Yucaipa Valley Water District

Notice and Agenda of a Board Workshop
Tuesday, September 27, 2011 at 4:00 p.m.

MEETING LOCATION: District Administration Building
12770 Second Street, Yucaipa

MEMBERS OF THE BOARD: Director Ian Cuthbertson, Division 1
Director Bruce Granlund, Division 2
Director Jay Bogh, Division 3
Director Lonni Granlund, Division 4
Director Hank Wochholz, Division 5

I. Call to Order

II. Public Comments: At this time, members of the public may address the Board of Directors on matters within its jurisdiction; however, no action or significant discussion may take place on any item not on the agenda. To provide comments on specific agenda items, please complete a speaker's request form and provide that form to the Board Secretary prior to the commencement of the Board meeting.

III. Staff Comments

IV. Presentations

A. Preliminary Maximum Benefit Commitments for the Beaumont Management Zone [Workshop Memorandum No. 11-142 - Page 3 of 91]

B. Enhanced Recycled Water Reuse in the Yucaipa Valley [Workshop Memorandum No. 11-143 - Page 41 of 91]

C. Water Use in the California Residential Home [Workshop Memorandum No. 11-144 - Page 42 of 91]

D. Methodology for Calculating Baseline and Compliance Urban Per Capita Water Use for the Consistent Implementation of the Water Conservation Act of 2009 [Workshop Memorandum No. 11-145 - Page 56 of 91]

V. Capital Improvement Projects

A. Status Report on the Construction of the Yucaipa Valley Regional Brineline [Workshop Memorandum No. 11-146 - Page 66 of 91]

Any person with a disability who requires accommodation in order to participate in this meeting should telephone Erin Anton at (909) 797-5117, at least 48 hours prior to the meeting in order to make a request for a disability-related modification or accommodation.

Materials related to an item on this agenda submitted to the Board of Directors after distribution of the workshop packet are available for public inspection during normal business hours at the District office located at 12770 Second Street, Yucaipa. Meeting material is also be available on the District's website at www.yvwd.dst.ca.us

B. Addendum to Environmental Documentation for the Reservoir R-10.3 Project [Workshop Memorandum No. 11-147 - Page 69 of 91]

VI. Development Related Issues

A. Overview of Proposed Sewer Service Connection for Commercial Development at Yucaipa Boulevard and 15th Street [Workshop Memorandum No. 11-148 - Page 74 of 91]

B. Sewer Mainline Reimbursement for Commercial Development Located on 5th Street, Calimesa (APN 411-180-025) - Bill Dickinson [Workshop Memorandum No. 11-149 - Page 76 of 91]

C. Overview of Development Agreement No. 05-2011 related to Assessor's Parcel Numbers 319-051-10, 21, 22, 23, 24, 31 & 34, Yucaipa [Workshop Memorandum No. 11-150 - Page 80 of 91]

VII. Administrative Issues

A. Project Management Support Services by RMC Water & Environment [Workshop Memorandum No. 11-151 - Page 85 of 91]

VIII. Closed Session

A. Conference with Legal Counsel - Anticipated Litigation (Government Code 54956.9) - One Case

IX. Director Comments

X. Adjournment

Yucaipa Valley Water District

Workshop Memorandum 11-142

Date: **September 27, 2011**

Subject: **Preliminary Maximum Benefit Commitments for the Beaumont Management Zone**

In January 2004, the Regional Water Quality Control Board amended the Basin Plan to incorporate an updated total dissolved solids (TDS) and nitrogen management plan for the Santa Ana Region. The antidegradation water quality objectives set forth by the 2004 Basin Plan Amendment restricted the use of recycled water for irrigation and groundwater recharge for certain groundwater management zones, including the Beaumont Management Zone, the San Timoteo Management Zone and the Yucaipa Management Zone. In particular, the ambient TDS concentrations of all three management zones exceeded the antidegradation objectives, meaning that no assimilative capacity exists for the use of recycled water with TDS concentrations in excess of the objectives.

On September 13, 2010, the Regional Board issued an order pursuant to California Water Code Section 13267 requiring that the City of Beaumont, Beaumont Cherry Valley Water District and the Yucaipa Valley Water District prepare an antidegradation analysis in support of implementing TDS and nitrogen maximum benefit objectives in the Beaumont Management Zone. The order required the following:

1. Updated planning information for the use of all sources of water by each agency;
2. An update of the water quality model to create a 30-year TDS and nitrogen projection for the Beaumont Management Zone, based on the full range of recycled water planning scenarios being considered; and
3. An assessment of the individual and cumulative water quality impacts resulting from each agency's water management activities and a calculation of the salt liability of all recycled water users in the Beaumont Management Zone.

The purpose of this workshop item is to provide an overview of the information submitted to the Regional Water Quality Control Board with respect to achieving compliance with the order issued to the District on September 13, 2010.

Preliminary Documentation - Subject to Modification

Proposed Regional Implementation of Maximum Benefit Commitments for the Beaumont Management Zone

Preliminary Draft
September 20, 2011

Submitted to the Santa Ana Regional Water Quality Control Board

by

City of Banning
Beaumont Cherry Valley Water District
San Gorgonio Pass Water Agency
Yucaipa Valley Water District

Preliminary Document - Subject to Independent Modification
September 18, 2011

"California highly values its water resources, which are significantly limited in quantity and quality. Recurring periods of drought have demonstrated the magnitude and severity of our water quantity limitations. Improper waste management practices and contaminated sites pose significant threats to the quality of California's useable groundwater and surface water sources."

- Adapted from the State Water Resources Control Board "A Compilation of Water Quality Goals", April 2011

Background

State Water Resources Control Board - Resolution No. 68-16

On October 24, 1968, the State Water Resources Control Board adopted Resolution No. 68-16 setting a policy for maintaining high quality water resources in California. This Resolution acknowledged that the "…California Legislature has declared that it is the policy of the State that the granting of permits and licenses for unappropriated water and the disposal of wastes into the water of the State shall be so regulated as to achieve highest water quality consistent with maximum benefit to the people of the State…".

This policy set the stage for protecting the high quality waters in the State of California by resolving that,

> "any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with the maximum benefit to the people of the State will be maintained."

Santa Ana Regional Water Quality Control Board - Resolution No. R8-2004-0001

On January 22, 2004, the California Regional Water Quality Control Board, Santa Ana Region adopted Resolution No. R8-2004-0001, amending the Water Quality Control Plan for the Santa Ana River Basin incorporating an updated Total Dissolved Solids (TDS) and Nitrogen Management Plan for the Santa Ana Region, updated groundwater subbasins, revised TDS and nitrogen wasteload allocations.

During the preparation of the updated Basin Plan, stakeholders and the Regional Water Quality Control Board staff recognized that the reuse of recycled water is critical to many agencies' plans to meet the increasing water demands in the region. In some areas of the watershed, there exists assimilative capacity for the addition of TDS and/or nitrogen where wastewaters

with higher TDS/nitrogen concentrations than the receiving waters are diluted by natural rainfall or recharge so the TDS and nitrogen objectives of the receiving waters are met. In an area like the Beaumont Management Zone, assimilative capacity did not exist for the use of recycled water use or recharge until a "maximum benefit" objective was approved. The application of a "maximum benefit" objective is contingent on the implementation of certain projects and programs by specific dischargers as part of their maximum benefit demonstration.

Groundwater Management Zone	"Maximum Benefit" Water Quality Objective	Antidegradation Water Quality Objective
Beaumont Management Zone	330 mg/l	230 mg/l
Yucaipa Management Zone	370 mg/l	320 mg/l
San Timoteo Management Zone	400 mg/l	300 mg/l

Source: California Regional Water Quality Control Board Santa Ana Region, Resolution R8-2004-0001, Table 4-1.

State of California - Recycled Water Policy

On February 3, 2009, the California State Water Resources Control Board (SWRCB) adopted a Recycled Water Policy (the "Policy") formally declaring their mission to "preserve, enhance and restore the quality of California's water resources to the benefit of present and future generations."

To achieve this mission, the SWRCB encourages every region in California to develop a salt/nutrient management plan by 2014 to serve as a foundation to provide California with clean, abundant and sustainable water supplies. This goal is only accomplished by properly implementing a water resource strategy that maximizes the use of recycled water, water conservation, and the use of storm water (including dry-weather urban runoff). These water resources are viewed as drought-proof and reliable, and will generally minimize carbon footprints over the long-term.

The Recycled Water Policy formally sets forth the following goals for the State of California:

- Increase the use of recycled water over 2002 levels by at least one million acre-feet per year by 2020 and by at least two million acre-feet per year by 2030.
- Increase the use of storm water over use in 2007 by at least 500,000 acre-feet per year by 2020 and by at least one million acre-feet per year by 2030.
- Increase the amount of water conserved in urban and industrial uses by comparison to 2007 by at least 20 percent by 2020.
- Included in these goals is the substitution of as much recycled water for potable water as possible by 2030.

The SWRCB recognizes that some groundwater basins have salts and nutrients that exceed or threaten to exceed water quality objectives established in the applicable Water Quality Control Plans (Basin Plans). Therefore, it has been determined that salts and nutrients from all sources be managed on a basin-wide or watershed-wide basis in a manner that ensures attainment of water quality objectives and protection of beneficial uses.

The representatives from the Beaumont Cherry Valley Water District, the City of Banning, the San Gorgonio Pass Water Agency, and the Yucaipa Valley Water District support the principles established in the Recycled Water Policy adopted by the State Water Resources Control Board

and have agreed to jointly implement a salt management strategy to protect the water resources of the Beaumont Management Zone. These participating agencies agree with the State Water Board finding that the appropriate way to address salt management issues is through the development of a regional salt management strategy equally applied amongst all recycled water users and waste discharge permits in the Beaumont Management Zone.

San Timoteo Watershed Management Authority "Maximum Benefit" Commitments

On July 2, 1990, the State Water Resources Control Board issued an administrative procedure for antidegradation policy implementation. This policy requires an antidegradation analysis to be completed to "…support all regulatory actions that, in the Regional Board's judgment, will result in a significant increase in pollutant loadings".

When undertaking an antidegradation analysis, the Regional Board would proceed as follows:

1. Compare receiving water quality to the water quality objectives established to protect designated beneficial uses:

    a. If baseline water quality is equal to or less than the quality as defined by the water quality objective, water quality shall be maintained or improved to a level that achieves the objectives.

    b. If baseline water quality is better than the water quality as defined by the water quality objective, the baseline water quality shall be maintained unless poorer quality is necessary to accommodate important economic or social development and is considered to be of maximum benefit to the people of the State of California.

As part of the 2004 Basin Plan adopted by the Santa Ana Regional Water Quality Control Board, a number of the agencies participating in the preparation of this Salt Management Strategy were members of the San Timoteo Watershed Management Authority ("STWMA"). The STWMA identified to the Regional Water Quality Control Board in documentation dated October 30, 2002, that California Water Code section 13241 provides for a change of water quality objectives based on the following:

> "Each regional board shall establish such water quality objectives in water quality control plans as in its judgment will ensure the reasonable protection of beneficial uses and the prevention of nuisance; however, it is recognized that it may be possible for the quality of water to be changed to some degree without unreasonably affecting beneficial uses. Factors to be considered by a regional board in establishing water quality objectives shall include, but not necessarily be limited to, all of the following:
> a) Past, present, and probable future beneficial uses of water;
> b) Environmental characteristics of the hydrographic unit under consideration, including the quality of water available hereto;
> c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area;
> d) Economic considerations;
> e) The need for developing housing within the region;
> f) The need to develop and use recycled water."

Based on this criterion, the STWMA member agencies and the Santa Ana Regional Water Quality Control Board agreed to establish maximum benefit water quality objectives for the Beaumont Management Zone as long as the irrevocable commitments made by the member agencies are fulfilled. These irrevocable commitments are specifically identified in Resolution No. R8-2004-0001 (pages 72-78).

The parties recognize that failure to fully implement the commitments will required mitigation of the adverse water quality effects, both on the immediate and downstream waters that resulted from the recycled water discharges. Furthermore, the "mitigation by groundwater extraction and desalting must be adjusted to address concentrations of salt and nitrogen in the basin, not simply salt load"

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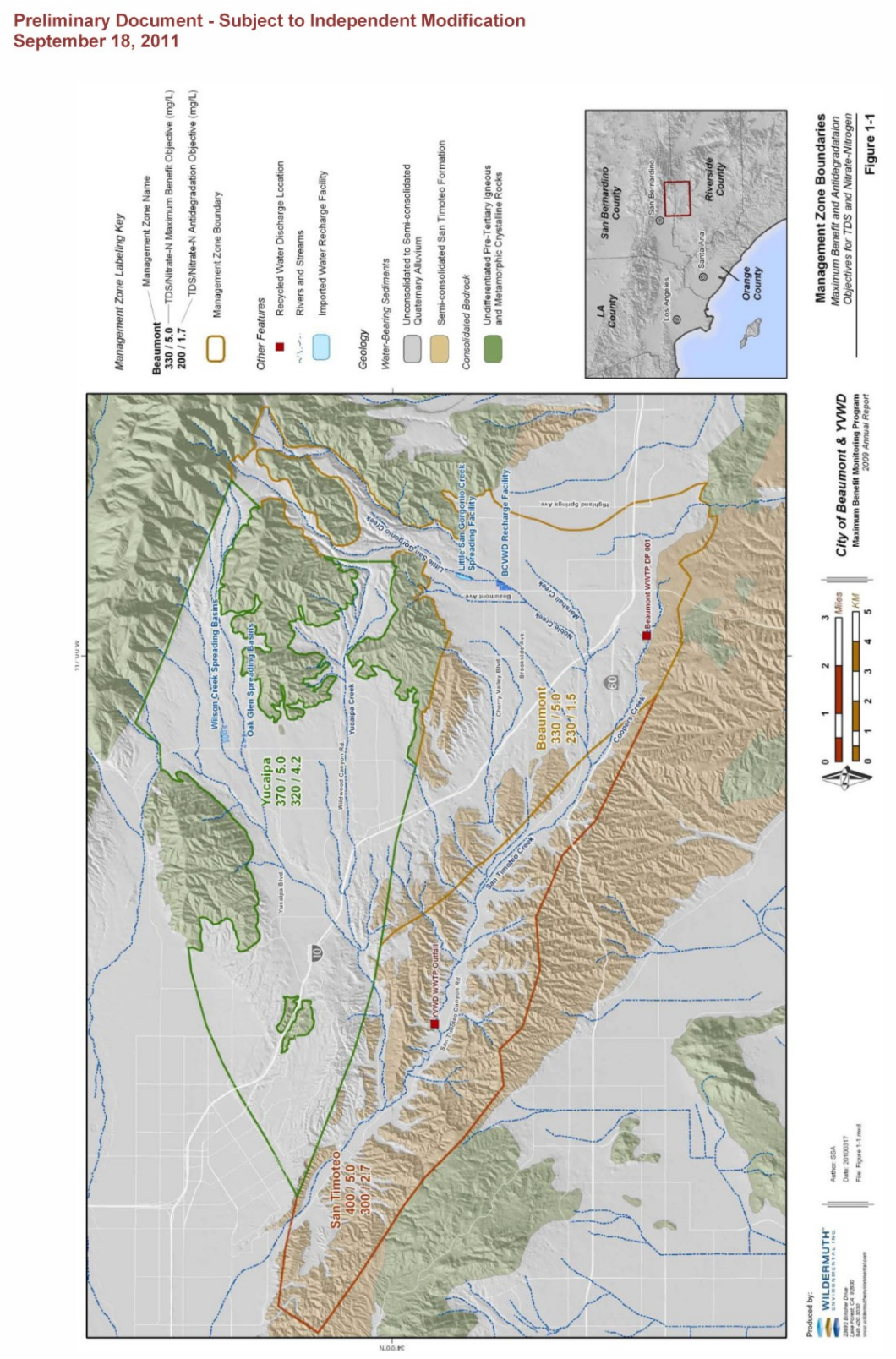
September 18, 2011



Management Zone Boundaries
Maximum Benefit and Antidegradation Objectives for TDS and Nitrate-Nitrogen
Figure 1-1

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September 18, 2011

Regional Salt Management Strategy

On September 13, 2010 the managers of the Beaumont Cherry Valley Water District, City of Beaumont and Yucaipa Valley Water District received an *Order Pursuant to Water Code Section 13267 for Technical Reports for a Technical Report to Support the Implementation of the Maximum Benefit Objectives for Total Dissolved Solids and Nitrate Nitrogen in the Beaumont Management Zone*. The Order required the preparation of a technical report that included the following elements:

1. Updated planning information for the use of all sources of water by each agency in the Beaumont Management Zone. This updated information needed to include flow, quality, and recharge or use location;

2. An update of the CSRM model to create 30-year TDS and nitrogen projections for the Beaumont Management Zone based on the full range of recycled water planning scenarios that are being considered; and

3A. An assessment of the individual and cumulative water quality impact as a result of each agency's water management activities; and

3B. A calculation of the salt liability of all recycled water users in the Beaumont Management Zone.

The required elements identified above as 1., 2., and 3A. have been previously provided to the Santa Ana Regional Water Quality Control Board. This draft document has been prepared in compliance with the required element 3B. above.

Over the past several months, the agencies involved in the preparation of this document have strongly embraced the importance of maintaining high quality water resources in the Beaumont Management Zone. Since the Beaumont Management Zone does not have a large volumes of natural runoff like the Bunker Hill B Management Zone, it is important to protect the local water quality in a manner consistent with the policies of the State of California and the Basin Plan as approved by the Santa Ana Regional Water Quality Control Board.

For illustration purposes, the following graph represents the water quality objectives and 2009 current ambient water quality as water resources proceed downstream from the Beaumont Management Zone to the Orange County Management Zone.

Total Dissolved Solids (mg/l)			
Management Zone	Water Quality Objective	Maximum Benefit Objective	2009 Current Ambient Water Quality
Beaumont	230	330	280
San Timoteo	300	400	420
Bunker Hill B	310	- -	270
Colton	410	- -	430
Riverside A	560	- -	430
Chino - South	680	- -	980
Orange County	580	- -	600

To maintain the high quality water resources of the Beaumont Management Zone, the undersigned agencies recognize the importance of fully implementing the commitments made by the San Timoteo Watershed Management Authority in order to maintain the maximum benefit objectives applied in the Beaumont Management Zone.

City of Banning:

Print Name	Signature	Date

Beaumont Cherry Valley Water District:

Print Name	Signature	Date

San Gorgonio Pass Water Agency:

Print Name	Signature	Date

Yucaipa Valley Water District:

Print Name	Signature	Date

1. **Surface Water Monitoring, Groundwater Monitoring and Ambient Groundwater Quality Determination.** (See Santa Ana Regional Water Quality Control Board Basin Plan, Table 5-10a, page 5-73 and 5-74, Items 1, 2, and 6)

   The Beaumont Cherry Valley Water District, the City of Banning, the San Gorgonio Pass Water Agency, and the Yucaipa Valley Water District are committed to continue our active role in surface water monitoring, groundwater monitoring and the preparation of the ambient groundwater quality determinations.

   To fully satisfy the maximum benefit commitment associated with surface water monitoring, groundwater monitoring and ambient groundwater quality determination, the Parties propose to jointly collect water quality samples and participate in the cost of data compilation and report preparation as provided in Exhibit C. The proposed water quality monitoring locations and tests performed will be reviewed and potential changes to the water quality protocol will be forwarded to the Regional Water Quality Control Board for review and approval every three years as part of the ambient water quality determination.

2. **Desalter and Brineline Facilities.** (See Santa Ana Regional Water Quality Control Board Basin Plan, Table 5-10a, page 5-73, Item 3)

The Yucaipa Valley Water District is in the process of completing an extension of the Santa Ana Regional Interceptor from the San Bernardino Wastewater Treatment Plant to the Wochholz Regional Water Recycling Facility. This brineline extension (the "Yucaipa Valley Regional Brineline") and associated reverse osmosis equipment is scheduled to be completed and operational by the second quarter of 2014.

With the completion of the brineline and reverse osmosis, the "maximum benefit" objectives necessary to protect the water resources of the Beaumont Management Zone is achieved for the Yucaipa Valley Water District and users of the recycled water produced by the Wochholz Regional Water Recycling Facility.

As provided in greater detail below, compliance with this commitment will be demonstrated as follows:

A. Recycled Water for Irrigation Purposes - Upon completion and operation of the Yucaipa Valley Regional Brineline and associated equipment, the Yucaipa Valley Water District will reduce the salinity of recycled water supplies to comply with a 10-year running average total dissolved solids ("TDS") concentration of 330 mg/l in the Beaumont Management Zone.

Compliance of this water quality objective will be measured in the recycled water system as a weighted average of recycled water within the management zone and will be achieved by blending imported water sources or desalting the recycled water supply. The ten-year compliance calculation would begin when recycled water from the Wochholz Regional Water Recycling Facility is first introduced into the recycled water system.

B. Recycled Water Recharge - Recycled water recharge, whether it is direct or incidental, shall comply with the maximum benefit objectives of the Beaumont Management Zone. Upon completion and operation of the Yucaipa Valley Regional Brineline and associated equipment, the Yucaipa Valley Water District will reduce the salinity of our recycled water to comply with a 10-year running average total dissolved solids ("TDS") concentration of 330 mg/l in the Beaumont Management Zone.

Compliance of this water quality objective will be measured at the point of discharge and will be achieved by desalting the recycled water supply and/or blending the recycled water supply with other imported water resources.

3. **Recycled (Non-Potable) Water Supply.** (See Santa Ana Regional Water Quality Control Board Basin Plan, Table 5-10a, page 5-73, Item 4)

The Beaumont Cherry Valley Water District, the City of Banning, the San Gorgonio Pass Water Agency, and the Yucaipa Valley Water District will maintain a 10-year running average total dissolved solids concentration of 330 mg/l in the recycled (non-potable) water supplies used in the Beaumont Management Zone.

Compliance of this water quality objective will be measured in the recycled water system as a weighted annual average concentration of all recycled water sources added to the recycled water system within the management zone. It is anticipated that an agency can comply with this "maximum benefit" commitment by blending the recycled water supply with water resources imported into the Beaumont Management Zone, imported water from the State Water Project, storm water added to the recycled water supply system, or by directly desalting the recycled water source.

4. **Recycled Water Recharge.** (See Santa Ana Regional Water Quality Control Board Basin Plan, Table 5-10a, page 5-73, Item 5)

The Beaumont Cherry Valley Water District, the City of Banning, the San Gorgonio Pass Water Agency, and the Yucaipa Valley Water District recognize the importance of maintaining the pure water resources in the Beaumont Management Zone. Therefore, the Parties will recharge recycled water, whether direct or incidental; in compliance with a 10-year running average of 330 mg/l total dissolved solids for the recharge of waters within the boundary of the Beaumont Management Zone.

Compliance of this water quality objective will be measured at the point of discharge to calculate the representative water quality and quantity recharged within the definitive recharge facility property/parcel boundary. The "maximum benefit" water quality objective at the recharge property/parcel is expected to be achieved by desalting the recycled water supply and/or blending recycled water with water resources added to the recharge facility such as imported water from outside the Beaumont Management Zone, imported water from the State Water Project, or storm water captured at the recharge facility. In all cases the quantity and quality of the water supplies recharged will be monitored and reported.

In cases whereby multiple Parties propose to recharge recycled water in the same recharge facility property/parcel boundary, each individual agency will separately demonstrate independent compliance with the maximum benefit objective. A comprehensive annual report will be compiled by the participating agencies demonstrating compliance with the maximum objective within the recharge facility property/parcel boundary by each agency.

The preparation of this document is based on a concept of consistent implementation of water quality objectives throughout the watershed. The Parties request permit language that provides an opportunity to ensure a consistent and uniform approach is applied to the implementation of waste discharge requirements in the region.

Preliminary Document - Subject to Independent Modification
September 18, 2011

Exhibit A

Santa Ana Regional Water Quality Control Board Basin Plan

The 1995 Water Quality Control Plan for the Santa Ana River Basin (Region 8) was updated in February 2008 with minor, nonsubstantive editorial corrections made to Chapter 4 in June 2011. Attached for reference are pages 5-71 to 5-81.

2. San Timoteo and Beaumont Management Zones – City of Beaumont and San Timoteo Watershed Management Authority (STWMA)

As shown in Chapter 4, two sets of TDS and nitrate-nitrogen objectives have been adopted for both the San Timoteo and Beaumont Management Zones: the "maximum benefit" objectives and objectives based on historic ambient quality (the "antidegradation" objectives). The application of the "maximum benefit" objectives for these Management Zones is contingent on the implementation of commitments by the City of Beaumont/STWMA (and, in the case of the San Timoteo Management Zone, by the Yucaipa Valley Water District (YVWD; see preceding discussion)) to implement a specific water and wastewater resources management program [Ref. 10E]. This program is part of a coordinated effort by the member agencies of STWMA to develop and implement projects that will assure reliable water supplies to meet rapidly increasing demands in this area. The San Timoteo Watershed Management Program (STWMP) developed by STWMA entails enhanced recharge of native and recycled water, maximizing the direct use of recycled water, optimizing the direct use of imported water, recharge and conjunctive use.

Wastewater collection and treatment services in the STWMA service area are provided by the City of Beaumont, as well as YVWD. Beaumont discharges tertiary treated wastewater to Coopers Creek, a tributary of San Timoteo Creek, Reach 3. This unlined reach of the Creek overlies and recharges the San Timoteo groundwater management zone.

Table 5-10a identifies the projects and requirements that must be implemented by Beaumont/STWMA to demonstrate that water quality consistent with maximum benefit to the people of the state will be maintained. STWMA, acting for all its member agencies, has committed to conduct the regional planning and monitoring activities necessary to implement these "maximum benefit" commitments, and the San Timoteo Watershed Management Program as a whole. Table 5-10a also specifies an implementation schedule. The Regional Board will revise the City of Beaumont's waste discharge requirements and take other actions as necessary to require that these commitments be met. It is assumed that maximum benefit is demonstrated, and that the "maximum benefit" water quality TDS and nitrate-nitrogen objectives apply to the Beaumont and San Timoteo Management Zones, as long as the schedule is being met[7]. If the Regional Board determines that the maximum benefit program is not being implemented effectively in accordance with the schedule shown in Table 5-10a (and in the case of the San Timoteo Management Zone, the commitments and schedule shown in Table 5-9a (see preceding section)), then maximum benefit is not demonstrated, and the "antidegradation" TDS and nitrate-nitrogen objectives apply. In this situation, the Regional Board will require mitigation for TDS and nitrate-nitrogen discharges

[7] Application of "maximum benefit" objectives for the San Timoteo Management Zone is also contingent on the timely implementation of the commitments by the Yucaipa Valley Water District which are discussed in the preceding section.

affecting these management zones that took place in excess of limits based on the "antidegradation" objectives.

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Preliminary Document - Subject to Independent Modification
September 18, 2011

Exhibit A

Table 5-10a

City of Beaumont and San Timoteo Watershed Management Authority
Maximum Benefit Commitments

Description of Commitment	**Compliance Date – as soon as possible, but no later than**
1. Surface Water Monitoring Program	
a. Submit Draft Monitoring Program to Regional Board	a. January 23, 2005
b. Implement Monitoring Program	b. Within 30 days from Regional Board approval of monitoring plan
c. Quarterly data report submittal	c. April 15, July 15, October 15, January 15
d. Annual data report submittal	d. February 15th
2. Groundwater Monitoring Program	
a. Submit Draft Monitoring Program to Regional Board	a. January 23, 2005
b. Implement Monitoring Program	b. Within 30 days from Regional Board approval of monitoring plan
c. Annual data report submittal	c. February 15th
3. Desalter(s) and Brine Disposal Facilities	
Submit plan and schedule for construction of desalter(s) and brine disposal facilities. Facilities are to be operational as soon as possible but no later than 7 years from date of Regional Board approval of plan/schedule.	a. Within 6 months of either of the following: i. When Beaumont's effluent 5-year running average TDS exceeds 480 mg/L; and/or ii. When volume weighted average concentration in the Yucaipa MZ of TDS exceeds 320 mg/L
b. Implement the plan and schedule	b. Within 30 days from Regional Board approval of monitoring plan
4. Non-potable water supply	
Implement non-potable water supply system to serve water for irrigation purposes. The non-potable supply shall comply with a 10-year running average TDS concentration of 330 mg/L or less	December 23, 2014

IMPLEMENTION 5-73 January 24, 1995
Updated February 2008

Page 14 of 37

Preliminary Document - Subject to Independent Modification
September 18, 2011

Exhibit A

Description of Commitment	Compliance Date – as soon as possible, but no later than
5. Recycled water recharge The recharge of recycled water in the Beaumont or San Timoteo Management Zones shall be limited to the amount that can be blended with other recharge sources to achieve a 5-year running average equal to or less than the "maximum benefit" objectives for TDS and nitrate-nitrogen for the relevant Management Zone(s). a. Submit baseline report of amount, locations, and TDS and nitrogen quality of stormwater/imported water recharge. b. Submit documentation of amount, TDS and nitrogen quality of all sources of recharge and recharge locations. For stormwater recharge used for blending, submit documentation that the recharge is the result of City of Beaumont/STWMA enhanced recharge facilities/programs	Compliance must be achieved by end of 5th year after initiation of recycled water use/recharge operations. a. Prior to initiation of construction of basins/other facilities to support enhanced storm/water imported water recharge . b. Annually, by January 15th, after initiation construction of facilities/implementation of programs to support enhanced recharge.
6. Ambient groundwater quality determination	July 1, 2005 and every 3 years thereafter
7. Replace denitrification facilities (if necessary to comply with TIN wasteload allocation specified in Table 5-5)	Compliance with 6 mg/L TIN limitation to be achieved by December 23, 2007
8. City of Beaumont recycled water quality Improvement plan and schedule a. Submit plan and schedule b. Implement plan and schedule	a. 60 days after the TDS 12-month running average effluent quality equals or exceeds 480 mg/L for 3 consecutive months and/or the 12-month running average TIN concentration equals or exceeds 6 mg/L in any month (once facility/operational changes needed to achieve 6 mg/L TIN are in place) b. Upon approval by Regional Board
9. Remove/reduce the discharge of Beaumont Effluent From the unlined portion of San Timoteo Creek a. Submit proposed plan/schedule b. Implement plan/schedule	a. June 23, 2005 b. Upon Regional Board approval

IMPLEMENTION 5-74 January 24, 1995
Updated February 2008

Page 15 of 37

A. Description of City of Beaumont, San Timoteo Watershed Authority Commitments

1. Surface Water Monitoring Program (Table 5-10a, #1)

The City of Beaumont and the STWMA shall develop and submit for Regional Board approval a surface water monitoring program for San Timoteo, Little San Gorgonio and Noble Creeks at the locations listed in Table 5-10b. The monitoring program must be implemented within 30 days of Regional Board approval of the monitoring plan, and six months of data must be generated prior to the implementation of any changes to the effluent discharge points and before any recycled water is used in the Beaumont or San Timoteo Management Zones.

At a minimum, the surface water monitoring program shall include the collection of monthly measurements of TDS and nitrogen components at locations in San Timoteo, Little San Gorgonio and Noble Creeks (see Table 5-10b). Data reports shall be submitted to the Regional Board's Executive Officer by April 15, July 15, October 15 and January 15 each year. An annual report summarizing all data collected for the year and evaluating compliance with relevant surface water objectives shall be submitted February 15th of each year.

2. Groundwater Monitoring Program (Table 5-10a. #2)

The purpose of the groundwater monitoring program is to identify the effects of the implementation of the Beaumont and San Timoteo Management Zone maximum benefit TDS and nitrate-nitrogen water quality objectives on water levels and water quality within the Beaumont and San Timoteo Management Zones. Prior to discharge of recycled water to the Beaumont and/or San Timoteo Management Zone, the City of Beaumont and the STWMA shall submit to Regional Board for approval a groundwater monitoring program to determine ambient water quality in the Beaumont and San Timoteo Management Zones. The groundwater monitoring program must be implemented within 30 days of approval by the Regional Board.

An annual report, including all raw data and summarizing the results of the approved groundwater monitoring program, shall be submitted to the Regional Board by February 15th of each year.

3. Desalters and Brine Disposal (Table 5-10a. #3)

The City of Beaumont and the STWMA shall construct and operate desalting facilities and brine disposal facilities when:

a. The 5-year running average TDS concentration in recycled water produced at the City of Beaumont wastewater treatment plant exceeds 480 mg/L, or

b. The volume-weighted TDS concentration in the Beaumont Management Zone equals or exceeds 320 mg/L.

Exhibit A

The construction of these facilities will be in accordance with a plan and schedule submitted by Beaumont/STWMA and approved by the Regional Board. The schedule shall assure that these facilities are in place within 7 years of Regional Board approval. These facilities shall be designed to stabilize or reverse the degradation trend evidenced by effluent and/or management zone quality.

Table 5 – 10b

Surface Water Monitoring Sites for Monitoring Water Quality and Quantity
City of Beaumont & San Timoteo Watershed Management Authority

Site Name	Discharge	Owner	Type	Discharge Frequency	Monitoring Period	Water Quality Monitoring Frequency	Water Quality Monitoring Period	Water Quality Monitoring Analyses
Above confluence With Coopers Cr.	San Timoteo Creek	Beaumont & STWMA	Total Discharge	Bi-weekly	Jan-Dec	Bi-weekly	Jan-Dec	TDS, TIN, Physical
Near Hinda Sec.35 T2S,R2W	San Timoteo Creek	Beaumont & STWMA	Total Discharge	Bi-weekly	Jan-Dec	Bi-weekly	Jan-Dec	TDS, TIN, Physical
Above confluence With San Timoteo Creek	Coopers Creek	Beaumont & STWMA	Total Discharge	Bi-weekly	Jan-Dec	Bi-weekly	Jan-Dec	TDS, TIN, Physical
At Freeway 10	Little San Gorgonio Cr.	Beaumont & STWMA	Total Discharge	Bi-weekly	Jan-Dec	Bi-weekly	Jan-Dec	TDS, TIN, Physical
At Freeway 10	Noble Creek	Beaumont & STWMA	Total Discharge	Bi-weekly	Jan-Dec	Bi-weekly	Jan-Dec	TDS, TIN, Physical
Recharged to Beaumont MZ	State Water Project	Beaumont & STWMA	Total Discharge	Bi-weekly	Jan-Dec	Monthly	Jan-Dec	TDS, Nitrate-N
Recharged to Beaumont MZ	Storm water	Beaumont & STWMA	Total Discharge	Bi-weekly	Jan-Dec	Monthly	Jan-Dec	TDS, Nitrate-N

4. Non-potable water supply distribution system (Table 5-10a, #4)

Like YVWD, the City of Beaumont is constructing a non-potable water system that will convey untreated State Project water and recycled water for irrigation within its service area. The intent of blending these sources is to minimize the impact of recycled water use on groundwater quality in the proposed Beaumont and San Timoteo Management Zones. A higher proportion of State Project water will be used in wet, surplus years, while larger amounts of recycled water will be used in dry, deficit years.

5. Recycled Water Use (Table 5-10a, #5)

The use of recycled water within the Beaumont Management Zone is a critical component of the City of Beaumont and STWMA water management plan and is necessary to maximize the use of the water resources of the Beaumont area.

The demonstration of "maximum benefit" and the continued application of the "maximum benefit" objectives depends on the combined recharge (recycled water, imported water, storm water) to the Beaumont Management Zone of a 5-year annual average (running average) TDS concentration of 330 mg/L and a nitrate-nitrogen concentration of 5 mg/L. If recycled water recharge in the San Timoteo Management Zone is pursued, then the application of the "maximum benefit" objectives will depend on the combined recharge to that Zone of 5-year annual average (running average) concentrations of 400 mg/L or less TDS, and 5 mg/L or less nitrate-nitrogen.

To comply with this requirement, the STWMA member agencies are developing plans to recharge and store State Project water in the proposed Beaumont Management Zone. The Beaumont-Cherry Valley Water District (BCVWD) is developing a new 80-acre groundwater recharge project that will increase storm water recharge in the Beaumont Basin by 4,100 acre-ft/yr. This facility will also be used to recharge State Water project water. The City of Beaumont is also developing storm water recharge in facilities in newly developing areas, which is expected to result in the recharge of an additional 2,400 acre-ft/yr of stormwater runoff.

Accordingly, the use of recycled water for use or recharge in the Beaumont or San Timoteo Management Zone shall be limited to the amount that can be blended on a volume-weighted basis with other sources of recharge to achieve 5-year running average concentrations less than or equal to the "maximum benefit" objectives for the affected groundwater management zone. The 25% nitrogen loss coefficient will be applied in determining the amount of recharge of other water sources that must be achieved to meet the 5-year running average nitrogen concentrations.

6. Ambient Groundwater Quality Determination (Table 5-10a, # 6)

By July 1, 2005, and every three years thereafter, the City of Beaumont and STWMA shall submit a determination of ambient TDS and nitrate-nitrogen quality in the Beaumont and San Timoteo Management Zones. This determination shall be accomplished using methodology consistent with the calculation (20-year running averages) used by the Nitrogen /TDS Task Force to develop the TDS and nitrate-nitrogen "antidegradation" water quality objectives for groundwater management zones within the region [Ref. 1].

7. Replacement/modification of denitrification facilities (Table 5-10a, #7)

The City of Beaumont has committed to produce recycled water with a 12-month average TIN concentration of 6 mg/L or less by 2008. This may be accomplished via operational changes, or may require the installation/modification of facilities. This TIN effluent quality is specified in the TIN wasteload allocation (see Table 5-5) and is necessary to assure compliance with the proposed "maximum benefit" nitrate-nitrogen objective for the Beaumont and San Timoteo Management Zones (5 mg/L). An appropriate schedule, not to exceed December 23, 2007 for compliance with this effluent limit will be specified in a revised NPDES permit for the City.

8. City of Beaumont Wastewater Management (Table 5-10a, #8)

Beaumont expects to limit the TDS concentration in its effluent to less than or equal to 490 mg/L by using a low TDS source water supply for potable uses, selective desalting of either source water and/or recycled waters, and minimizing the TDS waste increment.

Within 60 days after the Beaumont 12-month running average concentration for TDS equals or exceeds 480 mg/L for 3 consecutive months, or the 12-month running average TIN concentration equals or exceeds 6 mg/L in any month (once facility/operational changes needed to achieve 6 mg/L TIN are in place), the City of Beaumont shall submit to the Regional Board a plan and time schedule for implementation of measures to insure that the average agency wastewater effluent quality does not exceed 490 mg/L and 6 mg/L for TDS and TIN, respectively. The plan and schedule are to be implemented upon approval by the Regional Board.

9. Relocation of San Timoteo Creek Discharge (Table 5-10a, #9)

Like YVWD, Beaumont has established the goal of eliminating its discharge to the unlined reach of San Timoteo Creek by 2008 to minimize the impacts of these discharges on the San Timoteo Management Zone. The STWMP anticipates that Beaumont's recycled water will be almost completely reused within the Beaumont area for landscape irrigation, habitat enhancement, and potentially for groundwater recharge. Like YVWD, Beaumont and STWMA are also considering the export of a portion of Beaumont's surplus recycled water to the San Jacinto basin, where the

TDS objectives are higher than those for the Beaumont Management Zone and recycled water demands are greater than supplies. Some limited recycled water discharge to Coopers Creek and thence /San Timoteo Creek may need to be continued to support existing riparian habitat.

Whole or partial removal of the discharge from the unlined reach of San Timoteo Creek would improve the quality of groundwater in the San Timoteo Management Zone and supplement recycled water supplies available for reuse elsewhere in the service area.

By June 23, 2005, Beaumont/STWMA shall submit a proposed plan and schedule to remove/reduce the discharge of recycled water to the unlined reach of San Timoteo Creek. The plan and schedule shall be implemented upon Regional Board approval.

B. Implementation by Regional Board

1. Revision of City of Beaumont NPDES Permit

To implement the "maximum benefit" objectives, the Regional Board will revise the NPDES permit for the City of Beaumont wastewater discharge to reflect the commitments described above, as appropriate. This includes the following.

The discharge limits for TDS and TIN will be specified as an annual volume-weighted average not to exceed 490 mg/L TDS and 6 mg/L TIN. These limits are based on the wasteload allocation shown in Table 5-5. A schedule not to exceed December 23, 2007 for compliance with this TIN limit shall be included in the permit. This schedule will enable Beaumont to make the necessary facility/operational changes. Alternative TDS and nitrate-nitrogen limitations based on the "antidegradation" objectives will also be specified and will apply should the Regional Board find that maximum benefit is not demonstrated. These alternative limits are also specified in Table 5-5. Compliance schedules for these alternative limits will be specified in Beaumont's waste discharge requirements, as necessary.

Beaumont will be required to implement measures to improve effluent quality when the 12-month running average effluent TDS quality equals or exceeds 480 mg/L for 3 consecutive months, and/or when the 12-month running average TIN concentration equals or exceeds 6 mg/L in any month (once the facility/operational changes necessary to assure compliance with the 6 mg/L limit are in place).

Beaumont's waste discharge requirements will require that recycled water used for recharge shall be limited to the amount that can be blended with other water sources, such as stormwater or imported water, to achieve 5-year running average concentrations equal to or less than the "maximum benefit" TDS and nitrate-nitrogen objectives for the affected management zone (Beaumont or San Timoteo).

The effluent limits for the City of Beaumont, which establish an upper limit on TDS and TIN concentrations of recycled water discharged in the management zones, are

a key part of the maximum benefit demonstration. The cap on effluent TDS and TIN concentrations provides a controlling point for management of TDS and nitrogen water quality. The City of Beaumont has committed to initiate the building of a groundwater desalter and brine disposal line when the TDS in the City's effluent reaches 480 mg/L. Further, the City will immediately implement a salt management program to reduce the salts entering the City's wastewater treatment plant. This salt management program will include: 1) provision of incentives for the removal of on-site regenerative water softeners and the use of off-site regenerative systems; and 2) percolation of State Water Project water into the Beaumont Management Zone when State Water Project water has low TDS. Implementing these measures will assure that the groundwater quality remains at or below the Beaumont management zone objective of 330 mg/L TDS. Maintenance of this ambient groundwater quality is necessary, in turn, to assure that the City's wastewater treatment facility is able to meet the effluent TDS limits. Beaumont Management Zone groundwater is a component of the water supplied to the City and its quality thus has an important effect on the effluent quality. Poor ambient quality will preclude the City from meeting effluent limits without desalting.

Beaumont will be required to submit a proposed plan and schedule for the removal/reduction of its wastewater discharges from the unlined reach of San Timoteo Creek. Beaumont's revised permit will also reflect the surface and groundwater monitoring program requirements described above. This includes the determination of ambient quality in the San Timoteo and Beaumont Management Zones.

2. Review of Project Status

No later than 2005, and every three years thereafter (to coincide with the Regional Board's triennial review process), the Regional Board intends to review the status of the activities planned and executed by the City of Beaumont and STWMA to demonstrate maximum benefit and justify continued implementation of the "maximum benefit" water quality objectives. This review is intended to determine whether the commitments specified above and summarized in Table 5-10a are met. As indicated above, if, as a result of this review, the Regional Board finds that the City of Beaumont and STWMA commitments are not met and after consideration at a duly noticed Public Hearing, the Regional Board will make a finding that the lowering of water quality associated with TDS and nitrate-nitrogen water quality objectives that are higher than historical water quality (the "antidegradation" objectives) is not of maximum benefit to the people of the state. By default, the scientifically derived "antidegradation" objectives for the Beaumont and San Timoteo Management Zones would become effective (230 mg/L TDS and 1.5 mg/L nitrate-nitrogen for the Beaumont Management Zone; 300 mg/L TDS and 2.7 mg/L nitrate-nitrogen for the San Timoteo Management Zone (see Chapter 4).

Furthermore, in the event that the projects and actions specified in Table 5-10a are not implemented, the Regional Board will require that the City of Beaumont and STWMA mitigate the adverse water quality effects, both on the immediate and

downstream waters, that resulted from the recycled water discharges based on the "maximum benefit' objectives. As for CBW/IEUA and YVWD, discharges in excess of the antidegradation objectives that must be considered for mitigation include both recycled water and imported water, at TDS concentrations in excess of the antidegradation objectives. Mitigation by groundwater extraction and desalting must be adjusted to address concentrations of salt and nitrogen in the basin, not simply salt load.

(End of Salt Management Plan Section) (End of Resolution R8-2004-0001)

NONPOINT SOURCE PROGRAM

Considerable improvements in water quality have been achieved in the nation through the control of point source discharges such as those from sewage treatment plants or industrial facilities. It is now recognized that in many areas, nonpoint source inputs, such as urban nuisance flows and stormwater runoff, are the principal sources of contaminant inputs to surface and groundwaters.

In contrast to point sources, which discharge wastewater of predictable quantity and quality at a discrete point (usually at the end of a pipe), nonpoint source inputs are diffuse in origin and variable in quality. Management of nonpoint source inputs is in many ways more difficult to achieve, since it requires an array of control techniques customized to local watershed conditions.

Nonpoint Source Management Plan

Section 319 of the 1987 amendments to the Clean Water Act (33 USC 466 *et seq.*), established the framework for nonpoint source activities. Section 319 requires each state to prepare a Nonpoint Source Management Plan and to conduct an assessment of the impact nonpoint sources have on the state's waterbodies. In response to these requirements, the State Board adopted the Nonpoint Source Management Plan (NPSMP) in 1988 and the Water Quality Assessment in 1990 (see Chapter 6 for a discussion of the Water Quality Assessment). The NPSMP establishes a statewide policy for managing nonpoint source inputs to California's waters and is part of this Basin Plan.

The State Board defined six objectives of the Nonpoint Source Management Plan, four of which apply to activities in the Santa Ana Region:

1. Initiate and institutionalize activities for control of nonpoint source pollution (drainage from urban activities, agriculture, silviculture, abandoned mines construction, grazing, hydrologic modification, and individual disposal systems). These activities include outreach, education, public participation, technical assistance, financial assistance, interagency coordination, and demonstration projects.

Preliminary Document - Subject to Independent Modification
September 18, 2011

Exhibit B

Order Pursuant to Water Code Section 13267 for Technical Reports for a Technical Report to Support the Implementation of the Maximum Benefit Objectives for Total Dissolved Solids and Nitrate Nitrogen in the Beaumont Management Zone

Preliminary Document - Subject to Independent Modification
September 18, 2011

Exhibit B

California Regional Water Quality Control Board
Santa Ana Region

3737 Main Street, Suite 500, Riverside, California 92501-3348
Phone (951) 782-4130 • FAX (951) 781-6288 • TDD (951) 782-3221
www.waterboards.ca.gov/santaana

Linda S. Adams
Secretary for
Environmental Protection

Arnold Schwarzenegger
Governor

September 13, 2010

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Beaumont Cherry Valley Water District
Attention: Anthony Lara
Interim General Manager
560 Magnolia Avenue
Beaumont, CA 92223

City of Beaumont
Attention: David Dillon
Director of Economic Development
550 East 6th Street
Beaumont, CA 92223

Yucaipa Valley Water District
Attention: Joe Zoba
General Manager
12770 Second Street
Yucaipa, CA 92399

ORDER PURSUANT TO WATER CODE SECTION 13267 FOR TECHNICAL REPORTS FOR A TECHNICAL REPORT TO SUPPORT THE IMPLEMENTATION OF THE MAXIMUM BENEFIT OBJECTIVES FOR TOTAL DISSOLVED SOLIDS AND NITRATE NITROGEN IN THE BEAUMONT MANAGEMENT ZONE

Gentlemen:

This Order, issued pursuant to California Water Code section 13267, requires that you submit certain plans and schedules (collectively, reports) to evaluate the impact of discharges of total dissolved solids (TDS) and nitrogen on the Beaumont Groundwater Management Zone (Beaumont MZ). This requirement is consistent with the Salt Management Plan for the Santa Ana Region, and in particular the maximum benefit implementation plan for the Beaumont MZ, adopted by the California Regional Water Quality Control Board, Santa Ana Region (Regional Water Board) in 2004 (Resolution No. R8-2004-0001) and approved by the State Water Resources Control Board and the Office of Administrative Law in 2005.

Background of the Maximum Benefit Implementation Plan for the Beaumont MZ

On June 26, 2002, the San Timoteo Watershed Management Authority (STWMA[1]) submitted a proposal to establish maximum benefit objectives for TDS and nitrate-nitrogen for the Beaumont MZ to accommodate water resource management projects, including the recharge of stormwater,

[1] The San Timoteo Watershed Management Authority (STWMA) was formed in January 2001 by the Beaumont-Cherry Valley Water District (BCVWD), the City of Beaumont (Beaumont), the South Mesa Water Company and the Yucaipa Valley Water District (YVWD). The STWMA formed a stakeholder group to develop a watershed scale water resources management program that would provide a safe and reliable water supply for all water users in the watershed. In July 2010, STWMA disbanded.

Preliminary Document - Subject to Independent Modification
September 18, 2011

Exhibit B

imported State Project Water (SPW), and recycled water. The maximum benefit objectives and commitments for Beaumont MZ were based on detailed model projections and analyses conducted by Wildermuth Environmental, Inc (WEI). The modeling analysis utilized a Constantly Stirred Reactor Model (CSRM), and simulated TDS groundwater quality through 2100 resulting from the implementation of several planned scenarios, including a no project alternative and the preferred maximum benefit alternative. The preferred maximum benefit alternative assumes that 10,000 acre-ft of replenishment water will be recharged into the Beaumont MZ with a 50/50 mix of recycled water and SPW. The preferred option also assumed that 5,100 acre-ft of non-potable supply of a 50 /50 mix of SPW and recycled water would be used within the Beaumont MZ. The TDS quality of recycled water, to be provided by the City of Beaumont Wastewater Treatment Plant (WWTP), was assumed to have an average TDS concentration of 550 mg/L, and the imported water was assumed to have a TDS concentration of 290 mg/L.

The Regional Board adopted the maximum benefit proposals in 2004 (Resolution No. R8-2004-0001), assigning STWMA and the City of Beaumont the responsibility for implementing the maximum benefit commitments in the Beaumont MZ. The commitments include building desalting facilities when either of the following occurs:

- When the five-year average TDS concentration in recycled water produced by the Beaumont WWTP is 10 mg/L less than its current TDS limit (490 mg/L), or
- When the volume-weighted TDS concentration in the Beaumont MZ rises to within 10 mg/L of the maximum benefit TDS objective of 330 mg/L.

Resolution No. R8-2004-0001 also specifies similar maximum benefit implementation programs for the Yucaipa and San Timoteo MZs. Yucaipa Valley Water District (YVWD) is responsible for implementation of the maximum benefit commitments for the Yucaipa MZ, and is jointly responsible for implementing the maximum benefit commitments for the San Timoteo MZ along with the City of Beaumont and STWMA.

Permitting Issues

Since 2009, the Beaumont Cherry Valley Water District (BCVWD) has been working with Regional Board staff to obtain a recycled water permit to utilize various sources of water for non-potable use and for recharge in the Beaumont MZ. BCVWD is proposing to use recycled water from both the Yucaipa Valley Water District (YVWD) and the City of Beaumont, local groundwater, and imported SWP water. The ranges of anticipated flow and water quality for the YVWD recycled water and local groundwater for the near term (2015) and long term (2035), are described in a June 2, 2010 letter report submitted by BCVWD, which is attached as Exhibit A. These "new" sources of water – the YVWD recycled water and local groundwater – were not considered in the original model projections and analyses conducted by WEI in 2002. Therefore, the water quality impact of these "new" sources on the Beaumont MZ is unknown.

The City of Beaumont is also working with Regional Board staff to renew and update their Waste Discharge Requirements (WDRs) to increase the discharge from 4 MGD (approximately 4,484 acre-ft/year) to 8 MGD (8,968 acre-ft/year). Concurrently, YVWD has requested revisions to their WDRs to correct an error in the TDS limit for recycled water used for irrigation, and to include a provision allowing for the recharge of recycled water into the Beaumont MZ. YVWD's proposed irrigation use and recharge of recycled water in the Beaumont MZ was not considered in the original analysis by WEI, and the impact of these discharges needs to be evaluated.

Preliminary Document - Subject to Independent Modification
September 18, 2011

Exhibit B

Basin Plan Amendment Issues

As previously indicated, the Basin Plan specifies that STWMA and the City of Beaumont are responsible for implementing the maximum benefit commitments related to the Beaumont MZ. However, with the dissolution of STWMA, the responsibilities for carrying out the maximum benefit commitments in the Beaumont MZ need to be re-assessed. Some STWMA members, including BCVWD, the City of Beaumont and YVWD, continue to have and/or have expressed new interest in water management activities, including the use/increased use of recycled water, in the Beaumont MZ. Given this, it is necessary to reconsider the assigned responsibilities for implementing maximum benefit commitments for the Beaumont MZ. One STWMA member, South Mesa Water Company, has no interest in the Beaumont MZ, and should not be included in the maximum benefit program. In sum, the Basin Plan needs to be revised to incorporate changes in water resource and salt management, and maximum benefit implementation in the Beaumont MZ. To do so, an updated modeling analysis is necessary. It should be noted that this analysis is necessary in any case to support current permitting requests, described above. The analysis must include an assessment of salt liabilities by these agencies under the different management scenarios so that the responsibilities for maximum benefit implementation can be properly assigned.

Required Submittals

Consistent with the Salt Management Plan, you are hereby required to submit an updated analysis for the Beaumont MZ to the Regional Water Board as soon as possible, but **no later than November 30, 2010**. The analysis must include the following:

1) Updated planning information for the use of all sources of water by each agency in the Beaumont MZ. This updated information shall include flow, quality, and recharge or use location;

2) An update of the CSRM model to create 30-year TDS and nitrogen projections for the Beaumont MZ based on the full range of recycled water planning scenarios that are being considered; and

3) An assessment of the individual and cumulative water quality impact as a result of each agency's water management activities and calculation of the salt liability of all recycled water users in Beaumont MZ

The model analysis that is conducted must be consistent with the model analysis that was performed as part of the 2002 maximum benefit proposal.

We recommend that BCVWD, YVWD and the City of Beaumont conduct a single joint analysis. However, if each agency chooses to submit a separate analysis, it must include an assessment of all planned water uses by all agencies and include all the elements identified above.

Need for Technical Report

The Regional Water Board is charged with the protection of water quality in this Region. Unless properly managed, the discharge of salt or nitrogen as a result of water management activities in Beaumont MZ has the potential to contribute to the degradation of water quality and adversely affect beneficial uses. The technical report required by this Order is needed to determine the contribution of

salt and nitrogen from water use and water resource management activities. The data and information will assist efforts to carry out implementation of the maximum benefit program, as set forth in the Basin Plan, in the Beaumont MZ.

Evidence Supporting the Need for the Technical Reports

Monitoring and modeling conducted to develop the maximum benefit programs demonstrated that water management activities (e.g., irrigation use and recharge of recycled water) discharge salt and nitrogen to the Beaumont MZ. The evidence demonstrating that water management activities are sources of salt and nitrogen discharges is contained in letter report from STWMA "Revised San Timoteo Watershed Management Authority proposal for new total dissolved solids (TDS) and total inorganic nitrogen (TIN) water quality objectives for the Beaumont, San Timoteo, and Yucaipa management zones based on maximum beneficial use", and Exhibit A - TDS Budget Table, June 2002, and a letter report from BCVWD "Estimated Recycled Water and Imported Water Needs to Support Groundwater Quality Evaluation", June 2010. Based on these analyses, the three agencies have discharged, or are planning discharges that do and could potentially contribute salt and nitrogen loads in Beaumont MZ.

Burden and Cost of Technical Reports

The estimated cost of a single joint analysis is $36,000 (as reflected in the proposal to BCVWD and the City of Beaumont by WEI dated August 12, 2010). The three agencies can choose to share the cost of a single analysis and report, or prepare separate analyses and reports on their own. Logically, the cost of three separate analyses and reports will be higher. Since the analysis requires data and information from all three agencies, if the analysis is conducted separately for each agency, Regional Board staff estimates the total cost could potentially be $36,000 per agency for a total of $108,000.

Regardless of whether a single or combined analytical approach is selected, the costs of the technical reports required by this Order are justified. Without this information, we will not be able issue WDRs in a timely fashion. The preparation of the above report is also necessary to provide for continued implementation of the maximum benefit objectives for the Beaumont Management Zone.

Penalties

Though we are confident you will make every effort to comply with this Order in a timely manner, please be advised that pursuant to section 13268 of the California Water Code, failure to submit the required information by the specified compliance date, or falsifying any information provided therein, is a misdemeanor and may result in civil liability. Noncompliance may subject you to administrative civil liability in the amount of up to $1,000 for each day of violation. Compliance with this Order is not a substitute for compliance with other applicable laws and does not preclude action to enforce compliance with such other laws.

Appeal

Any person affected by this action of the Regional Water Board may petition the State Water Resources Control Board (State Water Board) to review the action in accordance with section 13320 of the California Water Code and Title 23, California Code of Regulations, section 2050. The petition must be received by the State Water Board within 30 days of the date of this Order. The State Board's website (http://www.swrcb.ca.gov/wqpetitions/index.html) contains detailed information regarding the petition process. Copies of the law and regulations applicable to filing petitions will be provided upon request. In addition to filing a petition with the State Water Board, any person affected

Preliminary Document - Subject to Independent Modification
September 18, 2011

Exhibit B

by this Order may request the Regional Water Board to reconsider this Order. To be timely, such a request must be received within 30 days of the date of this Order. Note that even if reconsideration by the Regional Water Board is sought, filing a timely petition with the State Water Board is also necessary to preserve the petitioner's legal rights. If you choose to request reconsideration of this Order or file a petition with the State Water Board, be advised that you must comply with the Order while your request for reconsideration and/or petition is being considered.

If you have any questions regarding the Order, or wish to schedule a meeting to discuss, please contact, Dr. Cindy Li, Engineering Geologist, at (951) 782-4906 or cli@waterboards.ca.gov.

Sincerely,

Joanne E. Schneider
Division Chief

cc: Regional Board
David Rice, Office of Chief Counsel, SWRCB, DavidRice@waterboards.ca.gov

Attachment: Exhibit A - Estimate of Recycled Water and Imported Water Needs in support of Groundwater Quality Evaluation for Cherry Valley Water District Recycled Water Permit

Preliminary Document - Subject to Independent Modification
September 18, 2011

Exhibit C

Proposed Regional Groundwater and Surface Water Monitoring Program for the Beaumont Management Zone, the San Timoteo Management Zone and the Yucaipa Management Zone

The attached monitoring plan is currently being reviewed by the participating agencies. The document will be enhanced to include additional monitoring to demonstrate full compliance with the "maximum benefit" objectives based on the results of the meeting conducted on September 13, 2011.

Preliminary Document - Subject to Independent Modification
September 18, 2011

Exhibit C

DRAFT MONITORING PROGRAM - SUBJECT TO MODIFICATION

Maximum Benefit Surface and Groundwater Monitoring Program for the Yucaipa, Beaumont and San Timoteo Management Zones

On January 22, 2004, the Santa Ana Regional Water Quality Control Board amended the Basin Plan with regard to TDS/Nitrogen Management in the Santa Ana River Watershed. In the Basin Plan amendment the Regional Water Quality Control Board found that appropriate beneficial use protection/maximum benefit demonstrations were made by the Yucaipa Valley Water District and the San Timoteo Watershed Management Authority to justify establishing alternative "maximum benefit" objectives for the Beaumont, San Timoteo and Yucaipa Groundwater Management Zones.

As part of the maximum benefit commitments, the Yucaipa Valley Water District, the members of the San Timoteo Watershed Management Authority, and the City of Beaumont have agreed to administer extensive and ongoing surface and groundwater monitoring programs in the Beaumont, San Timoteo, and Yucaipa Management Zones. With the dissolution of the San Timoteo Watershed Management Authority, it has become necessary to fully reevaluate the groundwater and surface water monitoring program and directly assign monitoring responsibilities to the City of Banning, City of Beaumont, Beaumont Cherry Valley Water District, the San Gorgonio Pass Water Agency, and the Yucaipa Valley Water District.

The following monitoring program has been developed to provide a common sense approach to ongoing water resource monitoring currently performed by each agency.

Beaumont, San Timoteo and Yucaipa Management Zone Surface Water Monitoring and Sampling Program

Surface water in the Yucaipa Management Zone is monitored for ground water recharge. Recharge by Yucaipa Valley Water District consists of State Project Water disbursement into either the Wilson Creek or Oak Glen spreading basins. Total recharge is determined by the amount of Imported State Water purchased and water quality samples are collected monthly for the duration of the discharge. The parameters for water quality are listed in Table 2. Storm water is monitored in a similar manner.

Pre-established surface water monitoring sites in the Beaumont, Yucaipa and San Timoteo Watershed are monitored bi-weekly for total discharge and field measurements (Table 2) consisting of temperature, pH, electrical conductivity, and dissolved oxygen content. Water quality samples are collected and analyzed for total inorganic nitrogen using ammonia, nitrate and nitrite as the dominant nitrogen species. Samples are also analyzed for total dissolved solids and turbidity. Additional alterations to current sites are provided in footnotes to Table 1.

Surface water monitoring in the San Timoteo Management Zone is performed on a bi-weekly schedule. Discharge and field measurements are taken at each location and a water quality sample is collected for analysis of the parameters listed in Table 2.

Preliminary Document - Subject to Independent Modification
September 18, 2011

Exhibit C

DRAFT MONITORING PROGRAM - SUBJECT TO MODIFICATION

Table 1: Surface Water Monitoring Sites in Beaumont, San Timoteo, and Yucaipa Management Zones

Site ID	Site Name	Discharge Description	Monitoring Agency
San Timoteo Management Zone			
YVWD-A	Above YVWD Recycled Water Discharge	San Timoteo Creek	YVWD
YVWD WWTP	YVWD Wastewater Treatment Facility	Recycled Water Effluent	YVWD
YVWD-B	Above confluence with Yucaipa Creek	San Timoteo Creek	YVWD
YVWD-C	Above levy system and concrete channel	San Timoteo Creek	YVWD
YVWD-D†	Concrete Channel at Barton Road	San Timoteo Creek	YVWD
YVWD-E	11055700 Gage	San Timoteo Creek	YVWD
YVWD-F	Santa Ana River above confluence	Santa Ana River	YVWD
YVWD-G	11059300 Gage, below confluence	Santa Ana River	YVWD
STWMA-2	San Timoteo Canyon Rd's 1st crossing w/ San Timoteo Creek	San Timoteo Creek & Ground water	Beaumont
Beaumont Management Zone			
BWWTP	Beaumont Wastewater TP #1	Recycled Water Effluent	Beaumont
STWMA-1*	Confluence of Noble and Marshal creeks	San Timoteo Creek	BCVWD
STWMA-3	Coopers Creek below BWWTP outfall	Coopers Creek	Beaumont
STWMA-4*	Above confluence w/ Noble Creek	Little San Gorgonio Creek	BCVWD
STWMA-5*	Above confluence w/ Marshal Creek at BCVWD recharge site	Noble Creek	BCVWD
STWMA-6/8	At Devil's Canyon	State Project Water	SGPWA
BMZ-5	Un-named creek behind Lowe's Distribution Center w/ mountain front runoff into BCVWD recharge facility	Un-named creek/stormwater runoff	BCVWD
STWMA-7	Oak Glen Road above entrance to BCVWD recharge facility	Stormwater/recharge	Beaumont
BMZ-6	At SGPWA recharge facility for State Project Water on Noble Creek	Noble Creek	BCVWD
BMZ-1	At Brookside Ave.	Mountain View Channel	BCVWD
BMZ-2	Stormwater detention pond @ Highland Springs & Eighth St	Stormwater/recharge	Beaumont
BMZ-3	Stormwater detention pond on Eighth St E/o Cherry Ave	Stormwater/recharge	Beaumont
BMZ-4	Where Smith Creek crosses Wilson St.	Smith Creek	Banning
Yucaipa Management Zone			
YMZ-1	Wilson and/or Oak Glen spreading basins	State Project Water for Groundwater recharge	YVWD
YMZ-2	Wilson and/or Oak Glen spreading basins	Stormwater runoff for Groundwater recharge	YVWD

*Previously monitored by City of Beaumont- BCVWD will assume responsibility pending approval by the Regional Board.

†Site has proven problematic for monitoring. Currently surface water entrance into concrete channel is covered with sediment. San Bernardino County Flood Control District estimates channel will be cleared by April 2012. Not recommending site for monitoring.

Preliminary Document - Subject to Independent Modification
September 18, 2011

Exhibit C

DRAFT MONITORING PROGRAM - SUBJECT TO MODIFICATION

Table 2: Surface Water Monitoring Program Parameters		
Field Measurements	Bi-weekly water quality samples	Groundwater recharge
Temperature	Total Dissolved Solids (TDS)	Total Dissolved Solids (TDS)
Conductivity	Turbidity	Nitrate-Nitrogen
pH	Ammonia-Nitrogen	
Dissolved Oxygen	Nitrate-Nitrogen	
	Nitrite-Nitrogen	
	Total Inorganic Nitrogen (TIN)	

In addition to these surface sites, results from YVWD's Wochholz Regional Water Recycling Facility (WRWRF) and the City of Beaumont's WWTP no. 1 final effluent monitoring for monthly NPDES reporting and daily discharge are reported (Table 3).

Table 3: Wochholz Regional Water Recycling Facility and Beaumont Wastewater Treatment Plant parameters reported for surface water monitoring program			
Monthly WWTP reporting	Quarterly WWTP reporting		
Ammonia-Nitrogen	Arsenic	Barium	Boron
Nitrate-Nitrogen	Cadmium	Calcium	Cobalt
Nitrite-Nitrogen	Copper	Carbonate	Bicarbonate
Total Inorganic Nitrogen (TIN)	Lead	Chloride	Fluoride
12-month Average TIN	Iron	Mercury	Magnesium
Total Dissolved Solids (TDS)	Nickel	Manganese	Selenium
12-month Average TDS	Sodium	Silver	Sulfate
Total Hardness	Aluminum	Total Chromium	
Free Cyanide	Total Organic Carbon, TOC		Zinc
Total Suspended Solids (TSS)	Benzene	Dibromochloromethane	
Bis(2-ethylhexyl)phthalate	Bromodichloromethane		Chloroform

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September 18, 2011

Exhibit C

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Groundwater Monitoring and Sampling in the Beaumont, San Timoteo and Yucaipa Management Zones

Ground water level measurements are taken monthly for all monitored wells in Beaumont, San Timoteo and Yucaipa Management Zones with one exception. It is not possible to measure ground water level at San Timoteo Management Zone GW-3, a privately owned well. Ground water levels are assumed to be similar to Yucaipa Valley Water District owned well, MW-3, located approximately 50 feet from GW-3. Yucaipa Valley Water District gathers data on ground water level and quality for those wells located within YMZ but not under its direct jurisdiction on an annual basis for inclusion in the annual RWQCB report.

Table 4: Groundwater Monitoring Sites in the San Timoteo Management Zone

Well ID	Description	Data type	Monitoring Agency
MW-1 (1221779)	San Timoteo Canyon Rd.	Level only	YVWD
MW-2 (1221780)	Alessandro St.	Level & Quality	YVWD
MW-3 (1221781)	Live Oak/San Timoteo Canyon	Level & Quality	YVWD
MW-4 (1221782)	above WWTP outfall pipe	Level & Quality	YVWD
MW-5A (1222103)	San Timoteo Canyon Rd.	Level & Quality	YVWD
MW-5B (1222104)	San Timoteo Canyon Rd.	Level & Quality	YVWD
MW-5C (1222105)	San Timoteo Canyon Rd.	Level & Quality	YVWD
GW-3 (1222106)	Live Oak/San Timoteo- Private well	Quality Only	YVWD
GL-8 (1201605)	San Timoteo Canyon Rd-orchard	Level only	YVWD
GL-6 (1003044)	O. Hudson property on Live Oak Canyon Rd	Level & Quality	YVWD
BH-9 (1220051)	1.25" pvc pipe-Live Oak Canyon	Level & Quality	YVWD
Heartland well (1208660)	Owned by City of Beaumont	Level & Quality	Beaumont
San Tim-1 (1222061)	Owned by City of Beaumont	Level & Quality	Beaumont
San Tim-2B/1 (1222079)	Owned by City of Beaumont	Level & Quality	Beaumont
San Tim-2B/2 (1222080)	Owned by City of Beaumont	Level & Quality	Beaumont
1207756	East Valley Golf Club: 335645117024201	Level only	Beaumont
Well 2 (1201582)	Fisherman's Retreat	Level & Quality	Beaumont
Well 1 (1003079)	Fisherman's Retreat	Quality Only	Beaumont
ONE (1003049)	El Casco Lake Ranch	Level & Quality	Beaumont
1003049 (1003048)	Chester Hildebrand property	Level only	Beaumont
BH-19 (1220052)	Metropolitan Water District well	Level & Quality	Beaumont
Well 1 (1201539)	MCM poultry	Level & Quality	Beaumont

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September 18, 2011

Exhibit C

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Table 5: Ground Water Monitoring Program Sites in the Yucaipa Management Zone			
Site ID	Monitoring Entity	Site ID	Monitoring Entity
Pendleton	YVWD	WHWC 02A	Western Heights WC
Wilson B	YVWD	WHWC 03	Western Heights WC
YVWD 02	YVWD	WHWC 06B	Western Heights WC
YVWD 05	YVWD	WHWC 09	Western Heights WC
YVWD 06	YVWD	WHWC 10	Western Heights WC
YVWD 07	YVWD	WHWC 11	Western Heights WC
YVWD 10	YVWD	WHWC 12	Western Heights WC
YVWD 12	YVWD	WHWC 14	Western Heights WC
YVWD 13	YVWD	5th Ave 1	City of Redlands
YVWD 14	YVWD	CHICKNH4	City of Redlands
YVWD 16	YVWD	HOG CYN 2	City of Redlands
YVWD 18	YVWD	Redlands 10	City of Redlands
YVWD 24	YVWD	Redlands 11	City of Redlands
YVWD 25	YVWD	Redlands 12	City of Redlands
YVWD 26	YVWD	Redlands 13	City of Redlands
YVWD 27	YVWD	Redlands 14	City of Redlands
YVWD 27A	YVWD	Redlands 16	City of Redlands
YVWD 28	YVWD	Redlands 17	City of Redlands
YVWD 37	YVWD	Redlands 36	City of Redlands
YVWD 43	YVWD	Redland Hts	City of Redlands
YVWD 44	YVWD	Yucaipa Well	City of Redlands
YVWD 46	YVWD	Y-02	County of San Bernardino
YVWD 49	YVWD	Y-03	County of San Bernardino
YVWD 50	YVWD	Y-04	County of San Bernardino
YVWD 53	YVWD	Y-05	County of San Bernardino
YVWD 54	YVWD	Y-08	County of San Bernardino
YVWD 55	YVWD	Y-09A	County of San Bernardino
YVWD 56	YVWD	Y-09B	County of San Bernardino
GL-1	YVWD	Y-10A	County of San Bernardino
GL-2	YVWD	Y-10B	County of San Bernardino
GL-3	YVWD	Y-11A	County of San Bernardino
GL-4	YVWD	Y-11B	County of San Bernardino
GL-5	YVWD	Y-12	County of San Bernardino
		Y-13	County of San Bernardino
SMWC 01	South Mesa WC	Y-14	County of San Bernardino
SMWC 03	South Mesa WC	Y-15	County of San Bernardino
SMWC 05	South Mesa WC	Y-16	County of San Bernardino
SMWC 07	South Mesa WC	Y-17	County of San Bernardino
SMWC 09	South Mesa WC	Y-18	County of San Bernardino
SMWC 11	South Mesa WC	Y-19	County of San Bernardino
SMWC 12	South Mesa WC	Y-21	County of San Bernardino
SMWC 16	South Mesa WC	Y-22	County of San Bernardino

Preliminary Document - Subject to Independent Modification
September 18, 2011

Exhibit C

DRAFT MONITORING PROGRAM - SUBJECT TO MODIFICATION

Table 6: Beaumont Management Zone Ground Water Monitoring Sites.		
Well ID	Description	Monitoring Entity
1	Beaumont Basin Well	BCVWD
3	Beaumont Basin Well	BCVWD
16	Beaumont Basin Well	BCVWD
21	Beaumont Basin Well	BCVWD
22	Beaumont Basin Well	BCVWD
23	Beaumont Basin Well	BCVWD
24	Beaumont Basin Well	BCVWD
25	Beaumont Basin Well	BCVWD
26	Beaumont Basin Well	BCVWD
29	Beaumont Basin Well	BCVWD
4A	Edgar Canyon Well	BCVWD
5	Edgar Canyon Well	BCVWD
6	Edgar Canyon Well	BCVWD
12	Edgar Canyon Well	BCVWD
19	Edgar Canyon Well	BCVWD
MW-1	BMZ Monitoring Well	BCVWD
MW-2	BMZ Monitoring Well	BCVWD
MW-3 Deep	BMZ Monitoring Well	BCVWD
MW-3 Shallow	BMZ Monitoring Well	BCVWD
MW-4 Deep	BMZ Monitoring Well	BCVWD
MW-4 Shallow	BMZ Monitoring Well	BCVWD
MW-5 Deep	BMZ Monitoring Well	BCVWD
MW-5 Shallow	BMZ Monitoring Well	BCVWD
Well 48	YVWD Production Well	YVWD
C2A	City of Banning Source Well	City of Banning
C3	City of Banning Source Well	City of Banning
M3	City of Banning Source Well	City of Banning

Ground water quality (Table 7) is measured annually in San Timoteo Management Zone and according to Title 22 of the California Code of Regulations cycle sampling schedule for production wells in the Yucaipa Management Zone.

Wells are sampled annually until 3 consecutive years of qualifying data are gathered. At which point water quality samples need only be collected on a triennial basis for participation in the recalculation of ambient ground water quality stipulated by the Santa Ana River Basin Plan (2004).

Recharge to Yucaipa Management Zone is either storm water or State Project water and is monitored for total recharge (volume), nitrate and total dissolved solids.

Exhibit C

DRAFT MONITORING PROGRAM - SUBJECT TO MODIFICATION

Table 7: Ground Water Monitoring Parameters in Beaumont, San Timoteo and Yucaipa Management Zones		
Field Measurements	Water Quality Parameters	
Temperature	Total Dissolved Solids (TDS)	Chloride
Conductivity	Nitrate-Nitrogen or Nitrate as nitrate	Fluoride
pH	Total Alkalinity (as $CaCO_3$)	Potassium
	Carbonate and Bicarbonate	Sodium
	Silica (as SiO_3)	Sulfate
	Total Hardness (includes Ca and Mg)	

Reporting Requirements

A summary of surface water monitoring activities within the San Timoteo Management Zone is provided to the Santa Ana Regional Water Quality Control Board quarterly. Ground water levels are measured on a monthly basis and reported annually along with ground water quality results.

A complete report of all San Timoteo and Yucaipa Management Zones is combined with the City of Beaumont's similar compilation of their efforts within the Beaumont Management Zone and STMZ; the results are interpreted and presented to RWQCB annually on or before April 15 of each year.

Preliminary Document - Subject to Independent Modification
September 18, 2011

Exhibit C

DRAFT MONITORING PROGRAM - SUBJECT TO MODIFICATION

Page 37 of 37

Yucaipa Valley Water District

Workshop Memorandum 11-143

Date: **September 27, 2011**

Subject: **Enhanced Recycled Water Reuse in the Yucaipa Valley**

Over the past decade, Scott Goldman from RMC Water and Environment has been instrumental in providing technical support for the Yucaipa Valley Water District with master plan preparation and integration, grant funding management and overall staff assistance. His active consultation with other recycled water agencies provides a unique opportunity to leverage his knowledge and experience to help facilitate numerous aspects of our projects.

Mr. Goldman has offered to provide a presentation at the board workshop that will focus on regional recycled water projects, future recycled water opportunities, and anticipated regulatory changes in the future.

Yucaipa Valley Water District

Workshop Memorandum 11-144

Date: **September 27, 2011**

Subject: **Water Use in the California Residential Home**

New homes built to today's standards use far less water than homes built 20 years ago and will use even less water when the California Green Building Standards Code comes into effect in 2011, according to a California Homebuilding Foundation study released in January 2010 (attached).

Water Use in the California Residential Home was prepared by Stockton-based ConSol, a nationally recognized consultant on energy solutions for production single-family and multifamily builders since 1981. The study examined historical standards on water flow for shower heads, toilets, faucets and clothes washers, as well as water used for landscaping, and compared them to standards used today and those that will come into effect in 2011.

The study found that homes built in 2009 reduced indoor water use by 20 percent, saving more than 15,000 gallons of water per year when compared to homes built in 1990, and that new homes built to the 2011 standards will further reduce indoor water use by 21 percent, saving more than 12,000 gallons per year.

The study also found that landscaping accounts for 57 percent of total household water use, and that the California Department of Water Resources' Model Water Efficient Landscape Ordinance will help save an additional 26,000 gallons of water per year.

Water Use in the California Residential Home

January, 2010

Prepared by

ConSol

Funded through a grant from

CHF California Homebuilding Foundation
Scholarship | Research | Education

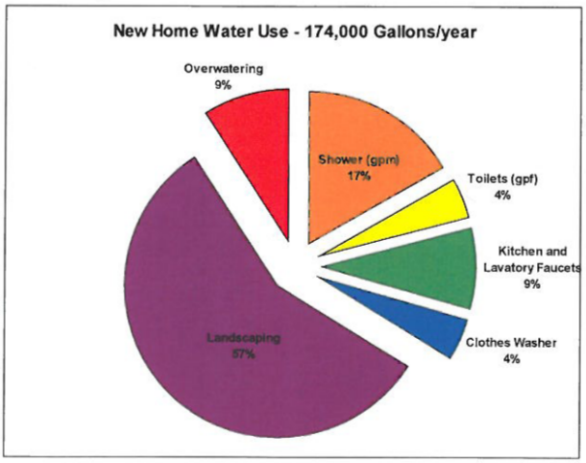
ConSol

Water Use in the California Residential Home

Prepared for: California Homebuilding Foundation
Date published: January 26, 2010
Prepared By: ConSol

Executive Summary:

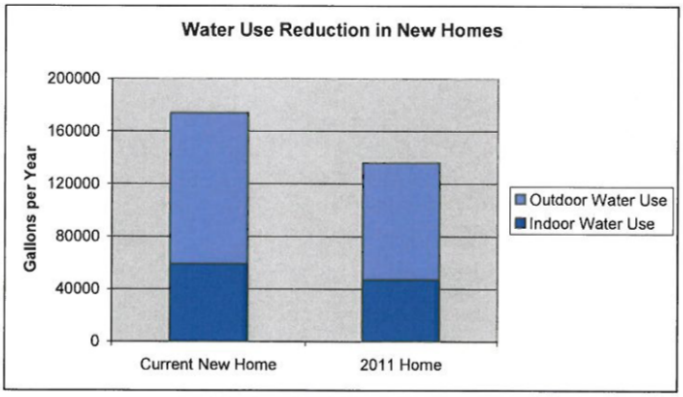
A new three bedroom single family home with four occupants is modeled to use 174,000 gallons of water per year. The majority of this water use is due to landscaping. The largest indoor water use is by showers. These estimates are based on assumptions provided in the California Green Building Standards Code (CGBSC) and the California Department of Water Resources' Model Water Efficient Landscape Ordinance.

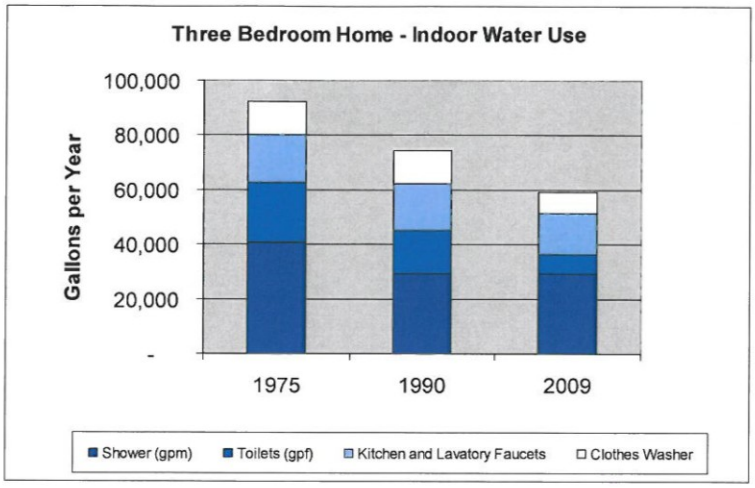


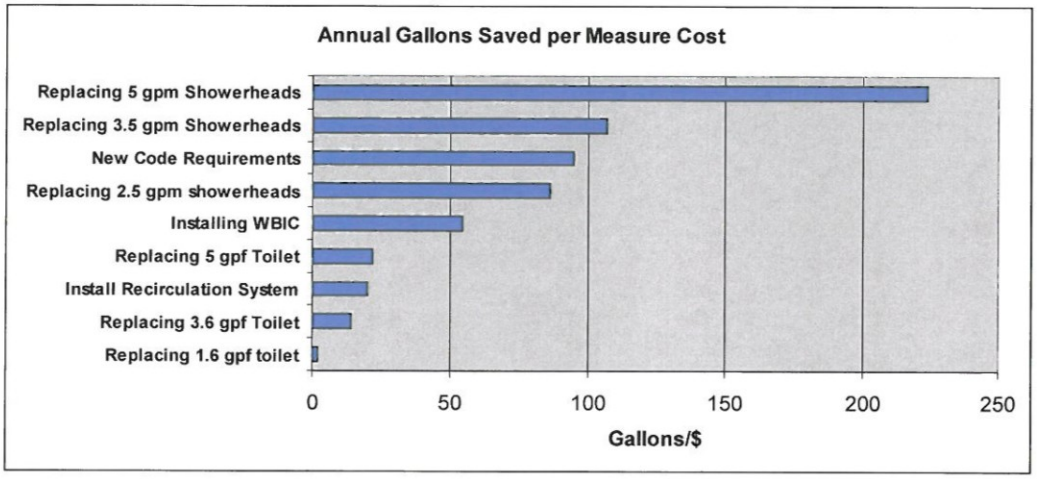
The CGBSC will come into effect in 2011, combined with the Model Ordinance; homes built to these standards will save approximately 38,000 gallons of water per year. One of the largest sources of these savings is the use of Weather Based Irrigation Controllers, which have been shown to reduce the amount of landscape over-watering by 85%, and total household water use by 7%

While there is still significant savings potential in new California homes, older California homes represent an even greater opportunity. Changes in code requirements in 1980 and 1992 have served to reduce the indoor water use of a three bedroom home by 35% over the last 30 years. Old toilets and showerheads can use up to three times more water than current available models.

Addressing existing housing, particularly old showerheads, can be a very cost effective way of reducing water use. Additionally, in order to achieve deep reductions in the amount of water used in homes, strategies must be developed to reach the 7,500,000 existing single family homes and the 13,000,000 total housing units in the state.







Lastly, the single largest use of water in the United States is by electric power plants. By continuing to improve the energy efficiency of homes, California home builders are indirectly helping to reduce nationwide water consumption.

Table of Contents

Water Use in the United States

Water is becoming an increasingly important resource throughout California and the United States. The largest single use of water use is in the cooling towers of power plants, followed by water used to irrigate for agriculture. Combined, these two uses account for over 80% of all domestic water use. The largest remaining segment of water use is that of Public Water Supplies. As of the year 2000, 85% of the national and 89% of California's population received their drinking water from public supplies; the remainder relies on self supplied water sources, generally ground water wells. Figure 1 below shows the national breakdown of water uses.

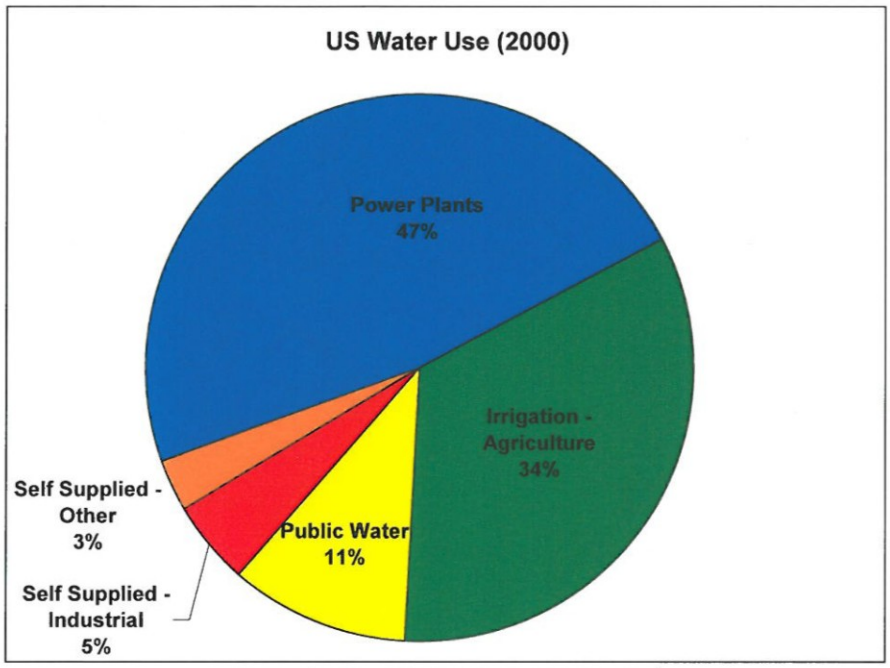


Figure 1: Total United States Water Use[1]

Public water supplies are often measured in gallons per capita per day (GPCD.) This is nothing more than the average daily supply divided by the service population. The national average for public water supplies is 179 GPCD, the California statewide average is 203 GPCD. California has the 15th highest per capita public water consumption in the country. Generally, the states with the highest water consumption are in the south and west, where there is a year round growing season and larger average home sites.

[1] http://pubs.usgs.gov/circ/2004/circ1268/htdocs/text-total.html

Water Use in the Home

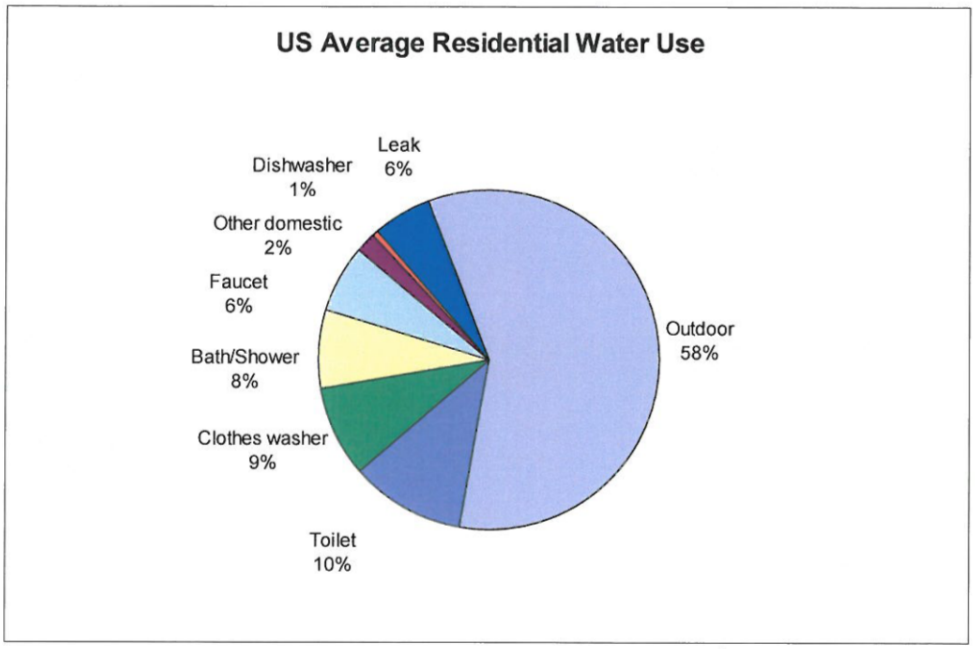


Figure 2: Average US Residential Water Use[2]

In the United States, residential water use is typically dominated by landscape water use and California is no exception. Figure 2 above shows the relative importance of various water uses throughout the home. There is a wide amount of variability in the above percentages. How much water an individual home will use is largely dependent on four factors: the number of residents; the types of fixtures (toilets, showerheads, faucets); the size of the home lot, and the type of landscaping (turf and pools using the most water.)

Indoor Water Use

The 2008 California Green Building Standards Code (CGBSC)[3] sets new standards for the flow rate of fixtures in new construction. The standards come into effect in 2011 and will call for a 20% reduction in indoor water use. The code also includes guidance on how to calculate the "baseline" indoor water use for a current new single family home. Table 1 lists the fixture flow rates and usage amounts assumed in the code for present day construction. The current fixture flow rates were set by the Federal Energy Policy Act of 1992, which became effective in 1994. Before that time, flow rates for these fixtures were much higher. In California, the 1980 plumbing code set showerhead flow rates at 2.5 gallons per minute (gpm) and toilet flow rates at 3.6 gallons per flush (gpf.) Before 1980, those values were typically 3.5 gpm and 5.0 gpf respectively. Table 2 shows the historical flow rates of showers, faucets, and toilets, as well as the flow rates which will become effective in 2011. Low flow faucets and showerheads should not add to the cost of the home. Currently, there is an approximately $50 premium on low-flow toilets, but that price has dropped dramatically over the past two years.

[2] http://www.aquacraft.com/Publications/resident.htm
[3] http://www.documents.dgs.ca.gov/bsc/2009/part11_2008_calgreen_code.pdf

FIXTURE TYPE	FLOW RATE[2]	DURATION	DAILY USES	OCCUPANTS[2,4]
Showerheads	2.5 gpm @ 80 psi	8 min.	1	X
Showerheads residential	2.5 gpm @ 80 psi	8 min.	1	X
Lavatory faucets residential	2.2 gpm @ 60 psi	.25 min.	3	X
Kitchen faucets	2.2 gpm @ 60 psi	4 min.	1	X
Replacement aerators	2.2 gpm @ 60 psi			X
Wash fountains	2.2 [rim space (in.) / 20 gpm @ 60 psi]			X
Metering faucets	0.25 gallons/cycle	.25 min.	3	X
Metering faucets for wash fountains	.25 [rim space (in.) / 20 gpm @ 60 psi]	.25 min.		X
Gravity tank type water closets	1.6 gallons/flush	1 flush	1 male[1] 3 female	X
Flushometer tank water closets	1.6 gallons/flush	1 flush	1 male[1] 3 female	X
Flushometer valve water closets	1.6 gallons/flush	1 flush	1 male[1] 3 female	X
Electromechanical hydraulic water closets	1.6 gallons/flush	1 flush	1 male[1] 3 female	X
Urinals	1.0 gallons/flush	1 flush	2 male	X

Fixture "water use" = flow rate × duration × occupants × daily uses

1. Except for low-rise residential occupancies, the daily use number shall be increased to three if urinals are not installed in the room.
2. The flow rate is from the CEC Appliance Efficiency Standards, Title 20, *California Code of Regulations*; where a conflict occurs, the CEC standards shall apply.
3. For low rise residential occupancies, the number of occupants shall be based on two persons for the first bedroom, plus one additional person for each additional bedroom.
4. For nonresidential occupancies, refer to Table A, Chapter 4, 2007 *California Plumbing Code*, for occupant load factors.
5. Use worksheet WS-1 to calculate base line water use.

Table 1: Table 603.1 of the 2008 California Green Building Standards Code

Fixture and Appliance Standards Over Time					
	1975	1980	1992	2009	2011
Shower (gpm)	3.5	**2.5**	2.5	2.5	**2.0**
Toilets (gpf)	5.0	**3.6**	**1.6**	1.6	**1.28**
Faucets (gpm)	2.5	2.5	2.5	**2.2**	**1.8**
Clothes Washers (gal/cu. Ft.)	15	15	15	**8.5**	**6**

Table 2: Flow Rates of Fixtures Over Time

The CGBSC, however, only covers showers, faucets, and toilets. The code does not provide baseline guidance for outdoor water use, nor does it provide guidance for clothes washer water use, which, as shown in Figure 2, is significant.

An average top loading clothes washer uses between 40 and 45 gallons per wash[4]. A horizontal axis washer can use between 15 and 30 gallons. Appliance standards currently effective in California limit the amount of water to 8.5 gallons per cubic foot of capacity. In 2010 this number will drop to 6 gallons per cubic foot. The average clothes washer capacity is 3 cubic feet, meaning a new clothes washer will average 18 gallons per wash. Studies have shown, the average household does between 300 and 400 loads of laundry per year[5]. Table 3 combines the fixture assumptions provided by the CGBSC with the assumptions on clothes washer usage to determine the estimated indoor water use for a new three bedroom home. Table 4 compares the water use of homes built prior to 1980, prior to 1994, the present day, and after 2011.

[4] http://www.allianceforwaterefficiency.org/Residential_Clothes_Washer_Introduction.aspx
[5] http://www.consumerenergycenter.org/home/appliances/washers.html,

Total Indoor Water Use, New Three Bedroom Home					
Fixture Type	**Flow Rate (gpm or gpf)**	**Duration (mins.)**	**Daily Uses**	**# of Occupants**	**Gallons/Year**
Showerheads	2.5	8	1	4	29,200
Lavatory Faucets	2.2	0.25	3	4	2,409
Kitchen Faucets	2.2	4	1	4	12,848
Toilets	1.6	---	3	4	7,008
Fixture Water Use					51,465
	Loads per Year		Gallons per Load		
Clothes Washers	300		25.5		7,650
Total Indoor Water Use, New Three Bedroom Home					**59,115**

Table 3: Indoor Water Use for a New Three Bedroom Home

Annual Water Use (gallons) for Family of Four

	1975	1990	2009	2011
Shower (gpm)	40,880	29,200	29,200	23,360
Toilets (gpf)	21,900	15,768	7,008	5,606
Kitchen and Lavatory Faucets	17,338	17,338	15,257	12,483
Clothes Washer	12,000	12,000	7,650	5,400
Total Water Use	**92,118**	**74,306**	**59,115**	**46,849**
Reduction		19%	20%	21%

Table 4: Indoor Water Use Over Time

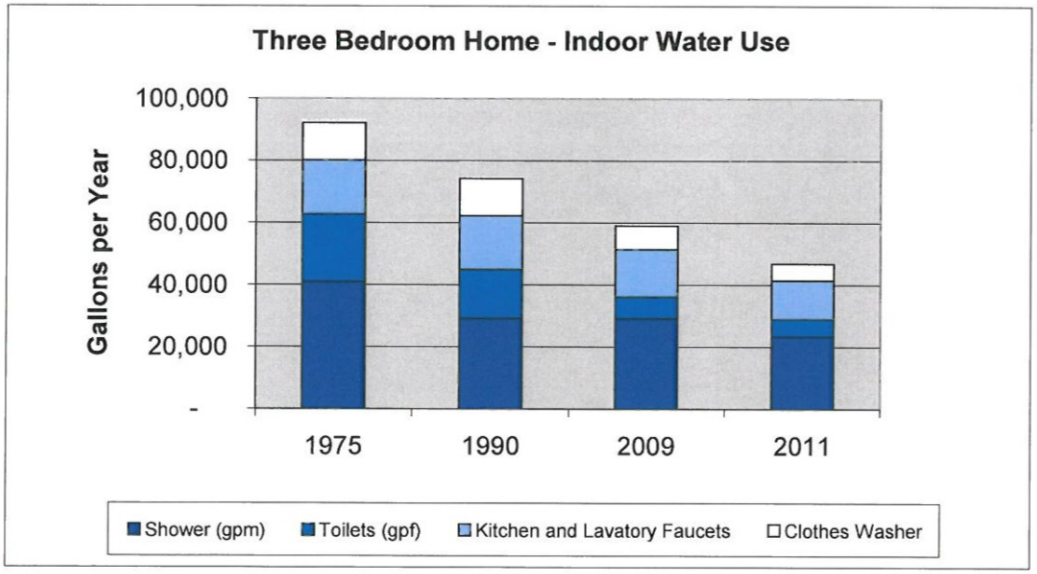


Figure 3: Indoor Water Use Over Time

Outdoor Water Use

The methods detailed in the California Department of Water Resources' recently published Model Landscape Ordinance[6] will be used to estimate outdoor water usage. The ordinance provides the formula listed in Equation 1 in order to determine the water needed by a given landscape.

$$LandscapeWater = (ETo)x(0.62)x(Area)x(ETAF)$$

Equation 1: Outdoor Water Use

In Equation 1, ET_o is the reference evapotranspiration. This is the amount of water, in inches, a specific species of grass requires in a specific climate. This number varies from city to city throughout the state, and the numbers are published in the Model Ordinance. The ET_o for Sacramento is 52 inches; for Monterey, which is much wetter and cooler, the ET_o is 36 inches. Needles, on the Arizona border, has the highest ET_o in the state at 92 inches. The median ET_o for the state is 50 inches. The complete list of the ET_o for all cities in California is available in Appendix A.

The number .62 is a conversion factor needed for the equation to output the water needed in gallons. The "Area" is the square footage of landscaping. For the purposes of this report, the average landscaped are of a single family home will be assumed to be 4000 square feet[7].

ETAF stands for evapotranspiration adjustment factor. This is a number that incorporates the specific plant type as well as the irrigation efficiency of the system[8]. The Model Ordinance uses a default value of 0.8 for the average existing California landscape. Given the assumptions made above, the landscape of an average single family home in California will require just shy of 100,000 gallons per year. Landscapes designed under the ordinance must have an ETAF of 0.7 or lower. This is accomplished through the greater use of plants that require less water. These landscapes will need 87,000 gallons of water per year, on average, a savings of 13,000 gallons. Meeting the requirements of the Model Ordinance should not add much cost to the installation of landscaping. However, there may be additional costs due to the time needed to calculate the water use of the landscaping in order to determine compliance.

It is rarely the case, however, that a landscape gets exactly as much water as it "needs"; more often than not, homeowners over water their lawn. One of the most detailed studies on the watering habits of homeowners was conducted by the Irvine Ranch Water District[9] (the ET_o for Irvine is conveniently right at the state average, making it well suited to evaluating landscaping water use).

The study concluded there was a savings potential in excess of 43 gallons per household per day, or roughly 16,000 gallons per year, if residents would not over water their lawn. The study examined two methods of changing homeowner behavior: mailing homeowners periodic postcards that carried suggested watering schedules; and installing weather based irrigation controllers (WBIC) that automatically adjust the irrigation system depending on current weather conditions (turning the sprinklers off after it has just rained). Mailing out the watering schedules captured 30% of the potential

[6] http://www.water.ca.gov/wateruseefficiency/landscapeordinance/
[7] http://www.epa.gov/WaterSense/docs/app_b508.pdf
[8] ETAF is the Plant Factor (PF) divided by the Irrigation Efficiency (IE.) Most turf grass has a PF of 0.8 or higher, while drought tolerant shrubs have a PF of 0.3 or lower. The PF numbers for specific plants can be looked up in the Water Use Classification of Landscape Species (WUCOLS) database, published by the University of California Cooperative Extension, the Department of Water Resources and the Bureau of Reclamation, 2000. Irrigation Efficiency is the percentage of water that leaves the sprinkler or irrigation device and actually lands on plants that need watering. Poorly designed spray head irrigation can have an IE of less than 0.6.
[9] http://www.irwd.com/Conservation/FinalETRpt[1].pdf

savings, 4,800 gallons per year. The WBICs captured 85% of the savings, 13,600 gallons per year. Because of their efficacy, WBICs are included in the Model Landscape Ordinance, and are likely to be added to the CGBSC. WBICs range on price from $150 to $350 dollars compared to a standard irrigation controller which is generally less than $50. Many water districts, however, provide rebates or incentives for the installation on WBICs.

When factoring in over watering, an "average" California landscape will consume approximately 115,000 gallons per year, a home which meets the requirements of the Model Landscape Ordinance will use approximately 89,000 gallons per year. This represents a savings of 26,000 gallons per year.

Combining the outdoor water savings with indoor water savings, a home built in 2011 will use 38,000 gallons of water less per year.

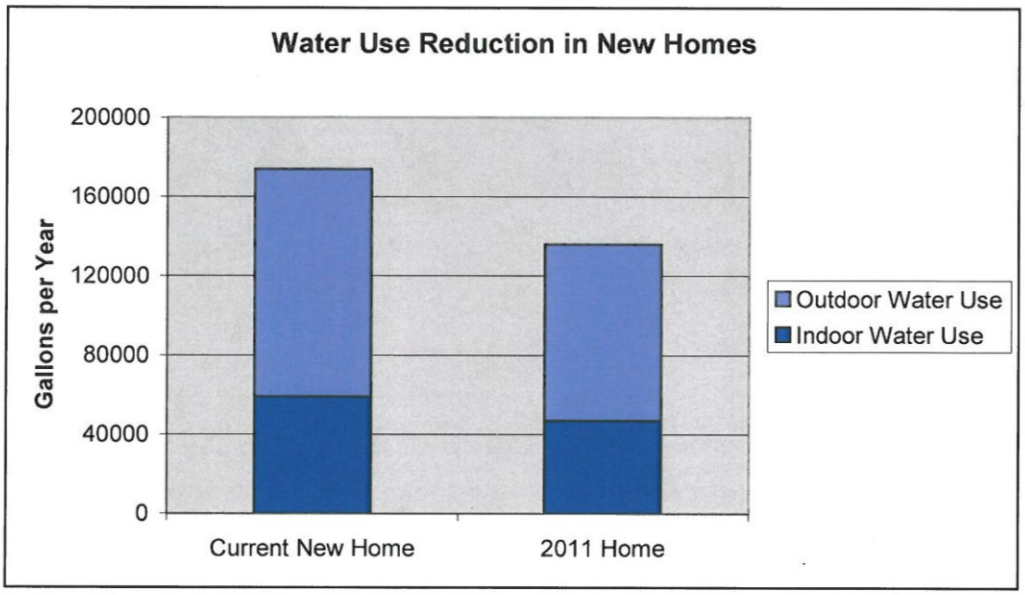


Figure 4: Water Use for New Three Bedroom Home

Wasted Water

Every morning, millions of gallons of water are wasted as homeowners wait for hot water to reach their showers. Studies have shown the average home with a conventional plumbing system uses an extra 10,000 gallons per year waiting for hot water[10]. Two systems which greatly reduce this waste are recirculation systems and parallel piping systems. A recirculation system is a pump that moves hot water through the pipe system so that it is ready when the fixture is tuned on. Recirculation systems come in three main varieties: always on; timer controlled, where the pump is set to run every day at specified times (at 6:15 am if you normally shower at 6:30;) and on demand, where the homeowner manually activates the pump. Recirculation systems eliminate nearly all the water loss while waiting for hot water. They cost approximately $500 to install, and do use additional energy, especially recirculation systems that are always on.

Parallel piping is a plumbing system that uses smaller diameter plastic pipes to run directly from the hot water fixtures to the water heater. Because these pipes have a smaller diameter, they hold a smaller volume of water that needs to be cleared before hot water arrives. These systems save on average, 7,000 gallons of water per year. There is an additional materials cost to installing a parallel piping system, but this is often negated by lower labor costs as the installation is generally easier than a traditional structured plumbing system.

Savings Potential

California currently has over 7,500,000 single family homes, more than half of these homes were built before 1980, when the first plumbing standards came into effect. While many of these homes have likely had their fixtures updated at some point, others have not. These older homes represent a large source of potential water savings.

Year Built	Number of Units	Avg. Indoor Water Use	Avg. Outdoor Water Use
pre 60s	2,392,460	92,118	115,088
60s	1,143,459	92,118	115,088
70s	1,162,924	92,118	115,088
80s	1,135,153	74,306	115,088
90s	826,346	59,115	115,088
00s	889,181	59,115	115,088
Total	7,549,523		

Table 5: Homes Built by Year

Table 6 Provides the savings potential of various retrofit measures discussed above. Water numbers are in gallons per year.

Year Built	Number of Units	Avg. Indoor Water Use	Avg. Outdoor Water Use	Fixture Replacemet	Toilet Replacement	WBIC	Water Schedules	Recirculation System
pre 60s	2,392,460	92,118	115,088	22,375	16,294	13,491	4,762	10,000
60s	1,143,459	92,118	115,088	22,375	16,294	13,491	4,762	10,000
70s	1,162,924	92,118	115,088	22,375	16,294	13,491	4,762	10,000
80s	1,135,153	74,306	115,088	10,695	10,162	13,491	4,762	10,000
90s	826,346	59,115	115,088	8,614	1,402	13,491	4,762	10,000
00s	889,181	59,115	115,088	8,614	1,402	13,491	4,762	10,000
Total	7,549,523							

Table 6: Savings Potential of Retrofit Measures

[10] http://www.toolbase.org/PDF/CaseStudies/hot_water_distribution_TN_California_2004_paper.pdf

The costs of retrofitting existing home could vary widely. The following assumptions (Table 7) are made to determine the cost of retrofit packages.

	Cost/unit	Units/Home	Total Cost
Fixture Replacemet	$ 50	3	$ 150
Toilet Replacement	$ 250	3	$ 750
WBIC	$ 250	1	$ 250
Recirculation System	$ 500	1	$ 500

Table 7: Retrofit Package Costs

Replacing old showerheads is by far the most cost effective water conservation measure available. The new code requirements are also fairly cost effective. The cost increase for a new home to meet the 2011 standards is estimated to be $350: $50 for three toilets, and $250 for additional landscape design. However, the total savings potential for the new code is only applicable to new construction, which accounts for less than 2% of the total housing stock.

Upgrade Measure	Annual Savings per Dollar (Gal.)
Replacing 5 gpm Showerheads	224
Replacing 3.5 gpm Showerheads	107
New Code Requirements	95
Replacing 2.5 gpm showerheads	86
Installing WBIC	54
Replacing 5 gpf Toilet	22
Install Recirc. System	20
Replacing 3.6 gpf Toilet	14
Replacing 1.6 gpf toilet	2

Table 8: Water Savings Cost Effectiveness

Appendix A – Reference Evapotranspiration for California Cities

Eureka	27.5	Santa Monica	44.2	Modesto	49.7	Lamont	54.4
Ferndale	27.5	San Juan	44.2	Los Banos	50	Chino	54.6
Crescent City	27.7	Chula Vista	44.2	Farmington	50	Gerber	54.7
Fort Bragg	29	Windsor	44.2	Los Angeles	50.1	Pine Valley	54.8
Point Arena	29.6	Yountville	44.3	Monrovia	50.2	Angwin	54.9
Fort Ross	31.9	Bennett Valley	44.4	Turlock	50.2	Beaumont	55
Hal Moon Bay	33.7	Los Alamos	44.6	Nicolaus	50.2	Elsinore	55
Garberville	34.9	Moraga	44.9	Oakdale	50.3	Kesterson	55.1
Weed	34.9	Ravendale	44.9	Otay Lake	50.4	Firebaugh	55.4
San Francisco	35.1	Carpenteria	44.9	Raymond	50.5	Gerber Dryland	55.5
Happy Camp	35.1	Hollister	45.1	Fair Oaks	50.5	San Bernardino	55.6
Soda Springs	35.4	Fairfield	45.2	Auburn	50.6	Esparto	55.8
Tahoe City	35.5	San Jose	45.3	Lindcove	50.6	Warner Springs	56
Hoopa	35.6	Pittsburg	45.4	Corning	50.7	Riverside UC	56.4
San Rafael	35.8	Lower Lake	45.4	Visalia	50.7	McFarland/Kern	56.5
Monterey	36	Solvang	45.6	Williams	50.8	Blackwells Corner	56.6
Mt Shasta	36	Gonzales	45.7	Crestline	50.8	Orange Cove	56.7
Castroville	36.2	Carneros	45.8	Coalinga	50.9	Temecula East II	56.7
Truckee	36.2	Pajaro	46.1	Putah Creek	51	Winchester	56.8
Santa Cruz	36.6	Valley of the Moon	46.1	Winters	51	Lost Hills	57.1
Salinas North	36.9	Camarillo	46.1	Thousand Oaks	51	Corcoran	57.1
Watsonville	37.7	Pleasanton	46.2	Bryte	51	Cathedral City	57.1
San Simeon	38.1	Walnut Creek	46.2	Durham	51.1	Hastings Tract	57.1
Salinas	39.1	Webb	46.2	Fresno	51.1	Panoche	57.2
Yreka	39.2	El Dorado	46.3	Santee	51.1	Patterson	57.3
Portola	39.4	San Diego	46.5	Red Bluff	51.1	Bakersfield/Bonanza	57.9
Oakland Foothills	39.6	Lodi West	46.7	Kerman	51.2	Bakersfield/Greenlee	57.9
Sierraville	39.6	Yuba City	46.7	Taft	51.2	Twitchell Island	57.9
Petaluma	39.6	McArthur	46.8	Manteca	51.2	Big Bear Lake	58.6
Long Beach	39.7	Fremont	47	La Grange	51.2	Lake Arrowhead	58.6
Novato	39.8	Rio Vista	47	Dinuba	51.2	Stratford	58.7
Torrey Pines	39.8	Miramar	47.1	Friant	51.3	Westlands	58.8
Morro Bay	39.9	Livermore	47.2	Reedley	51.3	Belridge	59.2
Arroyo Grande	40	San Benito	47.2	Willows	51.3	Cuyama	59.7
Weaverville	40	Camino	47.3	Claremont	51.3	Pearblossom	59.9
Hay Fork	40.1	Badger	47.3	Clovis	51.4	Kettleman	60.2
Quincy	40.2	Nevada City	47.4	Chowchilla	51.4	FivePoints	60.4
Benicia	40.3	Santa Maria	47.4	Denair	51.4	Santa Clarita	61.5
Blue Canyon	40.5	Brownsville	47.4	Oroville	51.5	Piru	61.5
Markleeville	40.6	Pomona	47.5	Hanford	51.5	Mendota	61.7
Santa Barbara	40.6	Groveland	47.5	Madera	51.5	Caruthers	62.7
Green Valley Rd	40.6	Sonora	47.6	Merced	51.5	Independence	65.2
Cloverdale	40.7	Soledad	47.7	Kingsburg	51.6	Palmdale	66.2
De Laveaga	40.8	Oakville	47.7	Ramona	51.6	La Quinta	66.2
Healdsburg	40.8	Colfax	47.9	Alpaugh	51.6	Victorville	66.2
Hopland	40.9	Courtland	48	Woodland	51.6	Lower Haiwee Res.	67.6
Ukiah	40.9	Grass Valley	48	Chico	51.7	Ripley	67.8
Burney	40.9	Goleta	48.1	Lemoore	51.7	Palo Verde II	68.2
Guadalupe	41.1	Santa Ana	48.2	Burbank	51.7	Bishop	68.3
Lompoc	41.1	Brentwood	48.3	Buntingville	51.8	Oasis	68.4
Downieville	41.3	Suisun Valley	48.3	Gridley	51.9	Calipatria/Mulberry	70.7
Yosemite Village	41.4	Isabella Dam	48.4	Arvin	51.9	Mecca	70.8
Oakland	41.8	Tracy	48.5	Sacramento	51.9	Lancaster	71.1
Martinez	41.8	Santa Ynez	48.7	Lincoln	51.9	Palm Springs	71.1
Fall River Mills	41.8	Shanandoah Valley	48.8	Parlier	52	Westmoreland	71.4
Santa Rosa	42	San Andreas	48.8	Buttonwillow	52	Blythe	71.4
Glenburn	42.1	Coulterville	48.8	Delano	52	Rancho Mirage	71.4
Oxnard	42.3	Redding	48.8	San Fernando	52	Meloland	71.6
Redondo Beach	42.6	Jackson	48.9	Orland	52.1	Yuma	71.6
Lakeport	42.8	Mariposa	49	Shafter	52.1	Palm Deser	71.6
Redwood City	42.8	San Ardo	49	Nipomo	52.1	Salton Sea North	71.7
Oceanside	42.9	Paso Robles	49	Dixon	52.1	Barstow NE	71.7
Los Gatos	42.9	San Miguel	49	Porterville	52.1	Inyokern	72.4
Tule lake FS	42.9	MacDoel	49	Roseville	52.2	Thermal	72.8
Black Point	43	Sanel Valley	49.1	Pasadena	52.3	China Lake	74.8
Point San Pedro	43	Long Valley	49.1	Bakersfield	52.4	Lucerne Valley	75.3
Bridgeport	43	San Juan Valley	49.1	Gorman	52.4	Seeley	75.4
Palo Alto	43	Stockton	49.1	Davis	52.5	Newberry Springs	78.2
Modoc/Alturas	43.2	Betteravia	49.1	Arroyo Seco	52.6	Death Valley Jct	79.1
Laguna Beach	43.2	Sisquoc	49.2	King City-Oasis Rd.	52.7	El Centro	81.7
Concord	43.4	Newman	49.3	Colusa	52.8	Twentynine Palms	82.9
Port Hueneme	43.5	Winters	49.4	Hollywood Hills	52.8	Oasis	83.1
Ventura	43.5	Grapevine	49.5	Zamora	52.8	Indio	83.9
Gilroy	43.6	Greenfield	49.5	Tehachapi	52.9	Brawley	84.2
Glendale	43.7	Rancho California	49.5	Browns Valley	52.9	Holtville	84.7
Atascadero	43.7	Woodside	49.5	Famoso	53.1	Baker	86.6
San Luis Obispo	43.8	Morgan Hill	49.5	Glendora	53.1	Coachella	88.1
Susanville	44	King City	49.6	Delano	53.6	Desert Center	90
St Helena	44.1	Irvine	49.6	Fresno State	53.7	Needles	92.1
Union City	44.2	Goleta Foothills	49.6	Escondido SPV	54.2		

Yucaipa Valley Water District

Workshop Memorandum 11-145

Date: **September 27, 2011**

Subject: **Methodology for Calculating Baseline and Compliance Urban Per Capita Water Use for the Consistent Implementation of the Water Conservation Act of 2009**

In February 2008, Governor Arnold Schwarzenegger introduced a seven-part comprehensive plan for improving the Sacramento-San Joaquin Delta. A key component of his plan was a goal to achieve a 20 percent reduction in per capita water use statewide by the year 2020. The governor's inclusion of water conservation in the Delta plan emphasizes the importance of water conservation in reducing demand of the Delta and in reducing demand on the overall California Water Supply.

In November 2009, SBX7-7, The Water Conservation Act of 2009, was signed into law as part of a comprehensive water legislation package. The Water Conservation Act addresses both urban and agricultural water conservation. The legislation sets a goal of achieving a 20 percent statewide reduction in urban per capita water use and directs urban retail water suppliers to set 2020 urban water use targets.

The Yucaipa Valley Water District's 2010 Urban Water Management Plan established our water use targets based on specific methodology established by the Department of Water Resources in compliance with the Water Conservation Act of 2009. The Yucaipa Valley Water District used Method 1 to calculate our 2015 and 2020 Compliance Water Use Targets and committed to meet our water use targets as an individual agency rather than as part of a regional alliance.

Based on our Urban Water Management Plan, the annual daily per capita water use for the ten year period from January 1, 2000 to December 31, 2009 results in 292 GPCD. Therefore, the compliance water use target under Method 1 is eighty percent of the water supplier's baseline per capita water use, or a 2020 water use target of 233 gallons per capita per day (GPCD), and an interim 2015 water use target of 262 GPCD.

To put these figures into perspective, based on water consumption records for 2007 (prior to the economic slowdown in the region), the Yucaipa Valley Water District will need to offset water consumption by about 4,350 acre feet per year. This figure represents the water use reduction needed without a change to the population, or the addition of no new development over the next decade. The addition of any new development will need to achieve an average water use target of 233 gallons per capita per day or less in order not to negatively impact the District's obligation to meet this requirement.

Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use

February 2011

California Department of Water Resources
Division of Statewide Integrated Water Management
Water Use and Efficiency Branch

Methodology 1: Gross Water Use

Definition of Gross Water Use

Section 10608.12(g) of the Water Code defines "Gross Water Use" as:

> *the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:*
>
> *(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier*
>
> *(2) The net volume of water that the urban retail water supplier places into long term storage*
>
> *(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier*
>
> *(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24*

Calculation of Gross Water Use

Gross Water Use is a measure of water supplied to the distribution system over 12 months and adjusted for changes in distribution system storage and deliveries to other water suppliers that pass through the distribution system. Recycled water deliveries are to be excluded from the calculation of Gross Water Use. Water delivered through the distribution system for agricultural use may be deducted from the calculation of Gross Water Use. Under certain conditions, industrial process water use also may be deducted from Gross Water Use.

The methodology for calculating Gross Water Use broadly follows American Water Works Association (AWWA) Manual M36 guidance for calculating Distribution System Input Volume.[1] Calculating Gross Water Use entails 12 basic steps, two of which are optional.[2]

Step 1: Define the 12-month Calculation Period

Gross Water Use shall be calculated over a continuous 12-month period. This period can be based on the calendar year or the utility's fiscal year.[3] The same 12-month period must be used in calculations of Gross Water Use for determining Base Daily Per Capita Water Use and Compliance Daily Per Capita Water Use.

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[1] American Water Works Association, Manual of Water Supply Practices – M36: Water Audits and Loss Control Programs, 3rd Edition, 2009. M36 defines Distribution System Input Volume as the volume of water entering the distribution system to provide service to customers. It is equal to the water volume derived from the water utility's own source waters, plus water imported or purchased, plus or minus the net change in water storage (if applicable and significant).

[2] AWWA Manual M36 contains several forms and worksheets that retail urban water suppliers can use to compile and organize data required to calculate Gross Water Use.

[3] As stipulated in paragraph (1) of subdivision (a) of Section 10608.20 of SBX7-7.

Step 2: Delineate Distribution System Boundary

Water supply systems can be broadly subdivided between the transmission systems that convey large amounts of water to local storage reservoirs or treatment plants, and the distribution systems that supply water to residential, commercial, industrial, and public uses such as fire safety. Water distribution systems generally comprise large networks of pipes with complex branched and loop topologies with multiple flow paths to many delivery points.[4] In some systems, some retail customers receive water for municipal and industrial (M&I) uses directly from transmission canals and pipes, in which case the retail water supplier may treat the sections of the transmission canals and pipes delivering water to the retail M&I customers as part of its distribution system. However, transmission canals and pipelines not used for delivering water directly to retail customers should not be included as part of the distribution system.

Wherever possible, distribution system boundary limits should be defined by points of metering or measurement[5] of the water supply. Typical measurement locations for distribution include exit points for treatment plants, treated water reservoirs, wells feeding directly into the distribution system, and imported water entering directly into the distribution system. A schematic of a typical urban retail water supply system is shown in Figure 1; actual distribution systems may vary greatly in configuration. Therefore, each urban retail water supplier must define and delineate its distribution system for purposes of calculating Gross Water Use. The rules for defining and delineating the distribution system boundary must be applied consistently in the base period and compliance years.[6]

Step 3: Compile Water Volume from Own Sources

The water supplier's own sources of supply entering the distribution system shall be identified and tallied. For systems that provide only treated water, this may consist mostly or entirely of water entering the distribution system from treatment plants (as in Figure 1). It may also include water from wells or other sources controlled by the water supplier that directly supply the distribution system (as in Figure 1).

Recycled water, as defined in subdivision (m) of Section 10608.12, directly entering the distribution system shall be excluded from the tally of own sources. Step 8 addresses how to account for recycled water indirectly entering the distribution system through potable reuse.

Measurement records for each source shall be compiled into annual volumes. AWWA's M36 manual or other appropriate references should be consulted in situations where water sources are unmetered or the water meters have not been routinely calibrated. Volumes for each source shall be reviewed and corrected for known errors that may exist in the raw

[4] http://censam.mit.edu/news/posters/whittle/1.pdf

[5] Measurements of unmetered agricultural and raw water deliveries must, at a minimum, meet an accuracy standard of +/- 6% by volume, as defined in the U.S. Bureau of Reclamation, Mid-Pacific Region's "2008 Conservation and Efficiency Criteria". Metered deliveries of M&I water must meet the measurement accuracy and calibration standards described in American Water Works Association Manual M6.

[6] For guidance on situations in which the distribution system boundary changed during the base period, see Methodology 3: Base Daily Per Capita Water Use. For situations in which the distribution system boundary changed during the compliance period, see Methodology 4: Compliance Daily Per Capita Water Use.

measurement data. Uncorrected metered volumes shall be adjusted based on the registration accuracy of the meter, as follows:[7]

$$\text{metered volume correction} = \frac{\text{uncorrected metered volume}}{\text{registration accuracy expressed as a decimal}} - \text{uncorrected meter volume}$$

Step 4: Compile Imported Water Volume

Outside sources of finished water imported directly into the distribution system shall be identified and tabulated, excluding the following:

- Recycled water, as defined in subdivision (m) of Section 10608.12, imported from another water supplier
- Imported raw water passing through the urban retail water supplier's treatment plants, if that water has already been counted under Step 3 (as in Figure 1)

The raw measurement data shall be corrected for known errors in the same manner as for own source water.[8]

Step 5: Compile Exported Water Volume

Any water volumes sent through the distribution system to another water utility or jurisdiction shall be identified and tabulated. Recycled water, as defined in subdivision (m) of Section 10608.12, exiting the distribution system shall be excluded from the tabulation.[9]

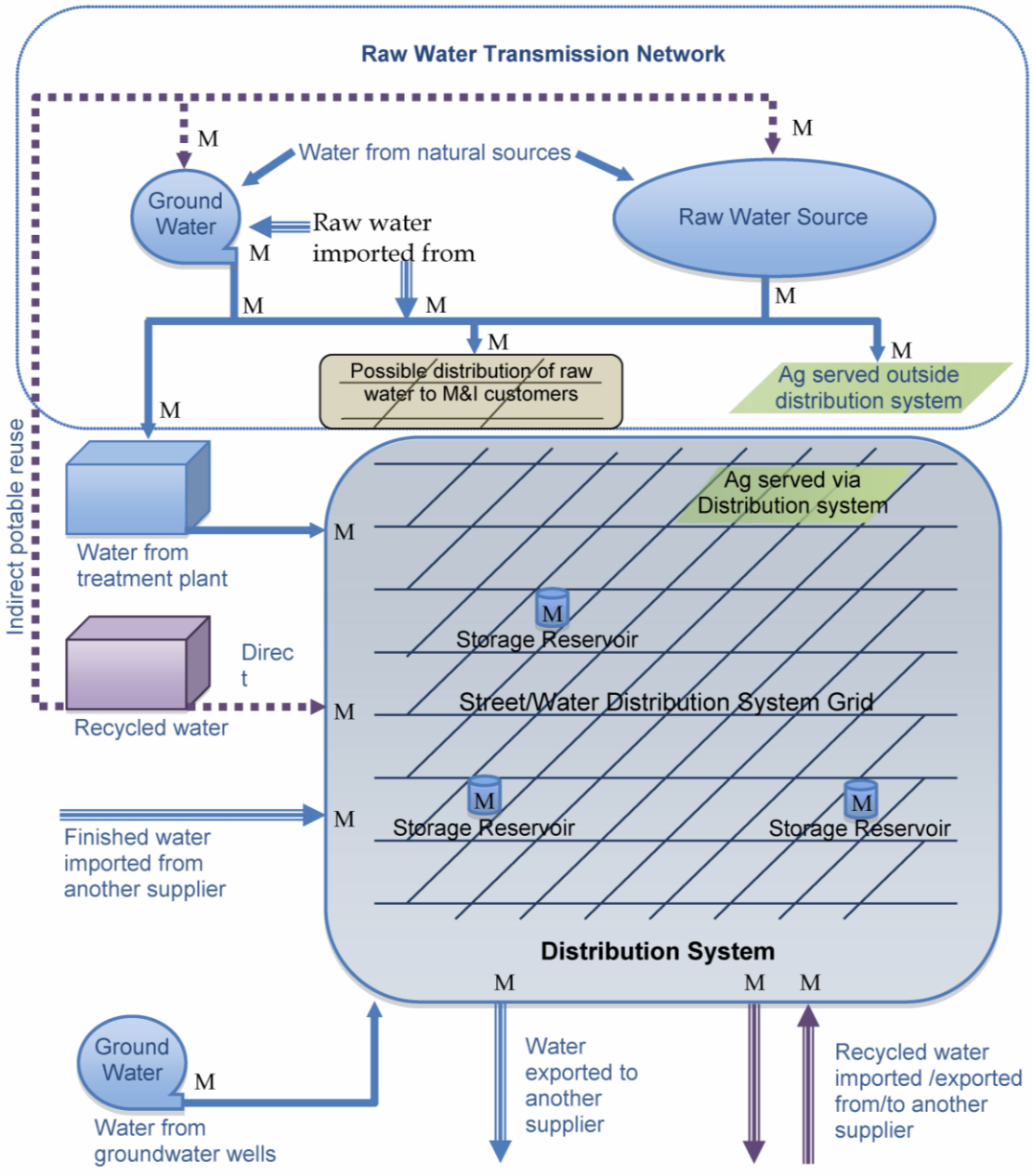
Bulk water exports that do not pass through the distribution system also shall not be counted. The raw metering data shall be corrected for known errors in the same manner as for own source and imported water.

Step 6: Calculate Net Change in Distribution System Storage

If distribution system storage is greater at the end of the year than at the beginning, it indicates that water has entered the distribution system but has not been delivered to customers. This water would have been counted in Steps 3 and 4, but because it has not been delivered to customers, it must be deducted from the calculation of Gross Water Use.

Conversely, a decrease in end-of-year distribution system storage indicates that water has been drawn from storage to meet customer demands. This water would not have been counted in Steps 1 and 2, and therefore must be added to the calculation of Gross Water Use. Note that these calculations apply only to storage in the distribution system. Do not include changes in storage outside the distribution system. If the change in distribution system storage is expected to be insignificant, or if data needed to calculate the change in distribution system storage are not available, the water supplier may forgo this step.

[7]AWWA Manual M36 should be consulted if additional guidance on correcting raw meter data for meter registration inaccuracy is needed. Meters with errors exceeding AWWA standards should be recalibrated, repaired, or replaced.
[8]Generally, bulk water sale meters are routinely monitored for accuracy because they provide the basis for payment between the wholesaler and retailer.
[9]It is necessary to subtract recycled water exiting the system only if it was included in the tabulations of water entering the distribution system performed in Steps 3 and 4. However, the easiest way to handle recycled water directly entering the distribution system in the calculation of Gross Water Use is to exclude it entirely from each calculation step.



M = water system measurement points

FIGURE 1
URBAN RETAIL WATER SUPPLIER SYSTEM SCHEMATIC[10]

[10]Figure 1 provides a general depiction of all of the elements that may affect the calculation of Gross Water Use. Not all of these elements may be present in a particular water system, nor is it expected that Figure 1 will accurately characterize a particular system configuration.

Step 7: Calculate Gross Water Use before Indirect Recycled Water Use Deductions

Gross Water Use before Indirect Recycled Water Use Deductions equals the volume of water from own sources entering the distribution system determined in Step 3, plus the volume of water from imported water sources entering the distribution system determined in Step 4, less the volume of water delivered via the distribution system to other utilities determined in Step 5, less the net change in distribution system storage determined in Step 6.[11] Table 1 provides an example calculation.

Step 8: Deduct Recycled Water Used for Indirect Potable Reuse from Gross Water Use

This step is necessary only if the urban retail water supplier uses recycled water (as defined in Subdivision (m) of Section 10608.12) to supplement raw surface or groundwater for indirect potable reuse. The Step 8 deduction requires the urban retail water supplier to estimate the amount of recycled water indirectly entering the distribution system through a surface or groundwater source (as in Figure 1).[12] This calculation requires three steps: (1) estimate the amount of recycled water used to supplement a surface reservoir source of supply, (2) estimate the amount of recycled water in extracted groundwater sources of supply, and (3) adjust these volumes for losses during transmission and treatment before the water enters the distribution system.

1. **Estimate recycled water used for surface reservoir augmentation.** The allowable deduction depends on the recycled water blend percentage in the surface reservoir water entering the potable water treatment plant. For example, if the raw surface water source is 95 percent fresh water and 5 percent recycled water, no more than 5 percent of the volume from this water source can be deducted from Gross Water Use calculated in Step 7. If the blend percentage of a surface water source is unknown, it shall be estimated based on the measured or estimated volumes of recycled water, local runoff, and imported water that entered the reservoir for the three years before the year for which Gross Water Use is being calculated. For example, if Gross Water Use is being calculated for 2005, the blend percentage is estimated by dividing the volume of recycled water that entered the reservoir by the total volume of water that entered the reservoir from 2002 through 2004.

2. **Estimate recycled water used for groundwater recharge.** Three approaches are allowed to estimate the amount of recycled water extracted from groundwater and introduced into a distribution system. Because year-to-year variations can occur in the amount of recycled water applied in a groundwater recharge operation, long-term running averages are required.

[11] If the net change is negative, Gross Water Use will increase. If it is positive, Gross Water Use will decrease.

[12] Recycled water used for indirect potable use should only be subtracted at the time it enters the potable distribution system. It cannot be subtracted when placed into storage and again when extracted for potable use.

a. **Monitoring data at extraction wells.** If monitoring data are available to enable determination of the percent of extracted water at each extraction well that originated as recycled water (for example, using geochemical analysis), then such data can be used to estimate the amount of recycled water entering a distribution system. To account for year-to-year variations, the credit or recycled water is a five year running monthly average percentage for each well for the preceding 60 months. For recharge projects in operation less than 60 months, a period of 60 months can be created using a combination of actual monitoring data since initiation of recharge operations and projected data. The projected data can be based on an acceptable groundwater model as described in paragraph b below or a projected average of extraction using the procedure described in paragraph c below.

b. **Groundwater model for extraction wells.** If a groundwater model is available that has the capability of tracking the movement of recycled water from recharge operations to extraction wells and estimating the percent of extracted groundwater that originated as recycled water at each well operated by the water supplier based on actual historic data of recycled water applied at groundwater recharge operations, then such data can be used to determine the amount of recycled water entering a distribution system. The groundwater model must be calibrated and approved as part of an adjudication or other regulatory process, such as the groundwater permitting process by the California Department of Public Health or a California Regional Water Quality Control Board. To account for year-to-year variations, the credit for recycled water is a five-year running monthly average percentage at each well for the preceding 60 months. For recharge projects in operation less than 60 months, the monthly running average may be derived from the model using all months of actual recycled water applied in a recharge operation and projected recycled water amounts planned to be applied for a future period to reach a combined total of 60 months of operation.

c. **Recharge data less in-basin losses.** Where actual extraction well monitoring data or estimated data obtained from an accepted groundwater model, as described in paragraph b above, are unavailable, an estimate can be made of extracted recycled water based on amounts of recycled water applied in recharge operations adjusted for an in-basin loss factor. The allowable deduction depends on the product of three factors:

    i. The average annual volume of recycled water recharged into the groundwater basin for the purpose of indirect potable reuse over the 5 years before the year for which Gross Water Use is being calculated. For recharge projects in operation less than 60 months, data from all months of actual recharge operations may be combined with projected volumes of recycled water recharge to reach a combined total of 60 months of operation to calculate the average annual volume of recycled water recharged.

    ii. A loss factor to account for water losses during recharge and extraction. If a loss factor has been developed as part of a groundwater management plan,

a basin adjudication process, or some similar regulatory process, the water supplier shall use that loss factor and provide reference to the appropriate documentation. If a loss factor has not been developed as part of a local regulatory process, the water supplier shall use a default loss factor of 10 percent.[13] The default loss factor of 10percent is not applicable to groundwater recharge operations intended as seawater intrusion barriers. For seawater intrusion barriers, the loss factor will be determined on a case-by-case basis.

iii. The volume of water pumped from the basin by the urban retail water supplier expressed as a percentage of the total volume of water pumped by all water users extracting water from the basin in the year for which Gross Water Use is being calculated.

For example, if the average annual recharge of recycled water for the five years before the year for which Gross Water Use is being calculated is 500 acre-feet (AF), the recharge loss factor is 10 percent, and the urban retail water supplier accounted for 25 percent of the volume of water pumped from the basin in the year for which Gross Water Use is being calculated, then no more than 113AF =(500 x (1.0-0.10) x 0.25) from this supply source can be deducted from Gross Water Use calculated in Step 7.

3. **Adjust for losses.** Only deduct the volume of recycled water used for indirect potable reuse that enters the distribution system from Gross Water Use calculated in Step 7.

Loss factors for transmission and treatment based on recent system audit data (or other reliable sources for estimating transmission and treatment losses) shall be applied to the estimated volumes of recycled water. For example, if the volume of recycled water before transmission and treatment is estimated to be 1,000 AF, and combined losses from transmission and treatment are estimated to be 3 percent, only 970 AF shall be deducted from Gross Water Use calculated in Step 7.

Table 2 shows an example calculation of the volume of recycled water used for indirect potable reuse based on approach 2.c above.

[13]The default value of 10 percent is based on the loss factors applied to groundwater storage in the Arvin-Edison and Semitropic Water Storage Districts. It also is consistent with the range of 0 to 15 percent loss factors applied to California water storage projects identified in the Groundwater Banking Programs Survey-Results and Summary Report prepared for the Sacramento Groundwater Authority by Kennedy/Jenks Consultants (2008). The projects they surveyed primarily used modeling and observation to determine the specific loss factor for each project.

Step 9: Calculate Gross Water Use after Deducting Indirect Recycled Water Use

This equals the volume of water determined in Step 7 less the volume of water determined in Step 8. Table 1 shows an example calculation of Gross Water Use after indirect recycled water use deductions.

Step 10 (Optional): Deduct from Gross Water Use the Volume of Water Delivered for Agricultural Use

This step is necessary only if the urban retail water supplier has chosen to exclude from the calculation of Gross Water Use water delivered for agriculture per Section 10608.12 (g) (4).

Consideration of agricultural water use must be the same for calculations of Gross Water Use for determining Base Daily Per Capita Water Use and Compliance Daily Per Capita Water Use.

Identify and tabulate the volume of water delivered through the distribution system for agricultural water uses. Do not include deliveries that bypass the distribution system (see Figure 1 for examples of agricultural deliveries inside and outside the distribution system).

Delivery volumes shall be based on account records and meter data for connections in the distribution system used to supply water for the commercial production of agricultural crops or livestock.[14]

Step 11 (Optional): Deduct Volume of Water Delivered for Process Water Use

This step is necessary only if the urban retail water supplier has elected to exclude process water from the calculation of Gross Water Use and the supplier is eligible to do so. An urban retail water supplier is eligible to exclude process water from the calculation of Gross Water Use only if its industrial water use comprises a substantial percentage of total water use.

[NOTE: See Appendix D for guidance on whether to include or exclude process water.]

Step 12: Calculate Gross Water Use after Optional Deductions

This equals the volume of water determined in Step 9 less the volume of water determined in Steps 10 and 11. Table 1 provides an example calculation of Gross Water Use after optional deductions.

[14]The standard used to identify distribution system connections supplying agricultural water uses is based on subdivision (b) of Section 535 of the California Water Code. Commercial agricultural production is defined by the U.S. Department of Agriculture and the Census Bureau as any place from which $1,000 or more of agricultural products (crops and livestock) were sold or normally would have been sold during the year. For the purposes of calculating Gross Water Use, retail nursery water use is not considered to be an agricultural water use.

Yucaipa Valley Water District

Workshop Memorandum 11-146

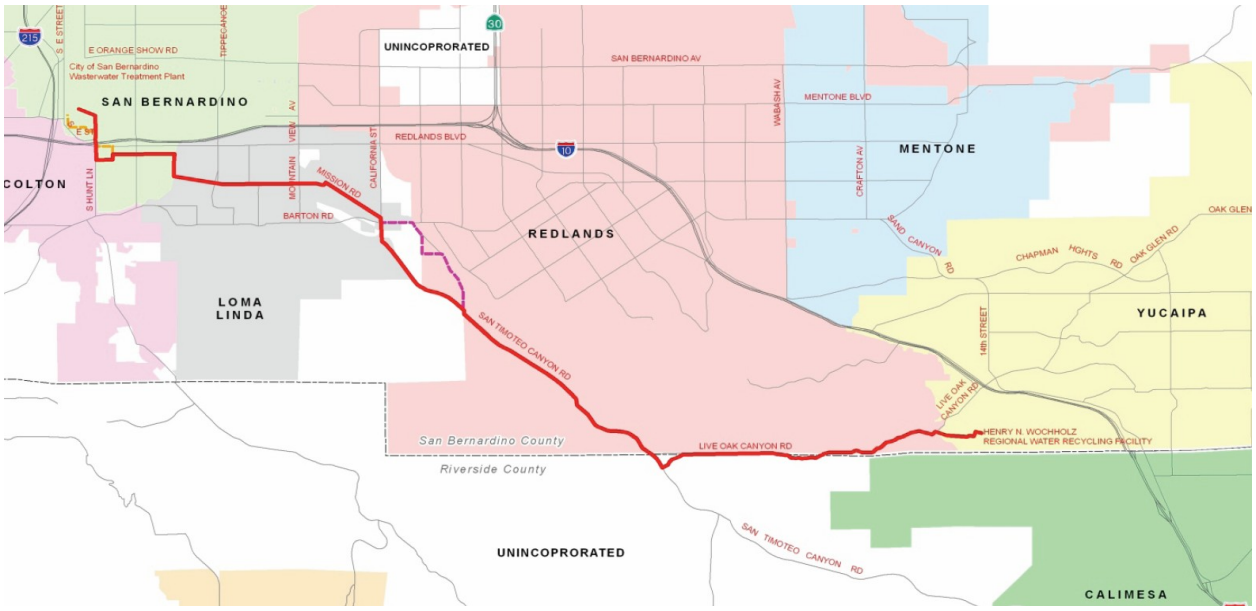
Date: **September 27, 2011**

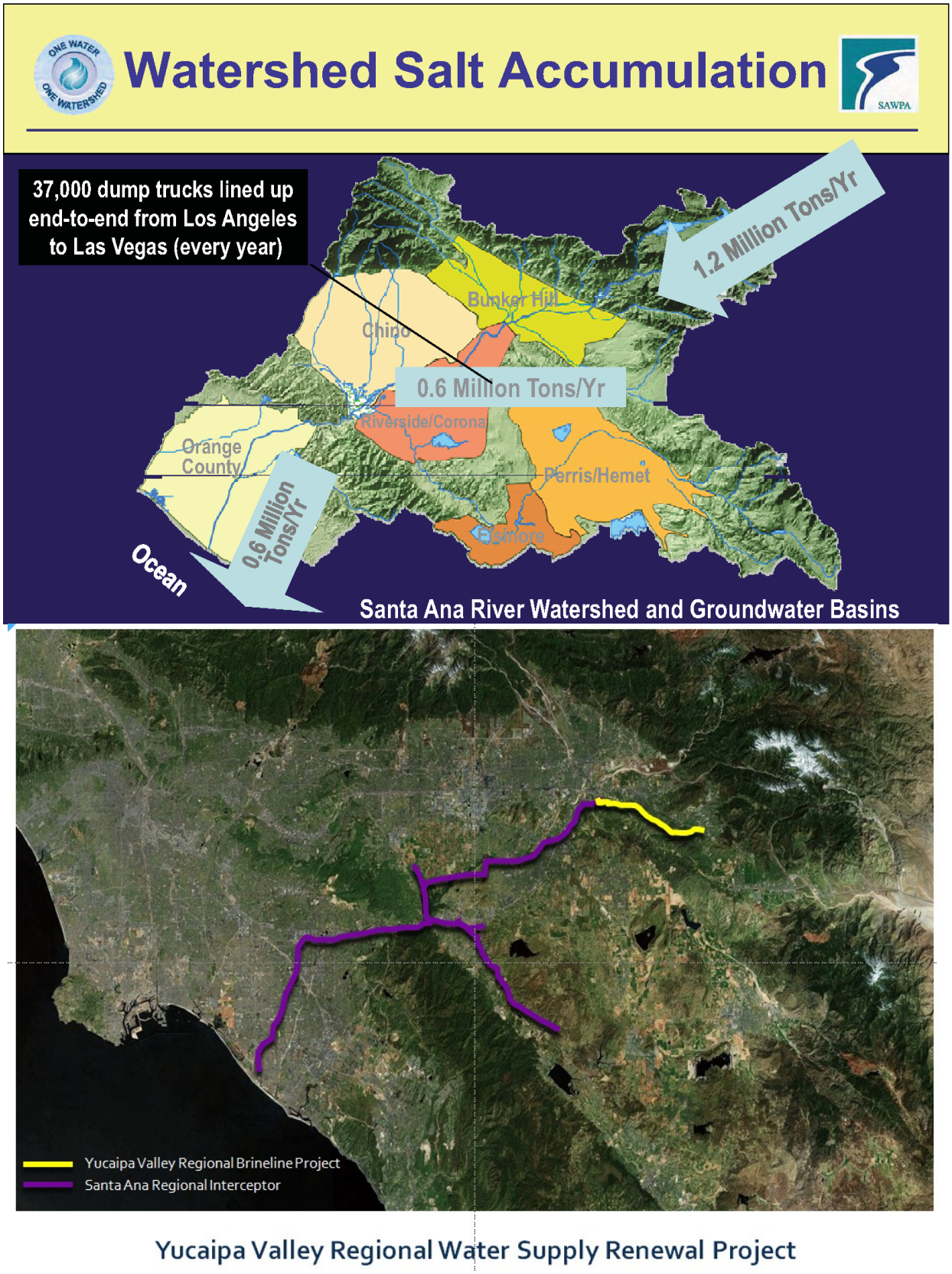
Subject: **Status Report on the Construction of the Yucaipa Valley Regional Brineline**

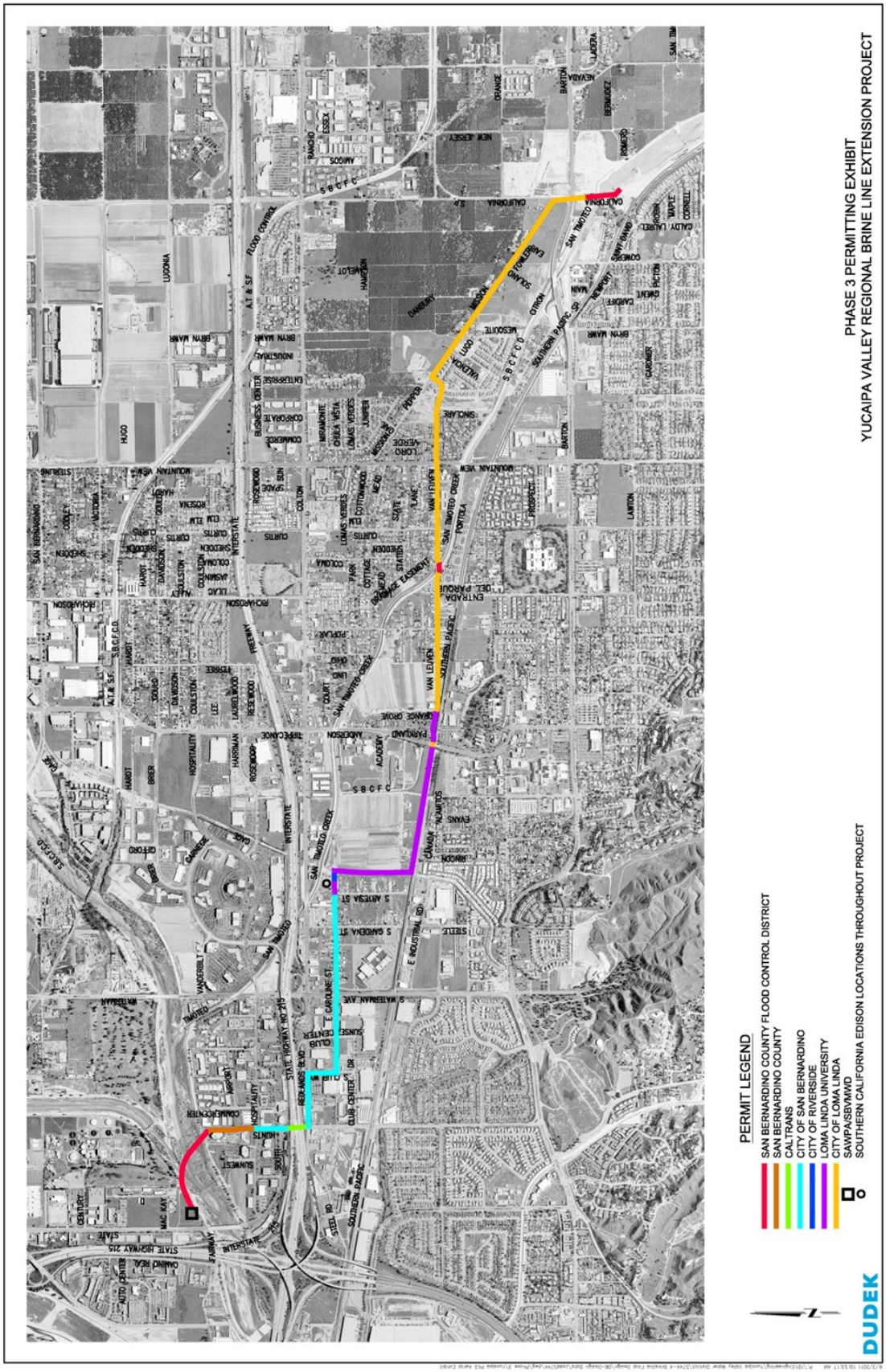
Yucaipa Valley Water District is in the process of constructing the Yucaipa Valley Regional Brineline in order to produce recycled water that complies with groundwater basin objectives as established by the Regional Water Quality Control Board. In order to comply with these limits, the District is required to add a reverse osmosis process to the wastewater treatment plant. This will enable the District to remove salts and minerals from depositing in to the groundwater basin. The proposed reverse osmosis system will produce salt water, referred to as "brine", that must be sent to the Pacific Ocean so it does not impact any fresh water supplies downstream of the Yucaipa Valley.

The Yucaipa Valley Regional Brineline Project consists of a 15-mile pipeline through which the District can safely and effectively dispose of the salt water produced. This pipeline will commence at the Wochholz Regional Water Recycling Facility and terminate at an existing brine disposal pipeline near the I-215 and I-10 Interchange. At this point the existing brineline extends another 73 miles traversing San Bernardino, Riverside and Orange counties to Orange County Sanitation District Wastewater Treatment Plant No. 2 in Huntington Beach, where the salt water is treated with domestic sewage and then sent to the ocean or reclaimed by Orange County Water District.

During this agenda item, the District staff will be providing an update of the construction status of the Yucaipa Valley Regional Brineline Project.




Watershed Salt Accumulation
SAWPA
37,000 dump trucks lined up end-to-end from Los Angeles to Las Vegas (every year)
1.2 Million Tons/Yr
Bunker Hill
Chino
0.6 Million Tons/Yr
Riverside/Corona
Orange County
Perris/Hemet
Elsinore
0.6 Million Tons/Yr
Ocean
Santa Ana River Watershed and Groundwater Basins
Yucaipa Valley Regional Brineline Project
Santa Ana Regional Interceptor
Yucaipa Valley Regional Water Supply Renewal Project


PHASE 3 PERMITTING EXHIBIT
YUCAIPA VALLEY REGIONAL BRINE LINE EXTENSION PROJECT
PERMIT LEGEND
SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
SAN BERNARDINO COUNTY
CALTRANS
CITY OF SAN BERNARDINO
CITY OF RIVERSIDE
LOMA LINDA UNIVERSITY
CITY OF LOMA LINDA
SAWPA/SBVMWD
SOUTHERN CALIFORNIA EDISON LOCATIONS THROUGHOUT PROJECT
DUDEK

Yucaipa Valley Water District

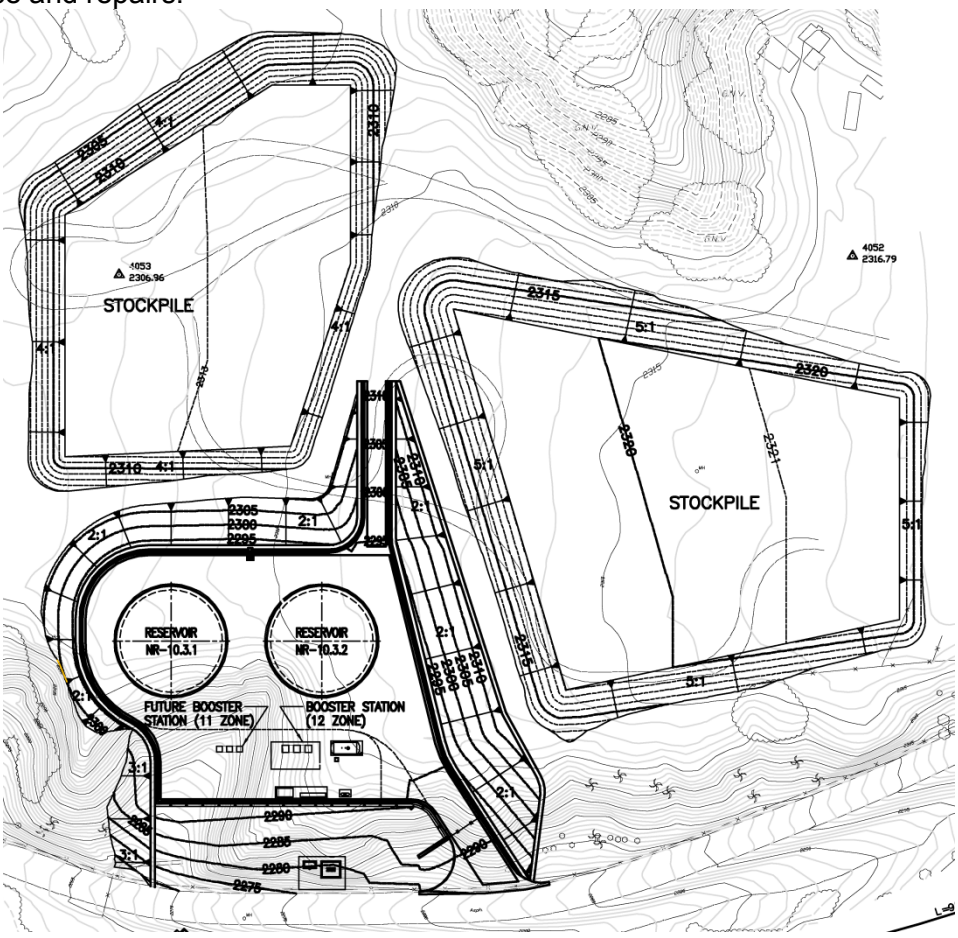
Workshop Memorandum 11-147

Date: **September 27, 2011**

Subject: **Addendum to Environmental Documentation for the Reservoir R-10.3 Project**

The Yucaipa Valley Water District is actively preparing the design documents for the R-10.3 Reservoir site located approximately 1 mile east of the Wochholz Regional Water Recycling Facility. This site is important for the construction of recycled water reservoirs and booster stations to connect the recycled water supply from the wastewater treatment plant to the existing recycled water system.

The District staff has prepared the attached environmental documentation to amend the environmental documentation to allow for the construction of two, one million gallon water storage reservoirs instead of a single two million gallon water storage reservoir. The importance of this change is that the dual reservoirs will provide the operational flexibility and redundancy to allow the facility to operate while one of the two reservoirs is taken out of service for maintenance and repairs.



YUCAIPA VALLEY WATER DISTRICT
12770 2ND STREET
P.O. BOX 730
YUCAIPA, CALIFORNIA 92399
(909) 797-5117

ADDENDUM TO ENVIRONMENTAL IMPACT REPORT FOR YUCAIPA VALLEY WATER DISTRICT REGIONAL NON-POTABLE DISTRIBUTION SYSTEM PROJECT

SEPTEMBER 2011

Prepared by

KRIEGER & STEWART, INCORPORATED
ENGINEERING CONSULTANTS
3602 UNIVERSITY AVENUE
RIVERSIDE, CALIFORNIA 92501
(951) 684-6900

REGISTERED PROFESSIONAL ENGINEER
DAVID F. SCRIVEN
No. 42922
Exp. 03/31/2012
CIVIL
STATE OF CALIFORNIA

SIGNATURE _____

DATE 9/9/11

ADDENDUM TO
ENVIRONMENTAL IMPACT REPORT
(14 CCR 15164)

YUCAIPA VALLEY WATER DISTRICT
REGIONAL NON-POTABLE DISTRIBUTION SYSTEM PROJECT

Project: Regional Non-Potable Distribution System Project

Proponent: Yucaipa Valley Water District (hereinafter YVWD)

Location: The Regional Potable Distribution System Project is located in the cities of Calimesa, Yucaipa, Redlands, and Moreno Valley, within the counties of San Bernardino and Riverside, California. The portion of the Project covered by this addendum is the Reservoir E-2 site, located on West County Line Road within the City of Calimesa, approximately 3/4 mile westerly of Interstate 10, in Section 15, T2S, R2W, SBM.

Description: YVWD's "Regional Non-Potable Distribution System Project" Project (Project) consists of construction of approximately 153,000 lineal feet of non-potable water distribution pipeline with appurtenances, 24,000 lineal feet of outfall pipeline, three reservoirs, and four pump stations, and conversion of one potable water reservoir to non-potable water service.

A Draft Environmental Impact Report (DEIR) for the Project was prepared by Dudek & Associates, Inc. in November, 2005, and the Final Environmental Impact Report (FEIR) was certified by YVWD on April 19, 2006. The project includes several non-potable water storage reservoirs, including Reservoir E-2, a 2.0 million gallon reservoir located on County Line Road within the City of Calimesa. The description of reservoir facilities at the Reservoir E-2 site has changed since adoption of the FEIR. The EIR described Reservoir E-2 as follows:

> *"Reservoir E-2 would consist of an above-ground tank with a capacity of two million gallons. The tank would be 32 feet above ground and would require a total area, including a pump station and district parking, of one acre. The pump station would be housed in a concrete block structure no more than 16 feet in height and occupying no more than 500 square feet."*

The description of reservoir facilities at the site, now known as the NR-10.3 Reservoir site, is hereby revised as follows:

> *"NR-10.3 Reservoir site facilities will consist of two above-ground tanks with a capacity of one million gallons each, a booster pumping plant, site piping, electrical and ancillary facilities, site access and parking. The tanks will be 32 feet above ground. The pump station will be no more than 16 feet in height and occupy no more than 5,000 square feet, and will be furnished with mufflers and all appropriate sound attenuation facilities required to fully comply with the City of Calimesa's Noise Ordinance. Total site disturbance is estimated at 5.4 acres."*

ADDENDUM TO
ENVIRONMENTAL IMPACT REPORT
(Continued)

Appendix B, attached, contains a Habitat Assessment Report conducted to verify that the findings of the original Biological Resources Technical Report prepared for the DEIR were applicable to the reservoir site as revised.

The Habitat Assessment did not find that biological resources and habitat had changed in any significant way from the time that the previous Biological Resources Technical Report had been conducted, and no significant biological resources requiring mitigation were found in the areas of the site that were not surveyed previously. No changes to the original mitigation measures are proposed. However, the Habitat Assessment Report does provide recommendations regarding construction during nesting bird breeding season and for performance of a pre-construction survey for burrowing owl (*Athene cunicularia*) as precautions against potential impacts to species that were not verified to be present onsite at the time of the survey, but which could possibly occupy the site prior to commencement of construction activities. Said recommendations will be incorporated into the contract documents as routine precautionary measures.

YVWD's Board of Directors, having conducted a careful and independent review of the proposed changes to YVWD's "Regional Non-Potable Distribution System Project" described above, does hereby find and declare that said changes are minor in nature, and do not call for the preparation of a subsequent Environmental Impact Report. The Board of Directors additionally finds that:

1. No substantial changes are proposed in the Project which will require major revisions of the previous Environmental Impact Report due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

2. No substantial changes have occurred with respect to the circumstances under which the Project is undertaken which will require major revisions of the previous Environmental Impact Report due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

3. No new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous Environmental Impact Report was adopted, shows any of the following:

    a. The Project will have one or more significant effects not discussed in the previous Environmental Impact Report;

    b. Significant effects previously examined will be substantially more severe than shown in the previous Environmental Impact Report;

    c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

    d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous Environmental Impact Report would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

ADDENDUM TO
ENVIRONMENTAL IMPACT REPORT
(Continued)

A brief statement of the reasons supporting the Board's findings are as follows:

> The proposed Project has not changed since adoption of the 2005 Environmental Impact Report with the exception that the design of onsite facilities at the NR-10.3 Reservoir site, formerly known as the Reservoir E-2 site, has changed as follows: two one-million-gallon reservoirs are now proposed to be constructed rather than one two-million-gallon reservoir, the onsite booster pumping station will not be housed in a concrete block structure and will occupy approximately 5,000 square feet rather than 500 square feet, site grading will require an estimated 5.4 acres of site disturbance rather than 1.0 acre of site disturbance originally estimated, and the site plan has been revised as shown in Appendix A. A new Habitat Assessment did not result in discovery of any new environmental impacts resulting from said changes. The revisions to the Project described above will have no significant environmental impacts not already mitigated by the existing mitigation measures.

The Board of Directors hereby finds that this Addendum to the District's 2005 Environmental Impact Report reflects its independent judgment.

DATED: _____

_____
Jay Bogh, President
YUCAIPA VALLEY WATER DISTRICT

REPORTS/CEQA/818-67-ADDENDUM

Yucaipa Valley Water District

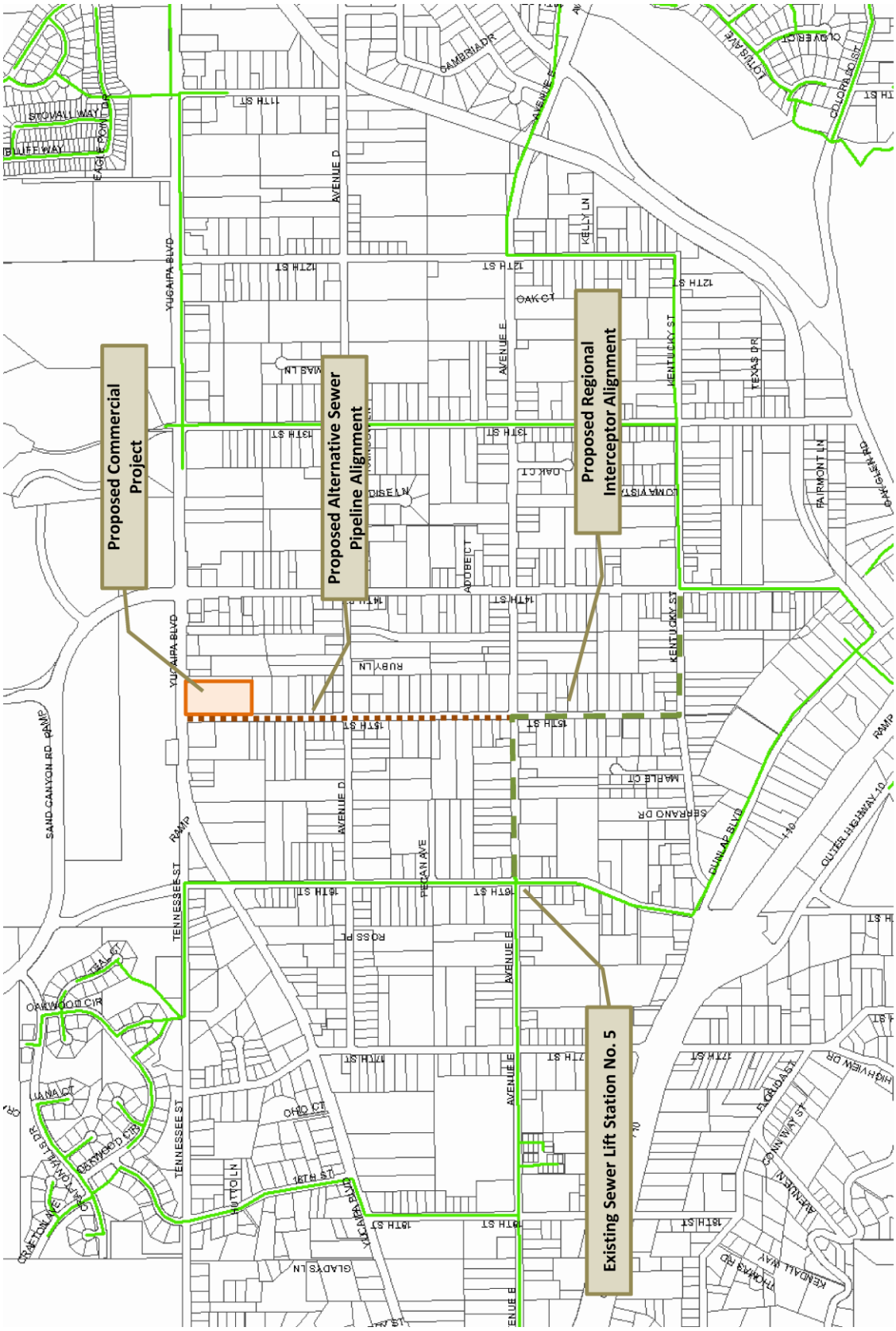
Workshop Memorandum 11-148

Date: **September 27, 2011**

Subject: **Overview of Proposed Sewer Service Connection for Commercial Development at Yucaipa Boulevard and 15th Street**

The Yucaipa Valley Water District staff has recently met with a developer exploring the potential of a commercial development on the southeast corner of Yucaipa Boulevard and 15th Street. In order for the development to proceed, a sewer mainline extension will be required from the project site to the existing sewer mainlines.

The District staff will be presenting information about the existing sewer infrastructure in the area and some potential solutions to the offsite sewer mainline requirements for the project.


Proposed Commercial Project
Proposed Alternative Sewer Pipeline Alignment
Proposed Regional Interceptor Alignment
Existing Sewer Lift Station No. 5
YUCAIPA BLVD
SAND CANYON RD
TENNESSEE ST
AVENUE D
AVENUE E
KENTUCKY ST
DUNLAP BLVD
SERRANO DR
PECAN AVE
ADOBE CT
OAK CT
RUBY LN
ROSS PL
MAPLE CT
OAKWOOD CIR
OHIO CT
SUTTON LN
GLADYS LN
KELLY LN
FAIRMONT LN
TEXAS DR
RAMP
I-10

Yucaipa Valley Water District

Workshop Memorandum 11-149

Date: **September 27, 2011**

Subject: **Sewer Mainline Reimbursement for Commercial Development Located on 5th Street, Calimesa (APN 411-180-025) - Bill Dickinson**

The Yucaipa Valley Water District staff has worked with the property owner / developer of the commercial development located at 1096 5th Street, Calimesa. The building permits were issued and construction of the project was able to proceed without a development agreement from the Yucaipa Valley Water District. This commercial project was completed in 2008.

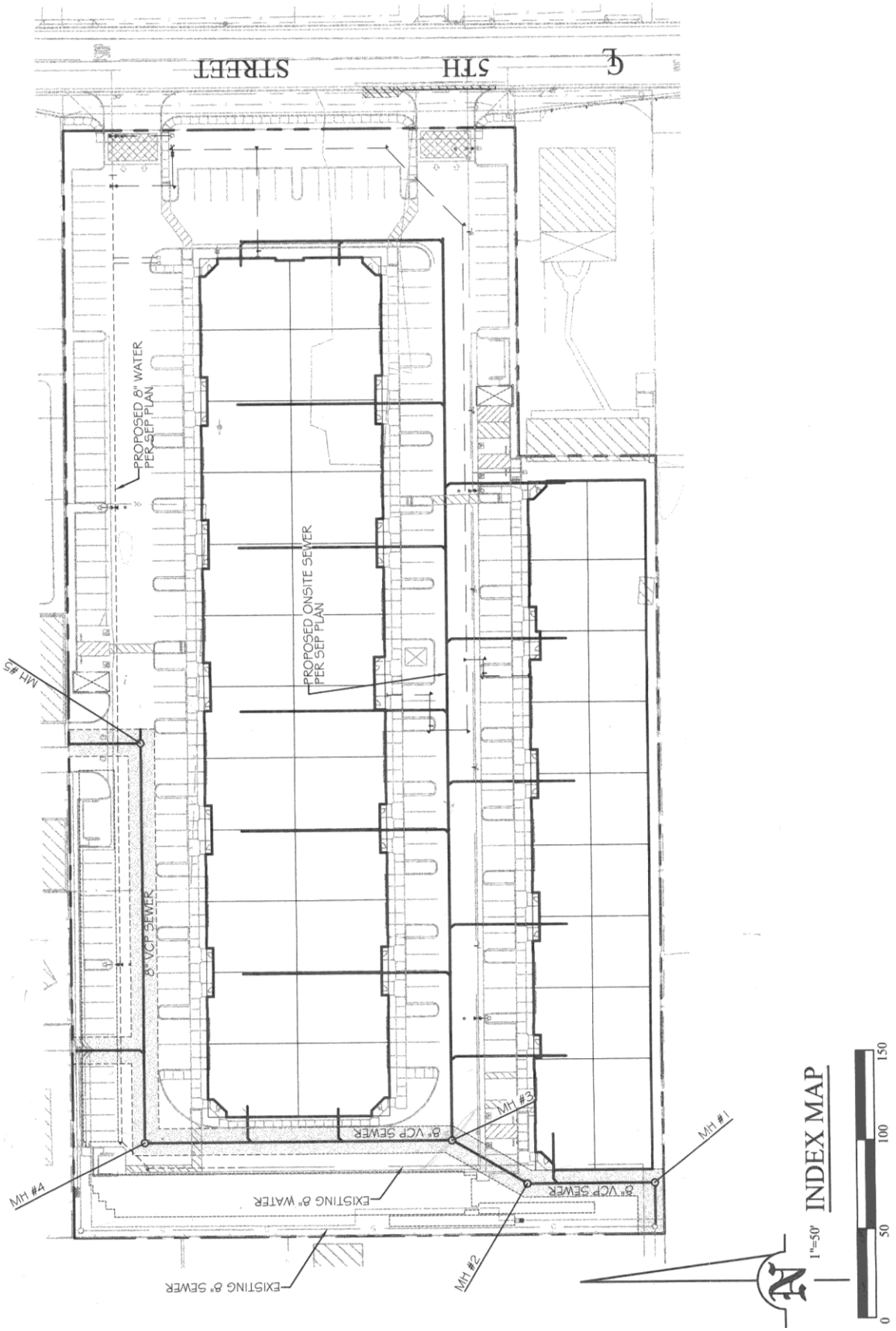
During the construction of the project, the developer coordinated with the District and was required to relocate approximately 550 feet of an existing sewer mainline from an easement near the property line to a location within the paved area of the project (see page 2 of 4). The primary reason for relocating the sewer mainline was due to conflicts from the subsurface storm water capture system and the inability for the District to adequately maintain the original sewer mainline in the original location. During construction of the commercial development, the original sewer mainline was used by adjacent properties to the north. The District inspected the construction of the new sewer mainline.

Over the past two years, the District staff has been working with the developer to resolve the reimbursement issues for the sewer mainline and the determination of whether the relocation of the sewer mainline was the responsibility of the development or the District. As a potential solution, the District and developer have decided to approach the resolution by segmenting the sewer mainline installed as part of the project. This approach enabled the two parties to split the cost of the newly constructed infrastructure based on the cost of installation.

A detailed breakdown of the costs is provided on page 4 of 4.

An overview of the project and a summary of each line item will be provided at the board workshop.


New Sewer Mainline
Original Sewer Mainline
AVENUE L
J17-35
J17-34
J17-33
J17-21
J16-16
J16-15
CALIMESA BLVD
CALIMESA BLVD
MESA BLVD


STREET
5TH
℄
PROPOSED 8" WATER PER SEP PLAN
PROPOSED ONSITE SEWER PER SEP PLAN
MH #5
8" VCP SEWER
8" VCP SEWER
MH #3
MH #4
EXISTING 8" WATER
8" VCP SEWER
MH #1
EXISTING 8" SEWER
MH #2
INDEX MAP
1"=50'
150
100
50
0

Bill Dickinson - 5th Street Project (P-65-122) - Proposed Resolution of Sewer Mainline Construction Issues
APN 411-180-025

Issue						Developer Allocation		District Allocation	
					Issue Cost	Percentage	Amount ($)	Percentage	Amount ($)
1	Manhole Construction	Developer = MH #1, #2 & #3; District = MH #4 & #5			$35,000.00	60%	$21,000.00	40%	$14,000.00
2	Sewer Mainline Construction								
	Start Point	End Point	Cost ($/LF)	Length (Feet)	Total Cost				
	Existing Sewer Mainline (0+00)	Manhole #1 (0+24.69)	$50.00	20.69	$1,034.50	75%	$775.88	25%	$258.63
	Manhole #1 (0+24.69)	Manhole #2 (0+96.78)	$50.00	68.09	$3,404.50	75%	$2,553.38	25%	$851.13
	Manhole #2 (0+96.78)	Manhole #3 (1+45.48)	$50.00	44.70	$2,235.00	50%	$1,117.50	50%	$1,117.50
	Manhole #3 (1+45.48)	Manhole #4 (3+16.43)	$50.00	166.95	$8,347.50	35%	$2,921.63	65%	$5,425.88
	Manhole #4 (3+16.43)	Manhole #5 (5+40.20)	$50.00	219.77	$10,988.50	0%	$0.00	100%	$10,988.50
	Manhole #5 (5+40.20)	Northern Property Line	$50.00	38.20	$1,910.00	0%	$0.00	100%	$1,910.00
				558.40	$27,920.00				
3	Laterals to Northern Property Line				$5,900.00	0%	$0.00	100%	$5,900.00
4	Wyes, Fittings and Couplings				$2,200.00	58%	$1,276.00	42%	$924.00
5	Demolition of Manholes				$800.00	0%	$0.00	100%	$800.00
6	Fill and Abandon Sewer with Slurry				$1,800.00	0%	$0.00	100%	$1,800.00
7	Saw-Cut and Remove Concrete				$6,800.00	100%	$6,800.00	0%	$0.00
8	Pump Existing Septic Tanks				$1,800.00	100%	$1,800.00	0%	$0.00
9	Rental of Shoring Equipment				$1,500.00	26%	$395.87	74%	$1,104.13
10	160 Tons of Rock Backfill				$2,960.00	26%	$781.17	74%	$2,178.83
11	Miscellaneous Items				$3,500.00	26%	$923.69	74%	$2,576.31
					Total Allocation of Sewer System Construction		**$40,345.10**		**$49,834.90**

Final Manline Allocation	
Developer	District
$7,368.38	$20,551.63
26%	74%

Notes:

A. The calculations used above do not directly reflect the cost of installing the onsite PVC sewer system.
B. The $50.00 per foot for Issue #2 is based on the difference between the additional sewer cost of $45,200 minus the original construction cost of $16,900 as provided on SL Johnson summary dated 11/28/2007.
C. The breakdown for Issue #4 is based on the original 780 linear feet of unapproved PVC sewer to be installed and the addition of the the 565 linear feet of VCP mainline.
D. The breakdown for Issues #9 to #11 is based on the Final Allocation of Mainline Costs provided to the right of Issue #2.
E. A credit of $5,000 will be applied to the outstanding inspection services charges for the development for the construction/replacement of the District's on-site sewer mainline.
F. The implementation of this proposal is solely dependent upon approval by the Yucaipa Valley Water District Board of Directors.

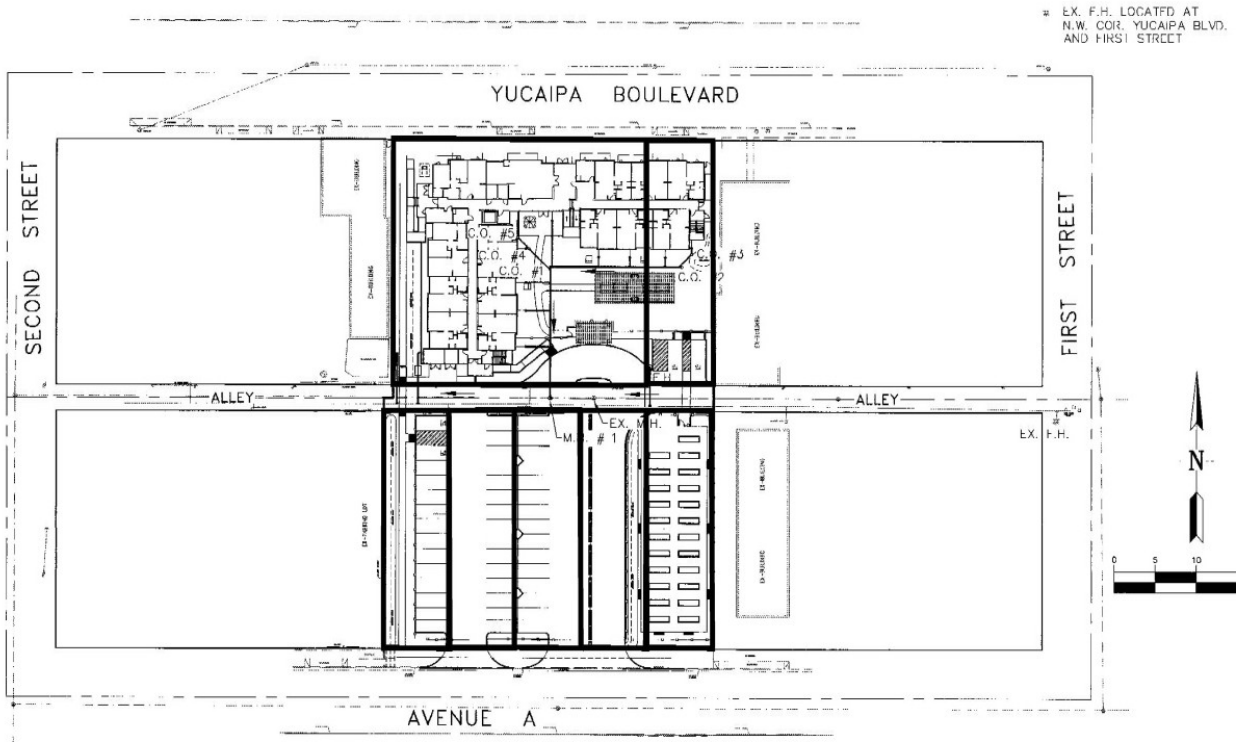
Yucaipa Valley Water District

Workshop Memorandum 11-150

Date: **September 27, 2011**

Subject: **Overview of Development Agreement No. 05-2011 related to Assessor's Parcel Numbers 319-051-10, 21, 22, 23, 24, 31 & 34, Yucaipa**

The proposed project is located south of Yucaipa Boulevard, between 1st Street and 2nd Street in the City of Yucaipa and consists of seven parcels on approximately 1.34 acres (Assessor's Parcel Numbers 319-051-10, 21, 22, 23, 24, 31 & 34).



The majority of the development agreement is consistent with the Yucaipa Valley Water District standard agreement form. The specific conditions of service for this project are included in Part G - Special Conditions of the attached agreement.

The attached development agreement is in the process of being executed by the owner, Corporation of Better Housing.

AGREEMENT NO. 05-2011

AGREEMENT TO PROVIDE WATER AND SEWER SERVICE TO THE PRIVATE DEVELOPMENT OF APN 0319-051-10, 21, 22, 23, 24, 31 & 34

This Agreement is made and effective this 5th day of October, 2011, by and between the YUCAIPA VALLEY WATER DISTRICT, a public agency ("DISTRICT") and CORPORATION FOR BETTER HOUSING, ("DEVELOPER"). Each is sometimes referred to herein as a "Party" and jointly as the "Parties".

Contact information for the parties is as follows:

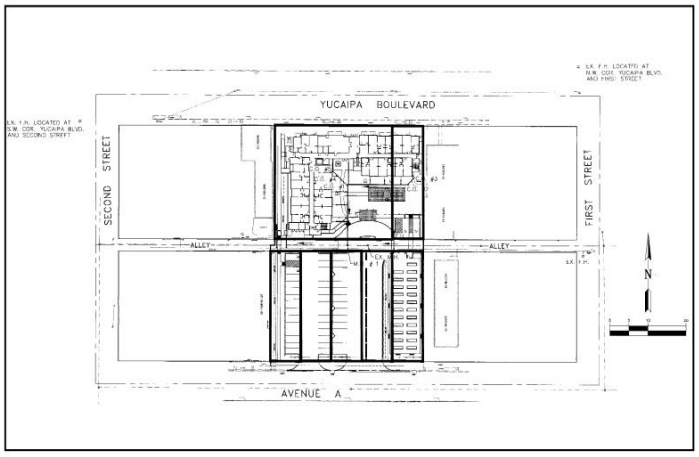
DISTRICT:
Yucaipa Valley Water District
12770 Second Street
Post Office Box 730
Yucaipa, California 92399-0730
Attn: Joseph B. Zoba, General Manager
Telephone: (909) 797-5119
Facsimile: (909) 797-6381

DEVELOPER:
Corporation for Better Housing
15303 Ventura Boulevard, Suite 1100
Sherman Oaks, California 91403
Attn: David Sclafani, Senior Vice President
Telephone: (818) 905-2430
Facsimile: (818) 905-2440

PROJECT OVERVIEW

This project involves the development of 1.34 acres on seven (7) parcels located at the south east corner of Yucaipa Boulevard and Second Street (APN 0319-051-10, 21, 22, 23, 24, 31 and 34). This project is located in the City of Yucaipa, San Bernardino County.

The Yucaipa Valley Water District has been involved in the review process for this project and has established a project file P-65-233 / W.O. 65-10875.



AGREEMENT

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, the DEVELOPER and the DISTRICT agree as follows:

1. During the course of construction, all construction work of the Facilities to be conveyed to, and owned and operated by the DISTRICT ("Facilities"), will be inspected by DISTRICT personnel and/or by DISTRICT's consultants at the sole cost of the DEVELOPER. The DEVELOPER acknowledges that the DISTRICT's inspector(s) shall have the authority to require

that any and all unacceptable materials, workmanship, construction and/or installation not in conformance with standard practices, qualities and standards in the industry, as reasonably determined by the DISTRICT, shall be replaced, repaired or corrected at DEVELOPER's sole cost and expense.

2. The DEVELOPER hereby agrees that Facilities shall be planned, designed and constructed, at its sole cost and expense, in accordance with all applicable laws, rules, regulations and policies, including the DISTRICT's Design Manual and Construction Guidelines, in effect at the time of construction. The DEVELOPER shall strictly comply with all applicable law, rules and regulations, concerning the provision of services, materials and the payment of wages. The DEVELOPER shall keep fully informed of and obey all laws, rules and regulations, and shall indemnify the DISTRICT against any liability arising from DEVELOPER's violation of any such law, rule or regulation.

3. Prior to proceeding with any construction, the DEVELOPER shall schedule and conduct a preconstruction conference with the DISTRICT's Engineer and/or designees or agents.

4. Ownership; Operation and Maintenance: Once constructed and accepted by the DISTRICT, title to the Facilities (and associated right-of-way) shall be conveyed by the DEVELOPER to the DISTRICT, and the DISTRICT will operate and maintain the Facilities and will provide service to the DEVELOPER's Property in accordance with the DISTRICT's rules and regulations and the provisions of this Agreement.

a. The DEVELOPER shall merge all seven (7) parcels into a single parcel to comply with the current DISTRICT rules and ordinances.

b. The DEVELOPER shall take all reasonable precautions and care necessary to protect the existing 8-inch C-200 PVC main within the alleyway during the complete course of development and construction of the proposed project site. Should the existing 8-inch C-200 PVC main rupture, the DEVELOPER shall immediately contact and notify the DISTRICT.

c. The DEVELOPER shall be responsible for the cost of installing two (2) additional in-line valves and all necessary mainline restraints onto the existing 8-inch C-200 PVC main at the westerly and easterly property lines.

d. The DEVELOPER shall be responsible to provide all necessary easements to the DISTRICT and the proper design and construction of new commercial (8-inch ductile iron pipe) fire hydrant extensions from the existing C-200 PVC water main in the alleyway between Yucaipa Boulevard and Avenue A, northerly to Yucaipa Boulevard along the westerly property line and another within the alleyway on the easterly property.

e. The DEVELOPER shall submit plans for approval by the DISTRICT for all related water and sewer service connections and uses necessary to serve this project site. The DEVELOPER shall properly abandon and replace the existing C-200 PVC water main in the alleyway within the project limits with the DISTRICT providing the new 8-inch DIP and gaskets for installation. The DEVELOPER will be responsible for constructing all related service laterals to their site off of the new 8-inch ductile iron pipe main and the existing sewer main.

f. The DEVELOPER shall be responsible for the proper abandonment of all existing water and sewer services serving the APNs within the project limits pursuant to DISTRICT rules and ordinances.

g. The DEVELOPER shall be responsible for the necessary inspection and testing of all new facilities pursuant to DISTRICT guidelines and standard procedures prior to rendering service to the project site.

h. There are currently two (2) EDU facility capacity credits available for the domestic water fees and two (2) EDU facility capacity credits available for the sewer fees within the project limits that shall be applied towards the total development fees due for this project.

5. The DEVELOPER shall be solely responsible for the payment to the DISTRICT of all fees, charges, costs and expenses related to this development. In the event of a change in the DISTRICT's schedule of fees and charges, such change shall automatically be incorporated into this Agreement as though set forth in full.

6. The DEVELOPER and the DISTRICT agree that the DISTRICT, its employees, agents and officials, shall be fully protected and indemnified from any loss, injury, damage, claim, fine, penalty, lawsuit, cost, expense, attorneys' fees, litigation costs, defense costs, court costs or any other costs arising out of or in any way related to the performance by DEVELOPER of this Agreement. Accordingly, the provisions of this indemnity provision are intended by the parties to be interpreted and construed to provide the fullest protection possible under the law to the DISTRICT. DEVELOPER acknowledges that the DISTRICT would not enter into this Agreement in the absence of this commitment from the DEVELOPER to indemnify and protect the DISTRICT as set forth herein.

7. Unless extended by mutual agreement of the parties in writing, this Agreement shall terminate at 5:00 p.m., on the day before the sixth (6^{th}) anniversary date of this Agreement; provided, however, that this Agreement shall automatically terminate, as follows:

a. Upon expiration of the recorded map regardless of the decision to extend the expiration date by the land use authority; or

b. Immediately, upon abandonment by the DEVELOPER of the DEVELOPER's project and/or the work hereunder; or

c. Within 45 days of the date of the issuance of a Notice of Default by the DISTRICT to the DEVELOPER in the event the DEVELOPER fails or refuses to perform, keep or observe any of the terms, conditions or covenants set forth in this Agreement.

In the event of termination, and in order to counteract any threat to the public's health, safety or welfare, the DISTRICT shall have the right, without liability to the DEVELOPER, to complete, at the DEVELOPER's non-reimbursable expense, all or a portion of the Facilities constructed pursuant to this Agreement.

Notwithstanding the foregoing, the Indemnification clauses contained herein shall survive the termination of this Agreement.

8. This Agreement may be amended in writing signed by both parties.

9. However, this Agreement shall not be assignable except by the written consent of both parties.

10. This Agreement is not intended to create, and nothing herein contained shall be construed to create, an association, a trust, a joint venture, a partnership or other entity of any kind, and either party is intended to be the agent, employee or partner of the other. This Agreement is only for the benefit of the parties to this Agreement, their successors and assigns. No other person or entity shall be entitled to rely on any matter set forth in this Agreement.

11. All disputes related to this Agreement shall first be submitted to non-binding mediation.

IN WITNESS WHEREOF, the parties have executed is Agreement to be effective on the day and year first above written.

DEVELOPER	**YUCAIPA VALLEY WATER DISTRICT**
By _____	By _____
_____ Print Name	_____ Print Name
_____ Title	Board President Title
_____ Company	Yucaipa Valley Water District Agency

Yucaipa Valley Water District

Workshop Memorandum 11-151

Date: **September 27, 2011**

Subject: **Project Management Support Services by RMC Water & Environment**

The Yucaipa Valley Water District has maintained a long working relationship with Scott Goldman and the staff of RMC Water & Environment. In particular, Scott Goldman and his staff provide administrative assistance related to our grant/loan funding contracts.

Over the past two years, the District staff gradually suspended various activities previously approved as task orders to RMC. These tasks were discussed and consolidated as part of Director Memorandum No. 10-031 dated May 5, 2010.

Since this time, the District staff has reevaluated our need for consulting services and has worked with RMC Water & Environment to develop the attached scope of services which includes the following:

- Task 1 - Continued Assistance with Funding Activities
- Task 2 - System Planning Assistance
- Task 3 - Assistance with Environmental Compliance Activities
- Task 4 - Permitting Assistance for Recharge of Recycled Water
- Task 5 - Meetings and Coordination

The largest element within the proposed scope of services relates to the regulatory permitting associated with the recharge of recycled water. The need for this assistance will be discussed as part of Workshop Memorandum No. 11-134 earlier in the meeting.

Note: This workshop item was continued from the board workshop conducted on September 13, 2011 [Workshop Memorandum No. 11-139].

YUCAIPA VALLEY WATER DISTRICT
BRINELINE EXTENSION AND
PHASE II RECYCLED WATER SYSTEM EXPANSION

CONTINUATION OF PROJECT MANAGEMENT
SCOPE OF SERVICES

RMC Water and Environment
September 2011

BACKGROUND

In the last several years the District constructed an extensive recycled water distribution system to help satisfy increasing demands and to reduce the growing overdraft of local groundwater supplies. The sources of non-potable water distributed through the system is intended to be a mixture of advanced tertiary treated wastewater (recycled water) generated at the Henry N. Wochholz Wastewater Treatment Plant (WWTP), untreated imported water from the State Water Project, and to a lesser degree non-potable groundwater pumped from the Beaumont, San Timoteo and Yucaipa Management Zone Groundwater Basins. Currently only SWP water is delivered.

The District and the Region realizes multiple benefits from the non-potable water distribution system:

- Reduces capacity and operating cost of the new Yucaipa Regional Water Filtration Facility (YRWFF)
- Provides method for disposal of NF membrane concentrate, which allows continued use of free chlorine for disinfection of potable water
- Opportunity to eliminate NPDES permit for discharges of treated effluent from the existing WWTP
- Reduces overdraft and preserves groundwater for periods of drought
- Minimizes quantity of water imported from Northern California
- Reduces energy using raw imported water available in higher pressure zones rather than pumping groundwater from lower elevations.

The District's Non-Potable Water Distribution System is being constructed in phases with State and Federal Grant funding assistance.

Phase I System - The Phase I system was completed in 2005 and provides nonpotable water to approximately 18 irrigation sites with an average annual water demand of approximately 1,200 afy. The Phase I system consists of approximately 53,000 linear feet of pipeline, two storage reservoirs and one booster pump station.

Phase II System - Phase II will expand the system to serve additional irrigation sites and will connect to the Wochholz Water Recycling Facility (WRF). Facilities identified for the Phase II expansion include the 24-inch Crow Street Pipeline (approximately 4,400 lf), 24-

inch Beaumont Cherry Valley Pipeline (approximately 14,000 lf), Non-Potable Booster Station 10.3 (NB-10.3) with a capacity of about 2,100 gpm, and two 1 million gallon Non-potable Reservoirs 10.3 (NR-10.3) at the end of Crow Street.

PREVIOUS PROJECT MANAGEMENT SERVICES

Since January 2006 Water 3 Engineering (now RMC Water and Environment) has worked as an extension of District staff on expansion of the Recycled Water System and extension of the SARI brineline. Specific services provided include the following:

- Assistance with environmental compliance process
- Assistance with procurement of design consultants for the project.
- Assistance with consultant negotiations for the project.
- Technical review of design submittals
- Coordination of District Staff comments on technical submittals and consolidation for transmittal back to design consultants.
- Assistance with Prop 13 funding for the Phase I system and coordination with SAWPA.
- Assistance with Prop 50 funding for brineline
- Assistance with SWRCB for State Revolving Fund Loans
- Assistance with Federal funding and coordination with EPA and USBR.

In addition, the Scope of Services for RMC included coordination with the anticipated recycled water customers.

SCOPE OF SERVICES FOR CONTINUED ASSISTANCE

This Scope of Services is to continue to provide the District with Program Management Assistance for completion of the Phase II expansion of the Recycled Water System and Brineline Extension. Program Management tasks includes funding assistance, additional planning assistance, assistance with coordination of environmental compliance activities and meetings and overall coordination. RMC proposes to continue to act as an extension of District staff with regard to the Board and consultants. Close coordination with existing District staff will be maintained to ensure the level of effort being provided is adequate and appropriate. The following describes the specific tasks to be performed in support of the Phase II Recycled Water Expansion and Brineline Extension Projects.

Task 1 – Continued Assistance with Funding Activities

This task involves continuation of the coordination with outside funding agenices. The District is anticipating funding these projects with a combination of Federal Grants, State Grants and State Loans. Sources of funding are as follows:

- EPA Grant for Recycled Water System Expansion
- Title XVI Grant from the USBR for Brineline extension

- Prop 50 Grant from State administered through the Santa Ana Watershed Project Authority (SAWPA) for Brineline Extension and WISE project
- State Revolving Fund (SRF) Loans from the SWRCB for Brineline Extension and Recycled Water System Expansion
- State Grant from SWRCB for Recycled Water System Expansion

Each funding agency has its own method and frequency of reporting and requesting reimbursement for design and construction expenses. RMC has been providing this assistance for several years and is familiar with the requirements and staff at each of the funding agencies.

Task 2 – System Planning Assistance

Completion of the Phase II expansion of the non-potable water system will connect the WWTP to the existing delivery system. Distribution of recycled water will trigger several regulatory requirements and begin the process for removing the effluent from San Timoteo Creek. The Brineline construction will provide the District the ability to comply with the RWQCB maximum benefit commitments made by YVWD, which include:

- Limit TDS concentration in their Wochholz WRP effluent to a maximum of 540 mg/L.
- Construction of a non-potable water system for irrigation uses, using a blend of State Project Water and recycled water from the Wochholz WRP.
- Construction of desalting facilities and brine disposal pipeline.
- Maximize the recharge of storm and imported water
- Elimination of recycled water discharges to the unlined reach of San Timoteo Creek

Additional planning is needed to identify the optimal facilities and timing requirements. Specific planning assistance to be provided by RMC is as follows:

- Assist the District to refine alternatives for salinity management and timing needs for facilities. Consideration will be given to the timing of the RO membranes at the Wochholz RWRF.
- This task will also include assistance with the planning and regulatory requirements for implementation of a groundwater recharge project anticipated with BCVWD needed to manage effluent flows between winter and summer.
- This will also include assistance with acquisition of brine disposal capacity at the Orange County Sanitation District facilities. Planning to include consideration of the feasibility of a brine concentrator prior to discharge into the SARI pipeline.

Task 3 – Assistance with Environmental Compliance Activities

This task involves assisting District staff to coordinate the remaining environmental compliance activities associated with the recycled water and salinity management facilities. These activities include, but are not necessarily limited to:

- CEQA/NEPA Documentation for Beaumont-Cherry Valley Pipeline Extension YVWD is proposing to construct an extension to the YVWD Regional Recycled Water Distribution

System of approximately 18,500 linear feet (3.5 miles) of 24" waterline to connect an existing YVWD waterline to an existing Beaumont-Cherry Valley Water District (BCVWD) waterline via a proposed BCVWD booster. The intent of this project is to deliver non-potable water to the BCVWD. The entire pipeline would be constructed within existing roadways, and all construction work, staging areas, and access routes would be confined to existing paved right-of-ways (ROWs) and disturbed/developed areas. The proposed 24" pipeline alignment would extend south from an existing YVWD waterline for approximately 2,000 along 5th Street, and would continue south along Calimesa Boulevard for approximately 11,000 feet. It would then turn east and continue along Cherry Valley Boulevard for approximately 5,500 feet, connecting with the BCVWD waterline at the proposed booster.

- The Habitat Monitoring Program (HMP) associated with the Recycled Water Distribution System Project was developed in 2005 and is a long-term monitoring program designed to ensure the proposed reduction in discharge to San Timoteo Creek does not cause a decline in riparian habitat quality within downstream areas. In order to characterize the status of existing riparian habitat and groundwater prior to beginning the proposed discharge reductions, and to effectively monitor changes to riparian habitat quality in the creek, implementation of the HMP is scheduled to begin with at least one year of pre-reduction monitoring data. In accordance with the Final EIR EIS for the Non-Potable Water Distribution System Project, the HMP will be implemented annually for a minimum of 10 years. Estimating the natural variability of the system being monitored is critical to determining the level of sampling effort required to sufficiently detect changes that would trigger the implementation of management actions in accordance with the HMP.

Task 4 – Permitting Assistance for Recharge of Recycled Water

The District's implementation and expansion of the recycled water system allows a significant degree of flexibility and reliability in meeting projected future water demands. The majority of the projected future demands within the District are non-potable. While recycled water production is relatively steady throughout the year, non-potable water demands vary significantly by season. Some means of water storage will be required to balance out this seasonal difference in recycled water production and demand, and reduce discharges to San Timoteo Creek.

Seasonal recharge of recycled water into the ground and subsequent recovery offers a beneficial means of resolving this imbalance in recycled water production and demand. Under this concept, excess recycled water would be recharged into the ground during times when recycled water flows exceed non-potable demands. If recharge is done within the Yucaipa Basin the recycled water would constitute a percentage of groundwater withdrawn that could then be used for potable purposes.

A recent study by USGS on the geology in the area of the Wilson Creek spreading grounds indicates a travel time of approximately 3 to 4 months. This creates an excellent opportunity to

utilize these spreading grounds for recharge of recycled water. A regulatory requirement for recharge of recycled water into a potable groundwater basin requires the following:

- Control of Pathogenic Micro-organisms
- Control Nitrogen Compounds
- Control of Regulated Chemicals
- Dilution Water Requirements
- Recycled Water Contribution Limits
- Total Organic Carbon Requirements
- Travel Time to Potable Supply Wells
- Monitoring Requirements

Specific requirements need to be negotiated for each proposed project with the Regional Water Quality Control Board (RWQCB) and the State Department of Public Health (CDPH). Demonstration that all regulatory requirements are being satisfied is to be documented in an Engineering Report.

This task involves meetings and coordination with RWQCB, CDPH and District staff and others as may be necessary to identify the regulatory requirements for recycled water into the Wilson Creek Spreading Grounds. This will include facility planning, analysis of the groundwater basin, outlining the scope of the Engineering Report, identification of environmental compliance and outreach needs. The level of effort included in this proposal is to initial the permitting process since implementation is likely to take several years.

Task 5 – Meetings and Coordination

This task involves meetings and coordination with District staff, Board and others as may be necessary during the project. It is assumed that several of the District staff meetings can be coordinated with other meetings to minimize the required time to attend. Monthly status reports will be provided with invoices to document the activities of RMC relative to implementation of the Phase II Recycled Water System Expansion, Brineline Extension and Groundwater Recharge projects.

YUCAIPA VALLEY WATER DISTRICT
PROGRAM MANAGEMENT SERVICES RELATED TO BRINELINE EXTENSTION,
PHASE II EXPANSION OF THE RECYCLED WATER SYSTEM AND GROUNDWATER RECHARGE
Exhibit A
RMC WATER AND ENVIRONMENT - ESTIMATED LEVEL OF EFFORT

Item / Task	Principal Hrs	Principal Cost	Project Engineer Hrs	Project Engineer Cost	Designer Hrs	Designer Cost	Clerical Hrs	Clerical Cost	Total Labor Hrs	Subs Cost	Total Cost
Hourly rate	$ 210		$ 175		$ 95		$ 80				
1 Funding Assistance											
USBR Title IX Grant	48	$ 10,080	96	$ 16,800	0	$ -	16	$ 1,280	160	$ -	$ 28,160
Prop 50 Grant	48	$ 10,080	80	$ 14,000	0	$ -	16	$ 1,280	144	$ -	$ 25,360
EPA Grant	24	$ 5,040	72	$ 12,600	0	$ -	16	$ 1,280	112	$ -	$ 18,920
SWRCB Grant and SRF Loans	24	$ 5,040	64	$ 11,200	0	$ -	16	$ 1,280	104	$ -	$ 17,520
Subtotal	144	$ 30,240	312	$ 54,600	0	$ -	64	$ 5,120	520	$ -	$ 89,960
2 System Planning Assistance											
Continued assistance with salinity management option	16	$ 3,360	8	$ 1,400	0	$ -	0	$ -	24	$ -	$ 4,760
Continued assistance with BCV21 recharge options	16	$ 3,360	8	$ 1,400	0	$ -	0	$ -	24	$ -	$ 4,760
Subtotal	32	$ 6,720	16	$ 2,800	0	$ -	0	$ -	48	$ -	$ 9,520
3 Assistance with Environmental Compliance Activities											
CEQA/NEPA for Beaumont Cherry Valley Pipeline	16	$ 3,360	0	$ -	0	$ -	0	$ -	16	$ -	$ 3,360
Assstance with Habitat Monitoring Program	16	$ 3,360	0	$ -	0	$ -	0	$ -	16	$ -	$ 3,360
Subtotal	32	$ 6,720	0	$ -	0	$ -	0	$ -	32	$ -	$ 6,720
4 Permitting Assistance for Recharge of RW											
Negotiations with RWQCB and CDPH	120	$ 25,200	40	$ 7,000	0	$ -	8	$ 640	168	$ 10,000	$ 42,840
Facility Planning	24	$ 5,040	40	$ 7,000	24	$ 2,280	8	$ 640	96		$ 14,960
Groundwater Basin Analysis	80	$ 16,800	160	$ 28,000	40	$ 3,800	16	$ 1,280	296		$ 49,880
Development of Scope of Engineering Report	64	$ 13,440	80	$ 14,000	40	$ 3,800	16	$ 1,280	200		$ 32,520
ID Environmental and Outreach Requirements	24	$ 5,040	24	$ 4,200	0	$ -	0	$ -	48		$ 9,240
Subtotal	312	$ 65,520	344	$ 60,200	104	$ 9,880	48	$ 3,840	808	$ 10,000	$ 149,440
5 Meetings and Coordination											
Meetings with staff	24	$ 5,040	0	$ -	0	$ -	0	$ -	24	$ -	$ 5,040
Preparation of monthly status reports	12	$ 2,520	12	$ 2,100	0	$ -	0	$ -	24	$ -	$ 4,620
Subtotal	36	$ 7,560	12	$ 2,100	0	$ -	0	$ -	48	$ -	$ 9,660
Direct Costs											$ 2,500
Total	556	$ 116,760	684	$ 119,700	104	$ 9,880	112	$ 8,960	1,456	$ 10,000	$ 267,800