more conformable discussing compromise in a confidential setting when what is said in those confidential meetings is not subsequently held up against them in a public setting. This process was initially engaged in an Attorney-Manager process which was designed to solicit stakeholder input in a non-confrontational confidential setting to develop an outline. That outline on the basis of all of the parties who participated in that work product, that they wanted it to be day lighted into the Watermaster process; counsel complied with that request by holding workshops. In those workshops comments were received and in the interim since the last workshop in December, Mark Wildermuth's office has been busy preparing a technical response to the plethora of comments that were received, and counsel is pleased to report an administrative draft is now complete. Staff and counsel has committed to releasing the draft report for review very shortly. Counsel Slater stated that having gone through the workshop process, the individual meeting processes, and all other avenues to resolve the term sheet issues, counsel suggests, unless the boars feels strongly otherwise, counsel would like to prepare on behalf of staff a facilitator amalgamation, a straw man proposal, and distribute that. Counsel feels the best place to start this next process is in a confidential setting, this board convened as Watermaster can not convene in confidential in a confidential setting. This board can allow the parties, at their own convenience, to convene confidentially and agree amongst themselves not to introduce things that someone says at the meeting. This allows people to talk fairly among them, and the theory is not to limit it, to the Attorney-Manager process but to actually open this meeting up to any person or party who is willing to adhere to the confidential rules. This will entail staff and counsel to attending a single session to allow an opportunity to present the straw man proposal. At that session we would then either bring the proposal back to the board with whatever further modifications or suggestions which are received at that process and then the board would then make a decision whether it was worthy of presentation to the pools for an initiation into the traditional Watermaster process or if the members at the proposal session detested the proposal counsel would forward that information to this board and that would then be a dead end in the process. Counsel is anticipating the latter suggestion will not come into play and there will be some sort of proposal brought back to this board for a decision after the session. Counsel Slater stated during the second week in April the straw man proposal will be released followed by the scheduled, April 18, meeting by which was described in an earlier statement. At the next Watermaster Board meeting on Thursday, April 27, 2006 the results of the April 18, meeting will be presented with the expectation, if all goes well, we will then taken into the Watermaster process in May and on time to respond to the courts request for a July workshop date. A lengthy discussion ensued with regard to "board" closed sessions.

B. WATERMASTER ENGINEERING CONSULTANT REPORT

1. Update on Report on Balance of Recharge and Discharge

Mr. Wildermuth stated one of the many things Wildermuth Environmental is doing for the Watermaster is this presented item which deals with certain provisions of the Peace Agreement and with Peace II. This report, as of late last night, was completed in an administrative draft form. Mr. Wildermuth stated that a "draft administrative form" is a document, for all purposes, 95% to 97% complete. The report will first be circulated through the Watermaster staff and Watermaster legal counsel to ensure all the technical questions are answered that were presented at the workshops regarding the Peace II Term Sheet. It is most likely staff and counsel will turn this document around quickly and staff is anticipating very little changes to be made and this item will be sent through the Watermaster process.

C. CEO/STAFF REPORT

1. USGS-GAMA Program

Mr. Manning stated in May this pool is going to be given a presentation on the USGS-GAMA Program which is a groundwater ambient water monitoring and assessment program. This is where the USGS comes into various groundwater basins and tests and evaluates water quality (called the GAMA Program). Mr. Manning stated he recently had a conversation with Robert Kent from USGS, who is the person who will be giving the May presentation, by letting him know that this basin is already light years ahead of other basins in data collection and data management and that we will gladly cooperate in assisting him in his quest by offering data that we have already gathered. Staff is trying to avoid letting the USGS come in and test where they want and then take incorrect or uncorroborated data back to our legislature and let legislature make assumptions against isolated tests. This is an awareness issue and a full presentation will be given in May on this item.

2. Legislative Update

Mr. Manning stated a number of people were in Washington last week talking with members of congress about issues relative to California water issues. This was the ACWA Legislative Agenda that was being discussed. This agenda gave us an opportunity to talk about the issues which are taking place within our own basin. Because of the tight schedules and the hastiness at those ACWA meetings, staff and representatives will be returning in a few weeks to talk in greater detail specifically about Chino Basin issues and where we think congress can be effective in meeting our mission in delivering an affordable water supply.

Mr. Manning stated that there is a meeting being held, as we speak, with Senator Margett and Senator Dutton who are currently negotiating, on our behalf, to put money into the bond for the Chino Basin. The deadline for getting our bond issue onto the ballot is March 10, 2006. It appears by several conversations with legislatures that our interests are being protected and staff is in contact with them quite frequently.

3. SAW DMS Data Coordination

Mr. Manning stated there are a few letters provided in the meeting packet which parties have probably already received a copy of wherein SAWPA is asking to come in and talk to the parties about data at each agency. After Watermaster staff received this letter, an email was sent to Daniel Cozad at SAWPA which expressed to him that staff would like to coordinate this through Watermaster; it is preferred that SAWPA not work with all the individual parties that there are reasons and benefits to work with Watermaster in a joint effort on this item. By working together Watermaster can eliminate a lot of duplicated work efforts on their part and also possibly save them some money. Mr. Manning stated this is an awareness issue and that Daniel was open and receptive to the idea.

4. Department of Health Services Public Hearing on Recycled Water

Mr. Love stated there a scheduled DHS & Regional Water Quality Control Board public hearing on Thursday, April 20, 2006 starting at 9:30 a.m. and is being held at the Chino Basin Watermaster office. Mr. Love offered history on the public hearing which was held in December of 2003 regarding Phase 1 basins. Mr. Love is asking all the appropriators, Watermaster's, and stake holders, in writing and at the actual hearing, speak in support of this program that has broad regional benefits to the groundwater basin.

5. Monthly Recharge Update

Mr. Manning noted that by commitments made at previous meetings in which Watermaster would provide the parties with monthly recharge updates at these meetings, a copy of the most recent update is available on the back table. Mr. Treweek stated we have been fortunate recently in having some late spring storm events. Mr. Treweek reviewed the handout in detail and noted we are pretty much on target as far as capturing water; our goal for the year is 50,000 acre-feet and in order to achieve that we need more months like

February with its heavier rain storms. Some of our basins are only recharged, at this point in time, with only storm water and this recharge situation will be rectified shortly via our DWR grant for improvements.

Added Comment:

Mr. Manning stated when he came to the Chino Basin one of the first things he did was join the Ontario Kiwanis Club and one of the first people he met in that club and embraced him was Jerry DuBois. Mr. DuBois inducted Mr. Manning into the Kiwanis Club and has been a good friend ever since and Mr. Manning stated he is going to be greatly missed. Congressmen DuBois was a true advocate for the City of Ontario. Mr. Manning asked that this meeting be adjourned in Congressmen DuBois honor.

IV. INFORMATION

1. Newspaper Articles

Chair Willis noted that Mr. Vanden Heuvel put together a really great article which is included in the meeting packet and inquired to Mr. Manning if staff could work on getting Geoff a guest column in the Daily Bulletin to submit articles such as the one presented here.

V. BOARD MEMBER COMMENTS

Ms. Rose inquired into the past discussions of holding a Watermaster Board member training/education workshop by the end of April. Mr. Manning stated it will be accomplished in April and the invitation will be opened to all who would like to attend to go through in depth the role of the Watermaster Board member. Staff will be sending out notice on this informal workshop shortly.

VI. OTHER BUSINESS

No comment was made regarding this item.

VII. FUTURE MEETINGS

March 23, 2006	9:00 a.m.	Advisory Committee Meeting
March 23, 2006	11:00 a.m.	Watermaster Board Meeting
March 28, 2006	9:00 a.m.	GRCC Meeting
April 13, 2006	9:00 a.m.	Joint Appropriative Pool Meeting
April 18, 2006	9:00 a.m.	Agricultural Pool Meeting @ IEUA
April 27, 2006	9:00 a.m.	Advisory Committee Meeting
April 27, 2006	11:00 a.m.	Watermaster Board Meeting

Chair Willis asked the board members and attendees to partake in a moment of silence to observe the passing of Jerry DuBois.

The Watermaster Board Meeting Adjourned at 12:05 p.m. in honor of Congressmen Jerry DuBois

Secretary: _____

Minutes Approved: _____

CHINO BASIN WATERMASTER

I. CONSENT CALENDAR

B. FINANCIAL REPORTS

1. Cash Disbursements for the month of March 2006
2. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2005 through February 28, 2006
3. Treasurer's Report of Financial Affairs for the Period February 1, 2006 through February 28, 2006
4. Profit & Loss Budget vs. Actual July through February 2006

CHINO BASIN WATERMASTER

9641 San Bernardino Road, Rancho Cucamonga, Ca 91730
Tel: 909.484.3888 Fax: 909.484.3890 www.cbwm.org

KENNETH R. MANNING
Chief Executive Officer

STAFF REPORT

DATE: **April 13, 2006**
April 18, 2006
April 27, 2006

TO: **Committee Members**
Watermaster Board Members

SUBJECT: **Cash Disbursement Report – March 2006**

SUMMARY

Issue – Record of cash disbursements for the month of March 2006.

Recommendation – Staff recommends the Cash Disbursements for March 2006 be received and filed as presented.

Fiscal Impact – All funds disbursed were included in the FY 2005-06 Watermaster Budget.

BACKGROUND

A monthly cash disbursement report is provided to keep all members apprised of Watermaster expenditures.

DISCUSSION

Total cash disbursements during the month of March 2006 were $2,097,843.49. The most significant expenditures during the month were Inland Empire Utilities Agency in the amount of $880,331.90, Inland Empire Utilities Agency in the amount of $860,601.70, Wildermuth Environmental Inc. in the amount of $161,921.61, and Hatch and Parent in the amount of $56,282.51.

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

CHINO BASIN WATERMASTER
Cash Disbursement Detail Report
March 2006

Type	Date	Num	Name	Amount
Mar 06				
Bill Pmt -Check	3/3/2006	10308	CAFE CALATO	-102.90
Bill Pmt -Check	3/7/2006	10309	A & R TIRE	-282.42
Bill Pmt -Check	3/7/2006	10310	ANDERSON, JOHN	-125.00
Bill Pmt -Check	3/7/2006	10311	APPLIED COMPUTER TECHNOLOGIES	-1,635.70
Bill Pmt -Check	3/7/2006	10312	ARROWHEAD MOUNTAIN SPRING WATER	-83.77
Bill Pmt -Check	3/7/2006	10313	BLACK & VEATCH CORPORATION	-1,177.50
Bill Pmt -Check	3/7/2006	10314	BOWCOCK, ROBERT	-125.00
Bill Pmt -Check	3/7/2006	10315	CUCAMONGA VALLEY WATER DISTRICT	0.00
Bill Pmt -Check	3/7/2006	10316	DIRECTV	-74.98
Bill Pmt -Check	3/7/2006	10317	HAMRICK, PAUL	-125.00
Bill Pmt -Check	3/7/2006	10318	INLAND EMPIRE UTILITIES AGENCY	-880,311.90
Bill Pmt -Check	3/7/2006	10319	KUHN, BOB	-125.00
Bill Pmt -Check	3/7/2006	10320	MONTE VISTA WATER DIST	-250.00
Bill Pmt -Check	3/7/2006	10321	PETTY CASH	-713.95
Bill Pmt -Check	3/7/2006	10322	PRINTING RESOURCES	-322.93
Bill Pmt -Check	3/7/2006	10323	PURCHASE POWER	-15.28
Bill Pmt -Check	3/7/2006	10324	RAUCH COMMUNICATION CONSULTANTS, LLC	-979.80
Bill Pmt -Check	3/7/2006	10325	RICOH BUSINESS SYSTEMS-Maintenance	-745.50
Bill Pmt -Check	3/7/2006	10326	SANTA ANA WATERSHED PROJECT AUTHORITY	-356.96
Bill Pmt -Check	3/7/2006	10327	UNION 76	-128.41
Bill Pmt -Check	3/7/2006	10328	VANDEN HEUVEL, GEOFFREY	-633.10
Bill Pmt -Check	3/7/2006	10329	VELASQUEZ JANITORIAL	-1,200.00
Bill Pmt -Check	3/7/2006	10330	VERIZON	-41.44
Bill Pmt -Check	3/7/2006	10331	WILLIS, KENNETH	-375.00
Bill Pmt -Check	3/7/2006	10332	YUKON DISPOSAL SERVICE	-134.72
Bill Pmt -Check	3/7/2006	10333	CUCAMONGA VALLEY WATER DISTRICT	-5,076.00
Bill Pmt -Check	3/7/2006	10334	SOUTHERN CALIFORNIA WATER COMMITTEE	-50.00
Bill Pmt -Check	3/9/2006	10335	COMPUSA, INC.	-403.25
Bill Pmt -Check	3/9/2006	10336	LOS ANGELES TIMES	-42.40
Bill Pmt -Check	3/9/2006	10337	MCCALL'S METER SALES & SERVICE	-9,347.32
Bill Pmt -Check	3/9/2006	10338	PARK PLACE COMPUTER SOLUTIONS, INC.	-2,200.00
Bill Pmt -Check	3/9/2006	10339	PAYCHEX	-172.38
Bill Pmt -Check	3/9/2006	10340	UNITED PARCEL SERVICE	-375.96
Bill Pmt -Check	3/9/2006	10341	VERIZON	-364.25
General Journal	3/15/2006	06/03/3	PAYROLL	-5,629.68
General Journal	3/15/2006	06/03/3	PAYROLL	-20,248.82
Bill Pmt -Check	3/22/2006	10362	ACWA SERVICES CORPORATION	-234.16
Bill Pmt -Check	3/22/2006	10363	PUMP CHECK	-2,509.99
Bill Pmt -Check	3/22/2006	10364	REID & HELLYER	-8,866.32
Bill Pmt -Check	3/22/2006	10365	THE FURMAN GROUP, INC.	-2,695.00
Bill Pmt -Check	3/22/2006	10342	BANK OF AMERICA	-5,644.55
Bill Pmt -Check	3/22/2006	10343	CAL CPA	-320.00
Bill Pmt -Check	3/22/2006	10344	CALPERS	-2,650.83
Bill Pmt -Check	3/22/2006	10345	ELLISON, SCHNEIDER & HARRIS, LLP	-13,911.12
Bill Pmt -Check	3/22/2006	10346	FIRST AMERICAN REAL ESTATE SOLUTIONS	-125.00
Bill Pmt -Check	3/22/2006	10347	GREENLEE, GAIL	-69.61
Bill Pmt -Check	3/22/2006	10348	HATCH AND PARENT	-56,282.51
Bill Pmt -Check	3/22/2006	10349	INLAND EMPIRE UTILITIES AGENCY	-860,601.70
Bill Pmt -Check	3/22/2006	10350	MCI	-908.17
Bill Pmt -Check	3/22/2006	10351	OFFICE DEPOT	-641.56
Bill Pmt -Check	3/22/2006	10352	PRE-PAID LEGAL SERVICES, INC.	-103.60
Bill Pmt -Check	3/22/2006	10353	PREMIERE GLOBAL SERVICES	-126.14
Bill Pmt -Check	3/22/2006	10354	RAUCH COMMUNICATION CONSULTANTS, LLC	-5,146.43
Bill Pmt -Check	3/22/2006	10355	RICOH BUSINESS SYSTEMS-Lease	-3,591.31
Bill Pmt -Check	3/22/2006	10356	STANDARD INSURANCE CO.	-579.88
Bill Pmt -Check	3/22/2006	10357	STAULA, MARY L	-136.61
Bill Pmt -Check	3/22/2006	10358	WHEELER METER MAINTENANCE	-900.00
Bill Pmt -Check	3/22/2006	10359	WILDERMUTH ENVIRONMENTAL INC	-161,921.03
Bill Pmt -Check	3/22/2006	10360	RICOH BUSINESS SYSTEMS-Lease	-888.94
Bill Pmt -Check	3/22/2006	10361	RICOH BUSINESS SYSTEMS-Maintenance	-26.60
Bill Pmt -Check	3/23/2006	10366	EL TORITO	-261.55
Bill Pmt -Check	3/24/2006	10367	VIP AUTO DETAILING	-499.20
General Journal	3/25/2006	06/03/5	PAYROLL	-5,058.95
General Journal	3/25/2006	06/03/5	PAYROLL	-19,166.41
Mar 06				-2,087,843.49

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

CHINO BASIN WATERMASTER
COMBINING SCHEDULE OF REVENUE, EXPENSES AND CHANGES IN WORKING CAPITAL
FOR THE
PERIOD JULY 1, 2005 THROUGH FEBRUARY 28, 2006

	WATERMASTER ADMINISTRATION	OPTIMUM BASIN MANAGEMENT	POOL ADMINISTRATION AND SPECIAL PROJECTS APPROPRIATIVE POOL	AGRICULTURAL POOL	NON-AGRIC. POOL	GROUNDWATER OPERATIONS GROUNDWATER REPLENISHMENT	SB222 FUNDS	EDUCATION FUNDS	GRAND TOTALS	BUDGET 2004-05
Administrative Revenues										
Administrative Assessments			4,781,347		66,160				4,847,507	$3,984,888
Interest Revenue			100,514	10,433	3,278			37	114,262	78,330
Mutual Agency Project Revenue		29,763							29,763	0
Grant Income									-	0
Miscellaneous Income									-	0
Total Revenues	-	29,763	4,881,861	10,433	69,438	-	-	37	4,991,532	4,063,218
Administrative & Project Expenditures										
Watermaster Administration	371,958								371,958	621,784
Watermaster Board-Advisory Committee	37,185								37,185	37,018
Pool Administration			14,040	85,761	3,287				103,088	91,153
Optimum Basin Mgnt Administration		903,659							903,659	1,019,183
OBMP Project Costs		1,227,637							1,227,637	3,733,694
Education Funds Use								375	375	375
Mutual Agency Project Costs	21,075								21,075	80,004
Total Administrative/OBMP Expenses	430,218	2,131,296	14,040	85,761	3,287			375	2,664,977	5,583,211
Net Administrative/OBMP Income	(430,218)	(2,101,533)								
Allocate Net Admin Income To Pools	430,218		334,086	90,050	6,082				-	0
Allocate Net OBMP Income To Pools		2,101,533	1,631,945	439,878	29,710				-	0
Agricultural Expense Transfer			609,539	(609,539)					-	0
Total Expenses			2,589,610	6,150	39,079	-	-	375	2,664,977	5,583,211
Net Administrative Income			2,292,251	4,283	30,359			(338)	2,326,555	(1,519,993)
Other Income/(Expense)										
Replenishment Water Purchases						6,635,065			6,635,065	0
MZ1 Supplemental Water Assessments									-	2,179,500
Water Purchases									-	0
MZ1 Imported Water Purchase									-	(2,278,500)
Groundwater Replenishment						(5,748,143)			(5,748,143)	0
Net Other Income			-	-	-	886,922	-	-	886,922	(99,000)
Net Transfers To/(From) Reserves			2,292,251	4,283	30,359	886,922	-	(338)	3,213,477	(1,618,993)
Working Capital, July 1, 2005			4,450,869	464,653	187,298	3,580,499	158,251	2,238	8,843,808	
Working Capital, End Of Period			6,743,120	468,936	217,657	4,467,421	158,251	1,900	12,057,285	
04/05 Production			127,810.967	34,450.449	2,326.836				164,588.252	
04/05 Production Percentages			77.655%	20.931%	1.414%				100.000%	

Q:\Financial Statements\05-06\06 Jan\[CombiningSchedule Jan.xls]Sheet1

Prepared by Sheri Rojo, Chief Financial Officer /Assistant General Manager

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

CHINO BASIN WATERMASTER
TREASURER'S REPORT OF FINANCIAL AFFAIRS FOR THE PERIOD
FEBRUARY 1 THROUGH FEBRUARY 28, 2006

DEPOSITORIES:			
Cash on Hand - Petty Cash			$ 500
Bank of America			
Governmental Checking-Demand Deposits		$ 204,976	
Savings Deposits		9,685	
Zero Balance Account - Payroll		25,423	240,084
Vineyard Bank CD - Agricultural Pool			416,453
Local Agency Investment Fund - Sacramento			12,945,566
TOTAL CASH IN BANKS AND ON HAND	2/28/2006		**$ 13,602,603**
TOTAL CASH IN BANKS AND ON HAND	1/31/2006		12,952,000
PERIOD INCREASE (DECREASE)			**$ 650,603**

CHANGE IN CASH POSITION DUE TO:		
Decrease/(Increase) in Assets:	Accounts Receivable	$ 9,883
	Assessments Receivable	1,963,906
	Prepaid Expenses, Deposits & Other Current Assets	17,183
(Decrease)/Increase in Liabilities	Accounts Payable	(77,298)
	Accrued Payroll, Payroll Taxes & Other Current Liabilities	959
	Transfer to/(from) Reserves	(1,264,030)
	PERIOD INCREASE (DECREASE)	**$ 650,603**

SUMMARY OF FINANCIAL TRANSACTIONS:	Petty Cash	Govt'l Checking Demand	Zero Balance Account Payroll	Savings	Vineyard Bank	Local Agency Investment Funds	Totals
Balances as of 1/31/2006	$ 500	$ 180,974	$ -	$ 9,685	$ 415,275	$ 12,345,566	$ 12,952,000
Deposits	-	1,973,790	-	-	1,178	600,000	2,574,968
Transfers	-	(677,951)	77,951	-	-	-	(600,000)
Withdrawals/Checks	-	(1,271,837)	(52,528)	-	-	-	(1,324,365)
Balances as of 2/28/2006	$ 500	$ 204,976	$ 25,423	$ 9,685	$ 416,453	$ 12,945,566	$ 13,602,603
	-	-	-	-	-	-	
PERIOD INCREASE OR (DECREASE)	**$ -**	**$ 24,002**	**$ 25,423**	**$ -**	**$ 1,178**	**$ 600,000**	**$ 650,603**

CHINO BASIN WATERMASTER
TREASURER'S REPORT OF FINANCIAL AFFAIRS FOR THE PERIOD
FEBRUARY 1 THROUGH FEBRUARY 28, 2006

INVESTMENT TRANSACTIONS

Effective Date	Transaction	Depository	Activity	Redeemed	Days to Maturity	Interest Rate(*)	Maturity Yield
2/24/2006	Deposit	L.A.I.F.	$ 600,000				
TOTAL INVESTMENT TRANSACTIONS			**$ 600,000**	-			

* The earnings rate for L.A.I.F. is a daily variable rate; 3.63% was the effective yield rate at the Quarter ended December 31, 2005

INVESTMENT STATUS
February 28, 2006

Financial Institution	Principal Amount	Number of Days	Interest Rate	Maturity Date
Local Agency Investment Fund	$ 12,945,566			
TOTAL INVESTMENTS	**$ 12,945,566**			

Funds on hand are sufficient to meet all foreseen and planned Administrative and project expenditures during the next six months.

All investment transactions have been executed in accordance with the criteria stated in Chino Basin Watermaster's Investment Policy.

Respectfully submitted,

Sheri M. Rojo, CPA
Chief Financial Officer & Assistant General Manager
Chino Basin Watermaster

CHINO BASIN WATERMASTER
Profit & Loss Budget vs. Actual
July 2005 through February 2006

	Jul '05 - Feb 06	Budget	$ Over Budget	% of Budget
Ordinary Income/Expense				
Income				
4010 · Local Agency Subsidies	29,763	132,000	-102,238	22.55%
4110 · Admin Asmnts-Approp Pool	4,781,347	4,804,121	-22,774	99.53%
4120 · Admin Asmnts-Non-Agri Pool	66,160	73,425	-7,265	90.11%
4700 · Non Operating Revenues	114,262	78,330	35,932	145.87%
Total Income	4,991,532	5,087,876	-96,344	98.11%
Gross Profit	4,991,532	5,087,876	-96,344	98.11%
Expense				
6010 · Salary Costs	323,692	404,153	-80,461	80.09%
6020 · Office Building Expense	57,589	97,850	-40,261	58.85%
6030 · Office Supplies & Equip.	15,067	47,500	-32,433	31.72%
6040 · Postage & Printing Costs	52,107	75,700	-23,593	68.83%
6050 · Information Services	80,034	103,500	-23,466	77.33%
6060 · Contract Services	14,163	130,500	-116,337	10.85%
6080 · Insurance	16,525	24,210	-7,685	68.26%
6110 · Dues and Subscriptions	3,250	14,000	-10,750	23.21%
6140 · WM Admin Expenses	1,032	6,500	-5,468	15.87%
6150 · Field Supplies	-1,827	4,050	-5,877	-45.1%
6170 · Travel & Transportation	48,000	45,200	2,800	106.19%
6190 · Conferences & Seminars	12,084	17,500	-5,416	69.05%
6200 · Advisory Comm - WM Board	9,562	14,082	-4,520	67.91%
6300 · Watermaster Board Expenses	27,623	29,782	-2,159	92.75%
8300 · Appr PI-WM & Pool Admin	14,040	15,347	-1,307	91.48%
8400 · Agri Pool-WM & Pool Admin	13,128	18,756	-5,628	70.0%
8467 · Agri-Pool Legal Services	66,483	45,000	21,483	147.74%
8470 · Ag Meeting Attend -Special	6,150	10,000	-3,850	61.5%
8500 · Non-Ag PI-WM & Pool Admin	3,287	7,423	-4,136	44.28%
6500 · Education Funds Use Expens	375	375	0	100.0%
9500 · Allocated G&A Expenditures	-249,756	-378,284	128,528	66.02%
Subtotal G&A Expenditures	512,605	733,144	-220,539	69.92%
6900 · Optimum Basin Mgmt Plan	820,172	996,767	-176,595	82.28%
6950 · Mutual Agency Projects	21,075	75,000	-53,925	28.1%
9501 · G&A Expenses Allocated-OBMP	83,487	109,541	-26,054	76.22%
Subtotal OBMP Expenditures	924,734	1,181,308	-256,574	78.28%
7101 · Production Monitoring	44,179	68,755	-24,576	64.26%
7102 · In-line Meter Installation	40,688	97,954	-57,266	41.54%
7103 · Grdwtr Quality Monitoring	48,829	66,503	-17,674	73.42%
7104 · Gdwtr Level Monitoring	86,292	184,812	-98,520	46.69%
7105 · Sur Wtr Qual Monitoring	8,016	90,223	-82,207	8.88%
7106 · Wtr Level Sensors Install	0	5,734	-5,734	0.0%
7107 · Ground Level Monitoring	91,109	554,825	-463,716	16.42%
7108 · Hydraulic Control Monitoring	162,347	495,368	-333,021	32.77%
7109 · Recharge & Well Monitoring Prog	143,234	133,061	10,173	107.65%
7200 · PE2- Comp Recharge Pgm	246,456	759,105	-512,649	32.47%
7300 · PE3&5-Water Supply/Desalte	339	12,548	-12,209	2.7%

CHINO BASIN WATERMASTER
Profit & Loss Budget vs. Actual
July 2005 through February 2006

	Jul '05 - Feb 06	Budget	$ Over Budget	% of Budget
7400 · PE4- Mgmt Plan	134,082	1,081,014	-946,932	12.4%
7500 · PE6&7-CoopEfforts/SaltMgmt	48,849	255,769	-206,920	19.1%
7600 · PE8&9-StorageMgmt/Conj Use	6,849	77,268	-70,419	8.86%
7690 · Recharge Improvement Debt Pymt	0	300,000	-300,000	0.0%
7700 · Inactive Well Protection Prgm	0	12,128	-12,128	0.0%
9502 · G&A Expenses Allocated-Projects	166,269	268,742	-102,473	61.87%
Subtotal Special Project Expenditures	1,227,537	4,463,809	-3,236,272	27.5%
Total Expense	2,664,877	6,378,261	-3,713,384	41.78%
Net Ordinary Income	2,326,655	-1,290,385	3,617,040	-180.31%
Other Income/Expense				
Other Income				
4231 · MZ1 Assigned Water Sales	0	600,000	-600,000	0.0%
4210 · Approp Pool-Replenishment	6,635,065	0	6,635,065	100.0%
Total Other Income	6,635,065	600,000	6,035,065	1,105.84%
Other Expense				
5010 · Groundwater Replenishment	5,748,143	699,000	5,049,143	822.34%
9999 · To/(From) Reserves	3,213,578	-1,389,385	4,602,963	-231.3%
Total Other Expense	8,961,721	-690,385	9,652,106	-1,298.08%
Net Other Income	-2,326,655	1,290,385	-3,617,040	-180.31%
Net Income	0	0	0	0.0%

CHINO BASIN WATERMASTER

I. CONSENT CALENDAR

C. WATER TRANSACTION

Notice of Sale or Transfer – Cucamonga Valley Water District has agreed to purchase from West Valley Water District water in storage in the amount of 500 acre-feet.

Chino Basin Watermaster

9641 San Bernardino Road,, Rancho Cucamonga, CA 91730

Date: **February 1, 2006**

TRANSMITTAL

To: **Watermaster Interested Parties**

Mail **See list attached**

Email: **See list attached**

File: Water Transactions

From: **Janine Wilson**
Chino Basin Watermaster
9641 San Bernardino Road
Rancho Cucamonga, Ca. 91730

Phone: 909.484.3888
Fax: 909.484.3890

	REMARKS:		Enclosed	x	For your review		Per Your Request		Please comment	

Attached please find the following Application(s) for Water Transaction(s):

1. Notice of Sale or Transfer –Cucamonga Valley Water District has agreed to purchase from West Valley Water District water in storage in the amount of 500 acre-feet.

This matter will come before the Pool Committees in February 2006 and the Advisory Committee and Watermaster Board in March 2006.

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

RICHARD ANDERSON
1365 W. FOOTHILL BLVD
SUITE 1
UPLAND, CA 91786

RODNEY BAKER
COUNSEL FOR EGGWEST &
JOHNSON
PO BOX 438
COULTERVILLE, CA 95311-0438

PATRICK BAUER
ARROWHEAD WATER COMPANY
5772 JURUPA RD
ONTARIO, CA 91761-3672

BOB BEST
NAT'L RESOURCE CONS SVCS
25864 BUSINESS CENTER DR K
REDLANDS, CA 92374

BRUCE CASH
UNITED WATER MGMT CO INC
1881 BUSINESS CENTER DR
SUITE 8A
SAN BERNARDINO, CA 92408

WILLIAM P. CURLEY
PO BOX 1059
BREA, CA 92882-1059

DAVID B. COSGROVE
RUTAN & TUCKER
611 ANTON BLVD
SUITE 1400
COSTA MESA, CA 92626

PAUL HOFER
11248 S TURNER AVE
ONTARIO, CA 91761

JOE DELGADO
BOYS REPUBLIC
3493 GRAND AVENUE
CHINO HILLS, CA 91709

GLEN DURRINGTON
5512 FRANCIS ST
CHINO, CA 91710

DICK DYKSTRA
10129 SCHAEFER
ONTARIO, CA 91761-7973

RALPH FRANK
755 LAKEFIELD RD #E
WESTLAKE VILLAGE, CA 91361

CARL FREEMAN
L.D. KING
2151 CONVENTION CENTRE WAY
ONTARIO, CA 91764

PAUL DEUTSCH
GEOMATRIX CONSULTANTS, INC.
2444 MAIN ST., SUITE 215
FRESNO, CA 93721

JIM GALLAGHER
SOUTHERN CALIFORNIA WATER CO
2143 CONVENTION CENTER WAY
SUITE 110
ONTARIO, CA 91764

DON GALLEANO
4220 WINEVILLE RD
MIRA LOMA, CA 91752-1412

PETER HETTINGA
14244 ANON CT
CHINO, CA 91710

PETE HALL
PO BOX 519
TWIN PEAKS, CA 92391

LISA HAMILTON
GE/MGR ENV REMEDIATION PRGM
640 FREEDOM BUSINESS CTR
KING OF PRUSSIA, PA 19406

CARL HAUGE
SWRCB
PO BOX 942836
SACRAMENTO, CA 94236-0001

SUSAN TRAGER
LAW OFFICES OF SUSAN M. TRAGER
19712 MACARTHUR BLVD
SUITE 120
IRVINE, CA 92612

JOEL KUPERBERG
OCWD GENERAL COUNSEL
RUTAN & TUCKER, LLP
611 ANTON BLVD., 14TH FLOOR
COSTA MESA, CA 92626-1931

ANNESLEY IGNATIUS
COUNTY OF SAN BERNARDINO FCD
825 E 3RD ST
SAN BERNARDINO, CA 92415-0835

W. C. "BILL" KRUGER
CITY OF CHINO HILLS
2001 GRAND AVE
CHINO HILLS, CA 91709

SHARON JOYCE
STATE OF CA CDC
1515 S STREET, ROOM 314-F
SACRAMENTO, CA 95814

BOB THOMPSON
CONSULTANT TO SENATOR SOTO
822 N EUCLID AVE, SUITE A
ONTARIO, CA 91762

KRONICK ET AL
KRONICK MOSKOVITZ TIEDEMANN
& GIRARD
400 CAPITOL MALL, 27TH FLOOR
SACRAMENTO, CA 95814-4417

RONALD LA BRUCHERIE
12953 S BAKER AVE
ONTARIO,CA 91761-7903

CARLOS LOZANO
STATE OF CA YTS
15180 S EUCLID
CHINO, CA 91710

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

Distribution List Name: Committee List 1- Court Filings, Water Transactions

Members:

Al Lopez	lopezsixto@netzero.net
Alice Shiozawa	afshioza@gswater.com
Andy Malone	amalone@wildermuthenvironmental.com
Anne Schneider	ajs@eslawfirm.com
April Woodruff	awoodruff@ieua.org
Arnold Rodriguez	jarodriguez@sarwc.com
Art Kidman	akidman@mkblawyers.com
Barbara Swanson	Barbara_Swanson@yahoo.com
Bill Kruger	citycouncil@chinohills.org
Bill Rice	brice@rb8.swrcb.ca.gov
Bill Stafford	bstaff@uslextreme.com
Bill Thompson	bthompson@ci.norco.ca.us
Bob Feenstra	feenstra@agconceptsinc.com
Bob Kuhn	bgkuhn@aol.com
Bonnie Tazza	bonniet@cvwdwater.com
Boyd Hill	bhill@mkblawyers.com
Brenda Fowler	balee@fontanawater.com
Brian Hess	bhess@niagarawater.com
Butch Araiza	butcharaiza@mindspring.com
Carole McGreevy	cmcgreevy@jcsd.us
Charles Moorrees	cmoorrees@sawaterco.com
Chris Swanberg	chris.swanberg@corr.ca.gov
Cindy LaCamera	clacamera@mwdh2o.com
Craig Stewart	cstewart@geomatrix.com
Curtis Aaron	caaron@fontana.org
Dan Arrighi	darrighi@sgvwater.com
Dan Hostetler	dghostetler@csupomona.edu
Dan McKinney	dmckinney@rhlaw.com
Daniel Cozad	dcozad@sawpa.org
Dave Argo	argodg@bv.com
Dave Crosley	DCrosley@cityofchino.org
Dave Hill	dhill@ieua.org
David B. Anderson	danders@water.ca.gov
David Ringel	david.ringel@mwhglobal.com
ddejesus@mwdh20.com	ddejesus@mwdh20.com
Diane Sanchez	dianes@water.ca.gov
Don Galleano	donald@galleanowinery.com
Duffy Blau	Duffy954@aol.com
Eric Garner	elgarner@bbklaw.com
Eunice Ulloa	ulloa.cbwcd@verizon.net
Frank Brommenschenkel	frank.brommen@verizon.net
Fred Fudacz	ffudacz@nossaman.com
Fred Lantz	flantz@ci.burbank.ca.us
Garth Morgan	gmorgan@ieua.org
Gene Koopman	GTKoopman@aol.com
Gerard Thibeault	gthibeault@rb8.swrcb.ca.gov
Gerry Black	gjblack@FontanaWater.com
Glen Whritenour	gwhritenour@reliantenergy.com
Gordon P. Treweek	GTreweek@CBWM.ORG
Grace Cabrera	grace_cabrera@ci.pomona.ca.us
Henry Pepper	henry_pepper@ci.pomona.ca.us
James Jenkins	cnomgr@airports.sbcounty.gov
James P. Morris	jpmorris@bbklaw.com
Janine Wilson	Janine@CBWM.ORG
Jarlath Oley	joley@mwdh2o.com
Jean Cihigoyenetche	Jean_CGC@hotmail.com
jeeinc@aol.com	jeeinc@aol.com
Jeffrey L. Pierson	jpierson@unitexcorp.com
Jerry King	jking@psomas.com
Jess Senecal	JessSenecal@lagerlof.com
Jill Willis	jnwillis@bbklaw.com
Jim Bryson	jtbryson@fontanawater.com
Jim Hill	jhill@cityofchino.org

Distribution List Name: Committee List 2 - Court Filings, Water Transactions

Members:

Marilyn Levin	marilyn.levin@doj.ca.gov
Mark Kinsey	mkinsey@mvwd.org
Mark Ward	mark_ward@ameron-intl.com
Mark Wildermuth	mwildermuth@wildermuthenvironmental.com
Martha Davis	mdavis@ieua.org
Martin Rauch	martin@rauchcc.com
Martin Zvirbulis	martinz@cvwdwater.com
Maynard Lenhert	directorlenhert@mvwd.org
Michael Fife	Mfife@hatchparent.com
Michelle Staples	mstaples@jdplaw.com
Mike Del Santo	mike_delsanto@catellus.com
Mike Maestas	mmaestas@chinohills.org
Mike McGraw	mjmcgraw@FontanaWater.com
Mike Thies	mthies@spacecenterinc.com
Mohamed El-Amamy	melamamy@ci.ontario.ca.us.
Nathan deBoom	nathan@milkproducers.org
Pam Wilson	pwilson@hatchparent.com
Paul Hamrick	wleslie@jcsd.us
Paul Hofer	farmwatchtoo@aol.com
Paula Molter	PMolter@CBWM.ORG
Pete Hall	richard.okeefe@corr.ca.gov
Peter Von Haam	peter.vonhaam@doj.ca.gov
Phil Krause	pkrause@parks.sbcounty.gov
Phil Rosentrater	prosentrater@wmwd.com
Rachel R Robledo	RRobledo@HatchParent.com
Raul Garibay	raul_garibay@ci.pomona.ca.us
Richard Atwater	Atwater@ieua.org
Rick Hansen	rhansen@tvmwd.com
Rick Rees	rrees@geomatrix.com
Rita Kurth	ritak@cvwdwater.com
Robert DeLoach	robertd@cvwdwater.com
Robert Dougherty	RED@covcrowe.com
Robert Neufeld	N78098@aol.com
Robert Neufeld	robertn@cvwdwater.com
Robert Rauch	robert.rauchcc@verizon.net
Robert W Bowcock	bbowcock@irmwater.com
Robert W. Nicholson	rwnicholson@sgvwater.com
Ron Craig	RonC@rbf.com
Ron Small	ron.small@dgs.ca.gov
Rosemary Hoerning	rhoerning@ci.upland.ca.us
Sandra S. Rose	ybarose@verizon.net
Sandy Lopez	slopez@ci.ontario.ca.us
Scott Burton	sburton@ci.ontario.ca.us
Sharon Joyce	SJoyce@executive.corr.ca.gov
Steve Arbelbide	sarbelbide@californiasteel.com
Steve Kennedy	skennedy@bbmblaw.com
Steven Lee	slee@rhlaw.com
Tej Pahwa	tpahwa@dtsc.ca.gov
Terry Catlin	tlcatlin@verizon.net
Timothy Ryan	tjryan@sgvwater.com
Tom Bunn	TomBunn@Lagerlof.com
Tom Love	TLove@ieua.org
Tom McPeters	THMcP@aol.com
Tracy Tracy	ttracy@mvwd.org
Virginia Grebbien	vgrebbien@ocwd.com
Wayne Davison	ciwcpm@earthlink.net
William J. Brunick	bbrunick@bbmblaw.com
William P. Curley	wcurley@rwglaw.com
WM Admin Staff	

CHINO BASIN WATERMASTER

NOTICE

OF

APPLICATION(S)

RECEIVED FOR

WATER TRANSACTIONS – ACTIVITIES

Date of Notice:

February 1, 2006

This notice is to advise interested persons that the attached application(s) will come before the Watermaster Board on or after 30 days from the date of this notice.

CHINO BASIN WATERMASTER

NOTICE
OF
TRANSFER OF WATER

Notification Dated: February 1, 2006

A party to the Judgment has submitted a proposed transfer of water for Watermaster approval. Unless contrary evidence is presented to Watermaster that overcomes the rebuttable presumption provided in Section 5.3(b)(iii) of the Peace Agreement, Watermaster must find that there is "no material physical injury" and approve the transfer. Watermaster staff is not aware of any evidence to suggest that this transfer would cause material physical injury and hereby provides this notice to advise interested persons that this transfer will come before the Watermaster Board on or after 30 days from the date of this notice. The attached staff report will be included in the meeting package at the time the transfer begins the Watermaster process (comes before Watermaster).

CHINO BASIN WATERMASTER

9641 San Bernardino Road, Rancho Cucamonga, Ca 91730
Tel: (909) 484.3888 Fax: (909) 484-3890 www.cbwm.org

KENNETH R. MANNING
CHIEF EXECUTIVE OFFICER

DATE: February 1, 2006

TO: Watermaster Interested Parties

SUBJECT: Summary and Analysis of Application for Water Transaction

Summary -
There does not appear to be a potential material physical injury to a party or to the basin from the proposed transaction as presented.

Issue -

- Notice of Sale or Transfer – Cucamonga Valley Water District has agreed to purchase from West Valley Water District water in storage in the amount of 500 acre -feet.

Recommendation –

1. Continue monitoring as planned in the Optimum Basin Management Program.
2. Use all new or revised information when analyzing the hydrologic balance and report to Watermaster if a potential for material physical injury is discovered, and
3. Approve the transaction as presented.

Fiscal Impact –

[ ] None
[X] Reduces assessments under the 85/15 rule
[ ] Reduce desalter replenishment costs

Background
The Court approved the Peace Agreement, the Implementation Plan and the goals and objectives identified in the OBMP Phase I Report on July 13, 2000, and ordered Watermaster to proceed in a manner consistent with the Peace Agreement. Under the Peace Agreement, Watermaster approval is required for applications to store, recapture, recharge or transfer water, as well as for applications for credits or reimbursements and storage and recovery programs.

Where there is no material physical injury, Watermaster must approve the transaction. Where the request for Watermaster approval is submitted by a party to the Judgment, there is a rebuttable presumption that most of the transactions do not result in Material Physical Injury to a party to the Judgment or the Basin (Storage and Recovery Programs do not have this presumption).

The following application for water transaction is attached with the notice of application.

- Notice of Sale or Transfer – Cucamonga Valley Water District has agreed to purchase from West Valley Water District water in storage in the amount of 500 acre -feet.

Cucamonga Valley Water District

CUCAMONGA VALLEY WATER DISTRICT

10440 Ashford Street
Rancho Cucamonga, CA 91730-2799
(909) 987-2591 Fax (909) 476-8032

ROBERT A. DeLOACH
Secretary / General Manager/CEO

January 10, 2006

Mr. Ken Manning
Chief Executive Officer
CHINO BASIN WATERMASTER
9641 San Bernardino Road
Rancho Cucamonga, CA 91730

Dear Mr. Manning:

Please be advised that Cucamonga Valley Water District ("CVWD") has an agreement with West San Bernardino County Water District ("WSBCWD") whereby CVWD will purchase 500 acre feet of WSBCWD's stored Chino Basin groundwater. Please credit the 500 acre feet to CVWD's local storage account.

Enclosed please find:

Form 3 – Application for Sale or Transfer of Right to Produce Water from Storage
Form 4 – Application or Amendment to Application to Recapture Water in Storage
Form 5 – Application to Transfer Annual Production Right or Safe Yield
Map of CVWD's Chino Basin Wells

CVWD requests that this transfer be agendized for the next available Appropriative Pool meeting.

Should you have any questions, please contact me. Thank you.

Respectfully,

Robert A. DeLoach
General Manager

Enclosures

Form 3

APPLICATION FOR SALE OR TRANSFER OF RIGHT TO PRODUCE WATER FROM STORAGE

TRANSFER FROM LOCAL STORAGE AGREEMENT #____

West San Bernardino County Water District
Name of Party

855 W. Baseline Road
Street Address

Rialto | CA | 92376
City | State | Zip Code

Telephone: (909) 875-1804

Anthony W. Araiza
Applicant

January 4, 2006
Date Requested

_____
Date Approved

500 Acre-feet
Amount Requested

_____ Acre-feet
Amount Approved

Facsimile: (909) 875-7284

TRANSFER TO:

Cucamonga Valley Water District
Name of Party

10440 Ashford Street
Street Address

Rancho Cucamonga | CA | 91730
City | State | Zip Code

Telephone: (909) 987-2591

Attach Recapture Form 4

Facsimile: (909) 476-8032

Have any other transfers been approved by Watermaster between these parties covering the same fiscal year? Yes [ ] No [X]

WATER QUALITY AND WATER LEVELS

What is the existing water quality and what are the existing water levels in the areas that are likely to be affected?

Static water levels vary from 418' to 503'. Of the wells routinely pumped, nitrate levels vary from a low of 3.5 ppm to a high of 38 ppm.

MATERIAL PHYSICAL INJURY

Is the Applicant aware of any potential Material Physical Injury to a party to the Judgment or the Basin that may be caused by the action covered by the application? Yes [ ] No [X]

If yes, what are the proposed mitigation measures, if any, that might reasonably be imposed to ensure that the action does not result in Material Physical Injury to a party to the Judgment or the Basin?

N/A

Form 4

APPLICATION OR AMENDMENT TO APPLICATION TO RECAPTURE WATER IN STORAGE

APPLICANT

Cucamonga Valley Water District
Name of Party

10440 Ashford Street
Street Address

Rancho Cucamonga | CA | 91730
City | State | Zip Code

Telephone: (909) 987-2591

January 4, 2006
Date Requested

500 Acre-feet
Amount Requested

Varies
Projected Rate of Recapture

Facsimile: (909) 476-8032

_____
Date Approved

_____ Acre-feet
Amount Approved

July 1, 2005 – June 30, 2006
Projected Duration of Recapture

IS THIS AN AMENDMENT TO A PREVIOUSLY APPROVED APPLICATION? [ ] YES [X] NO
IF YES, ATTACH APPLICATION TO BE AMENDED

IDENTITY OF PERSON THAT STORED THE WATER: West San Bernardino County Water District

PURPOSE OF RECAPTURE

- [ ] Pump when other sources of supply are curtailed
- [X] Pump to meet current or future demand over and above production right
- [ ] Pump as necessary to stabilize future assessment amounts
- [ ] Other, explain _____

METHOD OF RECAPTURE (if by other than pumping) (e.g. exchange)

N/A

PLACE OF USE OF WATER TO BE RECAPTURED

Within Cucamonga County Water District's service area (see attached map) Management Zone 2

LOCATION OF RECAPTURE FACILITIES (IF DIFFERENT FROM REGULAR PRODUCTION FACILITIES).

N/A

WATER QUALITY AND WATER LEVELS

What is the existing water quality and what are the existing water levels in the areas that are likely to be affected?

Static water levels vary from 418' to 503. Of the wells routinely pumped, nitrate levels vary from a Low of 3.5 ppm to a high of 38 ppm.

APPLICATION
TO
TRANSFER ANNUAL PRODUCTION RIGHT OR SAFE YIELD

Fiscal Year 2005 - 2006

Commencing on July 1, 2005 and terminating on June 30, 2006, West San Bernardino County Water District ("Transferor") hereby transfers to Cucamonga Valley Water District ("Transferee") the quantity of 500 acre-feet of corresponding Annual Production Right (Appropriative Pool) or Safe Yield (Non-Agricultural Pool) adjudicated to Transferor or its predecessor in interest in the Judgment rendered in the Case of "CHINO BASIN MUNICIPAL WATER DISTRICT vs. CITY OF CHINO, et al.," RCV 51010 (formerly Case No. SCV 164327).

Said Transfer shall be conditioned upon:

(1) Transferee shall exercise said right on behalf of Transferor under the terms of the Judgment and the Peace Agreement and for the period described above. The first water produced in any year shall be that produced pursuant to carry-over rights defined in the Judgment. After production of its carry-over rights, if any, the next (or first if no carry-over rights) water produced by Transferee from the Chino Basin shall be that produced hereunder.
(2) Transferee shall put all waters utilized pursuant to said Transfer to reasonable beneficial use.
(3) Transferee shall pay all Watermaster assessments on account of the water production hereby Transferred.
(4) Any Transferee not already a party must intervene and become a party to the Judgment.

TO BE EXECUTED by both Transferor and Transferee, and to be accompanied by a general description of the area where the Transferred water was to be Produced and used prior to the Transfer, and where it will be Produced and used after the Transfer. This general description can be in the form of a map.

WATER QUALITY AND WATER LEVELS

What is the existing water quality and what are the existing water levels in the areas that are likely to be affected?

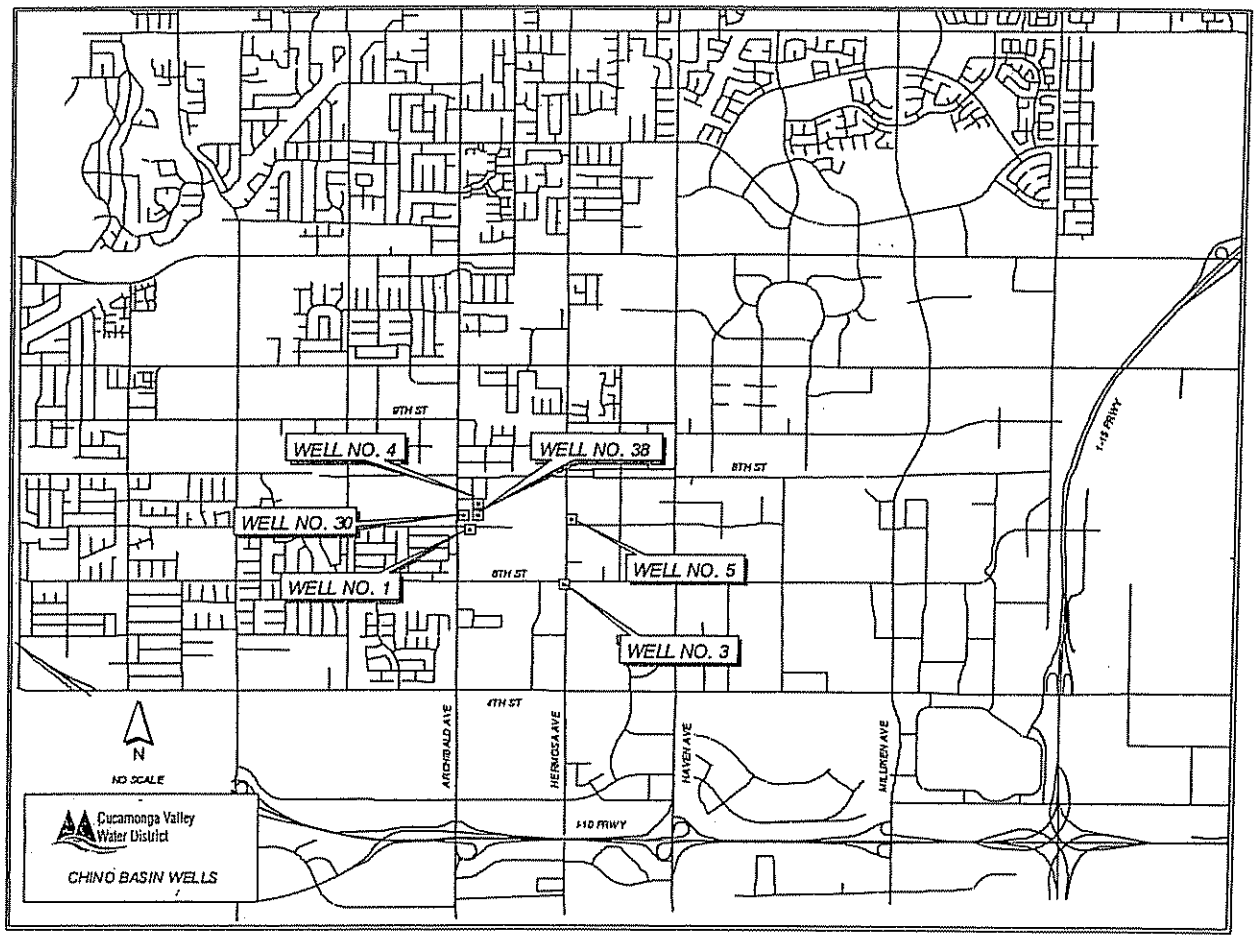
Static water levels vary from 418' to 503'. Of the wells routinely pumped, nitrate levels vary from a low of 3.5 ppm to a high of 38 ppm.

MATERIAL PHYSICAL INJURY

Is the Applicant aware of any potential Material Physical Injury to a party to the Judgment or the Basin that may be caused by the action covered by the application? Yes [ ] No [X]

If yes, what are the proposed mitigation measures, if any, that might reasonably be imposed to ensure that the action does not result in Material Physical Injury to a party to the Judgment or the Basin?

N/A


WELL NO. 4
WELL NO. 38
WELL NO. 30
WELL NO. 1
WELL NO. 5
WELL NO. 3
9TH ST
8TH ST
6TH ST
4TH ST
ARCHIBALD AVE
HERMOSA AVE
HAVEN AVE
MILIKEN AVE
I-10 FRWY
I-15 FRWY
N
NO SCALE
Cucamonga Valley Water District
CHINO BASIN WELLS

CHINO BASIN WATERMASTER

II. BUSINESS ITEMS

A. MZ1 SUMMARY REPORT

1. Consider Approval of the February 2006 MZ1 Summary Report

CHINO BASIN WATERMASTER

9641 San Bernardino Road, Rancho Cucamonga, Ca 91730
Tel: 909.484.3888 Fax: 909.484.3890 www.cbwm.org

KENNETH R. MANNING
Chief Executive Officer

STAFF REPORT

DATE: **April 13, 2006**
April 18, 2006
April 27, 2006

TO: **Committee Members**
Watermaster Board Members

SUBJECT: **MZ-1 Summary Report**

SUMMARY

Issue – Pursuant to the Special Referee's report dated June 16, 2005, Watermaster staff prepared a report titled *Management Zone 1 Interim Monitoring Program, MZ-1 Summary Report*. This report presents a summary of all the data collected as part of the MZ-1 monitoring program (through September 2005) and the conclusions reached from the analysis of the monitoring data. The report also includes MZ-1 Guidance Criteria, which are a recommended groundwater management criteria for the management of subsidence in the southern part of MZ-1 (Chino). These guidance criteria will be the basis of the long-term subsidence management plan.

Recommendation – Approve the February 2006 MZ-1 Summary Report.

Fiscal Impact – To be determined. The MZ-1 Summary Report recommends the continuation of the monitoring activities that have been implemented to date. The cost to Watermaster to provide this monitoring and reporting will be about $175,000 per year in 2006 dollars.

BACKGROUND

The Implementation Plan of the Optimum Basin Management Program (OBMP) called for an aquifer-system investigation of suspected pumping-induced land subsidence and ground fissuring that has occurred in the southern region of Management Zone 1 (MZ-1). Watermaster has coordinated and conducted the investigation under the guidance of the MZ-1 Technical Committee, which is composed of representatives from all major MZ-1 producers and their technical consultants. The results of the investigation are being used in the development of a long-term plan to minimize or abate future land subsidence and ground fissuring.

To date, the main conclusions derived from the investigation are:

1. The current state of aquifer-system deformation in south MZ-1 (in the vicinity of Ayala Park) is essentially elastic. Little, if any, inelastic (permanent) compaction is now occurring in this area, which is in contrast to the past when about 2.2 feet of land subsidence occurred, accompanied by ground fissuring, from about 1987-1995.

2. Groundwater production from the deep, confined aquifer system in this area causes the greatest stress to the aquifer system. In other words, pumping of the deep aquifer system causes water level drawdowns that are much greater in magnitude and lateral extent than drawdowns caused by pumping of the shallow aquifer system.

3. Water level drawdowns due to pumping of the deep aquifer system can cause inelastic (permanent) compaction of the aquifer-system sediments, which results in permanent land subsidence. The initiation of inelastic compaction within the aquifer system was identified during this investigation when water levels fell below a depth of about 250 feet in the PA-7 piezometer at Ayala Park.

4. Through this study, a previously undetected barrier to groundwater flow was identified. The barrier is located within the deep aquifer system and is aligned with the historical zone of ground fissuring. Pumping from the deep aquifer system is limited to the area west of the barrier, and the resulting drawdowns do not propagate eastward across the barrier. Thus, compaction occurs within the deep system on the west side of the barrier, but not on the east side, which causes concentrated differential subsidence across the barrier and creates the potential for ground fissuring.

5. InSAR and ground level survey data indicate that permanent subsidence in the central region of MZ-1 (north of Ayala Park) has occurred in the past and continues to occur today. The InSAR data also indicate that the groundwater barrier extends northward into central MZ-1. These observations suggest that the conditions that very likely caused ground fissuring near Ayala Park in the 1990s are also present in central MZ-1, and should be studied in more detail.

A workshop was held May 25, 2005 to update the Special Referee on progress of the investigation and development of the long-term plan for MZ-1. After the workshop, the Special Referee issued a report to the Court that summarized the workshop and requested that Watermaster:

- produce a MZ-1 Summary Report that describes the investigation results and conclusions to date
- notify the Court of the schedule for the completion of the long-term plan
- provide "guidance criteria" to the MZ-1 producers in an effort to minimize the potential for future subsidence and fissuring, pending completion of the long-term plan

The MZ-1 Summary Report contains the guidance criteria, which consist mainly of setting a "guidance" water level – 245 feet below the reference point for the PA-7 piezometer at Ayala Park – and recommends that groundwater production from a selected list of wells in MZ-1 not cause water levels to fall below the guidance level.

The report also outlines the process and schedule for developing a long-term management plan by June 2006. The primary objective of the long-term plan is to prevent additional permanent land subsidence that could initiate additional ground fissuring. A developing secondary objective is to optimize the use of existing groundwater production infrastructure. A key element of the long-term plan will be its adaptive nature, as new data are collected and periodically analyzed to evaluate the effectiveness of the long-term plan.

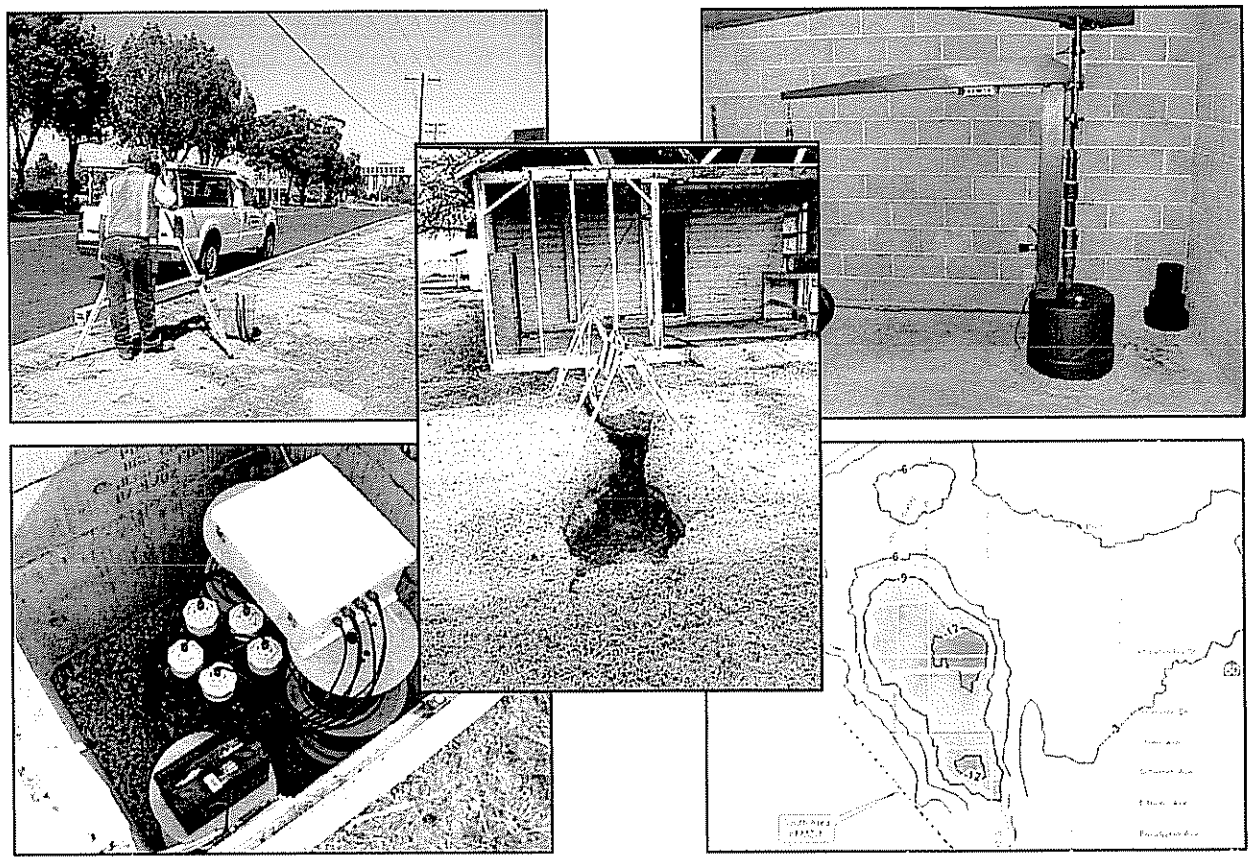
The guidance criteria and the long-term plan discussed above relate to the management of pumping-induced subsidence within the southern region of MZ-1, where associated ground fissuring damaged infrastructure in the early 1990s. However, this investigation has also revealed that the central region of MZ-1 has experienced in the past, and is currently experiencing, measurable land subsidence. This discovery has initiated an additional effort by Watermaster to characterize the subsidence mechanisms in this region through a slightly expanded monitoring effort. The adaptive nature of the long-term plan should accommodate the results that will emerge from the expanded monitoring effort in central MZ-1, so as to minimize the risk of future ground fissuring in this heavily urbanized region of Chino Basin.

The MZ1 Summary Report is best viewed in color which may done by downloading this document from: ftp://citrix.wildermuthenvironmental.com/MZ1

CHINO BASIN
OPTIMUM BASIN MANAGEMENT PROGRAM

Management Zone 1
Interim Monitoring Program

MZ-1 Summary Report



Prepared for

MZ-1 Technical Committee

Prepared by

Wildermuth Environmental, Inc.

February 2006

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

CHINO BASIN
OPTIMUM BASIN MANAGEMENT PROGRAM

Management Zone 1
Interim Monitoring Program

MZ-1 Summary Report

Prepared for

MZ-1 Technical Committee

Prepared by
Wildermuth Environmental, Inc.

February 2006

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYM AND ABBREVIATIONS LIST

AE	Associated Engineers
CA	California
CBWM	Chino Basin Watermaster
CIM	California Institution for Men
IMP	Interim Monitoring Program
MZ-1	Management Zone 1
OBMP	Optimum Basin Management Program
CH	Chino Hills
InSAR	Synthetic Aperture Radar Interferometry
MSL	mean sea level
PA	Piezometer A at Ayala Park Piezometer/Extensometer Facility
USGS	United States Geological Survey
WEI	Wildermuth Environmental Inc

THIS PAGE

HAS

INTENTIONALLY

BEEN LEFT

BLANK

FOR PAGINATION

EXECUTIVE SUMMARY

The Implementation Plan of the Optimum Basin Management Program (OBMP) called for an aquifer-system investigation of suspected pumping-induced land subsidence and ground fissuring that has occurred in the southern region of Management Zone 1 (MZ-1). Watermaster has coordinated and conducted the investigation under the guidance of the MZ-1 Technical Committee, which is composed of representatives from all major MZ-1 producers and their technical consultants. The results of the investigation are being used to develop management tools (models) that will assist in the development of a long-term plan to minimize or abate future land subsidence and ground fissuring.

To date, the main conclusions derived from the investigation are:

1. The current state of aquifer-system deformation in south MZ-1 (in the vicinity of Ayala Park) is essentially elastic. Little, if any, inelastic (permanent) compaction is now occurring in this area, which is in contrast to the past when about 2.2 feet of land subsidence occurred, accompanied by ground fissuring, from about 1987-1995.

2. Groundwater production from the deep, confined aquifer system in this area causes the greatest stress to the aquifer system. In other words, pumping of the deep aquifer system causes water level drawdowns that are much greater in magnitude and lateral extent than drawdowns caused by pumping of the shallow aquifer system.

3. Water level drawdowns due to pumping of the deep aquifer system can cause inelastic (permanent) compaction of the aquifer-system sediments, which results in permanent land subsidence. The initiation of inelastic compaction within the aquifer system was identified during this investigation when water levels fell below a depth of about 250 feet in the PA-7 piezometer at Ayala Park.

4. Through this study, a previously undetected barrier to groundwater flow was identified. The barrier is located within the deep aquifer system and is aligned with the historical zone of ground fissuring. Pumping from the deep aquifer system is limited to the area west of the barrier, and the resulting drawdowns do not propagate eastward across the barrier. Thus, compaction occurs within the deep system on the west side of the barrier, but not on the east side, which causes concentrated differential subsidence across the barrier and creates the potential for ground fissuring.

5. InSAR and ground level survey data indicate that permanent subsidence in the central region of MZ-1 (north of Ayala Park) has occurred in the past and continues to occur today. The InSAR data also indicate that the groundwater barrier extends northward into central MZ-1. These observations suggest that the conditions that very likely caused ground fissuring near Ayala Park in the 1990s are also present in central MZ-1, and should be studied in more detail.

A workshop was held May 25, 2005 to update the Special Referee on progress of the investigation and development of the long-term plan for MZ-1. After the workshop, the Special Referee issued a report to the Court that summarized the workshop and requested that Watermaster:

- produce a MZ-1 Summary Report (this report) that describes the investigation results and conclusions to date
- notify the Court of the schedule for the completion of the long-term plan
- provide "guidance criteria" to the MZ-1 producers in an effort to minimize the potential for future subsidence and fissuring, pending completion of the long-term plan

This report contains the guidance criteria, which consist mainly of setting a "control" water level – 245 feet below the reference point for the PA-7 piezometer at Ayala Park – and recommend that groundwater production from a selected list of wells in MZ-1 not cause water levels to fall below the control level.

This report also outlines the process and schedule for developing a long-term management plan by June 2006. The primary objective of the long-term plan is to prevent additional permanent land subsidence that could initiate additional ground fissuring. A developing secondary objective is to optimize the use of existing groundwater production infrastructure. A key element of the long-term plan will be its *adaptive* nature, as new data are collected and periodically analyzed to evaluate the effectiveness of the long-term plan.

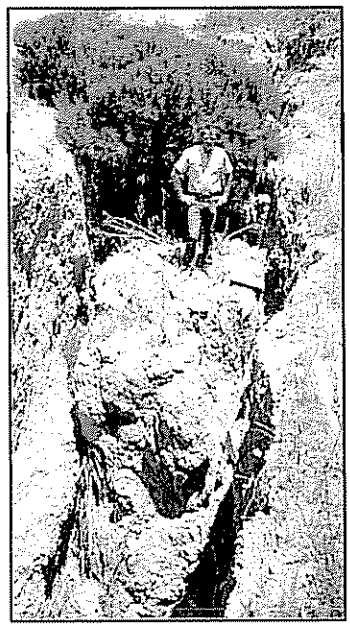
The guidance criteria and the long-term plan discussed above relate to the management of pumping-induced subsidence within the southern region of MZ-1, where associated ground fissuring damaged infrastructure in the early 1990s. However, this investigation has also revealed that the central region of MZ-1 has experienced in the past, and is currently experiencing, measurable land subsidence. This discovery has initiated an additional effort by Watermaster to characterize the subsidence mechanisms in this region through a slightly expanded monitoring effort. The adaptive nature of the long-term plan should accommodate the results that will emerge from the expanded monitoring effort in central MZ-1, so as to minimize the risk of future ground fissuring in this heavily urbanized region of Chino Basin.

The monitoring and analyses associated with this investigation dovetail nicely with other Watermaster efforts associated with basin re-operation and hydraulic control.

1. BACKGROUND

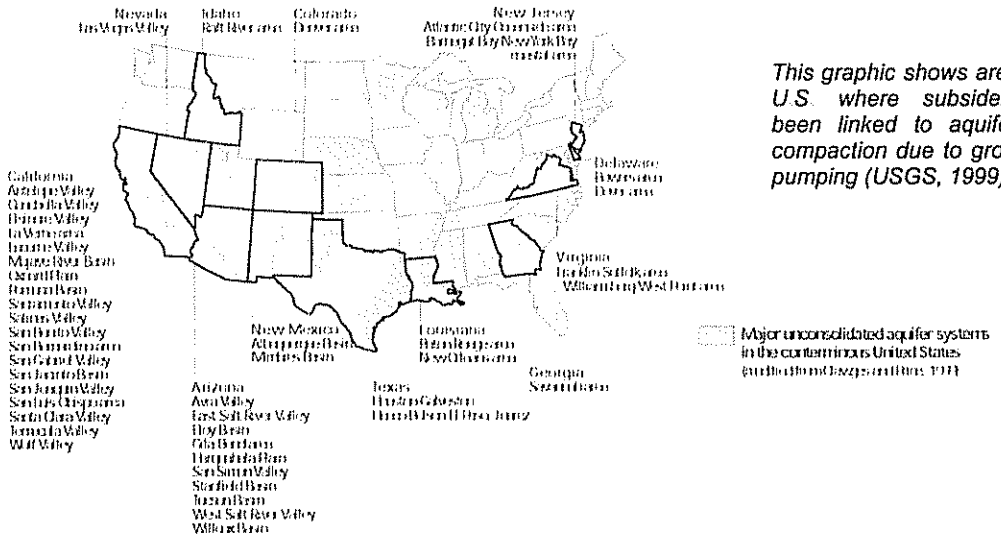
Groundwater Withdrawals and Land Subsidence

Land subsidence is the sinking of the Earth's surface due to the rearrangement of subsurface Earth materials. In the United States alone, over 17,000 square miles in 45 states have experienced land subsidence (USGS, 1999). In many instances, land subsidence is accompanied by adverse impacts at the land surface, such as sinkholes, earth fissures, encroachment of adjacent water bodies, modified drainage patterns, and others. In populated regions, these subsidence-related impacts can result in severe damage to man-made infrastructure and costly remediation measures.



This earth fissure near Mesa, Arizona formed as a result of differential compaction of the aquifer system (USGS, 1999).

Over 80% of all documented cases of land subsidence in the United States have been caused by groundwater extractions from the underlying aquifer system (USGS, 1999). Subsidence due to groundwater extraction is especially well-documented in the arid southwestern United States, where the aquifer systems are typically composed of unconsolidated sediments that are susceptible to permanent compaction when groundwater is extracted. Some infamous examples include the San Joaquin and Santa Clara Valleys in California, the Las Vegas Valley in Nevada, the Houston-Galveston area in Texas, and

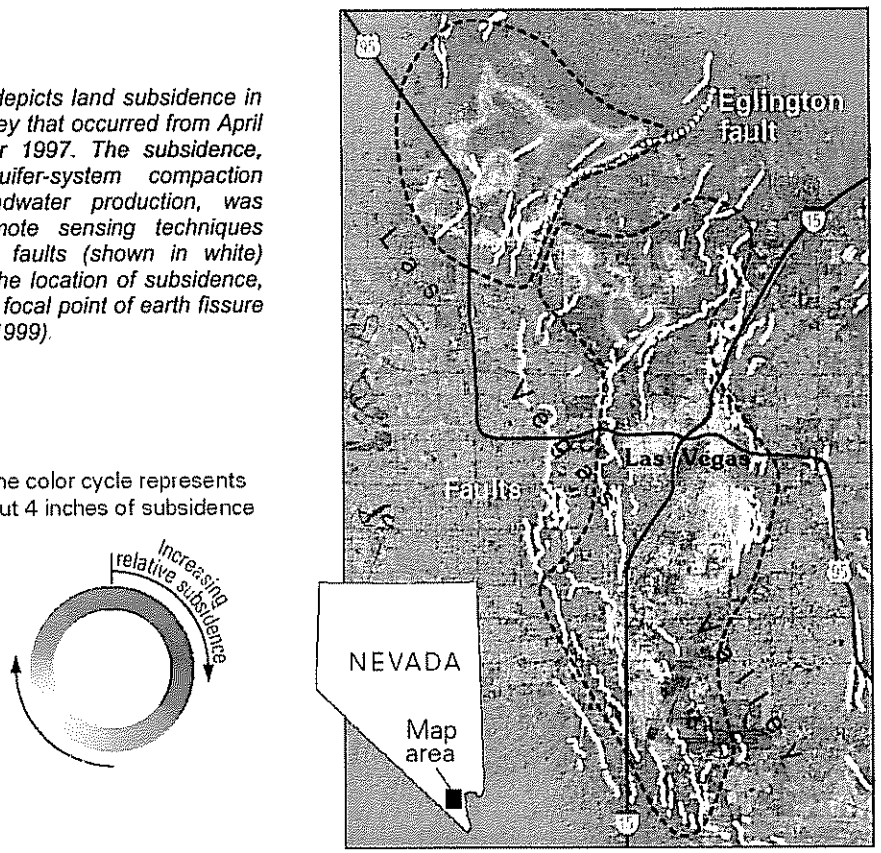


This graphic shows areas in the U.S. where subsidence has been linked to aquifer-system compaction due to groundwater pumping (USGS, 1999).

several basins in Arizona. In many of these regions, earth fissuring occurred in areas of differential subsidence (*i.e.* where rates and accumulated magnitudes of subsidence vary over short horizontal distances).

Although drawdown of water levels is the driving force that causes land subsidence due to groundwater pumping, the geology of a groundwater basin also plays an important role in this process. Clay layers within the aquifer-system are relatively compressible materials. Therefore, aquifer-systems that contain thick and/or numerous clay layers are most susceptible to permanent compaction and land subsidence when groundwater is extracted. In addition, faults that act as groundwater barriers can focus and augment drawdown in the aquifer-system when pumping wells are located near these faults. When pumping and drawdown are concentrated on one side of a fault barrier, then differential land subsidence and ground fissuring are a common result (see Las Vegas, as an example).

This map graphic depicts land subsidence in the Las Vegas Valley that occurred from April 1992 to December 1997. The subsidence, attributed to aquifer-system compaction caused by groundwater production, was measured by remote sensing techniques (InSAR). Geologic faults (shown in white) appear to control the location of subsidence, and have been the focal point of earth fissure formation (USGS, 1999).



The scientific model that describes the phenomenon of pumping-induced land subsidence is termed the *aquitard-drainage model*. This model has been successfully applied to numerous cases of land subsidence world-wide. It has been incorporated into the industry-standard computer models of groundwater flow and is increasingly recognized as critical to the understanding of aquifer-system hydraulics (flow and storage) and mechanics (deformation). A brief summary of the aquitard-drainage model is below:

Aquitard-Drainage Model. Simply stated, an aquifer system consists of permeable sand and gravel layers (the aquifers) interbedded with less-permeable silt and clay layers (the aquitards). Pumping wells cause water-level drawdowns in the aquifers which, in turn, cause the aquitards to slowly drain into the aquifers. The draining allows aquitard pore pressures to decay toward equilibrium with the reduced heads in the adjacent aquifers. Since the pressure of the pore water provides some internal support for the sedimentary structure of the aquitards, this loss of internal support causes the aquitards to compress, resulting in a small amount of subsidence at the land surface. When the pumping wells turn off, and water levels recover in the aquifers, groundwater migrates back into the aquitards and they expand, resulting in a small amount of rebound at the land surface. Over a limited range of seasonal water level fluctuations this process can occur in a purely elastic fashion. That is, a recovery of water levels to their original values causes the land surface to rebound to its original elevation. However, when drawdown falls below a certain "threshold" level, elastic compression transitions to a non-recoverable inelastic compaction of the aquitards, resulting in permanent land subsidence. The "threshold" water level, referred to as the *preconsolidation stress*, is taken to be the maximum past stress to which the sedimentary structure had previously equilibrated under the gradually increasing load of accumulating sediments. [Note: The probable value of the virgin preconsolidation stress in the Chino Basin has not been documented, but studies in similar areas suggest that drawdowns in the range of 40 to 100 feet will typically exceed the initial threshold value.]

Drawdowns exceeding a previous threshold water level result in an increase in the value of maximum past stress, and thus the establishment of a deeper threshold, accompanied by an increment of inelastic aquitard compaction. Concomitantly, the compaction results in the one-time irreversible mining of groundwater from the aquitards. The benefits of this process include not only the obvious economic value of the water produced but also the often overlooked fact that, by establishing deeper thresholds, it increases the volume of confined groundwater storage available for cyclical drawdown and replenishment under strictly elastic conditions. The cost, of course, is the resulting deformation of the land surface and its impact on vulnerable infrastructure.

History of Ground Fissuring and Land Subsidence in Chino Basin

Ground Fissuring. One of the earliest indications that land subsidence was occurring in Chino Basin was the appearance of ground fissures in the City of Chino. These fissures appeared as early as 1973 (Fife et al., 1976), but an accelerated occurrence of ground fissuring ensued after 1991. Figure 1-1 shows the location of the fissures within the larger context of Management Zone 1 (MZ-1) and the Chino Basin. Figure 1-2 shows a detailed view of this area.

Surface expression of earth fissure that developed in a field north of CIM in February 1991.

Photo source: Geomatrix Consultants

Subsequent studies of the fissuring attributed the phenomenon to land subsidence (Fife et al., 1976; Kleinfelder, 1993, 1996; Geomatrix, 1994). The evidence to support this cause-and-effect relationship between the subsidence and fissuring is shown in Figure 1-2. In this figure, and as pointed out by Geomatrix (1994), the north-south trend of fissuring is located on the steep eastern limb of the main trough of subsidence that was mapped by ground level surveying (discussed below) – an area where east-west directed extensional stress should be associated with subsidence to the west. These observations and conclusions prompted efforts to quantify the magnitude of historical subsidence and to monitor the rates of on-going subsidence. These efforts included:

- Compilation and analysis of leveling survey data to estimate historical subsidence
- Compilation and analysis of remote sensing data to estimate historical subsidence
- Initiation of monitoring efforts to track on-going subsidence

Through these efforts, the history of land subsidence near the area of ground fissuring was characterized in good detail for the period after 1987, and in lesser detail for the period prior to 1987.

Recent Land Subsidence (Post-1987). Repeated leveling surveys were conducted within the City of Chino from 1987-1999 (Kleinfelder, 1993, 1996, 1999). Figure 1-1 shows the location and extent of the surveys within the larger context of MZ-1 and the Chino Basin. Figure 1-2 shows a close-up view of this area, and subsidence contours of the survey data. These contours delineate a subsidence trough generally aligned north-south with maximum subsidence during the 12-year period of 2.4 feet along Central Avenue between Eucalyptus and Schaefer Avenues (the trough axis). The subsidence trough extends approximately from Pipeline Avenue on the west to Benson Avenue on the east, and from Merrill Avenue on the south to the edge of the survey area on the north (Riverside Drive). The contours suggest that the subsidence trough extends further north of Riverside Drive, but the surveys did not include benchmarks north of Riverside Drive.

Remote sensing studies of subsidence were conducted (Peltzer, 1999a, 1999b) to further analyze subsidence in MZ-1. These studies employed Synthetic Aperture Radar Interferometry (InSAR), which utilizes radar imagery from an Earth-orbiting spacecraft to map ground surface deformation. Figures 1-1 and 1-2 show the results of these InSAR studies that independently confirmed the location and relative magnitude of subsidence in MZ-1 as defined by the leveling surveys, and indicated the occurrence of subsidence north of the area monitored by the leveling surveys (north of Riverside Drive).

The leveling surveys and the InSAR analyses both indicated that subsidence rates have slowed significantly since about 1995. In fact, the leveling surveys indicated that about 90% of the total subsidence measured along Central Avenue from 1987-1999 occurred prior to 1996.

Historical Land Subsidence (Pre-1987). Much less data is available to estimate regional subsidence prior to 1987. Geomatrix (1994) and Geoscience (2002) compared the leveling survey data (post-1987) to elevation data published on USGS 7.5-minute quadrangle maps (1933 and 1967). Geomatrix (1994) estimated as much as 3-4 feet of subsidence from 1967-1993 in some areas shown on Figure 1-2. Geoscience (2002) estimated a maximum of 3.7 feet of subsidence from 1933-1987 at the intersection of Pipeline Avenue and Riverside Drive. These subsidence estimates and their assumptions and limitations are currently being reviewed by Watermaster. If generally accurate, these estimates combined with the post-1987 survey data suggest that as much as 4-5 feet of subsidence has occurred during 1933-1999 in some areas of Chino south of State Highway 60.

Potential Causes of Land Subsidence

The main studies that were commissioned subsequent to the fissuring events in the early 1990s (Kleinfelder, 1993, 1996; Geomatrix, 1994) attributed the subsidence and fissuring phenomenon to the aquitard-drainage model. Watermaster arrived at the same conclusion (WEI, 1999) based on the presence of all requisite elements of the aquitard-drainage model in the southern portion of MZ-1 and other supporting evidence:

- **Presence of aquitards.** Geophysical and lithologic logs from numerous wells in the region indicate that the aquifer-system sediments that underlie the area of subsidence in MZ-1 contain many interbedded aquitard layers, which are susceptible to permanent compaction under reduced piezometric heads. In addition, during the early 1900s, much of the southern part of MZ-1 was an area of flowing-artesian wells (Mendenhall, 1908), indicating the existence of fine-grained confining layers (aquitards) at depth.
- **Reduced pore pressures within the aquifer-system.** The flowing-artesian groundwater conditions in southern MZ-1 also indicate that piezometric heads were at or above the land surface during the early 1900s. Water level histories at numerous relatively shallow wells in the region demonstrate that the piezometric heads (water levels) declined by about 140 feet from about 1940 to 1977, but then recovered by about 40 feet by 1999 (see Figure 1-3).

  In addition, the accelerated occurrence of fissuring that commenced in 1991 was preceded by the completion and initial operation of a number of the deep production wells in 1989-1990. These wells are owned by the City of Chino Hills. Water level histories at these wells indicate that drawdowns within the deeper portions of the aquifer system caused by pumping these wells have exceeded 300 feet.

  In both the shallow and deep zones of the overall aquifer system, the historical drawdowns were substantially greater than probable maximum value of the virgin threshold of inelastic compaction.
- **Other evidence.** The axis of maximum subsidence along Central Avenue, as delineated by ground level surveys (1987-1999), is aligned with the locations of several deep production wells owned by Chino Hills—suggesting a cause-and-effect relationship.
- **Similarity to other subsidence case studies.** There are numerous examples throughout the western United States where ground fissures have accompanied aquifer-system compaction and land subsidence within alluvial groundwater basins (Holzer, 1984). Geomatrix (1994) studied the ground fissures on CIM property and also reviewed case histories of fissuring throughout the southwestern United States. Their study noted similarities between the physical structure of the CIM fissures and the fissures described in the literature that were associated with areas of subsidence due to groundwater pumping and aquifer-system compaction.

There exist other potential causes of land subsidence that have been documented in other locations world-wide. Most of these causes can be immediately dismissed as explanations for the subsidence observed in Chino Basin, but others can not. Table 1-1 lists all potential causes of land subsidence, and a qualitative description of their applicability to subsidence and fissuring in Chino Basin.

Even though some of these potential subsidence mechanisms cannot be immediately dismissed as contributing to subsidence in Chino Basin, they are not likely. The aquitard-drainage model is based on physical laws of nature—namely, gravity and the compressibility of materials under load. And when the requisite elements of this model are all present (*i.e.* presence of aquitards, piezometric head declines, *etc.*), the question is not whether subsidence occurred, but rather, how much is the inevitable result of the aquitard-drainage mechanism?

By comparison, other potential causes of subsidence were reduced to unlikely and, at the most, minor contributory factors in Chino Basin, and as such, were never directly investigated by Watermaster.

Development of the MZ-1 Interim Monitoring Program

In the Optimum Basin Management Program (OBMP) Phase I Report (WEI, 1999), Watermaster identified the aquitard-drainage model as the most likely cause of the land subsidence and ground fissuring observed in MZ-1. Program Element 4 of the OBMP – *Develop and Implement a Comprehensive Groundwater Management Plan for Management Zone 1* called for the development and implementation of an interim management plan for MZ-1 that would:

- Minimize subsidence and fissuring in the short-term
- Collect information necessary to understand the extent, rate, and mechanisms of subsidence and fissuring
- Formulate a long-term management plan to reduce to tolerable levels or abate future subsidence and fissuring

The main part of the interim management plan was to develop and implement a monitoring and testing program in MZ-1 that would answer certain questions to enable the development of a long-term plan to minimize or abate subsidence and fissuring. These questions included:

1. How much subsidence is currently occurring in MZ-1?
2. How much of the current subsidence is an elastic, reversible process that will restore the land surface to its original elevation if water levels recover to their original values; or, in the alternative phraseology, how much, if any, is irreversible (permanent subsidence)?
3. How much subsidence did historical pumping cause in MZ-1?
4. How much of the historical subsidence was an elastic, reversible process, and how much, if any, was irreversible?
5. These questions give rise to the most critical questions: What was the historical threshold value of head decline at which the deformation of the sedimentary structure would have changed from an elastic compression to inelastic compaction? And additionally, what is that threshold value of head decline today?

In an attempt to minimize subsidence and fissuring in the short-term, the cities of Chino and Chino Hills agreed to jointly reduce groundwater production in MZ-1 by 3,000 acre-feet per year for the duration of the interim management plan. This agreement between the cities was termed the *Forbearance Agreement*.

Formation of the MZ-1 Technical Committee. The MZ-1 Technical Committee was formed to serve as a clearing house for technical information, as well as the source for full professional discussion, input and peer review by its members, for the benefit of Watermaster. The Technical Committee provides comment and assists Watermaster in the development of recommendations for consideration and potential action by Watermaster under the Interim Management Plan. In addition, the Technical Committee provides similar assistance to Watermaster in its effort to develop a long-term plan as provided in Program Element 4. The Technical Committee consists of representatives (and their technical consultants) from those parties to the Judgment that are presently producing groundwater within MZ-1. Each of the following producers is entitled to representation on the Committee: Chino, Chino Hills, Ontario, Upland, Pomona, Monte Vista

Water District, San Antonio Water Company, Southern California Water Company, CIM and the Agricultural Pool. Figure 1-1 shows the locations of wells owned by the producers listed above. The MZ-1 Technical Committee first convened on March 6, 2002, and has continued to meet once every 1-3 months.

Composition of the MZ-1 Interim Monitoring Program. The MZ-1 Technical Committee approved the scope and schedule for the MZ-1 Interim Monitoring Program (IMP) at the January 29, 2003 meeting. The IMP was developed and implemented by Watermaster to collect the information necessary to answer the five questions listed above. The data collected and analyzed as part of this effort are being utilized to develop effective management tools and, ultimately, a long-term management plan that will minimize or completely abate ground fissuring and subsidence in MZ-1.

The IMP is described in detail in the IMP Work Plan dated January 8, 2003 (WEI, 2003), but generally consists of three main elements: benchmark survey, InSAR, and aquifer-system monitoring. The benchmark surveys and the InSAR analyses monitor deformation of the land surface. Aquifer-system monitoring measures the hydraulic and mechanical changes within the aquifer-system that cause the land surface deformation. The methods involved in the implementation of each element are briefly described below:

Methods: Aquifer-System Monitoring. This work involves the measuring of stresses within the aquifer system (water-level changes) that cause land surface deformation as measured by benchmark surveys, InSAR, and the extensometers (described below). The objective is to establish the relationships between water-level changes in the aquifer system (stress) and aquifer-system deformation (strain).

Figure 1-4 shows location of the centerpiece of the aquifer-system monitoring program – the Ayala Park Extensometer – a highly sophisticated monitoring facility consisting of two multi-piezometers and a dual-extensometer. As the aquifer system undergoes various stresses due to groundwater production and recharge, the facility monitors the hydraulic response of the aquifer system at the piezometers and the mechanical response of the aquifer system at the extensometers. The facility is equipped with pressure transducers to measure water levels in the piezometers, linear potentiometers to measure the vertical aquifer-system deformation at the extensometers, and data loggers to record the data at frequent intervals (e.g. 15 minutes).

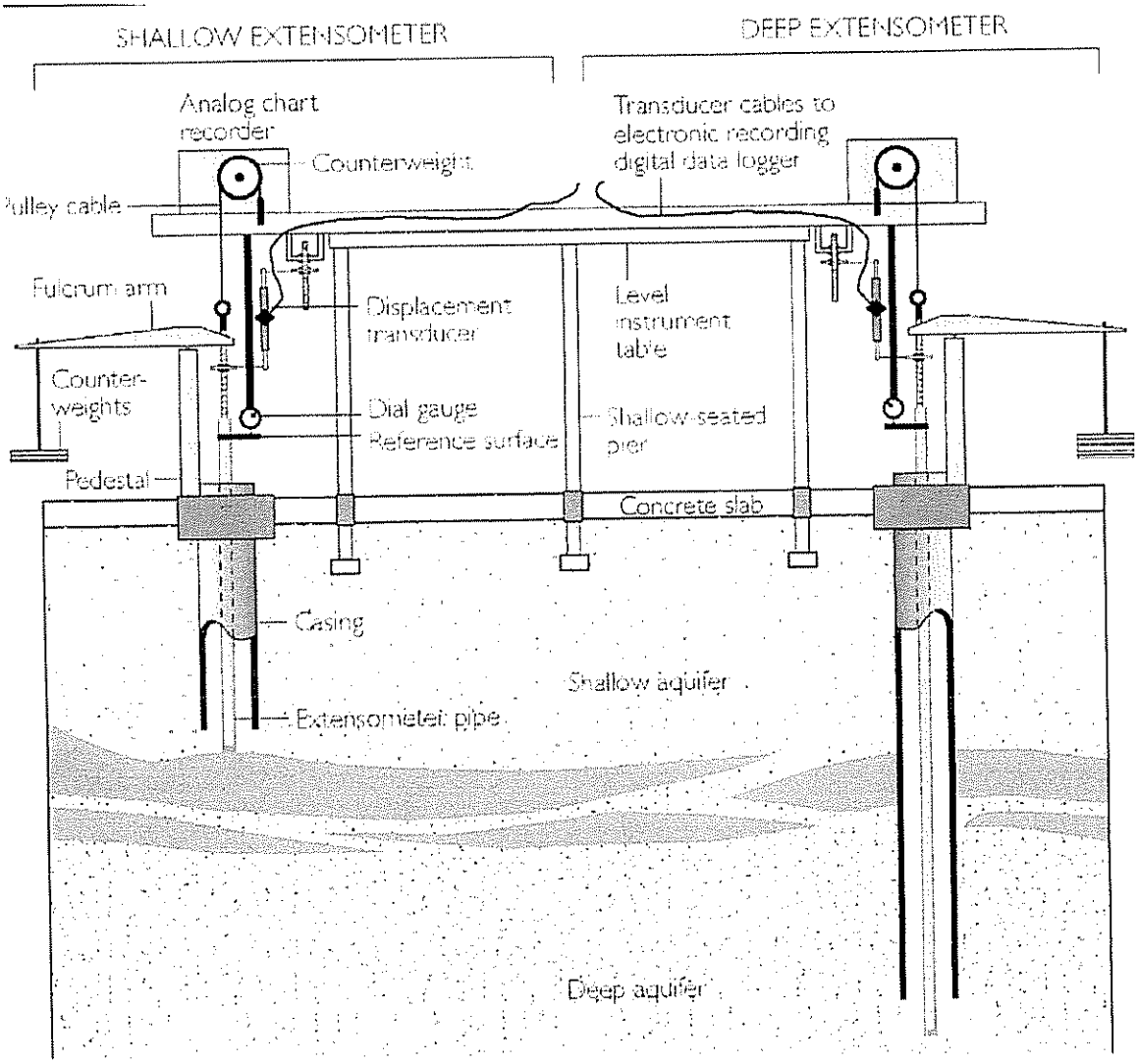
Piezometer construction and instrumentation was completed in mid-November 2002, at which time collection of piezometric data commenced. Dual-extensometer construction and instrumentation was completed in mid-July 2003, at which time collection of aquifer-system deformation data commenced.

Figure 1-4 also shows the nearby wells owned by CIM and the cities of Chino and Chino Hills that were equipped with pressure transducers and data loggers to record (1) water-level data and (2) the specific timing of pumping cycles at production wells.

The IMP also called for Watermaster, with the assistance of the well owners, to conduct controlled aquifer stress tests (pumping tests) while monitoring water levels and groundwater production at nearby monitoring wells and production wells, as well as aquifer-system compaction and/or expansion at the dual-extensometer. These tests were performed in fall 2003, spring 2004, and fall 2004.

The data collected from this monitoring effort are being used to: (1) quantify and characterize the current state of aquifer-system deformation (i.e. elastic vs. inelastic), (2) determine the threshold value of head decline at which the deformation of the aquifer-system sediments changes from an elastic compression to

inelastic compaction, (3) estimate aquifer-system parameters, such as the conductive and storage parameters of the aquifer and aquitard sediments, (4) reveal the existence of groundwater barrier(s) within the aquifer sediments, and (5) use all the above data as input to predictive computer models of compaction, subsidence, and groundwater flow to support the development of a long-term management plan.



A conceptual graphic of a dual extensometer, very similar to the facility at Ayala Park in Chino. Extensometers measure vertical deformation within an aquifer system. Typically, they are accompanied by piezometers that measure pore water pressure changes that cause deformation within the aquifer system.

Methods: Ground-Level Surveying. This work involves repeated benchmark surveying to measure vertical (and in some cases horizontal) ground surface deformation along selected profiles within Chino Basin – mainly in MZ-1. The benchmark surveys are being used to (1) establish a datum from which to measure land surface deformation during the IMP period, (2) allow determination of historical subsidence at any historical benchmarks that can be recovered, (3) "ground-truth" the InSAR data, and (4) assist in the development and evaluation of the long-term management plan.

A network of stable benchmark monuments was installed to supplement an existing network of benchmarks that was installed for the City of Chino in 1987. Associated Engineers (AE) completed monument installations (see Figure 1-5) and an initial survey of all monument elevations in April 2003. Repeat surveys are planned for April of each year during the IMP period.

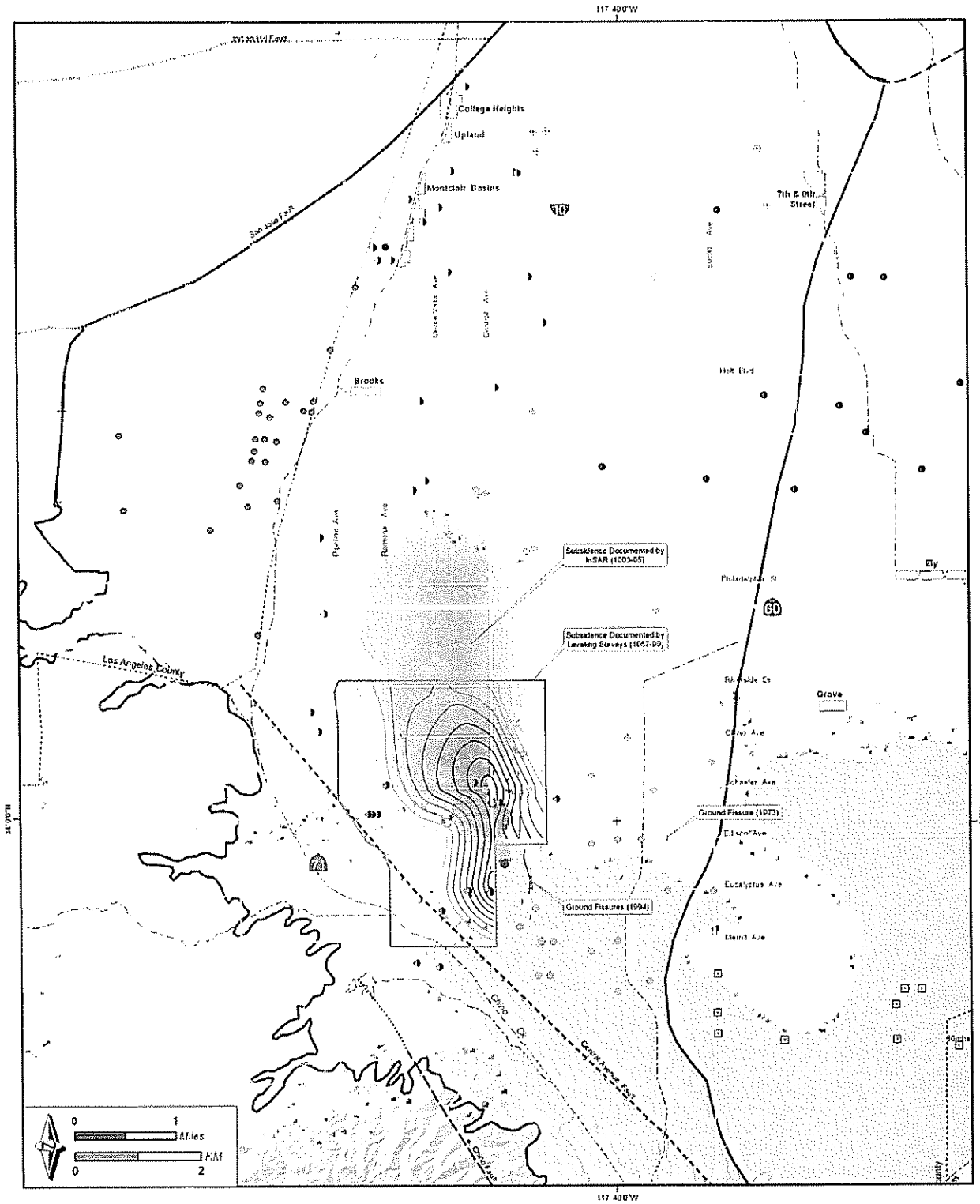
The IMP work plan also called for the deep extensometer at Ayala Park (discussed below), which is anchored in sedimentary bedrock at about 1,400 ft bgs, to be used as the "starting benchmark" for all survey loops. To accomplish this, a Class-A benchmark was constructed outside the extensometer building to serve as the practical (i.e. actual) starting benchmark. To link this benchmark to the deep extensometer pipe, each survey event begins by referencing the benchmark to a marked spot on one of the piers that supports the extensometer instrument platform. These piers and the instrument platform represent a stable ground surface datum that is used to measure relative vertical displacement between the ground surface and the deep extensometer pipe (recorded every 15 minutes). The vertical displacement recorded at the deep extensometer between survey events, in addition to any vertical displacement measured between the starting benchmark and the pier, is then used to calculate the elevation at the starting benchmark outside the extensometer building. Then, relative vertical displacement between benchmarks is measured across the entire network to obtain current elevations.

A key element of the MZ-1 benchmark network is the array of closely spaced benchmarks that have been established across the historic fissure zone in the immediate vicinity of the Ayala Park extensometers (Ayala Park Array). At this array, located along Edison and Eucalyptus Avenues, both vertical and horizontal displacements are measured. These horizontal and vertical displacements are defining two-dimensional profiles of land-surface deformation that can be related to the vertical distribution of aquifer-system compaction and expansion that is being recorded continuously at the extensometers. These surveys are being repeated semi-annually during the late spring and early fall periods of highest and lowest water levels in an attempt to monitor fissure movement, if any, that may be associated with elastic and/or inelastic aquifer-system deformation. (Note: the semi-annual survey frequency of the Ayala Park Array monuments is a modification to the IMP work plan, and was agreed upon by the MZ-1 Technical Committee at the September 24, 2003 meeting).

Methods: InSAR Analyses. InSAR is being used to characterize ground surface deformation in Chino Basin. This analysis will be performed for a historical period (1992-2000) and on an on-going basis thereafter. The advantage of InSAR is that it provides an aerially continuous representation of land surface deformation. These data are planned to be used to: (1) characterize the time history of land surface deformation in greater spatial and temporal detail than can be accomplished from the available historical ground-level survey data, (2) calibrate computer simulation models of subsidence and groundwater flow, and (3) assist in the evaluation of the effectiveness of the long-term management plan.

Table 1-1
Applicability of Potential Causes of Subsidence in Chino Basin

Potential Cause of Subsidence	Applicability to Chino Subsidence
Collapse of underground caverns	No caverns or soluble rocks are known to underlie the Chino Basin, and the geologic environment and history of the basin make their existence extremely unlikely
Consolidation due to surface loading	No substantial surface loading has been applied. other than the construction of Prado Dam and the occasional short-lived accumulation of flood waters behind it These are well south of the area of significant subsidence
Consolidation of sediments over geologic time scales	This process is presumably occuring under the gradually increasing load of accumulating alluvial sediments. but at rates much too slow to be readily detectable over a period of decades Under conditions of subaerial deposition the buildup of surfical sediments far exceeds their compaction at depth
Desiccation and shrinkage of expansive soils	Swell/shrink properties of soils in the subsiding area have not been investigated However. most of the area has been subject to agricultural and/or residential irrigation and is unlikely to have experienced serious dessication. despite substantial lowering of the water table
Settlement of soils due to ground shaking	Significant coseismic settlement of unconsolidated soils typically involves temporary liquifaction manifested in localized slumping and sand boils These phenomena have not been reported during the seismic events of recent decades
Drainage of organic soils	High organic soils do not occur in the subsiding area
Hydrocompaction	Hydrocompaction occurs where thick accumulations of very dry soils are rewetted for the first time since deposition The very shallow water tables and artesion conditions that historically characterized the area of recent subsidence rule out this phenomenon
Solution of soluble subsurface deposits like salt	There is no evidence for the existence of soluble rocks underlying the Chino Basin
Subsurface extraction of hydrocarbons	Not applicable There are no known oil or gas extraction wells currently in operation in Chino Basin
Tectonism	While the alluvial basins of California have obviously been subsiding over geologic time relative to their bounding mountain ranges, there is no evidence for a tectonic mechanism that would account for the localized and relatively rapid subsidence observed in the southwestern part of Chino Basin
Thawing permafrost	Not applicable Permafrost is soil or rock that remains below 0°C throughout the year, and forms when the ground cools sufficiently in winter to produce a frozen layer that persists throughout the following summer These conditions do not occur in Chino Basin
Aquifer-system compaction	Probable cause



Subsidence Features

-2.2
-2.1 - -2.0
-1.0 - -1.6
-1.5 - -1.4
-1.3 - -1.2
-1.1 - -1.0
-0.9 - -0.8
-0.7 - -0.6
-0.5 - -0.4
-0.3 - 0.0

Relative Change in Land Surface Altitude as Measured by Leveling Surveys 1987 - 1999 (feet)

+ 1.0
0.0
- 1.0

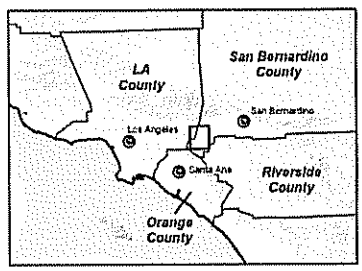
Relative Change in Land Surface Altitude as Measured by InSAR Oct 1993 - Dec 1995 (feet)

Wells in MZ-1 by Owner

- Ontario
- Pomona
- SAWC
- Upland
- SCWC
- CIM
- Chino Hills
- Chino
- MWD

Other Features

- Ayala Park Extensometer Facility
- Chino Basin Desalter Well (Existing)
- Management Zone 1 Boundary
- No InSAR Data



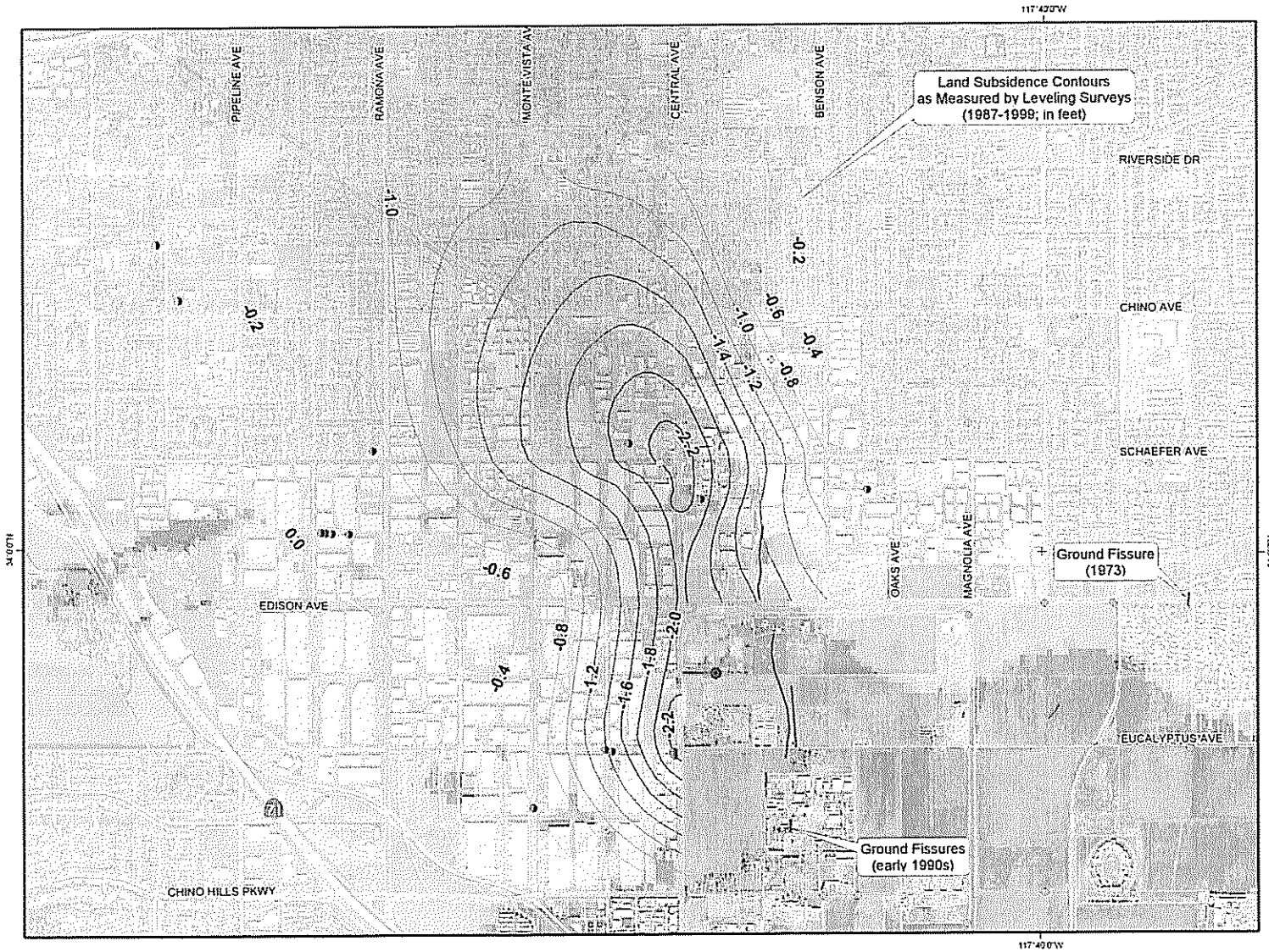
Prepared by:
WILDERMUTH ENVIRONMENTAL INC.

MZ-1 Summary Report
September 2005

Author: AEM
Date: 20050927
File: Figure_1-1.mxd

Land Surface Deformation in Management Zone 1
Leveling Surveys and InSAR

Figure 1-1



Subsidence Features

Ground Fissure (dashed where approximated)

+ 1.0
0.0
- 1.0
Relative Change in Land Surface Altitude as Measured by InSAR Oct 1993 - Dec 1995 (feet)

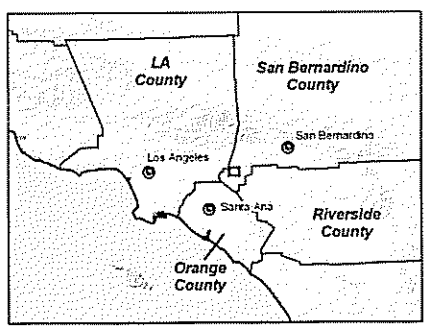
Wells in MZ-1 by Owner

- Ontario
- Pomona
- SAWC
- Upland
- SCWC
- CIM
- Chino Hills
- Chino
- MWD

Other Features

Ayala Park Extensometer Facility

Note: Air photo background flown in April 2004.



Produced by:
WILDERMUTH ENVIRONMENTAL INC
2880 Bristol Drive
Laguna Niguel, CA 92677
949.420.3030
www.wildermuthenvironmental.com

Author: AEM
Date: 20050927
File: Figure_1-2.mxd

0 1,000 2,000 3,000 Feet
0 500 1,000 Meters

MZ-1 Summary Report
September 2005

Land Surface Deformation in Chino, CA

Leveling Surveys and InSAR

Figure 1-2

Figure 1-3
Groundwater Level History in Southern MZ-1 (Shallow Wells)

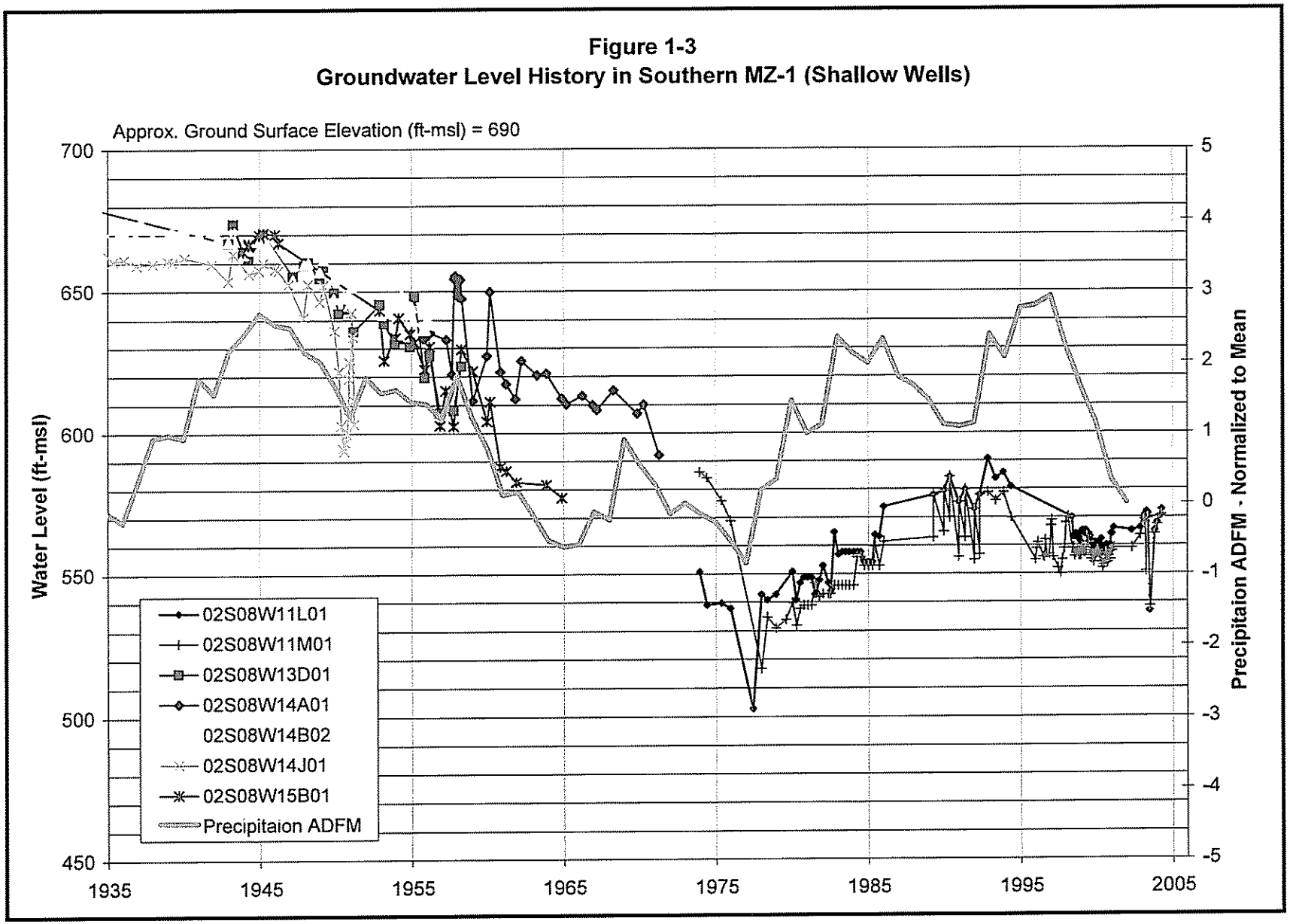
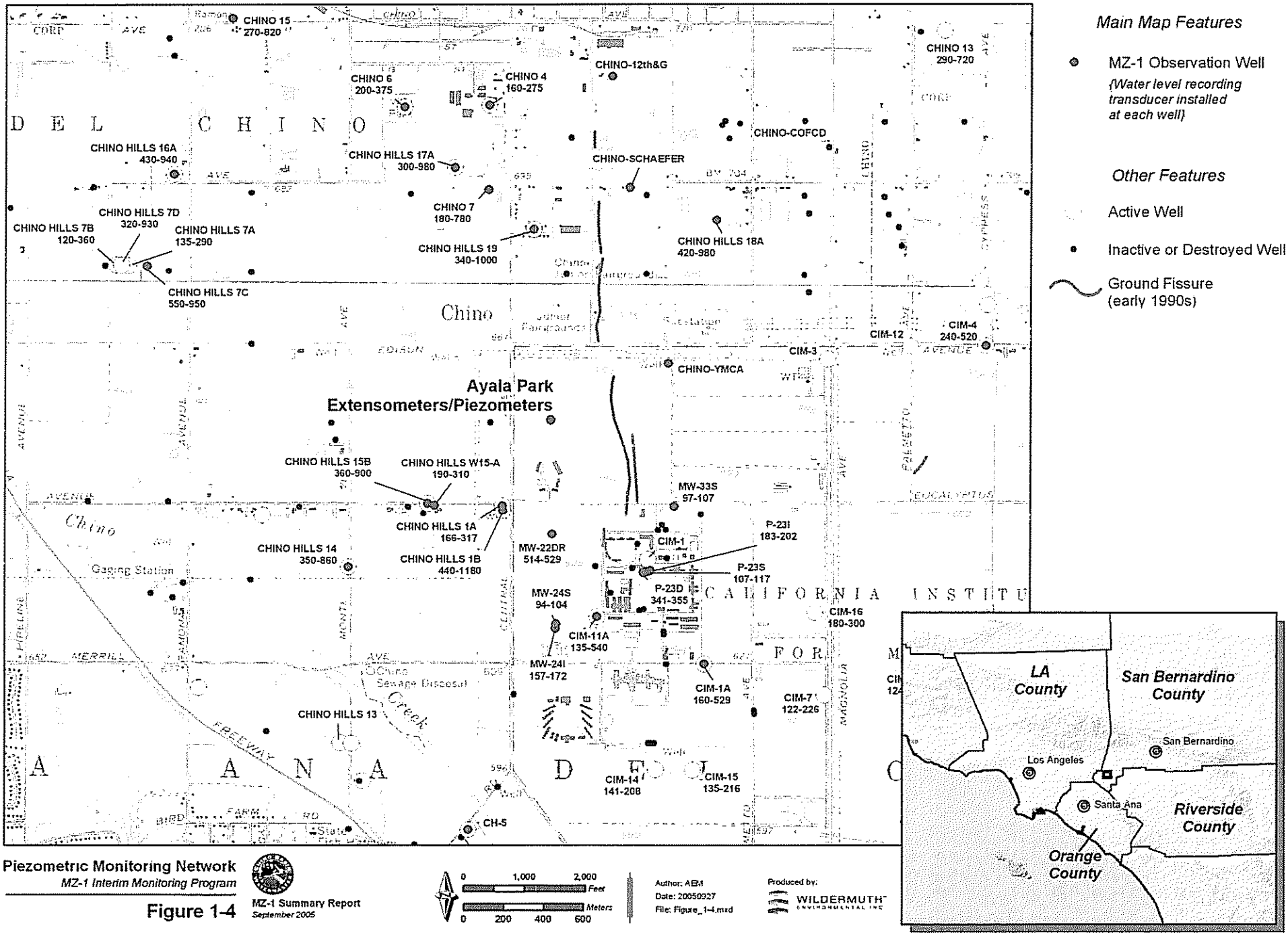


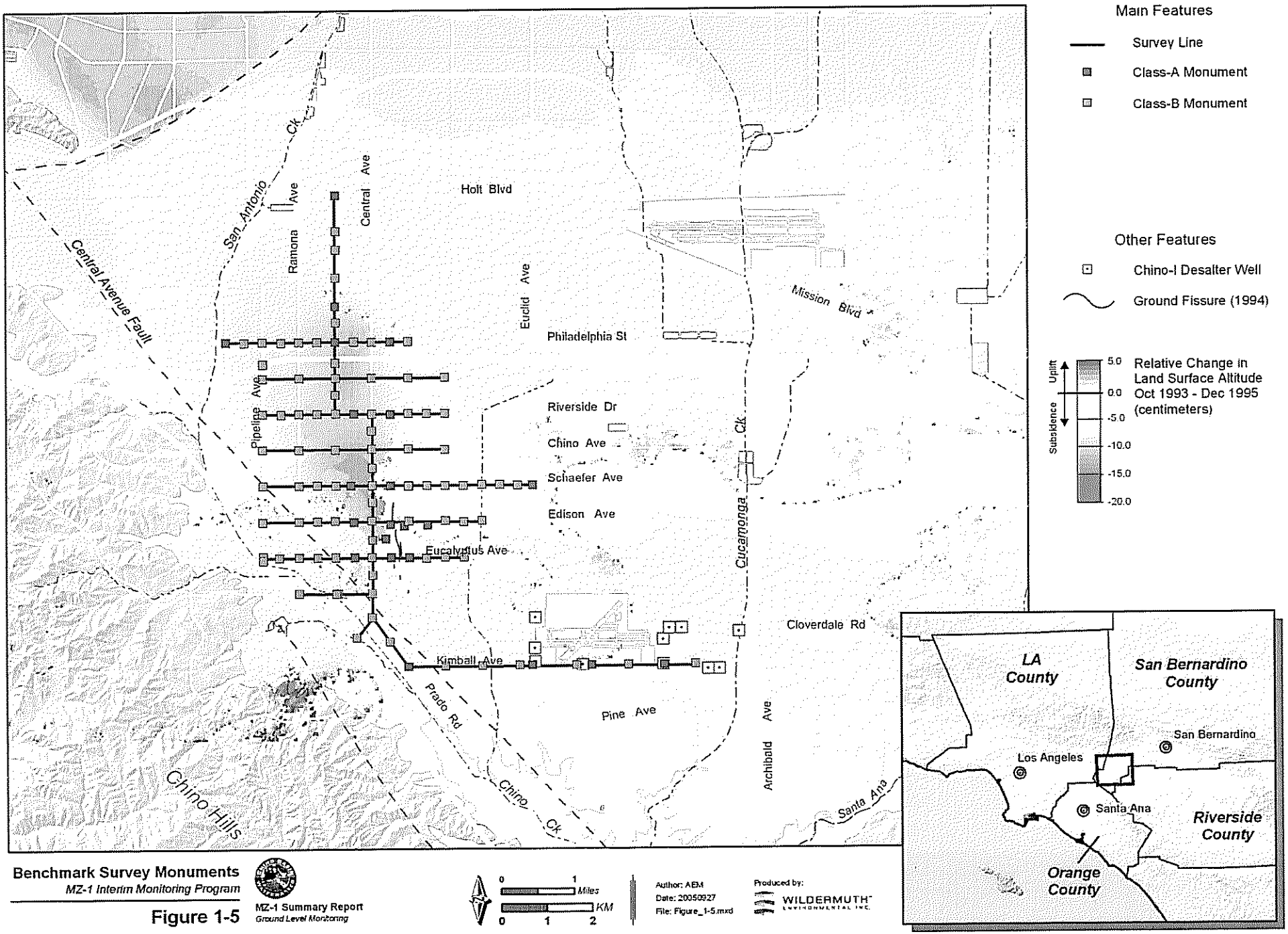
Figure_1-3.xls - Figure_1-3
10/4/2005



Piezometric Monitoring Network
MZ-1 Interim Monitoring Program

Figure 1-4

MZ-1 Summary Report
September 2005


Main Features
Survey Line
Class-A Monument
Class-B Monument
Other Features
Chino-I Desalter Well
Ground Fissure (1994)
Uplift
Subsidence
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Relative Change in Land Surface Altitude Oct 1993 - Dec 1995 (centimeters)
Holt Blvd
Philadelphia St
Riverside Dr
Chino Ave
Schaefer Ave
Edison Ave
Eucalyptus Ave
Kimball Ave
Pine Ave
Cloverdale Rd
Mission Blvd
Central Avenue Fault
San Antonio Ck
Ramona Ave
Central Ave
Euclid Ave
Pipeline Ave
Cucamonga Ck
Archibald Ave
Prado Rd
Chino Ck
Santa Ana
Chino Hills
LA County
San Bernardino County
Riverside County
Orange County
San Bernardino
Los Angeles
Santa Ana
Benchmark Survey Monuments
MZ-1 Interim Monitoring Program
Figure 1-5
MZ-1 Summary Report
Ground Level Monitoring
0 1 Miles
0 1 2 KM
Author: AEM
Date: 20050927
File: Figure_1-5.mxd
Produced by:
WILDERMUTH ENVIRONMENTAL INC.

2. MZ-1 Interim Monitoring Program

This section describes the results, interpretations, and major conclusions derived from the Interim Monitoring Program (IMP) as of September 19, 2005.

Results and Interpretations

Aquifer-System Monitoring. The controlled testing and comprehensive monitoring of the aquifer-system (see Section 1) and subsequent data analyses has led to a number of key interpretations:

1. There appear to be two distinct aquifer systems in this area – a shallow, un-confined to semi-confined system from about 100-300 ft-bgs and a deep, confined system from about 400-1,200 ft-bgs.

2. Under current conditions of aquifer utilization in MZ-1, the aquifer-system deformation appears to be essentially elastic. At the Ayala Park Extensometer, about 0.14 feet of elastic land subsidence and rebound were observed during the pumping and recovery seasons of 2004-05. Minor amounts (~0.01 feet) of permanent compaction and associated land subsidence apparently occurred over this same period.

3. The relationships between aquifer-system stress (water level changes) and aquifer-system strain (vertical deformation of the sediment matrix) have been established by comparing piezometer data versus extensometer data. These relationships indicate the nature of the aquifer-system deformation (i.e. elastic vs. inelastic) and provide estimates of aquifer-system parameters for later use in aquifer-system models.

4. A deep aquifer-system pumping test in September 2004 appears to have transitioned the system from elastic to inelastic deformation. This provides a "threshold" water level at Ayala Park, below which further drawdown will result in inelastic compaction. The data derived from this test will assist in the creation of management tools for MZ-1 (e.g. groundwater flow and subsidence models).

A technical discussion related to the above interpretations follows:

Figure 2-1 shows the changes in thickness of the aquifer systems as recorded by the deep and shallow extensometers, completed at depths of 1,400 and 550 ft-bgs. It also shows the water-level fluctuations in two piezometers, PA-10 and PA-7, which are representative of the shallow aquifer system and the upper part of the deep aquifer system, respectively.

During periods of water-level decline in PA-7, both extensometers are recording compaction of the sediments. During periods of recovery in PA-7, both extensometers are generally recording elastic expansion. Note that for the data available, almost all of the compaction during the drawdown season is recovered as expansion during the recovery season.

During the late-spring (2004) pumping of the shallow aquifer system, while the deep system not pumped, the shallow extensometer recorded compression while the deep extensometer recorded an overall expansion. Subtracting the shallow record from the deep confirms that the deeper sediments continued a smooth expansion in response to continuing recovery of heads in the deeper parts of the aquifer system, as represented by the data from PA-7, which is screened from 438-448 ft-bgs. The shallow compression is seen to correlate closely with the drawdown recorded by PA-10, screened from 213-233 ft-bgs.

These observations clearly demonstrate the existence of the deep and shallow aquifer-systems in this region of MZ-1. Nearby pumping at wells that are screened in either the deep or shallow aquifer-systems result in distinct hydraulic and mechanical responses that are recorded at the Ayala Park piezometers and extensometers. These observations also demonstrate the importance, for analytical purposes, of

independently stressing the deep and shallow systems by pumping from only one at a time, so that the observed deformation can be more accurately attributed to production from a specific depth interval.

The relationships between water levels and aquifer-system deformation are further depicted in the stress-strain diagrams shown in Figure 2-2. In this diagram, increasing depth to water (drawdown due to pumping) is the measure of decreasing pore pressure and increasing effective intergranular stress. Increasing compression of the sediments is the resulting strain. When pumping diminishes or ceases, pore pressures recover, intergranular stress is reduced, and the aquifer system expands.

Figure 2-2 shows that the full thickness of sediments responds linearly to extended intervals of continuous drawdown or recovery, but with a large seasonal hysteresis attributable to the time lag involved in the delayed vertical propagation of pore pressure changes from the pumped aquifers into adjacent, poorly permeable aquitards. The parallel slopes of the compression and expansion trends represent the overall elasticity of the sedimentary section. Its inverse is the skeletal storativity, in hydrologic terminology.

Brief intervals of recovery during the drawdown season, and of drawdown during the recovery season, produce steeply sloping, more-or-less tight hysteresis loops. Their much steeper slope represents the (inverse) aggregate compressibility of the permeable pumped aquifers. The longer intervals of recovery and drawdown generate the more open hysteresis loops, as the delayed responses of immediately adjacent portions of the aquitards have time to influence the extensometers.

The parallelism of the seasonal drawdown and recovery stress-strain slopes in Figure 2-2 indicates that seasonal drawdown to 250 ft-bgs at this site is producing essentially elastic, recoverable deformation. However, the slope of the drawdown curve in 2004 begins to deviate from its elastic trend when the seasonal drawdown exceeds 250 ft-bgs indicating a transition to inelastic compaction within draining aquitard interbeds. A minor amount of non-recovered compaction is indicated by the offset of the recovery curve in 2005 to the right (direction of compression). On about September 19, 2005 water levels had recovered to the levels of pre-pumping conditions of 2004 (~105 ft-bgs at PA-7), and the offset of the stress-strain curve to the right (direction of compression) confirmed that about 0.01 ft of permanent compaction occurred during the pumping season of 2004.

The pumping and associate drawdown of water levels in 2004 was part of a controlled aquifer system stress test. The primary objective of this test was to transition the deformation of aquifer-system sediments from elastic compression to inelastic compaction. If successful, it would provide "threshold" piezometric heads at the extensometer location that should not be approached in the future if permanent (inelastic) compaction within the aquifer-system is to be avoided. This would also define a key parameter required for estimating the maximum elastic storage capacity of the confined aquifer-system.

For fear of exacerbating the ground fissuring, one limiting condition of the test that was agreed upon by the participating agencies was that pumping cease when inelastic compaction was identified. Although 0.01 feet of permanent compaction is relatively minor deformation, it is measurable and within the detection limits of the extensometer. The stress-strain diagram in Figure 2-2 indicates that at Ayala Park the aquifer-system transitioned from elastic compression to inelastic compaction when the water level in the PA-7 piezometer at Ayala Park fell below about 250 ft-bgs. The applicability of this limit at increasing distances from the piezometer/extensometer facility is dependent on an approximate replication of the tested pumping conditions (i.e. specific wells pumped, pumping rates, and pumping durations). A different areal distribution of pumping might cause localized inelastic compaction away from Ayala Park without drawing PA-7 below 250 feet or recording inelastic effects at the extensometer.

A different vertical distribution of extraction will stress the aquifer system in a different manner, and may result in a different threshold water level in PA-7.

Other objectives of the pumping test that were successfully accomplished were to (1) estimate key aquifer-system parameters that could be used in later modeling efforts, and (2) confirm and elucidate the existence of a groundwater barrier within the sediments below about 300 ft-bgs

Discovery of Groundwater Barrier. Multiple lines of evidence suggest that a previously unknown groundwater barrier exists within the deep aquifer-system in the same location as the fissure zone.

Controlled aquifer-system stress (pumping) tests in October 2003 and April 2004 provided piezometric response data that revealed a potential groundwater barrier within the sediments below about 300 ft-bgs and aligned north-south with the historic fissure zone. Figure 2-3 is a map that shows the locations of a pumping well perforated in the deep aquifer system (CH-19, 340-1,000 ft-bgs) and other surrounding wells that also are perforated exclusively in the deep system. Figure 2-4 shows the water level responses in these wells during various pumping cycles at CH-19. The groundwater barrier is evidenced by a lack of water level response in CH-18 (east of the fissure zone) due to pumping at CH-19 (west of the fissure zone). Image-well analysis of pumping-test responses also indicates that this barrier approximately coincides with the location of the historic zone of ground fissuring.

Ground level survey data (described in detail below) corroborate the water level data – also indicating the existence of the barrier and its coincident location with the fissure zone. Figure 2-6 shows that during the pumping season of 2003 (April to November) vertical displacement of the land surface (i.e. subsidence) was generally greater on the west side of the fissure zone where water-level drawdown was greatest. Figure 2-7 shows that during the recovery season of 2003-04 (November to April) vertical displacement of the land surface (i.e. rebound) was again greater on the west side of the fissure zone where water level recovery was greatest.

In other words, the groundwater barrier in the deep aquifer-system is aligned with the fissure zone and causes greater water level fluctuations on the west side of the barrier where the pumping is concentrated. These greater water level fluctuations on the west side of the barrier, in turn, cause greater deformation of the aquifer-system matrix which, in turn, causes greater vertical land surface deformation on the west side of the barrier. In addition, the pattern of horizontal displacement of benchmarks over the pumping and recovery seasons, as shown in Figures 2-6 and 2-7, likely reflects, in part, the differential compaction of the aquifer system across the fissure zone.

Similarly, the InSAR data in Figures 1-2 and 2-5 also corroborate the existence of the groundwater barrier by showing maximum subsidence west of the barrier and virtually no subsidence east of the barrier.

This spatial coincidence of the groundwater barrier and the historic fissure zone suggests a cause-and-effect relationship: the barrier causes differential water level declines, which cause differential aquifer-system compaction and a steep gradient of subsidence across the barrier, which can and likely has caused ground fissuring above the barrier.

Monitoring of Ground-Surface Deformation—Ground-Level Surveying. In late April 2004, AE performed the annual survey event across the entire network of benchmark monuments, including the measurements of horizontal displacements at the Ayala Park Array of monuments. The results of the ground level surveys were presented to the MZ-1 Technical Committee at its meeting. Also at this

meeting, the project manager from AE made a presentation to describe survey methodologies, accuracy, results, and challenges.

Figure 2-5 displays the vertical displacement at monuments that occurred from April 2003 to April 2004. Comparing monument elevations over the April-to-April period is meant to reveal the inelastic component of compaction, if any, which may be occurring in the region. The assumption here is that in April 2004 water levels in the region have recovered to the April 2003 levels; thus the measured vertical displacement does not include the elastic component of aquifer system deformation. Water levels measured as part of the IMP (in the vicinity of Ayala Park) support this assumption. Examination of Figure 2-5 shows that the monuments near Ayala Park experienced little to no subsidence over this time period. However, the monuments located in the northern portions of the surveyed area showed small but measurable subsidence of the land surface (on average about 0.04 feet). Maximum subsidence of about 0.08 feet was recorded at monuments located along Philadelphia Street between Pipeline and Ramona Avenues. Water level and groundwater production data have not been collected or analyzed as part of the IMP in these northern portions of the survey area; hence, it is not yet possible to classify the nature of the subsidence in this region (*i.e.* elastic vs. inelastic), since it is not known whether water levels in 2004 had recovered to their 2003 levels.

The color-coded background in Figure 2-5 represents the subsidence that occurred in the area over the October 1993 to December 1995 period as measured by InSAR. The subsidence shown by this InSAR data has been interpreted as primarily permanent subsidence caused by inelastic aquifer-system compaction. If so, the survey data in Figure 2-5 are indicating that the distribution of inelastic compaction in 2003-04 is significantly different than the distribution of inelastic compaction that occurred during the early 1990s. In particular, maximum permanent subsidence of about 1 foot in 1993-95 was measured in the vicinity of Ayala Park by InSAR, whereas in 2003-04 the survey data are indicating minimal permanent subsidence, if any, in this same area.

Figures 2-6 and 2-7 display the vertical and horizontal displacement at monuments of the Ayala Park Array that occurred from April 2003 to November 2003 and November 2003 to April 2004, respectively. The determination of horizontal displacement of monuments was accomplished through the processing of distance and angle measurements between adjacent monuments, and is based on the assumption that the southeastern monument was stable over the period of measurement. The methods used to measure the horizontal displacement of monuments at the Ayala Park Array are currently being refined by AE. These figures show:

- significant horizontal displacement of the ground surface over the course of the pumping and recovery seasons in the vicinity of the historic fissure zone
- the elastic nature of the land surface displacement over the course of the pumping and recovery seasons
- the apparent presence of a groundwater barrier within the deep aquifer system (see Section 5.3.4 below).

Groundwater production and water-level data show that pumping of wells perforated within the deep aquifer system (>300 ft-bgs) causes water-level drawdowns in the deep aquifer system on the order of 150 feet. However, these large drawdowns do not propagate east of the fissure zone. During the pumping season of 2003 (April to November) vertical displacement of the land surface (i.e. subsidence) was generally greater on the west side of the fissure zone where water-level drawdown was greatest. During

the recovery season of 2003-04 (November to April) vertical displacement of the land surface (i.e. rebound) was again greater on the west side of the fissure zone where water-level recovery was greatest.

In other words, the groundwater barrier in the deep aquifer system aligned with the fissure zone causes greater water-level fluctuations on the west side of the barrier where the pumping is concentrated. These greater water-level fluctuations west of the barrier cause greater deformation of the aquifer-system matrix which, in turn, causes greater vertical land surface deformation on the west side of the barrier. The InSAR data corroborate the existence of the groundwater barrier by showing maximum subsidence west of the barrier (0.2ft) and virtually no subsidence east of the barrier during the course of one pumping season (April-1993 to September 1993). In addition, the pattern of horizontal displacement of benchmarks over the pumping and recovery seasons likely reflects, in part, the differential compaction of the aquifer system across the fissure zone.

In June 2005, the entire network of monuments was surveyed for vertical displacement and, at the Ayala Park array of monuments, for horizontal displacement. The results of this survey are currently being processed.

Monitoring of Ground Surface Deformation—InSAR. Vexcel Corporation of Boulder, Colorado – a company that specializes in remote sensing and radar technologies – conducted a "proof of concept" study of historical synthetic aperture radar data that was acquired over the MZ-1 area. The objective of this study was to generate cumulative displacement maps over relatively short time steps (April to November 1993). The MZ-1 Technical Group deemed the study successful, and approved follow-up study by Vexcel to perform a comprehensive analysis of all historical synthetic aperture radar data (1992-2003) to characterize in detail the history of subsidence in MZ-1.

The comprehensive analysis was completed during the first quarter of calendar 2005. However, the usable data in this analysis only spanned the 1992-2000 period. Dr. David Cohen of Vexcel presented the InSAR results by to the MZ-1 Technical Committee in March 2005. Figures 2-8 and 2-9 display the summary results of the InSAR analysis of land subsidence for the periods of 1992-1995 and 1996-2000.

The InSAR results were generally consistent with the ground level survey data collected over a similar period with respect to the areal extent and magnitude of historical subsidence. The InSAR data show that:

- the rate of subsidence in the south area of MZ-1 has declined over time, particularly since about 1995.
- currently, the aquifer system is experiencing mainly elastic compression and expansion in the south area of MZ-1.
- the central area of MZ-1 is displaying greater rates of subsidence than the south area (near Ayala Park). This subsidence is probably due to aquifer system compaction, but pumping and water level data that would define this relationship have not yet been collected and analyzed in the central area of MZ-1.
- a steep gradient of subsidence exists across the fissure zone. The steep gradient extends north of the fissure zone to about Francis Street. In addition, the spatially continuous InSAR data show that the gradient of subsidence is steeper across the fissure zone than is shown by surveys of discrete benchmarks, which further supports the potential link between the subsidence and the fissuring. The existence of this steep gradient across the fissure zone also supports/reveals the existence and extent of the groundwater barrier.

Conclusions

There are five major conclusions that have been derived from the IMP to date:

1. The current state of aquifer-system deformation in south MZ-1 (in the vicinity of Ayala Park) is essentially elastic. Little, if any, inelastic (permanent) compaction is now occurring in this area, which is in contrast to the past when about 2.2 feet of land subsidence occurred, accompanied by ground fissuring, from about 1987-1995.

2. Groundwater production from the deep, confined aquifer system in this area causes the greatest stress to the aquifer system. In other words, pumping of the deep aquifer system causes water-level drawdowns that are much greater in magnitude and lateral extent than drawdowns caused by pumping of the shallow aquifer system.

3. Water-level drawdowns due to pumping of the deep aquifer system can cause inelastic (permanent) compaction of the aquifer-system sediments, which results in permanent land subsidence. The initiation of inelastic compaction within the aquifer system was identified during this investigation when water levels fell below a depth of about 250 feet in the PA-7 piezometer at Ayala Park.

4. Through this study, a previously undetected barrier to groundwater flow was identified. The barrier is located within the deep aquifer system and is aligned with the zone of historical ground fissuring. Pumping from the deep aquifer system is limited to the area west of the barrier, and the resulting drawdowns do not propagate eastward across the barrier. Thus, compaction occurs within the deep system on the west side of the barrier, but not on the east side, which causes concentrated differential subsidence across the barrier and creates the potential for ground fissuring.

5. InSAR and ground-level survey data indicate that permanent subsidence in the central parts of MZ-1 (north of Ayala Park) has occurred in the past and continues to occur today. The InSAR data also indicate that the groundwater barrier extends northward into central MZ-1. These observations suggest that the conditions that very likely caused ground fissuring near Ayala Park in the 1990s are also present in central MZ-1, and should be studied in more detail.

Figure 2-1 - Piezometric and Extensometer Data

Ayala Park Piezometer/Extensometer Facility

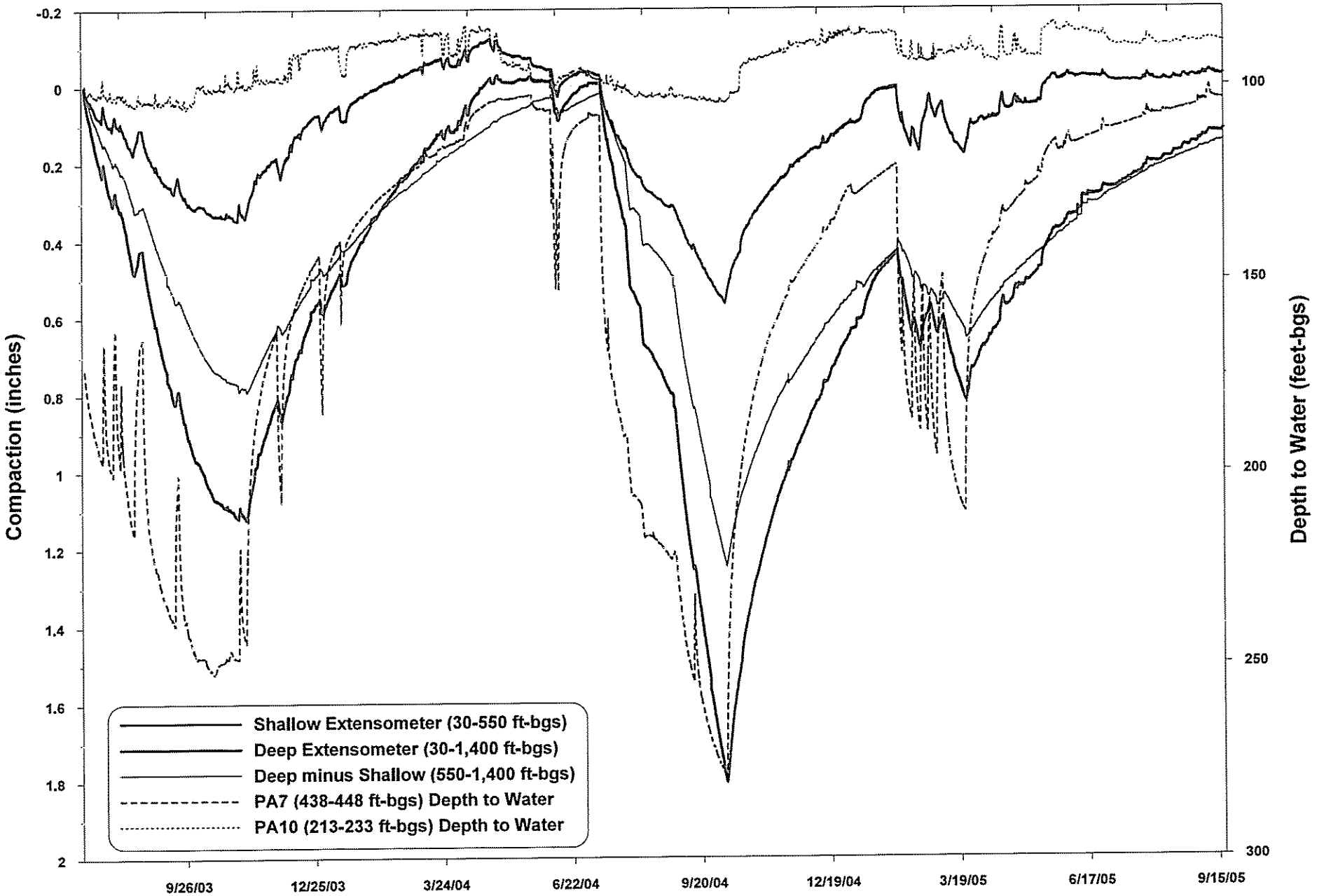
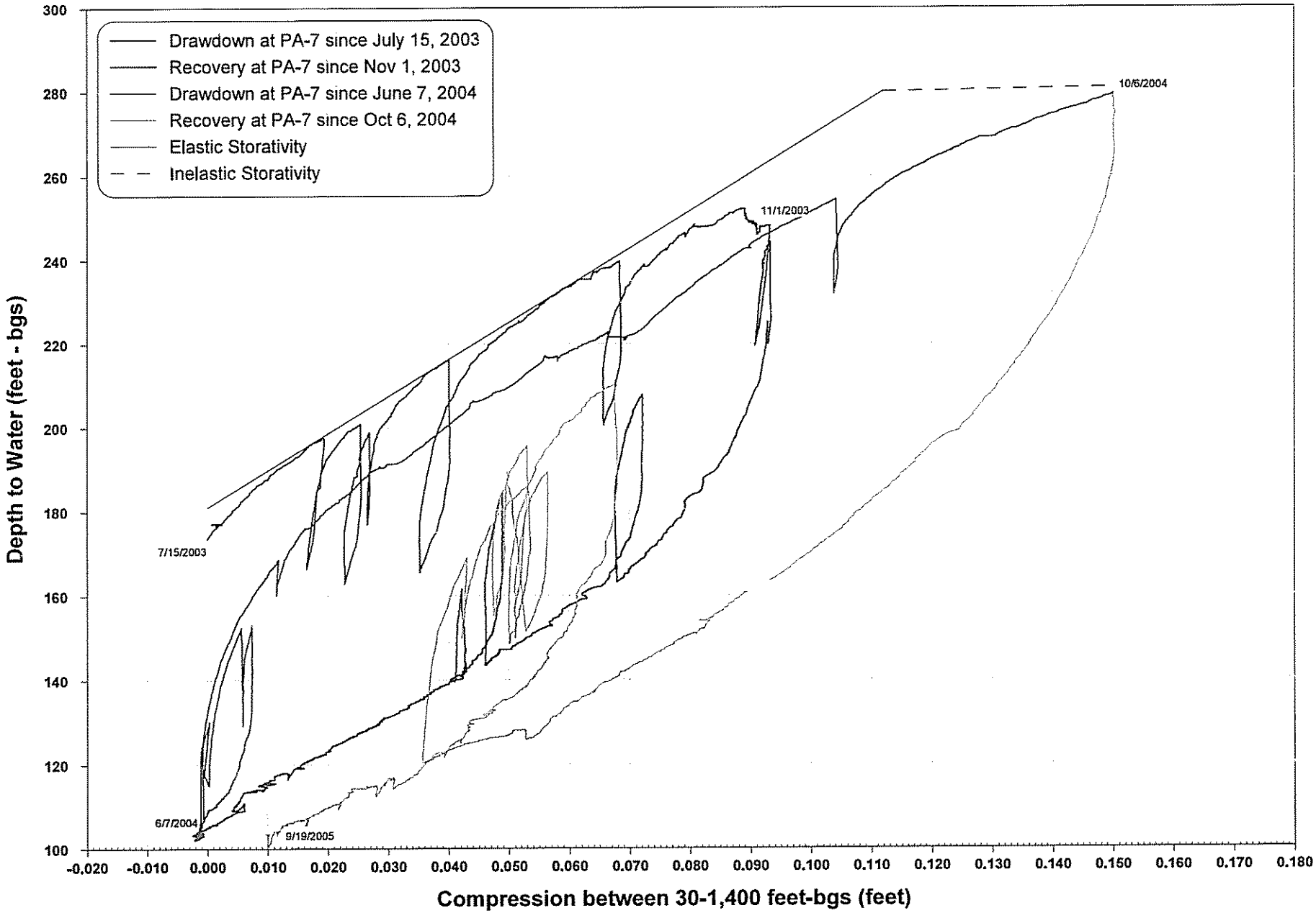
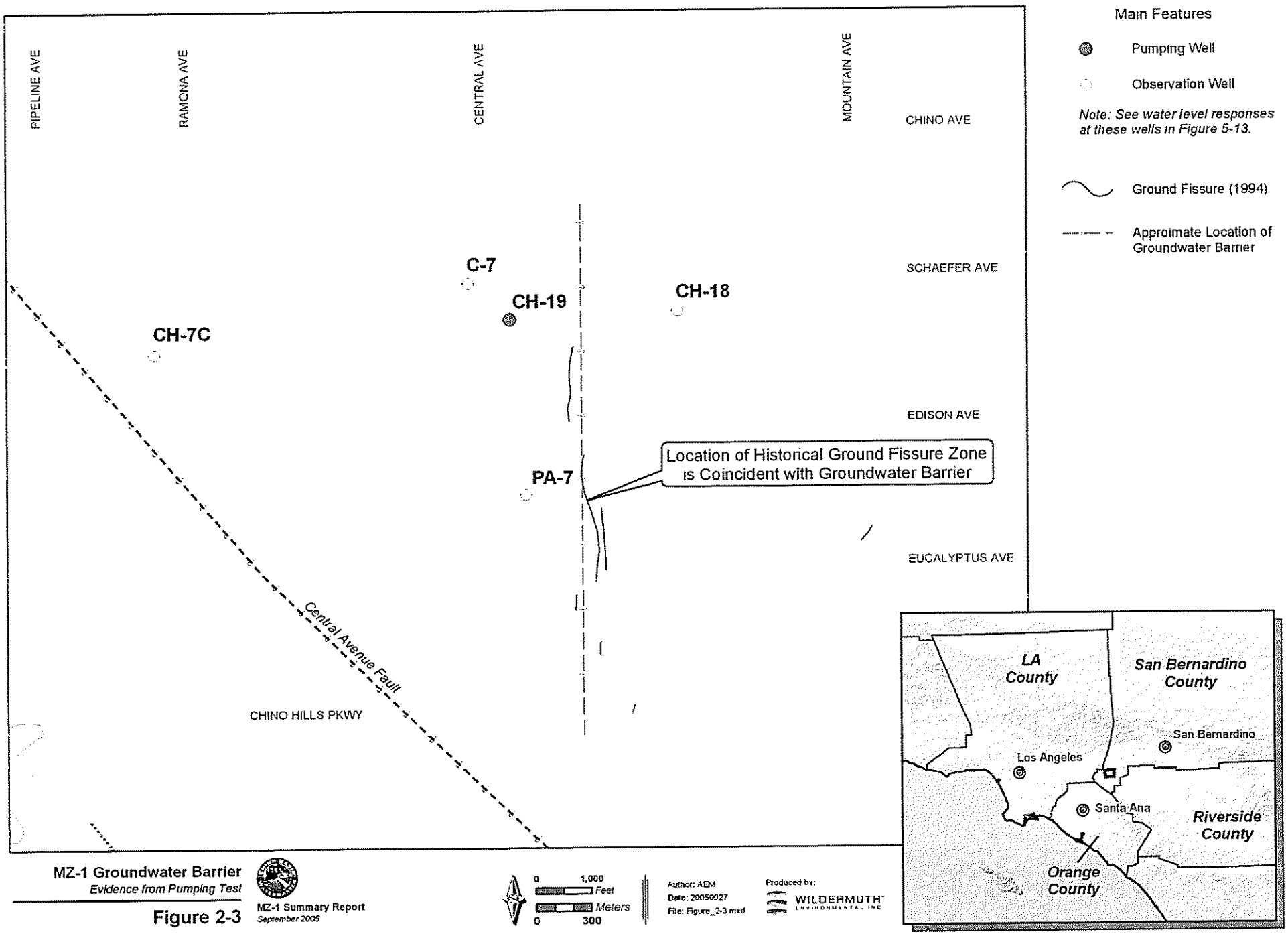


Figure 2-2 -- Stress-Strain Diagram

PA-7 vs. Deep Extensometer



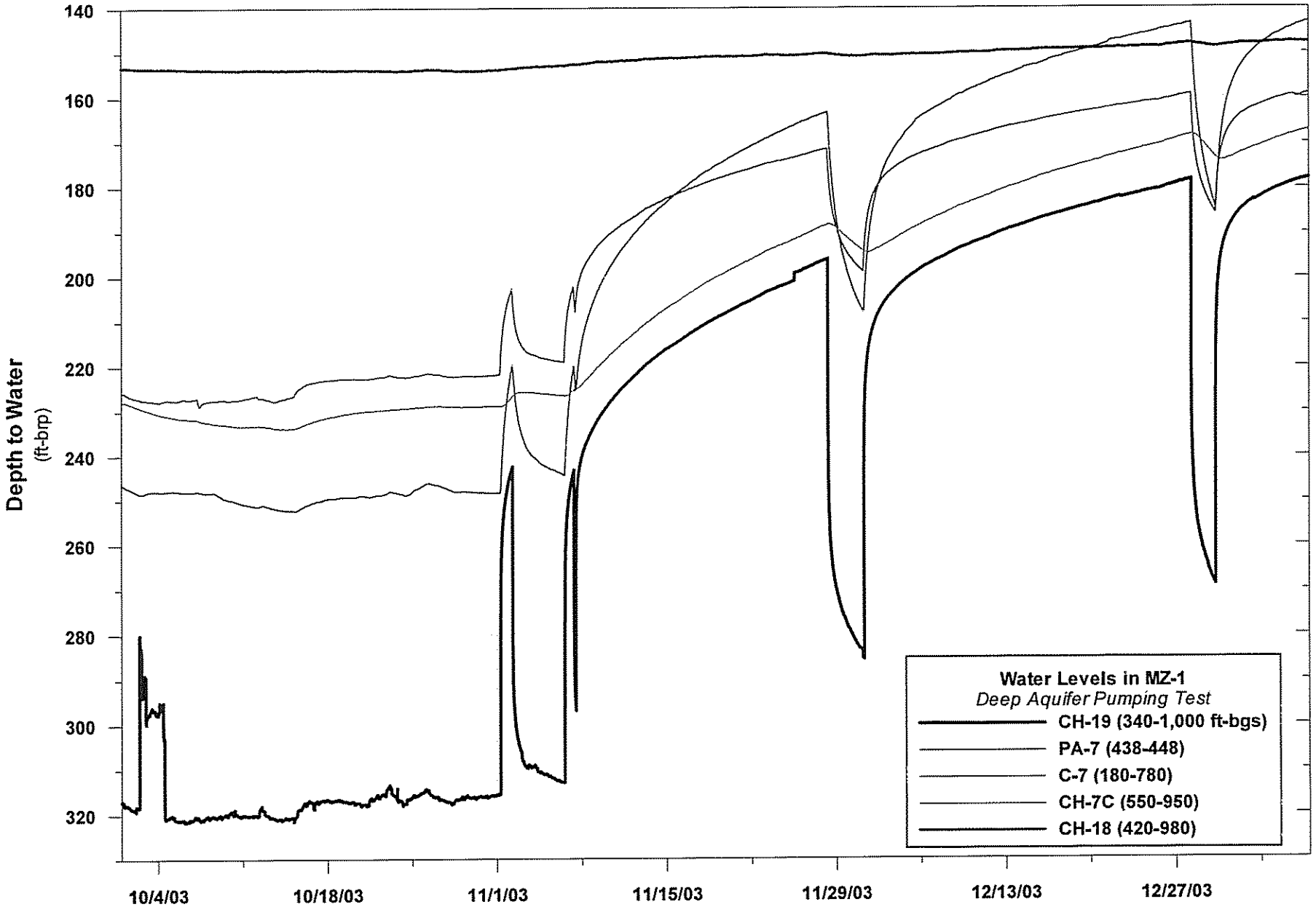


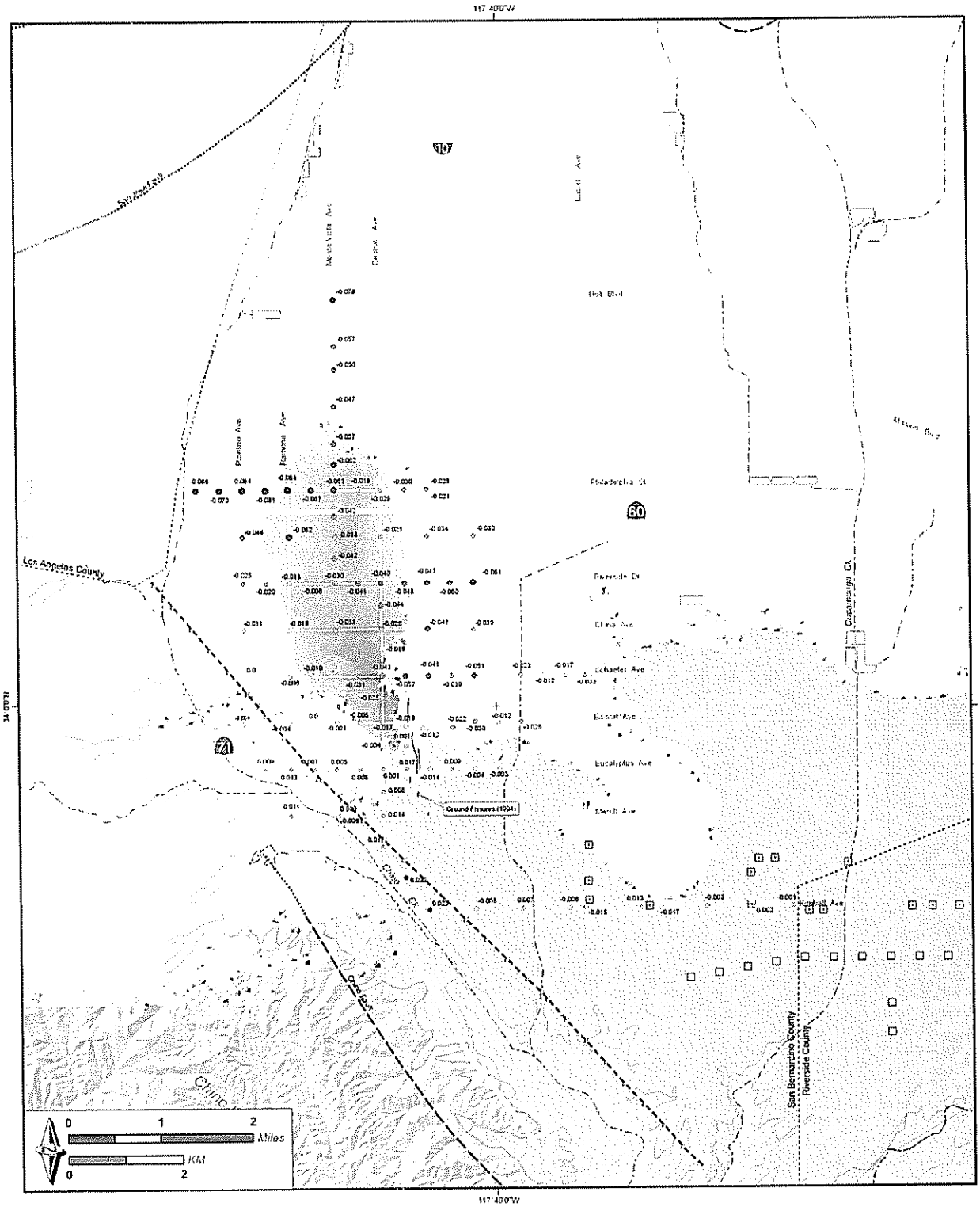
MZ-1 Groundwater Barrier
Evidence from Pumping Test

Figure 2-3

MZ-1 Summary Report
September 2005

Figure 2-4
Water Level Responses at Nearby Wells to Pumping at CH-19





Main Features

- -0.010 to -0.050
- -0.079 to -0.060
- -0.059 to -0.040
- -0.039 to -0.020
- -0.019 to -0.001
- 0.0
- 0.001 to 0.020

Relative Change in Land Surface Altitude as Measured by Leveling Surveys April 2003 - April 2004 (feet)

+ 1.0
0.0
- 1.0

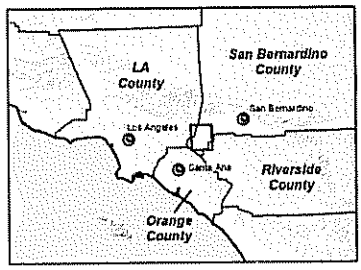
Relative Change in Land Surface Altitude as Measured by InSAR Oct 1993 - Dec 1995 (feet)

Other Features

- Ayala Park Extensometer Facility
- Chino Basin Desalter Well (Existing)
- Chino Basin Desalter Well (Planned)
- Chino Basin Hydrologic Boundary

Faults & Groundwater Divides

- Location Certain
- Location Approximate
- Location Concealed
- Location Uncertain
- Groundwater Divide



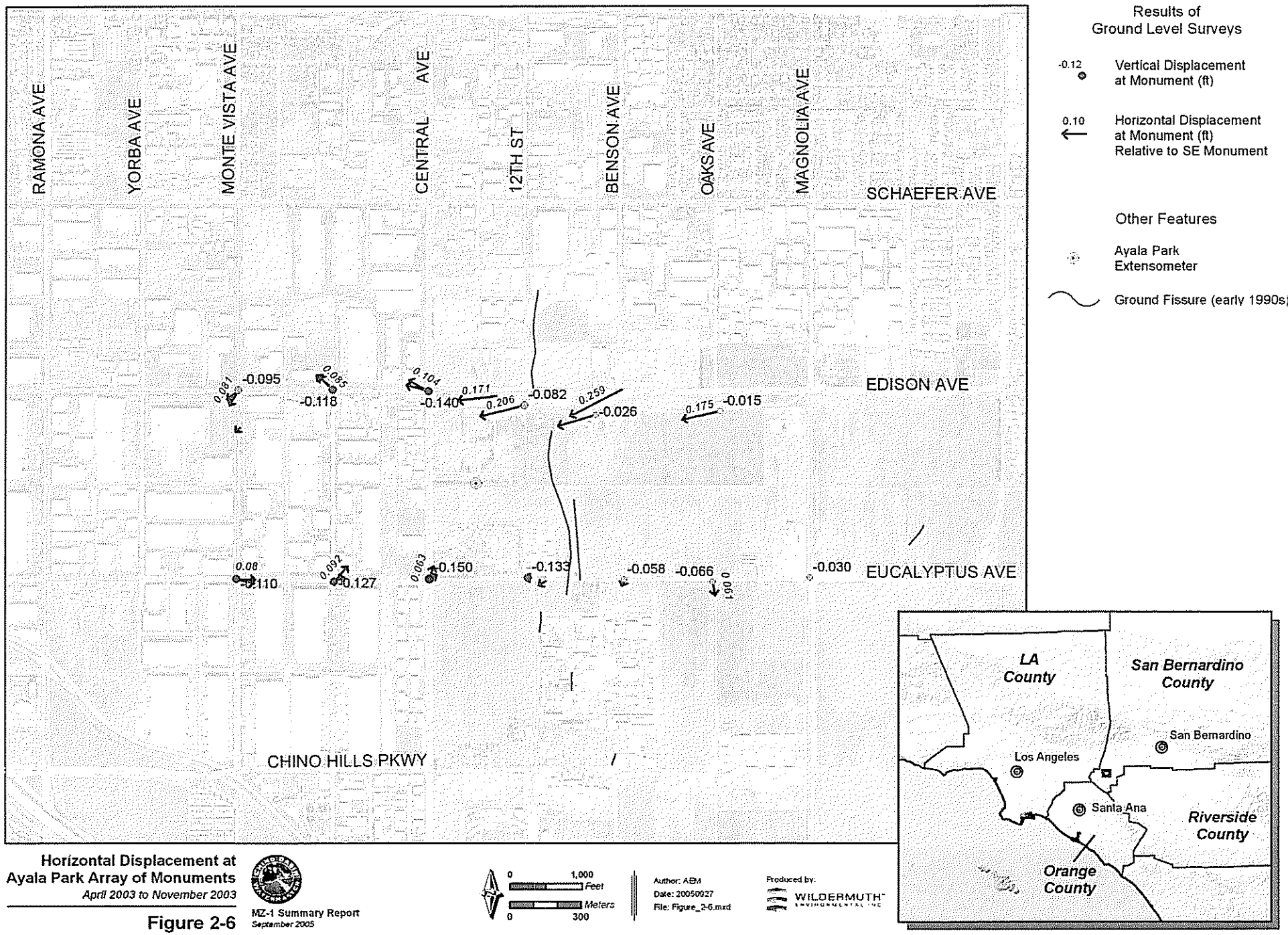
Prepared by:
WILDERMUTH ENVIRONMENTAL INC.
Lake Forest, CA 92630

MZ-1 Summary Report
September 2005

Author: AEM
Date: 20050927
File: Figure_2-5.mxd

Ground Level Survey Results
April 2003 to April 2004

Figure 2-5

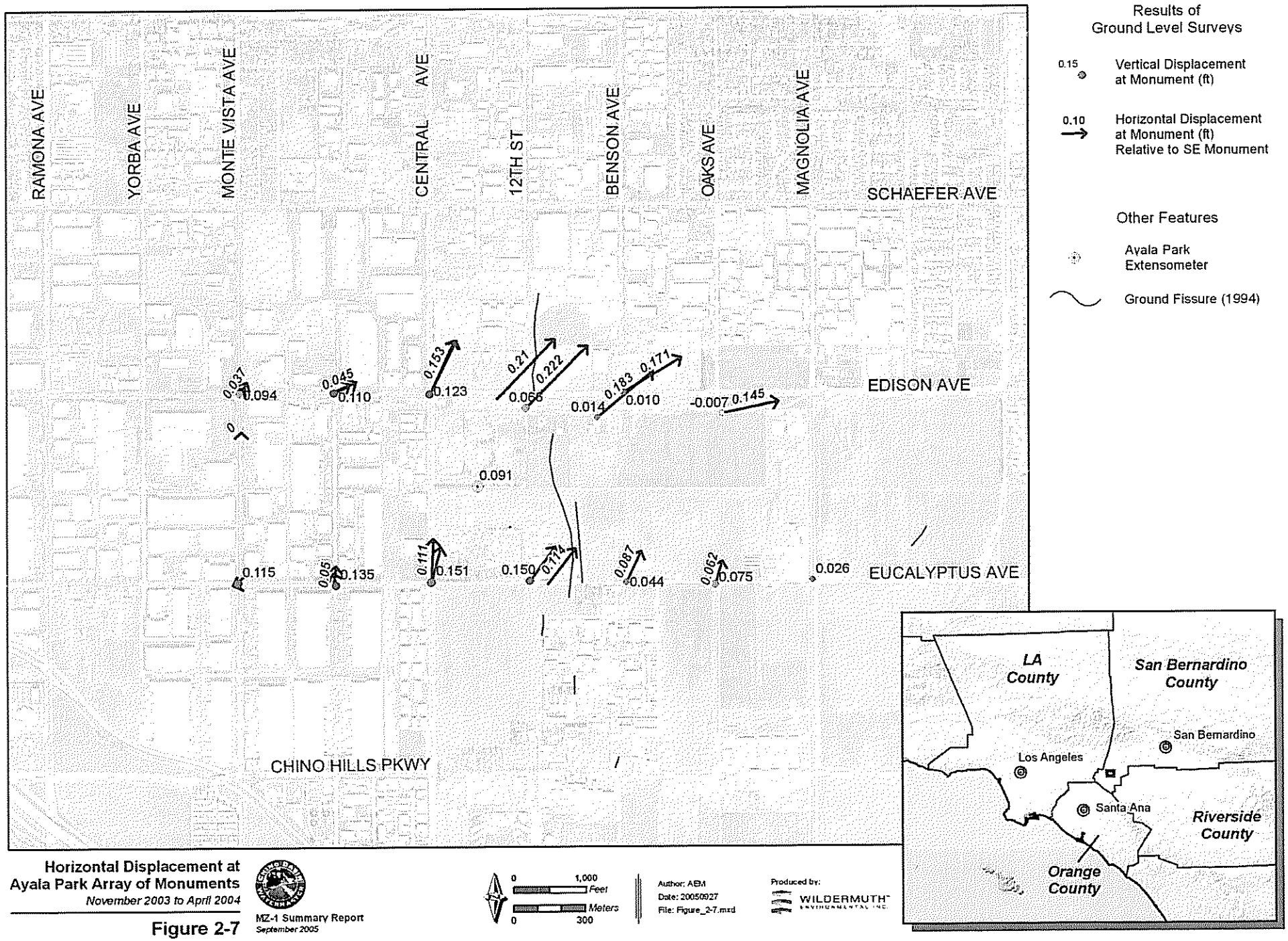


Horizontal Displacement at Ayala Park Array of Monuments

April 2003 to November 2003

Figure 2-6

MZ-1 Summary Report
September 2005



Horizontal Displacement at Ayala Park Array of Monuments

November 2003 to April 2004

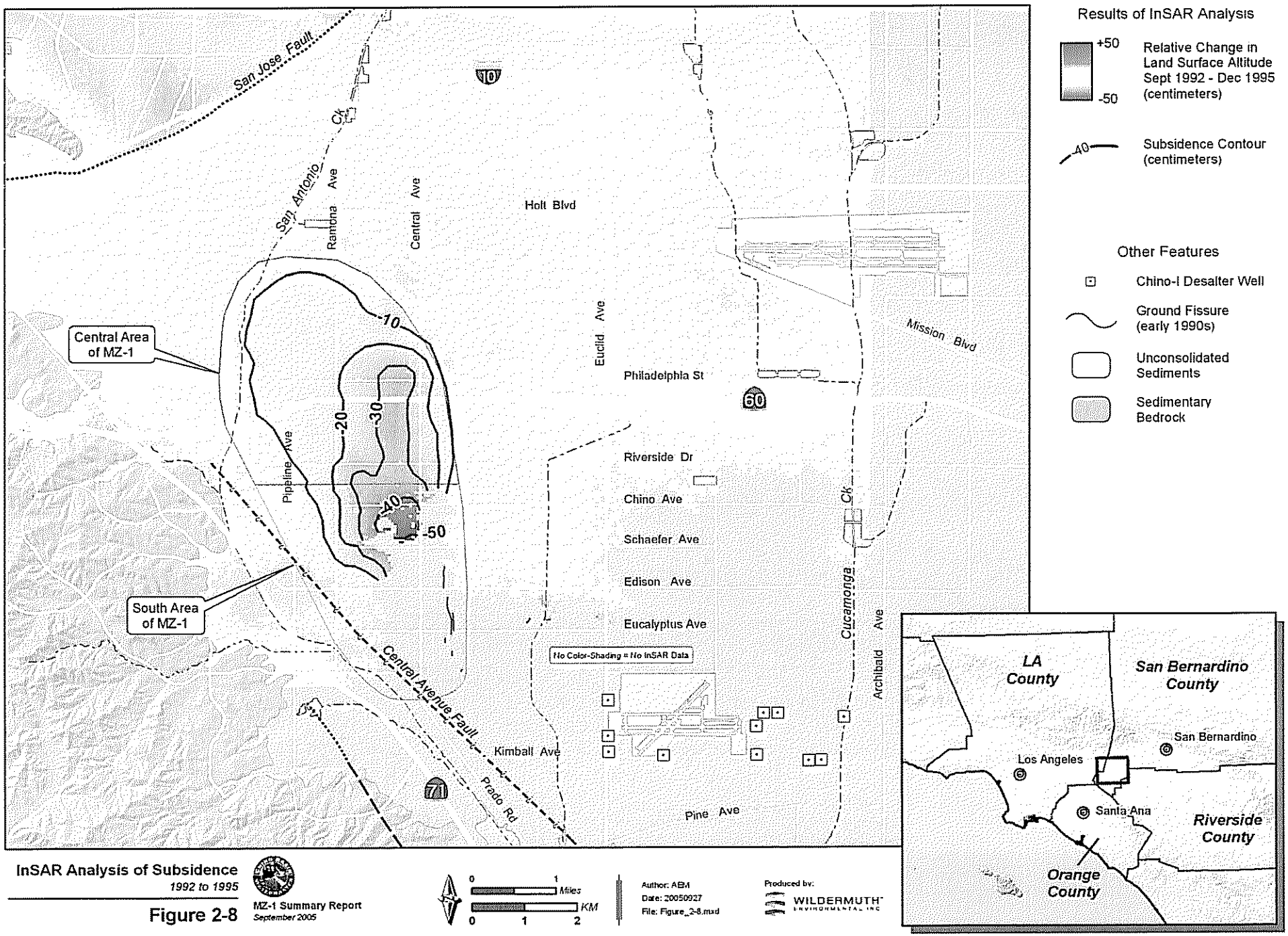
Figure 2-7

MZ-1 Summary Report
September 2005

0 1,000 Feet
0 300 Meters

Author: ABM
Date: 20050927
File: Figure_2-7.mxd

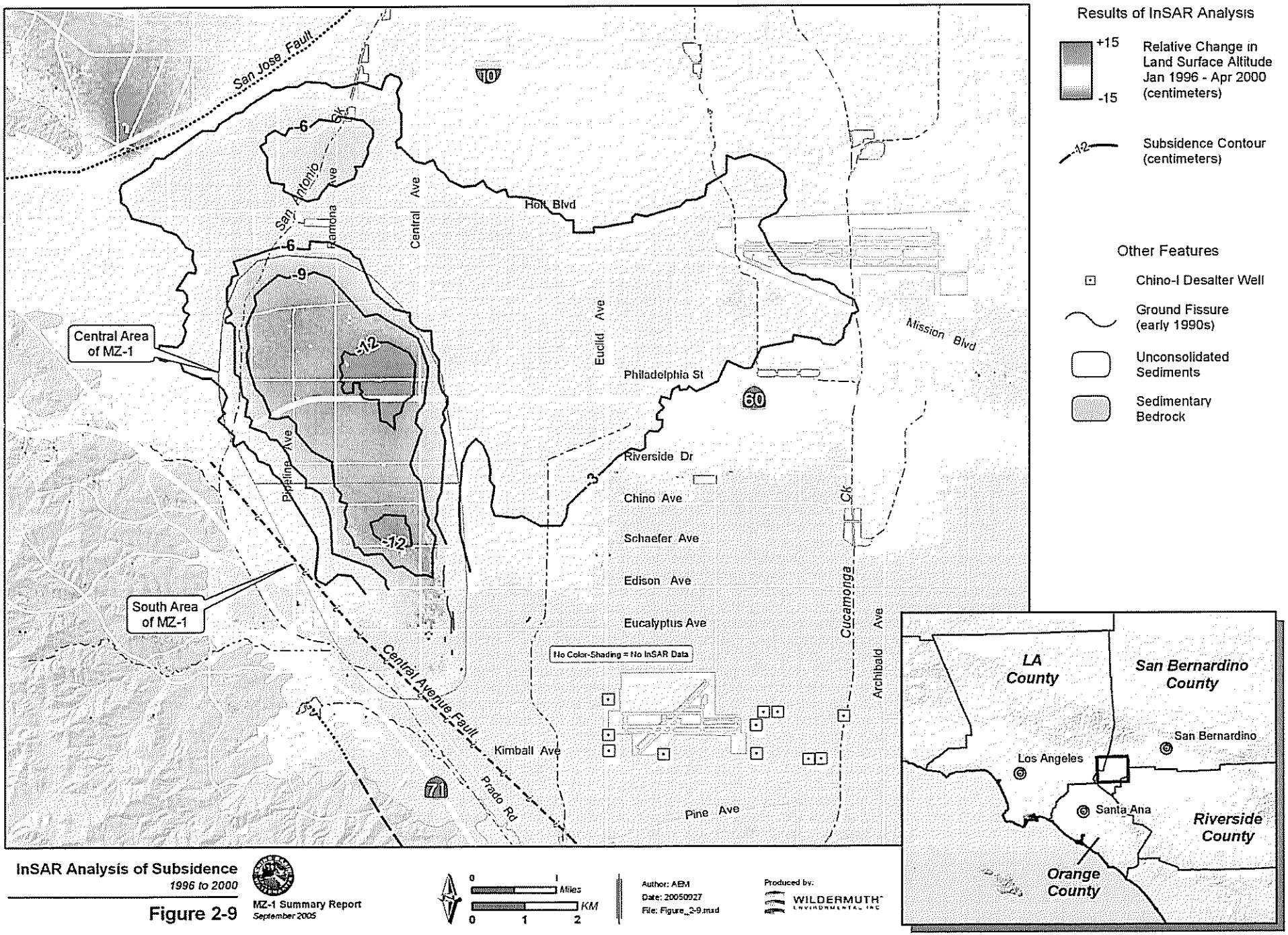
Produced by:
WILDERMUTH ENVIRONMENTAL INC.



InSAR Analysis of Subsidence
1992 to 1995

Figure 2-8

MZ-1 Summary Report
September 2005



InSAR Analysis of Subsidence
1996 to 2000

Figure 2-9

MZ-1 Summary Report
September 2005

3. ONGOING AND RECOMMENDED WORK

This section describes:

- the ongoing work of the IMP, which includes the continued monitoring of the aquifer system and land surface deformation and the development of analytical and numerical models of groundwater flow and aquifer-system deformation.
- the work that is currently being implemented that was not initially part of the IMP, but has been recommended by MZ-1 Technical Committee and/or Watermaster based on data obtained during the IMP period. This work includes the expanded aquifer-system monitoring in the central area of MZ-1, and the monitoring of horizontal ground surface deformation along Schaefer Avenue.

Continued Monitoring

Aquifer-System Monitoring. Aquifer-system monitoring efforts will continue for the duration of the IMP. The MZ-1 Technical Committee will likely recommend that the aquifer-system monitoring efforts continue, albeit at a reduced scope, as part of the long-term management plan. Electronic data from the Ayala Park Extensometer facility and from water level recording transducers in surrounding wells will be collected and entered into the MZ-1 database once every two months. The purpose of this continued monitoring effort is to (1) continually evaluate the effectiveness of the long-term plan, and (2) verify the accuracy of the groundwater flow and subsidence models that are being used as management tools.

InSAR. The MZ-1 Technical Committee is recommending that on-going InSAR monitoring of land surface deformation be conducted on a semi-annual interval (spring and fall data acquisition and interferometric analysis) for the next two years. This analysis will (1) reveal seasonal and annual ground surface displacement across the entire MZ-1 area, and (2) be compared to ground-level survey data collected at the same interval (see Section 5.4.2 below) to help determine a long-term strategy to monitor ground surface deformation.

Ground Level Surveying. The MZ-1 Technical Committee is recommending that the entire network be surveyed twice per year for the next two years (during the spring and fall of each year). The ground level survey data will be compared against the InSAR data (see above) to help determine a long-term strategy to monitor ground surface deformation.

Development of Analytical and Numerical Models

The objectives of aquifer-system modeling in MZ-1 are:

- To evaluate fluid withdrawal as the mechanism of historical land subsidence and fissuring
- To predict the effects of potential basin management practices on groundwater levels and land subsidence and fissuring (forecasting tool)

In other words, if a model can be constructed that simulates past drawdown and associated land subsidence, then the model represents an additional line of evidence that fluid withdrawal was the mechanism of historical land subsidence. In addition, the model can be used to predict future drawdown and associated land subsidence that would result from potential basin management practices.

Three distinct modeling efforts will take place in sequence:

1. *Inverse analytical modeling.* This type of modeling will use groundwater level and production data collected as part of the aquifer-system stress testing (pumping tests) that were conducted in 2003 and

2004. The objectives are to determine the hydraulic and mechanical parameters of the aquifer-system and reveal XY-anisotropy. The results will be used in subsequent numerical modeling efforts.

2. *One-dimensional compaction modeling.* This type of modeling will use groundwater level and aquifer-system deformation data collected at the Ayala Park Piezometer/Extensometer Facility, as well as historical water level and subsidence data collected near Ayala Park. One objective is to determine the aquitard properties in the vicinity of Ayala Park. Areal extrapolation of aquitard properties will be based on geology and InSAR data, and the results will be used in the three-dimensional numerical modeling efforts (see Section 3). Another objective is to predict aquifer-system deformation due to predicted water level changes that may occur at Ayala Park in the future due to nearby pumping.

3. *Three-dimensional groundwater flow and subsidence modeling.* This type of modeling will use groundwater level and production data at all wells in the area and historical land subsidence data from ground level surveys and InSAR. Again, this model will attempt to match historical water level and subsidence data and, if successful, will serve as a forecasting tool for MZ-1 managers.

It is desirable that the calibration period for future groundwater flow and subsidence modeling begins before significant drawdown in MZ-1 (~1940). The comprehensive set of subsidence data in this region begins in 1987. If subsidence data exists prior to 1987, then it needs to be collected, evaluated, and linked to the post-1987 survey data if it is to be used in model calibration. Associated Engineers is currently investigating the quantity and quality of pre-1987 subsidence data in MZ-1, and will deliver a report containing these data in October 2005.

Expanded Monitoring

One of the key discoveries of the IMP has been the groundwater barrier located beneath the historic fissure zone. However, the northern and southern extent of this barrier is unknown. The MZ-1 Technical Committee is contemplating the expansion of the aquifer-system monitoring network to the north and south of its current extent to better characterize the location and effectiveness of the barrier. Further aquifer-system testing (i.e. pumping test) may be necessary as part of this effort.

The horizontal surveys will also be extended to the north over this two year period to include the benchmarks along Schaefer Avenue. The next survey of the entire monument network is planned for October 2005.

4. Development of the Long-Term Management Plan for MZ-1

Recall that the objective of the long-term management plan is to minimize or abate permanent land subsidence and ground fissuring in MZ-1. The modeling efforts described above will be critical to the development of the long-term plan, and the continual evaluation of plan in the future.

A workshop was held May 25, 2005 to update the Special Referee on IMP progress and development of the long-term management plan for MZ-1. The OBMP implementation plan called for the development of the long-term plan by June 2005. Because the modeling efforts were just begun in the summer of 2005, the Special Referee was notified before and during the workshop of the impending delay in the development of the long-term plan.

Subsequent to the workshop, the Special Referee issued a report to the Court (Appendix A). In the report, the Special Referee:

- indicated that the IMP progress and current activities are sufficient to warrant a delay in the development of a long-term plan
- indicated that it was incumbent upon Watermaster to request that the Court extend the period for completion of the long-term plan, and that Watermaster file with the Court a motion for an order to set a new schedule for the completion of the long-term plan
- requested that Watermaster produce a MZ-1 Summary Report (this report) that describes the IMP results and conclusions to date, and addresses outstanding issues such as other potential subsidence mechanisms and historical subsidence that pre-dates the 1990s
- requested that Watermaster provide "guidance criteria" to the MZ-1 producers in an effort to minimize the potential for future subsidence and fissuring until the completion of the long-term plan

Guidance Criteria to Minimize Subsidence and Fissuring

In response, Watermaster produced this summary report, and drafted a set of guidance criteria for MZ-1 producers. Again, the purpose of the guidance criteria is to minimize the risk of permanent subsidence and ground fissuring while the long-term plan is being developed. The guidance criteria are listed in Table 4-1 and below:

1. Table 4-2 lists the existing wells (hereafter the Managed Wells) and their owners (hereafter the Parties) that are the subject of these Guidance Criteria.

2. Figure 4-1 shows the area addressed by these Guidance Criteria (hereafter the Area of Subsidence Management). Within the boundaries of this area, both existing and newly-constructed wells are subject to being classified as Managed Wells. This is based upon the observed and/or predicted effects of pumping on groundwater levels and aquifer-system deformation. Initial Managed Well designations for wells that pumped during the IMP were based on effects measured at the Ayala Park Piezometer/Extensometer Facility. Additional Managed Well designations were made based on analysis of well construction and geology.

3. The Guidance Level is a specified depth to water measured in Watermaster's PA-7 piezometer at Ayala Park. It is defined as the threshold water level at the onset of inelastic compaction of the aquifer system as recorded by the extensometer, minus 5 feet. The 5-foot reduction is meant to be a safety factor to ensure that inelastic compaction does not occur. The Guidance Level is established by Watermaster based on the periodic review of monitoring data collected by Watermaster. The initial Guidance Level is 245 feet below the top of the PA-7 well casing.

4. If the water level in PA-7 falls below the Guidance Level, Watermaster recommends that the Parties curtail their production from designated Managed Wells as required to maintain the water level in PA-7 above the Guidance Level.

5. Watermaster will provide the Parties with real-time water level data from PA-7.

6. The Parties are requested to maintain and provide to Watermaster accurate records of the operation of the Managed Wells, including production rates and on-off dates and times. The Parties are requested to promptly notify Watermaster of all operational changes made to maintain the water level in PA-7 above the Guidance Level.

7. Watermaster recommends that the Parties allow Watermaster to continue monitoring piezometric levels at their wells.

8. Watermaster will evaluate the data collected as part of the MZ-1 Monitoring Program at the conclusion of each fiscal year (June 30) and determine if modifications, additions, and/or deletions to the Guidance Criteria are necessary. These changes to the Guidance Criteria could include (1) additions or deletions to the list of Managed Wells, (2) re-delineation of the Area of Subsidence Management, (3) raising or lowering of the Guidance Level, or (4) additions and/or deletions to the Guidance Criteria (including the need to have periods of water level recovery).

9. Watermaster cautions that some subsidence and fissuring may occur in the future even if these Guidance Criteria are followed. Watermaster makes no warranties that faithful adherence to these Guidance Criteria will eliminate subsidence or fissuring.

Development and Schedule of the Long-Term Plan

In a sense, the guidance criteria listed above are a *first draft* of the long-term plan. Over the next nine months (October 2005 to June 2006), Watermaster will conduct its modeling exercises and coordinate a series of meetings with MZ-1 producers that will likely lead to revisions of the guidance criteria.

Of particular interest to the affected Parties is the sixth criterion (6) listed above, which limits the timing of production from the Managed Wells to July through September of each year. It may be that the Managed Wells can be pumped at reduced rates over periods longer than three months, and still not cause drawdown below 245 feet at the PA-7 piezometer or inelastic compaction within the aquifer system. Watermaster's groundwater flow and subsidence models will help to address these unknowns prior to pumping by predicting:

- the water level response at PA-7 due to various proposed pumping scenarios, and
- the aquifer-system compaction response due to the water level responses.

In June 2006, after the MZ-1 meetings and modeling exercises, Watermaster will release an expanded *second draft* of the guidance criteria, which will be defined as the official long-term plan for MZ-1. A key element of the long-term plan will be the verification of the model predictions and the protective nature of the guidance criteria as related to permanent land subsidence and ongoing fissuring. This verification will be accomplished through continued monitoring and reporting by Watermaster and revision of the guidance criteria when appropriate (see Criterion 11 above). In this sense, the long-term plan will be adaptive.

The guidance criteria and the long-term plan discussed above relate to the management of pumping-induced subsidence within south MZ-1 (the Area of Subsidence Management in the terminology of the

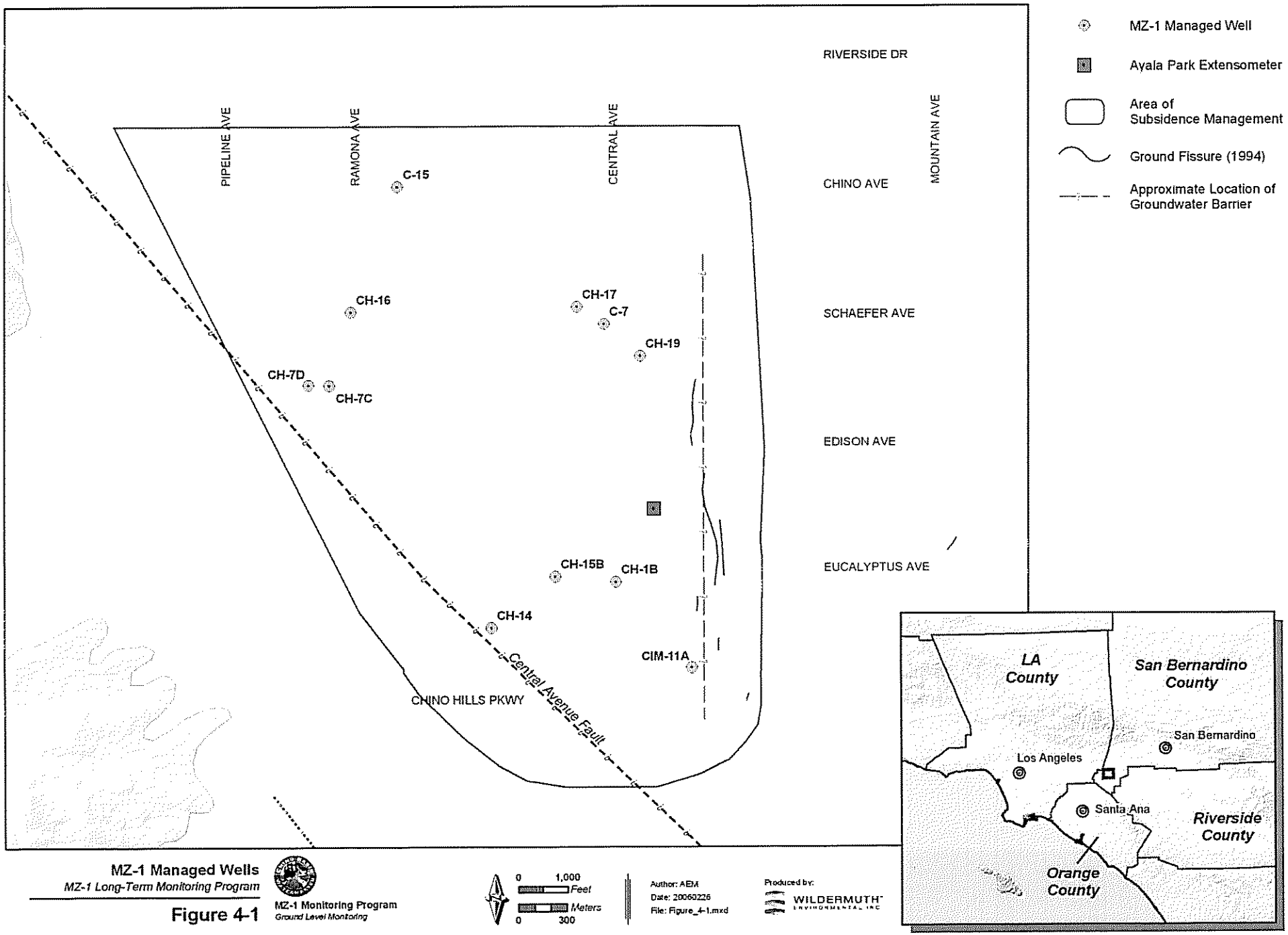
guidance criteria). Recall that central MZ-1 is currently experiencing measurable land subsidence, and is the focus of an expanded effort to monitor piezometric levels and land surface deformation. An adaptive long-term plan will accommodate the results and modified recommendations that will emerge from the expanded monitoring of central MZ-1.

Table 4-1
Guidance Criteria for MZ-1 Producers

1. Table 4-2 lists the existing wells (hereafter the Managed Wells) and their owners (hereafter the Parties) that are the subject of these Guidance Criteria.
2. Figure 4-1 shows the area addressed by these Guidance Criteria (hereafter the Area of Subsidence Management). Within the boundaries of this area, both existing and newly-constructed wells are subject to being classified as Managed Wells. This is based upon the observed and/or predicted effects of pumping on groundwater levels and aquifer-system deformation. Initial Managed Well designations for wells that pumped during the IMP were based on effects measured at the Ayala Park Piezometer/Extensometer Facility. Additional Managed Well designations were made based on analysis of well construction and geology.
3. The Guidance Level is a specified depth to water measured in Watermaster's PA-7 piezometer at Ayala Park. It is defined as the threshold water level at the onset of inelastic compaction of the aquifer system as recorded by the extensometer, minus 5 feet. The 5-foot reduction is meant to be a safety factor to ensure that inelastic compaction does not occur. The Guidance Level is established by Watermaster based on the periodic review of monitoring data collected by Watermaster. The initial Guidance Level is 245 feet below the top of the PA-7 well casing.
4. If the water level in PA-7 falls below the Guidance Level, Watermaster recommends that the Parties curtail their production from designated Managed Wells as required to maintain the water level in PA-7 above the Guidance Level.
5. Watermaster will provide the Parties with real-time water level data from PA-7.
6. The Parties are requested to maintain and provide to Watermaster accurate records of the operation of the Managed Wells, including production rates and on-off dates and times. The Parties are requested to promptly notify Watermaster of all operational changes made to maintain the water level in PA-7 above the Guidance Level.
7. Watermaster recommends that the Parties allow Watermaster to continue monitoring piezometric levels at their wells.
8. Watermaster will evaluate the data collected as part of the MZ-1 Monitoring Program at the conclusion of each fiscal year (June 30) and determine if modifications, additions, and/or deletions to the Guidance Criteria are necessary. These changes to the Guidance Criteria could include (1) additions or deletions to the list of Managed Wells, (2) re-delineation of the Area of Subsidence Management, (3) raising or lowering of the Guidance Level, or (4) additions and/or deletions to the Guidance Criteria (including the need to have periods of water level recovery).
9. Watermaster cautions that some subsidence and fissuring may occur in the future even if these Guidance Criteria are followed. Watermaster makes no warranties that faithful adherence to these Guidance Criteria will eliminate subsidence or fissuring.

Table 4-2
MZ-1 Managed Wells

CBWM_ID	Owner	Well Name	Status	Screened Interval ft-bgs	Capacity gpm
600487	Chino Hills	1B	Inactive	440-470, 490-610, 720-900, 940-1180	up to 1200
600687	Chino Hills	7C	Inactive	550-950	–
600498	Chino Hills	7D	Inactive	320-400, 410-450, 490-810, 850-930	400
600495	Chino Hills	14	Inactive	350-860	300-400
600488	Chino Hills	15B	Active	360-440, 480-900	1500
600489	Chino Hills	16	Inactive	430-940	800
600499	Chino Hills	17	Active	300-460, 500-980	700
600500	Chino Hills	19	Active	340-420, 460-760, 800-1000	1100-1500
3600461	Chino	7	Inactive	180-780	
600670	Chino	15	Inactive	270-400, 626-820	
3602461	CIM	11A	Active	135-148, 174-187, 240-283, 405-465, 484-512, 518-540	500-600


MZ-1 Managed Well
Ayala Park Extensometer
Area of Subsidence Management
Ground Fissure (1994)
Approximate Location of Groundwater Barrier
RIVERSIDE DR
CHINO AVE
SCHAEFER AVE
EDISON AVE
EUCALYPTUS AVE
PIPELINE AVE
RAMONA AVE
CENTRAL AVE
MOUNTAIN AVE
C-15
CH-16
CH-17
C-7
CH-19
CH-7D
CH-7C
CH-15B
CH-1B
CH-14
CIM-11A
CHINO HILLS PKWY
Central Avenue Fault
LA County
San Bernardino County
Riverside County
Orange County
San Bernardino
Los Angeles
Santa Ana
MZ-1 Managed Wells
MZ-1 Long-Term Monitoring Program
Figure 4-1
MZ-1 Monitoring Program
Ground Level Monitoring
0 1,000 Feet
0 300 Meters
Author: AEM
Date: 20060226
File: Figure_4-1.mxd
Produced by:
WILDERMUTH ENVIRONMENTAL INC

5. REFERENCES

Fife, D.L., Rodgers, D.A., Chase, G.W., Chapman, R.H., and E.C. Sprotte. 1976. Geologic Hazards in Southwestern San Bernardino County, California: California Division of Mines and Geology Special Report 113, 40 p.

Geomatrix Consultants, Inc. 1994. Final Report Ground Fissuring Study, California Department of Corrections, California Institution for Men, Chino, California. Project No. 2360. San Francisco, CA.

Geoscience Support Services, Inc. 2002. Preliminary Geohydrologic Analysis of Subsidence in the Western Portion of the Chino Basin (Draft). Prepared for: City of Chino Hills. August 29, 2002.

Holzer, T.L. 1984. Ground failure induced by ground-water withdrawal from unconsolidated sediment. Rev. Eng. Geol, 6:67-105.

Kleinfelder, Inc. 1993. Geotechnical Investigation, Regional Subsidence and Related Ground Fissuring, City of Chino, California. Project No. 58-3101-01. Diamond Bar, CA.

Kleinfelder, Inc. 1996. Chino Basin Subsidence and Fissuring Study, Chino, California. Project No. 58-5264-02. Diamond Bar, CA.

Kleinfelder, Inc. 1999. Update of Subsidence Map, Chino, California. Project No. 58-9040-01. Diamond Bar, CA.

Mendenhall, W. C. 1908. Ground waters and irrigation enterprises in the foothill belt, southern California: USGS Water-Supply Paper 219, p. 39-42, plates III and V.

Peltzer, G. 1999a. Subsidence Monitoring Project: City of Chino. March 14, 1999.

Peltzer, G. 1999b. Subsidence Monitoring Project: City of Chino. May 9, 1999.

United States Geological Survey (USGS). 1999. Land subsidence in the United States / edited by Devin Galloway, David R. Jones, S.E. Ingebritsen. USGS Circular 1182. 175 p.

Wildermuth Environmental, Inc. 1999. Optimum Basin Management Program. Phase I Report. Prepared for the Chino Basin Watermaster. August 19, 1999.

Wildermuth Environmental, Inc. 2003. Management Zone 1 (MZ-1) Interim Monitoring Program Work Plan. Optimum Basin Management Program. Prepared for Chino Basin Watermaster. January 8, 2003.

APPENDIX A – SPECIAL REFEREE'S REPORT ON PROGRESS MADE ON IMPLEMENTATION OF THE WATERMASTER INTERIM PLAN FOR MANAGEMENT OF SUBSIDENCE