



CHINO BASIN WATERMASTER

Thursday, September 27, 2007

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. – September 27, 2007

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 August 23, 2007 *(Page 1)*

B. FINANCIAL REPORTS

1. Cash Disbursements for the month of August 2007 *(Page 21)*
2. Watermaster Visa Check Detail *(Page 25)*
3. Combining Schedule for the Period July 1, 2007 through July 31, 2007 *(Page 27)*
4. Treasurer's Report of Financial Affairs for the Period July 1, 2007 through July 31, 2007 *(Page 29)*
5. Profit & Loss Budget vs. Actual July 2007 through July 2007 *(Page 31)*

II. BUSINESS ITEMS

A. Dr. SUNDING MICRO-ECONOMIC REPORT

Move to Receive and File the Dr. Sunding Micro-Economic Report *(Page 33)*

B. ADOPT RESOLUTION 07-05 (PEACE II LEGAL DOCUMENTS)

Move to Adopt Resolution 07-05 and Direct Legal Counsel to File With the Court *(Page 75)*

C. 20-GALLON CHALLENGE

Adopt Resolution No. 07-04 Encouraging Residents and Businesses to Help Drought-Proof the Chino Basin by Participating in the *20-Gallon Challenge* for Voluntary Water Conservation in the Chino Basin *(Page 237)*

III. REPORTS/UPDATES

A. WATERMASTER GENERAL LEGAL COUNSEL REPORT

1. Court Approval re Subsidence Long Term Plan *(Page 243)*

B. ENGINEERING REPORT

1. Status Report on Basin Modeling Work

C. FINANCIAL REPORT

- 1. Water Activity Report Status

D. CEO/STAFF REPORT

- 1. Legislative Update
- 2. Recharge Update

E. INLAND EMPIRE UTILITIES AGENCY

- 1. Three-year Recycled Water Business Plan *(Page 271)*
- 2. Drought Planning Update *(Page 291)*
- 3. Proposed Landscape Rebate Programs *(Page 313)*
- 4. Monthly Water Conservation Programs *(Page 341)*
- 5. Monthly Imported Water Deliveries Report *-handout-*
- 6. State and Federal Legislative Report *(Page 345)*
- 7. Community Outreach/Public Relations Report *(Page 383)*

F. OTHER METROPOLITAN MEMBER AGENCY REPORTS

IV. INFORMATION

- 1. Newspaper Articles *(Page 385)*

V. COMMITTEE MEMBER COMMENTS

VI. OTHER BUSINESS

VII. FUTURE MEETINGS

September 27, 2007	9:00 a.m.	Advisory Committee Meeting
September 27, 2007	11:00 a.m.	Watermaster Board Meeting
October 1, 2007	11:30 a.m.	Golf Tournament Tee Off
October 1, 2007	5:00 p.m.	Kick off Reception for Strategic Conference
October 2, 2007	7:30 a.m.	Strategic Planning Follow Up Conference
October 3, 2007	10:00 a.m.	MZ1 Workshop w/ Special Referee
October 11, 2007	10:00 a.m.	Appropriative & Non-Agricultural Pool Meeting
October 16, 2007	9:00 a.m.	Agricultural Pool Meeting @ IEUA
October 25, 2007	9:00 a.m.	Advisory Committee Meeting
October 25, 2007	11:00 a.m.	Watermaster Board Meeting

Meeting Adjourn

CHINO BASIN WATERMASTER
BOARD MEETING

11:00 a.m. – September 27, 2007

At The Offices Of

Chino Basin Watermaster
9641 San Bernardino Road
Rancho Cucamonga, CA 91730

AGENDA

CALL TO ORDER

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A. MINUTES

1. Minutes of the Watermaster Board Meeting held August 23, 2007 *(Page 7)*
2. Minutes of the Watermaster Board Conference Call held September 13, 2007 *(Page 17)*

B. FINANCIAL REPORTS

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B. ADOPT RESOLUTION 07-05 (PEACE II LEGAL DOCUMENTS)

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C. 20-GALLON CHALLENGE

Adopt Resolution No. 07-04 Encouraging Residents and Businesses to Help Drought-Proof the Chino Basin by Participating in the *20-Gallon Challenge* for Voluntary Water Conservation in the Chino Basin *(Page 237)*

D. ELIMINATION OF SECRETARY II POSITION

Approve the Elimination of the Secretary II Position *(Page 241)*

III. REPORTS/UPDATES

A. WATERMASTER GENERAL LEGAL COUNSEL REPORT

1. Court Approval re Subsidence Long Term Plan *(Page 243)*

B. ENGINEERING REPORT

- 1. Status Report on Basin Modeling Work

C. FINANCIAL REPORT

- 1. Water Activity Report Status

D. CEO/STAFF REPORT

- 1. Legislative Update
- 2. Recharge Update

IV. INFORMATION

- 1. Newspaper Articles (*Page 385*)

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October 3, 2007	10:00 a.m.	MZ1 Workshop w/ Special Referee
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October 16, 2007	9:00 a.m.	Agricultural Pool Meeting @ IEUA
October 25, 2007	9:00 a.m.	Advisory Committee Meeting
October 25, 2007	11:00 a.m.	Watermaster Board Meeting

Meeting Adjourn



CHINO BASIN WATERMASTER

I. CONSENT CALENDAR

A. MINUTES

1. Advisory Committee Meeting – August 23, 2007



Draft Minutes
CHINO BASIN WATERMASTER
ADVISORY COMMITTEE MEETING
August 23, 2007

The Advisory Committee meeting was held at the offices of the Chino Basin Watermaster, 9641 San Bernardino Road, Rancho Cucamonga CA, on July 26, 2007 at 9:00 a.m.

ADVISORY COMMITTEE MEMBERS PRESENT

Non-Agricultural Pool

Bob Bowcock, Chair

Vulcan Materials Company (Calmat Division)

Appropriative Pool

Mohamed El-Almay

City of Ontario

Mark Kinsey

Monte Vista Water District

Raul Garibay

City of Pomona

Robert Young

Fontana Union Water Company

Dave Crosley

City of Chino

Anthony La

City of Upland

Robert DeLoach

Cucamonga Valley Water District

J. Arnold Rodriguez

Santa Ana River Water Company

Charles Moorrees

San Antonio Water Company

Agricultural Pool

Edward Gonsman

State of California CIM

Nathan deBoom

Ag Pool, Dairy

Jeff Pierson

Ag Pool, Crops

Watermaster Board Members Present

Sandra Rose

Monte Vista Water District

Terry Catlin

Inland Empire Utilities Agency

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.

Others Present

Gary Meyerhofer

Carollo Engineering

Marty Zvirbulis

Cucamonga Valley Water District

Ron Craig

RBF Consulting

Ken Jeske

City of Ontario

Steven G. Lee

Ag Pool Legal Counsel

Martha Davis

Inland Empire Utilities Agency

Chair Bowcock called the Advisory Committee meeting to order at 9:01 a.m.

AGENDA - ADDITIONS/REORDER

There were no additions or reorders made to the agenda.

I. CONSENT CALENDAR

A. MINUTES

- 1. Minutes of the Advisory Committee Meeting held July 26, 2007

Item B was pulled for discussion.

B. FINANCIAL REPORTS

- 1. Cash Disbursements for the month of July 2007
- 2. Watermaster Visa Check Detail
- 3. Combining Schedule for the Period July 1, 2006 through June 30, 2007
- 4. Treasurer's Report of Financial Affairs for the Period June 1, 2007 through June 30, 2007
- 5. Profit & Loss Budget vs. Actual July 2006 through June 2007

Mr. Kinsey noted Chino Basin Watermaster is between \$800,000 and \$900,000 over budget. Mr. Kinsey stated this pool has had discussions in the past regarding over budget items and the process that Watermaster should have place when items are going to be over budget. Ms. Rojo agreed the discussion of budget issues has been a question in the past; however, nothing has been decided upon to date. Mr. Manning stated there are two issues that caused the budget to be over. One item was the State Board hearing on the Water Rights Application which was not an anticipated cost at the time the budget was approved. The second item was the review of the Wildermuth model and that came up after the budget was developed as well. Mr. Manning stated the cost for those two items was about \$750,000 for those two items alone. Mr. Kinsey offered comment with regard to what other agencies do to handle over budget items and that they normally look at other areas to cut costs to make up for some of the cost differences. A discussion regarding costs and budget overages ensued and it was noted this item will be sent on to the Budget Advisory Committee for a process to be developed to handle budget overages in the future.

C. WATER TRANSACTION

- 1. **Consider Approval for Notice of Sale or Transfer** – The lease of 3,500 acre-feet, to be taken first from the fiscal year 2006/2007 allocation from the City of Pomona's net underproduction, if any, with any remainder from Pomona's local storage account in the Chino Basin, to be transferred to the Cucamonga Valley Water District storage account. Date of Application: June 7, 2007
- 2. **Consider Approval for Notice of Sale or Transfer** – The City of Pomona has agreed to purchase from the City of Upland a portion of Upland's water in storage in the amount of 893 acre-feet for fiscal year 2006/2007. Date of Application: June 7, 2007
- 3. **Consider Approval for Notice of Sale or Transfer** – The Santa Ana River Water Company lease and assigned Jurupa Community Services District the quantity of 2,000 acre-feet of corresponding annual production right fiscal year 2006/2007. Date of Application: June 28, 2007

D. INTERVENTION – RIBOLI FAMILY/SAN ANTONIO WINERY

Intervention into Chino Basin Watermaster as a Non-Agricultural Pool Party

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

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

Item B was pulled for discussion.

E. INTERVENTION – FUJI NATURAL FOOD INC.

Intervention into Chino Basin Watermaster as an Agricultural Pool Party

Chair Bowcock stated he has read the intervention for Fuji Natural Foods and noted he is concerned over the limited information being presented to make a decision to place this entity in the Agricultural Pool. A lengthy discussion regarding the logistics of Fuji Natural Foods and its correlation with being placed into the Agricultural Pool ensued. Chair Bowcock asked the committee members to consider

pulling this item from the agenda for further investigation as to the appropriateness of the pool placement of this entity and asked Watermaster staff to create a more complete staff report when this item is put on the agenda for consideration. A discussion ensued with regard to this item.

Motion by Kinsey, second by DeLoach, without opposition

Moved to table this item for further examination and for this item to be brought back through the Pool process, as presented

II. BUSINESS ITEMS

A. LEGAL INSTRUMENTS

Mr. Manning stated newly revised legal instrument documents are available on the back table. Counsel Fife stated another draft of the legal instruments has been sent out to the parties and these new documents incorporated suggestions that were made prior to last week's workshop, and feedback staff has received subsequently. A follow up workshop has been scheduled for Wednesday, August 29, 2007 from 10:00 a.m. to 2:00 p.m. here at the Chino Basin Watermaster office. The August 29, workshop will be held to discuss the Sunding report which was received this morning and was distributed electronically; there are copies of that report on the back table. Counsel Fife stated while the workshops are taking place Watermaster staff is putting this item in the Business Item section of the package for all Pools, Advisory Committee, and Watermaster Board meetings to allow further discussions to take place. Mr. Kinsey stated the documents that are being developed are based on assumptions which are still pending on Wildermuth's model update which quantifies things such as induced inflow and how much of the 400,000 acre-feet of temporary surplus can be utilized. Dr. Sunding's report is another assumption and more information is needed on this. The other variable that was discussed was the consideration of the proposed amendment to the Dry Year Yield contract which has potential material changes from the Peace II provisions. Mr. DeLoach inquired as to what the change would be when the Wildermuth report comes back if anything. Mr. Kinsey noted that was an unknown answer. A lengthy discussion ensued with regard to Mr. Kinsey's comments, the Wildermuth Report, and the Sunding Report.

B. HANSON AGGREGATES

Counsel Fife stated this item has been an item of discussion for several months. Inland Empire Utilities Agency (IEUA) is the lead counsel in this law suit. Watermaster staff and counsel believe we need to file a complaint against Hanson Aggregates in order to get resolution regarding this issue; this is a cost issue at this time. IEUA and Watermaster are trying to recover the costs that were incurred by Hanson's discharge of sediment which clogged the Lower Day Basin. IEUA is the agency that spent the funds to clean up the basin. As IEUA is the lead on the lawsuit, Watermaster is also on the pleading with them and will be signing the pleading. Staff is requesting approval to go ahead and file the complaint against Hanson Aggregates. Counsel Fife stated counsel will need to seek court approval prior to the filing of the complaint because the court has indicated in the past when Watermaster is going to proceed with legal action against a non-party entity it must seek court authorization. A lengthy discussion ensued with regard to this matter.

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

Moved to approve filing of the complaint against Hanson Aggregates, as presented

III. REPORTS/UPDATES

A. WATERMASTER GENERAL LEGAL COUNSEL REPORT

1. MZ1 Filing

Counsel Fife stated the MZ1 Pleading was filed with the court and there is a hearing set for September 13, 2007 regarding this pleading. Counsel stated there have been discussions with the attorney representing Chino Hills and it has been requested by Chino Hills to seek a continuance for this hearing for 120 days on this matter. Counsel has communicated with Chino Hills at the general counsel level and stated that Watermaster is not comfortable with continuing the hearing to a later date. Our goal is to have the MZ1 matter taken care of

prior to the court process regarding Peace II; however, staff and counsel takes direction from the Watermaster Board and this request will be put forth to the Watermaster Board members for their direction. Counsel Fife stated Counsel Slater will convey this request to the Board members today along with counsel's recommendation that we not agree to a continuance. Counsel Fife stated if we don't consent, Chino Hills has indicated their counsel may go to the court immediately to make the request for a continuance; that could be seen within the next day or so. A brief discussion ensued with regard to this matter.

2. Sunding Report – Micro-Economic Study

Counsel Fife stated the workshop regarding this report is scheduled for August 29, 2007 from 10:00 a.m. to 2:00 p.m. A copy of the Sunding Report is on the back table.

3. Supplemental Filing Regarding May 24, 2007 Court Order

Counsel Fife stated there is another filing on the back table; this was handed out for the first time at the recent Legal Instrument Workshop. It is called a Supplemental Filing regarding the May 24, 2007 order. Counsel has gone back and reviewed the May 24, 2007 court order from the last conference that was held with the judge and Watermaster was ordered within 30 days of that hearing to provide an explanation of the connection between Hydraulic Control and the Basin Plan Amendments. Counsel Fife stated it was an oversight that this was not responded to and counsel and staff is now rectifying this with this supplemental filing; there will not be a hearing on this filing.

B. CEO/STAFF REPORT

1. Legislative Update

Mr. Manning stated the State of California has approved a budget and there was a compromise made to do this. A lot of details surrounding the budget will be analyzed by several parties. There is approximately three weeks left in the legislative session in Sacramento and a lot of bills will be considered during that time. Mr. Manning stated on page 95 of the meeting packet Ms. Davis has done a great job in compiling both state and federal legislative issues. In Washington DC there is a bit of a problem with the WRDA Act; there is some money in that act that could come to the Chino Basin for studying potential infrastructure within the basin.

2. Recharge Update

Mr. Manning stated there is no recharge taking place other than some minor water that finds its way into our basins.

C. ENGINEERING REPORT

1. State of the Basin Report Update

Mr. Wildermuth stated he is going to be giving the committee members a short presentation on the State of the Basin Report (SOB). Through an order that authorized us to implement the OBMP, the State of the Basin Report is required every two years. This is the third State of the Basin Report. Each time it has been done comments have been received by the Special Referee and the court as to what they would like to see. The report which is out now is a scaled down version of what it used to be. Mr. Wildermuth stated in May the Special Referee asked to verify that Watermaster has done all the replenishment it was supposed to do. The State of the Basin Report describes the state of the basin through June 2006 with respect to geology, groundwater levels and storage, pumping and recharge, Hydraulic Control, and ground level. It is a court order to report the change in the state of the basin since the implementation of the OBMP. Similar reports have been prepared in 2003 and 2005 for the fiscal years ending in 2002 and 2004. With few exceptions, most of the material presented in the 2006 SOB report has been presented in prior Watermaster process meetings and will not be presented today. Mr. Wildermuth stated with regard to the geology/hydrogeology the basin is much deeper than originally believed in the southern end of MZ1 and down into Temescal Basin. The sediments in the deeper zones are predominately fine grained and do not yield or transmit water at exploitable rates. The deep

aquifer subsidence mechanism is now understood which enabled the promulgation of the long term management plan. Mr. Wildermuth reviewed several maps in detail. Mr. Wildermuth stated the number of active agricultural wells and associated production has decreased since implementation of the OBMP in 2000. Agricultural production in the vicinity of the Desalter I well field has dropped significantly between 2000-2001 and 2005-2006. Desalter pumping started in 2000-2001 and has reached 16,500 acre-feet per year in 2005-2006. Mr. Wildermuth reviewed groundwater elevation maps in detail. A review of the time history of production, recharge, and groundwater levels in MZ1, MZ2, MZ3, MZ4, and MZ5 was completed. A review of groundwater production, recharge, levels, and storage which included change in storage since the OBMP was implemented in acre-feet from 2000 to 2006 was completed. Mr. Wildermuth stated with regard to groundwater quality, for the most part there have been no significant changes from prior SOB reports. Chilean nitrate has been confirmed as a source of some of the low-level perchlorate hits at wells. A lengthy discussion regarding Chilean nitrate ensued. Mr. Wildermuth reviewed several other area maps in detail. A discussion with regard to Mr. Wildermuth's presentation ensued.

D. FINANCIAL REPORT

1. Assessment Package Update

Ms. Rojo stated invoices were sent out recently to bill for one half of the prior year's assessments. As far as tying out the numbers that go into the Assessment Package this year, staff is all but finished with the land use conversions and the assignments. Staff has entered almost all of the production from each of the parties and the water activity reports will hopefully be able to be sent out to the parties by the end of the month. Staff does need the 85/15 sales figures that are being waited on from some of the parties; we have received about half to date. Ms. Rojo stated all in all the assessment process has been moved up several months, but as a result of the Peace II discussions, the Assessment Package will not be finalized for a while.

E. INLAND EMPIRE UTILITIES AGENCY

1. Drought Planning Activities for 2008 - Oral

Ms. Davis stated a supplemental packet with regard to this item is available on the back table. Ms. Davis stated Metropolitan Water District (MWD) started \$6 million in water conservation advertisements and Inland Empire Utilities Agency (IEUA) has funded weekly Daily Bulletin advertisements. MWD and member agencies are meeting to work on a 2008 Drought Allocation Plan. Their next meeting is scheduled for September 7, 2007. The MWD board action is scheduled for this item in December/January 2008. Ms. Davis stated this week MWD approved a \$15 million rebate specifically for public agencies for conservation efforts. Ms. Davis reviewed some of the rebate programs being offered.

2. MWD DYY Potential Implementation in April 2008 – Oral

Ms. Davis stated there was a workshop regarding this item and one of the topics discussed was wrapping up the current 100,000 acre-foot program and making sure all the facilities, complete. Ms. Davis discussed the potential implementation of the MWD DYY which would start in April, 2008.

3. MWD DYY Expansion Studies, Schedule and Budget Work Plan – Oral

Ms. Davis stated there is a work plan put together with IEUA and Western Municipal Water District who has approved the MOU and the work plan on August 15, 2007. Three Valleys Municipal District is scheduled to approve this tomorrow on August 24, 2007. Once all elements of this plan are put together it is due back to MWD by December, 2007. The goal of this expanded program is to have all of the logistics worked out by July and the CEQA by October so that we will meet the December deadline for MWD.

- 4. Current Regional Conservation Efforts – Oral
Ms. Davis discussed the *20-Gallon Challenge* which will be brought back next month as an action item and other conservation efforts such as the new pilot turf buy-back program.

Ms. Davis noted the next Recycled Water Workshop will be held on August 22, 2007.

- 5. Monthly Water Conservation Programs
No comment was made regarding this item.
- 6. Monthly Imported Water Deliveries Report
No comment was made regarding this item.
- 7. State and Federal Legislative Report
No comment was made regarding this item.
- 8. Community Outreach/Public Relations Report
No comment was made regarding this item.

F. 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

August 21, 2007	9:00 a.m.	Agricultural Pool Meeting @ IEUA
August 23, 2007	9:00 a.m.	Advisory Committee Meeting
August 23, 2007	11:00 a.m.	Watermaster Board Meeting
September 13, 2007	10:00 a.m.	Appropriative & Non-Agricultural Pool Meeting
September 18, 2007	9:00 a.m.	Agricultural Pool Meeting @ IEUA
September 27, 2007	9:00 a.m.	Advisory Committee Meeting
September 27, 2007	11:00 a.m.	Watermaster Board Meeting

The Advisory Committee meeting was dismissed by Chair Bowcock at 10:30 a.m.

Secretary: _____

Minutes Approved: _____



CHINO BASIN WATERMASTER

I. CONSENT CALENDAR

A. MINUTES

1. Watermaster Board Meeting – August 23, 2007
2. Watermaster Board Conference Call Meeting – August 23, 2007



Draft Minutes
CHINO BASIN WATERMASTER
WATERMASTER BOARD MEETING
August 23, 2007

The Watermaster Board Meeting was held at the offices of the Chino Basin Watermaster, 9641 San Bernardino Road, Rancho Cucamonga, CA, on July 26, 2007 at 11:00 a.m.

WATERMASTER BOARD MEMBERS PRESENT

Ken Willis, Chair	West End Consolidated Water Company
Bob Kuhn	Three Valleys Municipal Water District
Terry Catlin	Inland Empire Utilities Agency
Sandra Rose	Monte Vista Water District
Charles Field	Western Municipal Water District
Bob Bowcock	Vulcan Materials Company
Jeff Pierson	Agricultural Pool
Nathan deBoom	Agricultural Pool

Watermaster Staff Present

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

Watermaster Consultants Present

Michael Fife	Hatch & Parent
Mark Wildermuth	Wildermuth Environmental Inc.

Others Present

Gary Meyerhofer	Carollo Engineering
Bill Kruger	City of Chino Hills
Justin LoFranco	City of Corona
Ron Craig	RBF Consulting
Steve Orr	City of Upland Counsel
David DeJesus	Three Valleys Municipal Water District
Raul Garibay	City of Pomona
Ken Jeske	City of Ontario

The Watermaster Board Meeting was called to order by Chair Willis at 11:00 a.m.

PLEDGE OF ALLEGIANCE

AGENDA - ADDITIONS/REORDER

It was noted Consent Calendar Item E – Intervention for Fuji Natural Foods Inc. was pulled from the agenda at the request of the Advisory Committee.

I. CONSENT CALENDAR

A. MINUTES

- 1. Minutes of the Watermaster Board Meeting held July 26, 2007

Item B was pulled for discussion.

B. FINANCIAL REPORTS

- 1. Cash Disbursements for the month of July 2007
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Ms. Rose stated she appreciated receiving the board letter noted her concerns about Chino Basin Watermaster being about 20% over budget. Ms. Rose inquired about taking the money out of LAIF which is a reserve account. Mr. Rojo stated Watermaster does not carry a reserve from one year to the next nor do we keep different fund balances other than the Agricultural Pool fund which is separate. Ms. Rojo stated if Watermaster is over budget from one year to the next, in the past, we credit back the assessments for the upcoming year for any cash that we had on hand. This would have been the first year that we actually had less on hand to return back. Looking at the assessment package in past years we have actually refunded back the appropriators half of the cash available to refund to offset assessments. There is a small amount of cash that Watermaster has held from one year to the next which was used up to help cover the deficit that we currently have. The Budget Advisory Committee has been meeting and to discuss ways to streamline the assessment process and generate assessments that are more level over time that don't fluctuate as much depending on our budgets. One of the items we are looking at is not giving the cash back credit to the appropriators so that it would be more of a build up of a reserve. Ms. Rose inquired about the Santa Ana River hearing costs. Mr. Manning stated the \$500,000 which was discussed in the board letter was for technical work that had to be done, for special witnesses, and attorney fees.

C. WATER TRANSACTION

- 1. **Consider Approval for Notice of Sale or Transfer** – The lease of 3,500 acre-feet, to be taken first from the fiscal year 2006/2007 allocation from the City of Pomona's net underproduction, if any, with any remainder from Pomona's local storage account in the Chino Basin, to be transferred to the Cucamonga Valley Water District storage account. Date of Application: June 7, 2007
- 2. **Consider Approval for Notice of Sale or Transfer** – The City of Pomona has agreed to purchase from the City of Upland a portion of Upland's water in storage in the amount of 893 acre-feet for fiscal year 2006/2007. Date of Application: June 7, 2007
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D. INTERVENTION – RIBOLI FAMILY/SAN ANTONIO WINERY

Intervention into Chino Basin Watermaster as a Non-Agricultural Pool Party

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

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

Item E was pulled from the agenda to be placed on an agenda at another time.

E. INTERVENTION – FUJI NATURAL FOOD INC.

Intervention into Chino Basin Watermaster as an Agricultural Pool Party

II. BUSINESS ITEMS**A. LEGAL INSTRUMENTS**

Counsel Slater stated what is before you today is a suite of documents which comprise of the Peace II measures. They are the legal instruments which effectuate the intention of the parties as they can be divined from the non-binding term sheet. We took the Peace II Non-Binding Term Sheet and translated that document into a suite of legal documents and all of them are before you. The primary document which is the operative document is the Watermaster Resolution. The Watermaster Resolution is presently un-numbered and un-dated, we know it will be in 2007 and in this iteration if you look at Roman numeral eight you will see a variety of items that are referenced under paragraph eight. What this document does it indicates that Watermaster is holding each of those documents and each one of those documents is satisfactory to it, that the foundational or predicate findings have been made. We would then be holding a Socioeconomic Report that was acceptable to the board. Then we would have a report from Wildermuth Environmental regarding the investigation of the project description and whether it would cause material harm to the basin or any party. Having that information and having the documents, Watermaster would then presumably adopt the Resolution and then transmit the entire package over to the court for action. The reason for doing this is that no party or no interest is left behind; it is all tied together. The operative document from Watermaster's standpoint is the Resolution. This process also mirrors exactly what was done in 2000; it is not new. Within the packet are a series of documents which will be covered briefly and then we will take questions and comments related to any one of the individual documents. The first document within the Resolution is the Project Description and this is not CEQA. We have a duty to the court and the court has requested that Watermaster investigate all physical consequences of the intended action regardless of whether it qualifies as a project for CEQA. The document entitled Project Description, which will be an exhibit to the Resolution, is designed to describe to the court what it is we are doing and then Wildermuth Environmental is using the model as its tool to evaluate what the physical consequences would be of the intend action. It does not look at monetary benefits, or how the parties might divide the spoils, it sets the physical parameters for what Watermaster is doing and then will take a look at what the physical consequences of that action. The second document in the packet is a document entitled Discretionary Actions to Amend Watermaster Rules and Regulations. We have gotten lots of comments about the title and it has changed a bit. The reason it is phrased the way it is, is to call out the things that have already been delegated to Watermaster, and Watermaster has the discretion to modify its Rules and Regulations today. As a matter of prospecting the various levels of the overall package, Watermaster has agreed to adopt these Rules and Regulations at the same time as we were accepting the rest of the elements. The next items are two judgment amendments that relate to a specific subject and that is the liberalization of alienating the Non-Agricultural Overlying Rights. Allowing that water to be transferred and made available to the Appropriators provides for an assessment, and the dedication of water to desalter replenishment by the members of the Non-Agricultural Pool. A judgment amendment is required to implement that. A second judgment amendment is also required to implement our new improved OBMP, which the centerpiece of that strategy is Hydraulic Control and Basin Re-Operation. We can't get there from here without having a judgment amendment which allows us to engage in controlled overdraft over a defined period. This Board and the stakeholders spent countless hours defining the circumstances under which that controlled overdraft in Hydraulic Control may be achieved. This judgment amendment sets very specific guidelines on how that is to be accomplished to avoid harm to the basin and to give the court and the public the assurances that we are engaged in good stewardship when we are pursuing our Hydraulic Control. The next document in the package actually is a Purchase and Sale Agreement which is between Watermaster and the members of the Non-Agricultural Overlying Pool. Watermaster presently has the power and authorization to execute a water transfer from the Non-Agricultural Overlying Pool to Watermaster in two defined areas where it is used in connection with the Storage and Recovery Project, or whether it is in furtherance of Desalter Replenishment. This proposed agreement deems to do two things. It proposes to effectively give Watermaster an option to buy water from the Non-Agricultural Overlying Pool for potential use of either Desalter Replenishment, or in connection with the Storage and Recovery Project a significant quantity of

approximately 40,000 acre-feet and it also included an earmarking of a specific quantity for a transfer between a specific Non-Agricultural Overlying member, San Antonio and the seller, Vulcan. The next document in the package is the Peace II Agreement. Note it is the Peace II Agreement and not the amendment to the Peace Agreement and this is an important distinction and there is yet to be another document called the Amendment to the Peace Agreement. In the view of legal counsel it was important to distinguish between those things that were right for an amendment to the Peace Agreement and those things which were new subject matter. We have reduced into the category of new subject matter those things that are contained in the Peace II Agreement; it is a long list of actions that are going to be taken by the parties, primarily, as it relates to the construction and operation of the future desalters. That was a subject that was mentioned in the original Peace Agreement but not resolved; this agreement purports to finally resolve among all parties how future desalters would be managed, constructed, funded, designed, and ultimately operated. It also has a suite of agreements and terms related to subject matter that has to do with Hydraulic Control – how are we going to access the water that's going to be obtained under controlled overdraft and how will that water be shared among the various stakeholders for purposes of Desalter Replenishment. The last agreement is a pretty narrow agreement in that it is only one page and the signature blocks will take up about twenty five pages. It is an amendment to the Peace Agreement and in counsel's view there are three specific subjects that actually required an amendment; they either land on Peace Agreement subject matter, and secondly, they require a different outcome. The item related to the Non-Binding Term Sheet in relation to increasing the quantity that would be available for storage of local supplemental water, under the Peace Agreement is 50,000 while under the Non-Binding Term Sheet the parties want to move it to 100,000; that is clearly contradictory of the Peace Agreement and would require an amendment to the Peace Agreement to effectuate that result. There are also different procedural implications of having a new agreement versus an amendment. Those things that are contained in an amendment to the Peace Agreement are only effective if all parties to the Peace Agreement actually execute the amendment, as opposed to new agreement subject matter which lives or dies on the basis of the parties to that agreement, because it is a new agreement. We are hoping we have everyone sign on; there is no legal requirement that every party to the basin sign on to the Peace II Agreement. This concluded the summary of the documents presented today which include dialog in all workshops, discussions, written comments, and Watermaster meetings. These do reflect three iterations since the version that was transmitted to you at the last Watermaster Board meeting. For the Board's edification what I would like to do is, because of the high degree of confidence in the material, thus far drafted, meaning we are getting close to the finish but that we have structural issues and some procedural issues and then we have some specific issues that will require a resolution and hopefully some deal making amongst the parties before this board can ultimately adopt the package. The two structural issues relate to the role of CEQA. What we are doing with regard to this project description is we are identifying a project for analysis of physical impacts for purposes of the court process. What we are doing with the CEQA process is slightly different. The CEQA has a different definition of what a project is; there are exemptions for historical activity; those things that are being carried out under historical approvals don't require a new round of environmental review that the court may be looking at for purposes of trying to understand what our actions are. There are things that will be in the CEQA process and we are going to pay attention to CEQA, your approvals would be conditioned upon future compliance with CEQA. This means whether we get in under the existing Programmatic Environmental Impact Report which was prepared for the initiated OBMP, plus consistency findings, there will be some things eligible for that. Watermaster is not going to carry or authorize any physical action to be carried out unless we can check a box that there is an identifiable CEQA approval. It would either be the Programmatic Environmental Impact Reports or in the case of the new desalters which was the case of the last desalters, there will have to be environmental compliance related to the construction of new facilities, and potential operations of wells; there is going to be CEQA but what we are doing is approving the business deal subject to downstream CEQA compliance. This is the same thing that was done in 2000; there was a court of appeal decision issued in 2007 that expressly states that parties can engage in business transactional items and not violate CEQA. We are completely acting appropriately by

conditioning physical performance and your approvals of physical actions until CEQA has been complied with. In counsel's view our process is correct and consistent with what you have done in the past and we believe it will be acceptable to the court. There is also a question about whether we would be better served by proceeding under a global amendment to the Peace Agreement as opposed to these documents; so that we would go back to the Peace Agreement, load everything into the Peace Agreement and then proceed in that fashion. In the view of this counsel, that is asking for a quagmire. There is a whole bunch of commitments related to new subject matter and the earlier agreement is fine as it is and there are rights and remedies that have been bargained for in that agreement and there is not need to go back and change them. The process questions relate to mostly timing. The process questions are, you have given us a large amount of documents and while they may reflect the original deal that is represented in the Non-Binding Term Sheet, we do not have enough time to evaluate the propriety of this transaction as whole when we have not seen the Socio-Economic Report by Dr. Sunding. That report needs to be out in sufficient time to allow us to evaluate what the implications are and then, based upon that information, we can make a proper decision. I have been informed that the Sunding Report is out in a draft form, which we will get to, and there will be a workshop on that report next week. The second issue related to Mr. Wildermuth's technical evaluation, same concern, if there is new material or different material or even a mistake. We would like to know that and then adjust the documents. Our assumption based upon contestant communication with Mr. Wildermuth is that we are rocking along in general conformity with the earlier assumptions that the model is constantly being improved, but we have no dramatic changes in terms of our analysis and we are on schedule with that. We would expect that the parties would have at least a few weeks to review the Technical Report before this Board would be asked to approve it. The process questions – get us the information and get it to us early, we are doing the best we can. Ultimately the decision to go at the end of September or not is yours. Watermaster staff and counsel want to give the parties the opportunity to act by getting the documents complete. If you choose to defer it will be your choice with the benefit of all the documents that are presented today. There is also a highbred issue and the highbred issue is part structure and part process; what is the relationship between what we are doing now and a proposal to expand the Metropolitan Dry Yea Yield Account and you will see in the Project Description that indeed we have committed to evaluate the physical parameters of that activity as a foreseeable project within the Project Description. We want to know if this works with our effort to engage in controlled overdraft and obtain Hydraulic Control; it is in the Project Description and we are going to review that. There have been some questions as to whether or not we should address deal points of that DYY expansion within the context of the Peace Agreement. There is a second piece, can you at least include the potential deal points in the Socio-Economic Analysis. As to the Socio-Economic Analysis we have communicated to Dr. Sunding and we are hopeful that we can get a hypothetical of how the expanded DYY Program would weigh on the Socio-Economic impacts prior to your action. As to whether or not we should incorporate a hypothetical transaction, which has not been presented to you, which has not been approved by the Appropriative Pool and which is not being presently recommended by Watermaster staff or counsel, we think that is going too far. Those are the structural and process questions. Then, as it relates to the specific individual issues, there are isolated areas of concern. The heartfelt important views is that the Socio-Economic Report and the technical reports need to be done so people can understand them. There is an issue that has arisen with regard to the treatment of losses from storage. It is understood that there is a strongly held belief on the part of all of the parties to the process that if they have had water held in storage as soon as this deal went forward they would be relieved of any assessment of losses. Because we were implementing a program of Hydraulic Control; it has been said to the group and as your counsel, I am stating if we were intending to pursue that strategy as opposed to one which is in your present draft as opposed to which says the assessment of losses will continue at the current 2% level until we achieve Hydraulic Control. Under the Peace Agreement we have no losses, there were no losses assessed until a specific date, at which point we had to move to a 2% mandatory loss assessment. You had bound yourselves to a minimum of 2% unless and until there was a scientific technical basis to assume another loss figure. Your discretion is tied. So unless you are presented with a report to deviate from the 2%, you are stuck with 2%. The

parties' expectation was by signing up with the Peace Agreement that they would have some technical sponsorship to support that. Based upon where we stand right now, and given that the entire program that we are about to initiate, it is designed to eliminate losses that are presently occurring to the Santa Ana River. It is a bit difficult for your consultant to conclude that there are in deed no losses presently and if we can't make a finding that there are no losses occurring, you are stuck with the 2% number. This present draft is going to make all of your stakeholders grumpy; the facts are what we have. This draft reflects the most recent information that we have received and as soon as we have a feasible technical basis to go to zero, we are happy to do that. This issue has a second component and that is, what do we do about the water that is held in the Storage and Recovery account that is available for MWD. The parties previously called out in the Non-Binding Term Sheet which proposes a 6% loss figure for Storage and Recovery projects unless there is an in lieu contribution. This documentation provides a rationale for how that is to be accomplished, that is we are not worried about actual losses, we are talking about a leave behind which is a concept similar to other banking operations in California where you bank water in somebody's basin and you do good by leaving some component of your storage behind. We will assess actual losses for those who have engaged in historical contributions and a 6% leave behind for those who have not. Watermaster has discretion under this documentation to go to less. There are then related issues that have been raised regarding the ethnicity of the Long Term Plan for MZ1 and management of subsidence that bleed into the Peace II documents and it is represented in the form of concern about hydrologic balance and wanting to be sure that the commitment towards hydrologic balance in MZ1 is carried forward. The language that is in the present draft was approved by your stakeholders in whole a sub-group was set up last week with the task of providing sharper language on that point. In counsel's view we are on schedule, we will be in a position to distribute draft documents through the Watermaster process provided these issues are addressed. You will have the ability to approve the entire suite at the next Watermaster Board meeting. A brief discussion ensued with regard to the presentation given by Counsel Slater.

B. HANSON AGGREGATES

Counsel Slater stated this item has been an item of discussion for several months. Inland Empire Utilities Agency (IEUA) is the lead counsel in this law suit. Watermaster staff and counsel believe we need to file a complaint against Hanson Aggregates in order to get resolution regarding this issue; this is a cost issue at this time. IEUA and Watermaster are trying to recover the costs that were incurred by Hanson's discharge of sediment which clogged the Lower Day Basin. IEUA is the agency that spent the funds to clean up the basin. As IEUA is the lead on the lawsuit, Watermaster is also on the pleading with them and will be signing the pleading. Staff is requesting approval to go ahead and file the complaint against Hanson Aggregates. Counsel Slater stated counsel will need to seek court approval prior to the filing of the complaint because the court has indicated in the past when Watermaster is going to proceed with legal action against a non-party entity it must seek court authorization. A lengthy discussion ensued with regard to this matter.

Motion by Catlin, second by Pierson, and by unanimous vote

Moved to approve filing of the complaint against Hanson Aggregates, as presented

C. ACWA REGION 9 MEMBER AGENCY BOARD PRESIDENT

Election for the 2008-2009 ACWA Region 9 Officers and Board Members Who Will Represent and Serve the Members of Region 9

No motion was received on this item.

III. REPORTS/UPDATES**A. WATERMASTER GENERAL LEGAL COUNSEL REPORT****1. MZ1 Filing**

Counsel Slater stated the MZ1 Pleading was filed with the court and there is a hearing set for September 13, 2007 regarding this pleading. Counsel stated there have been discussions with the attorney representing Chino Hills and it has been requested by Chino Hills to seek a continuance for this hearing for 120 days on this matter. Counsel has communicated with Chino Hills at the general counsel level and stated that Watermaster is not comfortable with continuing the hearing to a later date. Our goal is to have the MZ1 matter taken care of prior to the court process regarding Peace II; staff and counsel takes direction from the Watermaster Board and this request will be put forth to the Watermaster Board members for their direction. Counsel Slater stated if we don't consent, Chino Hills has indicated their counsel may go to the court immediately to make the request for a continuance; that could be seen within the next day or so. A brief discussion ensued with regard to this matter.

2. Sunding Report – Micro-Economic Study

Counsel Slater stated the workshop regarding this report is scheduled for August 29, 2007 from 10:00 a.m. to 2:00 p.m. A copy of the Sunding Report is on the back table.

3. Supplemental Filing Regarding May 24, 2007 Court Order

Counsel Slater stated there is another filing on the back table; this was handed out for the first time at the recent Legal Instrument Workshop. It is called a Supplemental Filing regarding the May 24, 2007 order. Counsel has gone back and reviewed the May 24, 2007 court order from the last conference that was held with the judge and Watermaster was ordered within 30 days of that hearing to provide an explanation of the connection between Hydraulic Control and the Basin Plan Amendments. Counsel Slater stated it was an oversight that this was not responded to and counsel and staff is now rectifying this with this supplemental filing; there will not be a hearing on this filing.

B. CEO/STAFF REPORT**1. Legislative Update**

Mr. Manning stated the State of California has approved a budget and there was a compromise made to do this. A lot of details surrounding the budget will be analyzed by several parties. There is approximately three weeks left in the legislative session in Sacramento and a lot of bills will be considered during that time. Mr. Manning stated on page 95 of the meeting packet Ms. Davis has done a great job in compiling both state and federal legislative issues. In Washington DC there is a bit of a problem with the WRDA Act; there is some money in that act that could come to the Chino Basin for studying potential infrastructure within the basin.

2. Recharge Update

Mr. Manning stated there is no recharge taking place other than some minor water that finds its way into our basins.

C. ENGINEERING REPORT**1. State of the Basin Report Update**

Mr. Wildermuth stated he is going to be giving the committee members a short presentation on the State of the Basin Report (SOB). Through an order that authorized us to implement the OBMP, the State of the Basin Report is required every two years. This is the third State of the Basin Report each time it has been done comments have been received by the Special Referee and the court as to what they would like to see. The report which is out now is a scaled down version of what it used to be. Mr. Wildermuth stated in May the Special Referee asked to verify that Watermaster got all the replenishment it was supposed to do. The State of the Basin Report describes the state of the basin through June 2006 with respect to geology, groundwater levels and storage, pumping and recharge, Hydraulic

Control, and ground level. It is a court order to report the change in the state of the basin since the implementation of the OBMP. Similar reports have been prepared in 2003 and 2005 for the fiscal years ending in 2002 and 2004. With few exceptions, most of the material presented in the 2006 SOB report has been presented in prior Watermaster process meetings and will not be presented today. Mr. Wildermuth stated with regard to the geology/hydrogeology the basin is much deeper than originally believed in the southern end of MZ1 and down into Temescal Basin. The sediments in the deeper zones are predominately fine grained and do not yield or transmit water at exploitable rates. The deep aquifer subsidence mechanism is now understood which enabled the promulgation of the long term management plan. Mr. Wildermuth reviewed several maps in detail. Mr. Wildermuth stated the number of active agricultural wells and associated production has decreased since implementation of the OBMP in 2000. Agricultural production in the vicinity of the Desalter I well field has dropped significantly between 2000-2001 and 2005-2006. Desalter pumping started in 2000-2001 and has reached 16,500 acre-feet per year in 2005-2006. Mr. Wildermuth reviewed groundwater elevation maps in detail. A review of the time history of production, recharge, and groundwater levels in MZ1, MZ2, MZ3, MZ4, and MZ5 was completed. A review of groundwater production, recharge, levels, and storage which included change in storage since the OBMP was implemented in acre-feet from 2000 to 2006 was completed. Mr. Wildermuth stated with regard to groundwater quality, for the most part there have been no significant changes from prior SOB reports. Chilean nitrate has been confirmed as a source of some of the low-level perchlorate hits at wells. A lengthy discussion regarding Chilean nitrate ensued. Mr. Wildermuth reviewed several other area maps in detail. A discussion with regard to Mr. Wildermuth's presentation ensued.

D. FINANCIAL REPORT

1. Assessment Package Update

Ms. Rojo stated invoices were sent out recently to bill for one half of the prior year's assessments. As far as tying out the numbers that go into the Assessment Package this year, staff is all but finished with the land use conversions and the assignments. Staff has entered almost all of the production from each of the parties and the water activity reports will hopefully be able to be sent out to the parties by the end of the month. Staff does need the 85/15 sales figures that are being waited on from some of the parties; we have received about half to date. Ms. Rojo stated all in all the assessment process has been moved up several months, but as a result of the Peace II discussions, the Assessment Package will not be finalized for a while.

IV. INFORMATION

1. Newspaper Articles

No comment was made regarding this item.

V. BOARD MEMBER COMMENTS

No comment was made regarding this item.

VI. OTHER BUSINESS

No comment was made regarding this item.

VII. FUTURE MEETINGS

August 21, 2007	9:00 a.m.	Agricultural Pool Meeting @ IEUA
August 23, 2007	9:00 a.m.	Advisory Committee Meeting
August 23, 2007	11:00 a.m.	Watermaster Board Meeting
September 13, 2007	10:00 a.m.	Appropriative & Non-Agricultural Pool Meeting
September 18, 2007	9:00 a.m.	Agricultural Pool Meeting @ IEUA
September 27, 2007	9:00 a.m.	Advisory Committee Meeting
September 27, 2007	11:00 a.m.	Watermaster Board Meeting

The Watermaster Board meeting was dismissed by Chair Willis at 11:57 a.m.

Secretary: _____

Minutes Approved: _____

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Draft Minutes
CHINO BASIN WATERMASTER
WATERMASTER BOARD CONFERENCE CALL
September 13, 2007

WATERMASTER BOARD MEMBERS PRESENT ON THE CONFERENCE CALL

Ken Willis, Chair	West End Consolidated Water Company
Bob Kuhn	Three Valleys Municipal Water District
Terry Catlin	Inland Empire Utilities Agency
Sandra Rose	Monte Vista Water District
Charles Field	Western Municipal Water District
Bob Bowcock	Vulcan Materials Company
Geoffrey Vanden Heuvel	Agricultural Pool, Dairy
Jim Bowman	City of Ontario

Watermaster Staff Present

Kenneth R. Manning	Chief Executive Officer
Sheri Rojo	CFO/Asst. General Manager
Sherri Lynne Molino	Recording Secretary

Watermaster Consultants Present

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

The Watermaster Board Conference Call was called to order by Chair Willis at 4:04 p.m.

Chair Willis stated the conference call will proceed with a quorum being present.

Counsel Slater reviewed the Watermaster Staff Report which was provided electronically on Wednesday, September 12, 2007. The following recommendations were presented to the Board members consideration regarding Dr. Sunding's Report.

B. Request and Recommendation

1. Authorize Watermaster staff and counsel to proceed as set forth in the enclosed memoranda regarding socioeconomic impacts.

Staff recommendation: Approve

2. Provide direction as to whether the acceptance of Dr. Sunding Report should be deferred for an additional 30 days.

Staff recommendation: Do not approve

3A. Authorize Watermaster and Dr. Sunding to work with the parties to develop a single alternative baseline within 7 days and to further supplement Dr. Sunding's report within 14 days subject to an additional not-to-exceed of \$20,000, if and only if, there is a consensus (not unanimity) as to the alternative baseline.

3B Request those parties seeking a model run using an alternative baseline to describe the baseline alternative in sufficient detail to make alternative runs within 7 days for a run to be completed

within 14 days for a cost not to exceed \$20,000. The failure to provide the detail in the time specified will result in no further model runs.

3C Reject the request.

A lengthy discussion ensued with regard to the recommendations presented by Counsel Slater. It was decided by the Board members to seek a separate motion for the three items accepted by the Board members on items B1, B2, and B3B as presented above.

Motion by Vanden Heuvel, second by Rose, and by unanimous vote

Item B1: Moved to authorize Watermaster staff and counsel to proceed as set forth in the Socio-Economic Process, as presented

PROPOSED SOCIOECONOMIC PROCESS

A. Within seven days following the Dr. Sunding's delivery of his expected final draft of the socioeconomic report contemplated by the Peace II Term Sheet, the members of the Appropriative Pool shall convene a collaborative process to agree upon recommendations that will be applied by Watermaster in addressing Watermaster's continuing duties under Exhibits H and I of the Judgment.. This process will focus primarily on three areas as well as the considerations set forth in Section C.2 below that are thought to be material to the over-all distribution of costs and benefits of the OBMP among the members of the Appropriative Pool:

(1) Recharge Master Plan. Address the water, facilities and financing plan to equitably apportion of costs of recharge improvements and the specific measures that may be applicable to MZ#1 and remediation of subsidence;

(2) Desalters. Address yield preservation, replenishment, salt management, bonding capacity, and third party financing;

(3) Recycled Water. Address the cost of obtaining and making use of recycled water and the member's relative access to recycled water as a commodity.

B. No date has yet been scheduled for a Court hearing regarding the Peace II Measures. However, the participants acknowledge that their full commitment will be required to resolve potential differences and consequently they desire that this process be completed as soon as practicable. Notwithstanding their commitment to this process, all members of the Appropriative Pool reserve their respective rights to file responsive pleadings related to Watermaster's motion and a request for Court direction to proceed in accordance with Peace II Measures.

C. The parties will acknowledge and agree that as the Dr. Sunding report is moved through the Pool Process that although the Report may be final from Dr. Sunding's perspective:

1. There is a wide range of opinion regarding whether the Report addresses all the economic considerations that may be applicable to an evaluation of Watermaster's continuing duties under Exhibits H and I of the Judgment.

2. Without accepting or rejecting the relevance of any specific factors, members of the Appropriative Pool have suggested the potential importance of other considerations including but not limited to the following: the 1978 Judgment, apportionment of Operating Safe Yield, access to recharge water, access to recycled water; the CPUC, NEPA and the CEQA guidelines applicable to the measurement of socioeconomic impacts, agency ability to pay, and historical contributions by the parties.

3. Any recommendation and any Appropriator vote to accept the Dr. Sunding report as "final" is subject to these considerations and the willingness of the members of the Appropriative Pool to engage in the process outlined in A and B above.

Motion by Bowcock, second by Bowman, and by majority vote – opposing votes by Rose and Vanden Heuvel

Item B2: Moved to approve the staff recommendation not to delay the acceptance of Dr. Sunding's Report for an additional 30 days, as presented

Following a detailed discussion of the merits of the proposal by many of the Board members and audience the following motion was decided upon.

Motion by Vanden Heuvel, second by Rose, and by unanimous vote

Item B3B: Moved to approve those parties seeking a model run using an alternative baseline to describe the baseline alternative in sufficient detail to make alternative runs within 7 days, starting today, September 13, 2007, for a run to be completed within 14 days for a cost not to exceed \$5,000 above the existing contract for \$172,600. Bringing the Sunding contract to a new total of not to exceed \$177,600.

The Watermaster Board conference call was dismissed by Chair Willis at 5:12 p.m.

Secretary: _____

Minutes Approved: _____

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CHINO BASIN WATERMASTER

I. CONSENT CALENDAR

B. FINANCIAL REPORTS

1. Cash Disbursements for the month of August 2007
2. Watermaster Visa Check Detail
3. Combining Schedule of Revenue, Expenses and Changes in Working Capital for the Period July 1, 2007 through July 31, 2007
4. Treasurer's Report of Financial Affairs for the Period July 1, 2007 through July 31, 2007
5. Profit & Loss Budget vs. Actual July 2007 through July 2007





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: September 13, 2007
September 18, 2007
September 27, 2007

TO: Committee Members
Watermaster Board Members

SUBJECT: Cash Disbursement Report – August 2007

SUMMARY

Issue – Record of cash disbursements for the month of August 2007.

Recommendation – Staff recommends the Cash Disbursements for August 2007 be received and filed as presented.

Fiscal Impact – Funds disbursed were included in the FY 2007-08 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 August 2007 were \$600,718.59. The most significant expenditures during the month were Wildermuth Environmental Inc. in the amount of \$256,771.22, Hatch and Parent in the amount of \$87,027.04, and Berkeley Economic Consulting, Inc. in the amount of \$69,250.00

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CHINO BASIN WATERMASTER
Cash Disbursement Detail Report
August 2007

Type	Date	Num	Name	Amount
Aug 07				
Bill Pmt -Check	8/7/2007	11596	A & R TIRE	-35.77
Bill Pmt -Check	8/7/2007	11597	APPLIED COMPUTER TECHNOLOGIES	-3,969.15
Bill Pmt -Check	8/7/2007	11598	ARROWHEAD MOUNTAIN SPRING WATER	-40.21
Bill Pmt -Check	8/7/2007	11599	BOWCOCK, ROBERT	-125.00
Bill Pmt -Check	8/7/2007	11600	BOWMAN, JIM	-125.00
Bill Pmt -Check	8/7/2007	11601	CITISTREET	-3,652.94
Bill Pmt -Check	8/7/2007	11602	CITY OF RANCHO CUCAMONGA	-75.00
Bill Pmt -Check	8/7/2007	11603	COMPUTER NETWORK	-1,227.27
Bill Pmt -Check	8/7/2007	11604	DICK LARSEN - TREASURER/TAX COLLECTOR	-1,407.99
Bill Pmt -Check	8/7/2007	11605	DIRECTV	-74.98
Bill Pmt -Check	8/7/2007	11606	GEOTECHNICAL SERVICES	-5,295.19
Bill Pmt -Check	8/7/2007	11607	INLAND EMPIRE UTILITIES AGENCY	-1,193.22
Bill Pmt -Check	8/7/2007	11608	JOBS AVAILABLE INC	-30.00
Bill Pmt -Check	8/7/2007	11609	KUHN, BOB	-125.00
Bill Pmt -Check	8/7/2007	11610	MEDIA JIM	-900.00
Bill Pmt -Check	8/7/2007	11611	MONTE VISTA WATER DIST	-375.00
Bill Pmt -Check	8/7/2007	11612	OFFICE DEPOT	-760.79
Bill Pmt -Check	8/7/2007	11613	PARK PLACE COMPUTER SOLUTIONS, INC.	-6,750.00
Bill Pmt -Check	8/7/2007	11614	PAYCHEX	-199.52
Bill Pmt -Check	8/7/2007	11615	PETTY CASH	-494.61
Bill Pmt -Check	8/7/2007	11616	PREMIERE GLOBAL SERVICES	-196.87
Bill Pmt -Check	8/7/2007	11617	PUMP CHECK	-2,872.50
Bill Pmt -Check	8/7/2007	11618	PURCHASE POWER	-2,070.87
Bill Pmt -Check	8/7/2007	11619	REID & HELLYER	-3,866.88
Bill Pmt -Check	8/7/2007	11620	STATE COMPENSATION INSURANCE FUND	-739.51
Bill Pmt -Check	8/7/2007	11621	THE FURMAN GROUP, INC.	-2,520.00
Bill Pmt -Check	8/7/2007	11622	UNION 76	-152.17
Bill Pmt -Check	8/7/2007	11623	VANDEN HEUVEL, GEOFFREY	-250.00
Bill Pmt -Check	8/7/2007	11624	VELASQUEZ JANITORIAL	-1,200.00
Bill Pmt -Check	8/7/2007	11625	VERIZON	-390.75
Bill Pmt -Check	8/7/2007	11626	WILLIS, KENNETH	-250.00
Bill Pmt -Check	8/7/2007	11627	YUKON DISPOSAL SERVICE	-151.04
Bill Pmt -Check	8/7/2007	11628	CITISTREET	-3,493.23
General Journal	8/11/2007	07/08/3	PAYROLL	-7,355.02
General Journal	8/11/2007	07/08/3	PAYROLL	-23,230.56
Bill Pmt -Check	8/13/2007	11629	BERKELEY ECONOMIC CONSULTING, INC.	-69,250.00
Bill Pmt -Check	8/13/2007	11630	CARPET CARE CONNECTION	-364.70
Bill Pmt -Check	8/13/2007	11631	COMPUTER NETWORK	-3,512.65
Bill Pmt -Check	8/13/2007	11632	DCSE	-5,048.33
Bill Pmt -Check	8/13/2007	11633	LIATTI & ASSOCIATES	-160.00
Bill Pmt -Check	8/13/2007	11634	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-7,456.93
Bill Pmt -Check	8/13/2007	11635	SAFEGUARD DENTAL & VISION	-13.32
Bill Pmt -Check	8/13/2007	11636	SAFETY CLEAN JANITORIAL SERVICES	-274.00
Bill Pmt -Check	8/13/2007	11637	UNITED PARCEL SERVICE	-532.04
Bill Pmt -Check	8/13/2007	11638	W.C. DISCOUNT MOBILE AUTO DETAILING	-72.00
Bill Pmt -Check	8/13/2007	11639	WHEELER METER MAINTENANCE	-1,055.17
Bill Pmt -Check	8/13/2007	11640	PUBLIC EMPLOYEES' RETIREMENT SYSTEM	-7,202.97
Bill Pmt -Check	8/14/2007	11641	ACWA SERVICES CORPORATION	-262.31
Bill Pmt -Check	8/14/2007	11642	BANK OF AMERICA	-2,281.66
Bill Pmt -Check	8/14/2007	11643	CAROLLO ENGINEERS	-9,672.00
Bill Pmt -Check	8/14/2007	11644	COMPUTER NETWORK	-1,045.18
Bill Pmt -Check	8/14/2007	11645	FIRST AMERICAN REAL ESTATE SOLUTIONS	-125.00
Bill Pmt -Check	8/14/2007	11646	MCI	-1,169.95
Bill Pmt -Check	8/14/2007	11647	RICOH BUSINESS SYSTEMS-Lease	-4,480.25
Bill Pmt -Check	8/14/2007	11648	VERIZON WIRELESS	-405.33
Check	8/17/2007	11649	PAULA MOLTER	-972.67
Check	8/17/2007	11650	PAULA MOLTER	-3,275.84
Bill Pmt -Check	8/20/2007	11651	A & R TIRE	-220.56
Bill Pmt -Check	8/20/2007	11652	ADVANCE ORNAMENTAL IRON	-90.00
Bill Pmt -Check	8/20/2007	11653	COMPUTER NETWORK	-544.14
Bill Pmt -Check	8/20/2007	11654	ELLISON, SCHNEIDER & HARRIS, LLP	-4,978.60
Bill Pmt -Check	8/20/2007	11655	HATCH AND PARENT	-87,027.04
Bill Pmt -Check	8/20/2007	11656	PRE-PAID LEGAL SERVICES, INC.	-103.60
Bill Pmt -Check	8/20/2007	11657	QUILL	-116.11
Bill Pmt -Check	8/20/2007	11658	RICOH BUSINESS SYSTEMS-Maintenance	-1,130.07
Bill Pmt -Check	8/20/2007	11659	STAULA, MARY L	-136.61
Bill Pmt -Check	8/20/2007	11660	WESTERN DENTAL SERVICES, INC.	-23.25
Bill Pmt -Check	8/23/2007	11661	ALL PRO PLUMBING, HEATING & AIR	-151.00

CHINO BASIN WATERMASTER
Cash Disbursement Detail Report
August 2007

Type	Date	Num	Name	Amount
Bill Pmt -Check	8/23/2007	11662	CALPERS	-3,043.62
Bill Pmt -Check	8/23/2007	11663	CASA VERDE LANDSCAPE	-748.00
Bill Pmt -Check	8/23/2007	11664	IDEAL GRAPHICS	-8.62
Bill Pmt -Check	8/23/2007	11665	OFFICE DEPOT	-77.56
Bill Pmt -Check	8/23/2007	11666	STANDARD INSURANCE CO.	-593.58
Bill Pmt -Check	8/23/2007	11667	WILDERMUTH ENVIRONMENTAL INC	-256,771.22
General Journal	8/25/2007	70805	PAYROLL	-7,533.91
General Journal	8/25/2007	70805	PAYROLL	-24,009.56
Bill Pmt -Check	8/30/2007	11668	A & R TIRE	-241.09
Bill Pmt -Check	8/30/2007	11669	ARROWHEAD MOUNTAIN SPRING WATER	-49.00
Bill Pmt -Check	8/30/2007	11670	BLACK & VEATCH CORPORATION	-1,528.88
Bill Pmt -Check	8/30/2007	11671	CITISTREET	-3,493.23
Bill Pmt -Check	8/30/2007	11672	COMPUTER NETWORK	-129.30
Bill Pmt -Check	8/30/2007	11673	CUCAMONGA VALLEY WATER DISTRICT	-5,340.00
Bill Pmt -Check	8/30/2007	11674	DIRECTV	-74.98
Bill Pmt -Check	8/30/2007	11675	W.C. DISCOUNT MOBILE AUTO DETAILING	-75.00
Bill Pmt -Check	8/30/2007	11676	CITISTREET	-3,493.23
Bill Pmt -Check	8/30/2007	11677	HSBC BUSINESS SOLUTIONS	-494.19
Bill Pmt -Check	8/30/2007	11678	INLAND EMPIRE UTILITIES AGENCY	-127.31
Bill Pmt -Check	8/30/2007	11679	INTERNAL REVENUE SERVICE	-300.00
Bill Pmt -Check	8/30/2007	11680	PURCHASE POWER	-56.45
Bill Pmt -Check	8/30/2007	11681	STANTEC CONSULTING, INC.	-2,306.88
Bill Pmt -Check	8/30/2007	11682	STATE COMPENSATION INSURANCE FUND	-1,165.99
Bill Pmt -Check	8/30/2007	11683	TELECOM SERVICES	-90.00
Bill Pmt -Check	8/30/2007	11684	THE STANDARD INSURANCE COMPANY	-156.56
Bill Pmt -Check	8/30/2007	11685	VISION SERVICE PLAN	-36.11
Bill Pmt -Check	8/30/2007	11686	W.C. DISCOUNT MOBILE AUTO DETAILING	-25.00
Aug 07				-600,718.59

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CHINO BASIN WATERMASTER
Check Detail
August 2007

<u>Type</u>	<u>Num</u>	<u>Date</u>	<u>Name</u>	<u>Account</u>	<u>Paid Amount</u>
Bill Pmt -Check	11642	8/14/2007	BANK OF AMERICA	1012 · Bank of America Gen'I Ckg	
Bill	402442...	7/31/2007		6141.4 · AGWA Meetings	-181.54
				6141.3 · Admin Meetings	-21.67
				6909.1 · OBMP Meetings	-183.85
				6038 · Other Office Equipment	-541.12
				6031.7 · Other Office Supplies	-354.48
				6112 · Subscriptions/Publications	-304.00
				6191 · Conferences	-695.00
TOTAL					-2,281.66

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CHINO BASIN WATERMASTER
 COMBINING SCHEDULE OF REVENUE, EXPENSES AND CHANGES IN WORKING CAPITAL
 FOR THE
 PERIOD JULY 1, 2007 THROUGH JULY 31, 2007

	WATERMASTER ADMINISTRATION	OPTIMUM BASIN MANAGEMENT	POOL ADMINISTRATION AND SPECIAL PROJECTS APPROPRIATIVE POOL	AGRICULTURAL NON-AGRIC. POOL	GROUNDWATER REPLENISHMENT	GROUNDWATER OPERATIONS SB222 FUNDS	EDUCATION FUNDS	GRAND TOTALS	BUDGET 2007-2008
Administrative Revenues									
Administrative Assessments			5,139,446		61,606			5,201,052	\$7,540,370
Interest Revenue								-	181,500
Mutual Agency Project Revenue	41,667							41,667	145,500
Grant Income								-	0
Miscellaneous Income								-	0
Total Revenues	41,667	41,667	5,139,446	-	61,606	-	-	5,242,719	7,867,370
Administrative & Project Expenditures									
Watermaster Administration	59,531							59,531	627,797
Watermaster Board-Advisory Committee	3,970							3,970	60,645
Pool Administration			1,039	5,530	312			6,881	127,333
Optimum Basin Mgmt Administration		322,425						322,425	1,857,337
OBMP Project Costs		937,509						937,509	5,183,883
Education Funds Use								-	375
Mutual Agency Project Costs								-	10,000
Total Administrative/OBMP Expenses	63,501	1,259,934	1,039	5,530	312			1,330,316	7,867,370
Net Administrative/OBMP Income	(63,501)	(1,218,267)						-	-
Allocate Net Admin Income To Pools	63,501		48,959	13,351	1,192			-	-
Allocate Net OBMP Income To Pools			939,272	256,133	22,862			-	-
Agricultural Expense Transfer			264,164	(264,164)				-	-
Total Expenses	1,253,433		10,850		24,366			1,330,316	7,867,370
Net Administrative Income	3,886,013		(10,850)		37,240			3,912,403	-
Other Income/(Expense)									
Replenishment Water Purchases								-	0
MZ1 Supplemental Water Assessments								-	0
Water Purchases								-	0
MZ1 Imported Water Purchase								-	0
Groundwater Replenishment						(2,328,727)		(2,328,727)	0
Net Other Income						(2,328,727)		(2,328,727)	0
Net Transfers To/(From) Reserves			3,886,013	(10,850)	37,240	(2,328,727)		1,583,676	-

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**CHINO BASIN WATERMASTER
TREASURER'S REPORT OF FINANCIAL AFFAIRS FOR THE PERIOD
JULY 1 THROUGH JULY 31, 2007**

INVESTMENT TRANSACTIONS

Effective Date	Transaction	Depository	Activity	Redeemed	Days to Maturity	Interest Rate(*)	Maturity Yield
7/13/2007	Interest	L.A.I.F.	\$ 78,822				
7/19/2007	Withdrawal	L.A.I.F.	\$ (2,500,000)				
7/26/2007	Withdrawal	L.A.I.F.	\$ (700,000)				
TOTAL INVESTMENT TRANSACTIONS			\$ (3,121,178)				

* The earnings rate for L.A.I.F. is a daily variable rate; 5.23% was the effective yield rate at the Quarter ended June 30, 2007

**INVESTMENT STATUS
July 31, 2007**

Financial Institution	Principal Amount	Number of Days	Interest Rate	Maturity Date
Local Agency Investment Fund	\$ 1,204,271			
TOTAL INVESTMENTS	\$ 1,204,271			

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 2007

	<u>Jul 07</u>	<u>Budget</u>	<u>\$ Over Budget</u>	<u>% of Budget</u>
Ordinary Income/Expense				
Income				
4010 · Local Agency Subsidies	41,667	145,500	-103,833	29%
4100 · Administrative Assessments	5,201,052	0	5,201,052	100%
4110 · Admin Asmnts-Approp Pool	0	7,423,878	-7,423,878	0%
4120 · Admin Asmnts-Non-Agri Pool	0	116,492	-116,492	0%
4700 · Non Operating Revenues	0	181,500	-181,500	0%
Total Income	<u>5,242,719</u>	<u>7,867,370</u>	<u>-2,624,651</u>	<u>67%</u>
Gross Profit	5,242,719	7,867,370	-2,624,651	67%
Expense				
6010 · Salary Costs	39,446	477,247	-437,801	8%
6020 · Office Building Expense	9,151	101,580	-92,429	9%
6030 · Office Supplies & Equip.	3,653	46,500	-42,847	8%
6040 · Postage & Printing Costs	10,052	83,000	-72,948	12%
6050 · Information Services	29,014	132,000	-102,986	22%
6060 · Contract Services	3,795	117,500	-113,705	3%
6080 · Insurance	4,000	18,210	-14,210	22%
6110 · Dues and Subscriptions	1,346	16,750	-15,404	8%
6140 · WM Admin Expenses	203	4,650	-4,447	4%
6150 · Field Supplies	0	2,500	-2,500	0%
6170 · Travel & Transportation	1,094	25,000	-23,906	4%
6190 · Conferences & Seminars	1,895	22,500	-20,605	8%
6200 · Advisory Comm - WM Board	1,389	18,931	-17,542	7%
6300 · Watermaster Board Expenses	2,581	41,714	-39,133	6%
8300 · Appr PI-WM & Pool Admin	1,039	24,001	-22,962	4%
8400 · Agri Pool-WM & Pool Admin	1,663	24,004	-22,341	7%
8467 · Ag Legal & Technical Services	3,867	60,000	-56,133	6%
8470 · Ag Meeting Attend -Special	0	12,000	-12,000	0%
8500 · Non-Ag PI-WM & Pool Admin	312	7,328	-7,016	4%
6500 · Education Funds Use Expens	0	375	-375	0%
9500 · Allocated G&A Expenditures	-44,118	-419,640	375,522	11%
Subtotal G&A Expenditures	<u>70,382</u>	<u>816,150</u>	<u>-745,768</u>	<u>9%</u>
6900 · Optimum Basin Mgmt Plan	302,738	1,716,138	-1,413,400	18%
6950 · Mutual Agency Projects	0	10,000	-10,000	0%
9501 · G&A Expenses Allocated-OBMP	19,687	141,199	-121,512	14%
Subtotal OBMP Expenditures	<u>322,425</u>	<u>1,867,337</u>	<u>-1,544,912</u>	<u>17%</u>
7101 · Production Monitoring	10,103	116,709	-106,606	9%
7102 · In-line Meter Installation	2,587	37,791	-35,204	7%
7103 · Grdwtr Quality Monitoring	7,301	162,104	-154,803	5%
7104 · Gdwtr Level Monitoring	14,492	212,667	-198,175	7%
7105 · Sur Wtr Qual Monitoring	0	40,553	-40,553	0%
7107 · Ground Level Monitoring	774	425,465	-424,691	0%
7108 · Hydraulic Control Monitoring	8,754	369,232	-360,478	2%
7109 · Recharge & Well Monitoring Prog	2,945	182,827	-179,882	2%
7200 · PE2- Comp Recharge Pgm	193,016	1,255,827	-1,062,811	15%
7300 · PE3&5-Water Supply/Desalte	13,056	159,509	-146,453	8%

CHINO BASIN WATERMASTER
Profit & Loss Budget vs. Actual
July 2007

	<u>Jul 07</u>	<u>Budget</u>	<u>\$ Over Budget</u>	<u>% of Budget</u>
7400 · PE4- Mgmt Plan	21,714	159,674	-137,960	14%
7500 · PE6&7-CoopEfforts/SaltMgmt	14,095	308,533	-294,438	5%
7600 · PE8&9-StorageMgmt/Conj Use	5,866	92,660	-86,794	6%
7690 · Recharge Improvement Debt Pymt	618,373	1,377,552	-759,179	45%
7700 · Inactive Well Protection Prgm	0	4,339	-4,339	0%
9502 · G&A Expenses Allocated-Projects	24,431	278,441	-254,010	9%
Subtotal Implementation Project Expenditures	<u>937,507</u>	<u>5,183,883</u>	<u>-4,246,376</u>	<u>18%</u>
Total Expense	<u>1,330,314</u>	<u>7,867,370</u>	<u>-6,537,056</u>	<u>17%</u>
Net Ordinary Income	3,912,405	0	3,912,405	100%
Other Income/Expense				
Other Expense				
5010 · Groundwater Replenishment	2,328,727	0	2,328,727	100%
9999 · To/(From) Reserves	<u>1,583,678</u>	<u>0</u>	<u>1,583,678</u>	<u>100%</u>
Total Other Expense	<u>3,912,405</u>	<u>0</u>	<u>3,912,405</u>	<u>100%</u>
Net Other Income	<u>-3,912,405</u>	<u>0</u>	<u>3,912,405</u>	<u>100%</u>
Net Income	<u>0</u>	<u>0</u>	<u>0</u>	<u>0%</u>



CHINO BASIN WATERMASTER

II. BUSINESS ITEMS

A. DR. SUNDING MICRO-ECONOMIC 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: September 27, 2007
TO: Advisory Committee Members
Watermaster Board Members
SUBJECT: Sunding Micro-Economic Report

SUMMARY

Recommendation – Staff recommends that the Advisory Committee and Watermaster Board receive and file the Sunding micro-economic report subject to the process described in this staff report.

I. Background

The May 23, 2006 Stakeholder Non-Binding Term Sheet required Watermaster to update earlier analyses of socioeconomic impacts conducted pursuant to the Judgment prior to requesting Court approval of the final Peace II Agreement documents. To accomplish this analysis, Watermaster retained the services of Dr. David Sunding. Dr. Sunding held a scoping workshop on June 7, 2007. During the course of the preparation of the analysis, Dr. Sunding met with and conferred with many of the parties in the Basin, and collaborated with other economists retained by a subset of the parties.

On August 29, 2007, a second workshop was held at which Dr. Sunding presented a draft of his analysis and took comments from the parties. Following this workshop, a working copy of Dr. Sunding's model was made available to the parties for their review. On September 5, 2007, Dr. Sunding attended a further workshop with the parties to receive further comments.

After the September 5, 2007 workshop, Dr. Sunding performed further revisions to his report and delivered a final draft form to Watermaster in September 13, 2007.

As described below in section II, several parties had additional comments to the report that were not fully resolved prior to the Pool meetings. In order to allow the report to move forward through the process, the parties have agreed to a socioeconomic process.

II. PROPOSED SOCIOECONOMIC PROCESS

A. Within seven days following the Dr. Sunding's delivery of his expected final draft of the socioeconomic report contemplated by the Peace II Term Sheet, the members of the Appropriative Pool shall convene a collaborative process to agree upon recommendations that will be applied by Watermaster in addressing Watermaster's continuing duties under Exhibits H and I of the Judgment. This process will focus primarily on three areas as well as the considerations set forth in Section C.2 below that are thought to be material to the over-all distribution of costs and benefits of the OBMP among the members of the Appropriative Pool:

(1) Recharge Master Plan. Address the water, facilities and financing plan to equitably apportion of costs of recharge improvements and the specific measures that may be applicable to MZ#1 and remediation of subsidence;

(2) Desalters. Address yield preservation, replenishment, salt management, bonding capacity, and third party financing;

(3) Recycled Water. Address the cost of obtaining and making use of recycled water and the member's relative access to recycled water as a commodity.

B. No date has yet been scheduled for a Court hearing regarding the Peace II Measures. However, the participants acknowledge that their full commitment will be required to resolve potential differences and consequently they desire that this process be completed as soon as practicable. Notwithstanding their commitment to this process, all members of the Appropriative Pool reserve their respective rights to file responsive pleadings related to Watermaster's motion and a request for Court direction to proceed in accordance with Peace II Measures.

C. The parties will acknowledge and agree that as the Dr. Sunding report is moved through the Pool Process that although the Report may be final from Dr. Sunding's perspective:

1. There is a wide range of opinion regarding whether the Report addresses all the economic considerations that may be applicable to an evaluation of Watermaster's continuing duties under Exhibits H and I of the Judgment.

2. Without accepting or rejecting the relevance of any specific factors, members of the Appropriative Pool have suggested the potential importance of other considerations including but not limited to the following: the 1978 Judgment, apportionment of Operating Safe Yield, access to recharge water, access to recycled water; the CPUC, NEPA and the CEQA guidelines applicable to the measurement of socioeconomic impacts, agency ability to pay, and historical contributions by the parties.

3. Any recommendation and any Appropriator vote to accept the Dr. Sunding report as "final" is subject to these considerations and the willingness of the members of the Appropriative Pool to engage in the process outlined in A and B above.

**Report on the Distribution of Benefits to Basin Agencies from the Major Program
Elements Encompassed by the Peace Agreement and Non-Binding Term Sheet**

Prepared by:
David L. Sunding, Ph.D.
Berkeley Economic Consulting, Inc.
2550 Ninth Street, Suite 102
Berkeley, CA 94710

September 13, 2007

1. Introduction and Summary of Findings

This report measures the costs and benefits to various Chino Basin agencies of the program elements encompassed by the Peace I and Peace II Agreements. Both agreements are considered relative to a baseline state of the world existing after the Judgment but prior to the Peace Agreement. The analysis examines net returns to the ten largest agencies that hold groundwater rights in the Basin over the time period 2007 to 2030. Together, these agencies account for over 91 percent of Basin safe operating yield.

Overall, the study shows that the two agreements produce substantial net benefits to Chino Basin agencies – over \$904 million in present value terms. The provisions of the Peace II Agreement are especially valuable, as they account for \$723 million (80 percent) of the total net benefit to the Basin agencies studied. Through the attainment of hydraulic control, the program elements in Peace II Agreement include the introduction of large quantities of recycled water in the Basin, which lessens the need to procure other supplies to meet growing demand for water. With respect to the distribution of net benefits across agencies, shown in the summary tables below, the main outcome is that all agencies benefit from the agreements, although the magnitude of the net benefit varies considerably among agencies.

	Total Net Benefit (1000s of 2007\$)		
	<i>Peace I vs. Baseline</i>	<i>Peace II vs. Peace I</i>	<i>Peace II vs. Baseline</i>
City of Chino	\$20,294	\$75,671	\$95,966
City of Chino Hills	\$12,217	\$61,320	\$73,537
City of Ontario	\$42,547	\$189,724	\$232,271
City of Upland	\$9,442	\$34,644	\$44,086
Cucamonga Valley Water District	\$60,667	\$217,462	\$278,128
Fontana Union Water Co.	\$4,839	\$25,429	\$30,268
Monte Vista Water District	\$7,025	\$33,455	\$40,480
San Antonio Water Company	\$1,141	\$5,995	\$7,136
Jurupa CSD	\$15,772	\$19,482	\$35,254
City of Pomona	\$8,189	\$59,348	\$67,537
Total	\$182,133	\$722,530	\$904,663

	Net Benefit per Acre-Foot (2007\$)		
	<i>Peace I vs.</i>	<i>Peace II vs.</i>	<i>Peace II vs.</i>
	<i>Baseline</i>	<i>Peace I</i>	<i>Baseline</i>
City of Chino	\$31.30	\$116.70	\$148.00
City of Chino Hills	\$20.60	\$103.38	\$123.98
City of Ontario	\$24.20	\$107.91	\$132.11
City of Upland	\$17.46	\$64.07	\$81.54
Cucamonga Valley Water District	\$32.92	\$118.01	\$150.93
Monte Vista Water District	\$20.13	\$95.88	\$116.01
Jurupa CSD	\$17.86	\$22.06	\$39.92
City of Pomona	\$11.10	\$80.47	\$91.58
Overall Average	\$19.84	\$78.69	\$98.53

In terms of total net benefit, two agencies, City of Ontario and Cucamonga Valley Water District, receive over half of all the net benefits resulting from the agreements. An important reason these agencies receive a large share of the net benefit from the agreements is due to their relative size: the two agencies combined account for approximately half of the consumer demand for Basin water.¹ Controlling for agency size on the basis of demand for Basin water, the net benefit resulting from the combined program elements in the Peace I and Peace II Agreements shows considerably less variation. The table above indicates that 7 of the 8 agencies with positive demand for Basin water receiving benefits ranging from \$82 to \$151 per acre-foot.²

2. Conceptual Framework

The model of groundwater value used in this report is standard in the academic literature and builds on the methodology used in the earlier aggregate study of Basin net benefits. The net benefits resulting from access to a groundwater resource are the gains from pumping (the demand for water) less the cost of extraction and conveyance, and a user cost component, which reflects the lost option value entailed by removing a unit of water from storage. The stream of annual net benefits is discounted back to current dollars using a discount factor predicated on the rate of interest, which is taken to be the current risk-free long-term rate of interest and is set at 4.5 percent per year.

Allocation of aggregate costs and benefits to individual agencies in the Basin is accomplished by a complex set of legal rules (e.g., shares of operating yield), cost-sharing arrangements that fund programs for Basin improvements through collective institutions, and market forces. The goal of this study is to measure net benefits to individual agencies under three scenarios: (i) a baseline case defined by the Judgment; (ii) a set of rules to operate the Basin and fund programs through collections as defined by the Peace Agreement; and (iii) an alternative set of rules that are

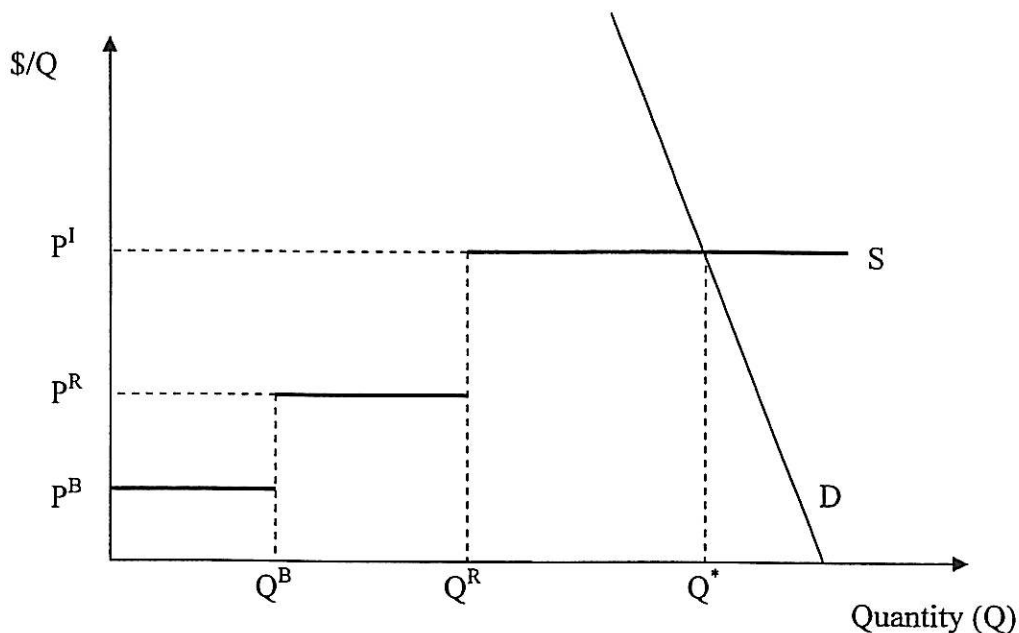
¹ Consumer demand for Basin water, which is met through some combination of Basin supply and water imports, is calculated for each agency as Urban Water Demand less available surface water and other groundwater supplies. Over the 2007-2030 period of study, the City of Ontario and Cucamonga Valley Water District are projected to meet consumer demand of 3.4 million acre-feet out of 6.9 million acre-feet (49 percent) of total consumer demand for Basin water.

² Fontana Union Water Company and San Antonio Water Company are not included in these calculations, because the available surface water and other groundwater supplies for these agencies exceed their Urban Water Demand.

designed to achieve hydraulic control and are defined in Peace II Agreement (as represented in the Non-Binding Term Sheet dated May 23, 2006).

To understand the allocation of benefits among individual agencies in the appropriative pool most clearly, consider for the moment the case in which the appropriative pool comprises 100 percent of the Basin water. Figure 1 depicts the aggregate supply (S) and demand (D) schedules for this Basin. Aggregate demand is total water demand in the Basin, and the supply curve is a step function, ordered from the least expensive uses of water to the most expensive uses of water.³ Many of the effects modeled in this study amount to changes in agencies' cost of meeting water demand. An arrangement or cost-sharing rule that reduces an agency's cost of service provides a net benefit to that agency and its ratepayers.

Figure 1. Conceptual Model: Aggregate Demand and Supply



The first step of the supply curve, which represents the least expensive water source, is groundwater pumped directly from the Basin. The extent of groundwater pumping in the Basin is limited by the steady-state (“safe”) yield, which is represented in the figure by quantity Q^B . The cost per unit of Basin water is denoted by the (implicit) price P^B , which includes lift costs, conveyance costs, and user cost. The second step of the supply curve represents replenishment water. After the safe yield of the Basin is exhausted, additional groundwater pumping can occur provided that replenishment water is purchased to recharge the Basin. The effective capacity of the Basin is the sum of Basin safe yield and Basin recharge capacity, denoted by the quantity Q^R in the figure. (The recharge capacity of the Basin is given by the difference $Q^R - Q^B$.)

³ In practice, the water supply function has multiple steps, with each step representing the various pumping and conveyance costs of a sequence of wells, and, for this reason, aggregate supply conditions are often approximated by an upwards-sloping, continuous supply function; however, the essential points of the model can be made more clearly by grouping water costs into common categories represented by each of the three steps.

Replenishment water is supplied to the Basin through replenishment water imports at the MWD replenishment rate, which is denoted in the figure by P^R . The third step in the supply function, the most-expensive source of water, is imported water for direct (consumptive) use. Imported water for direct use is available to agencies in the Basin at a price denoted by P^I , which reflects the cost of procuring new water supplies from outside the Basin. The cost of developing reliable sources of water outside the Basin may differ across agencies in practice according to the options available to each agency in developing outside water sources. The outside option for each agency in the present study, unless stated otherwise, is taken to have a cost equal to the Tier 2 MWD rate for untreated water.

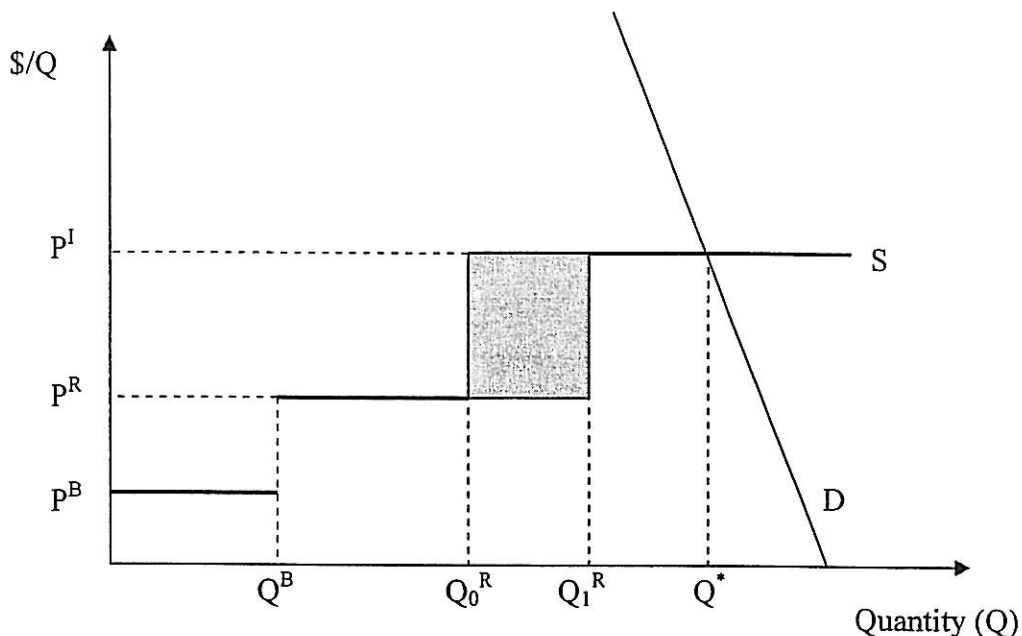
The equilibrium quantity of water consumed is given by the intersection of supply and demand, which occurs at the quantity Q^* and the price P^I . The key to characterizing the distribution of benefits from policies that increase the effective yield from the Basin, either by expanding Basin safe yield or by augmenting Basin recharge capacity, is the understanding that economic values, as captured by prices, are realized on the margin of water use where supply intersects with demand (the third step in the figure). Gains from management of the Basin are created by replacing units of water at the third and most-expensive step of the supply function with less expensive sources of water. Because individual supplies are added together to get aggregate supply, the distribution of market benefits to individual agencies in response to Basin improvements depends on the composition of water use by each agency across each of the steps of supply, in effect where each agency is "located" on the supply schedule. In general, agencies who meet their urban water demand to a greater degree with marginal units of water (i.e., imported water for direct use) acquire a larger share of the benefits from Basin improvements than agencies that are less represented on this "extensive margin" of supply.⁴

Consider a policy that increases the recharge capacity of the Basin. In general, such an effort has two effects that, taken together, can alter the net benefits received by water agencies: (i) increasing the Basin recharge capacity involves a fixed cost component that must be allocated among agencies according to some cooperative, cost-sharing rule; and (ii) increasing the Basin recharge capacity allows for greater use of replenishment water that can displace expensive Tier 2 water on the margin. The distribution of net benefits in the Basin is altered in cases where the market allocation of benefits from the increased use of replenishment water differs from the allocation of cost among individual agencies.

Figure 2 shows the gain from an increase in recharge capacity in the Basin. The increase in recharge capacity increases the effective yield in the Basin, which is depicted in the figure by the movement from Q_0^R to Q_1^R . The increased recharge capacity allows Basin agencies to incur additional replenishment obligations that displace $Q_1^R - Q_0^R$ units of imported water for direct use. The total producer benefit resulting from the increase in recharge capacity is represented by the shaded region in the figure, which sums the difference between the Tier 2 rate and replenishment rate for each additional unit of water that can be replenished.

⁴ Generally, users disproportionately represented on the margin of supply represent agencies that incurred large increases in urban water demand subsequent to the assignment of safe operating yield and were forced to meet the increase in demand with relatively expensive sources of imported water.

Figure 2. Benefit of an Increase in Basin Recharge Capacity

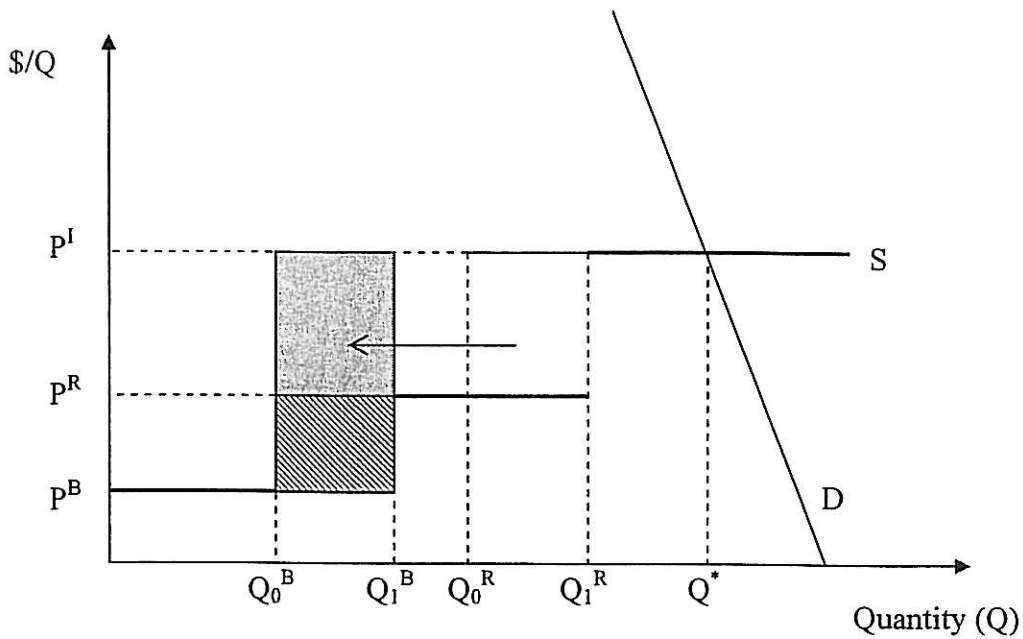


Among individual agencies in the Basin, the benefit of an increase in recharge capacity is distributed exclusively to agencies on the extensive margin of water supply. For this reason, the market return from an increase in recharge capacity can be distributed equally across agencies only in the case where the agencies have equal shares of the third step of water supply in the Basin. To illustrate this point, consider an agency that faces sufficiently small water demand relative to its share of Basin production rights that its urban water demand can be met each year entirely through the use of Basin safe yield. Such an agency would require the use of neither imported replenishment water nor imported water for direct use to meet its urban water demand, and would stand to receive no market benefit from participating in a cooperative policy designed to increase Basin recharge capacity. To the extent that cooperative assessments levied to recoup the cost of increasing Basin recharge capacity are based on relative share of operating yield, as opposed to being levied in proportion to the initial share of imported water deliveries for direct use across agencies, policies that increase Basin recharge capacity alter the distribution of net benefits.

Next, consider the benefit associated with an increase in Basin safe yield. Figure 3 shows the effect of an increase in Basin safe yield from Q_0^B to Q_1^B units. The increase in Basin safe yield extends the lowest step of the supply function and displaces $Q_1^B - Q_0^B$ units of replenishment water purchases. The value of the displaced replenishment water (net of the cost of Basin water) is shown by the cross-hatched region in the figure. The increase in Basin safe yield, in turn, increases the effective yield in the Basin (the sum of Basin yield and recharge capacity) from Q_0^R to Q_1^R , which is represented in the figure by a rightward shift in the replenishment step of supply. The increase in Basin safe yield therefore also displaces $Q_1^R - Q_0^R = Q_1^B - Q_0^B$ units of imported water on the extensive margin of supply, which provides an additional gain represented by the shaded region of the figure. The total market benefit to all agencies is represented by the sum of these two regions. The value of an increase in Basin safe yield is the difference between

the price of imported water for direct use and the procurement cost of Basin groundwater for each unit of additional water made available to Basin agencies.

Figure 3. Benefit of an Increase in Basin Safe Yield



The economic value of an increase in safe yield conveys upward into market benefit across both steps of supply. For this reason, policies which lead an increase in Basin safe yield are not only more valuable to agencies in the Basin than an increase in recharge capacity, but the benefits are also distributed more equally. As in the case of an increase in replenishment capacity, the ultimate repository of market value for a one-unit increase in safe yield is a unit of displaced water on the extensive margin of supply; however, this displacement now occurs with Basin safe yield rather than through the use of imported replenishment water. To see how the market benefits of a policy that increases Basin safe yield are distributed to individual agencies, consider again an agency that meets its urban water demand each year entirely through the use of Basin safe yield without the need for replenishment water or imported water for direct use. Unlike the case of an increase in replenishment capacity, the increase in Basin safe yield provides each agency with physical water assets (e.g., according to its share of Basin safe yield) that can be sold to other agencies in the transfer market. The gain to this agency following the increase in Basin safe yield depends on the price it receives in the transfer market, for instance if the transfer price is equal to the replenishment rate (P^R) then the agency acquires a share of the benefits in the cross-hatched region of the figure in proportion to its share of Basin safe yield. The remaining benefit of each unit of water provided as the share of safe yield to this agency is acquired by the water purchaser in the transfer market.

In sum, agencies that initially meet their urban water demand with a relatively large share of imported water for direct use receive the largest share of the market benefit from a policy that increases Basin safe yield. These agencies receive the full market value ($P^I - P^B$) for each unit of water displaced through their allocated share of the increase in Basin safe yield. To the extent

that agencies with an initially large share of imported water purchases for direct use participate in the transfer market, these agencies also acquire the difference between the Tier 2 water price and the transfer price for each unit of water purchased from agencies that are under-represented on the extensive margin of supply. If the transfer price of water is taken to be equal to the replenishment rate (P^R), then the market benefit represented by the shaded region of Figure 3 is divided among agencies according to their relative share of production on the extensive margin of supply, while the market benefit represented by the cross-hatched region of Figure 3 is divided among agencies according to their relative share of Basin safe yield.⁵ Policies that expand Basin safe yield lead to redistributive effects on the net benefits received by individual agencies whenever the allocation of costs in the cooperative arrangement differ from this distribution of benefits provided in the market.

The above framework for calculating the distribution of net benefits from various program elements is applied to the Chino Basin as follows. First, the water yield in the Basin is calibrated to the relevant quantity supplied by the appropriate pool by netting out production by the overlying rights-holders from the Basin safe yield. This is essentially the distinction made in practice between “safe yield” and “safe operating yield” in the Basin. As it pertains to the calculation of net benefits to agencies with appropriative rights, policies that increase the Basin yield (as in Figure 3) now refer both to policies that directly increase Basin safe yield as well as to policies that redistribute the existing safe yield from overlying right-holders to members of the appropriative pool, for instance through net agricultural transfer.

Second, as defined by the framework above, net benefits are calculated for individual agencies according to calculations on the avoided cost of Tier 2 water purchases provided by program elements in the Peace I and Peace II agreements, respectively, relative to the baseline scenario.⁶ Considering the change in cost from the introduction of new program elements suppresses the need to explicitly calculate components of cost that are common to the baseline, Peace I, and Peace II scenarios.

Third, the analysis abstracts from seasonal and annual cycles in water availability by considering expected values where possible. Seasonal cycles are smoothed in all scenarios by using annual data on demand and supply conditions facing agencies. Annual cycles are smoothed in all scenarios by treating each year as an average weather occurrence represented by the expectation that each 10-year future horizon in the model is comprised of 7 “wet” years, in which replenishment water is available to agencies in the Basin, and 3 “dry” years, in which replenishment water is not available.⁷ Each year in the model thus has the interpretation of representing production decisions that are 30 percent dry and 70 percent wet. By smoothing annual production outcomes into an expected value framework, this implies that a replenishment

⁵ This argument does not rely on the water transfer price being equal to the replenishment rate and applies to any water transfer pricing rule that divides the gains from exchange (defined here by the value $P^I - P^B$).

⁶ An alternative scenario is also considered that denominates the avoided cost of imported water for direct use at the Tier 1 rate, which provides a bracketing condition on the range of outside options available to individual agencies for procuring reliable new sources of water at rates between the Tier 1 and Tier 2 MWD prices.

⁷ The expected sequence of wet and dry years is based on the assumption that underlies program element 2 of the OBMP that “replenishment water is available 7 out of 10 years.” (Implementation Plan: Optimal Basin Management Plan for the Chino Basin, p13: http://www.cbwm.org/docs/legaldocs/Implementation_Plan.pdf.)

water step exists in the supply function in each year of the study, but that the length of the step is treated as 70 percent of the recharge capacity in the Basin.

Fourth, the net benefit of policies that increase the safe operating yield of the appropriative pool is distributed among individual agencies, in part, through water exchanges between agencies in the transfer market. Water transfers are specified to exchange units of water between agencies that are not adequately represented on the extensive margin of supply to agencies which are more highly represented on this margin. Specifically, the water price in the transfer market is fixed at the prevailing MWD replenishment rate in each period to divide these rents from exchange.

Finally, the net benefit returned to each agency under Peace I and Peace II rules relative to the baseline scenario is computed by coupling the market distribution of benefits, as outlined by the framework here, with the distribution of cost implied by the rules encompassed by each agreement. These rules are defined in the following description of scenarios.

3. Common Components

Several components common to all scenarios frame the overall analysis.

3.1. Agencies Considered

Because of the detailed calculations required to divide the net benefit created by each scenario among individual agencies in the study, the study encompasses only the ten largest water-holding agencies in the Basin (the cities of Chino, Chino Hills, Ontario, Pomona, and Upland, Fontana Union Water Company, Monte Vista Water District, Cucamonga Valley Water District, Jurupa Community Services District, and San Antonio Water Company). These ten agencies account for 91.2 percent of the Basin-wide safe operating yield.

3.2. Smoothing Across Hydrologic Years

Because production is smoothed across years, the patterns of local storage and local supplemental storage are also smoothed for each agency. This abstracts from the actual series of puts and takes that rely on temporal adjustments in water storage by accounting for the expected local storage need of individual agencies. (Recall that each year is a representative hydrologic year characterized by expected conditions that are 70 percent wet and 30 percent dry.) A single local storage account is constructed for each agency that combines local storage with local supplemental storage in all scenarios, and the local storage balance of each agency is adjusted each year to reflect the fact that replenishment water is available to meet replenishment obligations only 70 percent of the time.

For this reason, the annual amount held in storage for each agency is $3/7$ ($3/7 = 10/7 - 1$) of the annual excess demand for water that cannot be met by the agency through the allocation of contemporaneous supply. The expected arrival time of a dry year in which replenishment water is not available is given by the mean of a Poisson process ($\mu = 10/3$), and the average holding time for a unit of water held in storage is half the expected arrival time of a dry year, which implies that the average annual amount of water held in local storage is $5/7$ ($5/7 = 3/7 * 10/3 * 1/2$) of the annual excess demand for each agency that cannot be met through the allocation of contemporaneous water supply. In each year, the local storage account is reconciled with the storage balance in the previous year by adding the increment in local storage to the excess

demand for water for each agency. Local storage levels increase smoothly over time in the model for most agencies due to the projected increases in urban water demand.

3.3. *Water Prices*

Annual water prices and the discount factor that converts annual values into present value are common across all scenarios. The market rates used in 2007 are the current water rates listed by MWD (\$427/AF for Tier 2 water, \$238/AF for replenishment water), and a \$13 surcharge is added to the replenishment rate to reflect the \$251/AF charge currently paid by each agency for replenishment water procured through Watermaster. The price of water transactions in the transfer market is taken in each period to be the price of replenishment water.⁸ The MWD rate forecast through 2012 is taken as the mean of the high- and low-rate forecasts provided by MWD over this horizon. Recycled water rates through 2011 are taken from IEUA projections provided in the 2007 IEUA Long-Run Plan of Finance, with a 25 percent non-member surcharge included for recycled water deliveries outside the IEUA service area (Jurupa Community Services District and the City of Pomona). The price of desalter water for urban supply is taken to be the price cap specified in section 7.6d of the Peace Agreement, which is \$375 in 2007. All water rates outside the range of published forecasts are assumed to increase at a rate of 4.5 percent per year. The discount factor is also taken to be 4.5 percent.

3.4. *Demand*

Demand for Basin water for each agency is identical across all three scenarios. Agency-level demand for Basin water is calculated from data provided in the relevant 2005 Urban Water Management Plans (UWMP) by taking the projected demand (gross of conservation) compiled by each agency and converting this into a residual (Basin) demand component by netting out available supplies of surface water and other groundwater sources available to each agency.⁹ In the case of Pomona, residual demand for Basin water is taken to be net of Puente and Spadra Basin recycled water, which implicitly assumes that this water would be available to Pomona irrespective of whether hydraulic control is attained in Chino Basin. Residual Basin water demand is linearized for each agency to recover values in the intervening years between the 5-year intervals reported in each UWMP. Residual demand for Fontana Union Water Co., which has rights but serves no subscribers, is zero in all scenarios, as is residual demand facing San Antonio Water Co., which has available surface water and other basin groundwater supply in excess of demand. The combined residual demand for the remaining agencies in the Basin is 215,996 AF in 2007 and increases over time with population growth projections to 337,246 AF in 2030. Among agencies with positive demand values, residual demand in 2007 ranges from a low of 12,753 AF for Monte Vista Water District to a high of 49,552 AF for the City of Ontario, and the residual water demand for the City of Ontario and Cucamonga Valley Water District over the entire horizon is about double the residual water demand of Pomona, 2-3 times greater than the City of Chino, City of Chino Hills, and Jurupa Community Services District, and 5-6

⁸ The average water transaction price in the data provided in the Watermaster's 2006-2007 Assessment Packet is \$177, which represents an approximate 30 percent discount below the current replenishment rate of \$251. This observed price discount below the expected transfer price accords with the "wet year" transfer price that would arise in a representative hydrologic year that is 70 percent wet and 30 percent dry when the "dry year" transfer price is \$422, a value bounded by the prevailing Tier 2 price of untreated water of \$427.

⁹ for IEUA members, these data are taken from the IEUA Urban Water Management Plan (2005), Table 2-7, and, for Jurupa Community Services District and the City of Pomona, these data are taken from the individual 2005 Urban Water Management Plans (2005) available on each agencies website.

times greater than the residual demand facing the City of Upland and Monte Vista Water District.

3.5. *Desalter Production*

Desalter production is treated as equal across all scenarios. Implicitly, this views the level and location of desalter activity to be determined by the requirements outlined by the Judgment.¹⁰ An alternative approach would be to construct a baseline scenario in which agencies provide their own salt removal infrastructure. One difference between this alternative approach and the present one is that, under baseline conditions with individual desalting O&M costs would be roughly the same, whereas the capital costs of building desalter facilities would be larger by the amount of funding that became available in the Basin through grants made possible by the Peace Agreement.

The projected desalter water for urban supply sets a schedule of delivery to three agencies considered in the study (City of Chino, City of Chino Hills, and Jurupa). The desalter water for urban supply rises from 15,230 AF to 38,088 AF over the period 2007-2030 among agencies in the study, with the remaining desalter supply being delivered to the City of Norco and the Santa Ana River Water Company. Each unit of desalter water supply, including deliveries to the City of Norco and the Santa Ana River Water Company, creates a replenishment obligation for producers in the Basin, and this obligation is divided among agencies according to the various rules encompassed by each of the three scenarios considered (as described below).

3.6. *Watermaster Assessments*

Although the assessment fees levied by Watermaster differ across the scenarios according to the total cost of the program elements embodied in each scenario, the rules in which assessments are distributed across individual agencies are common to all scenarios. Specifically, appropriate pool assessments are based on each agency's calculated share of actual fiscal year production. Given that total production and the share of production by individual agencies encompasses only a subset of total Basin production (e.g., roughly 87 percent in 2007), this approach slightly overestimates assessment costs in all scenarios by attributing 100 percent of the program cost to the ten agencies included in the study. Because the assessment costs used under the Peace I and Peace II scenarios include the baseline costs, as well as significant additional program costs, the over-allocation of assessment costs to individual agencies in the study provides a conservative estimate of the total benefit generated under Peace I and Peace II. The different components of the assessment costs were decomposed into program expenses from the 3-year assessment projections provided by Watermaster.¹¹ All cost components thereafter are assumed to increase at a rate of 4.5 percent.

¹⁰ Projected desalter production is taken from IEUA's UWMP (2005, Table 3-10 and Table 7-1), and includes the desalter production of Chino I, Chino I expansion, Chino II, and Desalter 3. The overall level of desalter activity, which grows to an ultimate production level of 43,000 AF by year 2025, an amount slightly below the 50,457 AF desalter production level anticipated by 2020 in the OBMP: (Implementation Plan: Optimal Basin Management Plan for the Chino Basin, Table 3, p59: http://www.cbwm.org/docs/legaldocs/Implementation_Plan.pdf.)

¹¹ Personal correspondence with Watermaster staff (August 7, 2007).

4. Baseline Scenario

4.1. Basin Supply

In the baseline scenario, available Basin supply for each agency in each year is comprised of the agency's share of: (i) safe operating yield, (ii) projected desalter water for urban supply, and (iii) the net agricultural pool transfer. The safe operating yield is allocated to individual agencies based on the share of safe operating yield in the Basin defined by the Judgment.

The projected desalter water for urban supply is taken for the baseline case (as well as for the remaining scenarios) from projections available in the IEUA UWMP.¹² Desalter water for urban use is treated in the model both as a source of water supply in the Basin and as a replenishment obligation, where the replenishment obligation associated with each unit of desalter water supply is shared by agencies through the allocation of storage losses and replenishment assessments by Watermaster, which are calculated for the baseline case according to each agency's pro rata share of safe operating yield up to the available recharge capacity in the Basin and by in lieu recharge according to each agency's pro rata share of safe operating yield for any obligation above the available recharge capacity.

The net agricultural transfer to each agency in each year is calculated by taking a straight-line projection of land-use conversions between 2006 conditions reported in the 2006-2007 Watermaster Assessment Package, and assumed "full build-out conditions" in 2030 in which all acres in the agricultural pool eligible for conversion are converted.¹³ For the baseline scenario, each converter is credited with 1.3 AF of Basin water for each acre converted, and the sum of water allocated to all land-use conversions and agricultural pool production in each year is deducted from the agricultural pool safe yield of 82,800 AF to get the net agricultural pool transfer to the appropriative pool in each year.¹⁴ Among the ten largest members of the appropriative pool considered in the study, the net agricultural transfer increases from 46,265 AF to 71,377 AF over the 2007-2030 period, which accounts for approximately 92 percent of the total water transfer to the appropriative pool in each year.

Under baseline conditions, there is also an issue of timing of the agricultural pool transfer, with no early transfer of agricultural pool water being made to the appropriative pool prior to the Peace Agreement. Under the Judgment, the agricultural pool allocation was defined to be 414,000 AF in every 5 years. This implies a 4-year waiting period for the appropriative pool before any agricultural transfer takes place, followed by a large allocation of the cumulative agricultural pool under-production in year 5, and an annual stream of transfers thereafter based on a rolling horizon comprised of the previous 5 years agricultural pool under-production. In the

¹² IEUA Urban Water Management Plan (2005), Tables 3-10 and 7-1.

¹³ Watermaster, Fiscal Year 2006-2007 Final Assessment Package, Land Use Conversion Summary (p10): <http://www.cbwm.org/docs/finandocs/Assessment%20Package%20FY%202006-2007%20Final.pdf>. Values after the conversion of all agricultural land eligible for conversion are based on Watermaster calculations (personal communication with Watermaster staff, July 12, 2007).

¹⁴ Under baseline conditions, 1.3 AF of water is allocated to the appropriative pool based on share of safe operating yield in the baseline scenario. This value is not parsed out from the net agricultural transfer that occurs each year, because all water transfers between the agricultural pool and the appropriative pool are based on shares of safe operating yield and an amount greater than 1.3 AF per acre is transferred from the agricultural pool to the appropriative pool in each year.

baseline scenario, the agricultural pool transfer is calculated on an annual basis and timing lags in the delivery of water are suppressed. Differences in the actual timing of the water have no implications for the baseline values in the study, because the rate of water price inflation is taken to be equal to the discount rate, so that delays in water delivery have no implications for the present value calculation.

The sum of these components in each year gives Basin supply for each agency. This represents the first step of the supply function depicted in Figure 1.¹⁵ In total, Basin supply among the ten largest agencies considered in the study rises from 116,044 AF to 164,014 AF over the 2007-2030 period, with the increase in supply generated through land use conversions and increased desalter water for urban supply. (This latter source of water supply is matched by an associated increase in the desalter replenishment obligation, as discussed below.)

4.2. *Import Demand*

Import demand for each agency in the Basin represents the amount of demand facing each agency that cannot be met with available Basin supplies (including supplies which can be purchased from other Basin agencies in the transfer market). Import demand for each agency, which must be met through some combination of replenishment water purchases and imported water purchases for direct use, is the sum of three components: (i) excess demand for water; (ii) storage account adjustments; and (iii) water transfers.

Excess demand for each agency in the Basin is calculated as residual demand less the available Basin supply. Excess demand for water is negative in each year for Fontana Union Water Co. and San Antonio Water Co., which implies that these agencies are water suppliers in the transfer market. In each year, approximately 70 percent of the excess demand for water in the Basin is derived from Cucamonga Valley Water District and the City of Ontario, which indicates a large water demand for Basin water among these agencies relative to their share of Basin supply.

In practice, the demand for water in dry years is met, in part, by smoothing the additional water supplies available in wet years across time through local storage. As discussed above, the model considers each year to be a representative year (30 percent dry and 70 percent wet), so that the annual amount of water held in local storage by each agency is 5/7 of the annual excess demand that cannot be met with contemporaneous supply. Local storage in the model, which represents the combined total held in local storage and local supplemental storage accounts in a representative year, increases over the period 2007-2030 from 83,706 AF to 141,565 AF among agencies in the study, where the growth in local storage over the period occurs in proportion to the 70 percent increase in excess demand for Basin water as population increases in the region.

Local storage accounts are not constructed for Fontana Union Water Co. and San Antonio Water Co., because these agencies have excess supply of water in each year above what is necessary to meet their urban water demands. In practice, these agencies may hold water in local storage to arbitrage expected differences in transfer prices between wet and dry years, but such arbitrage

¹⁵ Because desalter water is not a unique source of supply, an accounting adjustment is made later to back out desalter water supplies from Basin supply by creating an off-setting replenishment obligation for each unit of desalter water used for urban supply.

opportunities are suppressed in the model, because variations in annual water availability are smoothed in the model to a basis of a representative hydrologic year.

In each year, a storage account adjustment is made for each agency by adding the incremental growth in local storage from the previous year's value to the excess demand for water. The amount of water held in local storage adjusts upward each year to meet the growth in excess demand, and this need for added storage to smooth increasing volumes of water between wet and dry years is deducted from contemporaneous water supply.

After storage account adjustments are made in each year, individual excess demand and individual excess supply conditions clear each year in the transfer market. Excess supply to be cleared in the transfer market in each year is comprised of sales by Fontana Union Water Co. and San Antonio Water Co., and, to a lesser extent, by Jurupa Community Services District beginning in 2021. Jurupa CSD becomes a net supplier of water in the transfer market due to the relatively large purchases of desalter water for urban supply in the data provided in IEUA's UWMP (2005). Water transfers are allocated from these suppliers to individual agencies with positive demand for transfer water in proportion to each agency's share of excess demand relative to total excess demand for water in the Basin. The total amount of water transacted in the Basin rises from 12,677 AF to 20,401 AF over the 2007-2030 period, and the largest buyers of transfer water in each period are Cucamonga Valley Water District and the City of Ontario.

4.3. *Water Imports*

Water is imported into the Basin to meet the sum of import demand for direct use and desalter replenishment requirements. Imported water is taken as replenishment water in each period up to the limit on recharge capacity in the Basin (i.e., the second step of the water supply relationship in Figure 1), and the residual quantity of imported water that cannot be met with replenishment water is taken as Tier 2 water imports. Under baseline conditions, the recharge capacity of the Basin is taken to be 29,000 AF per year, which represents the available spreading facilities discussed as pre-existing facilities in program element 2 of the OBMP.¹⁶ Given the smoothing of production into the basis of representative hydrologic years, this implies that baseline conditions in the Basin can accommodate 20,300 AF of recharge per year ($0.7 \times 29,000$ AF). This recharge capacity defines the limit to which imported water in the Basin can be taken at the lower MWD replenishment rate.¹⁷

Imported replenishment water in the Basin must first be taken to meet the replenishment obligation of the desalters. The desalter replenishment obligation under baseline conditions is desalter production for urban supply less a 2 percent storage loss component deducted from individual local storage accounts.¹⁸ Under baseline conditions, the desalter replenishment obligation (net of the storage loss allocation) begins at 13,556 AF in 2007 and grows to 40,169 AF per year in 2030. In the year 2010, the desalter replenishment obligation rises to 22,604 AF,

¹⁶ Implementation Plan: Optimal Basin Management Plan for the Chino Basin, p13:
http://www.cbwm.org/docs/legaldocs/Implementation_Plan.pdf.

¹⁷ The increase in Basin recharge capacity, as described in the Recharge Master Plan (WEI, Black and Veatch 2001: <http://www.cbwm.org/docs/rechdocs/rechmastplanphase2rep/chapters/pdf/>) is a major program element considered in the Peace Agreement, both in terms of benefit and cost.

¹⁸ Personal correspondence with Watermaster staff.

an amount in excess of the 20,300 AF recharge capacity of the Basin in the baseline scenario, and the replenishment obligation remains above the recharge capacity for the remainder of the time horizon. Over the period 2007-2009, the amount of recharge capacity in excess of the desalter replenishment requirement (e.g., 20,300 – 13,556 = 6,744 AF in 2007) is allocated to individual agencies in proportion to each agency's share of imported water demand relative to total imported water demand in the Basin. Over the period 2010-2030, the desalter replenishment obligation exceeds the recharge capacity of the Basin, and the remaining desalter replenishment obligation above 20,300 AF is met through in lieu production by individual agencies in the Basin. In the baseline scenario, the desalter replenishment obligation, both the portion met with replenishment water purchases and the portion taken as in lieu production, is met by individual agencies according to each agency's pro rata share of safe operating yield.¹⁹

Aggregate supply and demand are cleared each year on the third step of supply by reconciling effective Basin water supply (Basin supply plus Basin recharge) with import demand through purchases of Tier 2 water from MWD. Tier 2 MWD water purchases are allocated to individual agencies based on the share of each agency's imported water demand relative to total imported water demand in the Basin. Under baseline conditions, the total purchases of Tier 2 water among agencies in the Basin rises from 97,766 AF in 2007 to 200,097 AF in 2030, with the combined purchase share of Cucamonga Valley Water District and the City of Ontario—the two largest purchasers of imported water—representing between 62 percent and 73 percent of total Tier 2 water purchases in each year.

4.4. *Water Procurement Costs*

The total cost of water procurement to individual agencies is the sum of five components: (i) Tier 2 water purchases; (ii) transfer water purchases; (iii) desalter water purchases for urban supply; (iv) desalter replenishment costs; and (v) Watermaster general assessments on the appropriative pool. Water procurement costs associated with Basin production also exist, but these costs exist in all scenarios and consequently net out of the comparison of the various program net benefits.

For the purpose of allocating Watermaster assessments, Tier 2 water purchases are assumed to occur outside the framework of the cooperative organization. That is, the actual production level of each agency, as recorded by the Watermaster each fiscal year for the basis of assessments, does not include any production demands that an individual agency meets through Tier 2 purchases acquired from MWD. For this reason, a separate accounting calculation is made for actual production to recover the allocation of Watermaster assessment costs to individual agencies in each period. Actual production for each agency is residual demand for Basin water less Tier 2 water purchases less storage losses and adjustments to the storage account balance.

Watermaster replenishment assessments are levied to recover desalter replenishment costs (for units up to the 20,300 AF recharge capacity of the Basin) through replenishment water purchased from MWD each year. These costs are allocated to individual agencies according to each agency's pro rata share of safe operating yield.

Watermaster general assessments are levied under baseline conditions to cover the cost of administrative costs, exclusive of the OBMP costs and the special project costs that pertain to

¹⁹ Personal correspondence with Watermaster staff (August 29, 2007).

Peace I and Peace II. In 2007, these costs account for \$816 thousand of the projected \$7.87 million costs to be levied for general assessments under prevailing Peace conditions. Under baseline conditions, moreover, only the appropriative pool share of general assessment costs is paid by the appropriative pool, which amounts to \$624 thousand of the \$816 thousand administrative costs in 2007, with the remaining share of costs paid by the overlying agricultural and non-agricultural pools. The costs attributed to the appropriative pool are allocated across to individual agencies according to each agency's share of actual production relative to total Basin production.

4.5. *Summary of Baseline Outcomes*

Table 1 provides a breakdown of the projected outcome for the eight largest producers under baseline conditions in the year 2015. Total urban water demand for these producers is 293,214 AF in 2015. Total residual demand, which is the difference between urban water demand and the Basin supply available to each agency, is 273,430 AF. Available Basin water supply, the sum of the shares of safe operating yield, net agricultural transfer (inclusive of land-use conversions), and desalter water for urban supply, is 123,554 AF in the year 2015. The total water transfers of 13,089 AF reflect sales by Fontana Union Water Company and San Antonio Water Company to the remaining producers encompassed by the study. The net storage acquisition of 1,022 AF reflects the change in the local storage balance between the year 2014 (106,032 AF) and the year 2015 (107,054 AF). This increment in the water held in local storage, which must be met by in lieu production by agencies, adds to residual demand for water in the Basin, and the difference between this term and the sum of available Basin water supply and water purchases in the transfer market results in a combined import demand among producers of 137,809 AF.

Total desalter production in the year 2015 is 34,122 AF, which exceeds the available recharge capacity of the Basin, so that imported water demand is met entirely with Tier 2 water purchases.²⁰ Actual production among these eight agencies (123,250 AF) is the difference between residual demand for Basin water, Tier 2 purchases from MWD, in lieu recharge taken to meet the desalter replenishment obligation, storage losses (2% of local storage = 2,141 AF), and the net storage acquisition. Watermaster administrative assessments are in 2015 are \$1.2 million, of which \$957 thousand is paid by agencies in the appropriative pool.

²⁰ An additional 3,905 AF of desalter water production is projected for the Santa Ana River Water Company and City of Norco, who are not considered in this study.

Table 1: Year 2015 Outcome Under the Baseline Scenario

Component	Appropriator										Total
	Chino	Chino Hills	Ontario	Upland	Cucamonga	Monte Vista	Jurupa	Pomona			
Urban Water Demand	26,200	24,700	66,600	22,500	72,500	14,100	36,350	30,264			293,214
Available Surface Water	0	0	0	5,200	3,000	0	500	0			8,700
Available Other Groundwater	0	0	0	3,800	5,400	0	0	1,884			11,084
<i>Residual Demand</i>	26,200	24,700	66,600	13,500	64,100	14,100	35,850	28,380			273,430
Safe Operating Yield	4,034	2,111	11,374	2,852	3,619	4,824	2,061	11,216			42,092
Net Ag Transfer	8,916	2,398	8,660	1,875	2,980	3,228	12,840	7,371			48,268
Desalter Water Supply	5,000	4,200	5,000	0	0	0	19,922	0			34,122
<i>Available Supply</i>	17,950	8,709	25,033	4,727	6,600	8,052	33,896	18,587			123,554
Net Storage	487	280	717	-122	1,039	108	-1,653	166			1,022
Transfers	758	1,411	3,668	750	5,078	534	26	864			13,089
<i>Import Demand</i>	7,979	14,860	38,616	7,901	53,461	5,622	275	9,095			137,809
Local Storage	5,893	11,422	29,690	6,266	41,072	4,320	1,396	6,995			107,054
Tier 2 Purchases	7,979	14,860	38,616	7,901	53,461	5,622	275	9,095			137,809
Actual Production	17,512	9,328	25,067	4,589	9,889	7,210	33,343	16,312			123,250
Watermaster Assessments	\$97	\$52	\$139	\$26	\$55	\$40	\$185	\$91			\$685

Notes:

1. All figures in acre-feet except Watermaster assessments.
2. Watermaster assessments are expressed in real terms (1,000s of 2007\$.)

5. Peace I Scenario

The Peace Agreement introduced various program elements in the Basin that were not present under baseline conditions. The main components of the Peace Agreement considered here that altered net benefits in the Basin are: (i) an increase in Basin recharge capacity from 29,000 AF to 134,000 AF; (ii) a change in the rules for land use conversion; (iii) transfer of agricultural pool assessments to the appropriative pool; (iv) the introduction of a storage and recovery program; (v) an increase in stormwater recovery from 5,000 AF per year to 12,000 AF per year; and (v) the Pomona credit. This section describes the changes that occurred through these program elements to alter net benefits received by individual agencies in relation to the earlier discussion of the baseline outcome detailed above.

5.1. Basin Supply

Under the set of Basin programs encompassed by the Peace Agreement, three factors led to changes in available Basin supply: (i) increased stormwater capture; (ii) a change in the water allocation resulting from land use conversions (including “early transfer”); and (iii) the introduction of the Dry Year Yield program for storage and recovery through MWD. The increased stormwater capture is represented by an annual increase in Basin supply by 12,000 AF of “new yield” in exchange for tying up 12,000 AF of recharge capacity.

The net agricultural transfer to each agency under Peace conditions increased the return to each converter from 1.3 AF of Basin water for each acre converted to 2.0 AF of Basin water for each acre converted. An early transfer program of 32,800 AF per year to the appropriative pool was also introduced, which ultimately led to an over-allocation of agricultural pool water to the appropriative pool.²¹ The net agricultural pool allocation to individual agencies replicates the Watermaster calculation in each year, given the projected pattern of land use conversion calculated through 2030. The agricultural pool transfer provides a credit of 2.0 AF per acre for all land-use conversions taking place after the signing of the Peace Agreement and credits earlier conversions at the 1.3 AF per acre rate and the early transfer to members of the appropriative pool is based on each agency’s share of safe operating yield. Because the sum of these two components and the projected agricultural pool production level after land-use conversions have been made exceeds the 82,800 AF of available agricultural pool water in every year, each agency is charged a replenishment obligation for the amount of over-allocated agricultural pool water in proportion to each agency’s share of safe operating yield. This is equivalent to deducting the over-allocation of agricultural pool water from the 32,800 AF early transfer after land use conversions take place and dividing this residual amount of water (e.g., $32,800 - 4,270 = 28,530$ AF in Fiscal Year 2006-2007) pro rata among members of the appropriative pool.

In total, the net agricultural pool transfer to the appropriative pool is the same under baseline and Peace rules (49,831 AF in 2007 and 76,909 AF in 2030). Among appropriators considered in the

²¹ Watermaster, Fiscal Year 2006-2007 Final Assessment Package, Land Use Conversion Summary (p10): <http://www.cbwm.org/docs/finandocs/Assessment%20Package%20FY%202006-2007%20Final.pdf>. In the Fiscal Year 2006-2007 Final Assessment Package provided by the Watermaster, the amount of over-allocation was 4,270 AF (3,893 AF of which is incurred as a replenishment obligation to agencies encompassed by the study), and the model projects this total to increase through the process of future land use conversions to 5,127 AF in 2030 (4,674 AF of which is incurred as a replenishment obligation to agencies encompassed by the study).

study, which encompass 91.2 percent of safe operating yield but 100 percent of land use conversions, the change in land-use conversion rules under the Peace Agreement provides a slightly larger net agricultural transfer among agencies considered than under baseline conditions (e.g., 71,673 AF after all conversions take place compared to 71,377 AF under baseline rules). The outcome for individual agencies under the Peace rules for net agricultural pool transfer relative to the baseline scenario is discussed later.

The DYY storage and recovery program alters the allocation of Basin water supply by allowing individual agencies to purchase water from MWD in wet years and store it for use in subsequent dry years. The effective rate paid to MWD for DYY water inputs, net of subsidies paid to the participating agencies, is approximately equal to the current replenishment rate,²² and the annual MWD replenishment rate is used in each period to price DYY water inputs to individual producers. The present analysis considers the value of the currently-approved 150,000 AF storage and recovery program.²³ Although further expansion beyond this level has been discussed, the study does not consider the potential expansion of this program to 500,000 AF nor the possibility for sales of this water to take place outside the Basin. The increase in the DYY program from 100,000 AF to 150,000 AF is assumed to take place immediately in the year 2007. To adjust the implied pattern of puts and takes of a 150,000 AF storage and recovery program to the smooth production horizon of a representative hydrologic year, we assume that water production in the DYY program is limited to 50,000 AF in each dry year. Given a 0.3 probability of a dry year, this implies an average of 15,000 AF of water is made available in the Basin each year through the DYY program. The distribution of the DYY program storage across individual agencies is given by the table of DYY shift obligations provided by IEUA for the current DYY-100 program, and these values are scaled upwards proportionately to 150,000 AF.²⁴ It is assumed that there is no storage loss for units of water placed in storage.²⁵ In effect, this implies that participating agencies in the DYY program purchase 15,000 AF of water in a representative hydrologic year at MWD replenishment rates and convert this amount into 15,000 AF of reliable Basin supply through the use of existing recharge facilities.

Among the ten largest agencies considered in the study, Basin supply under Peace conditions rises from 137,416 AF in 2007 to 185,692 AF in 2030. This reflects an approximate increase of 26,000 AF per year relative to baseline conditions (under baseline conditions, Basin supply is 111,486 AF in 2007 and 159,496 AF in 2030), and the source of the additional Basin supply under the Peace Agreement amounts to the roughly 11,000 AF increased stormwater yield (the share of the 12,000 AF “new yield” acquired by the ten largest agencies) plus the 15,000 AF recovery of DYY storage water.

5.2. *Import Demand*

Import demand for each agency in the Basin is calculated in the same manner as the baseline case. As noted above, this involves deducting Basin supply from the Basin water demand facing each agency to get excess demand, correcting excess demand to account for the dynamic adjustments that occur in local storage accounts, and then reconciling excess supply and excess

²² Personal communication with IEUA staff.

²³ Personal communication with Watermaster staff.

²⁴ IEUA Urban Water Management Plan (2005), Table 6-5.

²⁵ Personal correspondence with Watermaster staff.

demand among individual agencies in the Basin through water transactions in the transfer market.

Two major changes occur under Peace in the resulting evaluation of import demand. First, import demand is now lower each year than under baseline conditions by the approximate 26,000 AF of additional Basin supply that is available each year. This ultimately defrays Tier 2 water purchases as the supply-side of the model is built upwards to the third step of supply. Second, the amount of water held in the local storage account of individual agencies decreases, for instance by 17,769 AF in 2007 (83,706 AF in the baseline versus 65,937 AF under Peace.) Much of this difference in local storage balances is the result of participation in the DYY program crowding-out storage activities that would otherwise take place in local storage accounts.

5.3. *Water Imports*

As in the baseline case, annual water imports must flow into the Basin to meet the sum of import demand and replenishment requirements, where the Basin replenishment requirements now include 12,000 AF of stormwater recharge and 15,000 AF of replenishment water purchases for the DYY program in addition to the desalter replenishment obligation. Imported replenishment water represents the second step of the water supply relationship in Figure 2, and this step is elongated under Peace by the increase in Basin recharge capacity to 134,000 AF. Given the smoothing of production, this implies that Basin recharge capacity is 93,800 AF per year ($0.7 \times 134,000$ AF) in a representative hydrologic year. Of this amount, 27,000 AF per year of recharge capacity is now used to accommodate the combined requirements of stormwater recharge and DYY program recharge, and a substantial share of the remaining recharge capacity is used to fulfill the replenishment obligation of the desalters. The desalter replenishment obligation in each year is defined in the same manner as in the baseline scenario to be desalter production less storage losses of 2 percent deducted from the local storage accounts of producers in the Basin.²⁶

Under Peace conditions the need for imported Tier 2 water is smaller than under the baseline. Three main effects drive this change: (i) the recharge capacity of the Basin can now accommodate the entire desalter replenishment obligation each year without requiring agencies to engage in in-lieu recharge; (ii) the amount of annual Basin over-production that can be sustained in the Basin is larger by the amount of the increase in recharge capacity; and (iii) the reduction in local storage reduces the allocation of Basin storage losses to the desalter. The first two components produce direct value to agencies on the extensive margin of supply by defraying Tier 2 purchases (as depicted in Figure 2). The third component, the change in the designation of storage losses against the replenishment obligation of the desalters, creates no economic benefit to the Basin and is purely redistributive in its effects, because the change in the designation of storage losses does not alter the physical recharge capacity of the Basin. An individual agency that incurs a one-unit storage loss gives up a unit of water from local storage, and the value of this unit of water is distributed back to other agencies in the form of a credit against the desalter replenishment obligation.

²⁶ Peace Agreement, Article 5.2b(xii).

Under Peace conditions, the amount of replenishment water that is purchased from MWD in each representative hydrologic year is 81,800 AF (93,800 AF of recharge capacity less the 12,000 AF stormwater recharge). This 81,800 AF of replenishment water, which is purchased at MWD replenishment rates, is allocated first to meet the 15,000 AF per year replenishment water requirement for DYY participants and to meet the replenishment obligation of the desalter, with the remaining recharge capacity in each year allocated among individual agencies according to each agency's imported water demand relative to total imported water demand in the Basin.

As in the baseline scenario, imported water demand in excess of the recharge capacity of the Basin is cleared each year in the Peace I scenario on the third step of supply through purchases of Tier 2 water from MWD. Tier 2 MWD water purchases, as in the baseline case, are allocated to individual agencies based on the share of each agency's imported water demand relative to total imported water demand in the Basin.

Under peace conditions, the total purchases of Tier 2 water among agencies in the Basin rise from 25,692 AF in 2007 to 127,710 AF in 2030, a decline of approximately 72,000 AF per year relative to the baseline scenario. This decline in Tier 2 water purchases is approximately equal to the increase in recharge capacity under the Peace Agreement and represents a replacement of Tier 2 water purchases with replenishment water purchases at the lower MWD rate in each year. Cucamonga Valley Water District and the City of Ontario, the two largest buyers of imported water in both the baseline and Peace I, receive the largest share of the net benefit of this offset in Tier 2 water, because of their disproportionate representation on the extensive margin of supply.

5.4. *Water Procurement Costs*

The total cost of water procurement to individual agencies is the sum of eight components: (i) Tier 2 water purchases; (ii) transfer water purchases; (iii) desalter water purchases for urban supply; (iv) replenishment water purchases; (v) desalter replenishment costs; (vi) Watermaster general assessments on the appropriative pool; (vii) Watermaster general assessments on the agricultural pool paid by the appropriative pool; and (viii) the Pomona credit. The first three components of water procurement cost are calculated in the same manner as in the baseline case, with the exception that the total quantities of Tier 2 purchases and transactions in the transfer market differ.²⁷

Desalter replenishment costs are recovered through Watermaster replenishment assessments in an amount equal to the cost of replenishment water purchased from MWD to meet the replenishment obligation of the desalters each year. As in the baseline case, these costs are allocated to individual agencies according to each agencies pro rata share of safe operating yield.²⁸

Replenishment water purchases allocated to individual agencies related to the DYY program are levied back on individual agencies in proportion to their storage claims in the program, as detailed above. Any remaining recharge capacity in excess of the amount needed to fulfill DYY

²⁷ Changes in the pattern of Tier 2 water purchases and water transfers that occur across scenarios and over time within each scenario can have equilibrium effects on market prices; however, price changes in these markets are not considered in the scope of the present study.

²⁸ Personal correspondence with Watermaster staff (August 29, 2007).

contributions and the replenishment obligation of the desalters and DYY is allocated in each year to individual agencies according to each agency's imported water demand relative to total imported water demand in the Basin.

The total costs recovered through Watermaster general assessments for the program elements in the Peace I scenario include OBMP assessments, special project assessments, and recharge debt payments. The additional OBMP and special project assessments in the Peace I scenario amount to a total \$7.05 million out of the \$7.87 million (90 percent) in total Watermaster expenses in 2007, and these additional costs of implementing the program elements in the Peace I scenario rise to \$13.8 million in 2030. As in the baseline scenario, the allocation of all appropriative pool general assessments to individual agencies is made based on each agency's share of safe operating yield in the Basin.

The Peace Agreement negotiated the transfer of all general assessment fees from the agricultural pool to the appropriative pool. The total assessment fees paid by the agricultural pool, which are now assumed by members of the appropriative pool, amount to \$1.1 million in 2007 and decline to \$460 thousand in 2030 due to land use conversions that result in a decline in agricultural water use as a share of total Basin safe yield. In total, the general assessments paid by the appropriative pool inclusive of the transfer of agricultural pool assessments increase ten-fold from \$624 thousand in the baseline scenario to \$6.3 million under Peace conditions in 2007 and the assessment costs in the Peace I scenario remain at least 7 times as large as the costs attributable to baseline conditions in the Basin throughout the production horizon. The agricultural pool share of Watermaster assessment fees is paid by individual agencies in the appropriative pool according to the agency's share of the net agricultural transfer in each year.²⁹

Finally, the Pomona credit of \$66,667 per year is paid every year by each agency in proportion to the agency's share of safe operating yield.

5.5. Comparison of Baseline and Peace Agreement Outcomes

Under the terms of the Peace Agreement, the present value of the net benefit of the program elements for the ten agencies encompassed by the study is \$182 million. The main component associated with this increased net benefit is the displacement of Tier 2 water with new Basin yield and replenishment water. Under baseline conditions, the present value of total Tier 2 water purchases over the 2007-2030 period is \$1.53 billion, whereas, under Peace conditions, the present value of Tier 2 water purchase over the period decreases to \$931 million. This decrease in Tier 2 water under Peace conditions was replaced with replenishment water at the lower MWD rate, and the combined cost of imported water in the Peace I scenario decreased by \$310 million in present value terms (from \$2.06 billion under baseline conditions to \$1.75 billion under Peace conditions). This benefit was acquired at the expense of an increase in the present value of assessment costs from \$16.7 million to \$146 million.

²⁹ For details on this calculation and the distribution of general appropriative pool assessments based on pro rata share of safe operating yield, see Watermaster, Fiscal Year 2006-2007 Final Assessment Package, Pool 3 Assessments Summary (p5): <http://www.cbwm.org/docs/financdocs/Assessment%20Package%20FY%202006-2007%20Final.pdf>.

Table 2 provides a breakdown of the projected outcomes under Peace conditions in the year 2015 for the eight largest producers in the study. A comparison of these outcomes with those that emerge under baseline conditions in Table 1 provides a useful profile of the essential differences in Basin performance under each scenario. Residual demand for Basin water is identical in each scenario. This quantity corresponds to the value Q^* in Figure 1. The safe operating yield of the agencies considered is the same in both cases, as is desalter water for urban supply. The net agricultural pool allocation to the appropriative pool is slightly higher under Peace (48,848 AF relative to 48,268 AF under baseline rules). This is because the agencies considered in the study represent 91 percent of Basin production and nearly 100 percent of the land use conversions, which are credited with a larger water allocation under Peace. Available Basin supply in the Peace I scenario is accordingly higher by the sum of this component and the 15,000 AF of supply available to agencies through the DYY program, which leads to a commensurate reduction in imported water demand.

The level of local storage is lower under Peace by approximately the 15,000 AF of storage that is now accounted for in the DYY program. Replenishment purchases are now possible due to the increase in Basin recharge capacity, and the agencies combine to purchase 31,533 AF of replenishment water in the year 2015.

In total, Tier 2 water use falls from 137,809 AF under baseline conditions (inclusive of the purchases required by in lieu recharge) to 82,658 AF under Peace conditions. This decrease in Tier 2 water imports reflects the displacement of Tier 2 water purchases through a combination of new Basin yield and increased replenishment water purchases made possible by the expansion of Basin recharge capacity.

Actual production among these eight agencies is higher in the Peace I scenario by 36,953 AF in the year 2015 (160,203 AF vs. 123,250 AF in the baseline scenario). This increment in Basin production represents the effective increase in Basin recharge capacity available to these producers after accounting for the combined 27,000 AF of recharge capacity utilized by stormwater and DYY program recharge.

Table 2: Year 2015 Outcome Under Peace I Scenario

Component	Appropriator										Total
	Chino	Chino Hills	Ontario	Upland	Cucamonga	Monte Vista	Jurupa	Pomona			
Urban Water Demand	26,200	24,700	66,600	22,500	72,500	14,100	36,350	30,264			293,214
Available Surface Water	0	0	0	5,200	3,000	0	500	0			8,700
Available Other Groundwater	0	0	0	3,800	5,400	0	0	1,884			11,084
<i>Residual Demand</i>	26,200	24,700	66,600	13,500	64,100	14,100	35,850	28,380			273,430
Safe Operating Yield	4,034	2,111	11,374	2,852	3,619	4,824	2,061	11,216			42,092
New Yield	883	462	2,489	624	792	2,455	451	2,489			10,645
Net Ag Transfer	10,558	2,173	7,210	1,467	2,460	2,553	16,658	5,769			48,848
Desalter Water Supply	5,000	4,200	5,000	0	0	0	19,922	0			34,122
Storage & Recovery	527	658	3,671	1,364	5,160	1,801	909	909			15,000
<i>Available Supply</i>	21,001	9,604	29,744	6,308	12,032	10,234	39,074	20,349			148,346
Net Storage	428	288	771	-107	1,058	133	0	225			2,797
Transfers	726	1,985	4,854	914	6,854	516	-3,224	1,065			13,690
<i>Import Demand</i>	4,901	13,399	32,773	6,171	46,272	3,483	0	7,192			114,191
Local Storage	3,713	10,783	26,326	5,137	37,191	2,761	0	5,737			91,649
Replenishment Purchases	1,353	3,700	9,050	1,704	12,778	962	0	1,986			31,533
Tier 2 Purchases	3,548	9,699	23,723	4,467	33,494	2,521	0	5,206			82,658
Actual Production	21,653	11,373	34,071	7,119	18,142	10,695	35,850	21,299			160,203
Watermaster Assessments	\$849	\$401	\$1,258	\$267	\$629	\$411	\$1,353	\$795			\$5,963

Figure 1 compares the benefit received by each agency from reduced water procurement costs to the increase in assessment cost that result from the implementation of the program elements in the Peace I scenario. The assessment costs associated with implementing the program elements considered in the Peace I scenario are represented by an overall increase from \$16.7 million to \$146 million in present value terms. The program benefits in present value terms in the Peace II scenario are reflected in the decrease in water procurement costs from \$2.1 billion under baseline conditions to \$1.8 billion in the Peace I scenario.

In terms of the total benefit, two agencies, City of Ontario and Cucamonga Valley Water District, receive the largest share of the benefits resulting from the Peace I program elements, while the assessment costs are distributed more equally among producers. In total, the City of Ontario and Cucamonga Valley Water District together receive 46 percent of the benefit of decreased water procurement costs and incur 32 percent of the increase in assessment costs. An important reason these agencies receive a large share of the net benefit from the agreements is due to a scale effect in the annual level of residual demand for Basin water, for instance in 2015 these two agencies combined account for 48 percent of residual demand for Basin water (130,700 AF out of 273,430 AF).

Baseline vs. Peace I Benefit-Cost Comparison

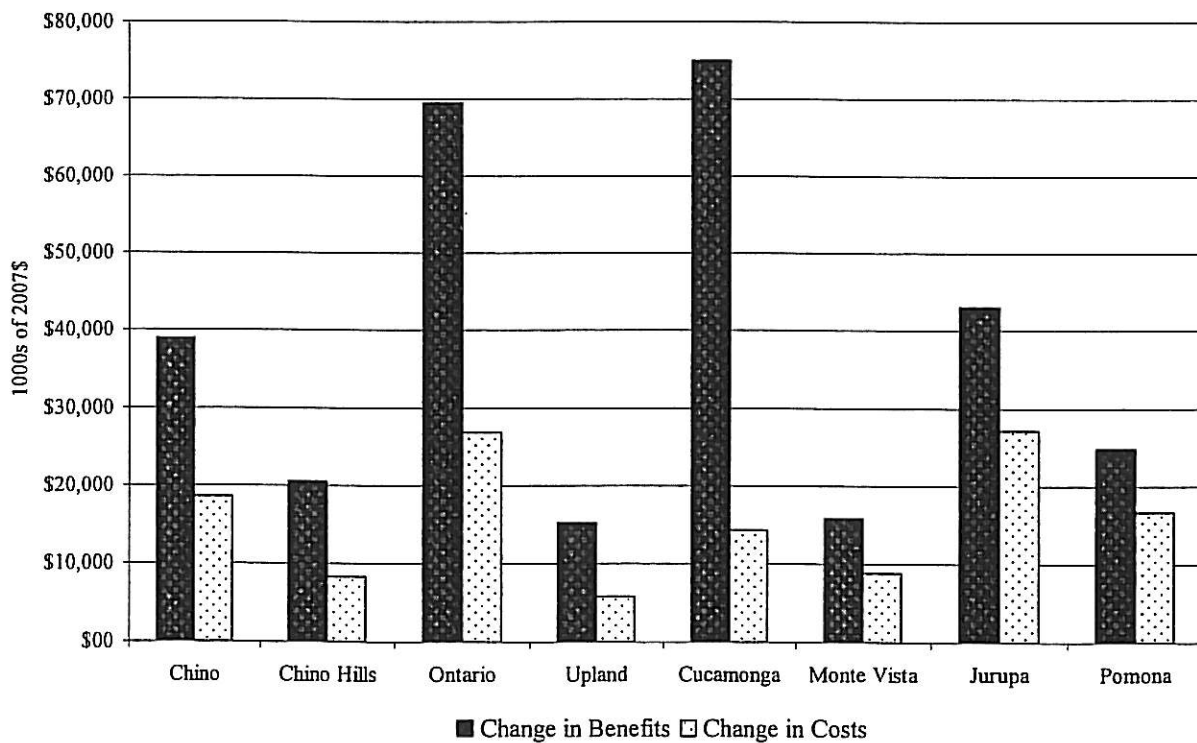


Figure 1

Distribution of Net Benefit, Peace I vs. Baseline (\$/per AF)

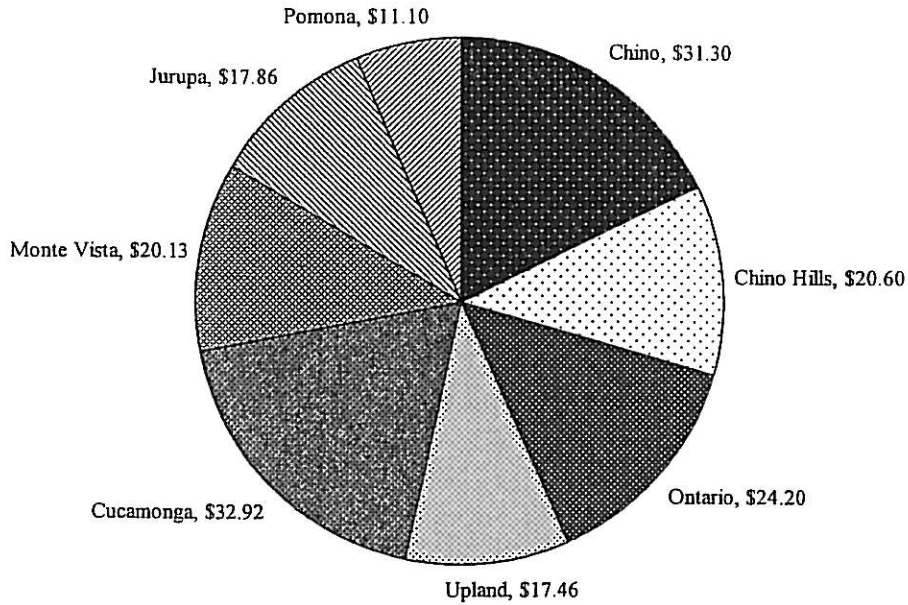


Figure 2

Figure 2 shows the distribution of net benefits per acre-foot of residual water demand across individual agencies in the Basin resulting from the program elements in the Peace I scenario. Fontana Union Water Company and San Antonio Water Company are not included in these calculations, because the available surface water and other groundwater supplies for these agencies exceed their total demand. Controlling for agency scale on the basis of residual demand for Basin water among the remaining producers, the net benefit resulting from the combined program elements in the Peace II Agreement is grouped between \$11.10/AF for the City of Pomona to \$32.92/AF for Cucamonga Valley Water District. Overall, the present value of the net benefit to all parties over the 24 year horizon resulting from a move from baseline conditions to Peace conditions is \$182 million and the total residual demand for water over this period is 6.9 million AF, which implies an average return of \$19.84 per acre-foot to the agencies encompassed by the study.

6. Peace II Scenario

The Peace II scenario introduces several major program elements in the Basin that build on the existing conditions under Peace. The main components of the Peace II scenario that alter market values in the Basin relative to the Peace I scenario are: (i) hydraulic control, which provides 400,000 AF of cumulative forgiveness and SAR inflow of 9,900 AF per year in the Basin; (ii)

the production of recycled water; (iii) a change in the allocation of the replenishment obligation associated with over-production in the agricultural pool transfer; (iv) a transfer of overlying non-agricultural pool water to the appropriative pool; and (v) a transfer of the Pomona credit from Basin agency to Three Valleys. This section describes the changes that occurred through these program elements to alter net benefits received by individual agencies in relation to the earlier discussion of the existing program elements in Peace Agreement.

6.1. Basin Supply

Under the set of programs encompassed by the Peace II Agreement, five factors led to changes in available Basin supply relative to prevailing conditions under Peace: (i) a change in the water allocation resulting from land use conversions; (ii) the influx of recycled water (for direct use and groundwater recharge), (iii) the transfer of 49,178 AF of overlying non-agricultural water to the appropriative pool; (iv) 9,900 AF per year of inflow from the Santa Ana River (SAR), eventually rising to 12,500 AF per year; and (v) 400,000 AF of cumulative forgiveness for Basin over-production. Unlike the program elements implemented in the Peace I scenario, all elements of the Peace II scenario (with the exception of the transfer of the Pomona credit to Three Valleys) fundamentally alter supply conditions on the lowest step of the supply relationship by contributing new sources of Basin yield.

The net agricultural transfer to each agency in the Peace II scenario maintains the return to each converter of 2.0 AF of Basin water for each acre converted and the early transfer of 32,800 AF per year to the appropriative pool, but alters the allocation rule for the replenishment obligation for the amount of over-allocated agricultural pool water. Under Peace II rules, the replenishment obligation for over-allocated agricultural pool water is made on the basis of a weighted average of the share of safe operating yield and share of cumulative land-use conversions for each agency (the “proportion of water available for reallocation (PAR)”) rather than in proportion to each agency’s share of safe operating yield in the Peace I scenario. By placing greater weight on land use conversions, a greater share of the replenishment obligation for over-allocated agricultural pool water is placed on land-use converters. For instance, the combined share of safe operating yield of the two largest land-use converters in the Basin—City of Chino and Jurupa Community Services District—is approximately 10 percent, whereas the combined PAR share of these agencies in Fiscal Year 2006-2007 is 38 percent.³⁰

The use of significant quantities of recycled water is made possible in the Basin by the attainment of hydraulic control.³¹ Recycled water projections for direct use in the Basin increase from 11,924 AF in 2007 to 60,450 AF in 2030 and recycled water use for groundwater recharge rises over the period from 3,443 AF to 35,000 AF.^{32, 33} The recycled water price charged by

³⁰ Watermaster, Fiscal Year 2006-2007 Final Assessment Package, Land Use Conversion Summary (p10): <http://www.cbwm.org/docs/financdocs/Assessment%20Package%20FY%202006-2007%20Final.pdf>.

³¹ Personal correspondence with IEUA staff.

³² Projections on recycled water deliveries for direct use and on total recycled water for groundwater recharge is provided for IEUA members in IEUA Urban Water Management Plan (2005), Table 3-13. The projections on recycled water deliveries for direct use to non-IEUA members as well as the distribution of recycled water deliveries for groundwater recharge across individual agencies are based on personal communication with IEUA staff (July 11, 2007).

³³ In no case does the amount of recycled water used for recharge exceed the DHS-approved dilution rates.

IEUA for recycled water deliveries in each period is viewed as sufficient to recover the fully amortized capital and operating costs of their recycled water operations.³⁴

The amount of transfer of overlying non-agricultural water to the appropriate pool is taken to be 49,178 AF, which is the ending total balance in the pool 2 local storage account in the Watermaster final assessment package for fiscal year 2006-2007.³⁵ This amount of water is allocated proportionally in four equal installments over the four-year period 2007-2010 to agencies in the appropriate pool according to their share of safe operating yield, and the price in each period is set at 92 percent of the prevailing MWD replenishment rate.³⁶

Finally, in meeting the goal of hydraulic control in the Peace II scenario, two sources of water are created: (i) the Santa Ana River (SAR) inflow is calculated to generate 9,900 AF of new Basin yield each year, eventually rising to 12,500 AF per year; and (ii) 400,000 AF of cumulative overdraft is necessary in the Basin over the period 2007-2030.³⁷ Both the 9,900 AF per year of SAR inflow and the allocation of the 400,000 AF of cumulative forgiveness are allocated to meet the replenishment obligation of the desalters. The dynamic path of forgiveness for the desalter obligation follows the most-rapid depletion path defined by the aggregate study, which assumes that the Basin overdraft occurs to whatever extent is necessary to meet the replenishment obligation of the desalters (net of storage losses and SAR inflow). Under the most-rapid depletion path, hydraulic control is achieved on the cumulative overdraft of 400,000 AF from the Basin in the year 2024, which raises the SAR inflow from 9,900 AF to 12,500 AF over the remaining period 2025-2030.

6.2. *Import Demand*

The demand for imported water for each agency in the Basin is calculated in the same manner as in the Peace scenario. In terms of the resulting values, the influx of new Basin water supply in response to recycled water use alter the resulting evaluation of import demand relative to the prevailing conditions under Peace in two significant ways. First, import demand is now lower each year relative to the outcome under Peace conditions by the amount of new Basin supply. This water ultimately defrays Tier 2 water purchases as the supply side of the model is built upwards and aggregated across each step towards the extensive margin of supply. As these supplies are developed, available supply in the Basin rises to 266,134 AF by the year 2030, an increase of 80,442 AF above the Peace I scenario and 106,678 AF above the baseline conditions.

Second, the amount of water held in local storage by individual agencies decreases to account for the effect of these new, reliable water sources in the Basin and the corresponding reduction in the need to smooth out the cyclical components of water supplies with puts and takes. As recycled water supplies are developed in the Basin, the need for local storage decreases; for instance, the total amount of water held in local storage in the Basin in 2030 decreases from 141,565 AF under baseline conditions, to 129,259 AF in the Peace I scenario, to 80,500 AF in the Peace II scenario.

³⁴ IEUA, Operating and Capital Program Budget, Fiscal Year 2007/08, Volume 1 (July 2007), p231.

³⁵ Watermaster, Fiscal Year 2006-2007 Final Assessment Package, Pool 2 Water/Storage Transactions (p12): <http://www.cbwm.org/docs/financdocs/Assessment%20Package%20FY%202006-2007%20Final.pdf>.

³⁶ Non-Binding Term Sheet, item IX.C.

³⁷ Personal correspondence with staff at Wildermuth Environmental.

The quantity of water transactions in the water transfer market rises significantly as the number of agencies selling water increases with the influx of recycled water supplies. This changes the distribution of net benefits, both directly by the allocation of recycled water supplies based on proximity of users (rather than according to the share of safe operating yield) and indirectly by reducing the number of agencies that procure water on the extensive margin of supply.

6.3. *Water Imports*

An important outcome in the Peace II scenario as a result of hydraulic control is the decrease in Tier 2 water purchases relative to both the baseline and Peace I scenarios. Unlike the case of the Peace I scenario, in which the decline in Tier 2 purchases was largely offset by an increase in assessment costs to support the increase in recharge capacity, the avoided Tier 2 water purchases in the Peace II scenario are associated either with negligible costs (SAR inflow and forgiveness for Basin over-draft) or with the relatively low cost associated with recycled water, which is valued at IEUA recycled water rates. These differences are characterized in the discussion below.

In addition, the level of water imports increases slightly in the Peace II scenario, because of a reduction in the storage loss component allocated to meet the desalter replenishment obligation. In the Peace II scenario, the desalter replenishment obligation is taken to be desalter production less storage losses of 1 percent from the local storage accounts of producers in the Basin.³⁸

6.4. *Water Procurement Costs*

All program costs that form the basis for Watermaster assessments in the Peace I scenario (as described above) are considered in the Peace II scenario, with the exception of the Pomona credit, which is no longer paid by appropriators in the Basin and is instead paid by Three Valleys Municipal Water District.³⁹ The removal of this fee from Watermaster assessments leads to an increase in net benefit to agencies in the Basin by \$66,667, and this is returned to agencies in proportion to each agency's share of safe operating yield. The increase in net benefit is offset by a proportional increase in cost for Three Valleys Municipal Water District, and the present value of this stream of payments over the period 2007-2030 at the prevailing rate of discount (4.5 percent) is \$1.0 million.

Recycled water costs are allocated to each agency using the recycled water prices provided by IEUA, as discussed above. The desalter replenishment obligation, which begins in the year 2024 after the 400,000 AF of over-draft credits are exhausted, is met in the Peace II scenario through Watermaster replenishment assessments as follows. Half of the desalter replenishment obligation is met by individual agencies according to pro rata shares of safe operating yield, as in the Peace I scenario, and the remaining half of the desalter replenishment obligation is met according to each agency's share of actual production relative to total production in the Basin.⁴⁰ This latter portion of the Watermaster replenishment assessments accords with the method of allocating Watermaster general assessments to the appropriative pool in all three scenarios considered. The

³⁸ Non-Binding Term Sheet, Item VI.B.1.

³⁹ Non-Binding Term Sheet, item VII.A.

⁴⁰ Personal correspondence with Watermaster staff (August 29, 2007).

method for calculating the remaining water procurement costs for each agency is identical to the method described above for the Peace I scenario.

6.5. *Comparison of Baseline, Peace I, and Peace II Outcomes*

Relative to baseline conditions, the present value of total net benefit among the ten agencies encompassed by the study for the program elements contained in the Peace II scenario is \$904.6 million, which represents an additional net benefits of \$722.5 million relative to the outcome of the Peace I scenario.

The main factor associated with this increased net benefit is the displacement of Tier 2 water with recycled water, SAR in-flow, and, in the period 2007-2024, with forgiveness for 400,000 AF of Basin over-draft to attain hydraulic control. Under peace I conditions, the present value of total Tier 2 water purchases over the period 2007-2030 is \$931 million, whereas, in the Peace II scenario, the present value of Tier 2 water purchases over the period is \$271 million. This decrease in Tier 2 water costs in the Peace II scenario was replaced with a combination of 400,000 AF of forgiveness for Basin over-draft and recycled water at the lower IEUA recycled water rate.⁴¹ The combined present value of cost of imported water and recycled water inputs in the Peace II scenario is \$1.0 billion, which represents a substantial reduction in the present value of water procurement cost from \$1.75 billion in the Peace I scenario.

Table 3 depicts the projected outcomes to individual agencies in the Peace II scenario for the year 2015. A comparison of these outcomes with those that emerge in the baseline scenario in Table 1 and the Peace I scenario in Table 2 provides a useful profile of the essential differences in Basin performance under Peace II conditions. Residual demand, which corresponds to the value Q^* in Figure 1, is identical in all three scenarios, as is the safe operating yield of the agencies and desalter production. The net agricultural pool transfer to the appropriative pool (48,530 AF) is between the values that emerge in the Peace I scenario (48,848 AF) and the baseline scenario (48,268 AF). Relative to the outcome under Peace I conditions, the new rules for assessing replenishment obligations for the over-allocated agricultural pool water redistribute the net returns away from the major land-use converters in the Basin (in particular, the City of Chino and Jurupa Community Services District).

Available Basin supply in the Peace II scenario in the year 2015 (208,199 AF) is considerably higher than the available Basin supply in the baseline scenario (123,554 AF) and Peace I scenario (148,346 AF), which leads to a commensurate reduction in imported water demand. Virtually the entire difference in imported water demand between the Peace I scenario and the Peace II scenario is the result of the 60,171 AF addition of recycled water (direct use plus groundwater replenishment).

The level of local storage in the Peace II scenario in, 53,293 AF, is lower than local storage levels in the baseline (107,054 AF) and Peace I scenarios (91,649 AF) due to the large influx of

⁴¹ The allocation of the 400,000 AF of forgiveness to meet the replenishment obligations of the desalters is implicitly valued at the Tier 2 rate, because each unit of forgiveness that is credited against the desalter replenishment obligation, which is valued directly in the model at the replenishment rate, “frees up” a unit of recharge capacity that allows a unit of Tier 2 water to be displaced on the extensive margin of supply.

reliable Basin water through the development of the recycling program and the acquisition of SAR inflow. This greater availability of Basin water supply also facilitates a richer pattern of water transfers in the Peace II scenario.

In total, Tier 2 water purchases in the year 2015 are 10,186 AF, which represents a substantial reduction from the 137,089 AF of Tier 2 water purchases that take place under baseline conditions (inclusive of the purchases required by in lieu recharge) and the 82,658 AF under Peace I conditions. Replenishment water purchases increase in the Peace II scenario from 31,533 AF in the Peace I scenario to 41,800 AF in the Peace II scenario. The increase in replenishment imports reflects the replacement of 35,267 AF of replenishment obligations in the Peace I scenario with SAR inflow and desalter forgiveness in the year 2015, less the 20,671 AF claim on recharge facilities associated with the groundwater recharge component of the recycled water program in the Peace II scenario. The decrease in Tier 2 water imports of 72,430 AF between the Peace I and Peace II scenario is the result of the displacement of Tier 2 water purchases with a combination of recycled water, SAR in-flow, and allowed over-draft.

Actual production among these eight agencies in the year 2015 (182,170 AF) is higher in the Peace II scenario than in the Peace I scenario (160,203 AF) and the baseline scenario (121,138 AF). This increment in Basin production relative to the Peace I scenario represents the increase in Basin supply resulting from the use of recycled water for groundwater recharge as well as small adjustments in storage loss and net storage requirements.⁴²

Finally, notice in the comparison of Tier 2 purchases by individual agencies in Tables 1-3 that the distribution of Tier 2 water purchases across individual agencies in the Basin differs in all three scenarios relative to the distributions of safe operating yield and the distribution of actual production. These elements together comprise the basis for the allocation of collective Basin net benefits to individual agencies, with the division of market benefits from Basin improvement activities determined by each agency's share of Tier 2 water purchases, and the allocation of cost determined through Watermaster formulas that are based either on a individual agency's share of actual production to total Basin production or on a individual agency's share of safe operating yield. Differences in the distributions of these three key values across individual agencies in the Basin are responsible for inequalities in the distribution the net benefit from the various program elements that improve the management of Chino Basin water resources.

⁴² Recycled water for direct use offsets urban water demand, but does not otherwise influence Basin production.

Table 3: Year 2015 Outcome Under Peace II Scenario

Component	Appropriator										Total
	Chino	Chino Hills	Ontario	Upland	Cucamonga	Monte Vista	Jurupa	Pomona			
Urban Water Demand	26,200	24,700	66,600	22,500	72,500	14,100	36,350	30,264			293,214
Available Surface Water	0	0	0	5,200	3,000	0	500	0			8,700
Available Other Groundwater	0	0	0	3,800	5,400	0	0	1,884			11,084
<i>Residual Demand</i>	26,200	24,700	66,600	13,500	64,100	14,100	35,850	28,380			273,430
Safe Operating Yield	4,034	2,111	11,374	2,852	3,619	4,824	2,061	11,216			42,092
New Yield	883	462	2,489	624	792	2,455	451	2,489			10,645
Net Ag Transfer	10,103	2,176	7,559	1,581	2,560	2,739	15,599	6,215			48,530
Desalter Water Supply	5,000	4,200	5,000	0	0	0	19,922	0			34,122
Storage & Recovery	527	658	3,671	1,364	5,160	1,801	909	909			15,000
Recycled Water, Direct Use	6,300	4,000	8,800	0	15,900	500	2,500	1,500			39,500
Recycled Water, Replenishment	2,402	2,188	5,590	2,450	5,304	1,070	1,667	0			20,671
<i>Available Supply</i>	29,248	15,796	44,482	8,871	33,336	11,990	42,181	22,294			208,199
Net Storage	0	69	527	-153	5	94	0	217			759
Transfers	-3,048	2,784	7,026	1,389	9,546	684	-6,331	1,955			14,004
<i>Import Demand</i>	0	6,190	15,619	3,087	21,223	1,520	0	4,347			51,986
Local Storage	0	6,360	15,798	3,306	21,974	1,507	0	4,347			53,293
Replenishment Purchases	0	4,977	12,559	2,482	17,064	1,222	0	3,495			41,800
Tier 2 Purchases	0	1,213	3,060	605	4,158	298	0	852			10,186
Actual Production	19,900	14,516	42,550	10,227	26,762	12,159	33,350	22,706			182,170
Watermaster Assessments	\$707	\$447	\$1,368	\$327	\$804	\$411	\$1,129	\$753			\$5,946

Figure 3 compares the benefit received by each agency from reduced water procurement costs to the increase in assessment cost that result from the implementation of the program elements in the Peace II scenario. The program costs in the Peace II scenario do not differ substantively from program costs in the Peace I scenario, and represent an overall increase from \$17 million to \$143.2 million in present value terms. The program benefits in present value terms in the Peace II scenario are reflected in the decrease in water procurement costs from \$2.1 billion under baseline conditions to \$1.1 billion in the Peace II scenario.

City of Ontario and Cucamonga Valley Water District receive the largest share of the benefits resulting from the Peace II program elements, while the assessment costs resulting from the Peace II program elements are notably smaller and distributed more equally across the agencies. In total, the City of Ontario and Cucamonga Valley Water District together receive 56 percent of the benefit of decreased water procurement costs and incur 39 percent of the increase in assessment costs.

Baseline vs. Peace II Benefit-Cost Comparison

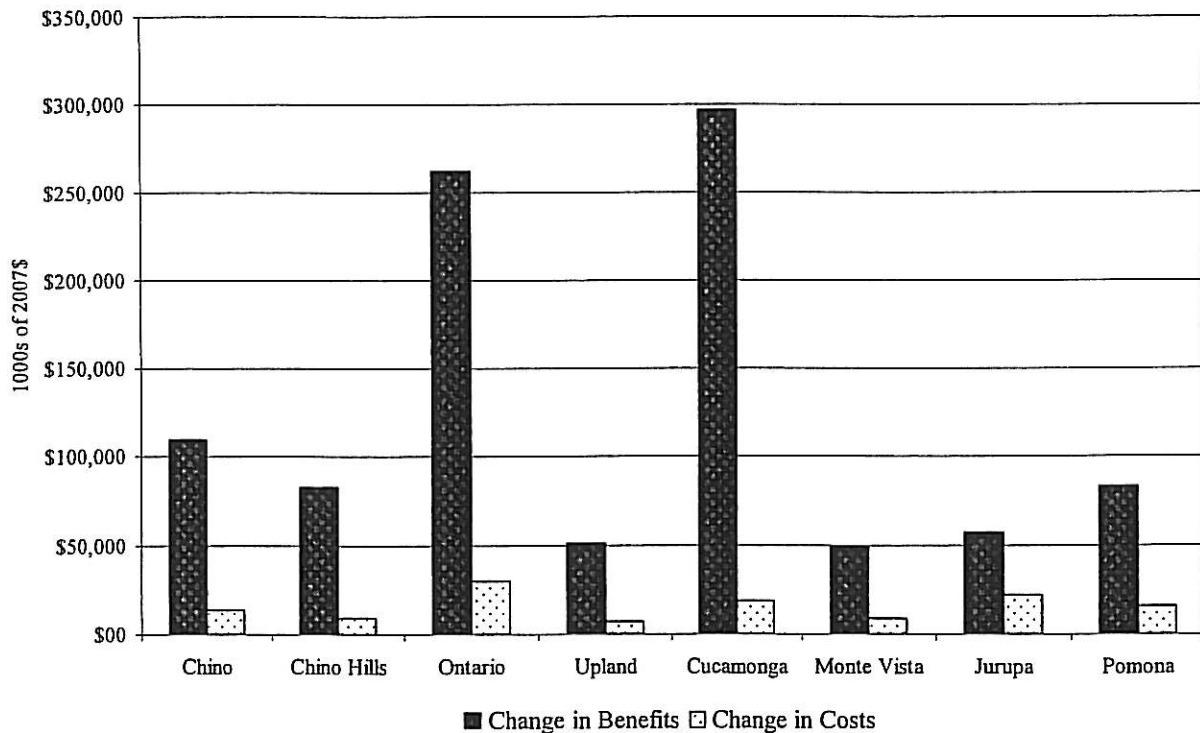


Figure 3

Distribution of Net Benefit, Peace II vs. Baseline (\$/per AF)

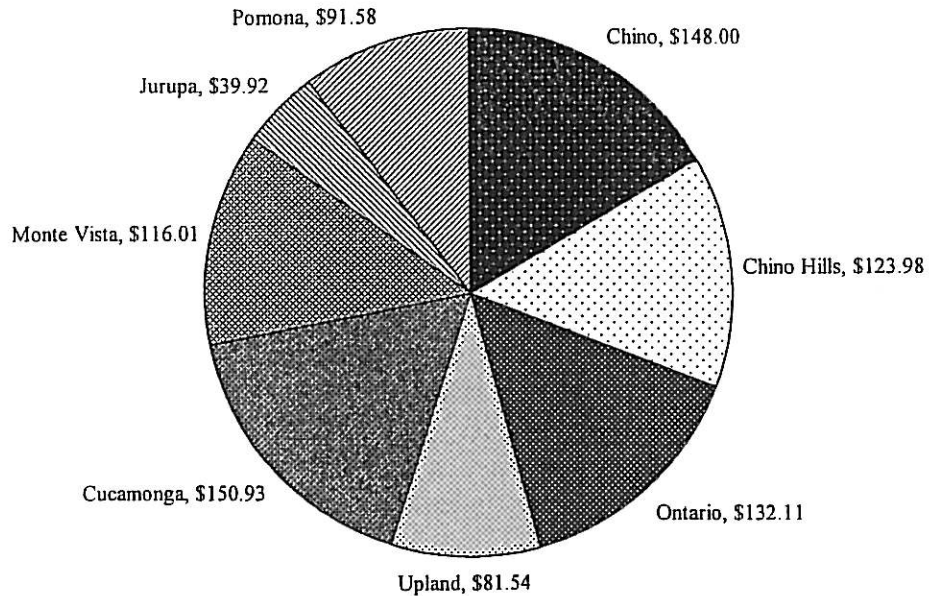


Figure 4

Figure 4 depicts the distribution of net benefits per acre-foot of residual water demand across individual agencies in the Basin resulting from the program elements in the Peace II scenario. Overall, the present value of the net benefit to all parties over the 24 year horizon resulting from a move from baseline conditions to Peace conditions is \$905 million and the total projected water demand over this period is 9.1 million AF, which implies an average return of \$98.53 per acre-foot to the agencies encompassed by the study.

Noting, as before, that Fontana Union Water Company and San Antonio Water Company have available surface water and other groundwater supplies in excess of their demand, and controlling for agency scale on the basis of residual demand for Basin water among the remaining producers, the net benefit resulting from the combined program elements in the Peace II Agreement lies between \$39.92/AF for Jurupa CSD to \$150.93 for Cucamonga Valley Water District.

The net benefit/AF received by Jurupa Community Services District is significantly smaller than the net benefit/AF received by other producers, because of systematic differences in the way this agency meets consumer water demand. Jurupa Community Services District is disadvantaged in the ability to capitalize on program elements that improve Basin performance by the large share of desalter water for urban water supply it receives, which cannot be defrayed by the development of new Basin supplies, and by a negligible reliance on imported water from MWD.

Among the remaining agencies, the Cities of Pomona and Upland receive a smaller share of the net benefit/AF, while Monte Vista Water District, the Cities of Chino, Ontario, Upland, and Chino Hills, and Cucamonga Valley Water District each receive a net benefit/AF above \$116/AF.

7. Alternative Scenarios

This section examines the sensitivity of the results to variations in various assumptions underlying the model. In theory, each of the factors considered here has the potential to change the relative rankings among agencies with respect to benefits per acre-foot. For example, increasing the cost of capital will tend to elevate the ranking of agencies that receive benefits in early years. These sensitivity analyses are intended to bracket actual results and measure the sensitivity of outcomes to changes in assumptions.

Five parameters are varied and the model results are recalculated in each case. The alternative scenarios considered are: (i) variation in the share of the desalter replenishment obligation attributed to the appropriative pool in the baseline case; (ii) variation in the discount rate; (iii) variation in Urban Water Demands; (iv) variation in the availability of Tier 1 water to agencies in the Basin; and (v) increases in effective recycled water prices due to the long-run average cost of recycled water infrastructure improvements.

The model results are most sensitive to the scenario in which all Tier 2 water purchases in the model are replaced with Tier 1 water purchases at the lower MWD rate. The results of this scenario are shown in Table 4. This scenario provides a bracketing assumption on the value of the outside water options available to agencies and it is unlikely that each agency can meet annual increases in urban water demand every year with a continued expansion of Tier 1 purchases. To the extent that individual agencies differ in their access to Tier 1 water, moreover, market forces would lead to a displacement of Tier 2 water purchases on the extensive margin of supply before any displacement occurs of Tier 1 water purchases, so that a model that considered a relatively equal mix of Tier 1 and Tier 2 water supplies would not result in values near the midpoint between the Tier 1 scenario and the Tier 2 scenario. Nonetheless, the total net benefit in the Basin under Peace II scenario remains high—\$611.7 million (\$88.89/AF)—even when the entire increase in Basin supply is valued at the displacement cost of Tier 1 water.

The model results are fairly robust to variations in the remaining parameters. In total, the net benefit of the Peace II program elements varies across the scenarios in a range between \$806.7 million - \$864.4 million (\$87.87/AF - \$104.22/AF) in each scenario, relative to the \$904.6 million (\$98.53/AF) at baseline levels of the parameters.

Table 4: Tier 2 Replaced By Tier 1

	Net Benefit (1000s of \$)			Net Benefit/AF	
	<i>Peace I vs. Baseline</i>	<i>Peace II vs. Baseline</i>	<i>Peace I vs. Baseline</i>	<i>Peace II vs. Baseline</i>	
City of Chino	\$8,549	\$77,828	\$13.18	\$120.03	
City of Chino Hills	\$18	\$46,218	\$0.03	\$77.92	
City of Ontario	\$1,451	\$148,970	\$0.83	\$84.73	
City of Upland	\$328	\$27,599	\$0.61	\$51.04	
Cucamonga Valley Water District	\$14,025	\$175,240	\$7.61	\$95.10	
Fontana Union Water Co.	\$1,451	\$26,880			
Monte Vista Water District	(\$2,090)	\$27,005	(\$5.99)	\$77.39	
San Antonio Water Company	\$342	\$6,337			
Jurupa CSD	\$10,611	\$29,242	\$12.01	\$33.11	
City of Pomona	(\$5,720)	\$46,453	(\$7.76)	\$62.99	
Total	\$28,965	\$611,773	\$3.15	\$66.63	

Table 5: 50% of Desalter Obligation Paid by Ag Pool

	Net Benefit (1000s of \$)			Net Benefit/AF	
	Peace I vs. Baseline	Peace II vs. Baseline	Peace I vs. Baseline	Peace II vs. Baseline	Peace II vs. Baseline
City of Chino	\$15,450	\$91,122	\$23.83		\$140.53
City of Chino Hills	\$9,681	\$71,001	\$16.32		\$119.70
City of Ontario	\$28,888	\$218,613	\$16.43		\$124.34
City of Upland	\$6,017	\$40,661	\$11.13		\$75.20
Cucamonga Valley Water District	\$56,320	\$273,782	\$30.56		\$148.57
Fontana Union Water Co.	(\$2,836)	\$22,592			
Monte Vista Water District	\$1,232	\$34,687	\$3.53		\$99.41
San Antonio Water Company	(\$669)	\$5,326			
Jurupa CSD	\$13,297	\$32,779	\$15.06		\$37.11
City of Pomona	(\$5,280)	\$54,068	(\$7.16)		\$73.31
Total	\$122,101	\$844,632	\$13.30		\$91.99

Table 6: 5.5% Discount Rate

	Net Benefit (1000s of \$)			Net Benefit/AF	
	Peace I vs. Baseline	Peace II vs. Baseline	Peace I vs. Baseline	Peace II vs. Baseline	Peace I vs. Baseline
City of Chino	\$17,681	\$84,906	\$27.27		\$130.95
City of Chino Hills	\$11,108	\$65,916	\$18.73		\$111.13
City of Ontario	\$38,234	\$207,227	\$21.75		\$117.86
City of Upland	\$8,595	\$39,560	\$15.90		\$73.16
Cucamonga Valley Water District	\$54,862	\$247,990	\$29.77		\$134.57
Fontana Union Water Co.	\$4,231	\$26,907			
Monte Vista Water District	\$6,265	\$36,087	\$17.95		\$103.42
San Antonio Water Company	\$997	\$6,343			
Jurupa CSD	\$13,877	\$31,426	\$15.71		\$35.58
City of Pomona	\$7,315	\$60,400	\$9.92		\$81.90
Total	\$163,165	\$806,761	\$17.77		\$87.87

Table 7: 10% Conservation

	Net Benefit (1000s of \$)		Net Benefit/AF	
	Peace I vs. Baseline	Peace II vs. Baseline	Peace I vs. Baseline	Peace II vs. Baseline
City of Chino	\$18,131	\$88,819	\$31.07	\$152.20
City of Chino Hills	\$13,070	\$70,172	\$24.48	\$131.45
City of Ontario	\$44,196	\$223,937	\$27.93	\$141.52
City of Upland	\$8,602	\$39,805	\$17.68	\$81.80
Cucamonga Valley Water District	\$64,718	\$268,848	\$39.02	\$162.10
Fontana Union Water Co.	\$4,989	\$30,656		
Monte Vista Water District	\$6,205	\$37,920	\$19.76	\$120.75
San Antonio Water Company	\$1,176	\$7,227		
Jurupa CSD	\$15,189	\$33,707	\$19.11	\$42.40
City of Pomona	\$6,788	\$63,259	\$10.23	\$95.30
Total	\$183,064	\$864,350	\$22.07	\$104.22

Table 8: 50% Increase in Recycled Water Price

	Net Benefit (1000s of \$)			Net Benefit/AF	
	Peace I vs. Baseline	Peace II vs. Baseline	Peace I vs. Baseline	Peace II vs. Baseline	Peace I vs. Baseline
City of Chino	\$20,294	\$88,913	\$31.30	\$137.13	\$137.13
City of Chino Hills	\$12,217	\$69,270	\$20.60	\$116.78	\$116.78
City of Ontario	\$42,547	\$220,779	\$24.20	\$125.57	\$125.57
City of Upland	\$9,442	\$42,215	\$17.46	\$78.07	\$78.07
Cucamonga Valley Water District	\$60,667	\$262,234	\$32.92	\$142.30	\$142.30
Fontana Union Water Co.	\$4,839	\$30,268			
Monte Vista Water District	\$7,025	\$39,277	\$20.13	\$112.56	\$112.56
San Antonio Water Company	\$1,141	\$7,136			
Jurupa CSD	\$15,772	\$31,962	\$17.86	\$36.19	\$36.19
City of Pomona	\$8,189	\$66,517	\$11.10	\$90.19	\$90.19
Total	\$182,133	\$858,571	\$19.84	\$93.51	\$93.51

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CHINO BASIN WATERMASTER

II. BUSINESS ITEMS

B. PEACE II LEGAL DOCUMENTS





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: September 27, 2007
TO: Advisory Committee Members
Watermaster Board Members
SUBJECT: Approval of Resolution 07-05 (Peace II Legal Instruments)

SUMMARY

Recommendation – Staff recommends that the Advisory Committee and Board adopt Resolution 07-05, subject to the process described in this staff report, and direct Watermaster to file with the Court.

I. Resolution 07-05 (Peace II Legal Instruments)

The Peace II Legal Instruments are organized as attachments and exhibits to two primary documents: Watermaster Resolution 07-05 and the document titled the Peace II Agreement. To date staff and legal counsel have presented the Peace II Legal Instruments individually to the Pools, the Advisory Committee and the Board. However, the final approval by the Advisory Committee and Board of the legal instruments takes the form of approval of Watermaster Resolution 07-05, to which the balance of the Peace II Legal Instruments are attachments.

Following adoption of Resolution 07-05, Watermaster will transmit the Resolution and all attached documents to the Court for its review and approval, with a transmittal pleading to be distributed to the Pools and Advisory Committee and Board in October and a hearing to be scheduled in late November.

II. Proposed Socioeconomic Process

A. Within seven days following the Dr. Sunding's delivery of his expected final draft of the socioeconomic report contemplated by the Peace II Term Sheet, the members of the Appropriative Pool shall convene a collaborative process to agree upon recommendations that will be applied by Watermaster in addressing Watermaster's continuing duties under Exhibits H and I of the Judgment. This process will focus primarily on three areas as well as the considerations set forth in Section C.2 below that are thought to be material to the over-all distribution of costs and benefits of the OBMP among the members of the Appropriative Pool:

(1) Recharge Master Plan. Address the water, facilities and financing plan to equitably apportion of costs of recharge improvements and the specific measures that may be applicable to MZ#1 and remediation of subsidence;

(2) Desalters. Address yield preservation, replenishment, salt management, bonding capacity, and third party financing;

(3) Recycled Water. Address the cost of obtaining and making use of recycled water and the member's relative access to recycled water as a commodity.

B. No date has yet been scheduled for a Court hearing regarding the Peace II Measures. However, the participants acknowledge that their full commitment will be required to resolve potential differences and consequently they desire that this process be completed as soon as practicable. Notwithstanding their commitment to this process, all members of the Appropriative Pool reserve their respective rights to file responsive pleadings related to Watermaster's motion and a request for Court direction to proceed in accordance with Peace II Measures.

C. The parties will acknowledge and agree that as the Dr. Sunding report is moved through the Pool Process that although the Report may be final from Dr. Sunding's perspective:

1. There is a wide range of opinion regarding whether the Report addresses all the economic considerations that may be applicable to an evaluation of Watermaster's continuing duties under Exhibits H and I of the Judgment.

2. Without accepting or rejecting the relevance of any specific factors, members of the Appropriative Pool have suggested the potential importance of other considerations including but not limited to the following: the 1978 Judgment, apportionment of Operating Safe Yield, access to recharge water, access to recycled water; the CPUC, NEPA and the CEQA guidelines applicable to the measurement of socioeconomic impacts, agency ability to pay, and historical contributions by the parties.

**WATERMASTER RESOLUTION
NO. 07-05**

**RESOLUTION OF THE CHINO BASIN WATERMASTER
REGARDING THE PEACE II AGREEMENT AND
THE OBMP IMPLEMENTATION PLAN**

WHEREAS, the Judgment in the Chino Basin Adjudication, *Chino Municipal Water District v. City of Chino, et al.*, San Bernardino Superior Court No. 51010, created the Watermaster and directed it to perform the duties as provided in the Judgment or ordered or authorized by the court in the exercise of the Court's continuing jurisdiction;

WHEREAS, Watermaster has the express powers and duties as provided in the Judgment or as "hereafter" ordered or authorized by the Court in the exercise of the Court's continuing jurisdiction" subject to the limitations stated elsewhere in the Judgment;

WHEREAS, Watermaster, with the advice of the Advisory and Pool Committees has discretionary powers to develop an OBMP for Chino Basin, pursuant to Paragraph 41 of the Judgment;

WHEREAS, in June of 2000, the Parties to the Judgment executed the Peace Agreement providing for the implementation of the OBMP and Watermaster adopted Resolution 00-05 whereby it agreed to act in accordance with the Peace Agreement;

WHEREAS, the Court ordered Watermaster to proceed in accordance with the Peace Agreement and the OBMP Implementation, Exhibit "B" thereto;

WHEREAS, Watermaster adopted and the Court approved Chino Basin Watermaster Rules and Regulations in June of 2001;

WHEREAS, the Peace Agreement, the OBMP Implementation Plan and the Chino Basin Watermaster Rules and Regulations reserved Watermaster's discretionary powers in accordance with Paragraph 41 of the Judgment, with the advice from the Advisory and Pool Committees, and contemplated further implementing actions by Watermaster;

WHEREAS, the Judgment requires that Watermaster in implementing the Physical Solution, and the OBMP have flexibility to consider and where appropriate make adjustments after taking into consideration technological, economic, social and institutional factors in maximizing the efficient use of the waters of the Basin.

WHEREAS, the Parties to the Judgment provided input into the creation of a "Stakeholder Non-Binding Term Sheet" that articulated methods to maximize beneficial use of the Basin ("Peace II measures") was distributed to and considered by each of the Pools, the Advisory Committee and the Watermaster Board and subsequently transmitted to the Court;

WHEREAS, Watermaster will continue to require that to the extent any of the Peace II Implementing Measures constitute “projects” within the meaning of the California Environmental Quality Act (“CEQA”), compliance with CEQA will be required as a pre-condition of Watermaster’s issuance of any final, binding approvals; and

WHEREAS, the actions articulated in the “Stakeholder Non-Binding Term Sheet” and contemplated herein to maximize the beneficial use of the groundwater and the Basin benefit the Basin and the Parties to the Judgment.

NOW, THEREFORE, IT IS HEREBY RESOLVED AND DETERMINED THAT:

1. Watermaster caused the completion of a preliminary engineering, hydrogeologic, and technical evaluation of the physical impacts to the Basin and to the Parties to the Judgment that may result from implementation of the Peace II measures. The preliminary evaluation was conducted by Mark Wildermuth of Wildermuth Environmental.

2. The Assistant to the Special Referee, Joe Scalmanini of Luhdorff & Scalmanini Consulting Engineers, transmitted his technical review in March of 2007 (“Report”). In relevant part, the Report states:

“For planning level analysis, the existing model is a useful and applicable tool to simulate approximate basin response to management actions that involve the quantities and distribution of pumping and recharge in the basin. For example, for the most notable of its applications to date, which has been to conduct a planning level analysis of intended future hydraulic control, the model can be confidently utilized to examine whether groundwater conditions (levels) will form in such a way that hydraulic control will be achieved as result of basin re-operation and, if not, what other changes in basin operation are logically needed to achieve it.”
(Report at p. 37)

3. Watermaster caused the preparation of a specific project description set forth in Attachment “A” hereto for the purpose of conducting a more refined engineering, hydrogeologic and technical evaluation of the physical impacts to the Basin and to the Parties to the Judgment that may result from implementation of the Peace II measures.

4. Watermaster caused the completion of a macro socioeconomic analysis by Dr. David Sunding, a PhD in economics and professor at the University of California Berkeley set forth in Attachment “B” hereto. The macro analysis provided an evaluation of the macro costs and benefits to the parties as a whole that may be attributable to the Peace II measures.

5. Watermaster caused an update of the previously completed socioeconomic analysis conducted pursuant to the Judgment. The analysis was completed by Dr. Sunding, and it considered the positive and negative impacts of implementing the OBMP, the Peace Agreement, and the Peace II measures, including Watermaster assessments. The analysis also addressed the potential distribution of costs and benefits among the parties that were initiated

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with the approval of the Peace Agreement. The study was completed in final draft form on September 13, 2007 and is set forth in Attachment "C" hereto. Each of the Parties to the Judgment has had the opportunity to comment on earlier drafts of the report and on the final draft of the report and to consider the analyses contained therein prior to Watermaster's approval of this Resolution 07-05.

9. Watermaster has caused the preparation of the 2007 Supplement to the Optimum Basin Management Program ("OBMP") addressing Watermaster's efforts to, among other things; pursue Hydraulic Control through Basin Re-Operation as set forth in Attachment "D" hereto.

10. Watermaster has prepared a summary of the cumulative total of groundwater production and desalting from all authorized Desalters and other activities authorized by the 2007 Supplement to the OBMP Implementation Plan as amended as provided in the Peace Agreement in a schedule that: (i) identifies the total quantity of groundwater that will be produced through the proposed Basin Re-Operation to obtain Hydraulic Control, and (ii) characterizes and accounts for all water that is projected to be produced by the Desalters for the initial Term of the Peace Agreement (by 2030) as dedicated water, New Yield, controlled overdraft pursuant to the Physical Solution or subject to Replenishment . This schedule is set forth in Attachment "E" hereto. Watermaster will modify its projections from time to time, as may be prudent under the circumstances.

11. More than fifteen months have passed since the Non-Binding Term Sheet was initially published by Watermaster in its current form and transmitted to the Court for its consideration and more than six months have passed following Watermaster's declaration that any party interested in participating in the development and construction of Future Desalters should identify their interest in making a proposal and no party has stepped forward and made a responsive proposal in lieu of the Western Municipal Water District proposal.

12. The Peace II measures collectively consist of:

(a) Watermaster's election to exercise its reserved discretion as provided in the Judgment, the Peace Agreement and the OBMP Implementation Plan, to amend the Watermaster Rules and Regulations as more fully set forth in Attachment "F" attached hereto and incorporated herein by this reference;

(b) Watermaster's execution and Court approval of the proposed Purchase and Sale Agreement with the Non-Agricultural (Overlying) Pool as more fully set forth in Attachment "G" attached hereto and incorporated herein by this reference;

(c) Watermaster's and the Court's approval of the proposed amendments to the Judgment as more fully set forth in Attachment "H", Attachment "I" and Attachment "J" attached hereto and incorporated herein by this reference;

(d) Watermaster's approval of and further agreement to act in accordance with the Peace II Agreement, including the provisions related to Future Desalters, as more fully set forth in Attachment "K" attached hereto, upon a further order of the

Court directing Watermaster to proceed in accordance with its terms;

(e) Watermaster's and the Court's approval of the 2007 Supplement to the OBMP Implementation Plan as they are more fully set forth in Attachment "D" attached hereto and incorporated herein by this reference; and

(f) Execution of the proposed Second Amendment to the Peace Agreement as more fully set forth in Attachment "L" attached hereto and incorporated herein by this reference, approval by Watermaster and a further order of the Court directing Watermaster to proceed in accordance with its terms.

13. The Overlying (Non-Agricultural), the Overlying (Agricultural) Pool, and the Appropriative Pool have approved the Peace II measures and recommended Watermaster's adoption of this Resolution 07-05

14. The Advisory Committee has approved the Peace II measures and recommended Watermaster's adoption of this Resolution 07-05.

15. In adopting this Resolution and by its agreement to implement the Peace II measures, Watermaster is not committing to carry out any project within the meaning of CEQA unless and until CEQA compliance has been demonstrated for any such project.

16. The Watermaster Board will transmit this Resolution 07-05, and the Peace II implementing measures, and the referenced Attachments to the Court along with other supporting materials and request the Court to approve the proposed Judgment Amendments and to further order that Watermaster proceed to further implement the 2007 Supplement to the OBMP as provided in the Peace II measures.

Date: _____

_____ for CHINO BASIN WATERMASTER

ATTACHMENT A

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**Attachment “A”
Project Description
for the
2007 Amendment to the Chino Basin
Optimum Basin Management Program**

Introduction

This document contains the project description for the Chino Basin desalting and re-operation programs that has been distilled from various planning investigations and was described in the Stakeholder Non-Binding Term Sheet. This document was prepared for use in: (a) Chino Basin Watermaster’s evaluation of the potential actions to cause Material Physical Injury to the Basin or the Parties to the Judgment; (b) in connection with Watermaster’s request for Court review and approval of proposed actions in further implementation of the Optimum Basin Management Program (“OBMP”); and (c) an environmental impact report to be prepared as part of the expansion of the desalters.

Requirements of the 2004 Amendment to the Water Quality Control Plan for the Santa Ana Watershed

Water quality objectives are established by the Regional Water Quality Control Board, Santa Ana Region (“Regional Board”) to preserve the beneficial uses of the Chino Basin and the Orange County Basin located downstream of the Chino Basin. Prior to the 2004 Amendment, the Regional Water Quality Control Plan (Basin Plan) contained restrictions on the use of recycled water within the Chino Basin for irrigation and groundwater recharge. The pre-2004 Basin Plan contained TDS “anti-degradation” objectives that ranged from 220 to 330 mg/L over most of the Chino Basin. Ambient TDS concentrations slightly exceeded these objectives. There was no assimilative capacity for TDS; thus, the use of the Inland Empire Utilities Agency’s (“IEUA”) recycled water for irrigation and groundwater recharge would have required mitigation even though the impact of this reuse would not have materially impacted future TDS concentrations or impaired the beneficial uses of Chino Basin groundwater.

In 1995, the Regional Board initiated a collaborative study with 22 water supply and wastewater agencies, including Watermaster and the IEUA, to devise a new TDS and nitrogen (total inorganic nitrogen or TIN) control strategy for the Santa Ana Watershed. This study culminated in the Regional Board’s adoption of the 2004 Basin Plan Amendment in January 2004 (Santa Ana Regional Water Quality Control Board, 2004). The 2004 Basin Plan Amendment included two sets of TDS objectives – antidegradation objectives that ranged between 280, 250 and 260 mg/L for Management Zones 1, 2, and 3, respectively; and a “maximum benefit”-based TDS objective of 420 mg/L for the Chino North Management Zone, which consists of almost all of Management Zones 1, 2, and 3. The relationship of the Management Zones that were developed for the OBMP and the “maximum benefit” based management zones is shown in Figure 1. Under the “maximum benefit”-based objective, the new TDS concentration limit for recycled water

that is to be used for recharge and other direct uses is 550 mg/L as a 12-month average. This discharge requirement has been incorporated into the IEUA's National Pollutant Discharge Elimination System (NPDES) permits for its wastewater treatment facilities.

In order for the IEUA and Watermaster to gain access to the assimilative capacity afforded by the "maximum benefit"-based objectives, the IEUA and Watermaster have to demonstrate that the maximum beneficial use of the waters of the State is being achieved. The 2004 Basin Plan Amendment contains a series of commitments that must be met in order to demonstrate that the maximum benefit is being achieved. These commitments include:

1. The implementation of a surface water monitoring program;
2. The implementation of groundwater monitoring programs;
3. The expansion of Desalter I to 10 million gallons per day (mgd) and the construction of a 10-mgd Desalter II
4. The commitment to future desalters pursuant to the OBMP and the Peace Agreement;
5. The completion of the recharge facilities included in the Chino Basin Facilities Improvement Program;
6. The management of recycled water quality;
7. The management of the volume-weighted TDS and nitrogen in artificial recharge to less than or equal to the maximum benefit objectives;
8. The achievement and maintenance of hydraulic control of subsurface outflows from the Chino Basin to protect the Santa Ana River water quality; and
9. The determination of the ambient TDS and nitrogen concentrations in the Chino Basin every three years.

The IEUA and Watermaster have previously demonstrated compliance with all of these requirements with the sole exception of hydraulic control. Hydraulic control is defined as the reduction of groundwater discharge from the Chino North Management Zone to the Santa Ana River to de minimus quantities. Hydraulic control ensures that the water management activities in the Chino North Management Zone do not result in material adverse impacts on the beneficial uses of the Santa Ana River downstream of Prado Dam. Achieving hydraulic control also maximizes the safe yield of the Chino Basin as required by Paragraph 30 and 41 of the Judgment. Two reports by Wildermuth Environmental, Inc. ("WEI"), prepared in 2006 at the direction of Watermaster, demonstrate that hydraulic control has not yet been achieved in the area between the Chino Hills and Chino Desalter I, well number 5 (WEI, 2006a and b).

Without hydraulic control, the IEUA and Watermaster will have to cease the use of recycled water in the Chino Basin and will have to mitigate the effects of using recycled water back to the adoption of the 2004 Basin Plan Amendment, which is December 2004. Table 1 shows the projected aggregate water supply plans for Chino Basin municipal water purveyors. The demand for recycled water in the Chino Basin is projected to reach from about 12,500 acre-ft/yr in 2005 to 58,000 acre-ft/yr in 2010, 68,000 acre-ft/yr in

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2015, 79,000 acre-ft/yr in 2020 and 89,000 acre-ft/yr in 2025. Recycled water reduces the demand of State Water Project (“SWP”) water by an equal amount, thereby reducing the demand on the Sacramento Delta and reducing energy consumption. Recycled water is a critical element of the OBMP and water supply reliability in the Chino Basin area.

Failure to achieve hydraulic control will lead to restrictions from the Regional Board on the use of imported SWP water for replenishment when the TDS concentration in SWP water exceeds the antidegradation objectives. The Regional Board produced a draft order that would treat the recharge of SWP water as a waste discharge. There would be no assimilative capacity if the Chino Basin antidegradation objectives were in force. Figure 2 shows the percent of time that the TDS concentration at Devil Canyon is less than or equal to a specific value based on observed TDS concentrations at the Devil Canyon Afterbay. This restriction will occur about 35, 52, and 50 percent of the time for Management Zones 1, 2, and 3, respectively. This will affect other basins in the Santa Ana Watershed, and the Regional Board is encouraging all basin managers to propose “maximum benefit”-based objectives similar to those in Chino Basin. With the “maximum benefit”-based TDS objective in the Chino Basin, there is assimilative capacity, and there would be no such restriction on the recharge of imported water.

The Regional Board is using its discretion in granting “maximum benefit” objectives even though hydraulic control has not been demonstrated. The Regional Board will continue to use “maximum benefit”-based objectives in the Chino Basin as long as the IEUA and Watermaster continue to develop and implement, in a timely manner, the OBMP desalter program as described in the project description below.

The Stakeholder Non-Binding Term Sheet: Peace II Implementing Measures

Under Watermaster oversight, the Chino Basin OBMP stakeholders have been engaged in, among other things, complying with the Peace Agreement provision regarding the planning and financing of the expansion of the OBMP desalting program to its full planned capacity generally referred to as Future Desalters (See Peace Agreement Article VII.). The stakeholders have been evaluating various alternatives since early 2004 and produced the Stakeholders’ Non-Binding Term Sheet that was transmitted to the Court along with a request by Watermaster for further technical review by the Assistant to the Special Referee in May of 2006. The Assistant’s review was completed in March of 2007.

The Non-Binding Term Sheet includes several items that will collectively further implement the existing OBMP Implementation Plan (Peace II Measures). The two items of interest to this project description are: the expansion of the desalting program and “Basin Re-Operation,” which are both physically described in Section II, Refined Basin Management Strategy, subsections A and B; and Section IV, Future Desalters.

The construction of a new desalter well field will be sized and located to achieve hydraulic control. The desalter will produce at least 9 mgd of product water. New groundwater production for the expanded desalter program will occur in the Southern end

of the basin. Some of this new desalter supply will come from a new well field that will be constructed in a location among Desalter I wells 1 through 4 and west of these wells. These wells will be constructed to pump groundwater from the shallow part of the aquifer system, which is defined herein to be the saturated zone that occurs within about 300 feet of the ground surface. The total groundwater pumping for all of the desalters authorized in the term sheet will be about 40,000 acre-ft/yr.

“Re-operation” means the increase in controlled overdraft, as defined in the Judgment, from 200,000 acre-ft over the period of 1978 through 2017 to 600,000 acre-ft through 2030 with the 400,000 acre-ft increase allocated specifically to the meet the replenishment obligation of the desalters. Re-operation is required to achieve hydraulic control. Re-Operation and Watermaster’s apportionment of controlled overdraft will not be suspended in the event Hydraulic Control is secured in any year *before* the full 400,000 acre-feet has been produced so long as: (i) Watermaster has prepared, adopted and the Court has approved a contingency plan that establishes conditions and protective measures to avoid Material Physical Injury and that equitable addresses this contingency, and (ii) Watermaster continues to demonstrate credible material progress toward obtaining sufficient capacity to recharge sufficient quantities of water to cause the Basin to return to a new equilibrium at the conclusion of the Re-Operation period. In addition to contributing to the achievement of hydraulic control, Re-operation will contribute to the creation of new yield. Watermaster has the discretion to apportion the 400,000 acre-feet increase in controlled overdraft under a schedule for re-operation that best meets the needs of the Parties and the conditions of the basin over the Initial Term of the Peace Agreement (before June 30, 2030).

The Project Description

The proposed project has two main features: the expansion of the desalter program such that the groundwater pumping for the desalters will reach 40,000 acre-ft and that the pumping will occur in amounts and at locations that contribute to the achievement of hydraulic control; and the strategic reduction in groundwater storage (re-operation) that, along with the expanded desalter program, significantly achieves hydraulic control.

The Expanded Desalting Program. A new well field, referred to as the Chino Creek Well Field (CCWF), will be constructed. The capacity of this well field could range from about 5,000 acre-ft/yr to 7,700 acre-ft/yr. The capacity of the CCWF will be determined during the design of the well field. Groundwater produced at the CCWF will be conveyed to Desalter I. The approximate location of the CCWF is shown in Figure 4. The capacity of Desalter I will not be increased; although, it is likely that the treatment systems at Desalter I will be modified to accommodate the chemistry of the raw water pumped from the CCWF. The product water capacity of Desalter I is about 14,200 acre-ft/yr which corresponds to a raw water pumping requirement of about 16,100 acre-ft/yr. The volume of groundwater pumping at existing Desalter I wells 13, 14, and 15 and conveyed to Desalter I will be reduced to accommodate new pumping at the CCWF.

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The treatment capacity of Desalter II will be increased from 10,400 acre-ft/yr to about 21,000 acre-ft/yr, which corresponds to the raw water pumping requirement of 11,800 acre-ft/yr expanding to 23,900 acre-ft/yr. The increase in groundwater pumping for Desalter II will come in part from greater utilization of the existing Desalter II wells and the addition of new wells to the Desalter II well field from either the construction of new wells and/or connecting Desalter I wells 13, 14, and 15. The Desalter II treatment plant would be expanded to increase its capacity from 10,400 acre-ft/yr to 21,000 acre-ft/yr.

The new product water developed at Desalter II would be conveyed to the Jurupa Community Services District ("JCSD"), the City of Ontario, and/or Western Municipal Water District ("WMWD") through existing and new pipelines. The facilities required to convey this water include pipelines, pump stations, and reservoirs. The precise locations of these facilities are unknown at this time.

The most current working description of these facilities is contained a report that was prepared for the City of Ontario and WMWD, entitled Chino Desalter Phase 3 Alternatives Evaluation (Carollo, 2007). Currently (September 2007), the City of Ontario and the WMWD are working with the JCSD and others to refine the alternatives in the Carollo report. The assumed startup for the expanded desalters is January 2013.

Finally, 40,000 acre-ft/yr of groundwater is expected to be produced by all Existing and Future Desalters. The 40,000 acre-ft/yr value was determined from the prior desalter modeling investigations of WEI (WEI, 2006a and c). The parties that are engaged in developing the desalter expansion are planning for a total of 40,000 acre-ft/yr of desalter groundwater pumping. Watermaster, on behalf of the Parties, will review the desalter pumping requirements to achieve hydraulic control during the project evaluation in the summer of 2007.

Re-Operation. Through re-operation and pursuant to a Judgment Amendment, Watermaster will engage in controlled overdraft and use up to a maximum of 400,000 acre-ft to off-set Desalter replenishment through 2030. After the 400,000 acre-ft is exhausted and the period of Re-Operation is complete, Watermaster will recalculate the safe yield of the basin. The Re-Operation will have no impact on Operating Safe Yield or on the parties' respective rights thereto. For project evaluation purposes, the Re-Operation and controlled overdraft of 400,000 will be examined under two different schedules that bracket the range in expected schedules. The first schedule will be based on allocating the 400,000 acre-ft at a constant percentage of desalter pumping such that the 400,000 acre-ft is used up in a constant proportion of the desalter pumping through 2030. The second schedule will use the controlled overdraft to off-set desalter the applicable replenishment obligation completely each year until the 400,000 acre-ft is completely exhausted.

The New Yield as defined by the Peace Agreement, attributable to the authorized desalters and the reduction in storage from re-operation, will be assigned to the authorized desalters. The resulting replenishment obligation assigned to the authorized desalters will then be handled as any other replenishment obligation pursuant to the

Judgment. The New Yield is expected to come from a reduction in groundwater discharge from the Chino Basin to the Santa Ana River within the reservoir created by Prado Dam and from new induced recharge of the Santa Ana River upstream of Prado Dam.

Other Important Facility and Operational Plans that Will Occur Concurrently with the Proposed Project

Expansion of Artificial Recharge Capacity. Watermaster and the IEUA will need to expand artificial recharge capacity in the Chino Basin to meet future replenishment obligations. This will occur independently from the proposed project. Current supplemental water recharge capacity is about 70,000 acre-ft/yr. The required recharge capacity to meet future replenishment obligations is about 70,000 acre-ft, a capacity expansion of about 70,000 acre-ft/yr. This expansion will occur through construction of new spreading basins, improvements to existing spreading basins and stormwater retention facilities, aquifer storage and recovery wells. The proposed project will be analyzed without recharge expansion projects.

Expansion of Storage and Recovery Programs. Currently, there is only one groundwater storage program approved in the Chino Basin: the 100,000 acre-ft Dry Year Yield Program with the Metropolitan Water District of Southern California (Metropolitan). Metropolitan, the IEUA, and Watermaster are considering expanding this program an additional 50,000 acre-ft to 150,000 acre-ft over the next few years. Watermaster is also considering an additional 150,000 acre-ft in programs with non-party water agencies. The total volume of groundwater storage allocated to storage programs that could overlay the proposed project is about 300,000 acre-ft.

These storage programs, if not sensitive to the needs of hydraulic control, could cause groundwater discharge to the Santa Ana River and result in non-compliance with hydraulic control and a loss in safe yield. The proposed project will be analyzed with various levels of storage programs up to 150,000 acre-ft, utilizing various “put and take” strategies. There have been no planning investigations that articulate how the expansion from the 150,000 acre-ft program to the to the 300,000 acre-ft and thus this expansion is not included herein. Storage program operating strategies will be developed to assure hydraulic control.

References

Santa Ana Regional Water Quality Control Board, 2004, Resolution No R8-2004-0001, <http://www.waterboards.ca.gov/santaana/pdf/04-01.pdf>

Stakeholder Non-Binding Term Sheet, in the form transmitted to the Court, 2006

September 21, 2007

Wildermuth Environmental, Inc., 2006a. Draft Report, Analysis of Future Replenishment and Desalter Plans Pursuant to the Peace Agreement and Peace II Process, April 2006; prepared for the Chino Basin Watermaster.

Wildermuth Environmental, Inc., 2006b. Chino Basin Maximum Benefit Monitoring Program Annual Report, April 2006; prepared for the Chino Basin Watermaster and Inland Empire Utilities Agency.

Wildermuth Environmental, Inc., 2006c. Draft Report, Addendum to the Draft April 2006 Report, Analysis of Future Replenishment and Desalter Plans Pursuant to the Peace Agreement and Peace II Process, December 2006; prepared for the Chino Basin Watermaster.

Carollo Engineers, 2007. Chino Desalter Phase 3 Alternatives Evaluation, May 2007; Prepared for the City of Ontario and the Western Municipal Water District.

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**Report on the Distribution of Benefits to Basin Agencies from the Major Program
Elements Encompassed by the Peace Agreement and Non-Binding Term Sheet**

Prepared by:
David L. Sunding, Ph.D.
Berkeley Economic Consulting, Inc.
2550 Ninth Street, Suite 102
Berkeley, CA 94710

September 13, 2007

1. Introduction and Summary of Findings

This report measures the costs and benefits to various Chino Basin agencies of the program elements encompassed by the Peace I and Peace II Agreements. Both agreements are considered relative to a baseline state of the world existing after the Judgment but prior to the Peace Agreement. The analysis examines net returns to the ten largest agencies that hold groundwater rights in the Basin over the time period 2007 to 2030. Together, these agencies account for over 91 percent of Basin safe operating yield.

Overall, the study shows that the two agreements produce substantial net benefits to Chino Basin agencies – over \$904 million in present value terms. The provisions of the Peace II Agreement are especially valuable, as they account for \$723 million (80 percent) of the total net benefit to the Basin agencies studied. Through the attainment of hydraulic control, the program elements in Peace II Agreement include the introduction of large quantities of recycled water in the Basin, which lessens the need to procure other supplies to meet growing demand for water. With respect to the distribution of net benefits across agencies, shown in the summary tables below, the main outcome is that all agencies benefit from the agreements, although the magnitude of the net benefit varies considerably among agencies.

	Total Net Benefit (1000s of 2007\$)		
	<i>Peace I vs. Baseline</i>	<i>Peace II vs. Peace I</i>	<i>Peace II vs. Baseline</i>
City of Chino	\$20,294	\$75,671	\$95,966
City of Chino Hills	\$12,217	\$61,320	\$73,537
City of Ontario	\$42,547	\$189,724	\$232,271
City of Upland	\$9,442	\$34,644	\$44,086
Cucamonga Valley Water District	\$60,667	\$217,462	\$278,128
Fontana Union Water Co.	\$4,839	\$25,429	\$30,268
Monte Vista Water District	\$7,025	\$33,455	\$40,480
San Antonio Water Company	\$1,141	\$5,995	\$7,136
Jurupa CSD	\$15,772	\$19,482	\$35,254
City of Pomona	\$8,189	\$59,348	\$67,537
Total	\$182,133	\$722,530	\$904,663

	Net Benefit per Acre-Foot (2007\$)		
	<i>Peace I vs. Baseline</i>	<i>Peace II vs. Peace I</i>	<i>Peace II vs. Baseline</i>
City of Chino	\$31.30	\$116.70	\$148.00
City of Chino Hills	\$20.60	\$103.38	\$123.98
City of Ontario	\$24.20	\$107.91	\$132.11
City of Upland	\$17.46	\$64.07	\$81.54
Cucamonga Valley Water District	\$32.92	\$118.01	\$150.93
Monte Vista Water District	\$20.13	\$95.88	\$116.01
Jurupa CSD	\$17.86	\$22.06	\$39.92
City of Pomona	\$11.10	\$80.47	\$91.58
Overall Average	\$19.84	\$78.69	\$98.53

In terms of total net benefit, two agencies, City of Ontario and Cucamonga Valley Water District, receive over half of all the net benefits resulting from the agreements. An important reason these agencies receive a large share of the net benefit from the agreements is due to their relative size: the two agencies combined account for approximately half of the consumer demand for Basin water.¹ Controlling for agency size on the basis of demand for Basin water, the net benefit resulting from the combined program elements in the Peace I and Peace II Agreements shows considerably less variation. The table above indicates that 7 of the 8 agencies with positive demand for Basin water receiving benefits ranging from \$82 to \$151 per acre-foot.²

2. Conceptual Framework

The model of groundwater value used in this report is standard in the academic literature and builds on the methodology used in the earlier aggregate study of Basin net benefits. The net benefits resulting from access to a groundwater resource are the gains from pumping (the demand for water) less the cost of extraction and conveyance, and a user cost component, which reflects the lost option value entailed by removing a unit of water from storage. The stream of annual net benefits is discounted back to current dollars using a discount factor predicated on the rate of interest, which is taken to be the current risk-free long-term rate of interest and is set at 4.5 percent per year.

Allocation of aggregate costs and benefits to individual agencies in the Basin is accomplished by a complex set of legal rules (e.g., shares of operating yield), cost-sharing arrangements that fund programs for Basin improvements through collective institutions, and market forces. The goal of this study is to measure net benefits to individual agencies under three scenarios: (i) a baseline case defined by the Judgment; (ii) a set of rules to operate the Basin and fund programs through collections as defined by the Peace Agreement; and (iii) an alternative set of rules that are

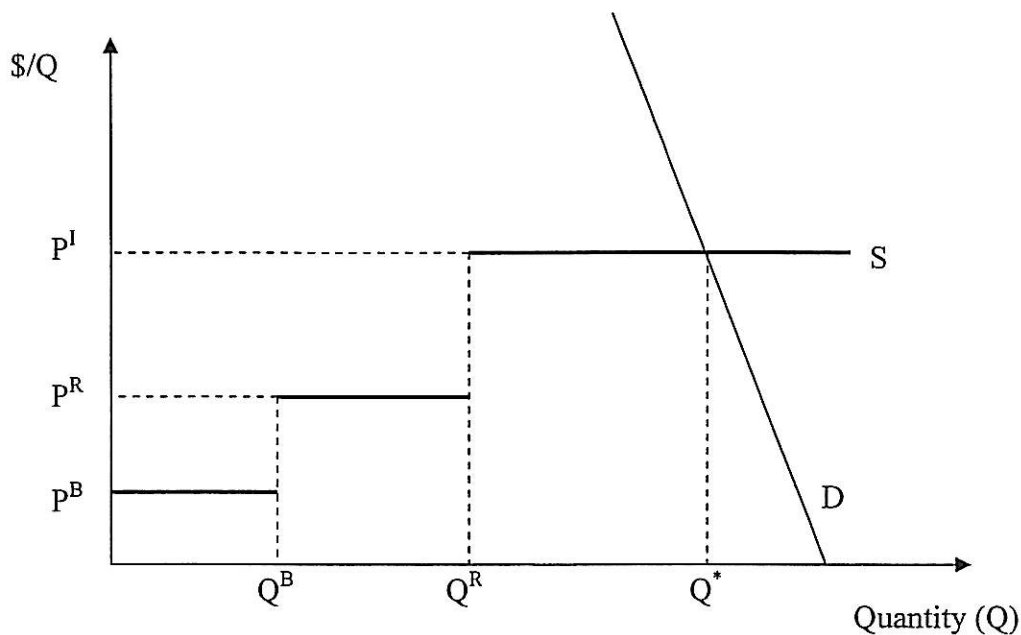
¹ Consumer demand for Basin water, which is met through some combination of Basin supply and water imports, is calculated for each agency as Urban Water Demand less available surface water and other groundwater supplies. Over the 2007-2030 period of study, the City of Ontario and Cucamonga Valley Water District are projected to meet consumer demand of 3.4 million acre-feet out of 6.9 million acre-feet (49 percent) of total consumer demand for Basin water.

² Fontana Union Water Company and San Antonio Water Company are not included in these calculations, because the available surface water and other groundwater supplies for these agencies exceed their Urban Water Demand.

designed to achieve hydraulic control and are defined in Peace II Agreement (as represented in the Non-Binding Term Sheet dated May 23, 2006).

To understand the allocation of benefits among individual agencies in the appropriative pool most clearly, consider for the moment the case in which the appropriative pool comprises 100 percent of the Basin water. Figure 1 depicts the aggregate supply (S) and demand (D) schedules for this Basin. Aggregate demand is total water demand in the Basin, and the supply curve is a step function, ordered from the least expensive uses of water to the most expensive uses of water.³ Many of the effects modeled in this study amount to changes in agencies' cost of meeting water demand. An arrangement or cost-sharing rule that reduces an agency's cost of service provides a net benefit to that agency and its ratepayers.

Figure 1. Conceptual Model: Aggregate Demand and Supply



The first step of the supply curve, which represents the least expensive water source, is groundwater pumped directly from the Basin. The extent of groundwater pumping in the Basin is limited by the steady-state (“safe”) yield, which is represented in the figure by quantity Q^B . The cost per unit of Basin water is denoted by the (implicit) price P^B , which includes lift costs, conveyance costs, and user cost. The second step of the supply curve represents replenishment water. After the safe yield of the Basin is exhausted, additional groundwater pumping can occur provided that replenishment water is purchased to recharge the Basin. The effective capacity of the Basin is the sum of Basin safe yield and Basin recharge capacity, denoted by the quantity Q^R in the figure. (The recharge capacity of the Basin is given by the difference $Q^R - Q^B$.)

³ In practice, the water supply function has multiple steps, with each step representing the various pumping and conveyance costs of a sequence of wells, and, for this reason, aggregate supply conditions are often approximated by an upwards-sloping, continuous supply function; however, the essential points of the model can be made more clearly by grouping water costs into common categories represented by each of the three steps.

Replenishment water is supplied to the Basin through replenishment water imports at the MWD replenishment rate, which is denoted in the figure by P^R . The third step in the supply function, the most-expensive source of water, is imported water for direct (consumptive) use. Imported water for direct use is available to agencies in the Basin at a price denoted by P^I , which reflects the cost of procuring new water supplies from outside the Basin. The cost of developing reliable sources of water outside the Basin may differ across agencies in practice according to the options available to each agency in developing outside water sources. The outside option for each agency in the present study, unless stated otherwise, is taken to have a cost equal to the Tier 2 MWD rate for untreated water.

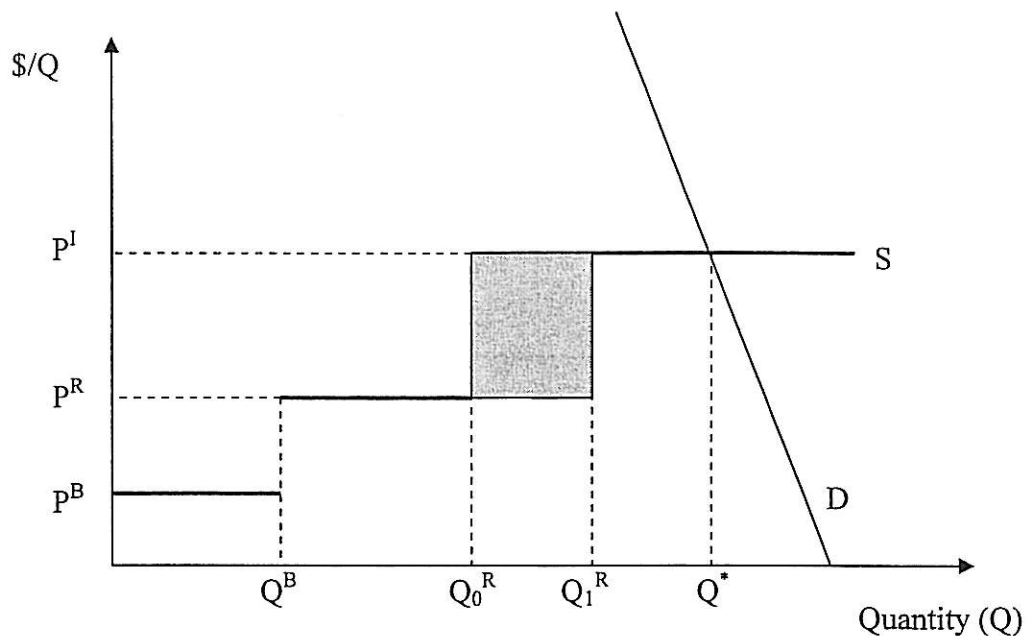
The equilibrium quantity of water consumed is given by the intersection of supply and demand, which occurs at the quantity Q^* and the price P^I . The key to characterizing the distribution of benefits from policies that increase the effective yield from the Basin, either by expanding Basin safe yield or by augmenting Basin recharge capacity, is the understanding that economic values, as captured by prices, are realized on the margin of water use where supply intersects with demand (the third step in the figure). Gains from management of the Basin are created by replacing units of water at the third and most-expensive step of the supply function with less expensive sources of water. Because individual supplies are added together to get aggregate supply, the distribution of market benefits to individual agencies in response to Basin improvements depends on the composition of water use by each agency across each of the steps of supply, in effect where each agency is “located” on the supply schedule. In general, agencies who meet their urban water demand to a greater degree with marginal units of water (i.e., imported water for direct use) acquire a larger share of the benefits from Basin improvements than agencies that are less represented on this “extensive margin” of supply.⁴

Consider a policy that increases the recharge capacity of the Basin. In general, such an effort has two effects that, taken together, can alter the net benefits received by water agencies: (i) increasing the Basin recharge capacity involves a fixed cost component that must be allocated among agencies according to some cooperative, cost-sharing rule; and (ii) increasing the Basin recharge capacity allows for greater use of replenishment water that can displace expensive Tier 2 water on the margin. The distribution of net benefits in the Basin is altered in cases where the market allocation of benefits from the increased use of replenishment water differs from the allocation of cost among individual agencies.

Figure 2 shows the gain from an increase in recharge capacity in the Basin. The increase in recharge capacity increases the effective yield in the Basin, which is depicted in the figure by the movement from Q_0^R to Q_1^R . The increased recharge capacity allows Basin agencies to incur additional replenishment obligations that displace $Q_1^R - Q_0^R$ units of imported water for direct use. The total producer benefit resulting from the increase in recharge capacity is represented by the shaded region in the figure, which sums the difference between the Tier 2 rate and replenishment rate for each additional unit of water that can be replenished.

⁴ Generally, users disproportionately represented on the margin of supply represent agencies that incurred large increases in urban water demand subsequent to the assignment of safe operating yield and were forced to meet the increase in demand with relatively expensive sources of imported water.

Figure 2. Benefit of an Increase in Basin Recharge Capacity

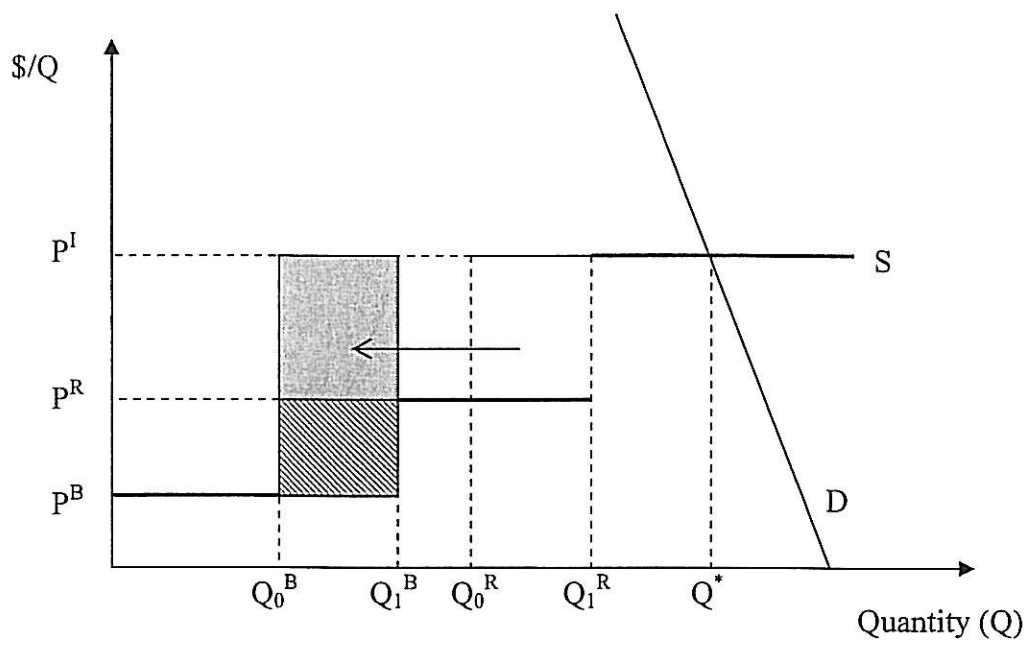


Among individual agencies in the Basin, the benefit of an increase in recharge capacity is distributed exclusively to agencies on the extensive margin of water supply. For this reason, the market return from an increase in recharge capacity can be distributed equally across agencies only in the case where the agencies have equal shares of the third step of water supply in the Basin. To illustrate this point, consider an agency that faces sufficiently small water demand relative to its share of Basin production rights that its urban water demand can be met each year entirely through the use of Basin safe yield. Such an agency would require the use of neither imported replenishment water nor imported water for direct use to meet its urban water demand, and would stand to receive no market benefit from participating in a cooperative policy designed to increase Basin recharge capacity. To the extent that cooperative assessments levied to recoup the cost of increasing Basin recharge capacity are based on relative share of operating yield, as opposed to being levied in proportion to the initial share of imported water deliveries for direct use across agencies, policies that increase Basin recharge capacity alter the distribution of net benefits.

Next, consider the benefit associated with an increase in Basin safe yield. Figure 3 shows the effect of an increase in Basin safe yield from Q_0^B to Q_1^B units. The increase in Basin safe yield extends the lowest step of the supply function and displaces $Q_1^B - Q_0^B$ units of replenishment water purchases. The value of the displaced replenishment water (net of the cost of Basin water) is shown by the cross-hatched region in the figure. The increase in Basin safe yield, in turn, increases the effective yield in the Basin (the sum of Basin yield and recharge capacity) from Q_0^R to Q_1^R , which is represented in the figure by a rightward shift in the replenishment step of supply. The increase in Basin safe yield therefore also displaces $Q_1^R - Q_0^R = Q_1^B - Q_0^B$ units of imported water on the extensive margin of supply, which provides an additional gain represented by the shaded region of the figure. The total market benefit to all agencies is represented by the sum of these two regions. The value of an increase in Basin safe yield is the difference between

the price of imported water for direct use and the procurement cost of Basin groundwater for each unit of additional water made available to Basin agencies.

Figure 3. Benefit of an Increase in Basin Safe Yield



The economic value of an increase in safe yield conveys upward into market benefit across both steps of supply. For this reason, policies which lead an increase in Basin safe yield are not only more valuable to agencies in the Basin than an increase in recharge capacity, but the benefits are also distributed more equally. As in the case of an increase in replenishment capacity, the ultimate repository of market value for a one-unit increase in safe yield is a unit of displaced water on the extensive margin of supply; however, this displacement now occurs with Basin safe yield rather than through the use of imported replenishment water. To see how the market benefits of a policy that increases Basin safe yield are distributed to individual agencies, consider again an agency that meets its urban water demand each year entirely through the use of Basin safe yield without the need for replenishment water or imported water for direct use. Unlike the case of an increase in replenishment capacity, the increase in Basin safe yield provides each agency with physical water assets (e.g., according to its share of Basin safe yield) that can be sold to other agencies in the transfer market. The gain to this agency following the increase in Basin safe yield depends on the price it receives in the transfer market, for instance if the transfer price is equal to the replenishment rate (P^R) then the agency acquires a share of the benefits in the cross-hatched region of the figure in proportion to its share of Basin safe yield. The remaining benefit of each unit of water provided as the share of safe yield to this agency is acquired by the water purchaser in the transfer market.

In sum, agencies that initially meet their urban water demand with a relatively large share of imported water for direct use receive the largest share of the market benefit from a policy that increases Basin safe yield. These agencies receive the full market value ($P^I - P^B$) for each unit of water displaced through their allocated share of the increase in Basin safe yield. To the extent

that agencies with an initially large share of imported water purchases for direct use participate in the transfer market, these agencies also acquire the difference between the Tier 2 water price and the transfer price for each unit of water purchased from agencies that are under-represented on the extensive margin of supply. If the transfer price of water is taken to be equal to the replenishment rate (P^R), then the market benefit represented by the shaded region of Figure 3 is divided among agencies according to their relative share of production on the extensive margin of supply, while the market benefit represented by the cross-hatched region of Figure 3 is divided among agencies according to their relative share of Basin safe yield.⁵ Policies that expand Basin safe yield lead to redistributive effects on the net benefits received by individual agencies whenever the allocation of costs in the cooperative arrangement differ from this distribution of benefits provided in the market.

The above framework for calculating the distribution of net benefits from various program elements is applied to the Chino Basin as follows. First, the water yield in the Basin is calibrated to the relevant quantity supplied by the appropriative pool by netting out production by the overlying rights-holders from the Basin safe yield. This is essentially the distinction made in practice between “safe yield” and “safe operating yield” in the Basin. As it pertains to the calculation of net benefits to agencies with appropriative rights, policies that increase the Basin yield (as in Figure 3) now refer both to policies that directly increase Basin safe yield as well as to policies that redistribute the existing safe yield from overlying right-holders to members of the appropriative pool, for instance through net agricultural transfer.

Second, as defined by the framework above, net benefits are calculated for individual agencies according to calculations on the avoided cost of Tier 2 water purchases provided by program elements in the Peace I and Peace II agreements, respectively, relative to the baseline scenario.⁶ Considering the change in cost from the introduction of new program elements suppresses the need to explicitly calculate components of cost that are common to the baseline, Peace I, and Peace II scenarios.

Third, the analysis abstracts from seasonal and annual cycles in water availability by considering expected values where possible. Seasonal cycles are smoothed in all scenarios by using annual data on demand and supply conditions facing agencies. Annual cycles are smoothed in all scenarios by treating each year as an average weather occurrence represented by the expectation that each 10-year future horizon in the model is comprised of 7 “wet” years, in which replenishment water is available to agencies in the Basin, and 3 “dry” years, in which replenishment water is not available.⁷ Each year in the model thus has the interpretation of representing production decisions that are 30 percent dry and 70 percent wet. By smoothing annual production outcomes into an expected value framework, this implies that a replenishment

⁵ This argument does not rely on the water transfer price being equal to the replenishment rate and applies to any water transfer pricing rule that divides the gains from exchange (defined here by the value $P^I - P^B$).

⁶ An alternative scenario is also considered that denominates the avoided cost of imported water for direct use at the Tier 1 rate, which provides a bracketing condition on the range of outside options available to individual agencies for procuring reliable new sources of water at rates between the Tier 1 and Tier 2 MWD prices.

⁷ The expected sequence of wet and dry years is based on the assumption that underlies program element 2 of the OBMP that “replenishment water is available 7 out of 10 years.” (Implementation Plan: Optimal Basin Management Plan for the Chino Basin, p13: http://www.cbwm.org/docs/legaldocs/Implementation_Plan.pdf.)

water step exists in the supply function in each year of the study, but that the length of the step is treated as 70 percent of the recharge capacity in the Basin.

Fourth, the net benefit of policies that increase the safe operating yield of the appropriative pool is distributed among individual agencies, in part, through water exchanges between agencies in the transfer market. Water transfers are specified to exchange units of water between agencies that are not adequately represented on the extensive margin of supply to agencies which are more highly represented on this margin. Specifically, the water price in the transfer market is fixed at the prevailing MWD replenishment rate in each period to divide these rents from exchange.

Finally, the net benefit returned to each agency under Peace I and Peace II rules relative to the baseline scenario is computed by coupling the market distribution of benefits, as outlined by the framework here, with the distribution of cost implied by the rules encompassed by each agreement. These rules are defined in the following description of scenarios.

3. Common Components

Several components common to all scenarios frame the overall analysis.

3.1. Agencies Considered

Because of the detailed calculations required to divide the net benefit created by each scenario among individual agencies in the study, the study encompasses only the ten largest water-holding agencies in the Basin (the cities of Chino, Chino Hills, Ontario, Pomona, and Upland, Fontana Union Water Company, Monte Vista Water District, Cucamonga Valley Water District, Jurupa Community Services District, and San Antonio Water Company). These ten agencies account for 91.2 percent of the Basin-wide safe operating yield.

3.2. Smoothing Across Hydrologic Years

Because production is smoothed across years, the patterns of local storage and local supplemental storage are also smoothed for each agency. This abstracts from the actual series of puts and takes that rely on temporal adjustments in water storage by accounting for the expected local storage need of individual agencies. (Recall that each year is a representative hydrologic year characterized by expected conditions that are 70 percent wet and 30 percent dry.) A single local storage account is constructed for each agency that combines local storage with local supplemental storage in all scenarios, and the local storage balance of each agency is adjusted each year to reflect the fact that replenishment water is available to meet replenishment obligations only 70 percent of the time.

For this reason, the annual amount held in storage for each agency is $3/7$ ($3/7 = 10/7 - 1$) of the annual excess demand for water that cannot be met by the agency through the allocation of contemporaneous supply. The expected arrival time of a dry year in which replenishment water is not available is given by the mean of a Poisson process ($\mu = 10/3$), and the average holding time for a unit of water held in storage is half the expected arrival time of a dry year, which implies that the average annual amount of water held in local storage is $5/7$ ($5/7 = 3/7 * 10/3 * 1/2$) of the annual excess demand for each agency that cannot be met through the allocation of contemporaneous water supply. In each year, the local storage account is reconciled with the storage balance in the previous year by adding the increment in local storage to the excess

demand for water for each agency. Local storage levels increase smoothly over time in the model for most agencies due to the projected increases in urban water demand.

3.3. *Water Prices*

Annual water prices and the discount factor that converts annual values into present value are common across all scenarios. The market rates used in 2007 are the current water rates listed by MWD (\$427/AF for Tier 2 water, \$238/AF for replenishment water), and a \$13 surcharge is added to the replenishment rate to reflect the \$251/AF charge currently paid by each agency for replenishment water procured through Watermaster. The price of water transactions in the transfer market is taken in each period to be the price of replenishment water.⁸ The MWD rate forecast through 2012 is taken as the mean of the high- and low-rate forecasts provided by MWD over this horizon. Recycled water rates through 2011 are taken from IEUA projections provided in the 2007 IEUA Long-Run Plan of Finance, with a 25 percent non-member surcharge included for recycled water deliveries outside the IEUA service area (Jurupa Community Services District and the City of Pomona). The price of desalter water for urban supply is taken to be the price cap specified in section 7.6d of the Peace Agreement, which is \$375 in 2007. All water rates outside the range of published forecasts are assumed to increase at a rate of 4.5 percent per year. The discount factor is also taken to be 4.5 percent.

3.4. *Demand*

Demand for Basin water for each agency is identical across all three scenarios. Agency-level demand for Basin water is calculated from data provided in the relevant 2005 Urban Water Management Plans (UWMP) by taking the projected demand (gross of conservation) compiled by each agency and converting this into a residual (Basin) demand component by netting out available supplies of surface water and other groundwater sources available to each agency.⁹ In the case of Pomona, residual demand for Basin water is taken to be net of Puente and Spadra Basin recycled water, which implicitly assumes that this water would be available to Pomona irrespective of whether hydraulic control is attained in Chino Basin. Residual Basin water demand is linearized for each agency to recover values in the intervening years between the 5-year intervals reported in each UWMP. Residual demand for Fontana Union Water Co., which has rights but serves no subscribers, is zero in all scenarios, as is residual demand facing San Antonio Water Co., which has available surface water and other basin groundwater supply in excess of demand. The combined residual demand for the remaining agencies in the Basin is 215,996 AF in 2007 and increases over time with population growth projections to 337,246 AF in 2030. Among agencies with positive demand values, residual demand in 2007 ranges from a low of 12,753 AF for Monte Vista Water District to a high of 49,552 AF for the City of Ontario, and the residual water demand for the City of Ontario and Cucamonga Valley Water District over the entire horizon is about double the residual water demand of Pomona, 2-3 times greater than the City of Chino, City of Chino Hills, and Jurupa Community Services District, and 5-6

⁸ The average water transaction price in the data provided in the Watermaster's 2006-2007 Assessment Packet is \$177, which represents an approximate 30 percent discount below the current replenishment rate of \$251. This observed price discount below the expected transfer price accords with the "wet year" transfer price that would arise in a representative hydrologic year that is 70 percent wet and 30 percent dry when the "dry year" transfer price is \$422, a value bounded by the prevailing Tier 2 price of untreated water of \$427.

⁹ for IEUA members, these data are taken from the IEUA Urban Water Management Plan (2005), Table 2-7, and, for Jurupa Community Services District and the City of Pomona, these data are taken from the individual 2005 Urban Water Management Plans (2005) available on each agencies website.

times greater than the residual demand facing the City of Upland and Monte Vista Water District.

3.5. *Desalter Production*

Desalter production is treated as equal across all scenarios. Implicitly, this views the level and location of desalter activity to be determined by the requirements outlined by the Judgment.¹⁰ An alternative approach would be to construct a baseline scenario in which agencies provide their own salt removal infrastructure. One difference between this alternative approach and the present one is that, under baseline conditions with individual desalting O&M costs would be roughly the same, whereas the capital costs of building desalter facilities would be larger by the amount of funding that became available in the Basin through grants made possible by the Peace Agreement.

The projected desalter water for urban supply sets a schedule of delivery to three agencies considered in the study (City of Chino, City of Chino Hills, and Jurupa). The desalter water for urban supply rises from 15,230 AF to 38,088 AF over the period 2007-2030 among agencies in the study, with the remaining desalter supply being delivered to the City of Norco and the Santa Ana River Water Company. Each unit of desalter water supply, including deliveries to the City of Norco and the Santa Ana River Water Company, creates a replenishment obligation for producers in the Basin, and this obligation is divided among agencies according to the various rules encompassed by each of the three scenarios considered (as described below).

3.6. *Watermaster Assessments*

Although the assessment fees levied by Watermaster differ across the scenarios according to the total cost of the program elements embodied in each scenario, the rules in which assessments are distributed across individual agencies are common to all scenarios. Specifically, appropriative pool assessments are based on each agency's calculated share of actual fiscal year production. Given that total production and the share of production by individual agencies encompasses only a subset of total Basin production (e.g., roughly 87 percent in 2007), this approach slightly overestimates assessment costs in all scenarios by attributing 100 percent of the program cost to the ten agencies included in the study. Because the assessment costs used under the Peace I and Peace II scenarios include the baseline costs, as well as significant additional program costs, the over-allocation of assessment costs to individual agencies in the study provides a conservative estimate of the total benefit generated under Peace I and Peace II. The different components of the assessment costs were decomposed into program expenses from the 3-year assessment projections provided by Watermaster.¹¹ All cost components thereafter are assumed to increase at a rate of 4.5 percent.

¹⁰ Projected desalter production is taken from IEUA's UWMP (2005, Table 3-10 and Table 7-1), and includes the desalter production of Chino I, Chino I expansion, Chino II, and Desalter 3. The overall level of desalter activity, which grows to an ultimate production level of 43,000 AF by year 2025, an amount slightly below the 50,457 AF desalter production level anticipated by 2020 in the OBMP: (Implementation Plan: Optimal Basin Management Plan for the Chino Basin, Table 3, p59: http://www.cbwm.org/docs/legaldocs/Implementation_Plan.pdf.)

¹¹ Personal correspondence with Watermaster staff (August 7, 2007).

4. Baseline Scenario

4.1. Basin Supply

In the baseline scenario, available Basin supply for each agency in each year is comprised of the agency's share of: (i) safe operating yield, (ii) projected desalter water for urban supply, and (iii) the net agricultural pool transfer. The safe operating yield is allocated to individual agencies based on the share of safe operating yield in the Basin defined by the Judgment.

The projected desalter water for urban supply is taken for the baseline case (as well as for the remaining scenarios) from projections available in the IEUA UWMP.¹² Desalter water for urban use is treated in the model both as a source of water supply in the Basin and as a replenishment obligation, where the replenishment obligation associated with each unit of desalter water supply is shared by agencies through the allocation of storage losses and replenishment assessments by Watermaster, which are calculated for the baseline case according to each agencies pro rata share of safe operating yield up to the available recharge capacity in the Basin and by in lieu recharge according to each agencies pro rata share of safe operating yield for any obligation above the available recharge capacity.

The net agricultural transfer to each agency in each year is calculated by taking a straight-line projection of land-use conversions between 2006 conditions reported in the 2006-2007 Watermaster Assessment Package, and assumed "full build-out conditions" in 2030 in which all acres in the agricultural pool eligible for conversion are converted.¹³ For the baseline scenario, each converter is credited with 1.3 AF of Basin water for each acre converted, and the sum of water allocated to all land-use conversions and agricultural pool production in each year is deducted from the agricultural pool safe yield of 82,800 AF to get the net agricultural pool transfer to the appropriate pool in each year.¹⁴ Among the ten largest members of the appropriate pool considered in the study, the net agricultural transfer increases from 46,265 AF to 71,377 AF over the 2007-2030 period, which accounts for approximately 92 percent of the total water transfer to the appropriate pool in each year.

Under baseline conditions, there is also an issue of timing of the agricultural pool transfer, with no early transfer of agricultural pool water being made to the appropriate pool prior to the Peace Agreement. Under the Judgment, the agricultural pool allocation was defined to be 414,000 AF in every 5 years. This implies a 4-year waiting period for the appropriate pool before any agricultural transfer takes place, followed by a large allocation of the cumulative agricultural pool under-production in year 5, and an annual stream of transfers thereafter based on a rolling horizon comprised of the previous 5 years agricultural pool under-production. In the

¹² IEUA Urban Water Management Plan (2005), Tables 3-10 and 7-1.

¹³ Watermaster, Fiscal Year 2006-2007 Final Assessment Package, Land Use Conversion Summary (p10): <http://www.cbwm.org/docs/finandocs/Assessment%20Package%20FY%202006-2007%20Final.pdf>. Values after the conversion of all agricultural land eligible for conversion are based on Watermaster calculations (personal communication with Watermaster staff, July 12, 2007).

¹⁴ Under baseline conditions, 1.3 AF of water is allocated to the appropriate pool based on share of safe operating yield in the baseline scenario. This value is not parsed out from the net agricultural transfer that occurs each year, because all water transfers between the agricultural pool and the appropriate pool are based on shares of safe operating yield and an amount greater than 1.3 AF per acre is transferred from the agricultural pool to the appropriate pool in each year.

baseline scenario, the agricultural pool transfer is calculated on an annual basis and timing lags in the delivery of water are suppressed. Differences in the actual timing of the water have no implications for the baseline values in the study, because the rate of water price inflation is taken to be equal to the discount rate, so that delays in water delivery have no implications for the present value calculation.

The sum of these components in each year gives Basin supply for each agency. This represents the first step of the supply function depicted in Figure 1.¹⁵ In total, Basin supply among the ten largest agencies considered in the study rises from 116,044 AF to 164,014 AF over the 2007-2030 period, with the increase in supply generated through land use conversions and increased desalter water for urban supply. (This latter source of water supply is matched by an associated increase in the desalter replenishment obligation, as discussed below.)

4.2. Import Demand

Import demand for each agency in the Basin represents the amount of demand facing each agency that cannot be met with available Basin supplies (including supplies which can be purchased from other Basin agencies in the transfer market). Import demand for each agency, which must be met through some combination of replenishment water purchases and imported water purchases for direct use, is the sum of three components: (i) excess demand for water; (ii) storage account adjustments; and (iii) water transfers.

Excess demand for each agency in the Basin is calculated as residual demand less the available Basin supply. Excess demand for water is negative in each year for Fontana Union Water Co. and San Antonio Water Co., which implies that these agencies are water suppliers in the transfer market. In each year, approximately 70 percent of the excess demand for water in the Basin is derived from Cucamonga Valley Water District and the City of Ontario, which indicates a large water demand for Basin water among these agencies relative to their share of Basin supply.

In practice, the demand for water in dry years is met, in part, by smoothing the additional water supplies available in wet years across time through local storage. As discussed above, the model considers each year to be a representative year (30 percent dry and 70 percent wet), so that the annual amount of water held in local storage by each agency is 5/7 of the annual excess demand that cannot be met with contemporaneous supply. Local storage in the model, which represents the combined total held in local storage and local supplemental storage accounts in a representative year, increases over the period 2007-2030 from 83,706 AF to 141,565 AF among agencies in the study, where the growth in local storage over the period occurs in proportion to the 70 percent increase in excess demand for Basin water as population increases in the region.

Local storage accounts are not constructed for Fontana Union Water Co. and San Antonio Water Co., because these agencies have excess supply of water in each year above what is necessary to meet their urban water demands. In practice, these agencies may hold water in local storage to arbitrage expected differences in transfer prices between wet and dry years, but such arbitrage

¹⁵ Because desalter water is not a unique source of supply, an accounting adjustment is made later to back out desalter water supplies from Basin supply by creating an off-setting replenishment obligation for each unit of desalter water used for urban supply.

opportunities are suppressed in the model, because variations in annual water availability are smoothed in the model to a basis of a representative hydrologic year.

In each year, a storage account adjustment is made for each agency by adding the incremental growth in local storage from the previous year's value to the excess demand for water. The amount of water held in local storage adjusts upward each year to meet the growth in excess demand, and this need for added storage to smooth increasing volumes of water between wet and dry years is deducted from contemporaneous water supply.

After storage account adjustments are made in each year, individual excess demand and individual excess supply conditions clear each year in the transfer market. Excess supply to be cleared in the transfer market in each year is comprised of sales by Fontana Union Water Co. and San Antonio Water Co., and, to a lesser extent, by Jurupa Community Services District beginning in 2021. Jurupa CSD becomes a net supplier of water in the transfer market due to the relatively large purchases of desalter water for urban supply in the data provided in IEUA's UWMP (2005). Water transfers are allocated from these suppliers to individual agencies with positive demand for transfer water in proportion to each agency's share of excess demand relative to total excess demand for water in the Basin. The total amount of water transacted in the Basin rises from 12,677 AF to 20,401 AF over the 2007-2030 period, and the largest buyers of transfer water in each period are Cucamonga Valley Water District and the City of Ontario.

4.3. *Water Imports*

Water is imported into the Basin to meet the sum of import demand for direct use and desalter replenishment requirements. Imported water is taken as replenishment water in each period up to the limit on recharge capacity in the Basin (i.e., the second step of the water supply relationship in Figure 1), and the residual quantity of imported water that cannot be met with replenishment water is taken as Tier 2 water imports. Under baseline conditions, the recharge capacity of the Basin is taken to be 29,000 AF per year, which represents the available spreading facilities discussed as pre-existing facilities in program element 2 of the OBMP.¹⁶ Given the smoothing of production into the basis of representative hydrologic years, this implies that baseline conditions in the Basin can accommodate 20,300 AF of recharge per year ($0.7 \times 29,000$ AF). This recharge capacity defines the limit to which imported water in the Basin can be taken at the lower MWD replenishment rate.¹⁷

Imported replenishment water in the Basin must first be taken to meet the replenishment obligation of the desalters. The desalter replenishment obligation under baseline conditions is desalter production for urban supply less a 2 percent storage loss component deducted from individual local storage accounts.¹⁸ Under baseline conditions, the desalter replenishment obligation (net of the storage loss allocation) begins at 13,556 AF in 2007 and grows to 40,169 AF per year in 2030. In the year 2010, the desalter replenishment obligation rises to 22,604 AF,

¹⁶ Implementation Plan: Optimal Basin Management Plan for the Chino Basin, p13:
http://www.cbwm.org/docs/legaldocs/Implementation_Plan.pdf.

¹⁷ The increase in Basin recharge capacity, as described in the Recharge Master Plan (WEI, Black and Veatch 2001: <http://www.cbwm.org/docs/rechdocs/rechmastplanphase2rep/chapters/pdf/>) is a major program element considered in the Peace Agreement, both in terms of benefit and cost.

¹⁸ Personal correspondence with Watermaster staff.

an amount in excess of the 20,300 AF recharge capacity of the Basin in the baseline scenario, and the replenishment obligation remains above the recharge capacity for the remainder of the time horizon. Over the period 2007-2009, the amount of recharge capacity in excess of the desalter replenishment requirement (e.g., $20,300 - 13,556 = 6,744$ AF in 2007) is allocated to individual agencies in proportion to each agency's share of imported water demand relative to total imported water demand in the Basin. Over the period 2010-2030, the desalter replenishment obligation exceeds the recharge capacity of the Basin, and the remaining desalter replenishment obligation above 20,300 AF is met through in lieu production by individual agencies in the Basin. In the baseline scenario, the desalter replenishment obligation, both the portion met with replenishment water purchases and the portion taken as in lieu production, is met by individual agencies according to each agency's pro rata share of safe operating yield.¹⁹

Aggregate supply and demand are cleared each year on the third step of supply by reconciling effective Basin water supply (Basin supply plus Basin recharge) with import demand through purchases of Tier 2 water from MWD. Tier 2 MWD water purchases are allocated to individual agencies based on the share of each agency's imported water demand relative to total imported water demand in the Basin. Under baseline conditions, the total purchases of Tier 2 water among agencies in the Basin rises from 97,766 AF in 2007 to 200,097 AF in 2030, with the combined purchase share of Cucamonga Valley Water District and the City of Ontario—the two largest purchasers of imported water—representing between 62 percent and 73 percent of total Tier 2 water purchases in each year.

4.4. *Water Procurement Costs*

The total cost of water procurement to individual agencies is the sum of five components: (i) Tier 2 water purchases; (ii) transfer water purchases; (iii) desalter water purchases for urban supply; (iv) desalter replenishment costs; and (v) Watermaster general assessments on the appropriative pool. Water procurement costs associated with Basin production also exist, but these costs exist in all scenarios and consequently net out of the comparison of the various program net benefits.

For the purpose of allocating Watermaster assessments, Tier 2 water purchases are assumed to occur outside the framework of the cooperative organization. That is, the actual production level of each agency, as recorded by the Watermaster each fiscal year for the basis of assessments, does not include any production demands that an individual agency meets through Tier 2 purchases acquired from MWD. For this reason, a separate accounting calculation is made for actual production to recover the allocation of Watermaster assessment costs to individual agencies in each period. Actual production for each agency is residual demand for Basin water less Tier 2 water purchases less storage losses and adjustments to the storage account balance.

Watermaster replenishment assessments are levied to recover desalter replenishment costs (for units up to the 20,300 AF recharge capacity of the Basin) through replenishment water purchased from MWD each year. These costs are allocated to individual agencies according to each agency's pro rata share of safe operating yield.

Watermaster general assessments are levied under baseline conditions to cover the cost of administrative costs, exclusive of the OBMP costs and the special project costs that pertain to

¹⁹ Personal correspondence with Watermaster staff (August 29, 2007).

Peace I and Peace II. In 2007, these costs account for \$816 thousand of the projected \$7.87 million costs to be levied for general assessments under prevailing Peace conditions. Under baseline conditions, moreover, only the appropriative pool share of general assessment costs is paid by the appropriative pool, which amounts to \$624 thousand of the \$816 thousand administrative costs in 2007, with the remaining share of costs paid by the overlying agricultural and non-agricultural pools. The costs attributed to the appropriative pool are allocated across to individual agencies according to each agency's share of actual production relative to total Basin production.

4.5. *Summary of Baseline Outcomes*

Table 1 provides a breakdown of the projected outcome for the eight largest producers under baseline conditions in the year 2015. Total urban water demand for these producers is 293,214 AF in 2015. Total residual demand, which is the difference between urban water demand and the Basin supply available to each agency, is 273,430 AF. Available Basin water supply, the sum of the shares of safe operating yield, net agricultural transfer (inclusive of land-use conversions), and desalter water for urban supply, is 123,554 AF in the year 2015. The total water transfers of 13,089 AF reflect sales by Fontana Union Water Company and San Antonio Water Company to the remaining producers encompassed by the study. The net storage acquisition of 1,022 AF reflects the change in the local storage balance between the year 2014 (106,032 AF) and the year 2015 (107,054 AF). This increment in the water held in local storage, which must be met by in lieu production by agencies, adds to residual demand for water in the Basin, and the difference between this term and the sum of available Basin water supply and water purchases in the transfer market results in a combined import demand among producers of 137,809 AF.

Total desalter production in the year 2015 is 34,122 AF, which exceeds the available recharge capacity of the Basin, so that imported water demand is met entirely with Tier 2 water purchases.²⁰ Actual production among these eight agencies (123,250 AF) is the difference between residual demand for Basin water, Tier 2 purchases from MWD, in lieu recharge taken to meet the desalter replenishment obligation, storage losses (2% of local storage = 2,141 AF), and the net storage acquisition. Watermaster administrative assessments are in 2015 are \$1.2 million, of which \$957 thousand is paid by agencies in the appropriative pool.

²⁰ An additional 3,905 AF of desalter water production is projected for the Santa Ana River Water Company and City of Norco, who are not considered in this study.

Table 1: Year 2015 Outcome Under the Baseline Scenario

Component	Appropriator										Total
	Chino	Chino Hills	Ontario	Upland	Cucamonga	Monte Vista	Jurupa	Pomona			
Urban Water Demand	26,200	24,700	66,600	22,500	72,500	14,100	36,350	30,264			293,214
Available Surface Water	0	0	0	5,200	3,000	0	500	0			8,700
Available Other Groundwater	0	0	0	3,800	5,400	0	0	1,884			11,084
<i>Residual Demand</i>	26,200	24,700	66,600	13,500	64,100	14,100	35,850	28,380			273,430
Safe Operating Yield	4,034	2,111	11,374	2,852	3,619	4,824	2,061	11,216			42,092
Net Ag Transfer	8,916	2,398	8,660	1,875	2,980	3,228	12,840	7,371			48,268
Desalter Water Supply	5,000	4,200	5,000	0	0	0	19,922	0			34,122
<i>Available Supply</i>	17,950	8,709	25,033	4,727	6,600	8,052	33,896	18,587			123,554
Net Storage	487	280	717	-122	1,039	108	-1,653	166			1,022
Transfers	758	1,411	3,668	750	5,078	534	26	864			13,089
<i>Import Demand</i>	7,979	14,860	38,616	7,901	53,461	5,622	275	9,095			137,809
Local Storage	5,893	11,422	29,690	6,266	41,072	4,320	1,396	6,995			107,054
Tier 2 Purchases	7,979	14,860	38,616	7,901	53,461	5,622	275	9,095			137,809
Actual Production	17,512	9,328	25,067	4,589	9,889	7,210	33,343	16,312			123,250
Watermaster Assessments	\$97	\$52	\$139	\$26	\$55	\$40	\$185	\$91			\$685

Notes:

1. All figures in acre-feet except Watermaster assessments.
2. Watermaster assessments are expressed in real terms (1,000s of 2007\$.)

5. Peace I Scenario

The Peace Agreement introduced various program elements in the Basin that were not present under baseline conditions. The main components of the Peace Agreement considered here that altered net benefits in the Basin are: (i) an increase in Basin recharge capacity from 29,000 AF to 134,000 AF; (ii) a change in the rules for land use conversion; (iii) transfer of agricultural pool assessments to the appropriative pool; (iv) the introduction of a storage and recovery program; (v) an increase in stormwater recovery from 5,000 AF per year to 12,000 AF per year; and (v) the Pomona credit. This section describes the changes that occurred through these program elements to alter net benefits received by individual agencies in relation to the earlier discussion of the baseline outcome detailed above.

5.1. Basin Supply

Under the set of Basin programs encompassed by the Peace Agreement, three factors led to changes in available Basin supply: (i) increased stormwater capture; (ii) a change in the water allocation resulting from land use conversions (including “early transfer”); and (iii) the introduction of the Dry Year Yield program for storage and recovery through MWD. The increased stormwater capture is represented by an annual increase in Basin supply by 12,000 AF of “new yield” in exchange for tying up 12,000 AF of recharge capacity.

The net agricultural transfer to each agency under Peace conditions increased the return to each converter from 1.3 AF of Basin water for each acre converted to 2.0 AF of Basin water for each acre converted. An early transfer program of 32,800 AF per year to the appropriative pool was also introduced, which ultimately led to an over-allocation of agricultural pool water to the appropriative pool.²¹ The net agricultural pool allocation to individual agencies replicates the Watermaster calculation in each year, given the projected pattern of land use conversion calculated through 2030. The agricultural pool transfer provides a credit of 2.0 AF per acre for all land-use conversions taking place after the signing of the Peace Agreement and credits earlier conversions at the 1.3 AF per acre rate and the early transfer to members of the appropriative pool is based on each agency’s share of safe operating yield. Because the sum of these two components and the projected agricultural pool production level after land-use conversions have been made exceeds the 82,800 AF of available agricultural pool water in every year, each agency is charged a replenishment obligation for the amount of over-allocated agricultural pool water in proportion to each agency’s share of safe operating yield. This is equivalent to deducting the over-allocation of agricultural pool water from the 32,800 AF early transfer after land use conversions take place and dividing this residual amount of water (e.g., $32,800 - 4,270 = 28,530$ AF in Fiscal Year 2006-2007) pro rata among members of the appropriative pool.

In total, the net agricultural pool transfer to the appropriative pool is the same under baseline and Peace rules (49,831 AF in 2007 and 76,909 AF in 2030). Among appropriators considered in the

²¹ Watermaster, Fiscal Year 2006-2007 Final Assessment Package, Land Use Conversion Summary (p10): <http://www.cbwm.org/docs/financdocs/Assessment%20Package%20FY%202006-2007%20Final.pdf>. In the Fiscal Year 2006-2007 Final Assessment Package provided by the Watermaster, the amount of over-allocation was 4,270 AF (3,893 AF of which is incurred as a replenishment obligation to agencies encompassed by the study), and the model projects this total to increase through the process of future land use conversions to 5,127 AF in 2030 (4,674 AF of which is incurred as a replenishment obligation to agencies encompassed by the study).

study, which encompass 91.2 percent of safe operating yield but 100 percent of land use conversions, the change in land-use conversion rules under the Peace Agreement provides a slightly larger net agricultural transfer among agencies considered than under baseline conditions (e.g., 71,673 AF after all conversions take place compared to 71,377 AF under baseline rules). The outcome for individual agencies under the Peace rules for net agricultural pool transfer relative to the baseline scenario is discussed later.

The DYY storage and recovery program alters the allocation of Basin water supply by allowing individual agencies to purchase water from MWD in wet years and store it for use in subsequent dry years. The effective rate paid to MWD for DYY water inputs, net of subsidies paid to the participating agencies, is approximately equal to the current replenishment rate,²² and the annual MWD replenishment rate is used in each period to price DYY water inputs to individual producers. The present analysis considers the value of the currently-approved 150,000 AF storage and recovery program.²³ Although further expansion beyond this level has been discussed, the study does not consider the potential expansion of this program to 500,000 AF nor the possibility for sales of this water to take place outside the Basin. The increase in the DYY program from 100,000 AF to 150,000 AF is assumed to take place immediately in the year 2007. To adjust the implied pattern of puts and takes of a 150,000 AF storage and recovery program to the smooth production horizon of a representative hydrologic year, we assume that water production in the DYY program is limited to 50,000 AF in each dry year. Given a 0.3 probability of a dry year, this implies an average of 15,000 AF of water is made available in the Basin each year through the DYY program. The distribution of the DYY program storage across individual agencies is given by the table of DYY shift obligations provided by IEUA for the current DYY-100 program, and these values are scaled upwards proportionately to 150,000 AF.²⁴ It is assumed that there is no storage loss for units of water placed in storage.²⁵ In effect, this implies that participating agencies in the DYY program purchase 15,000 AF of water in a representative hydrologic year at MWD replenishment rates and convert this amount into 15,000 AF of reliable Basin supply through the use of existing recharge facilities.

Among the ten largest agencies considered in the study, Basin supply under Peace conditions rises from 137,416 AF in 2007 to 185,692 AF in 2030. This reflects an approximate increase of 26,000 AF per year relative to baseline conditions (under baseline conditions, Basin supply is 111,486 AF in 2007 and 159,496 AF in 2030), and the source of the additional Basin supply under the Peace Agreement amounts to the roughly 11,000 AF increased stormwater yield (the share of the 12,000 AF “new yield” acquired by the ten largest agencies) plus the 15,000 AF recovery of DYY storage water.

5.2. *Import Demand*

Import demand for each agency in the Basin is calculated in the same manner as the baseline case. As noted above, this involves deducting Basin supply from the Basin water demand facing each agency to get excess demand, correcting excess demand to account for the dynamic adjustments that occur in local storage accounts, and then reconciling excess supply and excess

²² Personal communication with IEUA staff.

²³ Personal communication with Watermaster staff.

²⁴ IEUA Urban Water Management Plan (2005), Table 6-5.

²⁵ Personal correspondence with Watermaster staff.

demand among individual agencies in the Basin through water transactions in the transfer market.

Two major changes occur under Peace in the resulting evaluation of import demand. First, import demand is now lower each year than under baseline conditions by the approximate 26,000 AF of additional Basin supply that is available each year. This ultimately defrays Tier 2 water purchases as the supply-side of the model is built upwards to the third step of supply. Second, the amount of water held in the local storage account of individual agencies decreases, for instance by 17,769 AF in 2007 (83,706 AF in the baseline versus 65,937 AF under Peace.) Much of this difference in local storage balances is the result of participation in the DYY program crowding-out storage activities that would otherwise take place in local storage accounts.

5.3. *Water Imports*

As in the baseline case, annual water imports must flow into the Basin to meet the sum of import demand and replenishment requirements, where the Basin replenishment requirements now include 12,000 AF of stormwater recharge and 15,000 AF of replenishment water purchases for the DYY program in addition to the desalter replenishment obligation. Imported replenishment water represents the second step of the water supply relationship in Figure 2, and this step is elongated under Peace by the increase in Basin recharge capacity to 134,000 AF. Given the smoothing of production, this implies that Basin recharge capacity is 93,800 AF per year ($0.7 \times 134,000$ AF) in a representative hydrologic year. Of this amount, 27,000 AF per year of recharge capacity is now used to accommodate the combined requirements of stormwater recharge and DYY program recharge, and a substantial share of the remaining recharge capacity is used to fulfill the replenishment obligation of the desalters. The desalter replenishment obligation in each year is defined in the same manner as in the baseline scenario to be desalter production less storage losses of 2 percent deducted from the local storage accounts of producers in the Basin.²⁶

Under Peace conditions the need for imported Tier 2 water is smaller than under the baseline. Three main effects drive this change: (i) the recharge capacity of the Basin can now accommodate the entire desalter replenishment obligation each year without requiring agencies to engage in in-lieu recharge; (ii) the amount of annual Basin over-production that can be sustained in the Basin is larger by the amount of the increase in recharge capacity; and (iii) the reduction in local storage reduces the allocation of Basin storage losses to the desalter. The first two components produce direct value to agencies on the extensive margin of supply by defraying Tier 2 purchases (as depicted in Figure 2). The third component, the change in the designation of storage losses against the replenishment obligation of the desalters, creates no economic benefit to the Basin and is purely redistributive in its effects, because the change in the designation of storage losses does not alter the physical recharge capacity of the Basin. An individual agency that incurs a one-unit storage loss gives up a unit of water from local storage, and the value of this unit of water is distributed back to other agencies in the form of a credit against the desalter replenishment obligation.

²⁶ Peace Agreement, Article 5.2b(xii).

Under Peace conditions, the amount of replenishment water that is purchased from MWD in each representative hydrologic year is 81,800 AF (93,800 AF of recharge capacity less the 12,000 AF stormwater recharge). This 81,800 AF of replenishment water, which is purchased at MWD replenishment rates, is allocated first to meet the 15,000 AF per year replenishment water requirement for DYY participants and to meet the replenishment obligation of the desalter, with the remaining recharge capacity in each year allocated among individual agencies according to each agency's imported water demand relative to total imported water demand in the Basin.

As in the baseline scenario, imported water demand in excess of the recharge capacity of the Basin is cleared each year in the Peace I scenario on the third step of supply through purchases of Tier 2 water from MWD. Tier 2 MWD water purchases, as in the baseline case, are allocated to individual agencies based on the share of each agency's imported water demand relative to total imported water demand in the Basin.

Under peace conditions, the total purchases of Tier 2 water among agencies in the Basin rise from 25,692 AF in 2007 to 127,710 AF in 2030, a decline of approximately 72,000 AF per year relative to the baseline scenario. This decline in Tier 2 water purchases is approximately equal to the increase in recharge capacity under the Peace Agreement and represents a replacement of Tier 2 water purchases with replenishment water purchases at the lower MWD rate in each year. Cucamonga Valley Water District and the City of Ontario, the two largest buyers of imported water in both the baseline and Peace I, receive the largest share of the net benefit of this offset in Tier 2 water, because of their disproportionate representation on the extensive margin of supply.

5.4. *Water Procurement Costs*

The total cost of water procurement to individual agencies is the sum of eight components: (i) Tier 2 water purchases; (ii) transfer water purchases; (iii) desalter water purchases for urban supply; (iv) replenishment water purchases; (v) desalter replenishment costs; (vi) Watermaster general assessments on the appropriative pool; (vii) Watermaster general assessments on the agricultural pool paid by the appropriative pool; and (viii) the Pomona credit. The first three components of water procurement cost are calculated in the same manner as in the baseline case, with the exception that the total quantities of Tier 2 purchases and transactions in the transfer market differ.²⁷

Desalter replenishment costs are recovered through Watermaster replenishment assessments in an amount equal to the cost of replenishment water purchased from MWD to meet the replenishment obligation of the desalters each year. As in the baseline case, these costs are allocated to individual agencies according to each agencies pro rata share of safe operating yield.²⁸

Replenishment water purchases allocated to individual agencies related to the DYY program are levied back on individual agencies in proportion to their storage claims in the program, as detailed above. Any remaining recharge capacity in excess of the amount needed to fulfill DYY

²⁷ Changes in the pattern of Tier 2 water purchases and water transfers that occur across scenarios and over time within each scenario can have equilibrium effects on market prices; however, price changes in these markets are not considered in the scope of the present study.

²⁸ Personal correspondence with Watermaster staff (August 29, 2007).

contributions and the replenishment obligation of the desalters and DYY is allocated in each year to individual agencies according to each agency's imported water demand relative to total imported water demand in the Basin.

The total costs recovered through Watermaster general assessments for the program elements in the Peace I scenario include OBMP assessments, special project assessments, and recharge debt payments. The additional OBMP and special project assessments in the Peace I scenario amount to a total \$7.05 million out of the \$7.87 million (90 percent) in total Watermaster expenses in 2007, and these additional costs of implementing the program elements in the Peace I scenario rise to \$13.8 million in 2030. As in the baseline scenario, the allocation of all appropriative pool general assessments to individual agencies is made based on each agency's share of safe operating yield in the Basin.

The Peace Agreement negotiated the transfer of all general assessment fees from the agricultural pool to the appropriative pool. The total assessment fees paid by the agricultural pool, which are now assumed by members of the appropriative pool, amount to \$1.1 million in 2007 and decline to \$460 thousand in 2030 due to land use conversions that result in a decline in agricultural water use as a share of total Basin safe yield. In total, the general assessments paid by the appropriative pool inclusive of the transfer of agricultural pool assessments increase ten-fold from \$624 thousand in the baseline scenario to \$6.3 million under Peace conditions in 2007 and the assessment costs in the Peace I scenario remain at least 7 times as large as the costs attributable to baseline conditions in the Basin throughout the production horizon. The agricultural pool share of Watermaster assessment fees is paid by individual agencies in the appropriative pool according to the agency's share of the net agricultural transfer in each year.²⁹

Finally, the Pomona credit of \$66,667 per year is paid every year by each agency in proportion to the agency's share of safe operating yield.

5.5. Comparison of Baseline and Peace Agreement Outcomes

Under the terms of the Peace Agreement, the present value of the net benefit of the program elements for the ten agencies encompassed by the study is \$182 million. The main component associated with this increased net benefit is the displacement of Tier 2 water with new Basin yield and replenishment water. Under baseline conditions, the present value of total Tier 2 water purchases over the 2007-2030 period is \$1.53 billion, whereas, under Peace conditions, the present value of Tier 2 water purchase over the period decreases to \$931 million. This decrease in Tier 2 water under Peace conditions was replaced with replenishment water at the lower MWD rate, and the combined cost of imported water in the Peace I scenario decreased by \$310 million in present value terms (from \$2.06 billion under baseline conditions to \$1.75 billion under Peace conditions). This benefit was acquired at the expense of an increase in the present value of assessment costs from \$16.7 million to \$146 million.

²⁹ For details on this calculation and the distribution of general appropriative pool assessments based on pro rata share of safe operating yield, see Watermaster, Fiscal Year 2006-2007 Final Assessment Package, Pool 3 Assessments Summary (p5): <http://www.cbwm.org/docs/finandocs/Assessment%20Package%20FY%202006-2007%20Final.pdf>.

Table 2 provides a breakdown of the projected outcomes under Peace conditions in the year 2015 for the eight largest producers in the study. A comparison of these outcomes with those that emerge under baseline conditions in Table 1 provides a useful profile of the essential differences in Basin performance under each scenario. Residual demand for Basin water is identical in each scenario. This quantity corresponds to the value Q^* in Figure 1. The safe operating yield of the agencies considered is the same in both cases, as is desalter water for urban supply. The net agricultural pool allocation to the appropriative pool is slightly higher under Peace (48,848 AF relative to 48,268 AF under baseline rules). This is because the agencies considered in the study represent 91 percent of Basin production and nearly 100 percent of the land use conversions, which are credited with a larger water allocation under Peace. Available Basin supply in the Peace I scenario is accordingly higher by the sum of this component and the 15,000 AF of supply available to agencies through the DYY program, which leads to a commensurate reduction in imported water demand.

The level of local storage is lower under Peace by approximately the 15,000 AF of storage that is now accounted for in the DYY program. Replenishment purchases are now possible due to the increase in Basin recharge capacity, and the agencies combine to purchase 31,533 AF of replenishment water in the year 2015.

In total, Tier 2 water use falls from 137,809 AF under baseline conditions (inclusive of the purchases required by in lieu recharge) to 82,658 AF under Peace conditions. This decrease in Tier 2 water imports reflects the displacement of Tier 2 water purchases through a combination of new Basin yield and increased replenishment water purchases made possible by the expansion of Basin recharge capacity.

Actual production among these eight agencies is higher in the Peace I scenario by 36,953 AF in the year 2015 (160,203 AF vs. 123,250 AF in the baseline scenario). This increment in Basin production represents the effective increase in Basin recharge capacity available to these producers after accounting for the combined 27,000 AF of recharge capacity utilized by stormwater and DYY program recharge.

Table 2: Year 2015 Outcome Under Peace I Scenario

Component	Appropriator										Total
	Chino	Chino Hills	Ontario	Upland	Cucamonga	Monte Vista	Jurupa	Pomona			
Urban Water Demand	26,200	24,700	66,600	22,500	72,500	14,100	36,350	30,264			293,214
Available Surface Water	0	0	0	5,200	3,000	0	500	0			8,700
Available Other Groundwater	0	0	0	3,800	5,400	0	0	1,884			11,084
<i>Residual Demand</i>	26,200	24,700	66,600	13,500	64,100	14,100	35,850	28,380			273,430
Safe Operating Yield	4,034	2,111	11,374	2,852	3,619	4,824	2,061	11,216			42,092
New Yield	883	462	2,489	624	792	2,455	451	2,489			10,645
Net Ag Transfer	10,558	2,173	7,210	1,467	2,460	2,553	16,658	5,769			48,848
Desalter Water Supply	5,000	4,200	5,000	0	0	0	19,922	0			34,122
Storage & Recovery	527	658	3,671	1,364	5,160	1,801	909	909			15,000
<i>Available Supply</i>	21,001	9,604	29,744	6,308	12,032	10,234	39,074	20,349			148,346
Net Storage	428	288	771	-107	1,058	133	0	225			2,797
Transfers	726	1,985	4,854	914	6,854	516	-3,224	1,065			13,690
<i>Import Demand</i>	4,901	13,399	32,773	6,171	46,272	3,483	0	7,192			114,191
Local Storage	3,713	10,783	26,326	5,137	37,191	2,761	0	5,737			91,649
Replenishment Purchases	1,353	3,700	9,050	1,704	12,778	962	0	1,986			31,533
Tier 2 Purchases	3,548	9,699	23,723	4,467	33,494	2,521	0	5,206			82,658
Actual Production	21,653	11,373	34,071	7,119	18,142	10,695	35,850	21,299			160,203
Watermaster Assessments	\$849	\$401	\$1,258	\$267	\$629	\$411	\$1,353	\$795			\$5,963

Figure 1 compares the benefit received by each agency from reduced water procurement costs to the increase in assessment cost that result from the implementation of the program elements in the Peace I scenario. The assessment costs associated with implementing the program elements considered in the Peace I scenario are represented by an overall increase from \$16.7 million to \$146 million in present value terms. The program benefits in present value terms in the Peace II scenario are reflected in the decrease in water procurement costs from \$2.1 billion under baseline conditions to \$1.8 billion in the Peace I scenario.

In terms of the total benefit, two agencies, City of Ontario and Cucamonga Valley Water District, receive the largest share of the benefits resulting from the Peace I program elements, while the assessment costs are distributed more equally among producers. In total, the City of Ontario and Cucamonga Valley Water District together receive 46 percent of the benefit of decreased water procurement costs and incur 32 percent of the increase in assessment costs. An important reason these agencies receive a large share of the net benefit from the agreements is due to a scale effect in the annual level of residual demand for Basin water, for instance in 2015 these two agencies combined account for 48 percent of residual demand for Basin water (130,700 AF out of 273,430 AF).

Baseline vs. Peace I Benefit-Cost Comparison

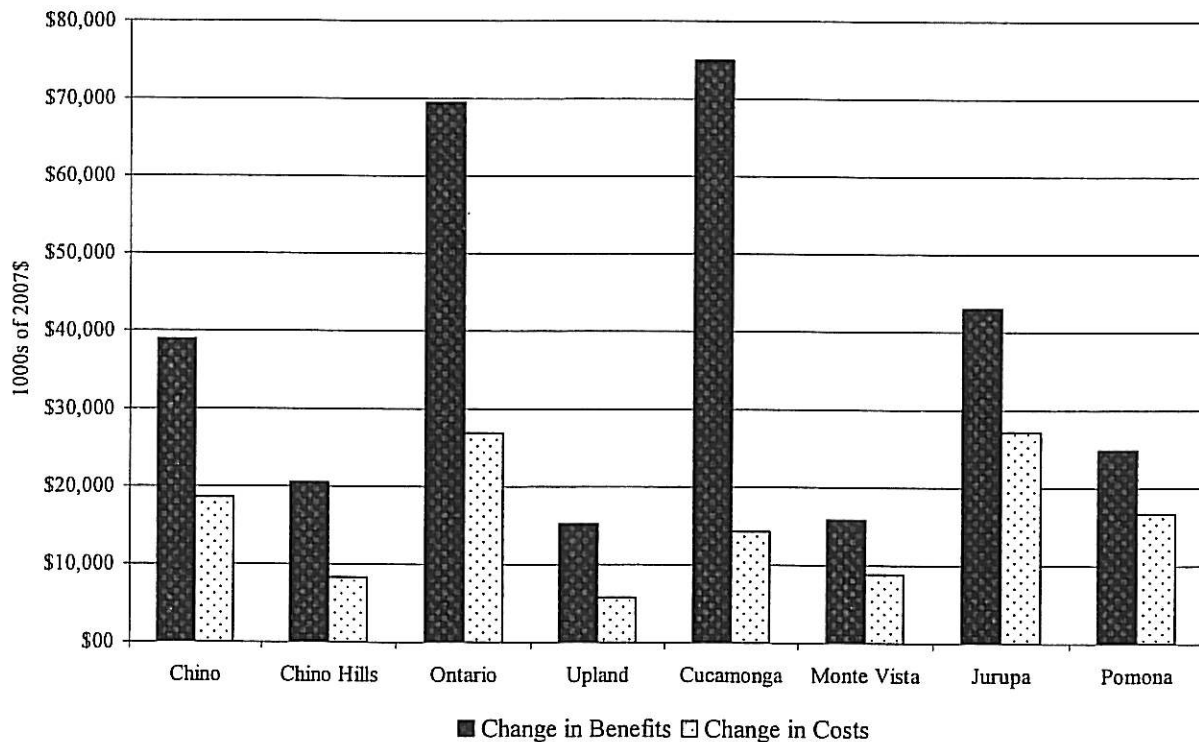


Figure 1

Distribution of Net Benefit, Peace I vs. Baseline (\$/per AF)

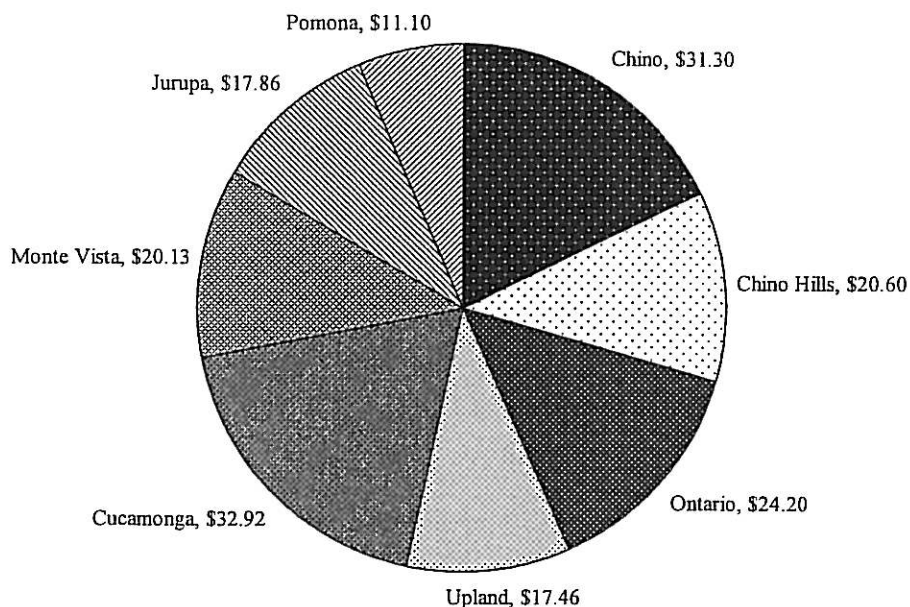


Figure 2

Figure 2 shows the distribution of net benefits per acre-foot of residual water demand across individual agencies in the Basin resulting from the program elements in the Peace I scenario. Fontana Union Water Company and San Antonio Water Company are not included in these calculations, because the available surface water and other groundwater supplies for these agencies exceed their total demand. Controlling for agency scale on the basis of residual demand for Basin water among the remaining producers, the net benefit resulting from the combined program elements in the Peace II Agreement is grouped between \$11.10/AF for the City of Pomona to \$32.92/AF for Cucamonga Valley Water District. Overall, the present value of the net benefit to all parties over the 24 year horizon resulting from a move from baseline conditions to Peace conditions is \$182 million and the total residual demand for water over this period is 6.9 million AF, which implies an average return of \$19.84 per acre-foot to the agencies encompassed by the study.

6. Peace II Scenario

The Peace II scenario introduces several major program elements in the Basin that build on the existing conditions under Peace. The main components of the Peace II scenario that alter market values in the Basin relative to the Peace I scenario are: (i) hydraulic control, which provides 400,000 AF of cumulative forgiveness and SAR inflow of 9,900 AF per year in the Basin; (ii)

the production of recycled water; (iii) a change in the allocation of the replenishment obligation associated with over-production in the agricultural pool transfer; (iv) a transfer of overlying non-agricultural pool water to the appropriative pool; and (v) a transfer of the Pomona credit from Basin agency to Three Valleys. This section describes the changes that occurred through these program elements to alter net benefits received by individual agencies in relation to the earlier discussion of the existing program elements in Peace Agreement.

6.1. Basin Supply

Under the set of programs encompassed by the Peace II Agreement, five factors led to changes in available Basin supply relative to prevailing conditions under Peace: (i) a change in the water allocation resulting from land use conversions; (ii) the influx of recycled water (for direct use and groundwater recharge), (iii) the transfer of 49,178 AF of overlying non-agricultural water to the appropriative pool; (iv) 9,900 AF per year of inflow from the Santa Ana River (SAR), eventually rising to 12,500 AF per year; and (v) 400,000 AF of cumulative forgiveness for Basin over-production. Unlike the program elements implemented in the Peace I scenario, all elements of the Peace II scenario (with the exception of the transfer of the Pomona credit to Three Valleys) fundamentally alter supply conditions on the lowest step of the supply relationship by contributing new sources of Basin yield.

The net agricultural transfer to each agency in the Peace II scenario maintains the return to each converter of 2.0 AF of Basin water for each acre converted and the early transfer of 32,800 AF per year to the appropriative pool, but alters the allocation rule for the replenishment obligation for the amount of over-allocated agricultural pool water. Under Peace II rules, the replenishment obligation for over-allocated agricultural pool water is made on the basis of a weighted average of the share of safe operating yield and share of cumulative land-use conversions for each agency (the “proportion of water available for reallocation (PAR)”) rather than in proportion to each agency’s share of safe operating yield in the Peace I scenario. By placing greater weight on land use conversions, a greater share of the replenishment obligation for over-allocated agricultural pool water is placed on land-use converters. For instance, the combined share of safe operating yield of the two largest land-use converters in the Basin—City of Chino and Jurupa Community Services District—is approximately 10 percent, whereas the combined PAR share of these agencies in Fiscal Year 2006-2007 is 38 percent.³⁰

The use of significant quantities of recycled water is made possible in the Basin by the attainment of hydraulic control.³¹ Recycled water projections for direct use in the Basin increase from 11,924 AF in 2007 to 60,450 AF in 2030 and recycled water use for groundwater recharge rises over the period from 3,443 AF to 35,000 AF.^{32, 33} The recycled water price charged by

³⁰ Watermaster, Fiscal Year 2006-2007 Final Assessment Package, Land Use Conversion Summary (p10): <http://www.cbwm.org/docs/financdocs/Assessment%20Package%20FY%202006-2007%20Final.pdf>.

³¹ Personal correspondence with IEUA staff.

³² Projections on recycled water deliveries for direct use and on total recycled water for groundwater recharge is provided for IEUA members in IEUA Urban Water Management Plan (2005), Table 3-13. The projections on recycled water deliveries for direct use to non-IEUA members as well as the distribution of recycled water deliveries for groundwater recharge across individual agencies are based on personal communication with IEUA staff (July 11, 2007).

³³ In no case does the amount of recycled water used for recharge exceed the DHS-approved dilution rates.

IEUA for recycled water deliveries in each period is viewed as sufficient to recover the fully amortized capital and operating costs of their recycled water operations.³⁴

The amount of transfer of overlying non-agricultural water to the appropriate pool is taken to be 49,178 AF, which is the ending total balance in the pool 2 local storage account in the Watermaster final assessment package for fiscal year 2006-2007.³⁵ This amount of water is allocated proportionally in four equal installments over the four-year period 2007-2010 to agencies in the appropriate pool according to their share of safe operating yield, and the price in each period is set at 92 percent of the prevailing MWD replenishment rate.³⁶

Finally, in meeting the goal of hydraulic control in the Peace II scenario, two sources of water are created: (i) the Santa Ana River (SAR) inflow is calculated to generate 9,900 AF of new Basin yield each year, eventually rising to 12,500 AF per year; and (ii) 400,000 AF of cumulative overdraft is necessary in the Basin over the period 2007-2030.³⁷ Both the 9,900 AF per year of SAR inflow and the allocation of the 400,000 AF of cumulative forgiveness are allocated to meet the replenishment obligation of the desalters. The dynamic path of forgiveness for the desalter obligation follows the most-rapid depletion path defined by the aggregate study, which assumes that the Basin overdraft occurs to whatever extent is necessary to meet the replenishment obligation of the desalters (net of storage losses and SAR inflow). Under the most-rapid depletion path, hydraulic control is achieved on the cumulative overdraft of 400,000 AF from the Basin in the year 2024, which raises the SAR inflow from 9,900 AF to 12,500 AF over the remaining period 2025-2030.

6.2. *Import Demand*

The demand for imported water for each agency in the Basin is calculated in the same manner as in the Peace scenario. In terms of the resulting values, the influx of new Basin water supply in response to recycled water use alter the resulting evaluation of import demand relative to the prevailing conditions under Peace in two significant ways. First, import demand is now lower each year relative to the outcome under Peace conditions by the amount of new Basin supply. This water ultimately defrays Tier 2 water purchases as the supply side of the model is built upwards and aggregated across each step towards the extensive margin of supply. As these supplies are developed, available supply in the Basin rises to 266,134 AF by the year 2030, an increase of 80,442 AF above the Peace I scenario and 106,678 AF above the baseline conditions.

Second, the amount of water held in local storage by individual agencies decreases to account for the effect of these new, reliable water sources in the Basin and the corresponding reduction in the need to smooth out the cyclical components of water supplies with puts and takes. As recycled water supplies are developed in the Basin, the need for local storage decreases; for instance, the total amount of water held in local storage in the Basin in 2030 decreases from 141,565 AF under baseline conditions, to 129,259 AF in the Peace I scenario, to 80,500 AF in the Peace II scenario.

³⁴ IEUA, Operating and Capital Program Budget, Fiscal Year 2007/08, Volume 1 (July 2007), p231.

³⁵ Watermaster, Fiscal Year 2006-2007 Final Assessment Package, Pool 2 Water/Storage Transactions (p12): <http://www.cbwm.org/docs/financcdocs/Assessment%20Package%20FY%202006-2007%20Final.pdf>.

³⁶ Non-Binding Term Sheet, item IX.C.

³⁷ Personal correspondence with staff at Wildermuth Environmental.

The quantity of water transactions in the water transfer market rises significantly as the number of agencies selling water increases with the influx of recycled water supplies. This changes the distribution of net benefits, both directly by the allocation of recycled water supplies based on proximity of users (rather than according to the share of safe operating yield) and indirectly by reducing the number of agencies that procure water on the extensive margin of supply.

6.3. *Water Imports*

An important outcome in the Peace II scenario as a result of hydraulic control is the decrease in Tier 2 water purchases relative to both the baseline and Peace I scenarios. Unlike the case of the Peace I scenario, in which the decline in Tier 2 purchases was largely offset by an increase in assessment costs to support the increase in recharge capacity, the avoided Tier 2 water purchases in the Peace II scenario are associated either with negligible costs (SAR inflow and forgiveness for Basin over-draft) or with the relatively low cost associated with recycled water, which is valued at IEUA recycled water rates. These differences are characterized in the discussion below.

In addition, the level of water imports increases slightly in the Peace II scenario, because of a reduction in the storage loss component allocated to meet the desalter replenishment obligation. In the Peace II scenario, the desalter replenishment obligation is taken to be desalter production less storage losses of 1 percent from the local storage accounts of producers in the Basin.³⁸

6.4. *Water Procurement Costs*

All program costs that form the basis for Watermaster assessments in the Peace I scenario (as described above) are considered in the Peace II scenario, with the exception of the Pomona credit, which is no longer paid by appropriators in the Basin and is instead paid by Three Valleys Municipal Water District.³⁹ The removal of this fee from Watermaster assessments leads to an increase in net benefit to agencies in the Basin by \$66,667, and this is returned to agencies in proportion to each agency's share of safe operating yield. The increase in net benefit is offset by a proportional increase in cost for Three Valleys Municipal Water District, and the present value of this stream of payments over the period 2007-2030 at the prevailing rate of discount (4.5 percent) is \$1.0 million.

Recycled water costs are allocated to each agency using the recycled water prices provided by IEUA, as discussed above. The desalter replenishment obligation, which begins in the year 2024 after the 400,000 AF of over-draft credits are exhausted, is met in the Peace II scenario through Watermaster replenishment assessments as follows. Half of the desalter replenishment obligation is met by individual agencies according to pro rata shares of safe operating yield, as in the Peace I scenario, and the remaining half of the desalter replenishment obligation is met according to each agency's share of actual production relative to total production in the Basin.⁴⁰ This latter portion of the Watermaster replenishment assessments accords with the method of allocating Watermaster general assessments to the appropriative pool in all three scenarios considered. The

³⁸ Non-Binding Term Sheet, Item VI.B.1.

³⁹ Non-Binding Term Sheet, item VII.A.

⁴⁰ Personal correspondence with Watermaster staff (August 29, 2007).

method for calculating the remaining water procurement costs for each agency is identical to the method described above for the Peace I scenario.

6.5. Comparison of Baseline, Peace I, and Peace II Outcomes

Relative to baseline conditions, the present value of total net benefit among the ten agencies encompassed by the study for the program elements contained in the Peace II scenario is \$904.6 million, which represents an additional net benefits of \$722.5 million relative to the outcome of the Peace I scenario.

The main factor associated with this increased net benefit is the displacement of Tier 2 water with recycled water, SAR in-flow, and, in the period 2007-2024, with forgiveness for 400,000 AF of Basin over-draft to attain hydraulic control. Under peace I conditions, the present value of total Tier 2 water purchases over the period 2007-2030 is \$931 million, whereas, in the Peace II scenario, the present value of Tier 2 water purchases over the period is \$271 million. This decrease in Tier 2 water costs in the Peace II scenario was replaced with a combination of 400,000 AF of forgiveness for Basin over-draft and recycled water at the lower IEUA recycled water rate.⁴¹ The combined present value of cost of imported water and recycled water inputs in the Peace II scenario is \$1.0 billion, which represents a substantial reduction in the present value of water procurement cost from \$1.75 billion in the Peace I scenario.

Table 3 depicts the projected outcomes to individual agencies in the Peace II scenario for the year 2015. A comparison of these outcomes with those that emerge in the baseline scenario in Table 1 and the Peace I scenario in Table 2 provides a useful profile of the essential differences in Basin performance under Peace II conditions. Residual demand, which corresponds to the value Q^* in Figure 1, is identical in all three scenarios, as is the safe operating yield of the agencies and desalter production. The net agricultural pool transfer to the appropriative pool (48,530 AF) is between the values that emerge in the Peace I scenario (48,848 AF) and the baseline scenario (48,268 AF). Relative to the outcome under Peace I conditions, the new rules for assessing replenishment obligations for the over-allocated agricultural pool water redistribute the net returns away from the major land-use converters in the Basin (in particular, the City of Chino and Jurupa Community Services District).

Available Basin supply in the Peace II scenario in the year 2015 (208,199 AF) is considerably higher than the available Basin supply in the baseline scenario (123,554 AF) and Peace I scenario (148,346 AF), which leads to a commensurate reduction in imported water demand. Virtually the entire difference in imported water demand between the Peace I scenario and the Peace II scenario is the result of the 60,171 AF addition of recycled water (direct use plus groundwater replenishment).

The level of local storage in the Peace II scenario in, 53,293 AF, is lower than local storage levels in the baseline (107,054 AF) and Peace I scenarios (91,649 AF) due to the large influx of

⁴¹ The allocation of the 400,000 AF of forgiveness to meet the replenishment obligations of the desalters is implicitly valued at the Tier 2 rate, because each unit of forgiveness that is credited against the desalter replenishment obligation, which is valued directly in the model at the replenishment rate, “frees up” a unit of recharge capacity that allows a unit of Tier 2 water to be displaced on the extensive margin of supply.

reliable Basin water through the development of the recycling program and the acquisition of SAR inflow. This greater availability of Basin water supply also facilitates a richer pattern of water transfers in the Peace II scenario.

In total, Tier 2 water purchases in the year 2015 are 10,186 AF, which represents a substantial reduction from the 137,089 AF of Tier 2 water purchases that take place under baseline conditions (inclusive of the purchases required by in lieu recharge) and the 82,658 AF under Peace I conditions. Replenishment water purchases increase in the Peace II scenario from 31,533 AF in the Peace I scenario to 41,800 AF in the Peace II scenario. The increase in replenishment imports reflects the replacement of 35,267 AF of replenishment obligations in the Peace I scenario with SAR inflow and desalter forgiveness in the year 2015, less the 20,671 AF claim on recharge facilities associated with the groundwater recharge component of the recycled water program in the Peace II scenario. The decrease in Tier 2 water imports of 72,430 AF between the Peace I and Peace II scenario is the result of the displacement of Tier 2 water purchases with a combination of recycled water, SAR in-flow, and allowed over-draft.

Actual production among these eight agencies in the year 2015 (182,170 AF) is higher in the Peace II scenario than in the Peace I scenario (160,203 AF) and the baseline scenario (121,138 AF). This increment in Basin production relative to the Peace I scenario represents the increase in Basin supply resulting from the use of recycled water for groundwater recharge as well as small adjustments in storage loss and net storage requirements.⁴²

Finally, notice in the comparison of Tier 2 purchases by individual agencies in Tables 1-3 that the distribution of Tier 2 water purchases across individual agencies in the Basin differs in all three scenarios relative to the distributions of safe operating yield and the distribution of actual production. These elements together comprise the basis for the allocation of collective Basin net benefits to individual agencies, with the division of market benefits from Basin improvement activities determined by each agency's share of Tier 2 water purchases, and the allocation of cost determined through Watermaster formulas that are based either on a individual agency's share of actual production to total Basin production or on a individual agency's share of safe operating yield. Differences in the distributions of these three key values across individual agencies in the Basin are responsible for inequalities in the distribution the net benefit from the various program elements that improve the management of Chino Basin water resources.

⁴² Recycled water for direct use offsets urban water demand, but does not otherwise influence Basin production.

Table 3: Year 2015 Outcome Under Peace II Scenario

Component	Appropriator										Total
	Chino	Chino Hills	Ontario	Upland	Cucamonga	Monte Vista	Jurupa	Pomona			
Urban Water Demand	26,200	24,700	66,600	22,500	72,500	14,100	36,350	30,264			293,214
Available Surface Water	0	0	0	5,200	3,000	0	500	0			8,700
Available Other Groundwater	0	0	0	3,800	5,400	0	0	1,884			11,084
<i>Residual Demand</i>	26,200	24,700	66,600	13,500	64,100	14,100	35,850	28,380			273,430
Safe Operating Yield	4,034	2,111	11,374	2,852	3,619	4,824	2,061	11,216			42,092
New Yield	883	462	2,489	624	792	2,455	451	2,489			10,645
Net Ag Transfer	10,103	2,176	7,559	1,581	2,560	2,739	15,599	6,215			48,530
Desalter Water Supply	5,000	4,200	5,000	0	0	0	19,922	0			34,122
Storage & Recovery	527	658	3,671	1,364	5,160	1,801	909	909			15,000
Recycled Water, Direct Use	6,300	4,000	8,800	0	15,900	500	2,500	1,500			39,500
Recycled Water, Replenishment	2,402	2,188	5,590	2,450	5,304	1,070	1,667	0			20,671
<i>Available Supply</i>	29,248	15,796	44,482	8,871	33,336	11,990	42,181	22,294			208,199
Net Storage	0	69	527	-153	5	94	0	217			759
Transfers	-3,048	2,784	7,026	1,389	9,546	684	-6,331	1,955			14,004
<i>Import Demand</i>	0	6,190	15,619	3,087	21,223	1,520	0	4,347			51,986
Local Storage	0	6,360	15,798	3,306	21,974	1,507	0	4,347			53,293
Replenishment Purchases	0	4,977	12,559	2,482	17,064	1,222	0	3,495			41,800
Tier 2 Purchases	0	1,213	3,060	605	4,158	298	0	852			10,186
Actual Production	19,900	14,516	42,550	10,227	26,762	12,159	33,350	22,706			182,170
Watermaster Assessments	\$707	\$447	\$1,368	\$327	\$804	\$411	\$1,129	\$753			\$5,946

Figure 3 compares the benefit received by each agency from reduced water procurement costs to the increase in assessment cost that result from the implementation of the program elements in the Peace II scenario. The program costs in the Peace II scenario do not differ substantively from program costs in the Peace I scenario, and represent an overall increase from \$17 million to \$143.2 million in present value terms. The program benefits in present value terms in the Peace II scenario are reflected in the decrease in water procurement costs from \$2.1 billion under baseline conditions to \$1.1 billion in the Peace II scenario.

City of Ontario and Cucamonga Valley Water District receive the largest share of the benefits resulting from the Peace II program elements, while the assessment costs resulting from the Peace II program elements are notably smaller and distributed more equally across the agencies. In total, the City of Ontario and Cucamonga Valley Water District together receive 56 percent of the benefit of decreased water procurement costs and incur 39 percent of the increase in assessment costs.

Baseline vs. Peace II Benefit-Cost Comparison

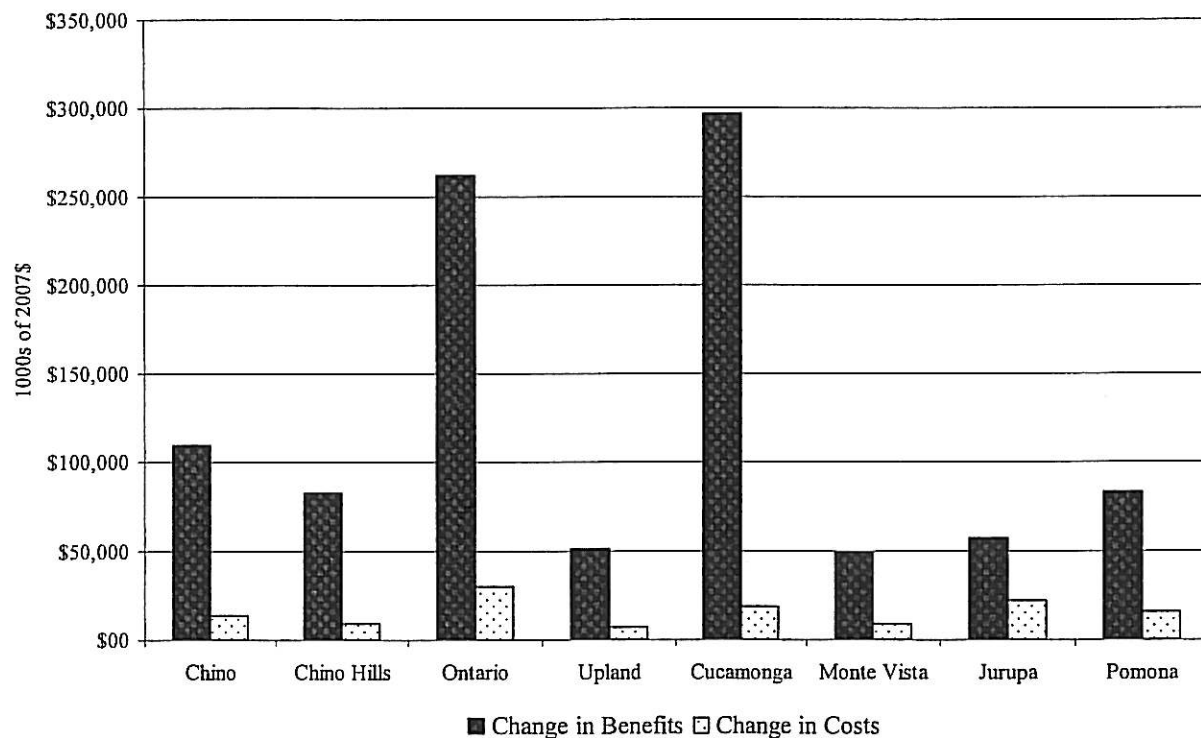


Figure 3

Distribution of Net Benefit, Peace II vs. Baseline (\$/per AF)

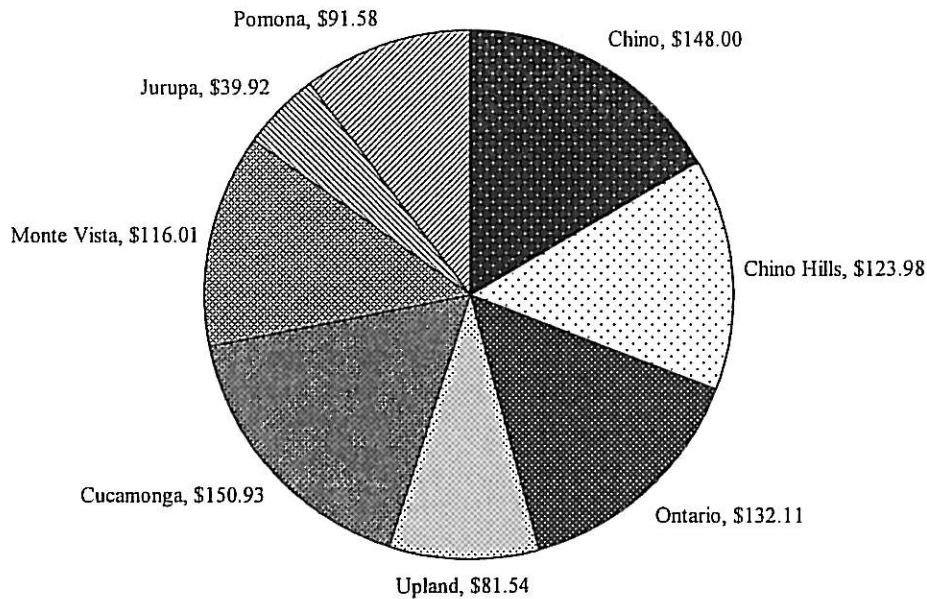


Figure 4

Figure 4 depicts the distribution of net benefits per acre-foot of residual water demand across individual agencies in the Basin resulting from the program elements in the Peace II scenario. Overall, the present value of the net benefit to all parties over the 24 year horizon resulting from a move from baseline conditions to Peace conditions is \$905 million and the total projected water demand over this period is 9.1 million AF, which implies an average return of \$98.53 per acre-foot to the agencies encompassed by the study.

Noting, as before, that Fontana Union Water Company and San Antonio Water Company have available surface water and other groundwater supplies in excess of their demand, and controlling for agency scale on the basis of residual demand for Basin water among the remaining producers, the net benefit resulting from the combined program elements in the Peace II Agreement lies between \$39.92/AF for Jurupa CSD to \$150.93 for Cucamonga Valley Water District.

The net benefit/AF received by Jurupa Community Services District is significantly smaller than the net benefit/AF received by other producers, because of systematic differences in the way this agency meets consumer water demand. Jurupa Community Services District is disadvantaged in the ability to capitalize on program elements that improve Basin performance by the large share of desalter water for urban water supply it receives, which cannot be defrayed by the development of new Basin supplies, and by a negligible reliance on imported water from MWD.

Among the remaining agencies, the Cities of Pomona and Upland receive a smaller share of the net benefit/AF, while Monte Vista Water District, the Cities of Chino, Ontario, Upland, and Chino Hills, and Cucamonga Valley Water District each receive a net benefit/AF above \$116/AF.

7. Alternative Scenarios

This section examines the sensitivity of the results to variations in various assumptions underlying the model. In theory, each of the factors considered here has the potential to change the relative rankings among agencies with respect to benefits per acre-foot. For example, increasing the cost of capital will tend to elevate the ranking of agencies that receive benefits in early years. These sensitivity analyses are intended to bracket actual results and measure the sensitivity of outcomes to changes in assumptions.

Five parameters are varied and the model results are recalculated in each case. The alternative scenarios considered are: (i) variation in the share of the desalter replenishment obligation attributed to the appropriative pool in the baseline case; (ii) variation in the discount rate; (iii) variation in Urban Water Demands; (iv) variation in the availability of Tier 1 water to agencies in the Basin; and (v) increases in effective recycled water prices due to the long-run average cost of recycled water infrastructure improvements.

The model results are most sensitive to the scenario in which all Tier 2 water purchases in the model are replaced with Tier 1 water purchases at the lower MWD rate. The results of this scenario are shown in Table 4. This scenario provides a bracketing assumption on the value of the outside water options available to agencies and it is unlikely that each agency can meet annual increases in urban water demand every year with a continued expansion of Tier 1 purchases. To the extent that individual agencies differ in their access to Tier 1 water, moreover, market forces would lead to a displacement of Tier 2 water purchases on the extensive margin of supply before any displacement occurs of Tier 1 water purchases, so that a model that considered a relatively equal mix of Tier 1 and Tier 2 water supplies would not result in values near the midpoint between the Tier 1 scenario and the Tier 2 scenario. Nonetheless, the total net benefit in the Basin under Peace II scenario remains high—\$611.7 million (\$88.89/AF)—even when the entire increase in Basin supply is valued at the displacement cost of Tier 1 water.

The model results are fairly robust to variations in the remaining parameters. In total, the net benefit of the Peace II program elements varies across the scenarios in a range between \$806.7 million - \$864.4 million (\$87.87/AF - \$104.22/AF) in each scenario, relative to the \$904.6 million (\$98.53/AF) at baseline levels of the parameters.

Table 4: Tier 2 Replaced By Tier 1

	Net Benefit (1000s of \$)		Net Benefit/AF	
	Peace I vs. Baseline	Peace II vs. Baseline	Peace I vs. Baseline	Peace II vs. Baseline
City of Chino	\$8,549	\$77,828	\$13.18	\$120.03
City of Chino Hills	\$18	\$46,218	\$0.03	\$77.92
City of Ontario	\$1,451	\$148,970	\$0.83	\$84.73
City of Upland	\$328	\$27,599	\$0.61	\$51.04
Cucamonga Valley Water District	\$14,025	\$175,240	\$7.61	\$95.10
Fontana Union Water Co.	\$1,451	\$26,880		
Monte Vista Water District	(\$2,090)	\$27,005	(\$5.99)	\$77.39
San Antonio Water Company	\$342	\$6,337		
Jurupa CSD	\$10,611	\$29,242	\$12.01	\$33.11
City of Pomona	(\$5,720)	\$46,453	(\$7.76)	\$62.99
Total	\$28,965	\$611,773	\$3.15	\$66.63

Table 5: 50% of Desalter Obligation Paid by Ag Pool

	Net Benefit (1000s of \$)			Net Benefit/AF	
	Peace I vs. Baseline	Peace II vs. Baseline	Peace I vs. Baseline	Peace II vs. Baseline	Peace II vs. Baseline
City of Chino	\$15,450	\$91,122	\$23.83		\$140.53
City of Chino Hills	\$9,681	\$71,001	\$16.32		\$119.70
City of Ontario	\$28,888	\$218,613	\$16.43		\$124.34
City of Upland	\$6,017	\$40,661	\$11.13		\$75.20
Cucamonga Valley Water District	\$56,320	\$273,782	\$30.56		\$148.57
Fontana Union Water Co.	(\$2,836)	\$22,592			
Monte Vista Water District	\$1,232	\$34,687	\$3.53		\$99.41
San Antonio Water Company	(\$669)	\$5,326			
Jurupa CSD	\$13,297	\$32,779	\$15.06		\$37.11
City of Pomona	(\$5,280)	\$54,068	(\$7.16)		\$73.31
Total	\$122,101	\$844,632	\$13.30		\$91.99

Table 6: 5.5% Discount Rate

	Net Benefit (1000s of \$)		Net Benefit/AF	
	<i>Peace I vs. Baseline</i>	<i>Peace II vs. Baseline</i>	<i>Peace I vs. Baseline</i>	<i>Peace II vs. Baseline</i>
City of Chino	\$17,681	\$84,906	\$27.27	\$130.95
City of Chino Hills	\$11,108	\$65,916	\$18.73	\$111.13
City of Ontario	\$38,234	\$207,227	\$21.75	\$117.86
City of Upland	\$8,595	\$39,560	\$15.90	\$73.16
Cucamonga Valley Water District	\$54,862	\$247,990	\$29.77	\$134.57
Fontana Union Water Co.	\$4,231	\$26,907		
Monte Vista Water District	\$6,265	\$36,087	\$17.95	\$103.42
San Antonio Water Company	\$997	\$6,343		
Jurupa CSD	\$13,877	\$31,426	\$15.71	\$35.58
City of Pomona	\$7,315	\$60,400	\$9.92	\$81.90
Total	\$163,165	\$806,761	\$17.77	\$87.87

Table 7: 10% Conservation

	Net Benefit (1000s of \$)		Net Benefit/AF	
	Peace I vs. Baseline	Peace II vs. Baseline	Peace I vs. Baseline	Peace II vs. Baseline
City of Chino	\$18,131	\$88,819	\$31.07	\$152.20
City of Chino Hills	\$13,070	\$70,172	\$24.48	\$131.45
City of Ontario	\$44,196	\$223,937	\$27.93	\$141.52
City of Upland	\$8,602	\$39,805	\$17.68	\$81.80
Cucamonga Valley Water District	\$64,718	\$268,848	\$39.02	\$162.10
Fontana Union Water Co.	\$4,989	\$30,656		
Monte Vista Water District	\$6,205	\$37,920	\$19.76	\$120.75
San Antonio Water Company	\$1,176	\$7,227		
Jurupa CSD	\$15,189	\$33,707	\$19.11	\$42.40
City of Pomona	\$6,788	\$63,259	\$10.23	\$95.30
Total	\$183,064	\$864,350	\$22.07	\$104.22

Table 8: 50% Increase in Recycled Water Price

	Net Benefit (1000s of \$)			Net Benefit/AF	
	Peace I vs. Baseline	Peace II vs. Baseline	Peace I vs. Baseline	Peace II vs. Baseline	Peace II vs. Baseline
City of Chino	\$20,294	\$88,913	\$31.30		\$137.13
City of Chino Hills	\$12,217	\$69,270	\$20.60		\$116.78
City of Ontario	\$42,547	\$220,779	\$24.20		\$125.57
City of Upland	\$9,442	\$42,215	\$17.46		\$78.07
Cucamonga Valley Water District	\$60,667	\$262,234	\$32.92		\$142.30
Fontana Union Water Co.	\$4,839	\$30,268			
Monte Vista Water District	\$7,025	\$39,277	\$20.13		\$112.56
San Antonio Water Company	\$1,141	\$7,136			
Jurupa CSD	\$15,772	\$31,962	\$17.86		\$36.19
City of Pomona	\$8,189	\$66,517	\$11.10		\$90.19
Total	\$182,133	\$858,571	\$19.84		\$93.51

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Analysis of Aggregate Costs and Benefits of Hydraulic Control, Basin Re-Operation and Desalter Elements of Non-Binding Term Sheet

Prof. David Sunding
UC Berkeley

November 29, 2006

Summary

The report measures the economic costs and benefits of achieving hydraulic control through re-operation of the Chino Basin. Various scenarios are considered in the analysis, with scenarios chosen to reflect uncertainty regarding future values of water, the time path of annual overdrafts selected to dewater the basin, and the use of the resulting induced inflow from the Santa Ana River. As shown in Table 1, depending on the scenario chosen, the net benefits of achieving hydraulic control through basin re-operation range between \$283.1 million and \$438.8 million in 2006 dollars.

1. Introduction

Hydraulic control refers to the elimination or reduction to negligible quantities of discharge from the Chino North Management Zone to the Santa Ana River. Basin re-operation is defined as the increase in controlled overdraft as defined in the Judgment from 200,000 acre-feet over the period 1978 through 2017, to 600,000 acre-feet through 2030 with the 400,000 acre-feet allocated specifically to meet the replenishment obligation of the desalters.

2. Framework

The model of groundwater value used in this report is standard in the academic literature.¹ The net benefits in each period resulting from access to a groundwater resource are the gains from pumping (i.e., the demand for water) minus the costs of extraction in the current period and a “user cost” term that reflects the change in future consumption possibilities resulting from current choices. The stream of annual net benefits is then discounted back to current dollars using a discount factor predicated on the rate of interest.

¹ Brozovic, N., D. Sunding and D. Zilberman, “Optimal Management of Groundwater Over Space and Time.” *Frontiers in Water Resource Economics*. D. Berga and R. Goetz, eds. New York: Springer-Verlag, 2005; Gisser, M., and Sanchez, D.A. “Competition versus Optimal Control in Groundwater Pumping.” *Water Resources Research* (1980): 638-642; Brown, G., Jr., and Deacon, R. “Economic Optimization of a Single-Cell Aquifer.” *Water Resources Research* (1975): 557-564.

The interest rate used in the analysis is 5.5%. This rate corresponds to the current risk-free long-term rate of interest, a relevant rate for public agencies with good credit. The discount factor for a payment occurring in some future period t is then $(1.055)^{-t} \approx e^{-0.055t}$.

Let y_t denote groundwater produced during period t , and x_t equal the stock of groundwater at beginning of period t . The value of the groundwater resource is then

$$Value = \sum_{t=0}^{\infty} (1+r)^{-t} [B(y_t) - C(x_t, y_t)],$$

where $B(y_t)$ denotes the benefits from groundwater production in period t , and $C(x_t, y_t)$ is the cost of extraction and recharge. In an economic optimization model, the problem is to find the time path of production and stock that maximizes the present value of access to the aquifer, subject to physical constraints such as the equation of motion $x_{t+1} = x_t + g(x_t, y_t) - y_t$ (where $g(x_t, y_t)$ denotes natural and artificial recharge) and regulatory constraints such as water quality objectives and requirements to operate the basin in a steady-state condition.

Viewed this way, basin re-operation and its alternatives can be modeled as different evolutions of production, stock and recharge. The net benefit of a particular basin re-operation strategy versus a baseline that maintains the current stock of groundwater is the difference of present value resulting from a particular choice of these policy variables.

The study period extends indefinitely into the future, but the period between the present and 2030 is modeled in more detail. This feature results from the fact that the Peace Agreement lasts until 2030, and more detailed environmental and water use modeling is available to this date. As described below, terminal values are assigned to key parameters from 2031 on, and at this point the groundwater system in the Chino Basin is assumed to enter into a steady state, with no expected change in production, groundwater elevation or recharge amounts.

Table 2 displays the assumptions made about groundwater production from the Chino Basin. All figures in the table are common to all scenarios considered, and thus these assumptions are not the basis for differences in value between scenarios. The table shows groundwater production increasing steadily throughout the study period. Desalter production is also increasing throughout the study period. Operating yield is set at 145,000 acre-feet through 2017, at which point it declines to 140,000 acre-feet annually. Finally, new stormwater recharge is assumed to be 12,000 acre-feet annually.

It is necessary to describe a scenario without basin re-operation in order to calculate the net benefits, if any, from this type of strategy. Table 3 displays the physical consequences of such an alternative. If the basin is not de-watered, then hydraulic control will not be achieved, and there will be water quality costs as a result. One such consequence is that relatively high-quality water must be used for recharge. In particular, the Basin would lose the ability to use relatively inexpensive recycled water for replenishment purposes

and would be forced to use water purchased from MWD instead.² Thus, Table 3 shows that the entire replenishment obligation for both normal and desalter production is met through the purchase of replenishment water from MWD.

In the event that hydraulic control is achieved, there are two types of benefits to the Chino Basin as a whole. The first benefit relates to water quality. As discussed above, if hydraulic control is achieved, then recycled water can be used for 30% of the total Basin replenishment obligation, up to an assumed capacity of 30,000 acre-feet annually.³ The second benefit is that lowering the groundwater elevation in the Basin induces an inflow of water from the Santa Ana River. Specifically, forgiving a reduction in the stock of groundwater in the Basin results in an average of 9,900 acre-feet annually until the 400,000 acre-feet of depletion credits are exhausted, and then 12,500 acre-feet annually thereafter. This natural recharge is new yield in the Basin; as discussed below, it can be used either for reducing the desalter replenishment obligation or as an asset in its own right.

3. Scenarios

The valuation model is implemented under a variety of assumptions about how re-operation will occur, how the Santa Ana River inflows are treated, and the level of future water prices. This section describes the construction of alternative scenarios.

Implementation of Basin Re-Operation

The basic principle of basin re-operation is that it is a means of achieving hydraulic control by increasing cumulative overdraft by 400,000 acre-feet through 2030. Overdraft is to be achieved by forgiving the replenishment obligation of the desalters by some annual amount over a defined period of time. This general principle is silent about *how* the total quantity of forgiveness of desalter replenishment is to be allocated over time.

This analysis considers two possible implementation scenarios. The first scenario, termed the straightline alternative, envisions an annual overdraft of 20,346 acre-feet occurring until 2030, at which time the annual overdraft would fall to zero and the system is assumed to enter into a new steady-state from 2031 onward. The second scenario, called the most rapid depletion path alternative, sets the annual overdraft to eliminate the desalter replenishment obligation for as long as possible.

Tables 4 and 7 display annual overdraft amounts under these two alternatives for implementing basin re-operation. As described, the straightline alternative entails constant annual overdraft quantities, resetting to zero from 2031 onwards. The most rapid

² Alternatively, recycled water would have to be desalted prior to recharge. Costs are not available at this time for this option.

³ Assumptions provided by Watermaster staff. If hydraulic control is achieved, it may be possible to increase this limit. In this case, the benefits resulting from basin re-operation would increase.

depletion path reaches a maximum annual overdraft of 30,289 acre-feet before dropping to zero in 2020.

Allocation of Induced Santa Ana River Inflow

A second dimension along which the scenarios vary is with regard to the allocation of Santa Ana River inflows induced by the reduction of the groundwater stock. A total of 12,500 acre-feet of new yield is assumed to result from the dewatering, and the scenarios differ in terms of the use of this new yield. One scenario allocates all Santa Ana River inflows from re-operation to reducing the desalter replenishment obligation. An alternative scenario treats these inflows as a resource to be used for any purpose; consequently, desalter replenishment obligations are higher under this assumption.

Tables 5 and 6 relate to the straightline depletion case and show replenishment obligations and sources under the two Santa Ana River inflow allocation alternatives. In Table 5, new yield is allocated to desalter replenishment, and the desalter replenishment obligation is negligible in the near term and reaches a maximum of 9,943 acre-feet during the study period. In Table 6, by contrast, total replenishment obligations are higher since the new yield can be used for any chosen purpose.

Tables 8 and 9 show replenishment obligations under the most rapid depletion path scenario. Results are similar as in the straightline depletion scenario, with the exception that desalter replenishment is forestalled until 2025 if new yield is allocated to this purpose.

Future Water Prices

Given the important role of relative prices in the economic analysis, and given uncertainties regarding the evolution of water values in Southern California, the analysis considers two alternative scenarios regarding future water prices. These scenarios are taken from MWD and are commonly referred to as the high rate and low rate scenarios. MWD scenarios cover Tier 1 and Tier 2 water, as well as replenishment water. The high rate scenario has the Tier 2 rate growing at an annual rate of 3.11% for the next five years, and then by 4.50% from 2011 to 2030. The replenishment rate grows at 6.94% through 2011, and then at 4.50% to 2030. In the low rate scenario, the Tier 2 rate grows by 2.28% annually for the next five years, and then by 3.00% from 2011 to 2030. The replenishment rate is assumed to grow by 4.79% through 2011, and by 3.00% thereafter.

The current price of recycled water for replenishment is assumed to be \$69 per acre-foot.⁴ In the high rate scenario, this price was assumed to grow at the same rate of inflation as

⁴ One public comment received after the July 26, 2006 presentation stated that the actual price paid for recycled water should be used in the analysis. While this price is not yet known, it is likely to exceed \$69 per acre-foot. Note, however, that this study considers the aggregate costs and benefits of elements of the non-binding term sheet. Thus, changes in the price of recycled water have distributional as opposed to efficiency effects, that is, they change the relative level of benefits enjoyed by the parties in the Chino Basin rather than affecting the total level of benefits.

the Tier 2 and MWD replenishment prices: 4.50%. Similarly, the recycled water price grows by 3.00% annually in the low rate scenario.

4. Other Effects of Basin Re-Operation

An additional benefit of hydraulic control is a reduction in storage losses. Measuring the value of reduced storage losses is conditioned on several factors that are not fully known at present. Of course, the ex post performance of any groundwater storage program depends on the sequence of puts and takes, which depend in turn on the sequence of wet and dry years. Based on conversations with Watermaster staff, the groundwater storage program is assumed to be 400,000 acre-feet over the study period, but may range from 300,000 to 500,000 acre-feet.⁵ Calculations provided by Wildermuth Environmental detail the relationship between average storage over the life of the MWD Dry Year Yield program and associated losses at 0.66 and 2 percent. Table 12 summarizes cumulative losses through 2028, together with present values calculated using the high and low rate scenarios for MWD replenishment rates as described above.

Assuming 2 percent loss and a 400,000 acre-foot storage program, the present value of reduced storage losses is \$24.9 million in 2006 dollars in the high rate scenario and \$20.4 million in the low rate scenario. These calculations are performed ex ante, and the actual magnitude of reduced storage losses will depend on factors including the size of the storage program, the percentage storage loss, the timing of puts and takes, and the actual replenishment rates charged by MWD. For the purpose of aggregating reduced storage loss benefits with other benefits and costs of basin re-operation, we will assume a 400,000 acre-foot storage program for both the high and low rate scenarios with storage losses equal to half of the amounts in Table 12 (recall that storage losses could range from 0 to 2 percent). The corresponding values of reduced storage losses are \$12.4 million and \$10.2 million for the high and low rate scenarios, respectively.

Achieving hydraulic control through basin re-operation will also result in higher pumping costs since forgiveness of the desalter replenishment operation is intended to lower the groundwater elevation in certain regions. The information needed to calculate the present value of increased pumping costs includes the quantity-weighted average change in lift in the Basin resulting from re-operation, the energy requirement per unit lift and energy costs per kilowatt-hour. Wildermuth Environmental provided the weighted average changes in groundwater elevation. The price of electricity is assumed to be \$0.14/kwh, and the pumping efficiency is taken to be 75 percent. The California Energy Commission forecasts that commercial and agricultural electricity rates charged by investor-owner utilities operating in California will decline slightly in nominal terms until 2013, when

⁵ The Peace Agreement provides that there is Target Storage of 500,000 acre-feet *in excess* of then existing storage, whereas this report only considers the Safe Harbor quantity of 500,000 acre-feet of storage in total. In some sense, there is a tradeoff between the decision to pursue max-benefit and the feasibility of obtaining the higher amount of storage. It should also be noted, however, that the basin is at the limit of shift capacity for export, and expansion of recharge to achieve greater storage is costly. Further, the PEIR only considered an additional 250,000 acre-feet of storage.

their forecast terminates.⁶ This analysis assumes that nominal electricity prices are constant.

Combining this information, increased pump lift costs have a present value of \$14.9 million in the straightline depletion scenario. In the rapid pulldown scenario, re-operation has a larger impact on the present value of energy costs since the groundwater elevation is reduced to the same level but at an earlier date. Increased energy costs have a present value of \$19.4 million in this scenario. Both calculations include increased energy costs in the new basin steady state achieved after 2030.

5. Results

Table 1 summarizes the results of the economic analysis. The figures in the table are the net benefits resulting from access to the Chino Basin aquifer under the alternative management and price scenarios described in the previous section. In all cases, basin re-operation results in aggregate net benefits. However, there are significant differences in net benefits depending on the realization of future water prices and the use of Santa Ana River inflows induced by reducing the stock of groundwater. The rapidity with which basin re-operation is implemented matters less.

When Santa Ana River inflow is allocated to desalter replenishment and overdraft occurs in constant annual amounts to 2030, basin re-operation results in gains of between \$283.1 and \$391.4 million in present value terms, depending on the growth of water prices and how the replenishment credit is used over time. These gains result from the ability to use recycled water for a fraction of recharge if hydraulic control is achieved, the value of new yield, and the value of the forgiven desalter replenishment.⁷

Since new yield is reliable, in any case more reliable than a supply of replenishment water, allocating it to desalter replenishment would seem to be inefficient. The Tier 2 rate is well above the price of replenishment water, which is a weighted average of the MWD replenishment rate and the price of recycled water. When Santa Ana River inflows are decoupled from replenishment obligations, the gains from straightline basin re-operation are between \$341.9 and \$438.8 million.

There is a small increase in the net benefits of basin re-operation when the most rapid overdraft strategy is implemented. Several factors explain this result. First, in the most rapid depletion scenario, the 30,000 acre-foot constraint on annual recycling recharge binds more frequently. Accordingly, less recycled water is recharged over the study

⁶ http://www.energy.ca.gov/electricity/rates_iou_vs_muni_nominal/medium_commercial.html;
http://www.energy.ca.gov/electricity/rates_iou_vs_muni_nominal/agricultural.html

⁷ Another potential source of loss is the option value of the water taken from the groundwater stock. That is, water used to avoid desalter replenishment is water that is not available in the event of a major disruption in surface water supplies to the region. Given the difficulty of describing and quantifying these future states of nature, option values have not been calculated. However, conversations with Watermaster staff indicate that dewatering will not result in any meaningful loss of operational flexibility since the percentage depletion of the aquifer envisioned through re-operation is relatively small.

period under this scenario. Second, while the most rapid depletion strategy delays replenishment, it also hastens the date at which a large replenishment obligation occurs once the desalter replenishment forgiveness of 400,000 acre-feet is exhausted.⁸ Given the relatively low real discount rate used in this study (i.e., the nominal discount rate minus the rate of growth of water prices), it is not surprising that dynamic factors such as this do not have a large effect on net benefits.

⁸ This study has not considered the capital and operating costs of expanding recharge capacity. Allocating Santa Ana River inflows to desalter replenishment delays the date at which capacity is exceeded, as does the most rapid depletion strategy.

Table 1: Net Benefits of Hydraulic Control, Basin Re-Operation and Desalter Production

(Figures in millions of 2006 dollars)

Gain Over Baseline: SAR Inflow Allocated to Desalter Replenishment

	<i>High Rate</i>	<i>Low Rate</i>
<i>Straightline</i>	388.6	283.1
<i>Most Rapid</i>	391.4	288.4

Gain Over Baseline: SAR Inflow Unallocated

	<i>High Rate</i>	<i>Low Rate</i>
<i>Straightline</i>	436.2	341.9
<i>Most Rapid</i>	438.8	347.7

Source: Calculated.

Table 2: Production, Operating Yield and Stormwater Recharge

<i>Year</i>	<i>Total Production</i>	<i>Chino Desalter Production</i>	<i>Operating Yield</i>	<i>New Stormwater Recharge</i>
2006	223,505	30,019	145,000	12,000
2007	230,566	31,923	145,000	12,000
2008	237,634	33,827	145,000	12,000
2009	244,702	35,731	145,000	12,000
2010	251,874	37,748	145,000	12,000
2011	251,768	38,980	145,000	12,000
2012	251,661	40,212	145,000	12,000
2013	251,551	41,445	145,000	12,000
2014	251,557	42,789	145,000	12,000
2015	250,216	42,789	145,000	12,000
2016	250,427	42,789	145,000	12,000
2017	250,640	42,789	145,000	12,000
2018	250,851	42,789	140,000	12,000
2019	251,060	42,789	140,000	12,000
2020	251,270	42,789	140,000	12,000
2021	254,049	42,789	140,000	12,000
2022	256,827	42,789	140,000	12,000
2023	259,605	42,789	140,000	12,000
2024	262,384	42,789	140,000	12,000
2025	265,163	42,789	140,000	12,000
2026	266,133	42,789	140,000	12,000
2027	267,104	42,789	140,000	12,000
2028	268,074	42,789	140,000	12,000
2029	269,044	42,789	140,000	12,000
2030	270,014	42,789	140,000	12,000

Source: Wildermuth Environmental.

Table 3: Replenishment Obligations and Sources – No Basin Re-Operation

<i>Year</i>	<i>Normal Production Replenishment Obligation</i>	<i>Chino Desalter Replenishment Obligation</i>	<i>MWD Replenishment</i>	<i>Recycling Replenishment</i>
2006	36,487	30,019	66,505	0
2007	41,643	31,923	73,566	0
2008	46,806	33,827	80,634	0
2009	51,970	35,731	87,702	0
2010	57,126	37,748	94,874	0
2011	55,788	38,980	94,768	0
2012	54,448	40,212	94,661	0
2013	53,107	41,445	94,551	0
2014	51,768	42,789	94,557	0
2015	50,427	42,789	93,216	0
2016	50,638	42,789	93,427	0
2017	50,851	42,789	93,640	0
2018	56,062	42,789	98,851	0
2019	56,271	42,789	99,060	0
2020	56,482	42,789	99,270	0
2021	59,260	42,789	102,049	0
2022	62,038	42,789	104,827	0
2023	64,816	42,789	107,605	0
2024	67,595	42,789	110,384	0
2025	70,374	42,789	113,163	0
2026	71,344	42,789	114,133	0
2027	72,315	42,789	115,104	0
2028	73,285	42,789	116,074	0
2029	74,255	42,789	117,044	0
2030	75,225	42,789	118,014	0

Source: Calculated.

Normal Production Replenishment Obligation = Total Production – Desalter Production
– Operating Yield – New Stormwater Recharge

Desalter Replenishment Obligation = Desalter Production

Table 4: Overdraft and SAR Inflow – Straightline Depletion Scenario

<i>Year</i>	<i>Annual Overdraft</i>	<i>Cumulative Overdraft</i>	<i>SAR Inflow</i>
2006	16,000	16,000	9,900
2007	16,000	32,000	9,900
2008	16,000	48,000	9,900
2009	16,000	64,000	9,900
2010	16,000	80,000	9,900
2011	16,000	96,000	9,900
2012	16,000	112,000	9,900
2013	16,000	128,000	9,900
2014	16,000	144,000	9,900
2015	16,000	160,000	9,900
2016	16,000	176,000	9,900
2017	16,000	192,000	9,900
2018	16,000	208,000	9,900
2019	16,000	224,000	9,900
2020	16,000	240,000	9,900
2021	16,000	256,000	9,900
2022	16,000	272,000	9,900
2023	16,000	288,000	9,900
2024	16,000	304,000	9,900
2025	16,000	320,000	9,900
2026	16,000	336,000	9,900
2027	16,000	352,000	9,900
2028	16,000	368,000	9,900
2029	16,000	384,000	9,900
2030	16,000	400,000	9,900

Sources: Annual and Cumulative Overdraft: Assumed; SAR Inflow, Wildermuth Environmental.

Table 5: Replenishment Obligations and Sources – Straightline Depletion Scenario with SAR Inflow Allocated to Desalter Replenishment

<i>Year</i>	<i>Normal Production Replenishment Obligation</i>	<i>Chino Desalter Replenishment Obligation</i>	<i>MWD Replenishment</i>	<i>Recycling Replenishment</i>
2006	36,487	4,119	28,424	12,182
2007	41,643	6,023	33,366	14,300
2008	46,806	7,927	38,314	16,420
2009	51,970	9,831	43,261	18,541
2010	57,126	11,848	48,282	20,692
2011	55,788	13,080	48,208	20,660
2012	54,448	14,312	48,133	20,628
2013	53,107	15,545	48,056	20,595
2014	51,768	16,889	48,060	20,597
2015	50,427	16,889	47,121	20,195
2016	50,638	16,889	47,269	20,258
2017	50,851	16,889	47,418	20,322
2018	56,062	16,889	51,065	21,885
2019	56,271	16,889	51,212	21,948
2020	56,482	16,889	51,359	22,011
2021	59,260	16,889	53,304	22,845
2022	62,038	16,889	55,249	23,678
2023	64,816	16,889	57,194	24,512
2024	67,595	16,889	59,139	25,345
2025	70,374	16,889	61,084	26,179
2026	71,344	16,889	61,763	26,470
2027	72,315	16,889	62,443	26,761
2028	73,285	16,889	63,121	27,052
2029	74,255	16,889	63,801	27,343
2030	75,225	16,889	64,480	27,634

Source: Calculated.

Normal Production Replenishment Obligation = Total Production – Desalter Production – Operating Yield – New Stormwater Recharge

Desalter Replenishment Obligation = Desalter Production – Annual Overdraft – SAR Inflow

Recycling Replenishment = min[0.3*(Normal Production Replenishment Obligation + Desalter Replenishment Obligation), 30,000]

MWD Replenishment = Normal Production Replenishment Obligation + Desalter Replenishment Obligation - Recycling Replenishment

Table 6: Replenishment Obligations and Sources – Straightline Depletion Scenario with SAR Inflow Unlocated

<i>Year</i>	<i>Total Replenishment Obligation</i>	<i>MWD Replenishment</i>	<i>Recycling Replenishment</i>
2006	50,505	35,354	15,152
2007	57,566	40,296	17,270
2008	64,634	45,244	19,390
2009	71,702	50,191	21,511
2010	78,874	55,212	23,662
2011	78,768	55,138	23,630
2012	78,661	55,063	23,598
2013	78,551	54,986	23,565
2014	78,557	54,990	23,567
2015	77,216	54,051	23,165
2016	77,427	54,199	23,228
2017	77,640	54,348	23,292
2018	82,851	57,995	24,855
2019	83,060	58,142	24,918
2020	83,270	58,289	24,981
2021	86,049	60,234	25,815
2022	88,827	62,179	26,648
2023	91,605	64,124	27,482
2024	94,384	66,069	28,315
2025	97,163	68,014	29,149
2026	98,133	68,693	29,440
2027	99,104	69,373	29,731
2028	100,074	70,074	30,000
2029	101,044	71,044	30,000
2030	102,014	72,014	30,000

Source: Calculated.

Total Replenishment Obligation = Total Production – Operating Yield – Annual Overdraft – New Stormwater Recharge

Recycling Replenishment = min[0.3*Total Replenishment Obligation, 30,000]

MWD Replenishment = Total Replenishment Obligation - Recycling Replenishment

Table 7: Overdraft and SAR Inflow – Most Rapid Depletion Scenario

<i>Year</i>	<i>Annual Overdraft</i>	<i>Cumulative Overdraft</i>	<i>SAR Inflow</i>
2006	20,119	20,119	9,900
2007	22,023	42,141	9,900
2008	23,927	66,069	9,900
2009	25,831	91,900	9,900
2010	27,848	119,748	9,900
2011	29,080	148,828	9,900
2012	30,312	179,141	9,900
2013	31,545	210,685	9,900
2014	32,889	243,574	9,900
2015	32,889	276,463	9,900
2016	32,889	309,352	9,900
2017	32,889	342,241	9,900
2018	32,889	375,130	9,900
2019	24,870	400,000	9,900
2020	0	400,000	12,500
2021	0	400,000	12,500
2022	0	400,000	12,500
2023	0	400,000	12,500
2024	0	400,000	12,500
2025	0	400,000	12,500
2026	0	400,000	12,500
2027	0	400,000	12,500
2028	0	400,000	12,500
2029	0	400,000	12,500
2030	0	400,000	12,500

Sources: Annual and Cumulative Overdraft: Assumed; SAR Inflow: Wildermuth Environmental.

Table 8: Replenishment Obligations and Sources – Most Rapid Depletion Scenario with SAR Inflow Allocated to Desalter Replenishment

<i>Year</i>	<i>Normal Production Replenishment Obligation</i>	<i>Chino Desalter Replenishment Obligation</i>	<i>MWD Replenishment</i>	<i>Recycling Replenishment</i>
2006	36,487	0	25,541	10,946
2007	41,643	0	29,150	12,493
2008	46,806	0	32,764	14,042
2009	51,970	0	36,379	15,591
2010	57,126	0	39,988	17,138
2011	55,788	0	39,051	16,736
2012	54,448	0	38,114	16,335
2013	53,107	0	37,175	15,932
2014	51,768	0	36,238	15,530
2015	50,427	0	35,299	15,128
2016	50,638	0	35,447	15,191
2017	50,851	0	35,596	15,255
2018	56,062	0	39,243	16,819
2019	56,271	8,019	45,003	19,287
2020	56,482	30,289	60,739	26,031
2021	59,260	30,289	62,684	26,865
2022	62,038	30,289	64,629	27,698
2023	64,816	30,289	66,574	28,532
2024	67,595	30,289	68,519	29,365
2025	70,374	30,289	70,663	30,000
2026	71,344	30,289	71,633	30,000
2027	72,315	30,289	72,604	30,000
2028	73,285	30,289	73,574	30,000
2029	74,255	30,289	74,544	30,000
2030	75,225	30,289	75,514	30,000

Source: Calculated.

Normal Production Replenishment Obligation = Total Production – Desalter Production – Operating Yield – New Stormwater Recharge

Desalter Replenishment Obligation = Desalter Production – Annual Overdraft – SAR Inflow

Recycling Replenishment = min[0.3*(Normal Production Replenishment Obligation + Desalter Replenishment Obligation), 30,000]

MWD Replenishment = Normal Production Replenishment Obligation + Desalter Replenishment Obligation - Recycling Replenishment

Table 9: Replenishment Obligations and Sources – Most Rapid Depletion Scenario with SAR Inflow Unallocated

<i>Year</i>	<i>Total Replenishment Obligation</i>	<i>MWD Replenishment</i>	<i>Recycling Replenishment</i>
2006	46,387	32,471	13,916
2007	51,543	36,080	15,463
2008	56,706	39,694	17,012
2009	61,870	43,309	18,561
2010	67,026	46,918	20,108
2011	65,688	45,981	19,706
2012	64,348	45,044	19,305
2013	63,007	44,105	18,902
2014	61,668	43,168	18,500
2015	60,327	42,229	18,098
2016	60,538	42,377	18,161
2017	60,751	42,526	18,225
2018	65,962	46,173	19,789
2019	74,190	51,933	22,257
2020	99,270	69,489	29,781
2021	102,049	72,049	30,000
2022	104,827	74,827	30,000
2023	107,605	77,605	30,000
2024	110,384	80,384	30,000
2025	113,163	83,163	30,000
2026	114,133	84,133	30,000
2027	115,104	85,104	30,000
2028	116,074	86,074	30,000
2029	117,044	87,044	30,000
2030	118,014	88,014	30,000

Source: Calculated.

Total Replenishment Obligation = Total Production – Operating Yield – Annual Overdraft – New Stormwater Recharge

Recycling Replenishment = min[0.3*Total Replenishment Obligation, 30,000]

MWD Replenishment = Total Replenishment Obligation - Recycling Replenishment

Table 10: Prices – High Price Scenario

<i>Year</i>	<i>Tier 2 Price</i>	<i>Replenishment Price</i>	<i>Recycling Price</i>
2006	427	238	69
2007	427	238	72
2008	459	275	75
2009	473	297	79
2010	486	314	82
2011	497	331	86
2012	519	346	90
2013	543	361	94
2014	567	378	98
2015	593	395	103
2016	619	412	107
2017	647	431	112
2018	676	450	117
2019	707	471	122
2020	739	492	128
2021	772	514	134
2022	807	537	140
2023	843	561	146
2024	881	587	152
2025	920	613	159
2026	962	641	166
2027	1,005	669	174
2028	1,050	700	182
2029	1,098	731	190
2030	1,147	764	198

Source: Metropolitan Water District of Southern California.

Table 11: Prices – Low Price Scenario

<i>Year</i>	<i>Tier 2 Price</i>	<i>Replenishment Price</i>	<i>Recycling Price</i>
2006	427	238	69
2007	427	238	71
2008	450	261	73
2009	457	268	75
2010	463	282	78
2011	477	300	80
2012	491	309	82
2013	506	318	85
2014	521	328	87
2015	537	338	90
2016	553	348	93
2017	570	358	96
2018	587	369	98
2019	604	380	101
2020	622	391	104
2021	641	403	107
2022	660	415	111
2023	680	428	114
2024	700	441	117
2025	722	454	121
2026	743	467	125
2027	765	481	128
2028	788	496	132
2029	812	511	136
2030	836	526	140

Source: Metropolitan Water District of Southern California.

Table 12: Expected Value of Reduced Storage Losses

Program Size	<i>Losses</i>	<i>Present Value - High Rate</i>	<i>Present Value - Low Rate</i>
300,000	80,175	18,647,350	15,290,827
400,000	106,900	24,863,133	20,387,769
500,000	133,626	31,079,149	25,484,903

Source: Wildermuth Environmental.

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2007 SUPPLEMENT
TO THE
IMPLEMENTATION PLAN
OPTIMUM BASIN MANAGEMENT PROGRAM
FOR THE
CHINO BASIN

INTRODUCTION

This document describes the supplement to the implementation plan for the Chino Basin Optimum Basin Management Program (OBMP), as determined through the 2007 "Peace II" process.

PROGRAM ELEMENT 1 DEVELOP AND IMPLEMENT
COMPREHENSIVE MONITORING PROGRAM

A. Production Monitoring Program

All active wells (except for minimum user wells) are now metered. Watermaster reads the production data from the meters on a quarterly basis and enters these data into Watermaster's relational database.

B. Surface Water Discharge and Quality Monitoring

Water Quality and Quantity in Recharge Basins. Watermaster measures the quantity and quality of storm and supplemental water entering the recharge basins. Pressure transducers or staff gauges are used to measure water levels during recharge operations. In addition to these quantity measurements, imported water quality values for State Water Project water are obtained from the Metropolitan Water District of Southern California (MWDSC) and recycled water quality values for the RP1 and RP4 treatment plant effluents are obtained from IEUA. Watermaster monitors the storm water quality in the eight major channels (San Antonio, West Cucamonga, Cucamonga, Deer Creek, Day Creek, San Sevaine, West Fontana, and DeClez) usually after each major storm

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event. Combining the measured flow data with the respective water qualities enables the calculation of the blended water quality in each recharge basin, the “new yield” to the Chino Basin, and the adequate dilution of recycled water.

Surface Water Monitoring in Santa Ana River (SAR). Watermaster measures the discharge of the river and selected water quality parameters to determine those reaches of the SAR that are gaining flow from Chino Basin and/or, conversely, those reaches that are losing flow into the Chino Basin. These bi-weekly flow and water quality measurements are combined with discharge data from permanent USGS and Orange County Water District (OCWD) stream gauges and discharge data from publicly owned treatment works (POTWs). These data are used in groundwater modeling to assess the extent of hydraulic control.

HCMP Annual Report

In January 2004, the RWQCB amended the Water Quality Control Plan (Basin Plan) for the Santa Ana River Basin to incorporate an updated total dissolved solids (TDS) and nitrogen (N) management plan. The Basin Plan Amendment includes both “antidegradation” and “maximum benefit” objectives for TDS and nitrate-nitrogen for the Chino and Cucamonga groundwater management zones. The application of the “maximum benefit” objectives relies on Watermaster and the IEUA’s implementation of a specific program of projects and requirements, which are an integral part of the OBMP. On April 15, 2005, the RWQCB adopted resolution R8-2005-0064; thus approving the Surface Water Monitoring Program and Groundwater Monitoring Program in support of maximum benefit commitments in the Chino and Cucamonga Basins. Watermaster and the IEUA completed the 2006 Annual Report, which summarizes the results for those two programs, and submitted it to the RWQCB on April 16, 2007 in partial fulfillment of maximum benefit commitments.

Chino Basin Recycled Water Groundwater Recharge Program

The IEUA, Watermaster, Chino Basin Water Conservation District, and San Bernardino County Flood Control District jointly sponsor the Chino Basin Recycled Water Groundwater Recharge Program. This is a comprehensive water supply program to enhance water supply reliability and improve the groundwater quality in local drinking water wells throughout the Chino Groundwater Basin by increasing the recharge of stormwater, imported water, and recycled water. The recharge program is regulated under RWQCB Order No. R8-2005-0033 and Monitoring and Reporting Program No. R8-2005-0033.

Monitoring Activities. Watermaster and the IEUA collect weekly and bi-weekly water quality samples from basins that are actively recharging recycled water and from lysimeters installed within those basins. Monitoring wells located down gradient of the recharge basins are sampled every two weeks during the reporting period for a total of about 100 samples.

Construction Activities. Lysimeters and monitoring wells associated with the RP-3, DeClez, and Ely Basins were installed in fiscal year (FY) 2006/07.

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C. Ground Level Monitoring Program

Watermaster developed a multifaceted land surface monitoring program to develop data for a long-term management plan for land subsidence in Management Zone 1 (MZ-1). The monitoring program consisted of three main elements:

- An aquifer system monitoring facility consisting of multiple depth piezometers and a dual bore extensometer.
- The application of synthetic aperture radar interferometry (InSAR) to measure historical land surface deformation.
- Benchmark surveys to measure land surface deformation, “ground truth” the InSAR data, and evaluate effectiveness of the long term management plan.

Following two years of data collection and analysis, Watermaster submitted the MZ-1 Summary Report in October 2005, which contained Guidance Criteria to minimize subsidence and fissuring. The Guidance Criteria included a listing of Managed Wells and their owners subject to the criteria, a map of the so-called Managed Area, an initial threshold water level (Guidance Level) of 245 feet below the top of the PA-7 well casing, and a plan for ongoing monitoring and notification. Since October 2005, the MZ-1 Summary Report and the Guidance Criteria contained therein have been discussed extensively by the parties involved, and were adopted by the Watermaster Board at its May 2006 Meeting. The final MZ-1 Subsidence Management Plan was adopted by the Watermaster Board at its June 2007 Meeting.

The MZ-1 monitoring program continues unabated. Water level monitoring expanded to the central regions of MZ-1 with the installation of transducers/data loggers at selected wells owned by the City of Chino, the Monte Vista Water District, and the City of Pomona. This expansion of the water level monitoring program is the initial effort to better understand the mechanisms behind ongoing land subsidence in this region.

PROGRAM ELEMENT 2 -- DEVELOP AND IMPLEMENT COMPREHENSIVE RECHARGE PROGRAM

INTRODUCTION

Construction on the Chino Basin Facilities Improvement Project (CBFIP) Phase I was completed by December 31, 2005 at a cost of \$38M; 50% from a SWRCB Proposition 13 Grant, and 25% each from Watermaster and the IEUA. A CBFIP Phase II list of projects was developed by Watermaster and the IEUA, including monitoring wells, lysimeters, recycled water connections, SCADA system expansions, three MWDSC turnouts, and berm heightening and hardening. At a cost of approximately \$15M, these Phase II facilities will be financed through a 50% Grant from DWR and 25% each from Watermaster and the IEUA.

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In FY 2005-2006, the CBFIP Phase I facilities were able to recharge 49,000 AF of storm and supplemental water. By the start of FY 2009-2010, most of the basins will be able to operate on a 12 months per year basis with combinations of storm, imported, and recycled water, with occasional downtime for silt and organic growth removal. Operations and basin planning are coordinated through the Groundwater Recharge Coordinating Committee (GRCC) which meets monthly.

Update to the Recharge Master Plan. The Recharge Master Plan will be updated as frequently as necessary and not less than every five (5) years, to reflect an appropriate schedule for planning, design, and physical improvements as may be required to offset the controlled mining at the end of the Peace Agreement and the end of forgiveness for Desalter replenishment.

Coordination. Watermaster will ensure that the members of the Appropriative Pool will coordinate the development of their respective Urban Water Management Plans and Water Supply Master Plans with Watermaster as follows.

- (a) Watermaster will obtain from each Appropriator that prepares an Urban Water Management Plan and Water Supply Plan copies of their existing and proposed plans.
- (b) Watermaster will use the Plans in evaluating the adequacy of the Recharge Master Plan and other OBMP Implementation Plan program elements.
- (c) Each Appropriator will provide Watermaster with a draft in advance of adopting any proposed changes to their Urban Water Management Plans and in advance of adopting any material changes to their Water Supply Master Plans respectively in accordance with the customary notification routinely provided to other third parties to offer Watermaster a reasonable opportunity to provide informal input and informal comment on the proposed changes.
- (d) Any party that experiences the loss or the imminent threatened loss of a material water supply source will provide reasonable notice to Watermaster of the condition and the expected impact, if any, on the projected groundwater use.

Suspension. To ameliorate any long-term risks attributable to reliance upon un-replenished groundwater production by the Desalters, the annual availability of any portion of the 400,000 acre-feet set aside for forgiveness, is expressly subject to Watermaster making an annual finding it is in substantial compliance with the revised Watermaster Recharge Master Plan pursuant to Paragraph 7.3 above.

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Acknowledgment re 6,500 Acre-Foot Supplemental Recharge. The Parties have made the following acknowledgments regarding the 6,500 Acre-Foot Supplemental Recharge:

- (e) A fundamental premise of the Physical Solution is that all water users dependent upon Chino Basin will be allowed to pump sufficient waters from the Basin to meet their requirements. To promote the goal of equal access to groundwater within all areas and sub-areas of the Chino Basin, Watermaster has committed to use its best efforts to direct recharge relative to production in each area and sub-area of the Basin and to achieve long-term balance between total recharge and discharge. The Parties acknowledge that to assist Watermaster in providing for recharge, the Peace Agreement sets forth a requirement for Appropriative Pool purchase of 6,500 acre-feet per year of Supplemental Water for recharge in Management Zone 1 (MZ1). The purchases have been credited as an addition to Appropriative Pool storage accounts. The water recharged under this program has not been accounted for as Replenishment water.
- (f) Watermaster was required to evaluate the continuance of this requirement in 2005 by taking into account provisions of the Judgment, Peace Agreement and OBMP, among all other relevant factors. It has been determined that other obligations in the Judgment and Peace Agreement, including the requirement of hydrologic balance and projected replenishment obligations, will provide for sufficient wet-water recharge to make the separate commitment of Appropriative Pool purchase of 6,500 acre-feet unnecessary. Therefore, because the recharge target as described in the Peace Agreement has been achieved, further purchases under the program will cease.

Watermaster will independently determine whether to require wet-water recharge within MZ1 to maintain hydrologic balance and to provide equal access to groundwater. Watermaster will conduct its recharge in a manner to provide hydrologic balance within, and will emphasize recharge in MZ1. Accordingly, the Parties acknowledge and agree that each year Watermaster shall continue to be guided in the exercise of its discretion concerning recharge by the principles of hydrologic balance.

Hydraulic Control. In accordance with the purpose and objective of the Physical Solution to “establish a legal and practical means for making the maximum reasonable beneficial use of the waters of the Chino Basin” (paragraph 39) and the identified Basin Management Parameters, Watermaster will manage the Basin to secure Hydraulic Control through controlled overdraft for a period of approximately 23 (twenty-three) years (Re-Operation). Hydraulic Control ensures that the water management activities in the Chino North Management Zone do not cause materially adverse impacts to the beneficial uses of the Santa Ana River downstream of Prado Dam. “Hydraulic Control” means the reduction of groundwater discharge from the Chino

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North Management Zone to the Santa Ana River to de minimus quantities. The Chino North Management Zone is more fully described and set forth in Exhibit 1 to this Appendix I.

Re-Operation. Independent of Watermaster determinations regarding Operating Safe Yield and without effect on or regard for the parties' respective rights thereto in any year, Re-Operation of the Basin through the managed withdrawal of groundwater from the Basin is required to achieve and maintain Hydraulic Control. Given the expected water quality, increased yield and economic benefits associated with Hydraulic Control, a Re-Operation through coordinated and controlled overdraft is a prudent and efficient use of the Basin resources *to the extent* groundwater is required to achieve and maintain Hydraulic Control. "Re-operation" means the potential increase in the accumulated overdraft from 200,000 acre-feet previously authorized under Exhibit I over the period 1978 through 2017 to 600,000 acre-feet through 2030, with the 400,000 acre-feet increase being expressly allocated to meet the replenishment obligation of the Desalters. Accordingly, a cumulative change in storage of up to 400,000 acre-feet greater than initially authorized by the original Judgment may result. However, the use of water pumped pursuant to Re-operation is subject to the following limitations:

(a) **Future Desalter Groundwater Production Facilities.** Future Desalter groundwater production facilities will emphasize Production from the southern end of the Basin.

(b) **The Material Physical Injury.** Controlled overdraft must not cause material physical injury to any Party or the Basin.

(c) **Proposed Schedule.** An initial schedule for Re-Operation, including annual and cumulative quantities to be pumped through Re-Operation will be developed. Watermaster may modify the proposed schedule from time to time as it may be prudent under the circumstances, but only after first obtaining Court approval.

(d) **Annual Accounting.** Watermaster will prepare an annual summary accounting of the cumulative total of groundwater production and desalting from all authorized desalters and other activities authorized by the Optimum Basin Management Program in a schedule that: (i) identifies the total change in groundwater storage that will result from the Re-Operation; and (ii) characterizes and accounts for all water that is projected to be produced by all authorized desalters.

(e) **Recharge and Replenishment Compliance.** Watermaster must be in substantial compliance with its then existing recharge and replenishment plans and obligations, and will make an annual finding whether or not it is in compliance.

(f) **Replenishment.** Groundwater produced by Desalters in connection with Re-Operation to achieve Hydraulic Control will be replenished through, inter alia, the water

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made available through controlled overdraft.

(g) Suspension. Re-Operation and Watermaster's apportionment of controlled overdraft will not be suspended in the event that Hydraulic Control is secured in any year *before* the full 400,000 acre-feet has been produced so long as: (i) Watermaster has prepared, adopted and the Court has approved a contingency plan that establishes conditions and protective measures to avoid Material Physical Injury and that equitably addresses this contingency, and (ii) Watermaster continues to demonstrate a credible material progress toward obtaining sufficient capacity to recharge sufficient quantities of water to cause the Basin to return to a new equilibrium at the conclusion of the Re-Operation.

(h) Definition of Desalters. "Desalters" means the Chino I Desalter, the Chino I Expansion, the Chino II Desalter and Future Desalters, consisting of all the capital facilities' and processes that remove salt from the Basin water, including extraction wells, transmission facilities for delivery of groundwater to the Desalter. Desalter treatment and delivery facilities for the desalted water include pumping and storage facilities and treatment and disposal capacity in the Santa Ana Regional Interceptor.

PROGRAM ELEMENT 3 DEVELOP AND IMPLEMENT WATER SUPPLY PLAN FOR THE IMPAIRED AREAS OF THE BASIN, PROGRAM ELEMENT 5 DEVELOP AND IMPLEMENT REGIONAL SUPPLEMENTAL WATER PROGRAM

Construction on the Chino I Desalter Expansion and the Chino II Desalter facilities was completed in February 2006 and an application has been made for \$1.6 M in Proposition 50 funds to add 8 MGD of ion exchange capacity to the Chino II Desalter. As currently configured, the Chino I Desalter provides 2.6 MGD of treated (air stripping for VOC removal) water from Wells Nos. 1-4, 4.9 MGD of treated (ion exchange for nitrate removal) water from Wells Nos. 5-15, and 6.7 MGD of treated (reverse osmosis for nitrate and TDS removal) water from Wells Nos. 5-15 for a total of 14.2 MGD (16,000 AFY). The Chino II Desalter provides 4.0 MGD of ion exchange treated water and 6.0 MGD of reverse osmosis treated water from 8 additional wells for a total of 10.0 MGD (11,000 AFY).

Consultants to the City of Ontario and Western Municipal Water District recently completed their evaluation of three alternative configurations for expansion of the Chino Desalters. Their results are presented in the report "Chino Desalter Phase 3 Alternatives Evaluation," dated May 2007. Essentially, they found that the preferred alternative would be to construct a 10.5 mgd (10,600 AFY) expansion to the existing Chino II Desalter, with raw water coming from the existing Wells Nos. 13, 14, and 15. A new Chino Creek Well Field, required for hydraulic

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control of the basin, would replace the raw water lost from the Wells Nos. 13, 14, and 15. Negotiations are currently underway between the City of Ontario, WMWD, and JCSD to determine capacity allocations and cost sharing for the new facilities.

**PROGRAM ELEMENT 4 DEVELOP AND IMPLEMENT COMPREHENSIVE
GROUNDWATER MANAGEMENT PLAN FOR MANAGEMENT ZONE 1 (MZ1)**

The occurrence of subsidence and fissuring in Management Zone 1 is not acceptable and should be reduced to tolerable levels or abated. The OBMP calls for a management plan to reduce or abate the subsidence and fissuring problems to the extent that it may be caused by production in MZ1.

In October 2005, Watermaster completed the MZ-1 Summary Report, including the Guidance Criteria. Since then the impacted parties have had numerous meetings to transform the Summary Report into a Long-term Management Plan. The Summary Report and the Guidance Criteria were adopted by the Watermaster Board in May 2006, and the Long-term Management Plan was adopted in June 2007.

**PROGRAM ELEMENT 6 DEVELOP AND IMPLEMENT COOPERATIVE PROGRAMS
WITH THE REGIONAL BOARD AND OTHER AGENCIES TO IMPROVE BASIN
MANAGEMENT, and PROGRAM ELEMENT 7 SALT MANAGEMENT PROGRAM**

On going discussions are being held with the RWQCB and the San Bernardino County Department of Airports in order to determine the engineering solution and costs for remediating the TCE plume at the Chino Airport. The consulting engineer for the SBCDA is currently characterizing the extent of off-site contamination and investigating remedial alternatives. For the Ontario Airport (OIA) plume, the Potentially Responsible Parties (PRPs) have been working with Watermaster to quantify the depth and extent of the TCE plume. At the Stringfellow site, the consultants to DHS have been investigating whether the perchlorate plume from the site adds to the existing perchlorate levels in the Santa Ana River, or whether the perchlorate plume is diverted towards the Chino II Desalter well field. Lastly, Watermaster continues to monitor the activities of General Electric's (GE) remediation at the Flat Iron facility and their efforts to develop a new location for recharge of their treated effluent.

MZ-3 Monitoring Program.

The former Kaiser plume has been incorporated into an overall monitoring program for the MZ-3 area. The MZ-3 monitoring program is also assessing the groundwater quality impairment from

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total dissolved solids (TDS), nitrate, and perchlorate. Quarterly samples will now be collected from all 4 wells to help recharacterize the Kaiser plume.

Ontario International Airport (OIA) Volatile Organic Chemical Plume.

Watermaster has provided water quality, water level, and well construction data from more than 400 private wells and 200 public wells to the RWQCB, which in turn forwarded the database to the PRPs pursuant to their request. Subsequently the PRPs submitted their sampling work plan and health and safety plan for the well installation and sampling.

Chino Airport VOC Plume.

Watermaster met with the RWQCB, the San Bernardino County Department of Airports, and their consultant Tetra Tech on April 18, May 25, and June 26, 2007 to discuss a joint remediation of the VOC plume from the airport. Such a joint remediation would help address other issues in the southwestern portion of Chino Basin such as maintenance of hydraulic control and the provision of high quality drinking water in an area of increasing demand. As a result of these meetings, Watermaster agreed to provide a database containing well construction information, water quality, water levels, and production for wells located southwest of the Chino airport. In addition, Watermaster provided results from sampling all the wells in this location to provide up-to-date analytical data on all the possible contaminants in these wells. These data are being reviewed with Tetra Tech to begin the engineering of appropriate remedial actions.

GE Flat Iron Remediation.

Finally, with respect to the GE Flat Iron remediation, GE conducted a screening of options for the disposal of treated effluent from their operational pump and treat facilities. Currently, GE discharges their effluent into the Ely Basins, where it percolates back into the groundwater. However, this operation limits Watermaster's ability to recharge recycled water into the Ely Basins and, consequently, Watermaster has asked that GE develop alternative disposal means. As a result of their screening, GE has decided to investigate, in detail, the construction of groundwater injection wells that would be operated in conjunction with their own recharge basin. GE completed their planning in December 2006 and began detailed design based upon the RWQCB's approval of the concept.

TDS and Nitrogen Monitoring Pursuant to the 2004 Basin Plan Amendment

Pursuant to the 2004 Basin Plan Amendment and the Watermaster/IEUA permit to recharge recycled water, Watermaster and the IEUA have conducted and will continue to conduct groundwater and surface water monitoring programs. Quarterly HCMP reports that summarize data collection efforts will continue to be submitted to the RWQCB.

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PROGRAM ELEMENT 8 DEVELOP AND IMPLEMENT GROUNDWATER STORAGE MANAGEMENT PROGRAM, PROGRAM ELEMENT 9 DEVELOP AND IMPLEMENT STORAGE AND RECOVERY PROGRAMS

Currently, there is only one groundwater storage program approved in the Chino Basin: the 100,000 acre-ft Dry-Year Yield Program with the Metropolitan Water District of Southern California (MWD). The MWD, IEUA, and Watermaster are considering expanding this program by an additional 50,000 acre-ft to 150,000 acre-ft over the next few years. Watermaster is also considering an additional 150,000 acre-ft in programs with non-party water agencies.

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Attachment "E"
Desalter Replenishment with Most Rapid Depletion of the Re-Operation Account
(acre-ft/yr)

Fiscal Year	Desalter Pumping	New Yield	Re-Operation			Residual Replenishment Obligation
			Replenishment Allocation for Desalter III	Replenishment Allocation to CDA	Balance	
					400,000	0
2006 / 2007	28,700	8,610	0	20,090	379,910	0
2007 / 2008	28,700	8,610	0	20,090	359,820	0
2008 / 2009	28,700	8,610	0	20,090	339,730	0
2009 / 2010	28,700	8,610	0	20,090	319,640	0
2010 / 2011	28,700	8,610	0	20,090	299,550	0
2011 / 2012	28,700	8,610	0	20,090	279,460	0
2012 / 2013	34,050	10,215	5,000	18,835	255,625	0
2013 / 2014	39,400	11,820	10,000	17,580	228,045	0
2014 / 2015	39,400	11,820	10,000	17,580	200,465	0
2015 / 2016	39,400	11,820	10,000	17,580	172,885	0
2016 / 2017	39,400	11,820	10,000	17,580	145,305	0
2017 / 2018	39,400	11,820	10,000	15,305	120,000	2,275
2018 / 2019	39,400	11,820	10,000		110,000	17,580
2019 / 2020	39,400	11,820	10,000		100,000	17,580
2020 / 2021	39,400	11,820	10,000		90,000	17,580
2021 / 2022	39,400	11,820	10,000		80,000	17,580
2022 / 2023	39,400	11,820	10,000		70,000	17,580
2023 / 2024	39,400	11,820	10,000		60,000	17,580
2024 / 2025	39,400	11,820	10,000		50,000	17,580
2025 / 2026	39,400	11,820	10,000		40,000	17,580
2026 / 2027	39,400	11,820	10,000		30,000	17,580
2027 / 2028	39,400	11,820	10,000		20,000	17,580
2028 / 2029	39,400	11,820	10,000		10,000	17,580
2029 / 2030	39,400	11,820	10,000		0	17,580
Totals	876,050	262,815	175,000	225,000		213,235

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Attachment "E"

Desalter Replenishment with Proportional Depletion of the Re-Operation Account

(acre-ft/yr)

Fiscal Year	Desalter Pumping	New Yield	Re-Operation			Residual Replenishment Obligation
			Replenishment Allocation for Desalter III	Replenishment Allocation to CDA	Balance	
					400,000	0
2006 / 2007	28,700	8,610	0	7,371	392,629	12,719
2007 / 2008	28,700	8,610	0	7,371	385,258	12,719
2008 / 2009	28,700	8,610	0	7,371	377,886	12,719
2009 / 2010	28,700	8,610	0	7,371	370,515	12,719
2010 / 2011	28,700	8,610	0	7,371	363,144	12,719
2011 / 2012	28,700	8,610	0	7,371	355,773	12,719
2012 / 2013	34,050	10,215	5,000	8,745	342,028	10,090
2013 / 2014	39,400	11,820	10,000	10,119	321,908	7,461
2014 / 2015	39,400	11,820	10,000	10,119	301,789	7,461
2015 / 2016	39,400	11,820	10,000	10,119	281,670	7,461
2016 / 2017	39,400	11,820	10,000	10,119	261,551	7,461
2017 / 2018	39,400	11,820	10,000	10,119	241,431	7,461
2018 / 2019	39,400	11,820	10,000	10,119	221,312	7,461
2019 / 2020	39,400	11,820	10,000	10,119	201,193	7,461
2020 / 2021	39,400	11,820	10,000	10,119	181,073	7,461
2021 / 2022	39,400	11,820	10,000	10,119	160,954	7,461
2022 / 2023	39,400	11,820	10,000	10,119	140,835	7,461
2023 / 2024	39,400	11,820	10,000	10,119	120,715	7,461
2024 / 2025	39,400	11,820	10,000	10,119	100,596	7,461
2025 / 2026	39,400	11,820	10,000	10,119	80,477	7,461
2026 / 2027	39,400	11,820	10,000	10,119	60,357	7,461
2027 / 2028	39,400	11,820	10,000	10,119	40,238	7,461
2028 / 2029	39,400	11,820	10,000	10,119	20,119	7,461
2029 / 2030	39,400	11,820	10,000	10,119	0	7,461
Totals	876,050	262,815	175,000	225,000		213,235

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DISCRETIONARY ACTIONS
TO AMEND WATERMASTER RULES AND REGULATIONS

Pursuant to the Judgment, the Peace Agreement and Watermaster Rules and Regulations, Watermaster will undertake the following actions:

I. Agricultural Pool Reallocation

- A. Section 6.3(c) of the Watermaster Rules and Regulations shall be amended to read:

“(c) In the event actual Production from the Agricultural Pool does not exceed 82,800 acre-feet in any one year or 414,000 acre-feet in any five years but total allocation from all the uses set forth in section 6.3(a) above exceeds 82,800 in any year, the amount of water made available to the members of the Appropriative Pool under section 6.3(a) shall be reduced pro rata in proportion to the benefits received by each member of the Appropriative Pool through such allocation. This reduction shall be accomplished according to the following procedure:

1. All of the amounts to be made available under 6.3(a) shall be added together. This amount shall be the “Potential Acre-Feet Available” for Reallocation.
2. Each Appropriative Pool member’s requested share of the Potential Acre-Feet Available for Reallocation shall be determined. This share shall be expressed as a percentage share of the Potential Acre-Feet Available for Reallocation.
3. Each Appropriative Pool member’s share of the Potential Acre-Feet Available for Reallocation shall be reduced pro rata according to the percentage determined in 2 above.”

- B. Section 6.3(d) of the Watermaster Rules and Regulations shall be added to read:

“(d) In the event actual Production from the Agricultural Pool does not exceed 82,800 acre-feet in any one year or 414,000 acre-feet in any five years and total Production from all the uses set forth in section 6.3(a) above does not exceed 82,800 acre-feet in any year, the amount of surplus water made available to the members of the Appropriative Pool shall be allocated according to the formula described in 6.3(c).”

- C. Section 9.6 of the Watermaster Rules and Regulations will be amended to include an articulated rule of construction that: "This provision will be construed by as permitting Watermaster to accept new voluntary agreements only to the extent that such voluntary agreements occur within areas eligible for conversion as described in Attachment 1 to the Judgment, previously added to the Judgment as an amendment by Order of the Court dated November 17, 1995."
- D. By Resolution, Watermaster will ratify all current Watermaster accounting practices with regard to Land Use Conversions, Assignments, voluntary agreements, Early Transfer, and reallocation of surplus Agricultural Pool water and continue to implement such provisions in a consistent manner.

II. Storage

- A. By Resolution, Watermaster has previously established a uniform loss percentage for all water held in storage at 2 percent, until it may be recalculated based upon the best available scientific information.
- B. Watermaster will impose a uniform loss against all water in storage in an amount of 2 (two) percent where the Party holding the storage account: (i) has previously contributed to the implementation of the OBMP as a Party to the Judgment, is in compliance with their continuing covenants under the Peace Agreement or in lieu thereof they have paid or delivered to Watermaster "financial equivalent" consideration to offset the cost of past performance prior to the implementation of the OBMP and (ii) promised continued future compliance with Watermaster Rules and Regulations. Where a Party has not satisfied the requirement of B(i) and B(ii) Watermaster will assess a 6 (six) percent loss. Following a Watermaster determination that Hydraulic Control has been achieved, Watermaster will assess losses of less than one 1 percent where the Party satisfies B(i) and B(ii).
- C. Section 8.1(f)(iii) a) and b) of Watermaster Rules and Regulations will be amended to substitute the date of July 1, 2010 for July 1, 2005.
- D. Section 8.2(a), (b), (g), (h) of Watermaster Rules and Regulations will be amended to substitute the date of July 1, 2010 for July 1, 2005.

III. Errors

- A. A new Section 3.3. of Watermaster Rules and Regulations and shall read as follows:

"3.3 Error Corrections. All reports or other information submitted to Watermaster by the parties shall be subject to a four-year limitations period regarding the correction of errors contained in such submittals. In addition, all information generated by Watermaster shall be subject to the same four-year

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limitations period. All corrections to errors shall apply retroactively for no more than four years.”

IV. Further Conforming Changes.

A. After consultation with the stakeholders, Watermaster may make further conforming changes to its Rules and Regulations to eliminate any inconsistencies with the Peace II measures and to more effectively implement the measures from time to time.

Date: _____

For CHINO BASIN WATERMASTER

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**PURCHASE AND SALE AGREEMENT FOR
THE PURCHASE OF
WATER BY WATERMASTER
FROM OVERLYING (NON-AGRICULTURAL) POOL**

THIS AGREEMENT (Agreement) is dated 27th day of September, 2007, regarding the Chino Groundwater Basin.

RECITALS

WHEREAS, the Peace Agreement expressly authorized a transfer of water from the Overlying (Non-Agricultural) Pool to Watermaster for use as replenishment for the Desalters and for use in connection with a Storage and Recovery Program;

WHEREAS, Watermaster is evaluating its replenishment needs under the Judgment and several Storage and Recovery opportunities;

WHEREAS, Watermaster desires to purchase and the Overlying (Non-Agricultural) Pool desires to sell, all of the Non-Agricultural Pool water held in storage as of June 30, 2007;

WHEREAS, Watermaster is proposing an amendment to the Overlying (Non-Agricultural) Pool Pooling Plan set forth in Exhibit "G" to the Judgment whereby members of the Pool may offer water for purchase by Watermaster and thence the members of the Appropriative Pool under the process set forth therein;

NOW THEREFORE, in consideration of the mutual promises specified herein and by conditioning their performance under this Agreement upon the conditions precedent set forth herein, and for other good and valuable consideration, the Parties agree as follows:

A. Peace Agreement Transfer. This purchase and sale agreement is in accordance with Section 5.3(e) of the Peace Agreement that provides that "parties to the Judgment with rights within the Non-Agricultural (Overlying) Pool shall have the additional rights to Transfer their rights to Watermaster for the purposes of Replenishment for a Desalter or for a Storage and Recovery Program."

B. Quantity. The quantity of water being made available to Watermaster by the Non-Agricultural (Overlying) Pool on a one-time basis ("Storage Transfer Quantity") is equivalent to the total quantity of water held in storage by the members of the Overlying (Non-Agricultural) Pool held in storage on June 30, 2007 ("Storage Quantity"), less a ten percent dedication for the purpose of Desalter Replenishment, less the quantity of water transferred pursuant to paragraph I below ("Special Transfer Quantity").

C. Notice. Within twenty-four months of the final Court approval of this Agreement (“Effective Date”), and only with the prior approval of the Appropriate Pool, Watermaster will provide written **Notice of Intent to Purchase** the Non-Agricultural (Overlying) Pool water pursuant to Section 5.3(a) of the Peace Agreement, which therein identifies whether such payment will be in connection with Desalter Replenishment or a Storage and Recovery Program.

D. Payment. Commencing thirty (30) calendar days from the Notice of Intent to Purchase (“Payment Date”) Watermaster will pay to the Non-Agricultural Overlying Pool for each acre-foot of the Storage Transfer Quantity in accordance with the following schedule as the schedule is adjusted for inflation by the consumers price index (“cpi”) for San Bernardino County from May 31, 2006 until the Payment Date.:

1. \$215 times 1/4 of the Storage Transfer Quantity on the Payment Date.
2. \$220 times 1/4 of the Storage Transfer Quantity on the first anniversary of the Payment Date.
3. \$225 times 1/4 of the Storage Transfer Quantity on the second anniversary of the Payment Date
4. \$230 time 1/4 of the Storage Transfer Quantity on the third anniversary of the Payment Date.

However, all payments provided for herein, including inflation adjustments, are subject to an express price cap and will not exceed ninety-two (92) percent of the then prevailing MWD replenishment rate in any year.

E. Dedication to Desalter Replenishment. Upon Watermaster’s issuance of its written **Notice of Intent to Purchase**, and Watermaster’s tender of its initial payment on the Payment Date, ten (10) percent of the Storage Quantity will be dedicated for replenishment of Desalter production without compensation. Watermaster will receive but will not pay for this dedication.

F. Use and Distribution. Watermaster will take possession of the water made available pursuant to this Agreement and make use of and distribute the water made available in a manner consistent with Section 5.3(e) of the Peace Agreement.

G. Condition Precedent. This Agreement and the Parties performance hereunder are expressly conditioned upon Court approval of this Agreement.

H. Early Termination. This Agreement will expire and be of no further force and effect if: Watermaster does not issue its **Notice of Intent to Purchase** in accordance with Paragraph D above within twenty-four (24) months of Court approval. Upon Watermaster’s failure to satisfy the condition subsequent, the rights of the Non-Agricultural (Overlying) Pool will remain unaffected and without prejudice as result of their having executed this Agreement except that in the event of Early Termination, the Storage Transfer Quantity, will then be made available for purchase by Watermaster and thence the members of the Appropriate Pool in accordance with Paragraph 9.(iv) of Amended Exhibit G, the Overlying (Non-Agricultural) Pool,

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Pooling Plan, including the requirement of a ten percent dedication towards Desalter replenishment.

I. One Time Transfer in Furtherance of the Physical Solution and in Aid of Desalter Replenishment (“Special Transfer Quantity”). In consideration of the Overlying (Non-Agricultural) Pool members’ irrevocable commitment made herein and it the Peace II Measures Watermaster will purchase and immediately make available the quantity of [redacted] acre-feet (less a ten percent dedication to Watermaster for Desalter Production) to the San Antonio Water Company (SAWCO) and Vulcan Materials, a member of the Overlying (Non-Agricultural) Pool under terms established as between those parties. This One Time Transfer is in addition to and without prejudice to the discretionary rights of the members of the Overlying (Non-Agricultural) Pool to make available and Watermaster and members of the Appropriative Pool to purchase water as Physical Solution transfers. No member of the Appropriative Pool, other than SAWCO assumes any responsibility for the purchase of this Special Transfer Quantity from Vulcan.

IN WITNESS THEREOF, the Parties hereto have set forth their signatures as of the date written below:

Dated:

NON-AGRICULTURAL OVERLYING POOL

By _____

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**JUDGMENT AMENDMENT
to Paragraph 8**

The Paragraph 8 of the Judgment shall be amended to read as follows:

"8. The parties listed in Exhibits "C" and "D" are the owners or in possession of lands which overlie Chino Basin. As such, said parties have exercised overlying water rights in Chino Basin. All overlying rights owned or exercised by parties listed in Exhibits "C" and "D" have, in the aggregate, been limited by prescription except to the extent such rights have been preserved by self-help by said parties. Aggregate preserved overlying rights in the Safe Yield for Agricultural Pool use, including the rights of the State of California, total 82,800 acre-feet per year. Overlying rights for non-agricultural pool use total 7,366 acre-feet per year and are individually decreed for each affected party in Exhibit "D." No portion of the Safe Yield of Chino Basin exists to satisfy unexercised overlying rights and such rights have all been lost by prescription. However, uses may be made of Basin water on overlying lands which have no preserved overlying rights pursuant to the Physical Solution herein. All overlying rights are appurtenant to the land and cannot be assigned or conveyed separate or apart therefrom for the term of the Peace Agreement except that the members of the Overlying (Non-Agricultural) Pool shall have the right to Transfer or lease their quantified Production rights: (i) within the Overlying (Non-Agricultural) Pool; (ii) to Watermaster in conformance with the procedures described in the Peace Agreement between the Parties therein, dated June 29, 2000; or (iii) in accordance with the Overlying-(Non-Agricultural) Pool Pooling Plan set forth in Exhibit "G."

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**JUDGMENT AMENDMENT
TO EXHIBIT G**

Exhibit G, the Overlying (Non-Agricultural) Pool Pooling Plan will be amended to revise Paragraph 5 to read as follows:

"5. Assessments.

(a) Replenishment Assessments. Each member of this Pool shall pay an assessment equal to the cost of replenishment water times the number of acre feet of production by such producer during the preceding year in excess of (a) his decreed share of the Safe Yield, plus (b) any carry-over credit under Paragraph 7 hereof.

(b) Administrative Assessments. In addition, the cost of the allocated share of Watermaster administration expense shall be recovered on an equal assessment against each acre-foot of production in the pool during such preceding fiscal year or calendar quarter; and in the case of Pool members who take substitute groundwater as set forth in Paragraph 8 hereof, such producer shall be liable for its share of administration assessment, as if the water so taken were produced, up to the limit of its decreed share of Safe Yield.

(c) Special Project OBMP Assessment. Each year, every member of this Pool will dedicate ten (10) percent of their annual share of Operating Safe Yield to Watermaster or in lieu thereof Watermaster will levy a Special Project OBMP Assessment in an amount equal to ten percent of the Pool member's respective share of Safe Yield times the then-prevailing MWD Replenishment Rate.

(1) The first priority for the use of any water dedicated or revenue collected from any Special Project OBMP Assessment will be for Watermaster to offset Desalter production or to purchase Replenishment water to offset any Production by the Desalters.

(2) In the event that there is no unmet replenishment obligation attributable to Desalters, Watermaster will earmark the water dedicated or revenue collected from any Special Project OBMP Assessment for distribution to any member(s) of the Appropriative Pool that Watermaster may determine have received a disproportionately small portion of the benefits obtained from recycled water and other OBMP-related salt management strategies. With advice and consultation of the Pools and the Advisory Committee, Watermaster has discretion to establish a grant program to distribute any available revenues among individual members of the Appropriative Pool to ensure an equitable distribution of the benefits attributable to recycled water."

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And to renumber Paragraph 9 as Paragraph 10 and add Paragraph 9 to read as follows:

“9. Physical Solution Transfers. All overlying rights are appurtenant to the land and cannot be assigned or conveyed separate or apart therefrom except that for the term of the Peace Agreement the members of the Overlying (Non-Agricultural) Pool shall have the discretionary right to Transfer or lease their quantified Production rights and carry-over water held in storage accounts in quantities that each member may from time to time individually determine as Transfers in furtherance of the Physical Solution: (i) within the Overlying (Non-Agricultural) Pool; (ii) to Watermaster in conformance with the procedures described in the Peace Agreement between the Parties therein, dated June 29, 2000; (iii) in conformance with the procedures described in Paragraph I of the Purchase and Sale Agreement for the Purchase of Water by Watermaster from Overlying (Non-Agricultural) Pool dated June 30, 2007; or (iv) to Watermaster and thence to members of the Appropriative Pool in accordance with the following guidelines and those procedures Watermaster may further provide in Watermaster’s Rules and Regulations:

(a) By December 31 of each year, the members of the Overlying (Non-Agricultural) Pool shall notify Watermaster of the amount of water each member shall make available in their individual discretion for purchase by the Appropriators. By January 31 of each year, Watermaster shall provide a Notice of Availability of each Appropriator’s pro-rata share of such water;

(b) Except as they may be limited by paragraph 9(e) below, each member of the Appropriative Pool will have, in their discretion, a right to purchase its pro-rata share of the supply made available from the Overlying (Non-Agricultural) Pool at the price established in 9(d) below. Each Appropriative Pool member’s pro-rata share of the available supply will be based on each Producer’s combined total share of Operating Safe Yield and the previous year’s actual Production by each party;

(c) If any member of the Appropriative Pool fails to irrevocably commit to their allocated share by March 1 of each year, its share of the Overlying (Non-Agricultural) Pool water will be made available to all other members of the Appropriative Pool according to the same proportions as described in 9(b) above and at the price established in Paragraph 9(d) below. Each member of the Appropriative Pool shall complete its payment for its share of water made available by June 30 of each year.

(d) Commensurate with the cumulative commitments by members of the Appropriative Pool pursuant to (b) and (c) above, Watermaster will purchase the surplus water made available by the Overlying (Non-Agricultural) Pool water on behalf of the members of the Appropriative Pool on an annual basis at 92% of the then-prevailing “MWD Replenishment Rate” and each member of the Appropriative Pool shall complete its payment for its determined share of water made available by June 30 of each year.

(e) Any surplus water cumulatively made available by all members of the Overlying (Non-Agricultural) Pool that is not purchased by Watermaster after completion of the process set forth herein will be pro-rated among the members of the Pool in proportion to the total quantity offered for transfer in accordance with this provision and may be retained by the Overlying (Non-Agricultural) Pool member without prejudice to the rights of the members of the Pool to

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make further beneficial use or transfer of the available surplus.

(f) Each Appropriator shall only be eligible to purchase their pro-rata share under this procedure if the party is: (i) current on all their assessments; and (ii) in compliance with the OBMP.

(g) The right of any member of the Overlying (Non-Agricultural) Pool to transfer water in accordance with this Paragraph 9(a)-(c) in any year is dependent upon Watermaster making a finding that the member of the Overlying (Non-Agricultural) Pool is using recycled water where it is both physically available and appropriate for the designated end use in lieu of pumping groundwater.

(h) Nothing herein shall be construed to affect or limit the rights of any Party to offer or accept an assignment as authorized by the Judgment Exhibit "G" paragraph 6 above, or to affect the rights of any Party under a valid assignment."

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JUDGMENT AMENDMENT
to Exhibit I

Exhibit "I" "ENGINEERING APPENDIX" is amended to read as follows:

1. **Basin Management Parameters.** In the process of implementing the physical solution, Watermaster shall consider the following parameters:

(a) **Pumping Patterns.** Chino Basin is a common supply for all persons and agencies utilizing its waters. It is an objective in management of the Basin's waters that no producer be deprived of access to said waters by reason of unreasonable pumping patterns, nor by regional or localized recharge of replenishment water, insofar as such result may be practically avoided.

(b) **Water Quality.** Maintenance and improvement of water quality is a prime consideration and function of management decisions by Watermaster.

(c) **Economic Considerations.** Financial feasibility, economic impact and the cost and optimum utilization of the Basin's resources and the physical facilities of the parties are objectives and concerns equal in importance to water quantity and quality parameters.

2. **Hydraulic Control and Re-Operation.** In accordance with the purpose and objective of the Physical Solution to "establish a legal and practical means for making the maximum reasonable beneficial use of the waters of the Chino Basin" (paragraph 39) including but not limited to the use and recapture of reclaimed water (paragraph 49(a)) and the identified Basin Management Parameters set forth above, Watermaster will manage the Basin to secure and maintain Hydraulic Control through controlled overdraft.

(a) **Hydraulic Control.** "Hydraulic Control" means the reduction of groundwater discharge from the Chino North Management Zone to the Santa Ana River to de minimus quantities. The Chino North Management Zone is more fully described and set forth in Attachment I-1 to this Engineering Appendix. By obtaining Hydraulic Control, Watermaster will ensure that the water management activities in the Chino North Management Zone do not cause materially adverse impacts to the beneficial uses of the Santa Ana River downstream of Prado Dam.

(b) **Re-Operation.** "Re-Operation" means the controlled overdraft of the Basin by the managed withdrawal of groundwater for the Desalters and the potential increase in the cumulative un-replenished Production from 200,000 acre-feet authorized by paragraph 3 below, to 600,000 acre feet for the express purpose of securing and maintaining Hydraulic Control as a component of the Physical Solution.

[1] The increase in the controlled overdraft herein is separate from and in addition to the 200,000 acre-feet of accumulated overdraft authorized in paragraph 3(a) and 3(b) below over the period of 1978 through 2017.

[2] “Desalters” means the Chino I Desalter, the Chino I Expansion, the Chino II Desalter and Future Desalters, consisting of all the capital facilities and processes that remove salt from Basin water, including extraction wells and transmission facilities for delivery of groundwater to the Desalter. Desalter treatment and delivery facilities for the desalted water include pumping and storage facilities and treatment and disposal capacity in the Santa Ana Regional Interceptor.

[3] The groundwater Produced through controlled overdraft pursuant to Re-Operation does not constitute New Yield or Operating Safe Yield and it is made available under the Physical Solution for the express purpose of satisfying some or all of the groundwater Production by the Desalters until December 31, 2030. (“Period of Re-Operation”).

[4] The operation of the Desalters, the Production of groundwater for the Desalters and the use of water produced by the Desalters pursuant to Re-Operation are subject to the limitations that may be set forth in Watermaster Rules and Regulations for the Desalters.

(5) Watermaster will update its Recharge Master Plan and obtain Court approval of its update, to address how the Basin will be contemporaneously managed to secure and maintain Hydraulic Control and operated at a new equilibrium at the conclusion of the period of Re-Operation. The Recharge Master Plan shall contain recharge projections and summaries of the projected water supply availability as well as the physical means to accomplish recharge projections. The Recharge Master Plan may be amended from time to time with Court approval.

(6) Re-Operation and Watermaster’s apportionment of controlled overdraft in accordance with the Physical Solution will not be suspended in the event that Hydraulic Control is secured in any year *before* the full 400,000 acre-feet has been Produced without Replenishment, so long as: (i) Watermaster has prepared, adopted and the Court has approved a contingency plan that establishes conditions and protective measures that will avoid unreasonable and unmitigated material physical harm to a party or to the Basin and that equitably distributes the cost of any mitigation attributable to the identified contingencies; and (ii) Watermaster is in substantial compliance with a Court approved Recharge Master Plan.

3 Operating Safe Yield. Operating Safe Yield in any year shall consist of the Appropriative Pool’s share of Safe Yield of the Basin, plus any accumulated overdraft of the Basin which Watermaster may authorize under 3(a) and 3(b) below. In adopting the Operating Safe Yield for any year, Watermaster shall be limited as follows:

(a) Accumulated Overdraft. During this Judgment and Physical Solution, the overdraft accumulated from and after the effective date of the Physical Solution and resulting from an excess of Operating Safe Yield over Safe Yield shall not exceed 200,000 acre feet.

(b) Quantitative Limits. In no event shall Operating Safe Yield in any year be less than the Appropriative Pool's share of Safe Yield, nor shall it exceed such share of Safe Yield by more than 10,000 acre-feet. The Initial Operating Safe Yield is hereby set at 54,834 acre-feet per year. Operating Safe Yield shall not be changed upon less than five (5) years' notice by Watermaster.

Nothing contained in this paragraph shall be deemed to authorize directly or indirectly, any modification of the allocation of shares in Safe Yield to the overlying pools, as set forth in Paragraph 44 of the Judgment.

4. Groundwater Storage Agreements. Any agreements authorized by Watermaster for Storage of supplemental water in the available groundwater storage capacity of Chino Basin shall include, but not be limited to:

- (a) The quantities and term of the storage right.
- (b) A statement of the priority or relations of said right, as against overlying or Safe Yield uses, and other storage rights.
- (c) The procedure for establishing delivery rates, schedules and procedures which may include:
 - [1] spreading or injection, or
 - [2] in lieu deliveries of supplemental water for direct use.
- (d) The procedures for calculation of losses and annual accounting for water in storage by Watermaster.
- (e) The procedures for establishment and administration of withdrawal schedules, locations and methods.

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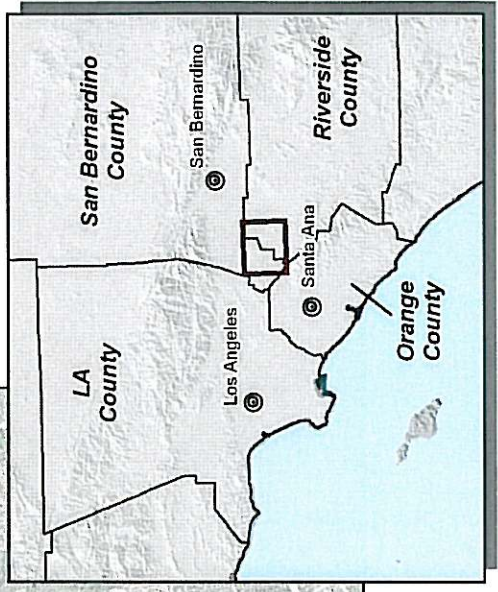
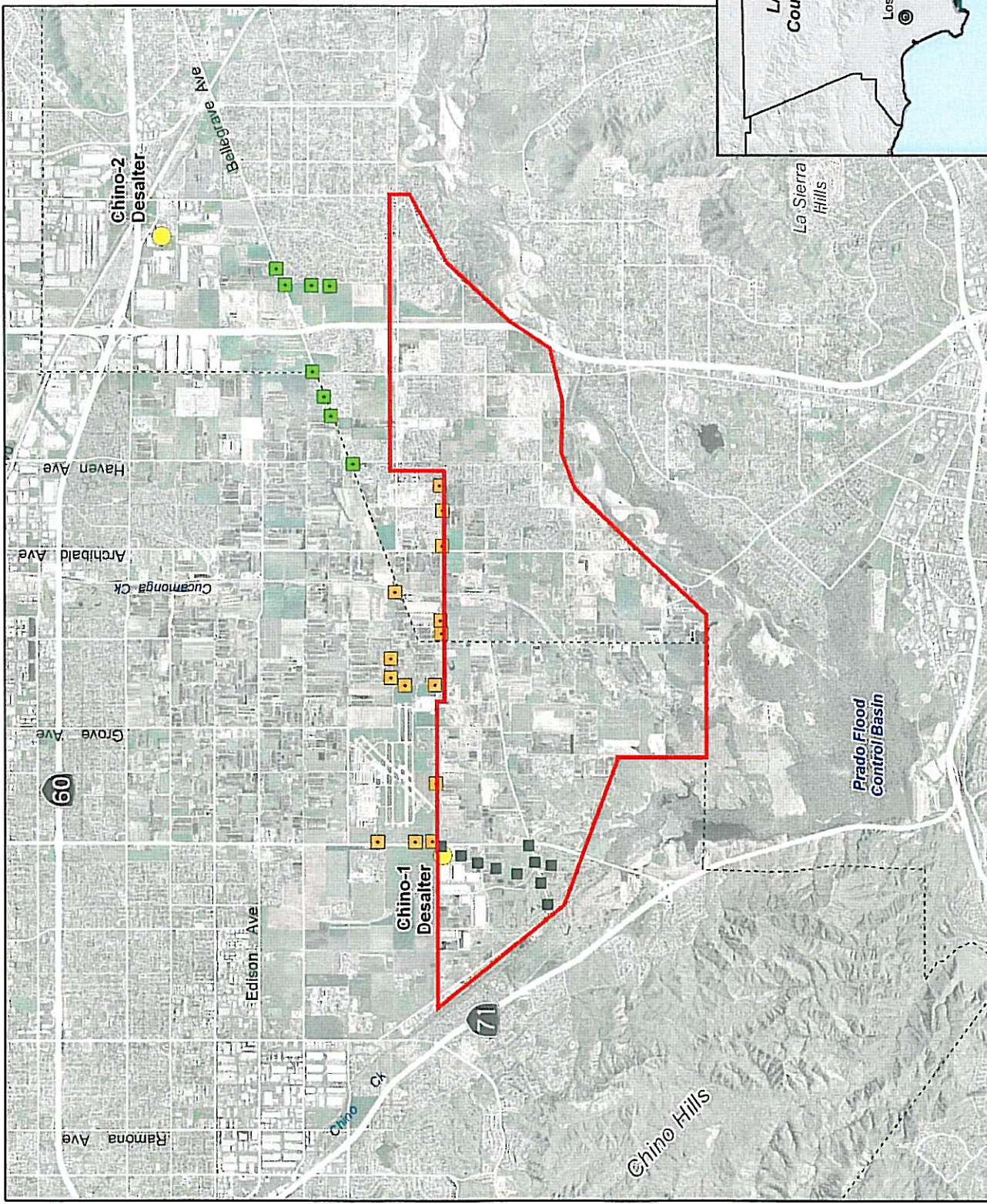
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Map Re-Operation

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- Map Features**
-  Area of Future Chino-III Wells
 -  Existing Chino-I Well
 -  Existing Chino-II Well
 -  Proposed Remediation Well
 -  Existing Desalter Facilities



Proposed Location of Future Chino-III Desalter Well Field

Figure 3

Chino Basin OBMP
Phase II Amendment (2007)

Produced by:
WILDERMUTH
ENVIRONMENTAL, INC.

Author: ABM
Date: 2007/07/02
File: Figure_3.mxd

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**PEACE II AGREEMENT:
PARTY SUPPORT FOR WATERMASTER'S OBMP
IMPLEMENTATION PLAN, –
SETTLEMENT AND RELEASE OF CLAIMS
REGARDING FUTURE DESALTERS**

WHEREAS, paragraph 41 of the Judgment entered in *Chino Basin Municipal Water District v. City of Chino* (San Bernardino Superior Court Case No. 51010) grants Watermaster, with the advice of the Advisory and Pool Committees, “discretionary powers in order to implement an Optimum Basin Management Program (“OBMP”) for the Chino Basin”;

WHEREAS, the Parties to the Judgment executed an agreement resolving their differences and pledging their support for Watermaster actions in accordance with specific terms in June of 2000 (“Peace Agreement”);

WHEREAS, Watermaster approved Resolution 00-05, and thereby adopted the goals and objectives of the OBMP, the OBMP Implementation Plan and committed to act in accordance with the terms of the Peace Agreement;

WHEREAS, pursuant to Article IV, paragraph 4.2, each of the parties to the Peace Agreement agreed not to oppose Watermaster’s adoption and implementation of the OBMP Implementation Plan attached as Exhibit “B” to the Peace Agreement;

WHEREAS, the Peace Agreement, the OBMP Implementation Plan and the Chino Basin Watermaster Rules and Regulations contemplate further actions by Watermaster in furtherance of its responsibilities under paragraph 41 of the Judgment and in accordance with the Peace Agreement and the OBMP Implementation Plan;

WHEREAS, the Parties to the Peace Agreement made certain commitments regarding the funding, design, construction and operation of Future Desalters;

WHEREAS, after receiving input from its stakeholders in the form of the Stakeholder’s Non-Binding Term Sheet, Watermaster has proposed to adopt Resolution 07-05 attached as Exhibit “A” hereto to further implement the OBMP through a suite of measures commonly referred to and herein defined as “Peace II Measures”, including but not limited to the 2007 Supplement to the OBMP, the Second Amendment to the Peace Agreement, amendments to Watermaster’s Rules and Regulations, the purchase and sale of water within the Overlying (Non-Agricultural) Pool and certain Judgment amendments; and

NOW, THEREFORE, in consideration of the mutual promises specified herein and by conditioning their performance under this Agreement upon the conditions precedent set forth in Article III herein, the Watermaster Approval, and Court Order, and for other good and valuable consideration, the Parties agree as follows:

ARTICLE I
DEFINITIONS AND RULES OF CONSTRUCTION

1.1 Definitions.

- (a) “Desalters” means Desalters and Future Desalters collectively, as defined in the Peace Agreement.
- (b) “Hydraulic Control” means “the reduction of groundwater discharge from the Chino North Management Zone to the Santa Ana River to de minimus quantities. The Chino North Management Zone is defined in the 2004 Basin Plan amendment (RWQCB resolution R8-2004-001) attached hereto as Exhibit “B.”
- (c) “Leave Behind” means a contribution to the Basin from water held in storage within the Basin under a Storage and Recovery Agreement that may be established by Watermaster from time to time that may reflect any or all of the following: (i) actual losses; (ii) equitable considerations associated with Watermaster’s management of storage agreements; and (iii) protection of the long-term health of the Basin against the cumulative impacts of simultaneous recovery of groundwater under all storage agreements.
- (d) Re-Operation” means the controlled overdraft of the Basin by the managed withdrawal of groundwater Production for the Desalters and the potential increase in the cumulative un-replenished Production from 200,000 authorized by paragraph 3 of the Engineering Appendix Exhibit I to the Judgment, to 600,000 acre feet for the express purpose of securing and maintaining Hydraulic Control as a component of the Physical Solution.
- (e) Unless otherwise expressly provided herein, all definitions set forth in the Peace Agreement and the Judgment are applicable to the terms as they are used herein.

1.2 Rules of Construction.

- (a) Unless the context clearly requires otherwise:
 - (i) The plural and singular forms include the other;
 - (ii) “Shall,” “will,” “must,” and “agrees” are each mandatory;
 - (iii) “May” is permissive;
 - (iv) “Or” is not exclusive;
 - (v) “Includes” and “including” are not limiting; and
 - (vi) “Between” includes the ends of the identified range.

- (b) Headings at the beginning of Articles, paragraphs and subparagraphs of this Agreement are solely for the convenience of the Parties, are not a part of this Agreement and shall not be used in construing it.
- (c) The masculine gender shall include the feminine and neuter genders and vice versa.
- (d) The word “person” shall include individual, partnership, corporation, limited liability company, business trust, joint stock company, trust, unincorporated association, joint venture, governmental authority, water district and other entity of whatever nature.
- (e) Reference to any agreement (including this Agreement), document, or instrument means such agreement, document, instrument as amended or modified and in effect from time to time in accordance with the terms thereof and, if applicable, the terms thereof.
- (f) Except as specifically provided herein, reference to any law, statute or ordinance, regulation or the like means such law as amended, modified, codified or reenacted, in whole or in part and in effect from time to time, including any rules and regulations promulgated thereunder.

ARTICLE II

COMPLIANCE WITH CEQA

- 2.1 Project Description. The proposed project description regarding the design, permitting, construction and operation of Future Desalter, securing Hydraulic Control through Basin Re-Operation is set forth in Exhibit “__” attached hereto.
- 2.2 Acknowledgment of IEUA as the Lead Agency for CEQA Review. IEUA has been properly designated as the “Lead Agency” for the purposes of completing environmental assessment and review of the proposed project.
- 2.3 Commitments are Consistent with CEQA. The Parties agree and acknowledge that no commitment will be made to carry out any “project” under the amendments to the OBMP and within the meaning of CEQA unless and until the environmental review and assessment that may be required by CEQA for that defined “project” have been completed.
- 2.4 Reservation of Discretion. Execution of this Agreement is not intended to commit any Party to undertake a project without compliance with CEQA or to commit the Parties individually or collectively to any specific course of action, which would result in the present approval of a future project.
- 2.5 No Prejudice by Comment or Failure to Comment. Nothing contained in environmental review of the Project, or a Party’s failure to object or comment thereon, shall limit any Party’s right to allege that “Material Physical Injury” will result or has resulted from the implementation of the OBMP or its amendment.

ARTICLE III
CONDITIONS PRECEDENT

- 3.1 Performance Under Articles IV-XII is Subject to Satisfaction of the Conditions Precedent. Each Party's obligations under this Agreement are subject to the satisfaction of the following conditions precedent on or before the dates specified below, unless satisfaction or a specified condition or conditions is waived in writing by all other Parties:
- (a) Watermaster approval of Resolution 07-05 in a form attached hereto as Exhibit "A," including the following Attachments thereto
 - (i) the amendments to the Chino Basin Watermaster Rules and Regulations set forth in Attachment "F" thereto.
 - (ii) the 2007 Supplement to the OBMP Implementation Plan set forth in Attachment "D" thereto.
 - (iii) the amendments to the Judgment set forth in Attachments "H, I, and J" thereto.
 - (iv) the Second Amendment to the Peace Agreement set forth in Attachment "L" thereto.
 - (v) the Purchase and Sale Agreement for the Purchase of Water by Watermaster From the Overlying (Non-Agricultural) Pool as set forth in Attachment G thereto.
 - (b) The execution of the proposed Second Amendment to the Peace Agreement by all Parties to the Peace Agreement .
 - (c) Court approval of the proposed Judgment Amendments and a further order of the Court directing Watermaster to proceed in accordance with the terms of the Peace II Measures as embodied in Resolution 07-05.

ARTICLE IV
MUTUAL ACKNOWLEDGEMENT AND COVENANTS

- 4.1 Acknowledgment of Peace II Measures. The collective actions of Watermaster set forth in Watermaster Resolution 07-05 and the Attachments thereto (Peace II Measures) constitute further actions by Watermaster in implementing the OBMP in accordance with the grant and limitations on its discretionary authority set forth under paragraph 41 of the Judgment
- 4.2 Non-Opposition. No Party to this Agreement shall oppose Watermaster's adoption of Resolution 07-05 and implementation of the Peace II measures as embodied therein including the Judgment Amendments, Amendments to the Peace Agreement, the 2007 Supplement to the OBMP Implementation Plan and Amendments to the Chino Basin Watermaster's Rules and Regulations or to Watermaster's execution of memoranda of

agreement that are not materially inconsistent with the terms contained therein. Notwithstanding this covenant, no party shall be limited in their right of participation in all functions of Watermaster as they are provided in the Judgment or to preclude a Party to the Judgment from seeking judicial review of Watermaster determinations pursuant to the Judgment or as otherwise provided in this Agreement.

- 4.3 Consent to Amendments. Each Party expressly consents to the Judgment amendments and modifications set forth in Watermaster's Resolution 07-05.
- 4.4 Non-Agricultural Pool Intervention. The Parties acknowledge and agree that any Party to the Judgment shall have the right to purchase Non-Agricultural overlying property within the Basin and appurtenant water rights and to intervene in the Non-Agricultural Pool.

ARTICLE V
FUTURE DESALTERS

- 5.1 Purpose. Watermaster plans to coordinate and the Parties to the Judgment plan to arrange for the physical capacity and potable water use of water from the Desalters. Desalters in existence on the effective date of this Agreement will be supplemented to provide the required capacity to cumulatively produce approximately 40,000 acre-feet per year of groundwater from the Desalters by 2012.
- 5.2 2007 Supplement to the OBMP Implementation Plan. The OBMP Implementation Plan will be supplemented as set forth in the 2007 Supplement to the OBMP Implementation Plan to reflect that Western Municipal Water District ("WMWD"), acting independently or in its complete discretion with the City of Ontario ("Ontario") or the Jurupa Community Services District ("Jurupa") or both, will exercise good faith and reasonable best efforts to arrange for the design, planning, and construction of Future Desalters in accordance with the 2007 Supplement to the OBMP Implementation Plan, to obtain Hydraulic Control, further Re-Operation and support the Future Desalters.
- 5.3 Implementation. WMWD, acting independently or in its complete discretion with Ontario, Jurupa, or both, will exercise good faith and reasonable best efforts to arrange for the design, planning, and construction of Future Desalters in accordance with the 2007 Supplement to the OBMP Implementation Plan, to account for Hydraulic Control, Re-Operation and Future Desalters.
 - (a) WMWD, acting independently or in its complete discretion with Ontario or Jurupa or both, will exercise good faith and reasonable best efforts to proceed in accordance with the timeline for the completion of design, permitting, finance and construction as attached hereto as Exhibit "1."
 - (b) WMWD, acting independently or in its complete discretion with the City of Ontario or the Jurupa Community Services District or both, will provide quarterly progress reports to Watermaster and the Court.
- 5.4 Project Description. The Future Desalters will add up to 9 mgd to existing Desalters. This will include production capacity from new groundwater wells that will be located in

the Southerly end of the Basin, as depicted in Exhibit "C" attached hereto and incorporated herein by this reference. The final design and construction of Future Desalters *may* depend on the terms and conditions that may be freely arrived at by fair bargaining among WMWD and the Chino Basin Desalter Authority ("CDA") or whether it is required to build stand-alone facilities or both. There are material yield benefits to the Parties to the Judgment that are achieved by obtaining Hydraulic Control through Basin Re-Operation. The extent of these benefits is somewhat dependent upon the final location of new production facilities within the southerly end of the Basin. Accordingly, Watermaster will ensure that the location of Future Desalter groundwater production facilities will achieve both Hydraulic Control and maximize yield enhancement by their location emphasizes groundwater production from the Southerly end of the Basin.

5.5 Implementing Agreements. Within twenty-four (24) months of the effective date, WMWD, acting independently or in its complete discretion with the City of Ontario or the Jurupa Community Services District or both, will exercise good faith and reasonable best efforts to complete final binding agreement(s) regarding Future Desalters that includes the following key terms:

- (a) Arrangements for WMWD's purchase of product water from CDA;
- (b) Arrangements with CDA, Jurupa and other Chino Basin parties for the common use of existing facilities, if any;
- (c) Arrangement with the owners of the SARI line;
- (d) Arrangements with the Appropriative Pool regarding the apportionment of any groundwater produced as controlled overdraft in accordance with the Physical Solution between Desalters I, Desalters II on the one hand and the Future Desalters on the other hand;
- (e) WMWD's payment to Watermaster to reimburse Parties to the Judgment for their historical contributions towards the OBMP, if any;
- (f) The schedule for approvals and project completion.

5.6 Reservation of Discretion. Nothing herein shall be construed as committing WMWD, or any members of CDA to take any specific action(s) to accommodate the needs or requests of the other, Watermaster, or any Party to the Judgment, whatever the request may be.

5.7 Condition Subsequent. WMWD's obligation to execute a binding purchase agreement with CDA or to independently develop the Future Desalters is subject to the express condition subsequent that the total price per acre-foot of water delivered must not be projected to exceed the sum of the following: (i) the full MWD Tier II Rate; (ii) the MWD Treatment Surcharge calculated in terms of an annual average acre-foot charge; and (iii) \$150 (in 2006 dollars) per acre-foot of water delivered to account for water supply reliability.

- (a) The full acre-foot cost to Western for Capital and O&M (assuming the priority allocation of controlled overdraft), includes:
 - (i) the delivery of the desalted water to its Mockingbird Reservoir or directly to the City of Norco,
 - (ii) any applicable ongoing Watermaster assessments, payments to CDA and Jurupa and for SARI utilization.
- (b) Provided that if third-party funding, grants and a MWD subsidy under the Local Resources Program or otherwise should reduce Western's costs to an amount which is \$75 (in 2006 dollars) below the cap described in paragraph 5.5, Western will transmit an amount equal to fifty (50) percent of the amount less than the computed price cap less \$75 (in 2006 dollars) to Watermaster.
- (c) Western may elect to exercise its right of withdrawal under this paragraph 5.7 within 120 days following the later of: (1) completion of preliminary design; or (2) the certification of whatever CEQA document is prepared for the project, but not later than sixty (60) days thereafter and in no event after a binding water purchase agreement has been executed.

5.8 Limitations. The operation of the Future Desalters will be subject to the following limitations:

- (a) Well Location. New groundwater production facilities for the Future Desalters will be located in the southern end of the Basin to achieve the dual purpose of obtaining Hydraulic Control and increasing Basin yield.
 - (i) New wells will be constructed in the shallow aquifer system among Desalter I wells No. 1 through 4 and west of Desalter I.
 - (ii) So long as these wells produce at least one-half of the Future Desalter groundwater, the Future Desalters shall be entitled to first priority for the allocation of the 400,000 acre-feet of controlled overdraft authorized by the Judgment Amendments to Exhibit I.
- (b) Export. The export of groundwater from the Basin must be minimized. WMWD will present a plan for export minimization to the Watermaster for review and approval prior to operation of the Future Desalters.
 - (i) Watermaster will account for water imported and exported by WMWD.
 - (ii) Watermaster will prepare an initial reconciliation of WMWD's imports and exports at the end of the first ten (10) years of operation and every year thereafter to determine whether a "net export" occurred.

- (iii) WMWD will pay an assessment, if any, on all “net exports” in accordance with Judgment Exhibit “H,” paragraph 7(b) after the initial reconciliation is completed at the end of the first ten (10) years of operation.

ARTICLE VI
GROUNDWATER PRODUCTION BY AND
REPLENISHMENT FOR DESALTERS

6.1 Acknowledgment. The Parties acknowledge that the hierarchy for providing Replenishment Water for the Desalters is set forth in Article VII, paragraph 7.5 of the Peace Agreement, and that this section controls the sources of water that will be offered to offset Desalter Production.

6.2 Peace II Desalter Production Offsets. To facilitate Hydraulic Control through Basin Re-Operation, in accordance with the 2007 Supplement to the OBMP Implementation Plan and the amended Exhibits G and I to the Judgment, additional sources of water will be made available for purposes of Desalter Production and thereby some or all of a Replenishment obligation. With these available sources, the Replenishment obligation attributable to Desalter production in any year will be determined by Watermaster as follows:

- (a) Watermaster will calculate the total Desalter Production for the preceding year and then apply a credit against the total quantity from:
 - (i) the Kaiser account (Peace Agreement Section 7.5(a).);
 - (ii) dedication of water from the Overlying (Non-Agricultural) Pool Storage Account or from any contribution arising from an annual authorized Physical Solution Transfer in accordance with amended Exhibit G to the Judgment;
 - (iii) New Yield (other than Stormwater (Peace Agreement Section 7.5(b)));
 - (iv) any declared losses from storage in excess of actual losses enforced as a “Leave Behind”;
 - (v) Safe Yield that may be contributed by the parties (Peace Agreement Section 7.5(c));
 - (vi) any Production of groundwater attributable to the controlled overdraft authorized pursuant to amended Exhibit I to the Judgment.
- (b) To the extent available credits are insufficient to fully offset the quantity of groundwater production attributable to the Desalters, Watermaster will levy a Replenishment Assessment among the members of the Overlying (Non-Agricultural) Pool and the Appropriative Pool as follows.

- (i) A Special OBMP Assessment against the Overlying (Non-Agricultural) Pool equivalent to a Replenishment Assessment as more specifically described in amendment to Exhibit "G" to the Judgment. The Replenishment Assessment will be assessed pro-rata on each member's share of Safe Yield, followed by
 - (ii) A Replenishment Assessment against the Appropriative Pool, pro-rata based on each Producer's combined total share of Operating Safe Yield and the previous year's actual production. Desalter Production is excluded from this calculation. However, if there is a material reduction in the net cost of Desalter product water to the purchasers of product water, Watermaster may re-evaluate whether to continue the exclusion of Desalter Production but only after giving due regard to the contractual commitment of the parties.
 - (iii) The quantification of any Party's share of Operating Safe Yield does not include the result of any land use conversions.
- (c) The rights and obligations of the parties, whatever they may be, regarding Replenishment Assessments attributable to all Desalters and Future Desalters in any renewal term of the Peace Agreement are expressly reserved and not altered by this Agreement.

ARTICLE VII

YIELD ACCOUNTING

- 7.1 New Yield Attributable to Desalters. Watermaster will make an annual finding as to the quantity of New Yield that is made available by Basin Re-Operation including that portion that is specifically attributable to the Existing and Future Desalters. Any subsequent recalculation of New Yield as Safe Yield by Watermaster will not change the priorities set forth above for offsetting Desalter production as set forth in Article VII, Section 7.5 of the Peace Agreement. For the initial term of the Peace Agreement, neither Watermaster nor the Parties will request that Safe Yield be recalculated in a manner that incorporates New Yield *attributable to the Desalters* into the determination of Safe Yield so that this source of supply will be available for Desalter Production rather than for use by individual parties to the Judgment.
- 7.2 Apportionment of Controlled Overdraft. Within twelve (12) months of the court approval and no later than December 1, 2008, with facilitation by Watermaster, WMWD and the Appropriative Pool will establish by mutual agreement the portion of the 400,000 acre-feet of the controlled overdraft authorized by the amendment to Exhibit "I" to the Judgment will be allocated among the Desalters and pursuant to a proposed schedule.
- (a) To the extent the groundwater wells for the Future Desalters pump at least fifty (50) percent groundwater from the southern end of the Basin as set forth in Exhibit "2" the *Future Desalters* will be entitled to first priority to the controlled overdraft authorized by the amendment to Exhibit "I" to the Judgment.

- (b) WMWD and the Appropriative Pool will exercise good faith and reasonable best efforts to arrive at a fair apportionment. Relevant considerations in establishing the apportionment include, but are not limited to: (i) the nexus between the proposed expansion and achieving Hydraulic Control; (ii) the nexus between the project and obtaining increased yield; (iii) the identified capital costs; (iv) operating and maintenance expenses; and (v) the availability of third-party funding.
- (c) The parties will present any proposed agreement regarding apportionment to Watermaster. Watermaster will provide due regard to any agreement between WMWD and the Appropriative Pool and approve it so long as the proposal phases the Re-Operation over a reasonable period of time to secure the physical condition of Hydraulic Control and will achieve the identified yield benefits while at the same time avoiding Material Physical Injury or an inefficient use of basin resources.
- (d) If WMWD and the Appropriative Pool do not reach agreement on apportionment of controlled overdraft to Future Desalters, then no later than August 31, 2009, the members of the Appropriative Pool will submit a plan to Watermaster that achieves the identified goals of increasing the physical capacity of the Desalters and potable water use of approximately 40,000 acre-feet of groundwater production from the Desalters from the Basin no later than 2012. The Appropriative Pool proposal must demonstrate how it has provided first priority to the Future Desalters if the conditions of paragraph 7.2(a) are met.
- (e) Watermaster will have discretion to apportion the controlled overdraft under a schedule that reflects the needs of the parties and the need for economic certainty and the factors set forth in Paragraph 7.2(a) above. Watermaster may exercise its discretion to establish a schedule for Basin Re-Operation that best meets the needs of the Parties to the Judgment and the physical conditions of the Basin, including but not limited to such methods as “ramping up,” “ramping down,” or “straight-lining.”
 - (i) An initial schedule will be approved by Watermaster and submitted to the Court concurrent with Watermaster Resolution 07-05. .
 - (ii) Watermaster may approve and request Court approval of revisions to the initial schedule if Watermaster’s approval and request are supported by a technical report demonstrating the continued need for access to controlled overdraft, subject to the limitations set forth in amended Exhibit “I” to the Judgment and the justification for the amendment.

7.3 Suspension. An evaluation of Watermaster’s achievement of Basin outflow conditions, achievement of Hydraulic Control and compliance with Regional Board orders will be completed annually by Watermaster. Re-Operation and Watermaster’s apportionment of controlled overdraft will not be suspended in the event that Hydraulic Control is secured in any year *before* the full 400,000 acre-feet has been produced so long as: (i)

Watermaster has prepared, adopted and the Court has approved a contingency plan that establishes conditions and protective measures to avoid Material Physical Injury and that equitably distributes the cost of any mitigation attributable to the identified contingencies, and (ii) Watermaster is in substantial compliance with a Court approved Recharge Master Plan as set forth in Paragraph 8.1 below.

7.4 Storage: Uniform Losses. The Parties acknowledge that Watermaster has assessed a two (2)-percent loss on all groundwater presently held in storage to reflect the current hydrologic condition. As provided in the Peace Agreement, Watermaster will continue to maintain a minimum 2 (two) percent loss until substantial evidence exists to warrant the imposition of another loss factor. However, the Parties further acknowledge and agree that losses have been substantially reduced through the OBMP Implementation Plan and the operation of Desalters I and II and that once Hydraulic Control is achieved outflow and losses from the Basin will have been limited to de minimis quantities. Therefore, Watermaster may establish uniform losses for all water held in storage based on whether the Party has substantially contributed to Watermaster reducing losses and ultimately securing and maintaining Hydraulic Control. .

(a) Pre-Implementation of the Peace Agreement. The uniform annual loss (leave behind) of six (6) percent will be applied to all storage accounts to address actual losses, management and equitable considerations arising from the implementation of the Peace Agreement, the OBMP Implementation Plan, the 2007 Supplement to the OBMP Implementation Plan, including but not limited to the Desalters and Hydraulic Control unless the Party holding the storage account: (i) has previously contributed to the implementation of the OBMP as a Party to the Judgment, is in compliance with their continuing covenants under the Peace Agreement or in lieu thereof they have paid or delivered to Watermaster “financial equivalent” consideration to offset the cost of past performance prior to the implementation of the OBMP and (ii) promised continued future compliance with Watermaster Rules and Regulations. In the event that a Party satisfies 7.4(a)(i) and 7.4(a)(ii) they will be assessed a minimum loss of two (2) percent against all water held in storage to reflect actual estimated losses. Watermaster’s evaluation of the sufficiency of any consideration or financial equivalency may take into account the fact that one or more Parties to the Judgment are not similarly situated.

(b) Post-Hydraulic Control. Following Watermaster’s determination that it has achieved Hydraulic Control and for so long as Watermaster continues to sustain losses from the Basin to the Santa Ana River at a de minimis level (less than one (1) percent), any Party to the Judgment (agency, entity or person) may qualify for the Post-Hydraulic Control uniform loss percentage of less than 1 percent if they meet the criteria of 7.4(a)(i) and 7.4(a)(ii) above.

7.5 Allocation of Losses. Any losses from storage assessed as a Leave Behind in excess of actual losses (“dedication quantity”) will be dedicated by Watermaster towards groundwater Production by the Desalters to thereby avoid a Desalter replenishment obligation that may then exist *in the year* of recovery. Any dedication quantity which is not required to offset Desalter Production in the year in which the loss is assessed, will be

made available to the members of the Appropriative Pool. The dedication quantity will be pro-rated among the members of the Appropriative Pool in accordance with each Producer's combined total share of Operating Safe Yield and the previous year's actual production. However, before any member of the Appropriative Pool may receive a distribution of any dedication quantity, they must be in full compliance with the 2007 Supplement to the OBMP Implementation Plan and current in all applicable Watermaster assessments.

ARTICLE VIII **RECHARGE**

- 8.1 Update to the Recharge Master Plan. Watermaster will update and obtain Court approval of its update to the Recharge Master Plan to address how the Basin will be contemporaneously managed to secure and maintain Hydraulic Control and subsequently operated at a new equilibrium at the conclusion of the period of Re-Operation. The Recharge Master Plan shall contain recharge estimations and summaries of the projected water supply availability as well as the physical means to accomplish recharge the projections. Specifically, the Plan will reflect an appropriate schedule for planning, design, and physical improvements as may be required to provide reasonable assurance that following the full beneficial use of the groundwater withdrawn in accordance with the Basin Re-Operation and authorized controlled overdraft, that sufficient Replenishment capability exists to meet the reasonable projections of Desalter Replenishment obligations. The Recharge Master Plan will be updated and amended as frequently as necessary with Court approval and not less than every five (5) years. ,
- 8.2 Coordination. The members of the Appropriative Pool will coordinate the development of their respective Urban Water Management Plans and Water Supply Master Plans with Watermaster as follows.
- (a) Each Appropriator that prepares an Urban Water Management Plan and Water Supply Plans will provide Watermaster with copies of their existing and proposed plans.
 - (b) Watermaster will use the Plans in evaluating the adequacy of the Recharge Master Plan and other OBMP Implementation Plan program elements.
 - (c) Each Appropriator will provide Watermaster with a draft in advance of adopting any proposed changes to their Urban Water Management Plans and in advance of adopting any material changes to their Water Supply Master Plans respectively in accordance with the customary notification routinely provided to other third parties to offer Watermaster a reasonable opportunity to provide informal input and informal comment on the proposed changes.
 - (d) Any party that experiences the loss or the imminent threatened loss of a material water supply source will provide reasonable notice to Watermaster of the condition and the expected impact, if any, on the projected groundwater use.

- 8.3 Continuing Covenant. To ameliorate any long-term risks attributable to reliance upon un-replenished groundwater production by the Desalters, the annual availability of any portion of the 400,000 acre-feet set aside as controlled overdraft as a component of the Physical Solution, is expressly subject to Watermaster making an annual finding it is in substantial compliance with the revised Watermaster Recharge Master Plan pursuant to Paragraphs 7.3 and 8.1 above.
- 8.4 Acknowledgment re 6,500 Acre-Foot Supplemental Recharge. The Parties make the following acknowledgments regarding the 6,500 Acre-Foot Supplemental Recharge:
- (a) A fundamental premise of the Physical Solution is that all water users dependent upon Chino Basin will be allowed to pump sufficient waters from the Basin to meet their requirements. To promote the goal of equal access to groundwater within all areas and sub-areas of the Chino Basin, Watermaster has committed to use its best efforts to direct recharge relative to production in each area and sub-area of the Basin and to achieve long-term balance between total recharge and discharge. The Parties acknowledge that to assist Watermaster in providing for recharge, the Peace Agreement sets forth a requirement for Appropriative Pool purchase of 6,500 acre-feet per year of Supplemental Water for recharge in Management Zone 1 (MZ1). The purchases have been credited as an addition to Appropriative Pool storage accounts. The water recharged under this program has not been accounted for as Replenishment water.
 - (b) Watermaster was required to evaluate the continuance of this requirement in 2005 by taking into account provisions of the Judgment, Peace Agreement and OBMP, among all other relevant factors. It has been determined that other obligations in the Judgment and Peace Agreement, including the requirement of hydrologic balance and projected replenishment obligations, will provide for sufficient wet-water recharge to make the separate commitment of Appropriative Pool purchase of 6,500 acre-feet unnecessary. Therefore, because the recharge target as described in the Peace Agreement has been achieved, further purchases under the program will cease.
 - (c) The parties acknowledge that, regardless of Replenishment obligations, Watermaster will independently determine whether to require wet-water recharge within MZ1 to maintain hydrologic balance and to provide equal access to groundwater. Watermaster will conduct its recharge in a manner to provide hydrologic balance within, and will emphasize recharge in MZ1. Accordingly, the Parties acknowledge and agree that each year Watermaster shall continue to be guided in the exercise of its discretion concerning recharge by the principles of hydrologic balance.

ARTICLE IX

9.1 Basin Management Assistance. Three Valleys Municipal Water District (“TVMWD”) shall assist in the management of the Basin through a financial contribution of \$300,000 to study

the feasibility of developing a water supply program within Management Zone 1 of the Basin or in connection with the evaluation of Future Desalters. The study will emphasize assisting Watermaster in meeting its OBMP Implementation Plan objectives of concurrently securing Hydraulic Control through Re-Operation while attaining Management Zone 1 subsidence management goals. Further, TVMWD has expressed an interest in participating in future projects in the Basin that benefit TVMWD. If TVMWD wishes to construct or participate in such future projects, TVMWD shall negotiate with Watermaster in good faith concerning a possible "buy-in" payment

ARTICLE X
SETTLEMENT AND RELEASE

- 10.1 Settlement. By its execution of this Agreement, the Parties mutually and irrevocably, fully settle their respective claims, rights and obligations, whatever they may be, regarding the design, funding, construction and operation of Future Desalters as set forth in and arising from Article VII of the Peace Agreement.
- 10.2 Satisfaction of Peace Agreement Obligation Regarding Future Desalters. The Parties individual and collective responsibilities arising from the Part VII of the Peace Agreement and the OBMP Implementation Plan regarding the plan, design, permit, construction and operation of Future Desalter, whatever they may be, are unaffected by this Agreement. However, upon the completion of a 10,000 AFY (9 mgd) expansion of groundwater production and desalting from Desalter II as provided for herein, the Parties will be deemed to have satisfied all individual and collective pre-existing obligations arising from the Peace Agreement and the OBMP Implementation Plan, whatever they may be, with regard to Future Desalters as described in Part VII of the Peace Agreement and the OBMP Implementation Plan.
- 10.3 Satisfaction of Pomona Credit. In recognition of the ongoing benefits received by TVMWD through the City of Pomona's anion exchange project, as its sole and exclusive responsibility, TVMWD will make an annual payment to Watermaster in an amount equal to the credit due the City of Pomona under Peace Agreement Paragraph 5.4(b) ("the Pomona Credit").
- (a) Within ninety (90) days of each five-year period following the Effective Date of this Agreement, in its sole discretion TVMWD shall make an election whether to continue or terminate its responsibilities under this paragraph. TVMWD shall provide written notice of such election to Watermaster.
 - (b) Watermaster will provide an annual invoice to TVMWD for the amount of the Pomona Credit.
 - (c) Further, in any renewal term of the Peace Agreement, TVMWD will continue to make an equivalent financial contribution which TVMWD consents to Watermaster's use for the benefit of MZ1, subject to the same conditions set forth above with respect to TVMWD's payment of the "Pomona Credit".

- (d) In the event TVMWD elects to terminate its obligation under this Paragraph, the Peace Agreement and the responsibility for satisfying the Pomona Credit will remain unchanged and unaffected, other than as it will be deemed satisfied for each five-year period that TVMWD has actually made the specified payment.

10.4 Release. Upon WMWD's completion of a 10,000 AFY (9 mgd) expansion of groundwater production and desalting in a manner consistent with the parameters set forth in this Agreement, each Party, for itself, its successors, assigns, and any and all persons taking by or through it, hereby releases WMWD and IEUA from any and all obligations arising from WMWD's and IEUA's responsibility for securing funding, designing, and constructing Future Desalters as set forth in or arising exclusively from Article VII of the Peace Agreement and the Program Elements 3, 6, and 7, OBMP Implementation Plan only, and each Party knowingly and voluntarily waives all rights and benefits which are provided by the terms and provisions of section 1542 of the Civil Code of the State of California, or any comparable statute or law which may exist under the laws of the State of California, in or arising from WMWD's and IEUA's responsibility for securing funding, designing, and constructing Future Desalters as set forth in or arising exclusively from Article VII of the Peace Agreement and the OBMP Implementation Plan only. The Parties hereby acknowledge that this waiver is an essential and material term of this release. The Parties, and each of them, acknowledge that Civil Code section 1542 provides as follows:

A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM OR HER MUST HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR.

Each Party understands and acknowledges that the significance and consequence of this waiver of Civil Code section 1542 is the waiver of any presently unknown claims as described above, and that if any Party should eventually suffer additional damages arising out of the respective claim that Party will not be able to make any claim for those additional damages. Further, all Parties to this Agreement acknowledge that they consciously intend these consequences even as to claims for such damages that may exist as of the date of this Agreement but which are not known to exist and which, if known, would materially affect the Parties' respective decision to execute this Agreement, regardless of whether the lack of knowledge is the result of ignorance, oversight, error, negligence, or any other cause.

10.5 Reservation of Rights. Nothing herein shall be construed as precluding any party to the Judgment from seeking judicial review of any Watermaster action on the grounds that Watermaster has failed to act in accordance with the Peace Agreement as amended, this Agreement, the Amended Judgment, the OBMP Implementation Plan as amended and applicable law.

ARTICLE XI
TERM

- 11.1 Commencement. This Agreement will become effective upon the satisfaction of all conditions precedent and shall expire on the Termination Date.
- 11.2 Termination. This Agreement is coterminous with the initial term of the Peace Agreement and will expire of its own terms and terminate on the date of the Initial Term of the Peace Agreement.

ARTICLE XIII
GENERAL PROVISIONS

- 12.1 Construction of this Agreement. Each Party, with the assistance of competent legal counsel, has participated in the drafting of this Agreement and any ambiguity should not be construed for or against any Party on account of such drafting.
- 12.2 Awareness of Contents/Legal Effect. The Parties expressly declare and represent that they have read the Agreement and that they have consulted with their respective counsel regarding the meaning of the terms and conditions contained herein. The parties further expressly declare and represent that they fully understand the content and effect of this Agreement and they approve and accept the terms and conditions contained herein, and that this Agreement is executed freely and voluntarily.
- 12.3 Counterparts. This Agreement may be executed in counterparts. This Agreement shall become operative as soon as one counterpart hereof has been executed by each Party. The counterparts so executed shall constitute on Agreement notwithstanding that the signatures of all Parties do not appear on the same page.

IN WITNESS THEREOF, the Parties hereto have set forth their signatures as of the date written below:

Dated:

CITY OF BANANA

By _____

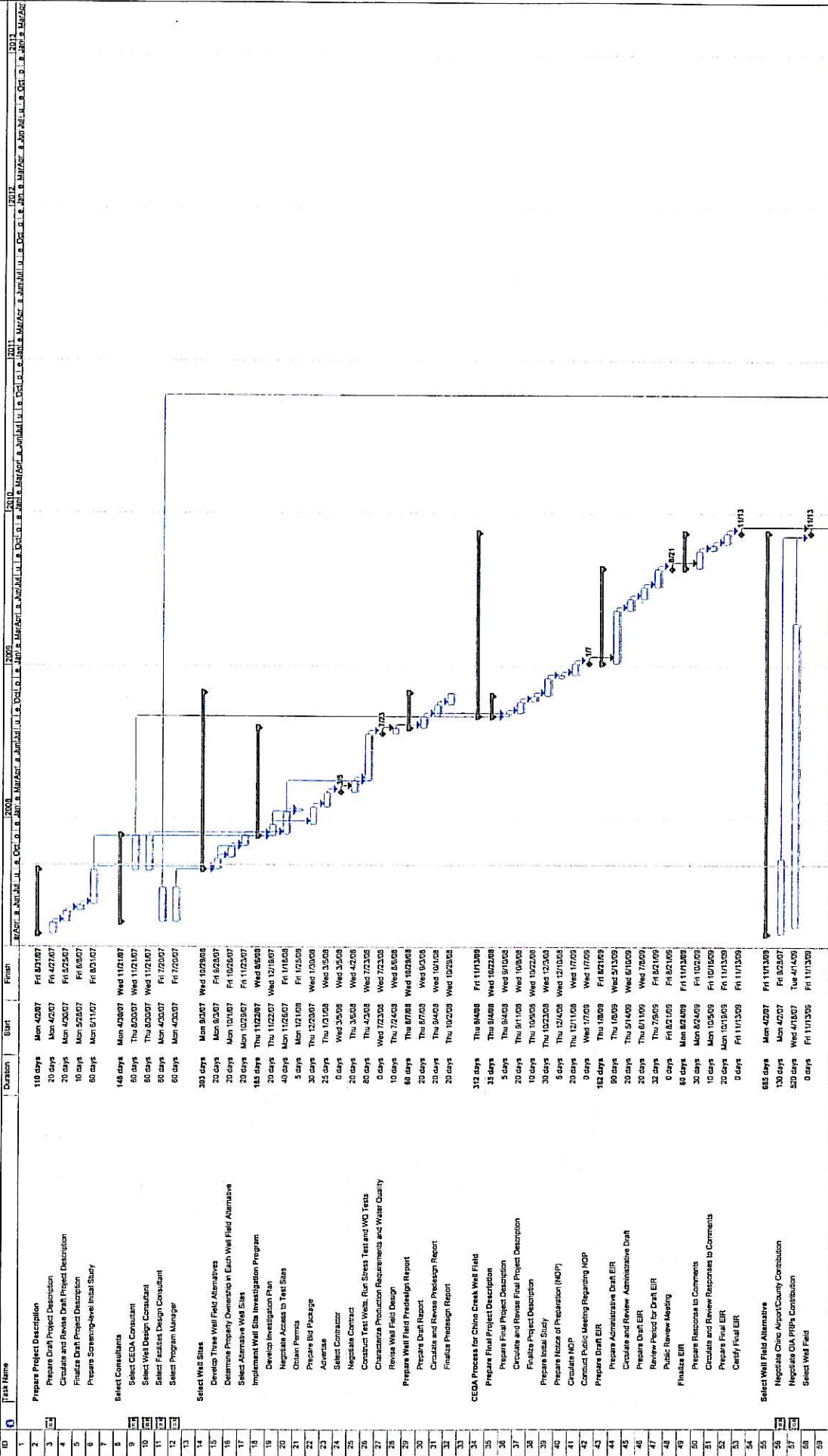
September 21, 2007

Exhibit “1”

TIMELINE

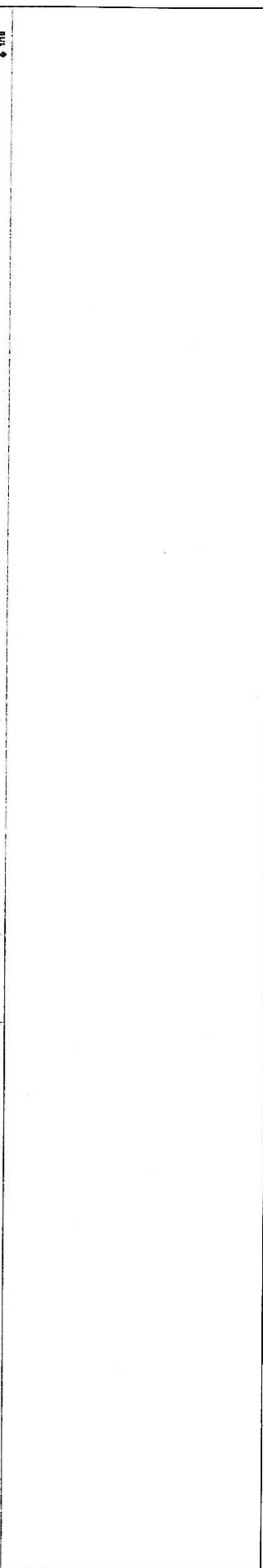
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Schedule A - Pragmatic Schedule for the Planning, Design and Construction of the Chino Creek Well Field

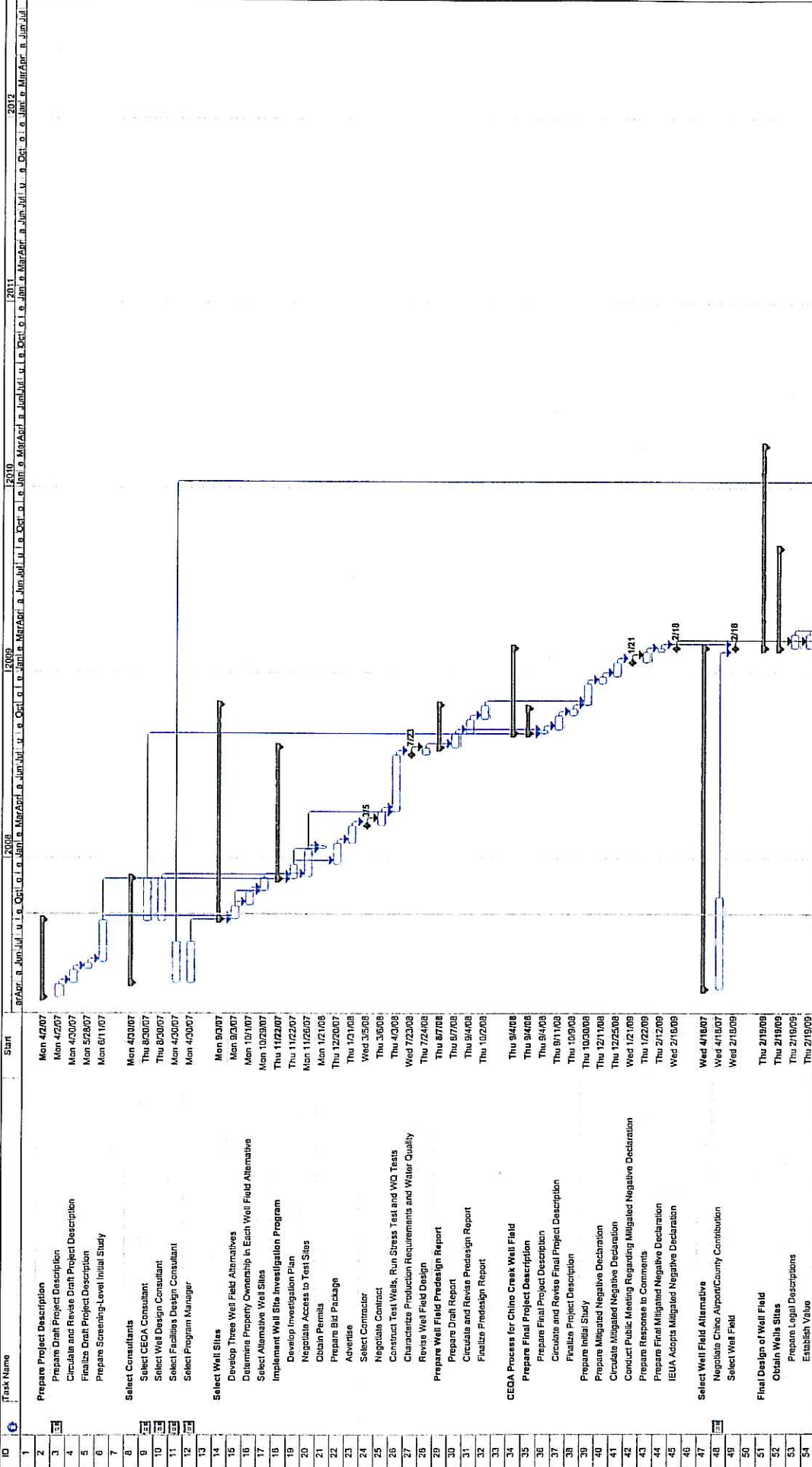


Schedule A - Pragmatic Schedule for the Planning, Design and Construction of the Chino Creek Well Field

ID	Task Name	Duration	Start	Finish
60	Final Design of Well Field	285 days	Mon 11/16/09	Fri 12/17/10
61	Obtain Wells Sits	140 days	Mon 11/16/09	Fri 5/28/10
62	Prepare Legal Descriptions	20 days	Mon 11/16/09	Fri 12/11/09
63	Establish Value	20 days	Mon 11/16/09	Fri 12/11/09
64	Negotiate Site Acquisition	60 days	Mon 12/14/09	Fri 3/5/10
65	Obtain Raw Water Pipeline Easements	60 days	Mon 3/30/10	Fri 5/25/10
66	Prepare Legal Description	20 days	Mon 3/30/10	Fri 4/23/10
67	Negotiate Easements	40 days	Mon 4/5/10	Fri 5/25/10
68	Prepare Final Well Field Design	285 days	Mon 11/16/09	Fri 12/17/10
69	Prepare Plans and Specifications for Wells	20 days	Mon 11/16/09	Fri 1/9/10
70	Prepare Bid Package	25 days	Mon 11/16/09	Fri 2/5/10
71	Advertise	0 days	Mon 2/9/10	Fri 3/12/10
72	Select Contractor	20 days	Mon 3/15/10	Fri 4/9/10
73	Negotiate Contract	130 days	Mon 3/15/10	Fri 10/6/10
74	Construct Six New Wells	0 days	Fri 10/6/10	Fri 10/6/10
75	Finalize Well Production and WG Characteristics	50 days	Mon 10/11/10	Fri 12/17/10
76	Prepare Well Construction Report	20 days	Mon 10/11/10	Fri 11/25/10
77	Prepare Draft Well Construction Report	15 days	Mon 11/8/10	Fri 11/25/10
78	Circulate and Review Draft	15 days	Mon 11/29/10	Fri 12/17/10
79	Finalize Well Construction Report	635 days	Mon 10/11/10	Fri 3/16/13
80	Design and Construct Pipeline, Wellhead, and Treatment Plant Improvements	40 days	Mon 10/11/10	Fri 12/24/10
81	Prepare 30 Percent Design Report	25 days	Mon 12/6/10	Fri 1/7/11
82	Prepare 50 Percent Design Report	25 days	Mon 12/6/10	Fri 1/7/11
83	Prepare 70 Percent Design Report	30 days	Mon 1/10/11	Fri 2/11/11
84	Prepare Final Design Report	30 days	Mon 2/14/11	Fri 3/25/11
85	Prepare Plans and Specifications	60 days	Mon 3/28/11	Fri 6/17/11
86	Prepare Bid Package	20 days	Mon 6/28/11	Fri 7/15/11
87	Advertise	25 days	Mon 7/19/11	Fri 8/19/11
88	Select Contractor	0 days	Fri 8/19/11	Fri 8/19/11
89	Negotiate Contracts	40 days	Mon 8/22/11	Fri 10/14/11
90	Construct Raw Water Pipeline	270 days	Mon 10/17/11	Fri 10/26/12
91	Construct Wellhead Improvements	270 days	Mon 10/17/11	Fri 10/26/12
92	Construct Desalter / Improvements	270 days	Mon 10/17/11	Fri 10/26/12
93	Construct Conduits	0 days	Fri 10/26/12	Fri 10/26/12
94	Prepare Construction Report	100 days	Mon 10/29/12	Fri 3/16/13
95	Prepare Draft Construction Report	40 days	Mon 10/29/12	Fri 12/11/12
96	Circulate and Review Draft	40 days	Mon 12/24/12	Fri 2/15/13
97	Finalize Construction Report	20 days	Mon 2/18/13	Fri 3/15/13
98	Start Up Testing of Improvements	60 days	Mon 10/29/12	Fri 1/16/13
99	Start of Regular Operations	0 days	Fri 1/16/13	Fri 1/16/13



Schedule B - Accelerated Schedule for the Planning, Design and Construction of the Chino Creek Well Field



ID	Task Name	Start	End
1	Prepare Project Description	Mon 4/20/08	Mon 4/20/08
2	Prepare Draft Project Description	Mon 4/20/08	Mon 4/20/08
3	Circulate and Revise Draft Project Description	Mon 4/20/08	Mon 4/20/08
4	Finalize Draft Project Description	Mon 4/20/08	Mon 4/20/08
5	Prepare Screening-Level Initial Study	Mon 4/20/08	Mon 4/20/08
6	Prepare Screening-Level Initial Study	Mon 4/20/08	Mon 4/20/08
7	Prepare Screening-Level Initial Study	Mon 4/20/08	Mon 4/20/08
8	Select Consultants	Mon 4/20/08	Mon 4/20/08
9	Select CEQA Consultant	Mon 4/20/08	Mon 4/20/08
10	Select Well Design Consultant	Mon 4/20/08	Mon 4/20/08
11	Select Facilities Design Consultant	Mon 4/20/08	Mon 4/20/08
12	Select Program Manager	Mon 4/20/08	Mon 4/20/08
13	Select Well Sites	Mon 4/20/08	Mon 4/20/08
14	Develop Three Well Field Alternatives	Mon 4/20/08	Mon 4/20/08
15	Determine Property Ownership in Each Well Field Alternative	Mon 4/20/08	Mon 4/20/08
16	Select Alternative Well Sites	Mon 4/20/08	Mon 4/20/08
17	Implement Well Site Investigation Program	Mon 4/20/08	Mon 4/20/08
18	Develop Investigation Plan	Mon 4/20/08	Mon 4/20/08
19	Negotiate Access to Test Sites	Mon 4/20/08	Mon 4/20/08
20	Obtain Permits	Mon 4/20/08	Mon 4/20/08
21	Prepare Bid Package	Mon 4/20/08	Mon 4/20/08
22	Advertise	Mon 4/20/08	Mon 4/20/08
23	Select Contractor	Mon 4/20/08	Mon 4/20/08
24	Negotiate Contract	Mon 4/20/08	Mon 4/20/08
25	Construct Test Wells, Run Stress Test and WQ Tests	Mon 4/20/08	Mon 4/20/08
26	Characterize Production Requirements and Water Quality	Mon 4/20/08	Mon 4/20/08
27	Revise Well Field Design	Mon 4/20/08	Mon 4/20/08
28	Prepare Well Field Pre-design Report	Mon 4/20/08	Mon 4/20/08
29	Prepare Draft Report	Mon 4/20/08	Mon 4/20/08
30	Circulate and Revise Pre-design Report	Mon 4/20/08	Mon 4/20/08
31	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
32	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
33	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
34	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
35	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
36	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
37	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
38	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
39	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
40	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
41	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
42	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
43	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
44	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
45	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
46	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
47	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
48	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
49	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
50	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
51	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
52	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
53	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08
54	Finalize Pre-design Report	Mon 4/20/08	Mon 4/20/08

Schedule B - Accelerated Schedule for the Planning, Design and Construction of the Chino Creek Well Field

ID	Task Name	Start	2008	2009	2010	2011	2012
55	Negotiate Slip Acquisition	Thu 3/19/09					
56	Obtain Raw Water Pipeline Easements	Thu 6/11/09					
57	Prepare Legal Description	Thu 6/11/09					
58	Negotiate Easements	Thu 7/9/09					
59	Prepare Final Well Field Design	Thu 2/19/09					
60	Prepare Plans and Specifications for Wells	Thu 2/19/09					
61	Prepare Bid Package	Thu 4/16/09					
62	Advertise	Thu 5/14/09					
63	Select Contractor	Wed 6/17/09					
64	Negotiate Contract	Thu 6/18/09					
65	Construct Six New Wells	Thu 7/16/09					
66	Finalize Well Production and WQ Characteristics	Wed 1/13/10					
67	Prepare Well Construction Report	Thu 1/14/10					
68	Prepare Draft Well Construction Report	Thu 1/14/10					
69	Circulate and Review Draft	Thu 2/11/10					
70	Finalize Well Construction Report	Thu 3/4/10					
71							
72	Design and Construct Pipeline, Wellhead, and Treatment Plant Improver	Thu 1/14/10					
73	Prepare 30 Percent Design Report	Thu 1/14/10					
74	Prepare 50 Percent Design Report	Thu 3/11/10					
75	Prepare 70 Percent Design Report	Thu 4/15/10					
76	Prepare Final Design Report	Thu 5/20/10					
77	Prepare Plans and Specifications	Thu 7/1/10					
78	Prepare Bid Package	Thu 9/23/10					
79	Advertise	Thu 10/21/10					
80	Select Contractor	Wed 11/24/10					
81	Negotiate Contracts	Thu 11/25/10					
82	Construct Raw Water Pipeline	Thu 1/20/11					
83	Construct Wellhead Improvements	Thu 1/20/11					
84	Construct Desalter Improvements	Thu 1/20/11					
85	Construction Complete	Wed 2/1/12					
86	Prepare Construction Report	Thu 2/2/12					
87	Prepare Draft Construction Report	Thu 2/2/12					
88	Circulate and Review Draft	Thu 3/29/12					
89	Finalize Construction Report	Thu 5/24/12					
90							
91	Start-Up Testing of Improvements	Thu 2/2/12					
92	Start of Regular Operations	Wed 4/25/12					

Task
 Milestone
 Progress
 Summary
 External Task
 External Milestone
 Split
 External Milestone task

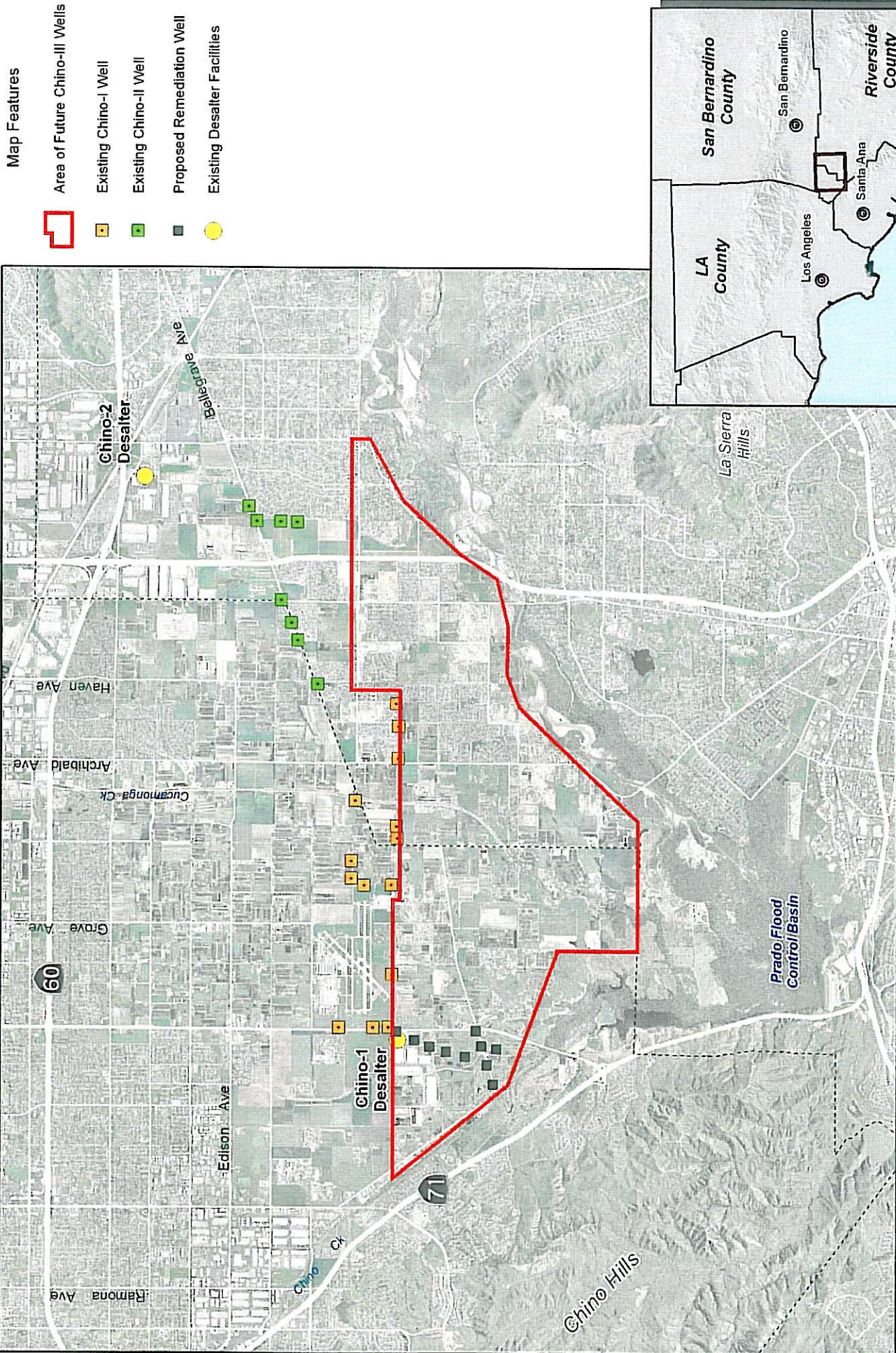
Project: 20070320 Schedule B Chino C
 Date: Wed 9/12/07
 Chino Basin Watermaster
 Inland Empire Utilities Agency
 Wildermuth Environmental, Inc.

Page 2

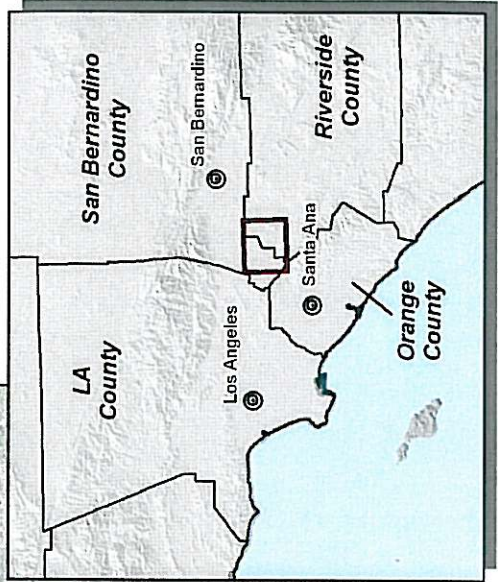
Exhibit “2”

MAP

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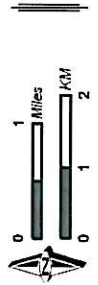


- Map Features**
- Area of Future Chino-III Wells
 - Existing Chino-1 Well
 - Existing Chino-2 Well
 - Proposed Remediation Well
 - Existing Desalter Facilities



Produced by:
WILDERMUTH
 ENVIRONMENTAL, INC.

Author: AB1
 Date: 2007/07/02
 File: Figure_3.mxd



Proposed Location of Future Chino-III Desalter Well Field
Figure 3
 Chino Basin OBMP
 Phase II Amendment (2007)

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September 21, 2007

ATTACHMENT "L"
SECOND AMENDMENT
TO PEACE AGREEMENT

THIS SECOND AMENDMENT TO PEACE AGREEMENT ("AGREEMENT") is dated the ____ of September 2007 regarding the Chino Groundwater Basin.

RECITALS

- A. The Parties entered into that certain "Peace Agreement" dated June 29, 2000. The Peace Agreement was approved by the Court in San Bernardino Superior Court Case No. RCV 51010.
- B. The Parties entered into a First Amendment to the Peace Agreement on September 2nd of 2004 regarding the deletion of Salt Credits and the Stormwater Component of New Yield.

NOW THEREFORE, in consideration of the covenants and conditions herein contained, and for other good and valuable consideration the receipt of which is hereby acknowledged, the Parties agree as follows:

AGREEMENT

Section 1. OBMP Credits Modified. The Peace Agreement § 5.4(d) will be amended to read:

- (d) Watermaster shall adopt reasonable procedures to evaluate requests for OBMP credits against future OBMP Assessments or for reimbursement. Any Producer or party to the Judgment, including but not limited to the State of California, may make application to Watermaster for reimbursement or credit against future OBMP Assessments for any capital or operations and maintenance expenses incurred in the implementation of any project or program, including the cost of relocating groundwater Production facilities, that carries out the purposes of the OBMP and specifically relates to the prevention of subsidence in the Basin, in advance of construction or that is prospectively dedicated to service of the stated goals of the OBMP. Watermaster shall exercise reasonable discretion in making its determination, considering the importance of the project or program to the successful completion of the OBMP, the available alternative funding sources, and the professional engineering and design standards as may be applicable under the circumstances. However, Watermaster shall not approve such a request for reimbursement or credit against future OBMP Assessments under this section where the Producer or party to the Judgment was otherwise legally compelled to make the improvement.

September 21, 2007

Section 2. Increase the Limit on Storage of Local Supplemental Water The current cap of 50,000 acre-feet of Storage of Supplemental Water described in paragraph 5.2(b)(iv) and 5.2(b)(vii) of the Peace Agreement shall be increased from 50,000 to 100,000 acre-feet. Any Party to the Judgment may make Application to Watermaster to store Supplemental Water pursuant to the terms of section 5.2(b) of the Peace Agreement except that the rebuttable presumption applicable to Local Storage Agreements described in Peace Agreement paragraph 5.2(b)(v) shall no longer be in effect with regard to such applications.

Section 3. Effect of Amendment. Except as amended hereby, the Peace Agreement remains in full force and effect.

IN WITNESS WHEREOF, the Parties hereto have set forth their signatures as of the date written below:

SB 441950 v1:008350.0001



CHINO BASIN WATERMASTER

II. BUSINESS ITEMS

C. 20-GALLON CHALLENGE





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: September 13, 2007
September 18, 2007
September 27, 2007

TO: Committee Members
Watermaster Board Members

SUBJECT: *20-Gallon Challenge*

SUMMARY

Recommendation – It is recommended that the Watermaster Board adopt Resolution No. 07-04, encouraging residents and businesses to help drought-proof the Chino Basin by participating in the 20-Gallon Challenge for voluntary water conservation.

Fiscal Impact – None

BACKGROUND

Southern California is experiencing the driest year on record and may be entering an extended drought that will seriously impact available water supplies to the cities and water agencies over in the Chino Basin. Chino Basin Watermaster is encouraging its residents and businesses to join the Inland Empire Utilities Agency and Metropolitan Water District *20-Gallon Challenge* for voluntary water conservation. To help people understand how they can save 20 gallons of water a day, Metropolitan Water District and Inland Empire Utilities Agency have created a water conservation media campaign showing conservation tips and the estimated amount of water savings. The *20-gallon Challenge* is being promoted by many water agencies and cities throughout the MWD service area in conjunction with other conservation outreach efforts

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RESOLUTION 07-04

RESOLUTION OF THE BOARD OF DIRECTORS OF THE CHINO BASIN
WATERMASTER, ENCOURAGING RESIDENTS AND BUSINESSES TO HELP
DROUGHT-PROOF THE CHINO BASIN BY PARTICIPATING IN THE 20-
GALLON CHALLENGE FOR VOLUNTARY WATER CONSERVATION IN THE
CHINO BASIN

WHEREAS, water conservation has always been a way of life for the residents in the Chino Basin; and

WHEREAS, Southern California is experiencing the driest year on record and may be entering an extended drought that will seriously impact available water supply to the cities and water agencies within the Chino Basin; and

WHEREAS, residents and businesses are encouraged to join the *20-Gallon Challenge* for voluntary water conservation; and

WHEREAS, the more people that start meeting the *20-Gallon Challenge*, the more water we can store to better meet next year's water needs; and

WHEREAS, just a few simple changes, such as fixing a leaky faucet can make a big difference in water savings; and

WHEREAS, NOW IS THE TIME TO GET SERIOUS about water conservation and make every drop count;

NOW, THEREFORE, BE IT RESOLVED, by the Board of Directors that the Chino Basin Watermaster recognizes that the water supply situation in the Chino Basin is serious and encourages everyone to make a difference and contribute to the drought-proofing the Chino Basin by taking the *20-Gallon Challenge*.

APPROVED by the Advisory Committee this 27th day of September 2007.

ADOPTED by the Watermaster Board on this 27th day of September 2007.

By: _____
Chairman, Watermaster Board

APPROVED:

Chairman, Advisory Committee

ATTEST:

Board Secretary
Chino Basin Watermaster

STATE OF CALIFORNIA)
) ss
COUNTY OF SAN BERNARDINO)

I, Ken Manning, Secretary of the Chino Basin Watermaster, DO HEREBY CERTIFY that the foregoing Resolution being No. 07-04, was adopted at a regular meeting of the Chino Basin Watermaster Board by the following vote:

AYES: Unanimous
NOES: 0
ABSENT: 0
ABSTAIN: 0

CHINO BASIN WATERMASTER

Secretary

Date: _____



CHINO BASIN WATERMASTER

II. BUSINESS ITEMS

D. ELIMINATION OF SECRETARY II POSITION





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: September 27, 2007
TO: Watermaster Board Members
SUBJECT: Elimination of Secretary II Position

Summary

Recommendation – Eliminate the position of Secretary II within the Chino Basin Watermaster list of approved positions.

Fiscal Impact – None

BACKGROUND

Chino Basin Watermaster has operated with the position of Secretary II for a number of years. Originally the position was designed to function as a high level administrative support position with a salary that is reflective of that responsibility. That level of support is now designated to the Executive Assistant position and the duties of the Secretary II have become more fundamental. That position is currently vacant and needs to be eliminated.

The CEO will be working with the Personnel Committee over the next few months to establish a new designation of employee that is more reflective of the job duties with a salary schedule commensurate of those duties.

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CHINO BASIN WATERMASTER

III. REPORTS / UPDATES

A. LEGAL COUNSEL REPORT

1. Court Approval re Subsidence Long Term Plan



1 MARK D. HENSLEY, CITY ATTORNEY, SBN 142653
 2 CITY OF CHINO HILLS; and
 3 JENKINS & HOGIN, LLP
 4 JOHN C. COTTI, SBN 193139
 5 ELIZABETH M. CALCIANO, SBN 161080
 6 1230 Rosecrans Avenue, Suite 110
 7 Manhattan Beach, California 90266
 (310) 643-8448; Fax (310) 643-8441
 Attorneys for Defendant, CITY OF CHINO HILLS

FILED
 SUPERIOR COURT
 COUNTY OF SAN BERNARDINO
 RANCHO CUCAMONGA DISTRICT

SEP 18 2007

BY *[Signature]*

Filing Fee Exempt Per
 Government Code § 6103

8 **SUPERIOR COURT OF THE STATE OF CALIFORNIA**
 9 **COUNTY OF SAN BERNARDINO**

11 CHINO BASIN MUNICIPAL WATER
 12 DISTRICT,
 13 Plaintiff,
 14 vs.
 15 CITY OF CHINO, et al.
 16 Defendants.

CASE NO. RCV 51010

[Assigned for All Purposes to the
 Honorable MICHAEL GUNN]

**CITY OF CHINO HILLS'
 EVIDENTIARY OBJECTIONS TO
 WATERMASTER'S MOTION FOR
 APPROVAL OF WATERMASTER'S
 LONG TERM PLAN FOR THE
 MANAGEMENT OF SUBSIDENCE
 AND EXHIBITS A THROUGH J
 ATTACHED THERETO**

Date: November 5, 2007
 Time: 8:30 a.m.
 Dept.: R8

23 **TO WATERMASTER, ALL PARTIES AND THEIR ATTORNEYS OF RECORD**
 24 **HEREIN:**

25 The City of Chino Hills ("City" or "Chino Hills") lodges the following
 26 evidentiary objections and moves to strike inadmissible evidence contained in
 27

1 Watermaster's Motion For Approval of Watermaster's Long Term Plan For The
2 Management Of Subsidence ("Watermaster's Motion"), including
3 Exhibits A through J.

4 1. **Disputed Statements and Exhibits:** The City objects to the admissibility of
5 statements made at page 6:7-9 and 6:18 through page 7:28, in the Section of the Motion
6 entitled "Chronology of the Interim and Long Term Plans," and statements made at page
7 9: 20-28, page 10: 21-26, page 12:20-22, page12: 25 through page 13:2, page 13:7-11,
8 page 14:23-27, and page 16: 16-19 ("Disputed Statements") and Exhibits B through J
9 attached thereto. These Disputed Statements and Exhibits purport to describe the City of
10 Chino Hills' actions and participation in the development of the Long Term Plan and how
11 that participation affected the Technical Committee's consideration of the Long Term
12 Plan from the period of March 2006 through October 2006. Watermaster attached
13 Exhibits B through J as "evidence" to support the Disputed Statements.

14 A. **Relevance:** The Disputed Statements and Exhibits B-J are irrelevant in
15 that they have no bearing on the appropriateness or adequacy of the Long Term Plan.
16 Watermaster proffers these statements for the sole purpose of prejudicing the Court
17 against Chino Hills. As such, they should be excluded.

18 B. **Lack of Foundation:** Chino Hills objects to the Disputed Statements and
19 Exhibits B through J because Watermaster failed to lay a foundation. Watermaster
20 ignored the Evidence Code by failing to provide declarations to support the factual
21 statements made in the Motion. Watermaster failed to establish any of the necessary
22 preliminary facts to warrant introduction of this evidence. Because Watermaster fails to
23 provide evidentiary support for these statements, it is unclear which persons at
24 Watermaster or Watermaster's counsel provided the evidentiary basis for these statements.
25 As such, these statements lack foundation.

26 C. **Privilege:** The Disputed Statements at page 16:18 through page 7:28 and at
27 page 12:25 through page 13:2 and Exhibits B through G are privileged communications
28 because the parties agreed to treat these communications as good faith settlement

1 discussions, these statements should be stricken because their inclusion violates Section
2 1.C. of the Interim Plan for the Management of Subsidence ("Interim Plan") and Exhibit A
3 of the Interim Plan¹ ("Acknowledgement"), (collectively, "Agreements") as well as
4 Evidence Code Section 1152.

5 Watermaster cited to these privileged Disputed Statements and Exhibits B
6 through G in express violation of the Agreements, which provide that all written or oral
7 communications made between members of the Technical Group and to Watermaster
8 during meetings of the Technical Group are privileged communications protected from
9 disclosure under Evidence Code §1152. See Interim Plan, §1.c² and the
10 Acknowledgement.³ In particular, *inter alia*, the Acknowledgement provided that: "The
11 **privilege shall extend to all conversations among and between members of the**
12 **Technical Group and any written work product that is developed and presented for**
13 **the primary purpose of consideration by the Technical Group and its members."**

14 (Emphasis added.) Thus, the privilege extends to more than just the actual conversations

15 ¹ Entitled the "Acknowledgement that Technical Group Communications are Privileged
16 Communications and Technical Group Participation Shall Not Be Used As Evidence"

17 ² Section 1.c provides as follows: "Full and Fair Discussion. Discussion between and among the
18 members of the Technical Group shall be considered as good faith settlement discussions and
19 therefore privileged as an offer of compromise. This will ensure an environment of full and
20 candid discussion among professionals. Representatives of the Technical Group will be required
21 to execute acknowledgments of the privileged character of the discussions as a precondition to
22 participation in meetings in a form substantially similar to Exhibit "A" attached hereto. The
23 privilege shall extend to all conversations among and between members of the Technical Group
24 and any written work product that is developed and presented for the primary purpose of
25 consideration by the Technical Group and its members. The existence of the privilege shall have
26 no bearing on the existence or non-existence of other potential privileges that may be asserted
27 with regard to any documents, reports or opinions."

28 ³ The Acknowledgement states, in pertinent part, that: "1. Offer of Compromise. It is hereby
agreed by the following parties that all written or oral communications made between or among
members of the Technical Group and to Watermaster during meetings of the Technical Group
shall be considered privileged communications as good faith settlement discussions. As such,
each party agrees that these communications shall be privileged and protected from disclosure as
an "offer of compromise" under Evidence Code § 1152. The existence or non-existence of other
privileges or the potential application of any privilege to the specific form of communication,
whatever the privilege or communication may be, is not affected by this acknowledgment. [¶]
2. Participation Not Evidence. The decision by any party to the Judgment to participate in
meetings of the Technical Group or to voluntarily modify their production in exchange for
receiving Substitute Water or Alternate Water will not be used by a party as evidence of any fact
regarding subsidence in any legal or equitable proceeding of any kind."

1 and documents in the physical Technical Group meetings. It extends to any conversations
2 and documents that are “for the primary purpose of consideration by the Technical Group
3 and its members.” Further, the Interim Agreement provides that: “An important objective
4 and work product of the Technical Group shall be its effort to serve in advisory capacity to
5 assist Watermaster in its development of the Long Term Plan.”

6 Watermaster included these Disputed Statements and Exhibits B through G in an
7 effort to poison the well so that the Court would not consider Chino Hills’ legitimate
8 objections to the Long Term Plan. This is exactly why the Agreements included
9 confidentiality provisions -- to shield parties so that they could participate openly without
10 having their words and participation used against them in subsequent court proceedings.

11 **D. Hearsay:** The City further objects to the Disputed Statements and Exhibits
12 “B” through “J” to the extent that they contain inadmissible hearsay. Without knowing on
13 what evidentiary basis Watermaster seeks to introduce these exhibits, it is difficult to
14 lodge the appropriate additional objections. If Watermaster is attempting to rely on an
15 exception to the hearsay rule by qualifying some or all of these Exhibits as business
16 records, for example, Watermaster failed to establish that these records were made in the
17 regular course of a business at or near the time of the act, that a qualified witness testifies
18 to their identity and the mode of their preparation; and that the sources of information and
19 method and time of preparation were such as to indicate trustworthiness. See Evidence
20 Code section 1271.

21 In addition, Watermaster makes bald, general assertions without attributing the
22 statement to a speaker, without laying any foundation, and without establishing that the
23 statements are not inadmissible hearsay. One such glaring example is Watermaster’s
24 statement that it “believes that the affected parties in MZ1 are sufficiently concerned with
25 the potential to cause subsidence that the continuation of a voluntary program . . . is the
26 most efficient and effective means to manage subsidence. . .” Motion at 13:7-11.

27 **E. Authentication:** Watermaster makes no effort to authenticate any of the
28 statements, records or exhibits it presents to court. See, e.g., Motion at 12:20-22 and 13:7-

1 11. Because Watermaster fails to establish the genuineness of the Disputed Statements
2 and Exhibits, they should be excluded. See, e.g., Evidence Code Section 1400.

3 **F. Voluntary Curtailment of Production:** The Watermaster breached the
4 Interim Plan provision that prevents parties from asserting another party's voluntary
5 curtailment of production against them in subsequent proceedings. See Interim Plan at
6 §7(a) and Acknowledgement, §2. As the Court knows, the Interim Plan called for
7 voluntary modifications to the City's groundwater production patterns in the MZ1. See
8 Interim Plan, at p. 1. Now, the LTP simply proposes that the producers in the MZ1
9 continue to voluntarily curtail production from "managed wells" in the MZ1. See LTP at
10 p. 2-1. In this connection the Watermaster makes numerous statements that violate this
11 confidentiality provision and which the City now asks this Court to strike. See Motion at
12 6:7-9; 9:20-28; 10:21-26; 14:23-27; and 16:16-19.

13 **2. The Long Term Plan Itself is Inadmissible Because Its Scientific Basis Is**
14 **Unsound.** The City objects to the admissibility of Exhibit A, entitled "Long Term MZ1
15 Subsidence Management Plan" June 2007 ("LTP"), because it was created in violation of
16 accepted scientific method. Unsupported scientific conclusions are inadmissible pursuant
17 to Evidence Code Section 801 (b). Scientific evidence cannot be admitted unless its basis
18 and reliability are recognized by competent authorities. See *Huntington v. Crowley* (1966)
19 64 Cal.2d 647, 653, 414 P.2d 382, 388; see also Evidence Code Section 801 (expert
20 opinion testimony "is limited to such an opinion as is: [¶] (b) Based on matter . . . that is
21 of a type that reasonably may be relied upon by an expert in forming an opinion").

22 The crux of the LTP is its Subsidence Guidance Criteria for the MZ-1 Producers,
23 which Watermaster concedes "is the basis of" the Long Term Plan. LTP, pp. 1-2. Yet,
24 Watermaster's expert, Wildermuth Environmental, Inc., arrived at this Guidance Criteria
25 after performing only one controlled aquifer pumping test conducted between June 2004
26 and September 2005. See MZ-1 Summary Report February 2006, attached to LTP ("MZ-
27 1 Summary Report") at pp. 2-1 to 2-2 and 4-1. In essence, the Subsidence Guidance
28 Criteria, under which Watermaster asks the City to continue to "voluntarily" forbear

1 production in the MZ1, was formulated on the strength of one test. This incomplete
2 scientific method cannot justify Watermaster's hypothesis as to the subsidence threshold
3 (i.e. subsidence guidance level). This is in violation of the accepted scientific method,
4 which requires, at a minimum, that scientists, collectively and over time, endeavor to
5 construct an accurate (i.e. reliable, consistent and non-arbitrary) representation of the
6 world.⁴

7 Nor can Wildermuth reproduce its result. Established scientific method
8 holds that:

9 "[t]he single feature that is most characteristic of science is its
10 reproducibility. If scientists cannot duplicate their first results, they are
11 forced to conclude that these were invalid. This problem occurs often. Its
12 cause is usually some unrecognized, and hence uncontrolled, factor in the
13 experiment (e.g., unrecognized variation in the properties of different
14 batches of the materials used in the experiment)."

15 Kimball, J., online text, **Kimball's Biology Pages**, attached as Exhibit B found at
16 <http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/S/ScientificMethods.html>.

17 Wildermuth themselves recognize the error in their analysis when they state in their
18 MZ-1 Summary report (February 2006) that different pumping conditions may result in a
19 different threshold water level (i.e. subsidence guidance level):

20 "The applicability of this limit to increasing distances from the
21 piezometer/extensometer facility is dependent on an approximate replication

22 ⁴ The scientific method attempts to minimize the influence of bias or prejudice in the
23 experimenter when testing a hypothesis or theory. The scientific method has four steps:

- 24 1. Observation and description of a phenomenon or group of phenomena.
 - 25 2. Formulation of a hypothesis to explain the phenomena.
 - 26 3. Use of the hypothesis to predict the existence of other phenomena, or to predict
quantitatively the results of new observations.
 - 27 4. Performance of experimental tests of the predictions by several independent
experimenters and properly performed experiments.
- 28 Villee, Claude E., Biology, Harvard University, pp. 3-4 (1957) (attached as Exhibit A).

1 of the tested pumping conditions (i.e. specific wells pumped, pumping rates,
2 and pumping durations). A different areal distribution of pumping might
3 cause localized inelastic compaction away from Ayala Park without drawing
4 PA-7 below 250 ft or recording inelastic effects at the extensometer. A
5 different vertical distribution of extraction will stress the aquifer system in a
6 different manner, and may result in a different threshold water level in PA-
7 7.”

8 MZ-1 Summary Report at pp. 2-2 to 2-3.

9 Wildermuth clearly recognized that its one test was insufficient to justify the 245-
10 foot Guidance Criteria and that any change in the wells pumped, in the pumping rates or
11 durations, or well depth would likely lead to a different result.⁵ Despite this fatal flaw,
12 Watermaster asks for the Court’s approval of the LTP that contains a Guidance Criteria
13 that is based on a guess, not on scientific evidence. Therefore, the LTP is inadmissible
14 pursuant to Evidence Code Section 801 and applicable case law, and the City of Chino
15 Hills requests that Exhibit A be stricken.

16 Nor has Watermaster established the Wildermuth has the qualifications necessary
17 to undertake the one test it did perform or opine on the adequacy of the Long Term Plan.
18 Watermaster fails to establish in its Motion that Wildermuth has any of the requisite
19 knowledge, skill, experience or training necessary to make the broad assertions set forth in
20 the Motion and Long Term Plan.

21 CONCLUSION

22 For the foregoing reasons, the City respectfully requests that the Court strike the
23 Disputed Statements as set forth above and Exhibits B through J. In addition, the City
24

25 _____
26 ⁵ Before the Special Referee in 2005, Mr. Wildermuth himself testified that the Long Term
27 Plan process would require “several more years of studies and model development and
28 analysis . . . , followed by 12 months to reach an agreement on a long-term plan.” Special
Referee Report dated June 16, 2005, at 6:9-12 (attached to the Motion at Exhibit A, MZ-1
Summary Report, Appendix A). The Special Referee made this point as well. *Id.* at 8:22-
26. Despite the recognition that more testing and analysis was required, Watermaster still
put forth a Long Term Plan relying on this one test to establish its Guidance Criteria.

1 also requests that this Court strike the proposed LTP, Exhibit A, in its entirety on the
2 grounds that it relies on an improper scientific method.

3 While the City has not formally noticed these objections as a Motion, the City
4 requests the Court's guidance prior to the hearing on Watermaster's Motion.
5

6
7 DATED: September 17, 2007

MARK D. HENSLEY, CITY ATTORNEY
CITY OF CHINO HILLS; and
JENKINS & HOGIN, LLP

9
10 By:



11 _____
MARK D. HENSLEY
Attorneys for CITY OF CHINO HILLS
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EXHIBIT "A"

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Claude A. Villee

Harvard University

BIOLOGY

Third Edition

W. B. Saunders Company

Philadelphia and London

REPRINTED AUGUST, 1957 AND JANUARY, 1958

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THIS BOOK was written that biology is a definite and theories, concerning facets of all kinds of living it is not simply a matter of a determined ratio, of biochemistry, anatomy and physiology, evolution, or any other. To bring to the fore the things which are basic to these things, this edition contains (Chapter Two) in which the major generalizations of biology are discussed. These, of course, are fully appreciated at the time but they should be held in a frame of reference for the chapters. They could be profitably used later in the course. This edition contains, in addition to the major revisions in the chapters on evolution, and human anatomy, and smaller changes. A number of illustrations have been placed and many new ones added. The new line drawings were made by R. Limberg, and William C. In writing an introduction, it is difficult to steer a true course between the Scylla of superficiality and the Charybdis of overdetail. This text presents the major facts and principles of biology without superfluous detail without undue emphasis on the facts which students find the facts

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Chapter 1

Introduction: Biology and
 the Scientific Method

IN ONE sense, biology is a very old science, for men began many centuries ago to study living things in attempts to solve the fascinating riddle of life. There was a considerable body of knowledge and theories about living things in the time of Aristotle (384–322 B.C.), and even in the older civilizations of Egypt, Mesopotamia and China much was known about practical uses of plants and animals. In fact, the cave men who lived 50,000 and more years ago must have been first rate biologists for they drew accurate and artistic pictures on the walls of their caves of the deer, cattle and mammoths that lived around them. The survival of early man depended on a knowledge of such fundamental biologic facts as which animals were dangerous and which plants could be safely eaten.

Yet in another sense biology is a young science. The major generalizations which are the foundations of any science have been made comparatively recently in biology and many of them are still being revised. The development of the electron microscope, for example, and the recent discovery of ways to prepare tissues for examination in this instrument, have revealed a whole new order of complexity in living matter.

1. EARLY HISTORY OF BIOLOGY

Biology as an organized body of knowledge can be said to have begun with the Greeks. They and the Romans described the many kinds of plants and animals known at the time. Galen (131–200 A.D.) described the anatomy of the human body and was the unchallenged authority for 1300 years. His descriptions, however, were based on dissections of apes and pigs and contained many errors. Galen was the first experimental physiologist and performed many experiments, mostly on pigs, to study the functions of nerves and blood vessels. Men such as Pliny (23–79 A.D.) prepared encyclopedias which were strange mixtures of facts and fiction about living things. In the succeeding centuries of the Middle Ages men wrote “herbals” and “bestiaries,” cataloguing and describing plants and animals respectively. With the Renaissance interest in natural history revived and more accurate studies of the structure, functions and life habits of countless plants and animals were made. Vesalius (1514–1564), Harvey (1578–1657) and John Hunter (1728–1793) studied the structure and functions of animals in general and man in particular and laid the foundations of anatomy and physiology. With the invention of the micro-

scope early in the seventeenth century, Malpighi (1628–1694), Swammerdam (1637–1680) and Leeuwenhoek (1632–1723) investigated the fine structure of a variety of plant and animal tissues. Leeuwenhoek was the first to describe bacteria, protozoa and sperm.

Biology expanded and altered greatly in the nineteenth century and has continued this trend at an accelerated pace in the twentieth. This is due in part to the broader scope and more detailed knowledge available today and in part to the new approaches made possible by the discoveries and techniques of physics and chemistry. In the past hundred years many biologists have been drawn to the level of inquiry represented by biophysics and biochemistry. This book is not primarily concerned with that level, but some knowledge of the ultramicroscopic world of atoms and molecules is necessary for a real understanding of even the simplest biologic processes.

2. THE BIOLOGICAL SCIENCES

The usual definition of biology as the "science of life" is only meaningful if we have some idea of what life and science mean. Life does not lend itself to a simple definition and its characteristics—growth, movement, metabolism, reproduction and adaptation—will be discussed in Chapter 3. Biology is concerned with the myriad forms that living things may have, with their structure, function, evolution, development and relations to their environment. It has grown to be much too broad a science to be investigated by one man or to be treated thoroughly in a single textbook, and most biologists are specialists in some one of the biological sciences. The *botanist* and *zoologist* study types of organisms and their relationships within the plant and animal kingdoms respectively. The sciences of *anatomy*, *physiology* and *embryology* deal with the structure, function and development of an organism; these can be further subdivided according to the kind of organism investigated: e.g., animal physiology, mammalian physiology, human physiology. The *parasitologist* studies those forms of life that live in and at the expense of other

forms, the *cytologist* investigates the structure, composition and function of cells, and the *histologist* inquires into the properties of tissues. The science of *genetics* is concerned with the mode of transmission of the characteristics of one generation to another, and is closely related to the study of *evolution*, which attempts to discover how new species arise, as well as how the present forms evolved from previous ones. The study of the classification of plants and animals and their evolutionary relations is known as *taxonomy*. One of the newest biological sciences is *ecology*, the study of the relations of a group of organisms to its environment, including both the physical factors and other living organisms which provide food or shelter for it, or compete with or prey upon it.

There are also specialists who deal with one kind of living thing—*ichthyologists*, who study fish, *mycologists*, who study fungi, *ornithologists*, who study birds, and so on.

3. SOURCES OF SCIENTIFIC INFORMATION

Where, you may ask, do all the facts about biology described in this book come from? And how do we know they are true? The ultimate source of each fact, of course, is in some carefully controlled observation or experiment made by a biologist. In earlier times, some scientists kept their discoveries to themselves, but now there is a strong tradition that scientific discoveries are public property and should be freely published. It is not enough in a scientific publication for a man to say that he has discovered a certain fact; he must give all the relevant details by which the fact was discovered so that others can repeat the observation. It is this criterion of *repeatability* that makes us accept a certain observation or experiment as representing a true fact; observations that cannot be repeated by competent investigators are discarded.

When a biologist has made a discovery, he writes a report, called a "paper," in which he describes his methods in sufficient detail so that another can repeat them, gives the results of his observations, discusses the conclusions to be drawn

from them, perhaps to explain them, and of these new facts in scientific knowledge. his discovery will be scrutiny of his colleagues for carefully relations or experiments them. He then submission in one of the in the particular field is estimated that 17,000 of them published the various fields of read by one or more tors of the journal, perts in the field. If published and thus literature" of the sub

At one time, when journals, it might be one man to read them appeared, but this is now. Journals such *abstracts* assist the hard publishing, classified reports or abstracts lished—giving the fa erence to the jour number of journals viewing the newer (ticular fields have s; twenty-five years; so *ological Reviews*, *T Quarterly Review of view of Microbiolog iews*. The new fac comes widely know in a professional jou in abstract and review ally may become a textbook.

Other means for new knowledge are held by the professio ists, geneticists, phy specialists at which discussed. There are national and inter called *symposia*, of field to discuss the n present status of th field. The discussio are usually publishe

investigates the structure of cells, and into the properties of genetics is of transmission of one generation to related to the study attempts to discover as well as how the from previous ones. sification of plants evolutionary relationship. One of the sciences is ecology, the of a group of organisms, including both and other living or food or shelter for prey upon it.

biologists who deal with fish—ichthyologists, zoologists, who study who study birds, and

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ask, do all the facts found in this book come from the way we know they are true of each fact, of carefully controlled observation made by a biological scientist kept themselves, but now addition that scientific property and should it is not enough in a for a man to say that certain fact; he must details by which the so that others can re-

It is this criterion of makes us accept a certain experiment as representative; observations that by competent investi-

has made a discovery, called a "paper," in his methods in sufficient another can repeat of his observations, conditions to be drawn

from them, perhaps formulates a theory to explain them, and indicates the place of these new facts in the present body of scientific knowledge. The knowledge that his discovery will be subjected to the keen scrutiny of his colleagues is a strong stimulus for carefully repeating the observations or experiments before publishing them. He then submits his paper for publication in one of the professional journals in the particular field of his discovery (it is estimated that there are more than 7,000 of them published over the world in the various fields of biology!) and it is read by one or more of the board of editors of the journal, all of whom are experts in the field. If it is approved, it is published and thus becomes part of "the literature" of the subject.

At one time, when there were fewer journals, it might have been possible for one man to read them each month as they appeared, but this is obviously impossible now. Journals such as *Biological Abstracts* assist the hard-pressed biologist by publishing, classified by fields, very short reports or abstracts of each paper published—giving the facts found, and a reference to the journal. A considerable number of journals devoted solely to reviewing the newer developments in particular fields have sprung up in the past twenty-five years; some of these are *Physiological Reviews*, *The Botanical Review*, *Quarterly Review of Biology*, *Annual Review of Microbiology* and *Nutrition Reviews*. The new fact or theory thus becomes widely known through publication in a professional journal and by reference in abstract and review journals, and eventually may become a sentence or two in a textbook.

Other means for the dissemination of new knowledge are the annual meetings held by the professional societies of botanists, geneticists, physiologists and other specialists at which papers are read and discussed. There are, from time to time, national and international gatherings, called symposia, of specialists in a given field to discuss the newer findings and the present status of the knowledge in that field. The discussions of these symposia are usually published as books.

4. THE SCIENTIFIC METHOD

The facts of biology are gained by the application of the scientific method, yet it is difficult to reduce this method to a simple set of rules that apply to all the branches of science. One of the basic tenets of the scientific method is the rejection of authority—the refusal to accept a statement just because someone says it is so. The skeptical scientist wants confirmation of the statement by the independent observation of another.

The basis of the scientific method and the ultimate source of all the facts of science is careful, close observation and experiment, free of bias and done as quantitatively as possible. The observations or experiments may then be analyzed, or simplified into their constituent parts, so that some sort of order can be brought into the observed phenomena. Then the parts can be synthesized or reassembled and their interactions discovered. On the basis of these observations, the scientist constructs a hypothesis (a trial idea about the nature of the observation) or possibly the connections between a chain of events, or even cause and effect relationships between different events. It is in the construction of hypotheses that scientists differ most and that true genius shows itself. The ability to see through a mass of data and suggest a reason for their interrelations is all too rare.

It must be emphasized that science does not advance by the mere accumulation of facts, or by the mere postulation of hypotheses. The two go hand-in-hand in most scientific investigations: hypothesis, observation, revised hypothesis, further observation, and so on. When a scientist embarks upon an investigation he has the advantage of the relevant facts already known with which to build a "working hypothesis" to guide the design of his experiments. When a scientist makes an observation that does not agree with his hypothesis he may conclude either that his hypothesis or that his observation is wrong. He then repeats his observation, perhaps altering the design of his experiment to get at the relationship in a new way, or perhaps using a different technique. If he can satisfy himself that

facts which previously had not been discovered and which could not be explained on a rational ground. A good scientific theory predicts additional facts as well as explains the facts already observed. Indeed, it predicts new relationships

By showing the relations of facts, simplifies our understanding of natural phenomena. As Einstein said, "In science from Greek times to the present physics, there have been attempts to reduce the apparently natural phenomena to a few fundamental ideas and really the search for a simple principle of Occam, a fourteenth-century philosopher made the dictum *entia sunt multiplicanda praeter necessitatem*, or "Entities should not be multiplied beyond necessity." This principle (often called Occam's razor) it pares a theory to its essentials means that no more entities should be postulated than are required to account for the phenomena. In science, this means that a theory is a relation which will account for all the known facts and predict new theory in biology and other previous misconceptions. It is not only stimulates the progress of biology, it also promotes the progress of practical agriculture, and simi-

In contrast, when its predictions are not followed, will sooner or later be discarded and clear, irrefutable predictions. It frequently is the last stage in our knowledge. In science, alternative theories are good explanations. But as more observations are made, one or the other (or both!) are ruled out. The scientific method, then, consists of observations and arrangements so as to bring order to natural phenomena. Then we can test a hypothesis or a conceptual model to explain not only the

facts already observed but also new facts as they are discovered. Sciences differ widely in the extent to which they are predictable and there are some who claim that biology is not a science because it is not completely predictable. However, even physics, generally regarded as the most "scientific" of the sciences, is far from completely predictable. Although we can predict the occurrence of eclipses, we cannot make predictions in the field of quantum mechanics, nor can we predict an earthquake, or even tomorrow's weather.

In most scientific studies one of the ultimate goals is to explain the cause of some phenomenon, but the hard-and-fast proof that a cause and effect relationship exists between two events is extremely difficult to obtain. If the circumstances leading to a certain event always have a certain factor in common in a variety of cases, that factor may be the cause of the event. The difficulty lies in making sure that the factor under consideration is the *only* one common to all the cases. For example, it would be wrong to conclude from finding that Scotch and soda, bourbon and soda, and rye and soda all produce intoxication, that soda is the only factor in common and therefore the cause of the intoxication! This method of discovering the common factor in a variety of cases that may be the cause of the event (known as the method of agreement) can seldom be used as a valid proof because of this difficulty in being sure that it really is the only common factor. The finding that all people suffering from beriberi have diets which are low in thiamine is not proof that this deficiency causes the disease, for there may be many other factors in common.

Another method for unraveling cause and effect relations is the method of difference: If two sets of circumstances differ in only one factor, and the one containing the factor leads to an event and the other does not, the factor may be considered the cause of the event. For example, if two groups of rats are fed diets which are identical except that one contains all the vitamins and the second contains all but thiamine, and if the first group grows normally and the second group fails to grow

and ultimately develops polyneuritis, this would be a strong suggestion, but not absolute proof, that polyneuritis or beriberi in rats is caused by a deficiency of thiamine. By using an inbred strain of rats that are as alike as possible in inherited traits, and by using litter mates (brothers and sisters) of this strain, one could make certain that there were no hereditary differences between the controls (the ones getting the complete diet) and the experimentals (the ones getting the thiamine-deficient diet). It could conceivably be that the diet without thiamine does not have as attractive a taste as the one with it, and the experimental group simply ate less food, failed to grow and developed the deficiency symptoms because they were partially starved. This source of error can be avoided by "pair-feeding," by pairing a control and an experimental animal, weighing the food eaten each day by each of the experimental animals and then giving only that much food to each control member of the pair.

A third way of detecting cause and effect relationships is the method of concomitant variation: If a variation in the amount of a given factor produces a parallel variation in the effect, the factor may be the cause. Thus if other groups of rats were given diets with varying amounts of thiamine and if the amount of protection against beriberi varied directly with the amount of thiamine in the diet, we could be reasonably sure that thiamine deficiency is the cause of beriberi.

It must be emphasized that it is seldom that we can be more than "reasonably sure" that X is the cause of Y. As more experiments and observations lead to the same result, the probability increases that X is the cause of Y. When experiments or observations can be made quantitative—when their results can be measured in some way—one can, by the methods of statistical analysis, determine the probability that X is the cause of Y, or the probability that Y follows X simply as a matter of chance. Scientists are usually satisfied that there is some sort of cause and effect relationship between X and Y if they can show that there is less than one chance in a hundred that the observed

X — Y relationship could be due to chance alone. A statistical analysis of a set of data can never give a flat yes or no to a question—it can only state that something is very probable or very improbable. It can also tell an investigator approximately how many more experiments he must do to reach a given probability that Y is caused by X.

Each experiment must contain a control group—one treated exactly like the experimental group in all respects but one, the factor whose effect is being tested. The use of controls in medical experiments raises the difficult question of the moral justification of withholding treatment from a patient who might be benefited by it. If there is sufficient evidence that one treatment is better than a second one, a physician would hardly be justified in further experimentation. However, the medical literature is full of treatments now known to be useless or even harmful, which were used for years but finally were abandoned as experience showed they were ineffective and that the evidence which had suggested their use originally was improperly controlled. There is a time in the development of any new treatment when the medical profession is not only morally justified but really morally required to do carefully controlled tests on human beings to be sure that the new treatment is better than the former one.

In such tests it is not sufficient simply to give a treatment to one group of patients and not to give it to another, for it is widely known that there is a strong psychologic effect in simply giving a treatment. For example, a group of students at a large western university served as subjects for a test of the hypothesis that daily doses of extra amounts of vitamin C might help prevent colds. This grew out of the observation that people who drank lots of fruit juice seemed to have fewer colds. The group receiving the vitamin C showed a 65 per cent reduction in the number of colds contracted during the winter when they were receiving treatment compared to the previous winter when they were not receiving treatment. There were enough students in the group (208) to make this result statistically significant.

In the absence of controls, one would have been led to conclude that vitamin C does help prevent colds. But a second group was given "placebos," pills identical in size, shape, color and taste to the vitamin C pills but without any vitamin C. The students were not told who was getting vitamin C and who was not, they only knew they were getting pills that might help prevent colds. The group getting placebos showed a 63 per cent reduction in the number of colds; thus, vitamin C had nothing to do with the result and the reported reductions in both groups were probably psychological effects.

In all experiments, the scientist must ever be on his guard against bias in himself, bias in the subject, bias in his instruments, and bias in the way the experiment is designed. The proper design of experiments is a science in itself, but one for which only general rules can be made.

~~A hypothesis that has been tested and found to fit the facts and capable of making valid predictions may then be called a theory, a principle, or a law.~~ Although there is some connotation of greater reliance in a statement called a "law" than in one called a "theory," the two words are used interchangeably.

5. APPLICATIONS OF BIOLOGY

Some of the practical uses of a knowledge of biology will become apparent as the student reads on through this text—its applications in the fields of medicine and public health, in agriculture and conservation, its basic importance to the social studies, and its contributions to the formulation of a philosophy of life. There are esthetic values in a study of biology as well. A student cannot expect to learn all or even many of the names and characteristics of the vast variety of plants and animals, but a knowledge of the structure and functions of the major types will greatly increase the pleasure of a stroll in the woods or an excursion to the seashore. The average city-dweller gets only a small glimpse of the vast panorama of living things, for so many of them live in places where they are not easily seen—the sea, or parts of the earth that are not easily visited. Trips to botanical gardens, zoos,

aquariums and muse one an appreciation variety of living thing

It is impossible to c life without reference places in which they to one of the major schemes of biology, t of a given region are with each other and w The study of this is ba present forms of life ε or less closely by evol we deal with each of the facts about them derstand and remem them into their place woven tapestry of life

In our discussions (we will focus our att man, to gain an ap place in the biologic man's somewhat bias stands in the center (other animals and pl serve him. In number durance and adaptab many animals and is the environment—wt may be considered 1 portant biologic attrit ganism—he often fr survey study of ge practical consideratic mand that our discus for we are primarily things as the human human gestation per ance of the human t

QUESTIONS

1. How would you de
2. Contrast a hypothe

controls, one would have to believe that vitamin C does not. But a second group of "placebo" pills identical in appearance and taste to the vitamin C pills, and any vitamin C. The subjects told who was getting the placebo was not, they only received the placebo pills that might have been vitamin C. The group getting the placebo had a 63 per cent reduction in colds; thus, vitamin C was not with the result and the placebo in both groups were identical effects.

Thus, the scientist must guard against bias in himself, bias in his instrument, bias in his instruction, bias in the experimental design, bias in the interpretation of the results, but one for each rule can be made. It has been tested and found to be true and capable of making a prediction that may then be called a law. Although the word "law" is a rotation of greater importance than the word "theory," the two words are used interchangeably.

OF BIOLOGY

The practical uses of a knowledge of biology become apparent as one goes through this text—the fields of medicine, agriculture and conservation, the importance of the scientific contributions to the philosophy of life. There is a study of biology as one does not expect to learn all the names and characteristics of plants and animals, the structure of the major types will be a pleasure of a stroll in a park or a excursion to the seashore. The biologist gets only a small glimpse of the most panoramic of living things, of them live in places that are not easily seen—the sea, the mountains, the botanical gardens, zoos,

aquariums and museums will help give one an appreciation of the tremendous variety of living things.

It is impossible to describe the forms of life without reference to their habitats, the places in which they live. This brings us to one of the major unifying conceptual schemes of biology, that the living things of a given region are closely interrelated with each other and with the environment. The study of this is basic to sociology. The present forms of life are also related more or less closely by evolutionary descent. As we deal with each of the major life forms, the facts about them will be easier to understand and remember if we try to fit them into their place in the closely interwoven tapestry of life.

In our discussions of biologic principles we will focus our attention primarily on man, to gain an appreciation of man's place in the biologic world. It is only in man's somewhat biased opinion that he stands in the center of the universe, with other animals and plants existing only to serve him. In numbers, size, strength, endurance and adaptability he is inferior to many animals and in his adjustment to the environment—which, as we shall see, may be considered to be the most important biologic attribute of any living organism—he often fails. However, in a survey study of general biology, both practical considerations and interest demand that our discussions focus on man, for we are primarily concerned with such things as the human stomach ache, the human gestation period, and the endurance of the human body.

QUESTIONS

1. How would you define "science"?
2. Contrast a hypothesis and a law.

3. How would you go about testing the hypothesis that beriberi is caused by a deficiency of thiamine?
4. What would you consider to be proof that beriberi is caused by thiamine deficiency?
5. To which of the biologic sciences would you assign the following scientific papers:
 - The Flora of Northern Michigan.
 - The Fate of the Aortic Arches in the Development of the Chick.
 - The Regulation of the Heart Rate.
 - The Geographical Distribution of the Species of Wheat.
6. Describe in your own words the mode of operation of the scientific method.
7. Contrast the "method of agreement" and the "method of difference" as means of establishing cause and effect relationships.
8. What characteristics and attitudes do you think would be helpful for a career in science?
9. What is meant by a "controlled experiment"?

SUPPLEMENTARY READING

There are a number of fine books on the history of science: The development of the sciences in general is described in Sedgwick, Tyler and Bigelow's *A Short History of Science*, and a discussion of the role of science in society is given in J. B. Conant's *On Understanding Science*. The histories of the biologic sciences by Nordenskiöld and by Singer are well written and informative. The *History of Medicine* written by Douglas Guthrie describes the beginnings of anatomy, physiology and bacteriology.

The scientific method and its application to research problems are discussed in Conant's *Science and Common Sense* and Cohen's *Science, Servant of Man*. E. Bright Wilson's *An Introduction to Scientific Research* gives an excellent discussion in nontechnical terms of the methods of science and some of the problems involved in scientific investigation. W. B. Cannon's *The Way of an Investigator* gives some interesting examples of the scientific method in medical research. *In the Name of Science*, by Martin Gardner, describes many pseudosciences and, in showing up their shortcomings, gives an appreciation for scientific evidence and standards.

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Scientific Methods

There is nothing mysterious or even particularly unusual about the things that scientists do.

There are many ways to work on scientific problems. They all require common sense. Beyond that, they all display certain features that are especially — but not uniquely — characteristic of science.

Index to this page
• Testing Hypotheses
• The Null Hypothesis
• Reproducibility of Scientific Work
• Scientific Fraud
• Building on the Work of Others
• Basic Versus Applied Science

For example:

- **Skepticism.** Good scientists use highly-critical standards in the judging of evidence. They approach data, claims, and theories (ideally, even their own!) with healthy doses of skepticism.
- **Tolerance of uncertainty.** Scientists often work for years — sometimes for an entire career — trying to understand one scientific problem. This often involves finding facts that, for a time, fail to fit into any coherent pattern and that even may support mutually contradictory explanations.

Sometimes, as one listens to scientists vigorously defending their views, their confidence seems absolute. But deep in their hearts, they know that their views are based on probabilities and that a new piece of evidence may turn up at any time and force a major shift in their views.

- Although they certainly have no monopoly on hard work, their willingness to work long hours and years pursuing a problem is the mark of all good scientists. For science is hard work.
- Before undergoing the frustrations — tempered by occasional joys — of wresting more secrets from nature, you must learn the foundations on which your subject is based.

Although scientific methods are as varied as science itself, there is a pattern to the way that scientists go about their work.

Scientific advances begin with observations.

- A census of the members of a species in some habitat is an observation.
- The readings on the display of a laboratory instrument are observations.

But science is more than a catalog of facts.

The goal of science is to find **an explanation for why the facts are as they are**. Such an explanation is a **hypothesis**.

[Link to a case study illustrating the scientific method at work.](#)

Testing Hypotheses

A good hypothesis meets several standards.

- It should provide an adequate explanation of the observed facts.
- If two or more hypotheses meet this standard, the simpler one is preferred.
- It should be able to **predict** new facts.

So if a generalization is valid, then certain specific consequences can be **deduced** from it.

One of the most exciting events in science is to

- predict the results of an experiment not yet performed if the hypothesis is valid and then to
- perform the experiment.

[Link to an example.](#)

The Null Hypothesis

Experimental biology often involves setting up an experimental treatment and — at the same time — a **control**. Then one compares the results of the experimental treatment with the results in the controls. If there is a difference, what is the probability that it is due to chance alone; that is, the experimental treatment really had no effect?

The hypothesis that the experimental treatment had no effect is called the **null hypothesis**.

Most workers feel that if the probability (designated p) of the observed difference is less than 1 in 20 ($p = <0.05$), then the null hypothesis is disproved and the observed difference is **significant**.

[Link to discussion of statistical methods.](#)

But significance is not proof. In fact, hypotheses can never be proven to be absolutely "true" in the sense that a theorem in geometry can. The most we can say is that there is a high probability that the hypothesis provides a valid explanation of the phenomenon being studied.

Hypotheses that are supported by many observations come to be called **theories**.

Reproducibility of Scientific Work

The single feature that is most characteristic of science is its reproducibility. If scientists cannot duplicate their first results, they are forced to conclude that these were invalid. This problem occurs often. Its cause is usually some unrecognized, and hence uncontrolled, factor in the experiment (e.g., unrecognized variation in the properties of different batches of the materials used in the experiment). With luck, the inability to reproduce experiments will be discovered by the same scientists who did the first experiments. This is why scientists generally repeat their experiments several times before reporting them in a scientific paper.

[Link to a description of the format of scientific papers.](#)

On other occasions, workers in another laboratory fail to secure the same results when they

- repeat experiments that have been published or, more often,
- perform experiments designed to carry the study into new areas, but these fail because of a flaw in the original experiments.

When this happens, all the parties concerned should get together to see if they can find out why their results differ.

- Often it is simply a matter of not using precisely the same materials and methods.
- Sometimes, however, a serious flaw may be discovered in the design and/or execution of the original experiments.
- And sometimes it proves impossible to find out why experiments that once seemed to work no longer do so.

In any of these cases, the failure to confirm the experiments must be reported.

Although this is acutely embarrassing for the original investigators, it represents one of the great strengths of science: its **built-in system for self-correction**.

Scientific Fraud

In the vast majority of cases, irreproducible results in science are caused by honest errors.

On rare occasions, however, laboratory reports cannot be confirmed because they are fraudulent. This is distressing to all concerned. If such a fraud becomes widely known, it is also likely to cause a great deal of excitement among the general public.

I believe, however, that rather than casting a cloud over the scientific enterprise, these rare aberrations reveal its great strength.

There is probably no other area of human activity where error is detected and corrected more rapidly. I am confident that you can think of a number of other fields of human study and activity where errors have been made that went uncorrected for years and caused widespread harm.

Dishonest scientists usually harm only themselves. They are disgraced; their careers often at an end.

But the progress of science usually moves forward as fast as (sometimes faster than) before.

Building on the Work of Others

Only rarely does a scientific discovery spring full-blown on the scene. When it does, it is likely to create a revolution in the way scientists perceive the world around them and to open up new areas of scientific investigation. Darwin's theory of evolution [[Link](#)] and Mendel's rules of inheritance [[Link](#)] are examples of such revolutionary developments.

Most science, however, consists of adding another brick to an edifice that has been slowly and painstakingly constructed by prior work. In fact, it is possible to construct a genealogical tree that traces the historical development of any scientific discovery (even, to a degree, Darwin's and Mendel's). The way in which science builds on the work of others is another illustration of what a communal activity science is.

The development of a new **technique** often lays the foundation for rapid advances along many different scientific avenues. Just consider the advances in biology that discovery of the light microscope and, later, the electron microscope have made possible. Throughout these pages, there are many examples of experimental procedures. Each was developed to solve a particular problem. However, each was then taken up by workers in other laboratories and applied to their problems.

In a similar way, the creation of a new explanation (**hypothesis**) in a scientific field often stimulates workers in related fields to reexamine their own field in the light of the new ideas. Darwin's theory of evolution, for example, has had an enormous impact on virtually every subspecialty in biology (and in other fields as well). To this very day, biologists in specialties as different as biochemistry and animal behavior are guided in their work by evolutionary theory.

Basic Versus Applied Science

The distinction between basic and applied science is more one of goals than of methods. The same rules and standards apply to each.

However, the motivation behind the work is somewhat different. Researchers in applied science have before them a practical problem to be solved. Much of the research that goes on in medicine and in agriculture is applied.

The researcher in basic science, on the other hand, is primarily driven by curiosity - the desire to find out more about how nature works.

Both types of research are not only honorable and demanding professions, but they are mutually dependent as well.

- Applied science repeatedly loses momentum without periodic infusions of fresh ideas and discoveries from basic research. (The light bulb would never have been discovered in the research and development (R and D) department of a candle manufacturer!)
- On the other hand, much basic research has depended on the development of new tools and instruments and, more often than not, these have been developed in laboratories devoted to applied research.

Welcome&Next Search

20 June 2007



CHINO BASIN WATERMASTER

III. REPORTS / UPDATES

E. INLAND EMPIRE UTILITIES AGENCY

6. Monthly Water Conservation Programs Report
7. Monthly Imported Water Deliveries Report (handout)
8. State and Federal Legislative Reports
9. Community Outreach/Public Relations Report



CHINO BASIN WATERMASTER

ADVISORY COMMITTEE

September 27, 2007

AGENDA

INTERAGENCY WATER MANAGERS' REPORT

Chino Basin Watermaster

9641 San Bernardino Road

Rancho Cucamonga, CA 91730

15-20 Minutes

Discussion Items:

- Three-year Recycled Water Business Plan
- Drought Planning Update
- Proposed Landscape Rebate Programs

Written Updates:

- Monthly Water Conservation Programs Report
- Monthly Imported Water Deliveries Report - **Oral**
- State and Federal Legislative Reports
- Community Outreach/Public Relations Report

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Regional Recycled Water Program 3-Year Business Plan

**Regional Sewerage Program
Technical/Policy Committees
September 6, 2007**

*Refer: IEUA Board Workshop
August 29, 2007*

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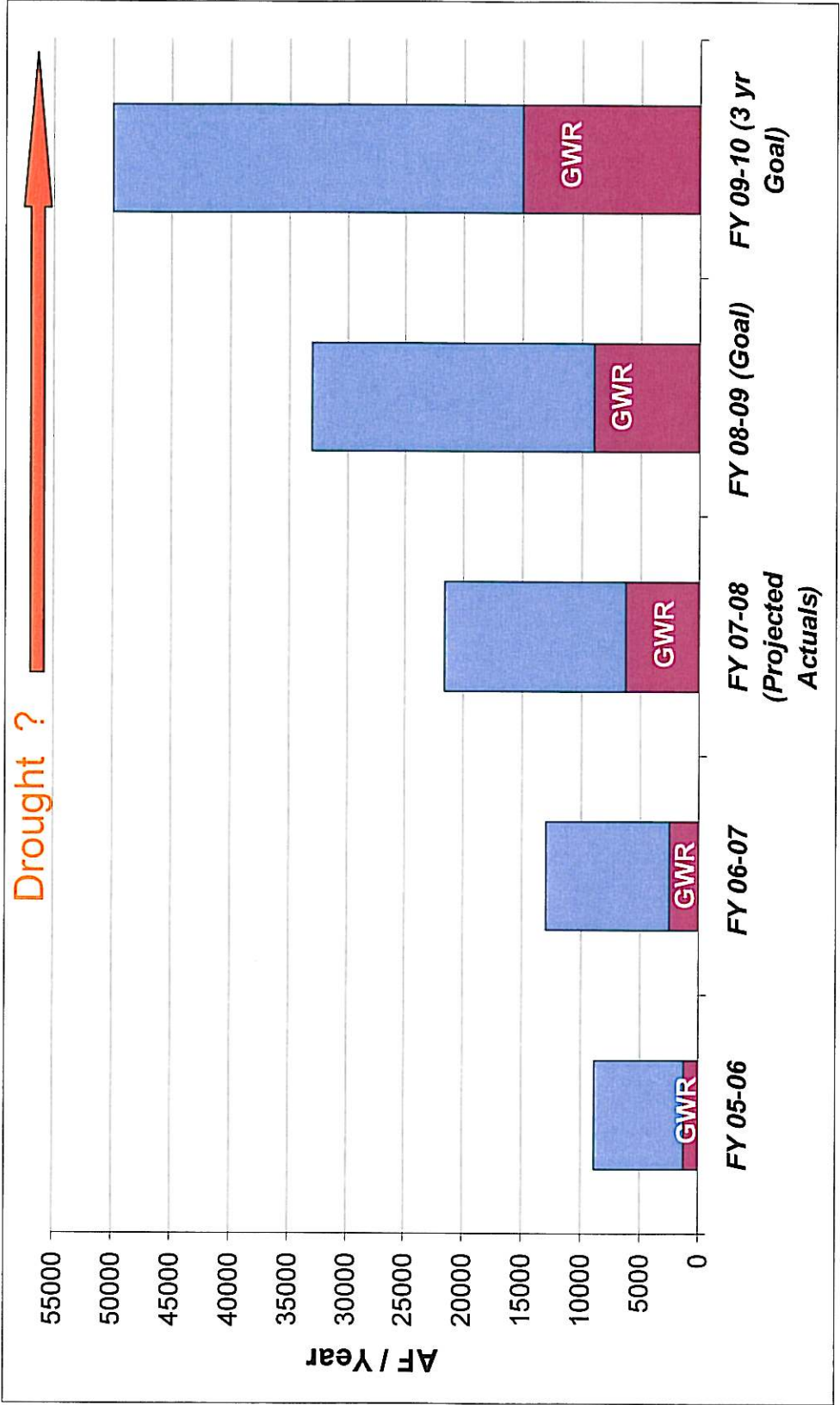
Chief Executive Officer's Message*

“Water supply issues are front page because of drought conditions and the endangered species “regulatory” and litigious environment. As a result IEUA priorities during the next fiscal year will be significantly affected by the potential reduction of MWD imported supplies to our service area. To compound the water problems during the past winter it was the lowest annual rainfall total on record in southern California. Utilizing our MWD drought groundwater storage account, increasing recycled water use and additional conservation measures will be critical to assuring adequate supply to our 800,000 residents.....”

* Excerpt from the Operating and Capital Program Budget- FY 2007/08, June 20, 2007

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Planned Recycled Water Use



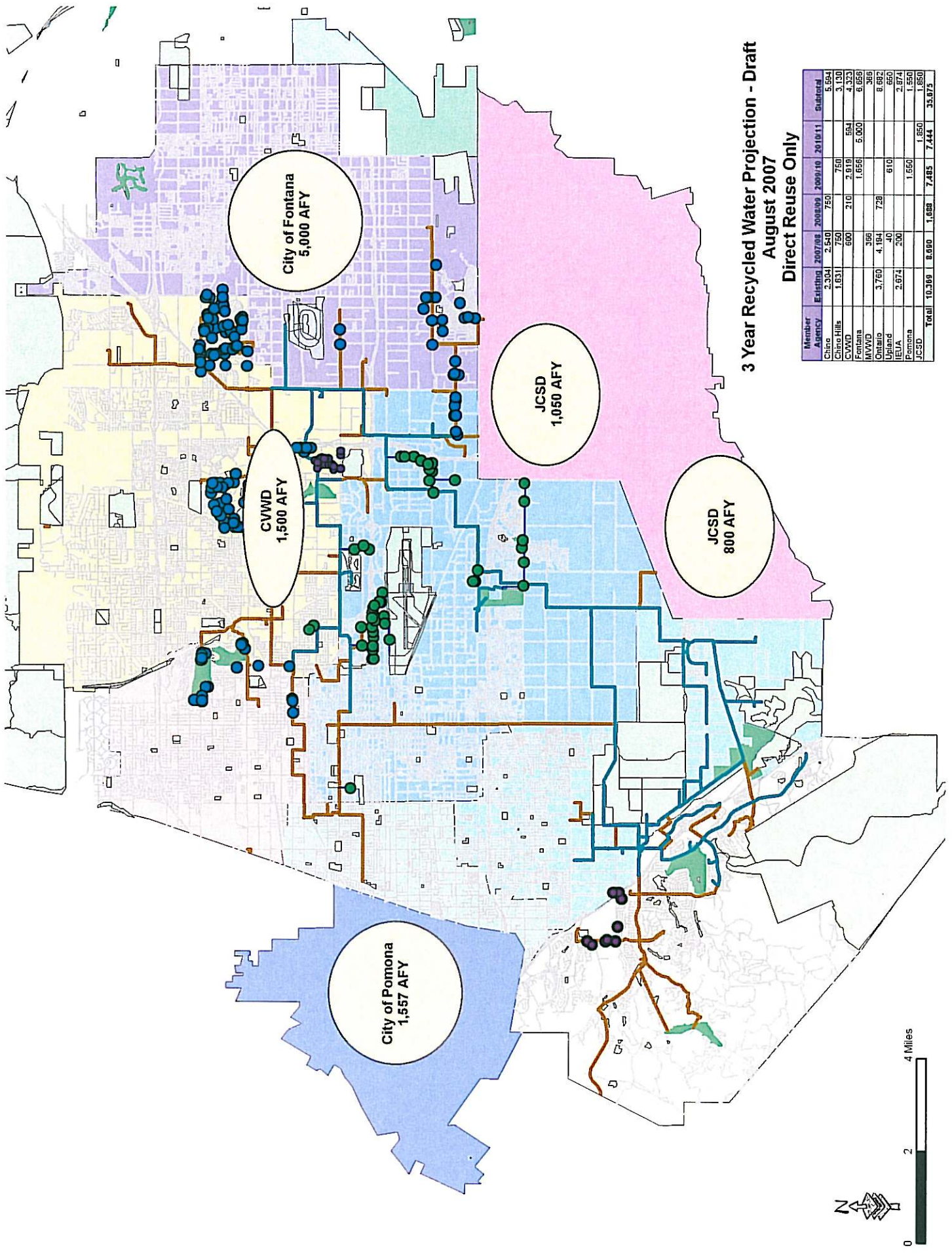
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RECYCLED WATER: THREE (3) YEAR BUSINESS PLAN

- **Focus:** "Rapidly" and cost effectively increase the current amount of recycled water (RW) with a structured Business Plan (Plan). The Plan will have annual usage goals, metrics, and requirements for monthly progress reports. The Plan will be revised and updated annually.
- **Goals:** For the program, the combined annual use (direct and indirect):
 - ✓ Year 1 (ending 6/30/08)....21,500 AFY *
 - ✓ Year 2 (ending 6/30/09)....35,800 AFY
 - ✓ Year 3 (ending 6/30/10)....50,000 AFY*Reference: Year ending 6/30/07...13,000 AFY
- **Background and Status:**
 - ✓ MWH RW Implementation Plan (Nov. 2005)
 - ✓ Projections for direct and indirect use
 - ✓ IEUA Capital Projects Status-Maps, details, costs.
 - ✓ Impacts-Drought (direct & indirect), population growth, regulations.
 - ✓ Implementation issues and concerns (i.e. available sites, energy, etc.)
- **Supply and Demand:**
 - ✓ Available supply of tertiary water... (note 16,875 AFY to river mandated)
 - ✓ Current wastewater treatment at 60.5mgd (67,760 AFY)
 - ✓ Possible Satellite RW Plants
 - ✓ Ultimate RW System over 93,000 AFY
- **Three Year Plan: (additional 37,000 AFY)**
 - 1) Year one, ending June 30, 2008: additional 8,500 AFY
 - 2) Year two, ending June 30, 2009: additional 14,300 AFY
 - 3) Year three, ending June 30, 2010: additional 14,200 AFY

DRAFT 8-29-07

3 Year Recycled Water Projection - Draft August 2007 Direct Reuse Only



Member Agency	Eligible	2007/08	2008/09	2009/10	2010/11	Subtotal
Chino Hills	2,331	2,510	750	750		5,341
CVWD	1,631	750	210	210	584	3,130
Fontana		500	1,655	5,000		7,155
MAVWD		356				356
Ontario	3,760	4,104	728	610		8,602
Upland		200				200
IEUA	2,674			1,550		4,224
Pomona					1,557	1,557
JCS D		10,309	8,000	1,038	7,444	26,801
Total						35,075

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Member Agency	Existing	2007/08	2008/09	2009/10	2010/11	Subtotal
Chino	2,304	2,540	750			5,594
Chino Hills	1,631	750		750		3,130
CVWD		600	210	2,919	594	4,323
Fontana				1,656	5,000	6,656
MVWD		366				366
Ontario	3,760	4,194	728			8,682
Upland		40		610		650
IEUA	2,674	200				2,874
Pomona				1,550		1,550
JCSD					1,850	1,850
Total	10,369	8,690	1,688	7,485	7,444	35,675

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CAPACITY DEVELOPMENT

Developed Maximum Recharge Capacity at 30% RWC and 80% Usage (AFY)

Basin	Ely	Banana	Hickory	Turner	8th St.	Brooks	Total Capacity
FY 05/06	870	870	870	0	0	0	2,610
FY 06/07	870	870	870	1,040	0	0	3,650
FY 07/08	870	870	870	1,040	870	0	4,520
FY 08/09	870	870	870	1,040	870	870	5,390
FY 09/10	870	870	870	1,040	870	870	5,390
FY 10/11	870	870	870	1,040	870	870	5,390

With Future System Expansion

Developed Maximum Recharge Capacity at 30% RWC and 80% Usage (AFY)

Basin	RP3	Declez	Victoria	San Sevaire	Etiwanda DB	Lower Day	New Capacity	All Basins
FY 05/06	-	-	-	-	-	-	-	2,610
FY 06/07	-	-	-	-	-	-	-	3,650
FY 07/08	-	-	-	-	-	-	-	4,520
FY 08/09	-	-	-	-	-	-	-	5,390
FY 09/10	1,210	-	1,040	8,670	1,210	-	12,130	17,520
FY 10/11	1,210	1,040	1,040	8,670	1,210	-	13,170	18,560

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Proposed Actions

- **Recycled Business Plan**
 - Oct. 3 (IEUA Board)
- **Develop “Red Team” with Retail Agencies**
 - Oct. 4 (Tech/Policy)
- **Prepare Lateral and Customers (MWD Public Facility) Retrofit Policies**
 - Oct. 3 (IEUA Board)
 - Oct. 4 (Tech/Policy)

VISION STATEMENT

Inland Empire Utilities Agency's vision is to promote water conservation, water recycling, groundwater management, organic composting, renewable energy, and overall environmental stewardship in partnership with the communities we serve.



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RW Project Design/Planning

- Etiwanda Pipeline and 1270 Reservoir
 - Service to Victoria Gardens and Heritage Village
 - San Sevaine, Victoria, Etiwanda Basins
- Wineville Pipeline Extension - Ontario and Fontana Customer Commitments
- Evaluation of Satellite Water Recycling Plant at Red Hill Park
 - Recycled Water Service to Red Hill Park, Red Hill Golf Course, Upland Hills CC
 - Other potential Satellite Plant Sites in Upland
- Local Laterals – Recycled Water Master Plans
 - MVWD – Potential for IEUA to finance and construct (SRF funded)
 - Upland – Euclid medians , Potential for IEUA to finance and construct
 - Others ?
- Three Year Recycled Water Business Plan
 - Increase recycled water deliveries to 50,000 AFY
 - Incorporate stakeholder priorities
 - Improve reliability and redundancy (Storage, Interconnections)



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STATUS OF CURRENT LOANS & GRANTS

<u>PROJECT</u>	<u>STATUS</u>	<u>FUNDING</u>	<u>FUNDING TO DATE</u>	<u>BALANCE EXPECTED</u>
Edison Avenue Pipeline	Complete	80% DWR grant	53%	Fall '07
7 th and 8 th St. Pipeline	Complete	50% DWR grant	46%	Fall '07
RP-1 So Zone Pump Sta. San Antonio Channel -A San Antonio Channel -B	90% complete Complete 60% complete	18% SWRCB Grant 68% SRF 86%	11% SWRCB 31 % SRF 42%	60% Fall '07 80% 6/30/08
LPP, MWD	Complete	\$154/AF	---	2017
USBR PLANNING	Complete	\$980,000	\$980,000	---

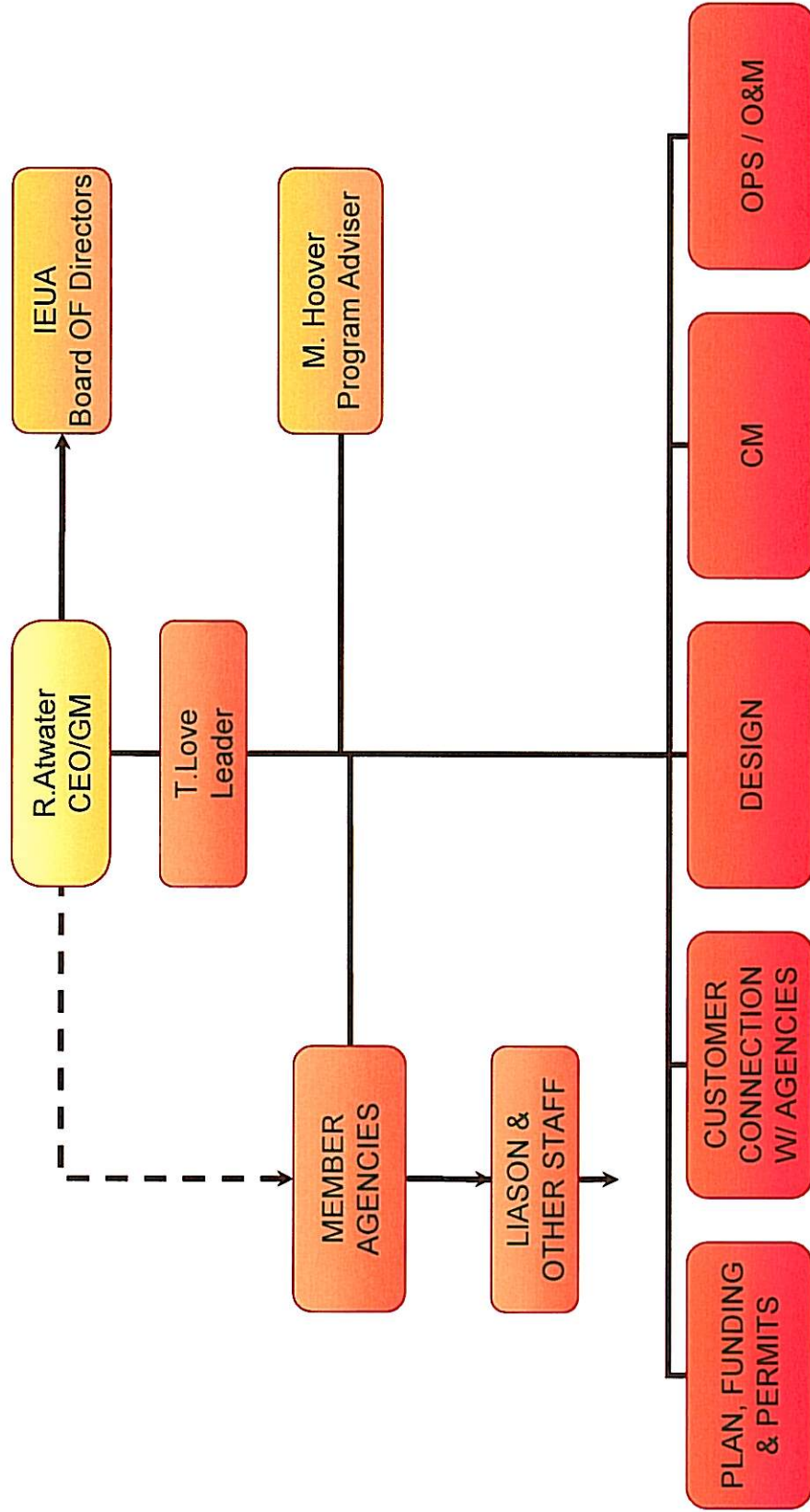
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PENDING LOANS & GRANTS 2007 / 08

<u>PROJECT</u>	<u>STATUS</u>	<u>FUNDING</u>	<u>FUNDING TO DATE</u>	<u>BALANCE EXPECTED</u>
SA Channel - B Realignment	Pending	100%, SRF	0%	September 2007
MVWD Laterals	Pending	100%, SRF	0%	November 2007
RP-4 Res. Pipeline & P.S.	Pending	59% SRF	0%	08/01/08
RP-4 Res. Pipeline & P.S.	Pending	25% Grant	0%	08/01/08
IEUA Phase II LRP, MWD	Pending	\$250/AF	0%	20 years
USBR Planning	Pending	\$1,000,000	0%	06/30/08
USBR Construction*	Pending	\$2,000,000	0%	06/30/08
MWD On-Site Conversion Rebate	Pending	\$250/ AF (2 years)	0	

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Develop "Red Team"



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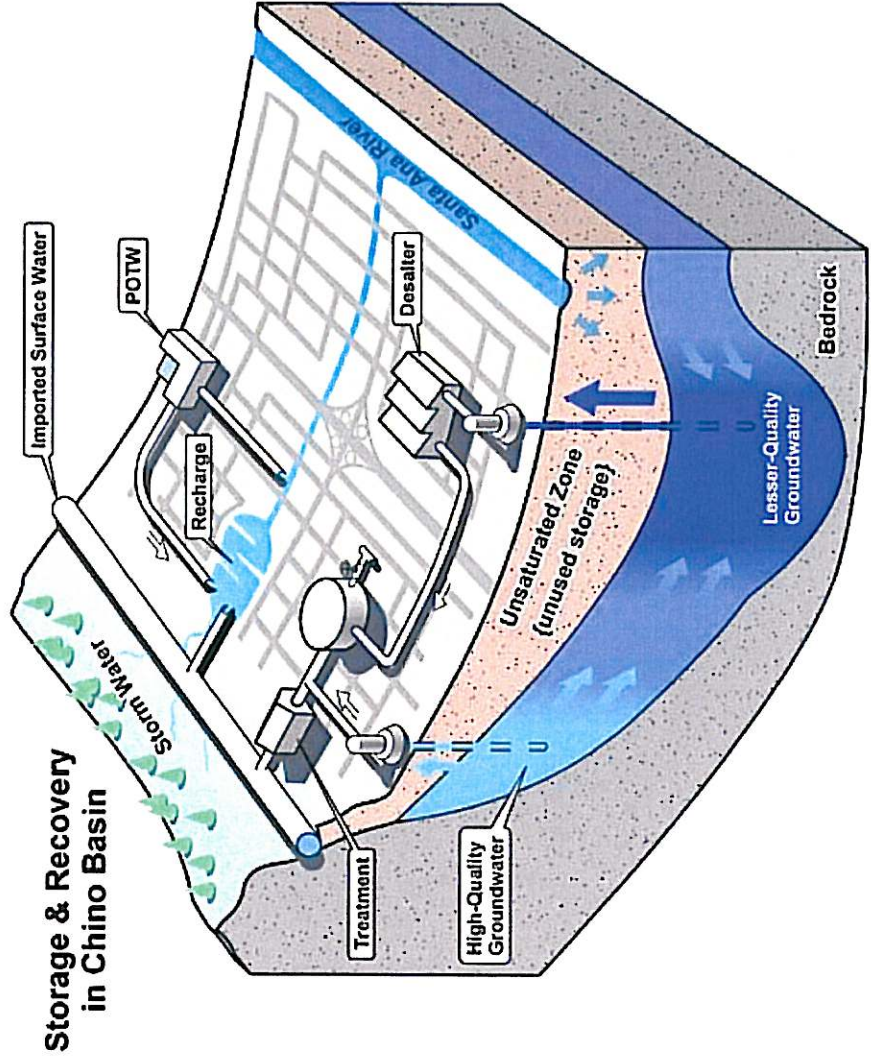
CAPACITY WITH SYSTEM EXPANSION

Actual and Projected Recycled Water Groundwater Recharge by Basin (AFY)

RWC	Basin	33%					0%		Additional New Capacity	All Basins
		RP3	Declez	Victoria	San Sevaine	Etiwanda DB	Lower Day			
FY 05/06		-	-	-	-	-	-	-	-	1,304
FY 06/07		-	-	-	-	-	-	-	-	2,989
FY 07/08		-	-	-	-	-	-	-	-	3,408
FY 08/09		-	-	-	-	-	-	-	-	3,405
FY 09/10		1,200	-	950	1,800	300	-	4,250	7,695	
FY 10/11		650	1,500	100	4,350	2,400	-	9,000	12,635	

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GROUNDWATER STORAGE AND RECOVERY IN CHINO BASIN



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PLANNING FOR A RELIABLE WATER FUTURE

IEUA is showcasing innovative water conservation programs to save water that will help meet our future needs. Every gallon of water saved translates into reduced demand for expensive imported water supplies resulting in lower water bills.

WATER RECYCLING

IEUA's regional recycled water distribution system will provide up to 20% of our future water needs. This safe and inexpensive water can be used for outdoor irrigation, commercial and industrial processing and other non-potable uses.

GROUNDWATER MANAGEMENT

Working with its retail agencies and Chino Basin Watermaster, IEUA is implementing a comprehensive groundwater enhancement program that will provide over 500,000 acre-feet of new groundwater storage within the Chino Basin ensuring that Chino's vast groundwater supply is available to meet the future needs of the region.

ORGANIC COMPOSTING

In a joint venture with Los Angeles County Sanitation District, IEUA is retrofitting an existing warehouse into an enclosed composting facility to process organic material into a high quality fertilizer products.

ENERGY EFFICIENCY

IEUA is developing cost-effective and reliable renewable energy sources through green power technologies such as solar panels, biogas (methane) fuels, and efficient power generation systems to demonstrate what can be done locally to generate power.

AIR AND WATER QUALITY BENEFITS

IEUA is committed to the protection of the region's air and downstream water quality through its Organic Management Strategy of treating wastewater biosolids, dairy manure, yard clippings and other organic materials.

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IEUA REGIONAL RECYCLED WATER PROGRAM

HISTORY

The following are significant events, studies, and reports leading up to the current Implementation Plan:

- 1972 Regional Contract , IEUA begins delivery of recycled water
- 1981 Chino Basin Reclamation Study
- 1991 RW Early Action Plan
- 1991 State Water Code, section 13550.(a); "Water Recycling Law"
- 1993 Recycled Water Master Plan
- 1995 Carbon Canyon Recycled Water System Plan
- 1996 Preliminary Design Report (Distribution System)
- 1998 Carbon Canyon Recycled Water System Initial Deliveries
- 2000 Optimum Basin Management Plan and OBMP EIR
- 2000 Peace Agreement
- 2001 Recycled Water Facilities Planning Study
- 2002 Regional Recycled Water Program Feasibility Study
- 2002 Programmatic EIR (June 29th certified by IEUA Board)
- 2003 SWRCB Grant (\$5 million) Loan (\$22 million) Approved
- 2003 Initiate Construction of Phase I Facilities
- 2005 Regional Recycled Water Program Implementation Plan
- 2004 Initiate Design of Phase II Facilities
- 2005 Phase III Design initiated

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CAPACITY WITH EXISTING DISTRIBUTION

Actual and Projected Recycled Water Groundwater Recharge by Basin (AFY)

RWC Basin	29%	36%	36%	33%	33%	33%	Current Capacity
	Ely	Banana	Hickory	Turner	8th St.	Brooks	
FY 05/06	188	598	518	0	0	0	1,304
FY 06/07	466	644	647	1,232	0	0	2,989
FY 07/08	840	0	258	710	1,600	0	3,408
FY 08/09	1,080	0	135	710	280	1,200	3,405
FY 09/10	1,080	0	135	710	280	1,240	3,445
FY 10/11	1,080	380	435	710	280	750	3,635

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Inland Empire Utilities
Agency
Board of Directors
Workshop



October 3, 2007

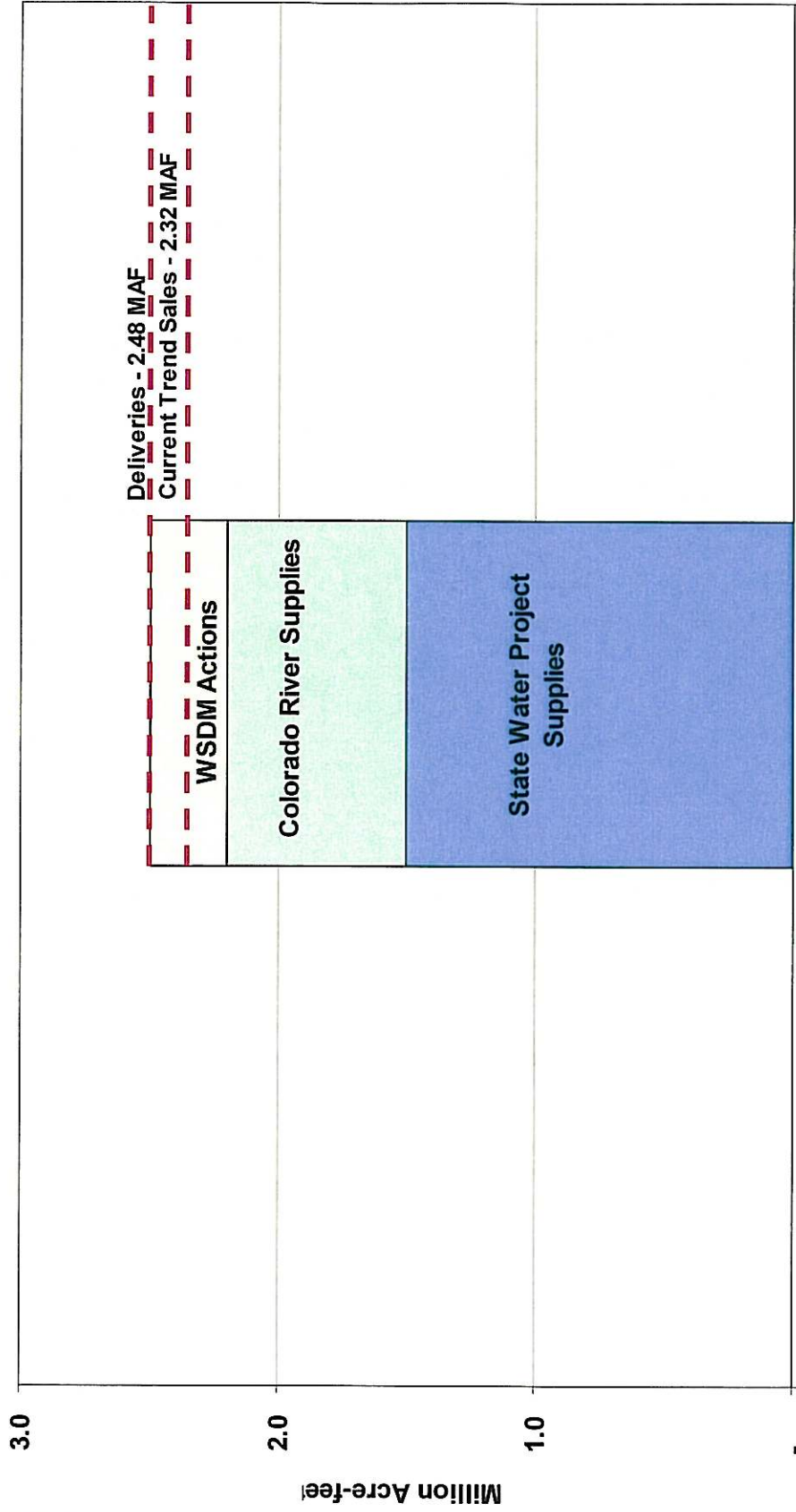
Outline

- Purpose
- Supplies
- Drought Allocation History at Metropolitan
- Water Surplus and Drought Management Plan
- Current discussions among member agencies
- Preferential Rights
- Schedule MWD Board Action
- Options for IEUA
- DYY Administration Considerations
- Next Steps for the Fall

Purpose

- Develop drought allocation plan for IEUA retail agencies
- Coordinate with MWD and other member agencies
- Administer MWD DYY Implementation
- Coordinate with Chino Basin Watermaster
- Implement Water Conservation Action Plan and Recycled Business Plan

2007 Supplies



Currently Allocated Supplies

2008 Supply Outlook

- End of year storage in Oroville 1.2 MAF
- State share of end of year storage in San Luis 250,000 AF
- Key point: “storage is at historic low levels this fall”
- Current trends indicate 20% initial SWP Table A allocation (not including Judge Wanger’s decision)
- Up to 30% cut in supplies due to Judge Wanger’s decision starting December 25, 2007

MWD Allocation History

- 1976-77 Drought – MWD 10% voluntary reductions to help the rest of the State
- 1991-1992 IICP – Stage 5 was implemented
- 1995 MWD Adopted Drought Plan for one year but did implement (improved hydrology)
- 1998/1999 MWD Approved the Water Surplus and Drought Management (WSDM) Plan

MWD Allocation History - IICP

- Incremental Interruption and Conservation Plan approved in December 1990
- Based on fiscal year 1989-90 MWD sales
- Staged cutbacks
 - Six stages
- Incentives/disincentives---triple water rate penalties but \$100/AF incentive payment for less than IICP target

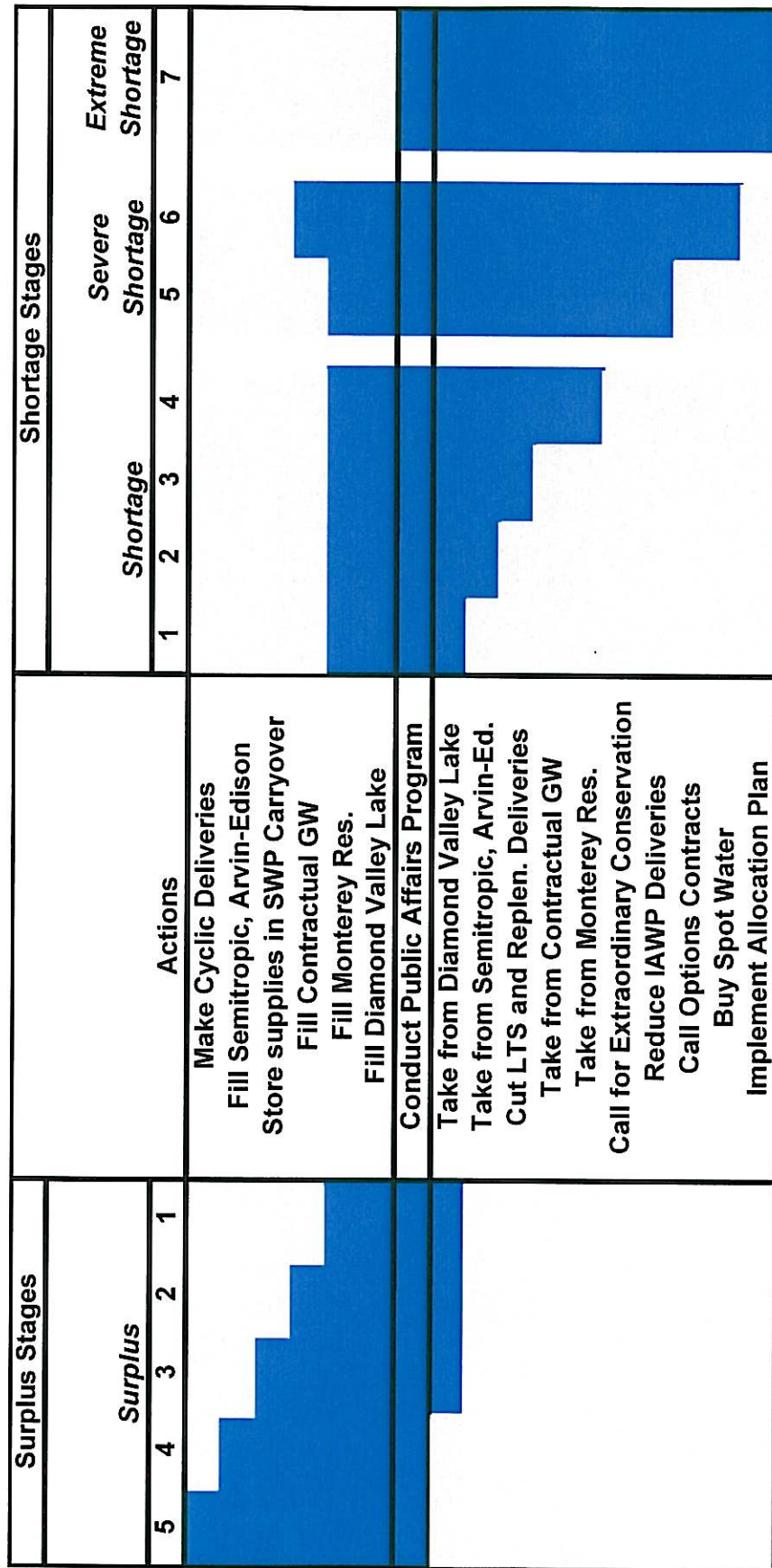
MWD Allocation History – 1995 DMP

- 1994 one of the driest water years
- 1995 Drought Management Plan to manage potential shortages - modified IICP
- Plan was not needed due to 1995 hydrology

Water Surplus and Drought Management Plan

- Adopted in 1999
- Provides for management of supplies for surplus water supply years and shortage years but does not include an allocation plan

Water Surplus and Drought Management Plan



Potential Simultaneous Actions

Water Surplus and Drought Management Plan

- Allocation principles and goals adopted
- Allocation plan partially developed but no agreement
- Equitably allocate imported water on basis of agencies' needs.

Water Surplus and Drought Management Plan

- Impact on retail consumers and economy
- Reclamation/Recycling
- Conservation
- Population and economic growth
- Investment in local resources
- Change and/or loss of local supply
- Participation in MWD's Interruptible programs
- Investment in MWD's facilities

Current Discussions

- MWD staff began where the unadopted plan left off
- Three year average base year retail and wholesale firm demands
- Adjustments
- “Two-Promise” Concept
 - Impacts to retail demand less than MWD regional shortage
 - MWD delivery cut no more than twice MWD regional shortage

Current Discussions

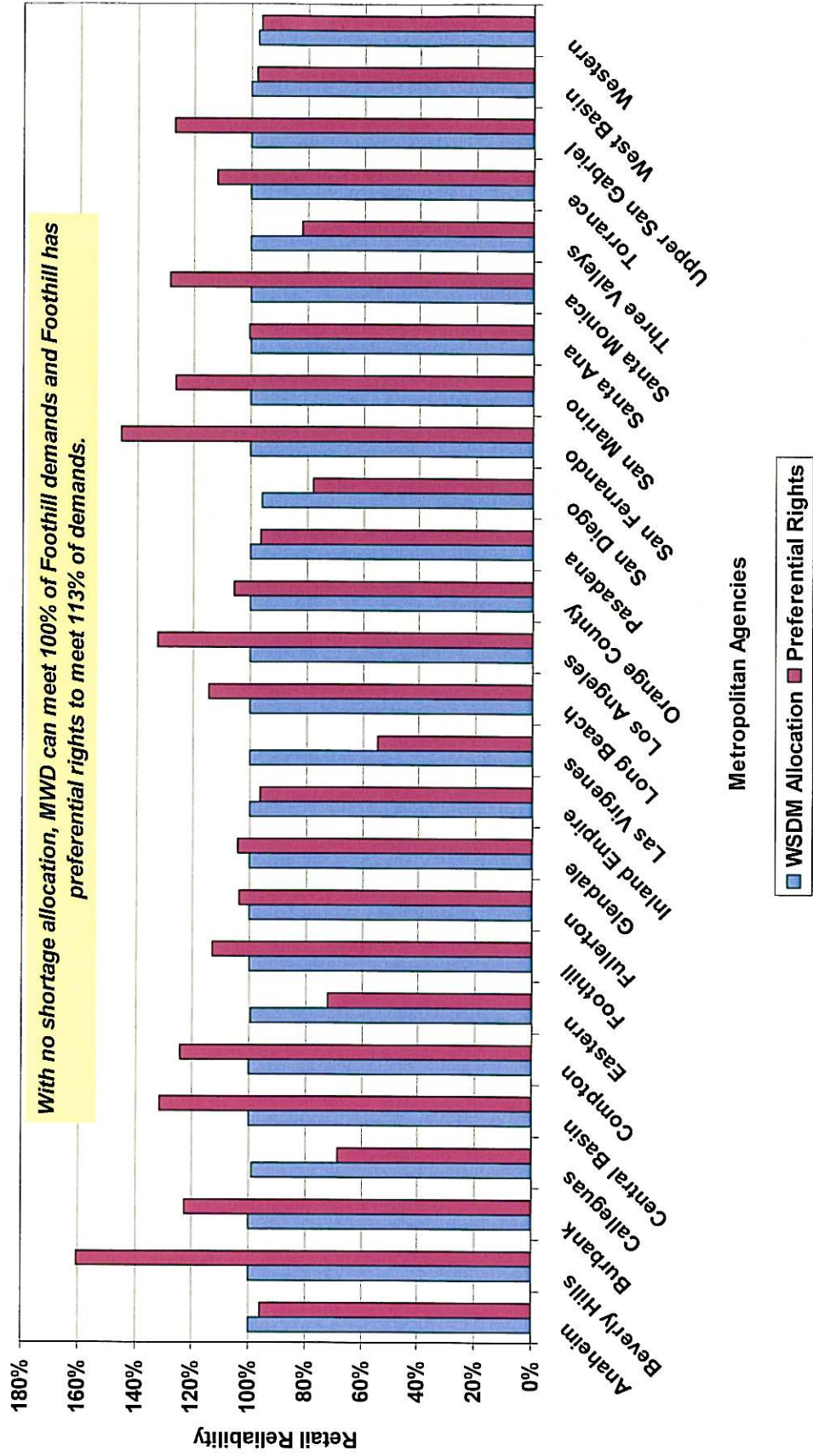
Shortage Level	Wholesale Promise	Retail Promise
1 (5%)	90%	95%
2 (10%)	80%	90%
3 (15%)	70%	85%
4 (20%)	60%	80%
5 (25%)	50%	75%
6 (30%)	50%	70%

Preferential Rights

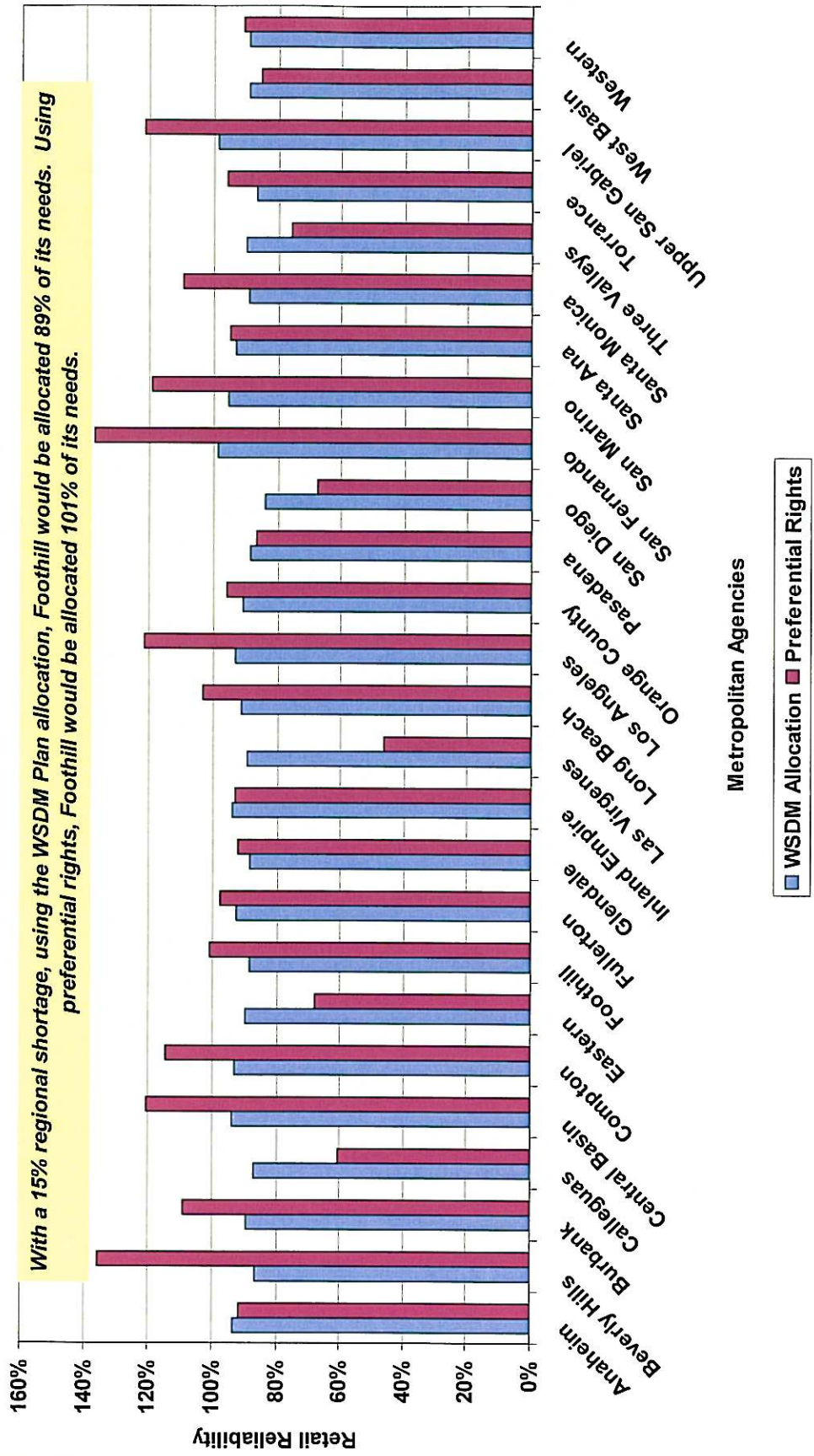
Sec. 135. [Preferential Right to Purchase Water]

Each member public agency shall have a preferential right to purchase from the district for distribution by such agency, or any public utility therein empowered by such agency for the purposes, for domestic and municipal uses within the agency a portion of the water served by the district which shall, from time to time, bear the same ratio to all of the water supply of the district as the total accumulation of amounts paid by such agency to the district on tax assessments and otherwise, excepting purchase of water, toward the capital cost and operating expense of the district's works shall bear to the total payments received by the district on account of tax assessments and otherwise, excepting purchase of water, toward such capital cost and operating expense.

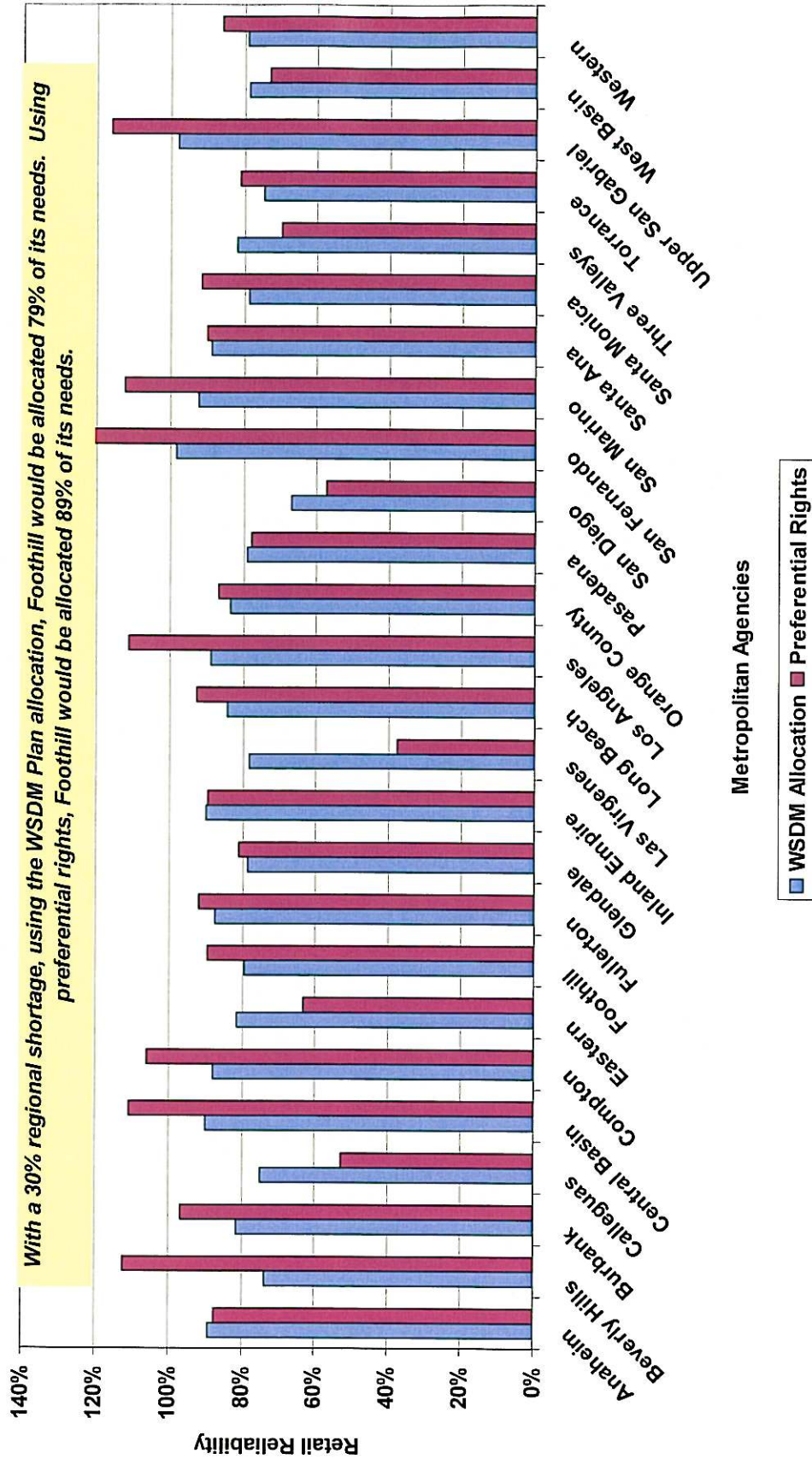
Comparison with No Shortage



Comparison with 15% Regional Shortage



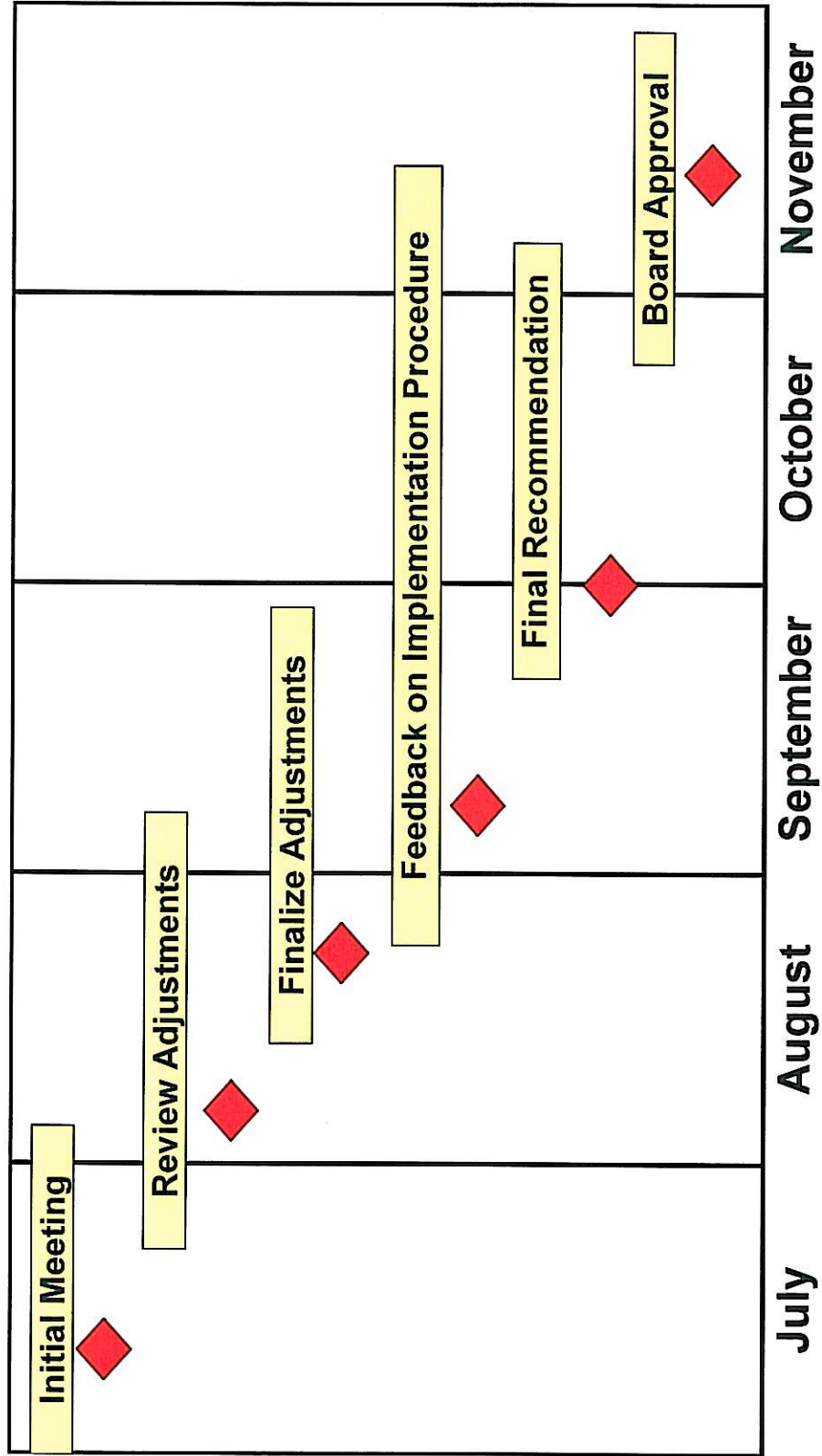
Comparison with 30% Regional Shortage



Current Discussions

- Include recycled water adjustment in any new local water supply development adjustment
- .5% adjustment for conservation rate structure
- 1.5 times wholesale minimum
- No economic adjustment for Levels I and II
- MWD Board discussions started in Sept. and approval scheduled for December

MWD WSDM Timeline



Other Considerations

- Should IEUA step up conservation actions?
- Should IEUA implement 3-year Recycled Business Plan
- MWD DYY Implementation (33,000 AF)
- Coordinate extensively with cities and retail water agencies on customer information:
 - Launch IEUA drought campaign with advertising supplementing MWD and ACWA
 - Speakers bureau and city council resolutions

Recommendation

- NEXT STEPS:
- Focus on water supply reliability for IEUA service area customers through local drought planning discussions (2008-2012 scenarios)
- Enhance conservation efforts with “20 Gallon Challenge” and adoption of Long Beach style emergency steps (mandatory use restrictions)
- Implement recycled water and local supply development projects ASAP to alleviate potential extreme shortages!

Proposed Regional Landscape Rebate Programs

1. Pervious Concrete Rebate Program – Pilot Incentive Rebate Program

- **Project Purpose:** Promote the strategic use of pervious concrete within a groundwater basin to reduce runoff, improve water quality and enhance the recharge of the Chino Basin. This will test the potential for development of a “southern California” rebate program that could be offered by MWD to encourage groundwater infiltration, reduce urban runoff and achieve conservation and augmentation of local water supplies through storm water capture.
- **Partners:**
 - MWD (\$87,000 Innovative Conservation Program Grant September 2007)
 - Southern California Ready Mix Concrete Association
 - Chino Basin Watermaster
 - U.C. Santa Barbara, Bren School of Environmental Science and Management
 - CSUSB, Water Resources Institute/San Bernardino County Low Impact Development Guidance Program (Five County Storm water Program for monitoring of LID best management practices)
- **Rebate:** Up to \$2 per square foot, up to 50% of the additional expense of installing pervious concrete or equivalent porous surface. Rebate will be offered on a competitive grant basis; It is expected that 3-5 demonstration projects totaling up to 36,000 square-feet will be selected for implementation;
- **Program Budget:** \$113,000 (will be revised to include project monitoring through San Bernardino County Low Impact Development Guidance Program) of which \$87,000 is provided by MWD with \$72,000 for rebates. Remainder of budget is IEUA staff in-kind services in administration of the pilot project.
- **Selection criteria** will include a site evaluation to identify areas with the greatest potential to benefit the Chino Groundwater Basin, the diversity of pervious concrete applications being demonstrated and the amount of matching funds provided by project applicants.
- **Expected Timeline:**
 - IEUA Board Approval of Rebate Program – October 3, 2007
 - Rebate Application Deadline – November 30, 2007
 - Project Selection – January 15, 2008
 - Project Implementation and Monitoring – 2008-2010

2. Water-Wise Residential Landscape Rebate Program

- **Project Purpose:** Promote removal of residential turf and installation of water conserving California-Friendly landscapes through development of a residential landscape rebate program that is modeled after existing successful programs to reduce significantly residential outdoor water use (e.g., Las Vegas, El Paso, and Tuscon).
- **Partnership:**
 - Cities and retail water agencies within IEUA's service area
 - Inland Empire Landscape Alliance
 - Chino Basin Watermaster
 - Chino Basin Water Conservation District
- **Proposed Rebate:** Up to \$2 per square foot, up to \$2,000 limit
- **Project Budget:** \$50,000 in IEUA's FY 07/08 Conservation Budget.
- **Program Conditions:** will be developed in September based upon programs being implemented by Southern Nevada Water Authority and the Crescenta Valley Water District and will include:
 - Size of turf to be removed/modified
 - Application Process
 - Verification of turf removal
 - Educational materials to encourage use of efficient irrigation system, water budgets, water-wise plants
- **Expected Timeline:**
 - Develop program conditions based upon discussions with Southern Nevada Water Authority and Crescenta Valley Water District
 - IEUA Board Approval of Rebate Program – October 3, 2007
 - Program Kick-Off – October 3, 2007

3. Synthetic Turf Rebate Program

- **Project Purpose:** Provide a rebate for the installation of synthetic turf to promote water conservation in residential and commercial properties, retrofit and new construction.
- **Partnership:**
 - MWD funded regional program in July 2007.
 - Cities and retail water agencies within IEUA's service area
 - Inland Empire Landscape Alliance
 - Chino Basin Watermaster
 - Chino Basin Water Conservation District

- Proposed Rebate: MWD is offering 30 cents per square foot for commercial and residential applications, with no upper limits per application. IEUA conservation partnership has recommended that IEUA provide a matching 30 cents per square foot up to the MWD contribution (ex. Rebate for 1,000 square feet is \$600; cost to install is \$10,000). Participants will be required to remove existing irrigated area and replace it with the synthetic turf (cannot be used to install synthetic turf on un-irrigated property).
- Proposed Budget: IEUA has approved \$50,000 in the FY 07/08 conservation budget for targeted enhanced rebate programs, Funding may be limited to first come, first serve while 07/08 funding is available.
- Program conditions: Consistent with MWD's existing Water Conservation Rebate Program. Synthetic turf purchases that were made after July 12, 2007, will qualify for the rebate.
- Expected timeline:
 - MWD Board approved synthetic turf rebate in July 2007
 - Application form under development by MWD
 - Rebates will be available as soon as form is completed
 - Expected initiation of program is October 2007

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BREAKFAST AT CENTRAL PARK

Best Irrigation Practices for Landscapes: The nuts and bolts of new irrigation technology

The Inland Empire Landscape Alliance is pleased to invite you to a breakfast workshop on Best Irrigation Practices for Landscapes. As we find ourselves in the midst of one of the driest years in California's history, incorporating California Friendly® plants, water efficient irrigation systems, and smart design techniques into large landscapes will result in substantial water savings. This program will present information about efficient irrigation techniques and the new technology available to make large landscapes water smart.

The workshop will include a complimentary continental breakfast, a presentation by **Nick Mrvos, Irvine Ranch Water District's landscape water conservation specialist**, followed by a discussion, and self-guided tour of the city of Rancho Cucamonga which will highlight Water-wise plantings and irrigation installations. We look forward to your participation!

Central Park Community Center
11200 Base Line Road
Rancho Cucamonga, CA
(909)477-8050

Wednesday, September 26, 2007
7:30 am to 9:30 am

Space is limited! Please RSVP by September 24, 2007. If you need additional information, please contact Sondra Elrod at (909) 993-1747 or selrod@ieua.org.



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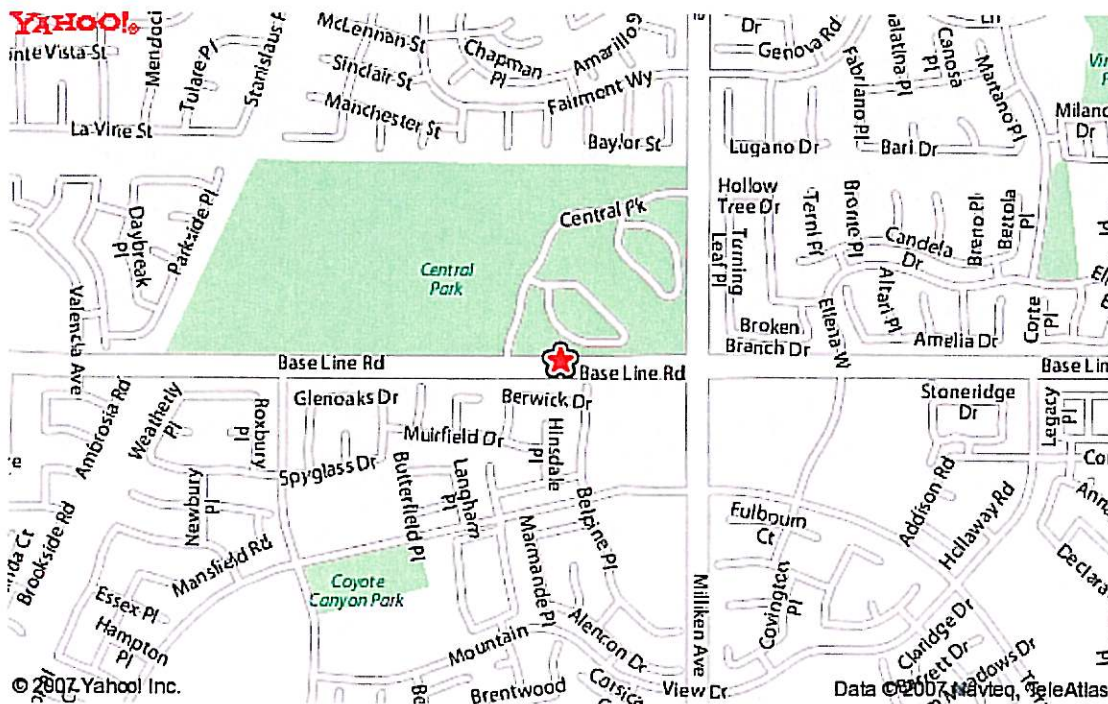
Sponsored by Inland Empire Landscape Alliance

Best Irrigation Practices for Landscapes
Wednesday September 26, 2007
7:30 a.m.-9:30 a.m.

Complimentary Breakfast will be provided

Agenda

- I. Introduction- Brad Buller, Land Matters, Consultant to the Inland Empire Utilities Agency
- II. Presentation- Nick Mrvos of Irvine Ranch Water District
 - Water efficient irrigation systems
 - New irrigation technology
 - Irrigation Retrofits
- III. Discussion- Best Irrigation and Landscape Practices within the Inland Empire region
- IV. Self guided tour of BMPs in Rancho Cucamonga

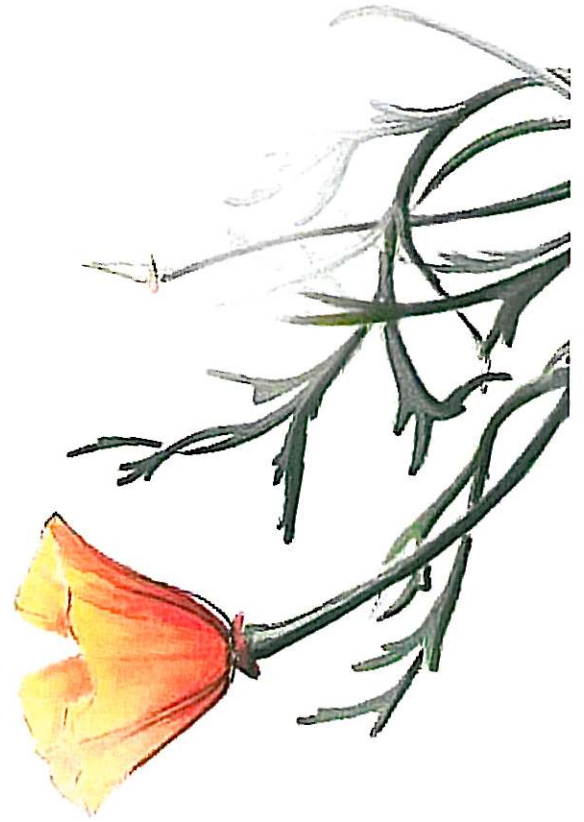


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Inland Empire Landscape Alliance

Inland Empire Utilities Agency

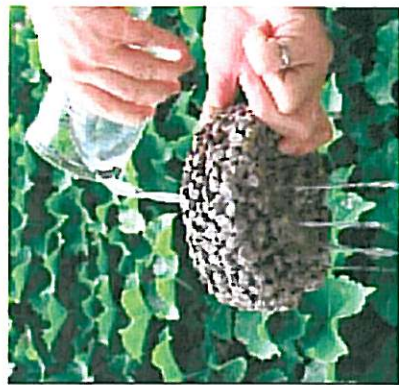
September 13, 2007



Proposed Regional Landscape Programs

- Pervious Concrete Rebate Program-Pilot Incentive Rebate Program
 - Water-Wise Residential Landscape Rebate Program
 - Synthetic Turf Rebate Program
-

Pervious Concrete Pilot Incentive Rebate Program



- Purpose: Promote and test the use of pervious concrete to reduce runoff, improve water quality, and enhance the recharge of Chino Basin

- This competitive grant program was created in partnership with:
 - MWD
 - Southern California Ready Mix Concrete Association
 - Chino Basin Watermaster
 - U.C. Santa Barbara
 - CSUSB, Water Resources Institute/San Bernardino County Low Impact Development Guidance Program

- Rebate: Up to \$2 per square foot, up to 50% of the additional expense of installing pervious concrete or equivalent porous surface

***Program will begin on October 3, 2007 pending IEUA Board Approval**

Water-Wise Residential Landscape Rebate Program

- Purpose: Promote the removal of residential turf and installation of water conserving California-Friendly® landscapes.
- This program was created in partnership with:
 - Cities and retail water agencies within IEUA's service area
 - Inland Empire Landscape Alliance
 - Chino Basin Watermaster
 - Chino Basin Water Conservation District
- Rebate: Up to \$2 per square foot, up to \$2,000 limit



Photograph courtesy of Roger's Gardens

***Program will begin on October 3, 2007 pending IEUA Board Approval**

Synthetic Turf Rebate Program

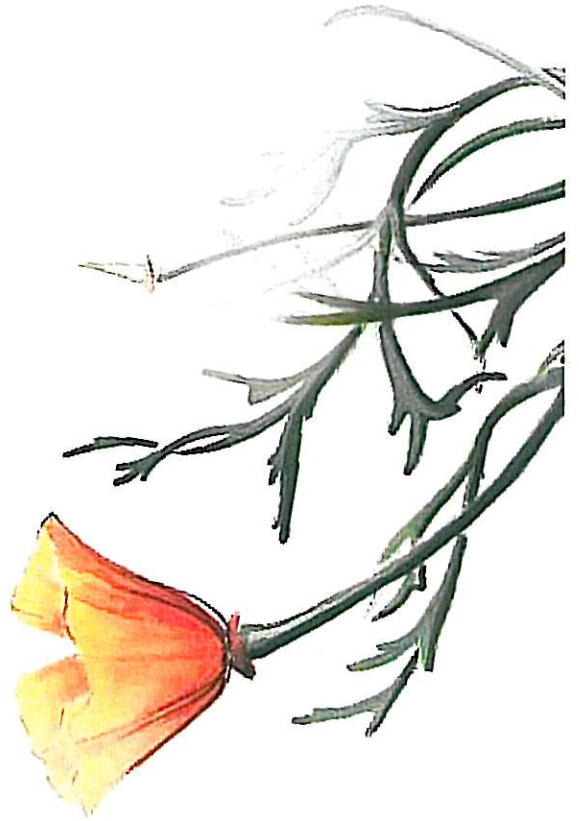
- Purpose: Provide a rebate for the installation of synthetic turf to promote water conservation in residential and commercial properties, retrofit and new construction.
- This program was created in partnership with:
 - MWD funded regional program in July 2007.
 - Cities and retail water agencies within IEUA's service area
 - Inland Empire Landscape Alliance
 - Chino Basin Watermaster
 - Chino Basin Water Conservation District
- Rebate: MWD is offering 30 cents per square foot for commercial and residential applications, with no upper limits per application. IEUA conservation partnership has recommended that IEUA provide a matching 30 cents per square foot up to the MWD contribution



*Program will begin on October 3, 2007 pending IEUA Board Approval

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Landscape Alliance Activities Update



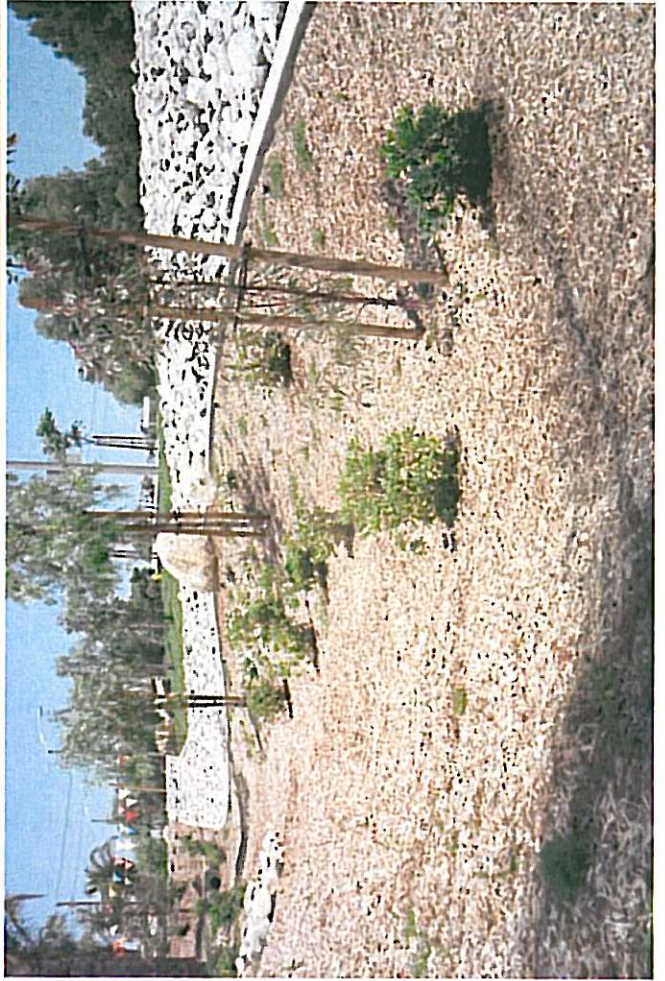
Meetings with City and Agency Staffs

- Conversations with Cities
 - Need for additional information about NPDES requirements, LID, plant pallets, etc
 - More information and the opportunities to do demonstration pervious concrete installations
 - Suggestions for how to implement and plan check/ review
 - Training for staff
-

Best Management Practices (BMPs)

- We have found examples of Water-Wise landscaping incorporated into cityscapes in parkways, medians, paseos and public facilities
- We are developing a photo guide for city and agency reference of these landscapes

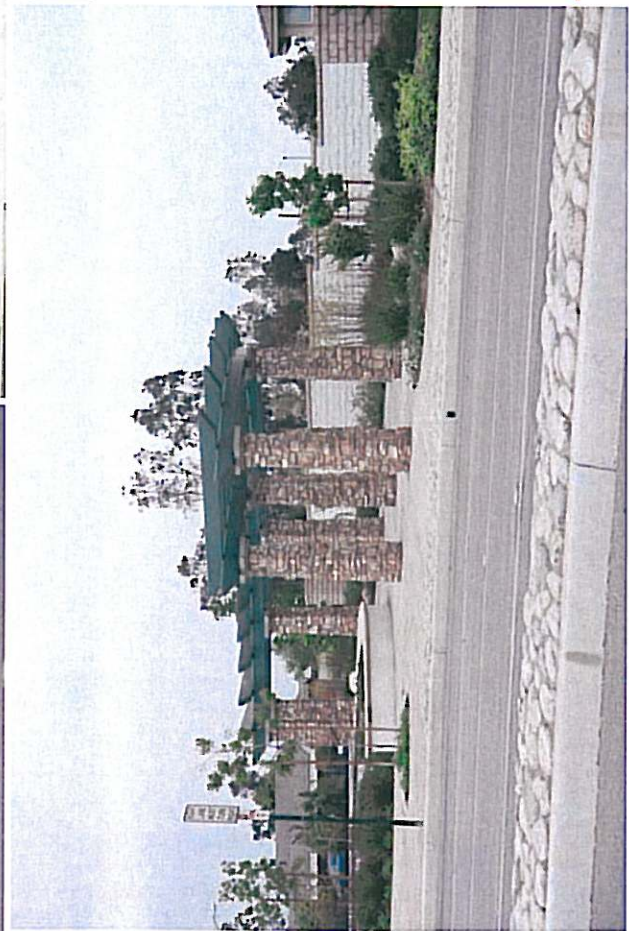
Parkway BMP



Median BMP



Paseo BMP



Public Facility BMP



Artificial Turf

Goals and Objectives

- Purpose: The goals and objectives will guide the development of a regional Green Landscapes Guide for developers, City Council, Planning Commission, and staff to create water efficient landscapes that are environmentally and economically sustainable

- Goals are consistent with:
 - AB 1881, Laird's Water Conservation in Landscaping bill
 - the recommendations developed by the AB2717 Landscape Task Force's Water Smart Landscapes for California report
 - Local Government Commission's Ahwahnee Water Principles: A Blueprint for Regional Sustainability
 - Metropolitan Water District's California Friendly® guidelines
 - NPDES requirements
 - Low Impact Design standards

- We have sent copies of the proposed Goals and Objectives to each city and are receiving their support and incorporating their recommendations into the Green Landscapes Guide

***We would like the Alliance to be prepared to discuss and ratify the Goals and Objectives at the next meeting**

Workshops

- **Past workshops:**
 - An Introduction to California Friendly® Landscapes
 - Water Runoff BMPs
 - IRWD's Landscape and Water conservation Through Tiered Rates
 - Implementing & Enforcing the Riverside County Water Efficient Landscape Ordinance
 - Best Planting Practices: Regional Plant Palettes

- **Future workshops:**
 - New Irrigation Technology
 - General Plan Language for Water Efficient Landscapes
 - Planning Commissioner Tour of the Inland Empire Region
 - An Introduction to Soil and Mulch
 - Water-Wise and California Friendly® Landscapes Part 2
 - Low Impact Design



Join us at our next workshop!



BREAKFAST AT CENTRAL PARK

Best Irrigation Practices for Landscapes:

The nuts and bolts of new irrigation technology

Central Park Community Center

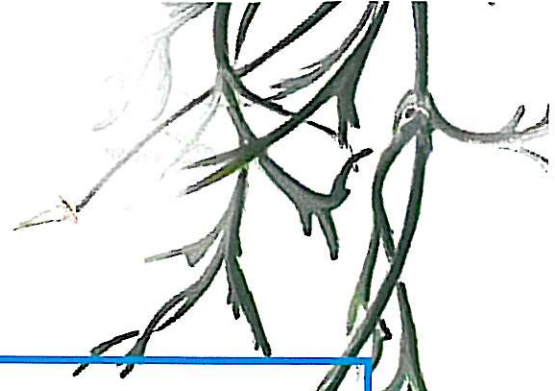
11200 Base Line Road

Rancho Cucamonga, CA

(909)477-8050

Wednesday, September 26, 2007

7:30 am to 9:30 am



Lessons Learned & Insights

- There is a value to each city and agency when we do something together
- Industry is on board & waiting for direction!

Lewis Group of Companies

“Cities need to tell us what they want us to do and how they want us to build”

- Randal Lewis, Executive Vice President, Lewis Corporation



Building Industry Association of Southern California

“Low Impact Design is the way of the future”

- Mark Grey, Director of Environmental Affairs, Building Industry Association of Southern California

Next Steps

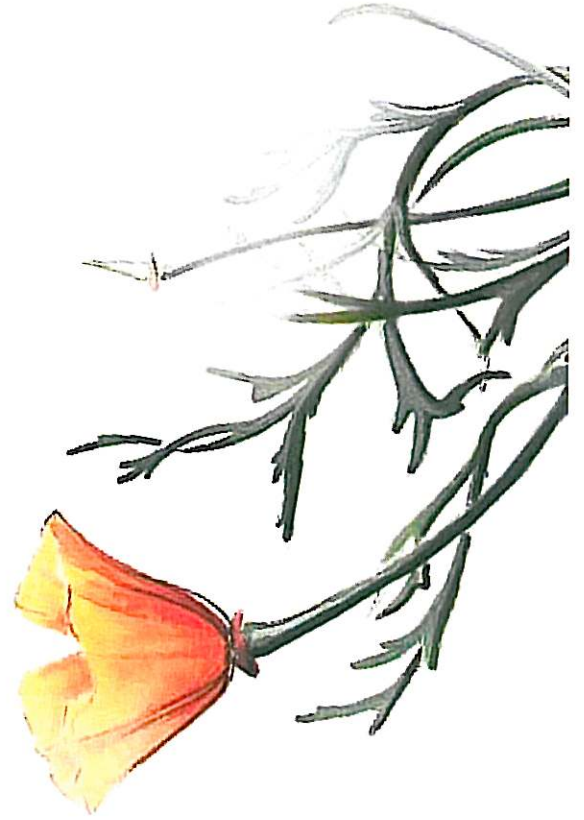
- Continue meeting with city and agency staff for input for the development of the Green Landscape Guide
 - Ratify goals and objectives at October Landscape Alliance Meeting
 - Continue informational workshops for city staffs
 - expand workshop series to address residential customers
-

Next Meeting

Thursday October 11, 2007

4:00-5:00PM

IEUA Board Room



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Regional Conservation Programs

Monthly Report – August 2007

MWD Activities

- **Media Campaign & Public Outreach** - MWD's media campaign kicked off in July with traffic radio announcements. During the month of August, the campaign will expand to 30 and 60-second radio spots, online news and print ads. Outreach materials have been developed and approved for use throughout the region. MWD will post all brochures and materials online for member agency access and ordering in September. The media campaign schedule will run from July-December, 2007.
- **Public Sector Water Conservation Partnership Demonstration Program** - A Board Letter was submitted to the MWD Board on August 21, 2007 requesting that \$15 million be allocated for the Accelerated Public Sector Water Efficiency Partnership Demonstration Program. Public agencies who use large amounts of water are excellent candidates for water efficiency improvements; however, due to budgetary constraints, are unable to implement those upgrades. Public agencies also serve as examples within their communities while having a significant impact on the public's attitude and willingness to conserve. MWD will work with member agencies to identify those agencies that have the highest potential for reductions in water demand through the implementation of recommended water efficiency improvements. This program will offer conservation audits to identify water efficiency improvements, pay for enhanced device incentives—paid up front—to purchase proven water-saving retrofit technologies, Pay-for-Performance water use reduction incentives and will also include hook-up of recycled water for use by public agencies, including schools.
- **Water/Energy Partnership Update** - The Water/Energy Program is a partnership between Southern California Edison (SCE), MWD and its member agencies. This program has been designed to provide high efficiency toilets through a direct installation program for low-income, multi-family complexes. Upon completion of toilet retrofits, this program will evaluate cold water (gas savings) and energy savings, which will be co-funded by MWD and SCE. Once sites have been identified, the program is tentatively scheduled to begin in January, 2008.
- **Region-wide Residential Program** - A Request for Proposal was distributed by MWD staff in July and vendor selection is expected to be completed in September, 2007. The regional program is tentatively scheduled to begin in January, 2008.
- **New MWD Commercial, Industrial and Institutional (CII) Rebates** - On July 10, 2007, the MWD Board of Directors approved all CII devices that were recommended through the PAC group, which includes funding for high efficiency/multi-load clothes washers, high efficiency urinals, synthetic turf for commercial, industrial, institutional and residential programs, dry vacuum pumps and high efficiency rotator nozzles for large landscapes, such as golf courses.
- **California-Friendly[®] Marketing Campaign** - The California Friendly[®] labeling campaign has been placed on hold until next year.

Landscape Programs

- **Landscape Audit Program** - HydroEarth has completed all 150 Commercial field audits to date and the reports are under review by IEUA. HydroEarth has completed 15 residential field audits. The program consists of 150 commercial audits and 50 large landscape residential audits to be completed by September, 2007.
- **Ontario Cares** - The City of Ontario has undertaken a pilot project in cooperation with IEUA, MWD and the United States Bureau of Reclamation to integrate California-Friendly[®] landscapes into the city's existing Ontario Cares program that provides home improvements for homeowners residing in low-income neighborhoods. The first California-Friendly[®] landscape site retrofit was completed on August 16, 2007. A post-site property inspection is scheduled to be done at the end of the month for program and California-Friendly[®] compliance.
- **Landscape Retrofit Rebate and Education Program** - The RFP for Consulting Services for an experienced Water Use Efficiency Consultant to develop the Landscape Retrofit Rebate and Education Program closed July 16, 2007. Two proposals were received by IEUA: Water Wise Consulting, Inc. submitted a bid for approximately \$50,000; Intergy Corporation submitted a bid for \$243,000. The proposals are currently under review by the Ad-Hoc Committee.

- **Inland Empire Landscape Alliance** - During the summer months, workshops have been held on a variety of topics, including an introduction to California-Friendly® landscapes, incorporation of NPDES requirements into landscape design, tiered rate structures, and on Western Municipal Water District's experiences working with and enforcing the Riverside County landscaping ordinance, and incorporating native or California-Friendly® plants into plant palettes. Upcoming topics will include new irrigation technology, soil and mulch maintenance, and additional California-Friendly® landscape class, and requirements for a regional landscape ordinance. The next formal meeting for the Landscape Alliance will be held at IEUA on September 13, 2007 at 3:30 p.m.
- **California-Friendly® Landscape Classes (formerly PDA)** - Requested classes have been scheduled through December 31, 2007. All current teacher contracts will expire on December 31, 2007. For those agencies requesting classes for January-June, 2008, the scheduling for them are on hold until MWD completes their RFP submittal reviews, makes the new teacher selections and executes the new contracts. This is expected to be completed in the fall. Once the new contracts have been executed, requested class schedules will be confirmed for January-June, 2008.

Commercial/Industrial/Institutional Program

- **(CII SAVE-A-BUCK)** - For fiscal year 07/08, there have been no rebates issued to date. From program inception (FY 00/01) to date, a total of 13,828 devices have been rebated, representing a lifetime savings of 6,497.88 AF. The following is a list of the most recent rebate activity within the IEUA service area and provided through MWD's Save-A-Buck Program, only:
 - **High Efficiency Clothes Washers** - During the month of July 2007, there were no rebates issued. To date, 409 commercial high efficiency clothes washer rebates have been issued within IEUA's service area since FY 00/01.
 - **Cooling Tower Conductivity Controller** - During the month of July 2007, there were no rebates issued. To date, 19 cooling tower conductivity controller rebates have been issued within IEUA's service area since FY 00/01.
 - **Ultra-Low-Flush Toilets** - During the month of July 2007, there were no rebates issued. To date, 1,884 ULFT rebates have been issued within IEUA's service area since FY 00/01.
 - **ULFT Flushometers** - During the month of July 2007, there were no rebates issued. To date, 4 ULFT flushometer rebates have been issued within IEUA's service area since FY 00/01.
 - **High Efficiency Toilets** - During the month of July 2007, there were no rebates issued. To date, 67 high efficiency toilet (HET) rebates have been issued within IEUA's service area since FY 00/01.
 - **Zero Water Urinals** - During the month of July 2007, there were no rebates issued. To date, 101 waterless urinal rebates have been issued within IEUA's service area since FY 00/01.
 - **Low – Flow Urinals** - During the month of July 2007, there were no rebates issued. To date, 8 low-flow urinal rebates have been issued within IEUA's service area since FY 00/01.
 - **Water Broom** - During the month of July 2007, there were no rebates issued. To date, 695 water broom rebates have been issued within IEUA's service area since FY 00/01.
 - **Weather-Based Irrigation Controllers** - During the month of July 2007, there were no rebates issued. To date, 0 WBIC rebates have been issued within IEUA's service area since FY 00/01.
 - **X-Ray Recirculation Units** - During the month of July 2007, there were no rebates issued. To date, 11 x-ray recirculation unit rebates have been issued within IEUA's service area since FY 00/01.
 - **Pre-Rinse Spray Head-(PRSH)** - During the month of July 2007, there were no rebates issued. To date, 2 pre-rinse spray head rebates have been issued in IEUA's service area since FY 00/01.

Residential Rebate Programs

- **ULFT and HET Rebate Program** –Implemented February 1, 2007, IEUA began processing the ULFT and HET rebates. In the month of July, there were no ULFT rebates processed for FY 07/08. 267 rebates were processed during FY 06/07. Since the program was executed in 2002, a total of 4,523 rebates have been processed by IEUA.
- **Correction: It was reported in the July Conservation Report that there was 57 ULFT and HET rebated in the month of June. In actuality, it was a total of 89 ULFT and HET rebated.**
- **High Efficiency Clothes Washer Rebate** - Starting FY 07/08, 37 washer rebates were processed in July. For FY 06/07, 1,329 washer rebates were processed by IEUA. A total of 7,790 rebates have been distributed since the program was put into practice in 2002.
- **“SmarTimer of Inland Empire” Program** - One (1) SmarTimer Irrigation Controller rebate was processed in July. To date, 28 SmarTimer Irrigation Controller rebates have been processed, with a total of 254 controllers placed since October, 2006. The program began in April, 2006.

- **Rotating Nozzles for Pop-up Spray Heads** - The new rebate program for rotating nozzles commenced late January, 2007. The incentive is \$4 per rotating nozzle to be replaced. The rotating nozzles save up to 6,600 gallons of water over five years. To date, 158 Rotating Nozzles have been placed. There were no rotating nozzles replaced in July.

Other Residential Programs

- **Multi-Family ULFT Program** - The Multi-Family Direct Installation Program began ULFT retrofits in October, 2006. To date, there have been 10,454 ULFTs retrofitted within IEUA's service area. During the month of July, there were 322 retrofits completed.

School Education Programs

- **Garden in Every School** - Schools that applied but were not previously selected are being contacted to see if they are interested in participating in the 07/08 program. Contact is also being renewed with past participants to help maintain the gardens and with the plan of creating a support network between all of the GIES schools. The 07/08 workshop will be held on Saturday, September 22 from 8:30 a.m. to 12:00 p.m. at Liberty Elementary in Ontario.
- **National Theatre for Children** - The schedule for 07/08 school year is currently being developed.
- **Chino Youth Museum** - Over the past year the Chino Youth Museum along with the City of Chino, MVWD, Chino Basin Water Conservation District and IEUA have been meeting to rejuvenate and improve the water exhibit that was constructed in 2002. The planning committee has received drawings from the consultant for the design of the new exhibit. Construction of the exhibit will begin in Fall, 2007.

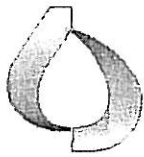
Outreach

- **Water Fair** - The planning committee for the Water Fair 2007 is meeting monthly. Water Fair 2007 will be held Saturday, October 20, 2007, from 10:00 a.m. to 2:00 p.m., at Montclair Plaza, inside lower level Main entrance. The event will promote water conservation and educate customers on the various rebates and programs that exist in their area. There will be a water show and activities for kids.
- **Water Education Water Awareness Committee (WEWAC)** - WEWAC is finalizing its garden site at the L.A. County Fairgrounds. The garden will incorporate a "backyard friendly" design, low-water use plants and drip irrigation for fairgoers to view.

CALENDAR

August 29, 2007	Landscape Alliance Workshop, IEUA – 7:30-8:30 a.m.
August 29, 2007	S.B. County LID Workshop, IEUA – 9:30 a.m.-3:30 p.m.
September 11, 2007	Regional Conservation Partnership Meeting – 9:00-11:00 a.m.
September 12, 2007	CUWCC Meeting, San Diego – All Day
September 13, 2007	Landscape Alliance Meeting, IEUA – 3:30-4:30 p.m.
September 22, 2007	Garden-in-Every School Kick-off Workshop, Liberty Elem. – All Day
September 26, 2007	Landscape Alliance Workshop, IEUA – 7:30-9:30 a.m.
October 9, 2007	CUWCC Drought Management Workshop, Santa Ana – 9:30-3:00 p.m.
October 12, 2007	Water Conservation Summit, UC San Diego – 8:00 a.m.-3:00 p.m.
October 20, 2007	Regional Water Fair, Montclair Plaza – All Day
October 30, 2007	Landscape Alliance Workshop, IEUA – 7:30-9:30 a.m.

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Inland Empire
UTILITIES AGENCY

Date: September 19, 2007

To: The Honorable Board of Directors

Through: Public, Legislative Affairs, and Water Resources Committee (09/12/07)

From: Richard W. Atwater *RWA*
Chief Executive Officer/General Manager

Submitted by: Martha Davis *MD*
Executive Manager of Policy Development

Subject: August Legislative Report from Innovative Federal Strategies, LLC

RECOMMENDATION

This is an informational item for the Board of Directors to receive and file.

BACKGROUND

Letitia White provides a monthly report on their federal activities on behalf of IEUA.

PRIOR BOARD ACTION

None.

IMPACT ON BUDGET

None.

RWA:MD:mef

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Innovative Federal Strategies LLC

Comprehensive Government Relations

MEMORANDUM

To: Rich Atwater and Martha Davis, IEUA
From: Letitia White, Susan Carr and Alex Shockey
Date: August 29, 2007
Re: August Monthly Legislative Update

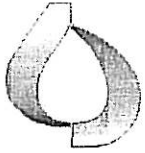
As you know, the House of Representatives started August recess behind schedule this year, after working until late into the night on Saturday, August 4th to pass the last of the annual appropriations bills. The remainder of August in Washington, D.C. has been very quiet, with Congress out of session and legislators back in their home districts meeting with constituents. Many staff have also taken the opportunity of August recess to go on vacation or go to the Member's home district to work. As a result, Washington is a bit of a ghost town!

The August political buzz has revolved mainly around the 2008 Presidential election. With many new, early primaries, the election seems like it is right around the corner! In addition to this buzz, several Members of Congress have announced that they will not run for re-election. These include Dennis Hastert (R) of Illinois (former Speaker of the House), Deborah Pryce (R) of Ohio, Chip Pickering (R) of Mississippi, and Ray LaHood (R) of Illinois.

The California delegation has a newly elected Member to replace Congresswoman Juanita Millender-MacDonald who died in April. On Tuesday, August 21, 2007, California State Assemblywoman Laura Richardson (D) took 67 percent of the vote in a special election in California's 37th Congressional District, which includes Carson, Compton, and portions of Long Beach.

The House and Senate will return on September 4th. The Senate plans to tackle some of the appropriations bills immediately upon its return which will allow House-Senate conferences to move forward. Homeland Security Appropriations will be the first House-Senate conference as it is the only bill that the Senate has passed. The issue of appropriations is important because the current fiscal year ends on September 30th. We will continue to keep you informed on all activities here in Washington.

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Inland Empire
UTILITIES AGENCY

Date: September 19, 2007

To: The Honorable Board of Directors

Through: Public, Legislative Affairs, and Water Resources Committee (09/12/07)

From: Richard W. Atwater *RWA*
Chief Executive Officer/General Manager

Submitted by: Martha Davis *MD*
Executive Manager of Policy Development

Subject: August Legislative Report from Geyer and Associates

RECOMMENDATION

This is an informational item for the Board of Directors to receive and file.

BACKGROUND

Bill Geyer and Jennifer West provide a monthly report on their state activities on behalf of IEUA.

PRIOR BOARD ACTION

None.

IMPACT ON BUDGET

None.

RWA:MD:mef

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MEMORANDUM

TO: Richard Atwater and Martha Davis

FROM: Jennifer West
Geyer Associates

DATE: August 30, 2007

RE: Legislative Report August

Water Bond 2008?

The Governor and the Department of Water Resources (DWR) are continuing their push for a 2008 water bond. Even though there are only two weeks left in the legislative session, the Governor's office and DWR say a deal can be reached before the legislature goes on fall break. To demonstrate his commitment to the passage of a water bond, the Governor said this week that if a deal fails to come together he might call a special fall session for this purpose. The Governor's water bond proposal is as follows:

\$5.95 billion Total Bond

- **Surface and groundwater storage -- \$4.5 billion**

For the development of new surface storage reservoirs along the Sacramento River and on the San Joaquin River. According to the Administration, Sites and Temperance Flat Reservoir could yield up to 500,000 acre-feet per year. Some unspecified amount of the \$4.5 would be used for groundwater storage projects.

- **Delta Conveyance --\$1 billion**

To build a canal or some form of channel conveyance around the Delta for the enhancement of water delivery throughout the state. This funding is intended to be augmented by water user investments.

- **River Restoration --\$250 million**

To support restoration on the Klamath River, Salton Sea, San Joaquin and projects on the Sacramento River and its tributaries.

- **Water Conservation --\$200 million**

For "targeted water conservation grants" to local communities that can augment existing IRWMPs.

The Governor's office and DWR say they are open to some changes in their proposal. Last month Senator Perata released an outline of a 2008 water bond that included \$1 billion for conveyance, \$1 billion of Delta restoration and \$2 billion for IRWM. No language has yet been released. IEUA with WateReuse has asked Senator Perata and DWR to include separate funding for water recycling in their respective bond proposals.

Hot Bills

AB 1489 (Huffman) IRWMP

This measure would place into statute many provisions of the Proposition 50 guidelines. The environmental justice and environmental community are also circulating amendments that would give them a greater statutory role in the development and implementation of IRWM plans. While these organizations are no longer seeking direct representation on IRWM governance bodies, they want a much earlier and greater role in the development of the plans. AB 1489 also includes codified intent language that implies all groundwater basins are being mismanaged and includes a study of different groundwater management plans. Many groups have recommended that the groundwater language be removed, however, this provision still remains in the bill. IEUA has been participating in the ACWA and author working group on the bill. Additional changes are expected this week.

SB 1002 (Perata) Proposition 84 Delta

SB 1002 is expected to contain funding for immediate actions that can improve Delta health. Senate and Assembly leadership are negotiating a new bill, which should be released next week. This bill reportedly included funding for climate change actions for DWR that might help in the implementation of AB 224 (Wolk).

**Inland Empire Utilities Agency
Legislative Tracking 8/31/07**
(Prepared by Geyer Associates)

Bond Funding/Prop. 84 and 1E	Bill Summary	Status
SB 59 (Cogdill) Water Bond 08	<p>Authorizes a \$3.9 billion water bond for the 2008 ballot. Includes \$2 billion for two surface storage facilities.</p> <p>The Governor has vowed to reopen this issue as part of the budget, or end of session negotiations.</p>	<p>Senate Nat. Resources</p> <p>Two year bill</p>
SB 167 (Negrete McLeod) General Plans: planning grants	<p>Establishes grant and loan program at the Office of Planning and Research for Prop. 84 (Chapter 9(c) \$90 million). Allows cities and counties to apply for funding to update their general plans.</p>	<p>Senate Approp.</p> <p>Two year bill</p>
SB 292 (Wiggins) State Bond Funds: allocation	<p>Requires Cal-EPA and the Resource Agency to develop grant criteria for the urban greening funding in Prop. 84, which contains \$90 million.</p>	<p>Senate Approp.</p> <p>Two year bill</p>
SB 378 (Steinberg) Flood Prevention Bond Act 2006	<p>Specifies that the \$300 million in Prop. 1E for stormwater management would be made available through a joint SWRCB and DWR grant program. The bill authorizes the agencies to prepare guidelines by March 2008. The agencies are required to conduct outreach to disadvantaged communities. There are no north/south split provisions mentioned in the bill.</p>	<p>Assembly WPW</p> <p>Two year bill</p>
SB 732 (Steinberg) Prop. 84	<p>Amendments were taken in the last policy committee to delete the references to the IRWMP "statewide criteria." Now the bill deals with implementing the sustainable communities section of Prop. 84.</p>	<p>Assembly Floor (as amended)</p>
SB 1002 (Perata) Prop. 84	<p>Senate Leadership bill that is being developed to address issues in the Delta. A complete rewrite is expected in the next week.</p>	<p>Assembly Floor (as amended)</p>

AB 739 (Laird) Stormwater Discharge	Establishes criteria by which SWRCB and DWR award grants for stormwater management projects funded by a portion of the proceeds of Prop 1E flood bonds and Prop 84.	Senate Floor
AB 783 (Arambula) Drinking Water Improvements	Makes changes to DHS grant funding in Prop. 84 for small and disadvantages communities. (Chapter 2, Section 7022)	Senate Floor
AB 909 (Wolk) Mercury Monitoring	Allows stormwater grant funds in Prop. 84 to be used for grants to public agencies for addressing mercury contamination.	Two year bill
AB 1297 (Arambula) IRWMP	IRWMP implementation bill.	Two year bill
AB 1303 (Smyth) Urban Greening Act 2007	Establishes an urban greening grant program for Prop. 84 funds. (Chapter 9, (a)).	Assembly Approp. Two year bill
AB 1489 (Huffman & Wolk) Resource Bond Funds	Primary IRWMP implementation bill. Proposed amendments would codify the Prop. 50 guidelines for the IRWMP and delete the references to the 2000 Costa bill. Environmental justice and environmental community are seeking amendments that would allow them to have voting membership on an IRWMP governance board. This amendment is permissive. IEUA and SAWPA have been participating in negotiations with the author and the sponsors.	Senate Approps. (held in Approps. May be reintroduced on the floor)
AB 1602 (Nunez) Sustainable Communities & Urban Greening	Establishes a grant program in the Resources Agency "Sustainable Communities and Urban Greening Grant Program." There is \$90 million in Prop. 84 for this purpose.	Senate Floor
Flood Control/Delta Conveyance		
SB 5 (Machado) Flood Management	Establishes the roles and responsibilities for the state of California, local governments and landowners in flood management. Double joined to AB 5 (Wolk).	Assembly Rules

SB 17 (Florez) Reclamation Board and Powers	Gives the "Central Valley Flood Protection Board" new authority over flood control activities in the Central Valley. The bill is backed by Senate leadership.	Assembly Floor
SB 34 (Torlakson) Delta User Fee	Requires the strategic financing plan for the Delta include recommendations in accordance with a "beneficiaries pay" principle, as to persons and entities on which a fee would be imposed, and proposed fee categories in order to create a dedicated revenue stream to pay for maintenance and improvements to delta levees, project levees, and the levee conveyance system.	Assembly Floor
AB 5 (Wolk) Flood Protection	Gives priority for state funds to be given to local agencies that have adopted a local plan of flood protection. Prohibits local governments in the Central Valley from approving new development within high-risk flood prone areas, unless adequate flood protection is assured. AB 5 is now double joined to SB 5 (Machado), which was sent back to Assembly Rules Committee. If SB 5 fails passage, so will AB 5.	Senate Floor
AB 1507 (Emmerson) Floodplain Management	Requires DWR to establish an Alluvial Fan Task Force.	Assembly Approp. Two year bill
Urban Water Management Plans/Conservation/Recycling		
SB 862 (Kuehl/ Steinberg) UWMP	Requires the UWMP to assess energy consumption and Bulletin 160. Contains all of the provisions of SB 1640 (Kuehl), 2006, except for the groundwater provisions. SB 1640 was vetoed last year because of the groundwater reporting language.	Assembly Rules (rereferred back to Assembly Rules)
AB 1435 (Salas) Water Charges	Requires a local water purveyor that supplies water to retail customers to institute a conservation rate structure based on the amount of water used for other than agricultural purposes for each customers that has a service connection for which a water meter has been installed.	Senate Natural Resources Two year bill
Groundwater		

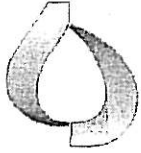
SB 178 (Steinberg and Kuehl) Groundwater	<p>Established a statewide groundwater elevation monitoring program. Under the provisions of the program, DWR would be required to receive and evaluate qualifications of those seeking to conduct the required monitoring. If there is no entity willing to do the monitoring, DWR would be required to step in.</p> <p>Recently amendments were taken that removed the opposition from agricultural interests.</p>	Assembly Floor
Water Quality/Water Supply		
AB 559 (Ruskin) Public Water Systems	Asks the University of California (UC) to direct the UC Center for Water Resources to study the potential adverse affects on human health of compounds used to disinfect drinking water and byproducts resulting from disinfection, with emphasis on chloramine use by the San Francisco Public Utilities Commission, and to report the center's findings to the Legislature by July 1, 2009.	Assembly Approps. Two year bill
AB 690 (Jones) Water Corp. Rates/Contamination	States that if a private water corporation receives monetary compensation for damage resulting from contamination of the utility's water supply, the PUC shall require the utility to equitably allocate the compensation between the ratepayers and investors of the utility.	Senate Approps.
AB 1127 (Carter) Perchlorate	Would authorize DSH to contract with SAWPA for the purposes of assessing and treating drinking water for perchlorate contamination in and around the City of Rialto.	Assembly E.S. & T.M. Two year bill
Compost		
SB 697 (Wiggins) Compost	Would require compost be used by the Department of Transportation and all persons contracting with the Department.	Assembly Floor
Green Buildings/Climate Change		
AB 35 (Ruskin) State Green Buildings	Requires the California Integrated Waste Management Board by 2009 to adopt regulations for sustainable building standards for the construction or renovation of state buildings. Similar language is contained in a budget trailer	Senate Approps. Held on suspense

	bill.	
Positions/Recommended Positions		
SB 55 (Florez) Biosolids	<p>Broadly defines "biosolids" to include any product with human waste, which would include some compost. Requires POTWs to certify to the regional boards that biosolids meet "the requirements and standards for any pollutant listed in the waste discharge requirement for the POTW, including, but not limited to, any requirements of standards governing the 126 priority toxic pollutants listed in 40 CFR 131.38." This list is designed for surface water issues and includes many compounds not found in biosolids.</p> <p>The bill was held in the Senate Appropriations Committee.</p>	<p>Oppose</p> <p>Senate Approps.</p> <p>Two year bill</p>
SB 201 (Florez) Recycled Water Leafy Green	<p>We asked that a section of the bill be deleted that requires extra field testing for recycled water.</p> <p>The Assembly Agriculture Committee did not like the approach of the bill and it was held in committee with no discussion of the recycled water issue.</p>	<p>Oppose unless amended</p> <p>Assembly Ag.</p> <p>Two year bill</p>
SB 220 (Corbett) Bottled Water	<p>Establishes a system for the regulation and inspection of water vending machines and imposes additional labeling requirements on water bottlers and vendors.</p>	<p>Support</p> <p>Assembly Floor</p>
SB 1029 (Ducheny) Drinking water regulations	<p>Places a time limit on the Department of Finance of 60 days to review drinking water regulations that are already adopted on the federal level. ACWA is the sponsor.</p>	<p>Support</p> <p>Assembly Floor</p>
AB 224 (Wolk) Climate Change/Water Supply Planning	<p>Requires DWR to assess the possible affects of climate change on water supply. Requires that this information be incorporated into state and local water planning documents. States that if DWR does not provide the information the requirement</p>	<p>Sponsor</p> <p>Senate Approps. (Held on</p>

	<p>does not apply. Requires SWRCB to conduct a study on the energy savings and GHG reductions associated with increased use of recycled water and water conservation.</p> <p>The bill was held on suspense apparently for political reasons because of issues between the Senate and Assembly. We are exploring options on the best way to proceed with the bill this year.</p>	suspense)
<p>AB 503 (Swanson) Overtime Notice/public agencies</p>	<p>Would have prohibited an agency from requiring any employee entitled to receive overtime compensation pursuant to any federal statute or regulation to perform services outside the employee's normal work schedule unless a minimum of 8 hours' written notice of that work assignment has been provided to the employee.</p> <p>Recently amended to a study only, looking at issues related to requiring state and local agencies to provide eight-hours' prior written notice when requiring an employee to work overtime.</p>	<p>Oppose to Neutral</p> <p>Senate Floor</p>
<p>AB 662 (Ruskin) Water use efficiency</p>	<p>Requires the California Energy Commission (CEC) to prescribe cost effective measures to promote the use of water efficient appliances.</p>	<p>Support</p> <p>Senate Floor</p>
<p>AB 566 (Plescia) Landscape Water Conservation</p>	<p>Requires the model landscape ordinance to include climate information for irrigation scheduling based on the California Irrigation Management Information System. IRWD sponsor.</p>	<p>Support</p> <p>Senate Approps (held in committee)</p>
<p>AB 715 (Laird) Low-flush Water Closets</p>	<p>Phases in requirements that water closets and water-using urinals have lower flush volumes, requiring manufacturers to produce an increasing percentage of high-efficiency models until 2014 when all new water closets and urinals would have to meet the high-efficiency definition. Allows cities and counties to enact ordinances that would exempt them from this requirement if it was determined that an older system would result in more water being used.</p>	<p>Support</p> <p>Senate Floor</p>

<p>AB 885 (Calderon) MWD Board Composition</p>	<p>Restructures the MWD Board of Directors so that no one agency would lose representation, only gain representation. Also requires that MWD study the manner in which members of the Board are designated and selected and the criteria that it uses for determining the number of directors allocated to each member public agency. Central Basin is the sponsor. The bill was held in Senate Local Government. MWD intends to form an internal workgroup to discuss Board representation issues.</p>	<p>Oppose Senate Local Two Year Bill</p>
<p>AB 888 (Lieu & Laird) Green Building Standards</p>	<p>Requires CalEPA to develop and adopt building standards for commercial construction that meet or exceed the Leadership in Energy and Environmental Design (LEED) Gold Standard. Requires that by 2012 all new commercial buildings, 50,000 square feet or larger, meet these new standards. Small newly constructed buildings can waive this requirement for economic purposes.</p>	<p>Support Senate Floor</p>
<p>AB 1260 (Caballero) Taxes and Fees</p>	<p>Clarifies how a public agency may provide notice when proposing a new, or increasing an existing, property-related fee or charge, and establishes a 120-day statute of limitations for any challenges to any property-related fee or charge. This bill is sponsored by ACWA and was introduced in response to the <u>Big Horn</u> decision last fall.</p>	<p>Support Senate Floor</p>
<p>AB 1404 (Laird) Water use Reporting</p>	<p>Establishes comprehensive system for reporting water use. Specifically, it requires DWR, the SWRCB and DPH to develop a coordinated water use reporting database.</p>	<p>Support Senate Floor</p>
<p>AB 1406 (Huffman) Recycled Water in Condos</p>	<p>Allows the use of recycled water in toilets and urinals in condominiums. Sponsored by IRWD. Recently opposed by DPH and Department of Finance because of concern over cross-connections.</p>	<p>Support Senate Floor</p>
<p>AB 1420 (Laird) UWMP Conservation</p>	<p>As recently amended, would require DWR to use a urban water agency's compliance with the demand management measures in the UWMP as the eligibility criteria for grants and loans. It allows for an agency to not be implementing all the demand measures and still be eligible for grants if it submits documentation demonstrating that those measures</p>	<p>Support Senate Floor</p>

	<p>it is not implementing are not locally cost effective. Allows DWR to consider the BMPs when developing the guidelines and leaves to the department's discretion what conservation measures known and unknown it will require. Provide for a technical panel that will provide advice to the Legislature for potential amendments to the 14 demand measures in the UWMP.</p>	
<p>AB 1481 (De LaTorre) Water Recycling General Permit</p>	<p>Sponsored by LADWP. Requires that SWRCB prepare a general permit by 2010 for water recycling for landscape irrigation.</p>	<p>Support Senate Floor</p>
<p>AB 1560 (Huffman) Building Standards</p>	<p>Requires the CEC to prescribe by regulation, water conservation design standards for new residential construction and new nonresidential buildings.</p>	<p>Support Senate Floor</p>



Inland Empire
UTILITIES AGENCY

Date: September 19, 2007

To: The Honorable Board of Directors

Through: Public, Legislative Affairs, and Water Resources Committee (09/12/07)

From: Richard W. Atwater *RWA*
Chief Executive Officer/General Manager

Submitted by: Martha Davis *MD*
Executive Manager of Policy Development

Subject: August Legislative Report from Dolphin Group

RECOMMENDATION

This is an informational item for the Board of Directors to receive and file.

BACKGROUND

Michael Boccadoro provides a monthly report on his activities on behalf of the Chino Basin/Optimum Basin Management Program Coalition.

PRIOR BOARD ACTION

None.

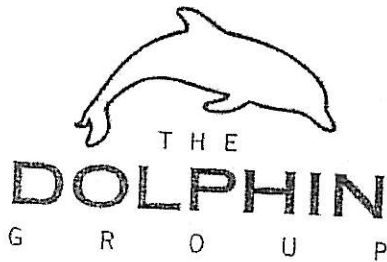
IMPACT ON BUDGET

None.

RWA:MD:mef

Enclosure

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August 30, 2007

To: Chino Basin/OBMP Coalition

From: Michael Boccadoro
Senior Vice President

RE: August Status Report

Please find attached the status report from The Dolphin Group for the month of August 2007.

The state's budget, once predicted by most to be a relatively easy process this year, stretched well into late August, marking the second longest budget stalemate in California's history. After holding out for nearly two months, the Senate Republicans finally offered the bare minimum of necessary votes to approve a budget on August 21st.

On the regulatory front, the California Air Resources Board focused on determining the current and historical levels of Greenhouse Gas (GHG) inventories for the purposes of adopting regulations in the coming years, while the CPUC is ruling on the tariffs to implement AB 1969 (Yee) and require the utilities to purchase renewable power from public water and wastewater agencies.

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Chino Basin / OBMP Coalition

Status Report – August 2007

ENERGY/REGULATORY

AB 1969 Implementation

The California Public Utilities Commission continues the process of implementing AB 1969. This measure, sponsored by IEUA and signed into law by Governor Schwarzenegger last year, requires utilities to purchase energy produced by public water and wastewater agencies at the market price referent (MPR). The Commission also took the additional step of expanding the concept to a “sister program” that similarly requires the utilities to purchase renewable energy from non-public agencies.

Following CPUC approval of the program last month, on August 2nd Southern California Edison submitted an advice letter that included the tariff and standard contract that will be offered to customers who elect to participate in the program. Some customer groups raised concerns that Edison’s language might imply that they were seeking too many green attributes, namely GHG credits, in order to ensure that the electricity would be considered “renewable”. On August 29th, Edison replied to these protests clearly stating they will only be seeking green attributes specific to the actual electricity generation, not to other operations that may have GHG benefits (ie, methane capture).

Because protests were filed, the CPUC Energy Division will write a resolution to resolve the dispute, which must be approved by the Commission. This process will likely take 1-2 months before the tariffs are fully effective.

On August 24th, Southern California Edison also submitted a petition for rehearing of the decision made last month by the Commission. That decision allows customers to either export all energy produced, or first off-set onsite energy before exporting the remainder of the energy produced. SCE believes that AB 1969 clearly states that the program should only permit “export only” agreements, and in this filing has asked the Commission to reconsider their decision.

Greenhouse Gas Inventory

On August 13th, the California Air Resources Board (CARB) released its revised inventory of GHG emissions, by sector, for the years 1990 through 2005. This inventory, when adopted, will serve to guide the Board in adopting regulations aimed at reducing 2005 emissions levels to 1990 levels statewide. The Board will consider and adopt a final inventory in December, 2007.

Manure Management Workshop – ARB

On September 5, the CARB will hold a workshop on manure management activities as they relate to impending greenhouse gas regulations that will be developed by the Board.

The meeting will cover three broad topics:

1. Background and Schedule of AB 32 implementation
2. Solicitation of input regarding the development of GHG reduction measures for manure management activities
3. Discussion of California Climate Action Registry manure management protocols

2007-08 STATE BUDGET

Because most prognosticators believed that this year's budget process would be relatively timely, most of Sacramento was surprised that the 2007-08 budget turned out to be the second-longest delayed budget adoption in the State's history.

Although the Assembly approved a budget on July 20th, negotiations in the Senate quickly deteriorated as it took another month, until August 21st, for the Senate to approve a budget. Governor Schwarzenegger signed the budget on August 24th.

Due to the 2/3 requirement for approval, the makeup of the Senate requires at least two Republican votes to join the Democrats to adopt the budget. Abel Maldonado (R-Santa Maria), a moderate Republican, voted with Democrats after only a few days, but the rest of the Republican Caucus held firm for many more weeks. Among their demands were further budget cuts, relaxed local GHG standards and increased funding for suburban schools.

Eventually, after the Legislature returned to Sacramento after a month-long recess on August 20th, Republican Minority Leader Dick Ackerman, joined with Maldonado to approve the budget by the bare minimum of votes.

SUMMARY:

Requires the Governor, Treasurer's office, the Public Employees' Retirement and the State Teachers' Retirement systems to annually report to the Legislature information relating to greenhouse gas emissions and green investments. Requires all land conservancies to report to the Legislature on past, current, and future activities to sequester greenhouse gas emissions. Requires an annual on the Global Warming Solutions Act. Includes the reduction of such gases in the Environmental Goals and Policy Project.

VOTES:

04/23/2007	Assembly Natural Resources Committee	P 7-1
05/31/2007	Assembly Appropriations Committee	P 12-5
06/04/2007	Assembly Floor	P 58-16
07/10/2007	Senate Environmental Quality Committee	P 5-2
Position:	Watch	

CA AB 118

AUTHOR: Nunez [D]
TITLE: Alternative Fuels and Vehicle Technologies: Funding
INTRODUCED: 01/09/2007
LAST AMEND: 08/20/2007
DISPOSITION: Pending
COMMITTEE: Senate Appropriations Committee
HEARING: 08/30/2007
SUMMARY:

Creates the Alternative and Renewable fuel and Vehicle Technology Program and fund to provide grants and loans to specified entities to develop innovative technologies that will transform the state's fuel and vehicle types. Increases driver's license and motor vehicle registration related fees for deposit into the fund. Creates the Air Quality Improvement Program and fund to fund air quality projects relating to fuel and vehicle technologies. Increases the smog abatement fees for deposit into the fund.

VOTES:

04/23/2007	Assembly Transportation Committee	P 9-4
05/31/2007	Assembly Appropriations Committee	P 12-5
06/05/2007	Assembly Floor	P 48-29
07/03/2007	Senate Transportation and Housing Committee	P 6-3
07/10/2007	Senate Environmental Quality Committee	P 5-2
Position:	Watch	

CA AB 578

AUTHOR: Blakeslee [R]
TITLE: Energy: Distributed Energy Generation: Study
INTRODUCED: 02/21/2007
LAST AMEND: 07/12/2007
DISPOSITION: Pending
LOCATION: Senate Appropriations Committee
SUMMARY:

Deletes the requirement the Energy Commission evaluate the costs and benefits of having an increased number of operational solar energy systems and part of the electrical system. Requires the Public Utilities Commission to study the impacts of distributed energy generation on

the state's distribution and transmission grid. Assesses the impacts of the Solar Initiative Program. Deletes reporting requires on ratepayer subsidies for renewable and fossil fuel, ultraclean and low-emission distributed generation.

VOTES:

04/09/2007	Assembly Utilities and Commerce Committee	P 11-0
05/31/2007	Assembly Appropriations Committee	P 17-0
06/05/2007	Assembly Floor	P 79-0
07/03/2007	Senate Energy, Utilities and Communications Committee	P 8-0

Position: Watch

CA AB 739

AUTHOR: Laird [D]
TITLE: Stormwater Discharge
INTRODUCED: 02/22/2007
LAST AMEND: 08/01/2007
DISPOSITION: Pending
COMMITTEE: Senate Appropriations Committee
HEARING: 08/30/2007
SUMMARY:

Requires the Department of Water Resources to develop project selection and evaluation guidelines to implement a specified stormwater flood management grant program. Provides the design and construction of projects for specified combined municipal sewer and stormwater system are eligible for the program. Requires the state Water Resources Control Board to develop program guidelines. Requires coordination with regard to the development of project selection and evaluation guidelines. Requires a task force.

VOTES:

05/01/2007	Assembly Environmental Safety and Toxic Materials Committee	P 6-0
05/31/2007	Assembly Appropriations Committee	P 12-0
06/05/2007	Assembly Floor	P 58-6
07/02/2007	Senate Environmental Quality Committee	P 5-2

Position: Watch

CA AB 938

AUTHOR: Calderon C [D]
TITLE: Regional Water Management
INTRODUCED: 02/22/2007
LAST AMEND: 07/03/2007
DISPOSITION: Pending
LOCATION: Senate Environmental Quality Committee
SUMMARY:

Authorizes a county or city to convene one or more watershed water quality committees to develop and facilitate cooperation in achieving local water quality solutions. Requires a committee to use reasonable efforts to prepare and submit a watershed management plan that addresses major sources of stormwater, urban runoff, and nonpoint source pollution within the region. Requires a city or county that provides certain utilities to provide facilities for returning captured waters to receiving bodies.

VOTES:

04/24/2007 Assembly Water, Parks and Wildlife Committee P 13-0
05/09/2007 Assembly Local Government Committee P 7-0
05/31/2007 Assembly Appropriations Committee P 17-0
06/04/2007 Assembly Floor P 78-0
06/27/2007 Senate Local Government Committee P 3-1
Position: Watch

CA AB 1428

AUTHOR: Galgiani [D]
TITLE: Energy: Biogas Digester and Manure Customer-Generator
INTRODUCED: 02/23/2007
LAST AMEND: 06/26/2007
DISPOSITION: Pending
LOCATION: Senate Environmental Quality Committee
SUMMARY:

Relates to existing law that requires electrical corporations with net energy metering to provide eligible biogas digester customer-generators, that commence operations by a specified date, with net energy metering, under a pilot program. Replaces the existing pilot program for eligible customer-generators with a net energy metering program for eligible customer-generators that use agricultural residues, animal wastes, or animal renderings to generate electricity and meet certain requirements.

VOTES:

04/09/2007 Assembly Utilities and Commerce Committee P 12-0
04/23/2007 Assembly Natural Resources Committee P 7-0
05/23/2007 Assembly Appropriations Committee P 16-0
05/29/2007 Assembly Floor P 77-0
06/19/2007 Senate Energy, Utilities and Communications Committee P 7-0
Position: Watch

CA AB 1470

AUTHOR: Huffman [D]
TITLE: Solar Energy: Solar Hot Water Heat and Efficiency Act
INTRODUCED: 02/23/2007
LAST AMEND: 07/10/2007
DISPOSITION: Pending
COMMITTEE: Senate Appropriations Committee
HEARING: 08/30/2007
SUMMARY:

Creates the Solar Water Heating and Efficiency Act. Requires the Public Utilities Commission to design and implement a program to incentivize the installation of 200,000 solar water heating systems in homes and business throughout the state in 2007. Requires the commission to establish criteria for such systems receiving gas customer funded incentives. Requires the commission to fund the program through a surcharge to gas customers in gas corporation service areas. Provides exemptions.

VOTES:

04/16/2007 Assembly Utilities and Commerce P 7-4
Committee
04/23/2007 Assembly Natural Resources Committee P 6-3
05/31/2007 Assembly Appropriations Committee P 12-5
06/06/2007 Assembly Floor P 44-34
07/03/2007 Senate Energy, Utilities and P 6-2
Communications Committee

Position: Watch

CA AB 1506

AUTHOR: Arambula [D]
TITLE: Greenhouse Gas Emissions
INTRODUCED: 02/23/2007
LAST AMEND: 07/17/2007
DISPOSITION: Pending
LOCATION: Senate Appropriations Committee
SUMMARY:

Requires the Business, Transportation and Housing Agency to contract with the University of California or with another postsecondary educational institution to conduct a study of the most effective ways for the state to provide incentives to businesses to reduce greenhouse gas emissions, and to report its findings and recommendations to the Legislature.

VOTES:

04/17/2007 Assembly Jobs, Economic Development and P 6-0
The Economy Committee
04/23/2007 Assembly Revenue and Taxation Committee P 8-1
05/31/2007 Assembly Appropriations Committee P 12-5
06/06/2007 Assembly Floor P 76-0
07/10/2007 Senate Environmental Quality Committee P 5-2

Position: Watch

CA AB 1613

AUTHOR: Blakeslee [R]
TITLE: Energy: Waste Heat and Carbon Emissions Reduction
INTRODUCED: 02/23/2007
LAST AMEND: 08/20/2007
DISPOSITION: Pending
COMMITTEE: Senate Appropriations Committee
HEARING: 08/30/2007
SUMMARY:

Enacts the Waste Heat and Carbon Emissions Reduction Act. Requires a electrical corporation to purchase excess electricity delivered by a combined heat and power system that complies with certain sizing, energy efficiency, and air pollution control requirements. Provides exceptions. Requires such corporations to file a standard tariff for excess electricity purchase from an eligible customer-generator. Requires the Public Utilities Commission to create a pay-as-you-save program for each such corporation.

VOTES:

04/23/2007 Assembly Utilities and Commerce P 12-0
Committee
05/31/2007 Assembly Appropriations Committee P 16-1

06/06/2007 Assembly Floor P 77-0
07/03/2007 Senate Energy, Utilities and P 8-0
Communications Committee

Position: Watch

CA SB 9

AUTHOR: Lowenthal [D]
TITLE: Trade Corridor Improvement: Transportation Project
INTRODUCED: 12/04/2006
LAST AMEND: 08/20/2007
DISPOSITION: Pending
COMMITTEE: Assembly Appropriations Committee
HEARING: 08/30/2007
SUMMARY:

Relates to Trade Corridor Improvement Transportation Fund projects. Establishes a process to be administered by the State Transportation Commission for allocation of fund moneys. Establishes the corridors eligible for funding. Establishes criteria for project selection based on improvement of mobility of freight and improvement of air quality. Requires projects to be ready for construction by a specified date. Provides for allocations to projects outside of the trade corridors.

VOTES:

04/17/2007 Senate Transportation and Housing P 7-3
Committee

05/31/2007 Senate Appropriations Committee P 10-6

06/07/2007 Senate Floor P 24-12

07/09/2007 Assembly Transportation Committee P 8-4

Position: Watch

CA SB 19

AUTHOR: Lowenthal [D]
TITLE: Trade Corridor: Projects to Reduce Emissions: Goods
INTRODUCED: 12/04/2006
LAST AMEND: 07/17/2007
DISPOSITION: Pending
LOCATION: Assembly Appropriations Committee
SUMMARY:

Relates to the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006. Requires the Air Resources Board to implement the Goods Movement Emission Reduction Program and to adopt guidelines and funding criteria for the program. Creates eligibility requirements for funding pursuant to this program. Creates the Goods Movement Emission Reduction Fund to be funded with bond proceeds.

VOTES:

04/17/2007 Senate Transportation and Housing P 6-4
Committee

05/31/2007 Senate Appropriations Committee P 10-6

06/04/2007 Senate Floor P 24-14

07/09/2007 Assembly Transportation Committee P 8-5

Position: Watch

CA SB 55

AUTHOR: Florez [D]
TITLE: Water Quality: Sewage Sludge
INTRODUCED: 01/10/2007

LAST AMEND: 04/30/2007
DISPOSITION: Pending
LOCATION: Senate Appropriations Committee
SUMMARY:

Relates to water quality and sewer sludge. Prohibits the treatment or land application of specified sewage sludge in violation of federal regulations. Requires a supplier of sludge to submit samples to a certified laboratory for testing. Relates to polluting chemicals including agricultural, industrial, personal care products and pharmaceuticals that may act as endocrine disrupters. Relates to pathogens.

VOTES:

04/24/2007 Senate Environmental Quality Committee P 6-1
Position: Watch, Watch

CA SB 210

AUTHOR: Kehoe [D]
TITLE: Greenhouse Gas Emissions: Fuel Standard
INTRODUCED: 02/08/2007
LAST AMEND: 08/20/2007
DISPOSITION: Pending
COMMITTEE: Assembly Appropriations Committee
HEARING: 08/30/2007
SUMMARY:

Requires the State Air Resources Board to adopt, implement, and enforce, a low-carbon fuel standard by regulation, that achieves the maximum technologically feasible and cost-effective reductions in carbon intensity of transportation fuels, and at least a 10% reduction in, the carbon intensity of transportation fuels. Provides the standard would apply to refiners, blenders, producers, and importers of such fuels. Requires the development of related environmental reports requirements.

VOTES:

03/27/2007 Senate Transportation and Housing P 7-4
Committee
04/24/2007 Senate Environmental Quality Committee P 4-2
05/31/2007 Senate Appropriations Committee P 10-6
06/04/2007 Senate Floor P 21-15
07/02/2007 Assembly Transportation Committee F 7-6
07/09/2007 Assembly Transportation Committee P 8-6
07/12/2007 Assembly Natural Resources Committee P 6-3
Position: Watch

CA SB 375

AUTHOR: Steinberg [D]
TITLE: Transportation Planning: Travel Models: Reviews
INTRODUCED: 02/21/2007
LAST AMEND: 07/17/2007
DISPOSITION: Pending
COMMITTEE: Assembly Appropriations Committee
HEARING: 08/30/2007
SUMMARY:

Relates to guidelines for travel demand guidelines used in regional transportation plans, the requirement a regional transportation plan include a preferred growth scenario designed to achieve goals for the

reduction of vehicle miles in the region, an environmental document under the Environmental Quality Act that examines specific impacts of a transportation project located in a local jurisdiction that has amended its general plan and the legislative body finds the project meets specified criteria.

VOTES:

04/24/2007	Senate Environmental Quality Committee	P 5-2
04/26/2007	Senate Transportation and Housing Committee	P 7-1
05/31/2007	Senate Appropriations Committee	P 10-6
06/07/2007	Senate Floor	P 21-15
07/03/2007	Assembly Local Government Committee	P 5-1
07/09/2007	Assembly Transportation Committee	P 8-5
Position:	Watch	

CA SB 411

AUTHOR: Simitian [D]
TITLE: Energy: Renewable Energy Resources
INTRODUCED: 02/21/2007
LAST AMEND: 07/17/2007
DISPOSITION: Pending
COMMITTEE: Assembly Appropriations Committee
HEARING: 08/30/2007
SUMMARY:

Requires a retail seller of electricity to increase its total procurement of eligible energy renewable resources so that at least 33% of its retail sales are procured from eligible renewable energy resources no later than specified date.

VOTES:

04/24/2007	Senate Energy, Utilities and Communications Committee	P 5-3
04/26/2007	Senate Environmental Quality Committee	P 5-1
05/17/2007	Senate Floor	P 21-15
07/02/2007	Assembly Utilities and Commerce Committee	P 8-3
07/09/2007	Assembly Natural Resources Committee	P 5-3
Position:	Watch	

CA SB 451

AUTHOR: Kehoe [D]
TITLE: Renewable Energy Resource Customer-Generator
INTRODUCED: 02/21/2007
LAST AMEND: 07/16/2007
DISPOSITION: Pending
COMMITTEE: Assembly Appropriations Committee
HEARING: 08/30/2007
SUMMARY:

Requires every electrical corporation to make the tariff available to any customer of the corporation on a first-come-first-served basis until the corporation meets its proportionate share of a combined statewide cumulative rated generating capacity of electrical generating facilities of 1,000 megawatts. Provides the electricity generated by a facility counts toward the corporation's renewables portfolio. Allows a customer to receive service pursuant to an alternative net metering program.

VOTES:

04/24/2007 Senate Energy, Utilities and P 8-0
Communications Committee
05/29/2007 Senate Appropriations Committee P 15-0
05/31/2007 Senate Floor P 39-0
07/02/2007 Assembly Utilities and Commerce P 12-0
Committee
07/09/2007 Assembly Natural Resources Committee P 8-0
Position: Oppose_Unless

CA SB 1001

AUTHOR: Perata [D]
TITLE: Regional Water Quality Control Boards
INTRODUCED: 02/23/2007
LAST AMEND: 07/10/2007
DISPOSITION: Pending
COMMITTEE: Assembly Appropriations Committee
HEARING: 08/30/2007
SUMMARY:

Relates to regional water boards and their responsibilities under the federal Clean Water Act and Porter-Cologne. Requires the State Water Resources Control Board, with the Department of Finance, to prepare a detailed report on the financial basis and programmatic effectiveness of its water quality programs. Requires the Legislative Analyst's office to prepare a report on the financial basis and programmatic effectiveness of the board's fee-based water quality programs. Requires related regulations.

VOTES:

04/24/2007 Senate Environmental Quality Committee P 5-2
05/31/2007 Senate Appropriations Committee P 10-6
06/07/2007 Senate Floor P 22-15
07/03/2007 Assembly Environmental Safety and Toxic P 4-2
Materials Committee
Position: Watch

CA SB 1036

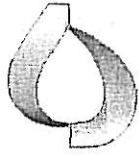
AUTHOR: Perata [D]
TITLE: Energy: Renewable Energy Resources
INTRODUCED: 02/23/2007
LAST AMEND: 07/12/2007
DISPOSITION: Pending
COMMITTEE: Assembly Appropriations Committee
HEARING: 08/30/2007
SUMMARY:

Repeals provisions providing for the New Renewable Resources Account within the Renewable Resource Trust Fund. Deletes the requirement that the Energy Commission award the production incentives and allocate and award supplemental energy payments to eligible renewable energy resources to cover above-market costs of renewable energy. Requires the Commission to terminate production incentives unless the project began generating electricity by a certain date.

VOTES:

04/24/2007 Senate Energy, Utilities and P 8-0
Communications Committee

05/07/2007	Senate Appropriations Committee	P 17-0
06/04/2007	Senate Floor	P 39-0
07/02/2007	Assembly Utilities and Commerce Committee	P 7-3
07/09/2007	Assembly Natural Resources Committee	P 6-3
Position:	Watch	



Inland Empire
UTILITIES AGENCY

Date: September 19, 2007
To: The Honorable Board of Directors
Through: Public, Legislative Affairs, and Water Resources Committee (09/12/07)
From: Richard W. Atwater *RWA*
Chief Executive Officer/General Manager
Submitted by: Martha Davis *MD*
Executive Manager of Policy Development
Subject: August Legislative Report from Agricultural Resources

RECOMMENDATION

This is an informational item for the Board of Directors to receive and file.

BACKGROUND

Dave Weiman provides a monthly report on his federal activities on behalf of IEUA.

PRIOR BOARD ACTION

None.

IMPACT ON BUDGET

None.

RWA:MD:mef

Enclosure

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Agricultural Resources

635 Maryland Avenue, N.E.
Washington, D.C. 20002-5811
(202) 546-5115
(202) 546-4472-fax
agresources@erols.com

August 28, 2007

Legislative Report

TO: Richard W. Atwater
General Manager, Inland Empire Utility Agency

FR: David M. Weiman
Agricultural Resources
LEGISLATIVE REPRESENTATIVE, IEUA

SU: Legislative Report, August 2007

Highlights:

- Congress Out During August, Back After Labor Day
- Senate Hearings on Title XVI, IEUA/CVWD Recycling Project
- Recycled Water Determined to be Energy Efficient – State Hearing
- Farm Bill Policy – Policy and Process
- Drought Conditions
- News and Notes
- IEUA Working Partners

Congress Out During August, Session Reconvenes After Labor Day – September to Have Packed Agenda. Congress went on its usual month-long breaking August 3. Many members went on fact-finding trips to Iraq and the surrounding region. In September, the congressional agenda will be packed. September is the last month of the fiscal year and all annual funding bills are pending. Some kind of a annual funding bill will be fashioned next month – and it faces a possible presidential veto. Some believe that a “government-wide shut-

down is possible unless an agreement is reached. The Iraq "surge" report is expected and will dominate if not dwarf the funding bill issues. The Farm Bill expires at the end of September as well. And, energy legislation remains pending. In short, a full agenda, limited time, and real deadlines.

Senate Hearings on Title XVI, IEUA/Cucamonga Valley Projects. The Senate Energy Committee's Water and Power Subcommittee held hearings on six water recycling bills in California and Texas. IEUA's GM testified on behalf of the agency and submitted a statement from Robert DeLoach, GM, Cucamonga in support of the legislation. This is the second time the Subcommittee has heard testimony, once in the 109th Congress (last year) and now in the 110th. Next step, markup. The subcommittee has signaled that they intend to markup some of the six bills (from the hearing, it was obvious that at least two of the proposals were preliminary, and various required reports would not be completed before the end of the year. The IEUA and CVWD proposals are complete and are expected to be in the "first wave" of bills qualified for markup.

Water Recycling Gets Boost in State of California Hearing. A hearing in the State Legislature examined the "Carbon Footprint of Water." IEUA's Rich Atwater and MWD participated in the hearing. So did Pacific Institute's Peter Gleick. His statement highlights that recycled water is among the most energy efficient of all water produced. We are sharing this new analysis with our delegation, the committees and the Bureau of Reclamation and OMB.

Farm Bill Policy-Schedule for Farm Bill. The House has made water districts eligible for USDA funding for digesters and has provided some funding for a program that makes digester funding eligible. The Senate is anticipated to do the same. Whether or not the funding is real remains to be determined. As previously reported, the House has passed a bill, and it's pending in the Senate. The Senate is now expected to begin Ag Committee mark on or about September 17. The bill will not get to the Senate Floor before October and – best possible scenario – will complete action by the end of the year. There is a growing possibility that no agreement can be reached and an "extension" of the existing program will be proposed.

Drought Conditions. According to the USDA/NOAA Drought Monitor as of the end of August drought is touching every Western State (Texas only a small amount). Southern California is still listed as "extreme."

News and Notes. *Leslie Gooch*, current legislative director, Office of Rep. Gary Miller is joining a public policy firm. Miller's new Leg Director will be *Sandra Breitengross*. *Bureau of Reclamation* is circulating new criteria guidelines. *Corps Authorization bill (WRDA)* fate is uncertain. Bill, now conferenced, may face veto. It contains new authority for the Santa Ana River. *EPA* has announced new guidelines for watershed planning. Finally, long-time House Water and Power Subcommittee staffer, *Steve Lanich*, informed Rep. Grace Napolitano that he would be retiring at the end of the calendar year.

IEUA Continues to Work With Various Partners. On an on-going basis in Washington, IEUA continues to work with:

- a. Metropolitan Water District of Southern California (MWD)
- b. Milk Producer's Council (MPC)
- c. Santa Ana Watershed Project Authority (SAWPA)
- d. Water Environment Federation (WEF)
- e. Association of California Water Agencies (ACWA)
- f. WaterReuse Association
- g. CALStart
- h. Orange County Water District (OCWD)
- i. Cucamonga Valley Water District (CVWD)
- j. Western Municipal Water District
- k. Chino Basin Watermaster

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Date: September 19, 2007

To: The Honorable Board of Directors

Through: Public, Legislative Affairs, and Water Resources Committee (09/12/07)

From: Richard W. Atwater
Chief Executive Officer/General Manager

Submitted by: Sondra Elrod
Public Information Officer

Subject: Public Outreach and Communications

RECOMMENDATION

This is an informational item for the Board of Directors to receive and file.

Outreach/Tours

- IEUA hosted the California Integrated Waste Management Board/CalTrans compost workshop on Thursday, August 23, 2007, in the Event Room
- IEUA hosted the Low Impact Development (LID) workshop on Wednesday, August 29, 2007, in the Event Room.

Calendar of Upcoming Events

- September 7 – 30, 2007, ECO Now Exhibit at LA County Fair.
- September 12, 2007, Chino Day at the LA County Fair. **(Anderson)**
- September 14 – 16, 2007, IEUA/MWD Director Koopman's State Water Project Tour.
- September 21, 2007, Chino Hills Day at the LA County Fair. **(Anderson)**
- September 26, 2007, IEUA Picnic, 11:30 a.m., Grand Avenue Park, Chino Hills.
- September 28, 2007, Fontana Days at the LA Fair County Fair. **(Santiago)**
- October 20, 2007, annual regional Water Fair, Montclair Plaza, 10:00 a.m. to 2:00 p.m.
- October 25, 2007, San Antonio Water Company 125th Anniversary Celebration, 4:00 p.m.. 139 North Euclid Avenue
- October 31, 2007, IEUA hosted Blood Drive from 9:00 a.m. to 3:00 p.m.
- We are working with the CBWCD to plan 'California Friendly' events during the month of October.
- December 20, 2007, IEUA Holiday Luncheon, Los Serranos Country Club, 11:30 a.m.

- April 25 – 27, 2008, IEUA/MWD Director Koopman’s Agricultural Inspection Trip.

OUTREACH/EDUCATIONAL INLAND VALLEY DAILY BULLETIN NEWSPAPER CAMPAIGN

- Safety Issue expected to run August 29, 2007.
- During August and September IEUA will utilize some of our ‘run-of-press’ pages in the Daily Bulletin to run a ‘water conservation’ campaign to get the message out on the importance of water conservation this summer. The theme of the campaign is “It’s time to get serious” (to be consistent with MWD’s message). The ads will offer water-saving tips and the number of “gallons” saved which will be consistent with San Diego’s *20-Gallon Challenge* tips and numbers.

PRIOR BOARD ACTION

None.

IMPACT ON BUDGET

None.



CHINO BASIN WATERMASTER

IV. INFORMATION

1. Newspaper Articles



EPA cites six SoCal dairies for Clean Water Act violations

The Associated Press
News Fuze

Article Launched:08/01/2007 07:45:18 PM PDT

LOS ANGELES—Federal regulators cited six Southern California dairies for violating clean water rules designed to prevent the facilities' animal waste from polluting local water supplies, officials said Wednesday.

The dairies were ordered to repair leaks in waste lagoons, build raised barriers around the lagoons, arrange to remove manure piles and make other changes to comply with the law, U.S. Environmental Protection Agency scientist Glenn Sakamoto said.

Regulators said runoff from the facilities could pollute the Santa Ana River. The dairies were cited for violations of state-issued permits that include failing to contain on-site manure, execute waste management plans, and design and manage manure-containment structures, the EPA said.

The facilities could face fines of up to \$32,500 per day per violation if they don't make needed fixes and as a result pollute streams, rivers or groundwater, Sakamoto said.

"We're hoping and trust that dairymen want to do what's best to protect the environment," Sakamoto said. "If the acts continue and it results in a discharge, we may look at the next step, which would be penalties."

Representatives for the dairies—identified as Legend Dairy #1, Legend Dairy #3, Sun Valley Jersey Dairy #1, Miersma Dairy #1, Tom Alger Dairy and Venegas Dairy—did not return messages or could not be reached for comment.

The orders were issued based on a March 2007 EPA inspection of the dairies, which are located in Chino, Ontario and Mira Loma.

Michael Marsh, who leads the trade group Western United Dairyman, said the organization would work with the dairies to bring them into compliance.

"Dairy producers have got to follow clean water and clean air laws," he said. "We take the business of keeping the environment clean very seriously."

In 2000 and 2001, the EPA fined numerous dairies in the Chino area for similar Clean Water Act violations, officials said.

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Save water now to avoid restrictions

Article Launched:07/29/2007 12:00:00 AM PDT

If you haven't started conserving water yet, what are you waiting for?

Some people may be stalling until an actual water emergency is declared locally, with the mandatory water-use restrictions that might entail. In our view, there is already enough evidence of problems ahead that there is no need to wait. Better to take some small steps now to help make our water last than to get hammered by harsh restrictions sometime next year, or the year after that.

The most recent indicator of the problem is the fact that Gov. Arnold Schwarzenegger declared a state of emergency in Riverside County because agriculture there has been decimated by the lack of rainfall. Riverside received less than 2 inches of precipitation in the rain year that ended June 30 - less than Death Valley got.

Of course, the real problem is that the dry conditions are not a local matter. The aridness reaches high into the Sierra Nevada mountain range as well as across the Colorado River Basin - meaning most of the Southwest.

The Sierra snowpack this spring was about a third of its normal size, resulting in a 40 percent cut in deliveries from the State Water Project. The Colorado River, in its eighth year of drought, is supplying half the water it did five years ago. Los Angeles had the driest year since the first records were kept in the 1870s.

Altogether, it's a triple-whammy that has water officials nervous. The good news is that the 2005-2006 rain year was a wet one, so we came into the dry year that just ended with ample stored supplies. The bad news that it won't be enough if the year we're just starting is anywhere close to as arid as the last.

And then, scientists are talking about the "medieval megadrought" in the Southwest, which according to tree-ring records lasted from 900 to 1400 A.D. And there are some signs that the warming of the ocean surface near the equator is changing rainfall patterns, shifting the bulk of precipitation farther north and out of the Colorado Basin.

Now, we needn't go all gloom-and-doom. We could have a big rain year that includes plenty of snowfall in the Sierras. That eight-year Colorado Basin drought could break any time. As we all know, the weather can surprise the experts.

But if it doesn't, and the dry conditions continue, the current "suggestion" of a 10 percent use cutback by customers of Southern California water agencies will become something firmer, and perhaps deeper.

So back to our original point: If you haven't already, start conserving water now.

Where to start? Check the Metropolitan Water District's Web site, www.bewaterwise.com, which offers water-saving tips and rebates available for water-saving appliances and irrigation equipment, both household and industrial. Or check the California Urban Water Conservation Council's site, www.h2ouse.org, where the first of the "Top 5 Actions" to save water is simply to check and repair any leaks around your house. You'll find guides for landscaping with plants that aren't so thirsty, allowing you to conserve over the long haul.

Between the two sites, you'll find many ways to save thousands of gallons of water and wads of money. At the same time, you'll be helping Southern California get through the dry times.

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Water forecast discouraging

By Jason Pesick, Staff Writer
Inland Valley Daily Bulletin

Article Launched: 07/22/2007 12:17:29 AM PDT

Representatives of local water agencies said they can make it through the dry season but are encouraging people to cut back on their water usage.

While the water purveyors aren't yet in panic mode, a number of factors next year could cause real trouble.

"Next year could be disastrous," said Anthony "Butch" Araiza, general manager of the West Valley Water District, which serves Bloomington and portions of Colton, Fontana and Rialto.

The rainy season that just ended was the driest in the history of Los Angeles and one of the driest ever in the Inland Empire, said Jim Ashby, a climatologist with the Western Regional Climate Center in Reno, Nev.

"Water levels are down and have been dropping over the past few years," said Robert Martin, general manager of East Valley Water District, which provides water to Highland and part of San Bernardino.

The area relies on snow melting off the mountains to provide water, but there wasn't much this year.

Martin and Araiza said water levels are decent, but they are worried about what will happen next year if there isn't much rain.

"Next year could have to have pretty strong water conservation to make it through," said Randy Van Gelder, general manager of the San Bernardino Valley Municipal Water District, or Muni.

Compounding that problem, an environmental controversy over Delta smelt fish is reducing the amount of water available from the Sacramento-San Joaquin Delta.

Two lawsuits say pumping threatens the endangered species. The dispute means that the San Bernardino area could get 40 percent less water from the delta than it is entitled to and possibly much less than that next year, Van Gelder said.

Another pressure on regional water agencies is the amount of development that siphons water.

Some agencies - such as Colton's and Rialto's, West Valley and the Fontana Water Company - also have to deal with perchlorate, a toxic substance, in their drinking water.

Rialto alone has three wells shut down because of the perchlorate. Muni is launching an advertising campaign to encourage people to conserve water.

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Stand up to polluters

Article Launched:07/26/2007 12:00:00 AM PDT

Perchlorate is an issue that affects everybody in San Bernardino County because of potentially huge costs to local governments' budgets. It is tragic that the Department of Defense and its contractors have denied their responsibility. Frankly, the Bush administration has been derelict on the perchlorate issue.

When I represented Rialto in the state Senate, I personally went to EPA Regional Administrator Wayne Nastri to ask for help. Rialto did not want the plume declared a Superfund site because city officials thought it would stigmatize the area. Yet San Gabriel Valley is a Superfund site and is economically prosperous.

To see effective cleanup, we only need to look to the San Gabriel Valley Water Quality Authority. When I introduced a bill to create an Inland Empire Water Quality Authority five years ago, it was opposed by several local water purveyors. Now is the time for all the agencies affected by perchlorate to find a new spirit of cooperation.

The cleanup effort was thrown into disarray with the Santa Ana Regional Water Quality Control Board's near fatal error in 2002, when they repealed Cleanup and Abatement Orders. Since then I was able to strengthen the law so that the regional board must go after the polluters to get replacement water (SB 1004, 2003).

Now the Santa Ana regional board can right the course and see that the new Cleanup and Abatement orders are enforced. There are hearings starting Aug. 21 in Rialto. I am depending on the state to be strong and stand up to a drove of industry attorneys.

NELL SOTO
Assembly member
61st District

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Water funding OK'd

Panel approves money for perchlorate investigation

Jason Pesick, Staff Writer
San Bernardino County Sun

Article Launched: 08/02/2007 12:00:00 AM PDT

Money to investigate perchlorate contamination around Rialto, Fontana and Colton was one of a few projects a congressional committee has approved, Rep. Joe Baca, D-Rialto, announced.

A conference committee made up of members of the House of Representatives and Senate approved a number of water projects for the Inland Empire, including money for the perchlorate investigation. The programs are part of the Water Resources Development Act.

"I think it's a good move," said Rialto Councilman Ed Scott, who is a member of the City Council's perchlorate committee.

Perchlorate, a chemical used in rocket fuels and other explosives, has seeped into Rialto's drinking water from industrial sites in the city's north end. The plume is creeping toward Colton.

Local agencies have either shut down contaminated wells or are treating the water so that no contaminated water is served. Perchlorate, if ingested, can affect the functioning of the thyroid and possibly mental development.

If both houses of Congress and the president sign off on the legislation, the Army Corps of Engineers would investigate the source of the perchlorate around Rialto, Fontana and Colton.

The extent of the contamination is not completely known, and it's not possible to clean it up without first understanding where it is coming from and where it is, Scott said.

The amount of money Baca secured for the project was not available.

"Whatever it is, it's a step in the right direction," Scott said.

The city asked its congressional representatives for almost \$12.7 million for an investigation of the Rialto Basin.

The projects announced Tuesday as part of the Water Resources Development Act included other Inland Empire projects:

Money for the Army Corps of Engineers to improve the Colton Drainage System to prevent flooding and remove storm flows along Valley Boulevard and around Arrowhead Regional Medical Center in Colton.

Funding for Ontario's Francis Street Storm Drain and Connectors Project that Rep. Gary Miller, R-Diamond Bar, also requested money for. The project would help reduce flooding, which could hurt Ontario and Chino's dairy industry.

Money for Rialto to support the Lytle Creek Groundwater Recharge Project to study Lytle Creek and understand both flooding and water-shortage issues in the creek.

The amount of money for these projects was also not available.

On Friday, Baca's office announced the House Appropriations Committee's approval of \$7.5 million as part of the Defense Appropriations Bill. That money included \$2.5 million for perchlorate treatment in the area.

Rialto also asked Congress for \$15 million for the Bunker Hill Water Supply Project to clean water as part of a U.S. Environmental Protection Agency cleanup effort. After the water is cleaned, Rialto and other areas outside San Bernardino would have access to some of it, said Randy Van Gelder, general manager of the San Bernardino Valley Municipal Water District.

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NEWS RELEASE

Association of California Water Agencies
910 K Street, Suite 100 · Sacramento, California 95814-3512
916/441-4545 · FAX 916/441-7893 · <http://www.acwa.com>

FOR IMMEDIATE RELEASE

August 31, 2007

Contact: Tim Quinn, ACWA Executive Director, 916/606-3124 (cell)
Jennifer Persike, ACWA Director of Strategic Coordination and Public Affairs,
916/441-4545, or 916/296-3981 (cell)

Court Ruling to Have Sweeping Water Impacts

Cuts in Deliveries Loom in Wake of Court-Ordered Reduction in Delta Pumping

Sacramento — The Association of California Water Agencies (ACWA) today said court-ordered reductions in deliveries by the State Water Project and federal Central Valley Project would have sweeping impacts across the state.

“The scope of this decision will be felt in nearly every region of California, in some cases within a few weeks,” ACWA Executive Director Timothy Quinn said. “These reductions represent the single largest court-ordered redirection of water in state history. It truly hammers home the serious challenges facing our statewide water system.”

In a highly anticipated ruling today, U.S. District Court Judge Oliver Wanger ordered the two projects to reduce pumping in the Sacramento-San Joaquin River Delta to protect a threatened fish species, the Delta smelt. The reduced pumping translates into a loss of as much as one-third or more of previously available water supplies – or a cut of up to two million acre-feet.

Quinn said the cuts would affect jobs and productivity, especially in the hard-hit agricultural areas from San Joaquin Valley to San Diego. New development in urban areas also could feel the effects in the near term.

“This puts in vivid and real terms the deepening crisis we are seeing in the Delta. It’s an ecological crisis and it’s a water supply crisis. While many factors are affecting the ecosystem, this reinforces the fact that our Delta water infrastructure doesn’t work for the environment or for the state’s economy,” Quinn said.

Wanger’s decision compounds challenges already facing water suppliers this year due to dry conditions. Many agencies have been drawing on emergency or reserve supplies and asking their customers to voluntarily reduce water use. More stringent restrictions – including rationing – are expected as a result of the ruling, and the situation could be dire if dry conditions continue.

“If anyone needed a wake-up call, this is it,” Quinn said. “We need to address fundamental problems in the Delta so we can better protect the environment and the water supplies so critical to our state.”

ACWA is a statewide association of public agencies whose 450 members are responsible for about 90% of the water delivered in California. For more information, visit www.acwa.com.

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Environmental groups find fault with state's perchlorate standard proposal

Jason Pesick, Staff Writer
San Bernardino County Sun

Article Launched: 08/29/2007 11:54:54 PM PDT

The state is in the final stages of setting a standard dictating how much perchlorate can be in your drinking water.

The cap on the amount of the widespread contaminant that can be in the drinking water could be in place within weeks.

But the proposal of 6 parts per billion is not one that will sit well with the environmental community.

It could also lead to hikes in water rates, as water purveyors are forced to begin cleaning perchlorate from the water they serve.

"We're disappointed that in light of all the accumulating evidence that perchlorate is harmful at levels well below this that California decided to stick with 6 ppb," said Bill Walker, vice president for the Environmental Working Group's West Coast office.

Perchlorate has been discovered in drinking water throughout areas of Southern California used for agricultural, industrial and military purposes.

On Aug. 6, the state Department of Public Health submitted a standard of 6 ppb to the state Office of Administrative Law. Once its review is complete, it will send the regulation to the secretary of state to sign off on.

Since the state began developing the standard, the Centers for Disease Control and Prevention released a study showing that even at low levels, perchlorate can affect hormone levels in a large percentage of women.

The proposed standard is also higher than the 2 ppb set by Massachusetts last year.

Perchlorate is used in the production of explosives like fireworks and rocket fuel.

Chilean fertilizer used in agricultural areas around the Southland is also thought to be responsible for perchlorate contamination.

It can affect the functioning of the thyroid, which is important for metabolism and neurological development.

Between August 2002 and August 2007, 251 wells had reported having perchlorate at a level of 4 ppb or higher in California.

Of those, 114 are in San Bernardino and Riverside counties.

The process of setting a standard began in August last year when the state Office of Environmental Health Hazard Assessment set a public health goal of 6 ppb.

Its task is to only take public health into consideration when setting that goal. Then the Department of Public Health takes into account how practical the proposed standard would be.

A few months after the public health goal was set, the CDC study came out in October.

"This is going to be important information for those people who are setting acceptable levels (for perchlorate)," one of the study's co-authors James Pirkle, said when the study came out.

Massachusetts officials said they came to a level of 2 out of caution and a difference of a opinion with California officials over how much perchlorate people ingest from other sources besides water, like food.

Massachusetts officials said they thought people take in a fair bit of perchlorate from other sources besides water, so they wanted to set a lower standard for perchlorate in water.

While environmentalists aren't satisfied with California's proposed standard, because they see it as too high, some water

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