LONG BEACH WATER DEPARTMENT

The Standard in Water Conservation & Environmental Stewardship

Water Availability Assessment

For the

Long Beach Downtown Community Plan

Long Beach, California

Approved by the

City of Long Beach

Board of Water Commissioners

August 12, 2010

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I. FINDINGS

The Long Beach Downtown Community Plan (**Project**) is exempt from the SB 221 requirement of an affirmative written verification of sufficient water supply (Government Code 66473.7) because it will be sited within an urbanized area that has been previously developed for urban uses. The **Project** is further exempt from SB 221 requirements because the immediate contiguous properties surrounding the proposed **Project** site are, or previously have been, developed for urban uses.

The **Project** is required to have a SB 610 water availability assessment. The purpose of the assessment is to determine whether the projected water supply for the next twenty years – based on normal, single and multiple dry-years – will meet the demand projected for the **Project** and for existing and planned future uses, including agricultural (if any) and manufacturing uses.

That water availability assessment must be approved by the Board of Water Commissioners and transmitted to the **Project**'s lead agency on or before Tuesday, August 17, 2010, for inclusion in any environmental documentation for the **Project**.

The assessment may be based partially, but not wholly, on the Urban Water Management Plan most recently adopted by the Board of Water Commissioners. The assessment cannot be wholly based on that plan because the plan relied on assurances in 2005 from the provider of supplemental water to Long Beach that it would be 100-percent reliable through the year 2030. However, events since 2005 have undermined that reliability. It is now reasonable to assume this supplemental supplier of water may not be 100-percent reliable through 2030 for all its water customers.

This water availability assessment anticipates adequate water supplies will be available during normal, single- and multiple-dry water years to meet the projected water demand associated with the **Project**, in addition to the existing and other planned future uses of Long Beach Water Department's (LBWD) system. This finding is based on LBWD's rights to a reliable supply of groundwater and LBWD's preferential rights to water from the Metropolitan Water District of Southern California (MWD), per Section 135 of the Metropolitan Water District Act.

II. BACKGROUND – SB 221, SB 610, LONG BEACH CITY CHARTER

Effective January 1, 2002, California Senate Bill 221 and Senate Bill 610 amended Section 21151.9 of the Public Resources Code and Sections 10631, 10656, 10910-12, 10915 of the Water Code and Section 11010 of the Business and Professions

Codes, and Sections 65867.5 of the Government Code as well as adding Sections 66455.3 and 66473.7 to the Government Code. The Senate Bills were designed to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 221 and SB 610 are companion measures which seek to promote more collaborative planning between local water suppliers and cities and counties. Both statutes require detailed information regarding water availability to be provided to the city and county decision-makers prior to approval of specified large development projects. Both statutes also require this detailed information to be included in the administrative record that serves as the evidentiary basis for an approval action by the city or county on such projects.

A. PROJECT DESCRIPTION

The **Project** is a mixed-use project as according to the **Project**'s PEIR provided to LBWD on May 19, 2010:

> *"2.0 Project DESCRIPTION, 2.1 Project SUMMARY: The proposed Project is the adoption and implementation of the Long Beach Downtown Community Plan (attached as Appendix B) that would replace the existing land use, zoning, and planned development districts as the land use and design document for all future development in the proposed Community Plan Project area. The Downtown Community Plan incorporates zoning, development standards, and design guidelines to be followed in implementing the Community Plan. Full implementation of the Downtown Community Plan would increase the density and intensity of existing Downtown land uses by allowing up to approximately 5,000 new residential units; 1.5 million square feet of new office, civic, cultural, and similar uses; 384,000 square feet of new retail; 96,000 square feet of restaurants; and 800 new hotel rooms. The additional development assumed in the Downtown Community Plan would occur over a 25-year time period."*

B. PROJECT'S EXPECTED WATER DEMAND

The **Project** is expected to require approximately 1,803 acre-feet per year:

Project's Estimated Annual Water Demand

	Demand Factors			Project Demand		
	Millions of Square Feet	Dwelling Units	AF / Unit / Yr			
Multiple-Family Dwelling Units		5,000	*0.25 * per DU*	1,245	af/yr	69%
Office Uses	1.500		*224 per 1 mil SF*	336	af/yr	19%
Commercial/ Retail Uses	0.384		*224 ~ per 1 mil SF*	86	af/yr	5%
Restaurants	0.096		*224 ~ per 1 mil SF*	22	af/yr	1%
Hotels/ Motels		800	*0.14 ^ per DU*	114	af/yr	6%
Expected Water Demand				**1,803**	**af/yr**	**af/yr**

* Based on average use in Long Beach.
^ Based on average use of large hotels in Long Beach.
~ Based on LBWD Compreshensive Sewer System Master Plan and Management Program.

Because the **Project** will take place in an area previously developed for urban use and served by LBWD, its expected demand for roughly 1,803 acre-feet of water per year will not represent a new, increased demand on LBWD of that much water; the actual annual increase in demand on LBWD will be less than the 1,803 acre-feet. However, due to the size (about 719 acres) and complexity of the existing usage, estimating the net new demand may not be feasible.

C. SB 221 ASSESSMENT IS NOT REQUIRED

The **Project** is exempt from SB 221 requirement of an affirmative written verification of sufficient water supply (Government Code 66473.7) because it will be sited within an urbanized area that has been previously developed for urban uses. The Project is further exempt from SB 221 requirements because the immediate contiguous properties surrounding the proposed Project site are, or previously have been, developed for urban uses.

D. SB 610 WAA IS REQUIRED

As stated above, the Project is a mixed-use development. The **Project** is also subject to CEQA.

Under Water Code § 10912(a)(7), SB 610 requires a water availability assessment if a development qualifies as a "project", as defined. The table below shows the "SB 610 Triggers" that define whether a development is a project; for example a development of 500 residential units would be required to have a WAA. If the table showed the **Project** equaled at least 100% of an individual trigger or in the case with mixed-use projects, showed the sum if the individual elements' impact equaled or exceeded 100% of the triggers, a WSS would be required.

As shown in the table below, this mixed-use **Project** equals 1,871% of the SB 610 triggers for requiring a WAA. Therefore, a WAA is required for this project.

Table 1 - SB 610 Threshold for requiring WAA

	Project		SB 610 Triggers		% of SB 610 Trigger
1. Residential units	5,000	units	500	units	1000%
2. Shopping center or business					
Retail	384,000	sf			
Restaurant	96,000	sf			
Total	480,000	sf	500,000	sf	96%
3. Commercial office (office, civic, cultrual & similar)	1,500,000	sf	250,000	sf	600%
4. Hotel or motel	800	rooms	500	rooms	160%
5. Industrial, manufacturing, or processing plant, or industrial park	96,000	sf	650,000	sf	15%
6. A mixed-use project that includes one or more of the projects above					1871%

E. LBWD MUST PROVIDE THE SB 610 WAA

The WAA must be completed prior to the issuance of a draft Environmental Impact Report or proposed Negative Declaration.

> *Water Code section 10911 (b): The city or county shall include the water assessment provided pursuant to Section 10910, and any information provided pursuant to subdivision (a), in any environmental document prepared for the project pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.*

If a WAA is required, the City must request the assessment from the Long Beach Water Department because the City Charter places all responsibility for water works with LBWD, including providing domestic water to the subject **Project**, and because LBWD is a public water system of over 3,000 service connections which will serve the development.

> *Long Beach City Charter, Section 1400: There is hereby created a Water Department which shall be under the exclusive jurisdiction and control of five commissioners who shall be known as the Board of Water Commissioners. Said Water Department shall have full and complete jurisdiction over all water works necessary and incidental to the use, sale and distribution of water owned and controlled by the City and all of the City's sewer system.*
>
> *California Water Code Section 10910 (b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined in Section 10912, that may supply water for the project…*

The City of Long Beach Board of Water Commissioners must approve and submit the assessment to the City not later than 90 days (certain exceptions may apply) from the date on which the request for a WAA was received. LBWD received the request for the **Project**'s WAA on May 19, 2010; therefore the Board of Water Commissioners must approve and submit the WAA not later than August 17, 2010 (unless certain exceptions apply).

F. A PROGRAMMATIC SB 610 WAA MAY BE CREATED

A single programmatic WAA may be performed for the whole **Project**. Additional WAAs are not required, under certain conditions, for developments that were part of this larger programmatic **Project** WAA:

> *Water Code section 10910 (h) Notwithstanding any other provision of this part, if a project has been the subject of a water assessment that complies*

with the requirements of this part, no additional water assessment shall be required for subsequent projects that were part of a larger project for which a water assessment was completed and that has complied with the requirements of this part and for which the public water system…has concluded that its water supplies are sufficient to meet the projected water demand associated with the proposed project, in addition to the existing and planned future uses, including, but not limited to, agricultural and industrial uses, unless one or more of the following changes occurs:

(1) Changes in the project that result in a substantial increase in water demand for the project.

(2) Changes in the circumstances or conditions substantially affecting the ability of the public water system…to provide a sufficient supply of water for the project.

(3) Significant new information becomes available which was not known and could not have been known at the time when the assessment was prepared.

III. PURPOSE OF THE SB 610 WAA

LBWD must prepare an assessment that answers the following question:

> **Will LBWD's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection meet the projected water demand of the Project, in addition to LBWD's existing and planned future uses, including agricultural and manufacturing uses?**

Supplies from all sources, including wholesaler supplies, require documentation. This documentation includes identifying and quantifying water rights, contracts, and/or entitlements to the supply; associated capital outlay programs; federal, state and local permits for constructing infrastructure for conveying the supply; and any necessary regulator approvals required for conveyance.

IV. INCORPORATING THE 2005 UWMP BY REFERENCE

If the projected water demand associated with the **Project** was accounted for in LBWD's most recently adopted urban water management plan (UWMP), LBWD may incorporate that information in preparing the elements of the assessment to comply with Water Code section 10910 subdivisions (d), (e), (f), and (g).

LBWD's most recently adopted urban water management plan, its 2005 UWMP as revised in 2007, hereafter referred to as the 2005 UWMP, did not articulate specific

development projects; but factored in their expected demand by projecting increases in factors influencing demand, such as increases in housing, population, and employment.

The 2005 UWMP projected water demands based on a number of factors, including an increase in multi-family housing from 89,703 units in 2005 to 112,716 units by 2030, or a total increase of 23,013 units. The **Project**, by adding 5,000 new housing units would represent about twenty-two percent of that increase if all 5,000 units were developed in the next 20 years. This increase is expected to occur over the 25-year time period (the last 5 years being outside the scope of this WAA).

The 2005 UWMP water demand forecast took growth in commercial/retail square footage into consideration, indirectly, by projecting an increase in water demand based on an increase in total employment, projecting an increase from 200,200 in 2005 to 244,400 jobs by 2030, an increase of 44,200 jobs. The **Project**'s non-dwelling-unit space represents only about eighteen-percent of this projected increase, or about 7,920 jobs (1.98 msf x's [California Department of Water Resources' equivalent of 1000 employees per 0.25 msf]). This increase is expected to occur over the 25-year time period (the last 5 years being outside the scope of this WAA).

LBWD had used the UWMP to develop water availability assessments for projects since 2005 but before 2010. Although those projects were also not specifically identified in the then-current 2005 UWMP, the assessments found that projected water supplies for twenty years would be available during normal, single-dry, and multiple-dry water years to meet the projected water demand associated with these past projects, in addition to the existing and other planned future uses of LBWD's system.

Those assessments were fundamentally based on three factors: the reliability of LBWD's groundwater, Metropolitan Water District of Southern California's (MWD) statements of reliability, and Long Beach preferential right to MWD water supplies.

What has not materially changed from the assumptions in the 2005 UWMP are the reliability of LBWD's groundwater and the Long Beach preferential rights to MWD supplies. Therefore, for the purpose of this water availability assessment, the 2005 UWMP as it pertains to groundwater and preferential rights is an appropriate reference, except as noted below. A copy of the 2005 UWMP is available at http://www.lbwater.org/pdf/uwmp/2005uwmp.pdf or upon request.

What has materially changed from the 2005 UWMP is the reliability of MWD's imported water supplies. As discussed below, MWD supplies areno longer as reliable as MWD had anticipated in 2005 and that LBWD assumed in its 2005 UWMP. However, because LBWD groundwater is reliable and LBWD holds preferential rights to imported water, LBWD's overall reliability remains strong.

A. CHANGE IN RELIABILITY OF IMPORTED WATER

LBWD receives water from just one wholesaler: MWD. The quantities of water LBWD received from MWD in prior years have been documented in the 2005 UWMP.

MWD provides, through its wholesale water programs, about 50-percent of the potable water consumed in Long Beach and throughout southern California. As such, MWD's reliability is essential for the reliability of the City and the region. These supplies are imported from the San Francisco/ Sacramento Delta region through the State Water Project and from the Colorado River through the Colorado River Aqueduct.

The 2005 UWMP was based in part on the assurance provided at that time by MWD, that it would be able to provide all municipal consumptive demand for water for the next 25-years (from 2005 through 2030).

> *"Through effective management of its water supply, Metropolitan fully expects to be 100 percent reliable in meeting all non-discounted non-interruptible demands throughout the next twenty five years." (MWD 2005 Regional UWMP, page II-15)*

It is an unfortunate but objective fact, however, that only four years after issuing that declaration MWD has had to eliminate certain kinds of water deliveries and allocate others due to a water supply shortage. MWD has been in a water shortage allocation since the summer of 2009, reducing supplies for municipal consumptive demand by 10-percent and completely eliminating groundwater replenishment services.

In recommending the 10-percent reduction in municipal supplies to its customers, a recommendation adopted by MWD's Board of Directors, MWD staff articulated the extraordinary measures it had taken to manage the water shortage (MWD Board Letter #8-7, dated April 14, 2009):

- May 2007 – MWD interrupted sales under Metropolitan's Replenishment Program.
- June 2007 – MWD authorized funds for "It's Time to Get Serious" advertising campaign and outreach effort.
- July 2007 – MWD initiated the development of the Water Supply Allocation Plan (detailing how to allocate limited water resources during a shortage).
- January 2008 – MWD reduced agricultural water deliveries under the Interim Agricultural Water Program (IAWP) by 30%.
- February 2008 – MWD approved the Water Supply Allocation Plan.
- April 2008 – MWD initiated Five-Year Supply Plan Process to identify and develop new water supplies.
- June 2008 - MWD approved the "Water Supply Condition" system and declared a "Condition 2 – Water Supply Alert".

- August 2008 – MWD initiated extraordinary conservation efforts including the $15 Million Public Sector Program for water efficiency.
- August 2008 – MWD authorized funds for continued water conservation advertising campaign and outreach effort.
- January 2009 – MWD approved funding for additional extraordinary conservation efforts, including an extension of the Public Sector Program.

MWD's board approved allocating water for the 12-month period July 2009 through June 2010, declaring:

> *"Metropolitan's Board of Directors declare that there currently is a regional water shortage in Metropolitan's service area." (page 2 of the resolution attached to the above-referenced April 14, 2009 Board letter).*

On April 13, 2010, MWD's board again approved allocating water based on shortage conditions for an additional 12 months, from July 2010 through June 2011.

The severity of the shortage is reflected in the fact that over 30 California communities in addition to MWD imposed mandatory conservation on their customers during this time, including these southern California agencies:

- Carlsbad
- Chino Hills
- Fallbrook
- Glendora
- Long Beach
- Eastern MWD
- Las Virgenes
- Los Angeles
- Orange County
- San Diego County
- Santa Clara Valley
- Santa Fe
- Simi Valley
- Ventura County
- West Basin MWD (Torrance and Manhattan Beach area)

By virtue of the fact that it is allocating available supplies to full-service customers and had eliminated replenishment supplies entirely, according to the criteria it used in the 2005 Regional UWMP (page II-16), MWD has been and remains in an "Extreme Shortage" condition:

> *"The WSDM Plan distinguishes between Surpluses, Shortages, Severe Shortages, and Extreme Shortages. Within the WSDM Plan, these terms have specific meanings relating to Metropolitan's ability to deliver water to its customers….*
>
> > *Shortage: Metropolitan can meet full-service demands and partially meet or fully meet interruptible demands, using stored water or water transfers as necessary.*
> >
> > *Severe Shortage: Metropolitan can meet full service demands only by using stored water, transfers, and possibly calling for extraordinary conservation. In a Severe Shortage, Metropolitan may have to curtail Interim Agricultural Water Program deliveries.*
> >
> > *Extreme Shortage: Metropolitan must allocate available supply to full-service customers."*

The importance of MWD having been in an "extreme shortage" condition despite its 100-percent certainty that this would not happen, is relevant to this Water Availability Assessment because it calls into question MWD's supply reliability over the term of this assessment; i.e., the next 20-years.

One of the most important issues to resolve with respect to this Water Availability Assessment is whether a significant probability exists that either this shortage will continue or that one or more additional MWD supply shortages will take place within the next 20 years?

If the answer to either of these questions is "Yes" and preferential rights cannot be invoked to ameliorate the shortfall, then it follows that any new demand placed on a retail water agency dependent on MWD for some of its firm water supplies will necessarily diminish the reliability of water to existing customers of that water agency.

To attempt to answer the question of whether MWD supplies will be reliable for the next 20-years, we highlight certain issues that may impact MWD's reliability.

B. STATE WATER PROJECT RELIABILITY DECLINES SINCE 2005

Depending on the year, about half of MWD's supplies are imported through the State Water Project (SWP).

California's Department of Water Resources (DWR) manages the SWP. DWR is in the process of updating its bi-annual assessment of the reliability of the SWP. The following is almost the entire forward from the current draft report (only the cover pages and forward of this 121 page document are included in Attachment 2).

> "*The report shows a continuing erosion of the ability of the SWP to deliver water. For current conditions, the dominant factor for these reductions is the restrictive*

operational requirements contained in the federal biological opinions. For future conditions, it is these requirements and the forecasted effects of climate change.

Deliveries estimated for the 2009 Report are reduced by the operational restrictions of the biological opinions issued by the U.S. Fish and Wildlife Service in December 2008 and the National Marine Fisheries Service in June 2009 governing the SWP and Central Valley Project operations. The 2007 Report incorporates the interim, and less restrictive, operation rules established by federal Judge Wanger in 2007.

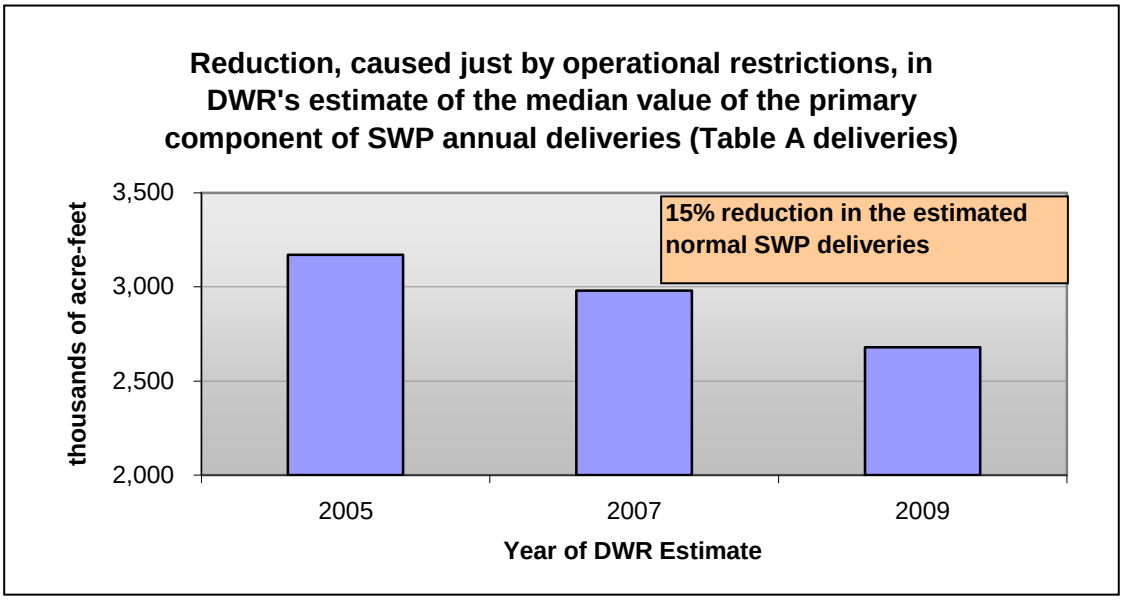
The 2005 Report is based upon much less restrictive operational rules contained in the biological opinions issued in 2005.

To illustrate the effect, the median value estimated for the primary component of SWP annual deliveries (Table A) for current conditions in the 2005 Report is 3,170 thousand acre-feet (taf). In the 2007 Report it is 2,980 taf, and in the 2009 Report, it is 2,680 taf. This is an overall reduction of almost 500 taf.

The studies used in this series of reports to estimate future deliveries now also include the potential effects of climate change. The studies for the 2005 report did not include any of these potential effects. For the 2007 report, the changes in run-off patterns and amounts were incorporated into the analyses. For the 2009 studies, the changes in run-off patterns and amounts are included along with a potential rise in sea level. Sea level rise has the potential to require more water to be released to repel salinity from entering the Delta in order to meet the water quality objectives established for the Delta.

The effect of the operational restrictions in addition to the incorporation of potential climate changes impacts amounts to an estimated reduction of 970 taf when the median value for annual SWP deliveries for future conditions in the 2005 report (3,570 taf) is compared to the updated value in the 2009 Report (2,600 taf).”

In other words, in the absence of an as-yet determined and financed solution to the problems posed by the environmental degradation of the delta, the SWP can be expected to deliver 15-percent less water than estimated in 2005:



With respect to SWP reliability 20-years into the future (2029), DWR expects additional downward pressure on reliability caused by the impacts of climate change.

It is not impossible for California to address the environmental and climate change problems. But it is certainly reasonable to question whether, for political and economic reasons, those problems will be adequately addressed; which in turn calls into question whether MWD's SWP reliability assumptions shown in its 2005 Regional UWMP were overly optimistic. The cost of a "fix" could be well over 10 billion dollars.

C. Colorado River water supply reliability threatened by water supply and demand imbalance, over allocation of available supplies, prolonged drought, climate change and historic low storage

In its assumption of 100-percent reliability, MWD relied on its right to Colorado River water for roughly 700,000 acre-feet of water per year, whether under normal hydrology or multi-year droughts (see Tables ii-7, -8, and -9 in it's 2005 Regional UWMP).

Unfortunately, this supply has become strained as a result of a prolonged drought in the Colorado River watershed and an apparent over-allocation of annual river supplies.

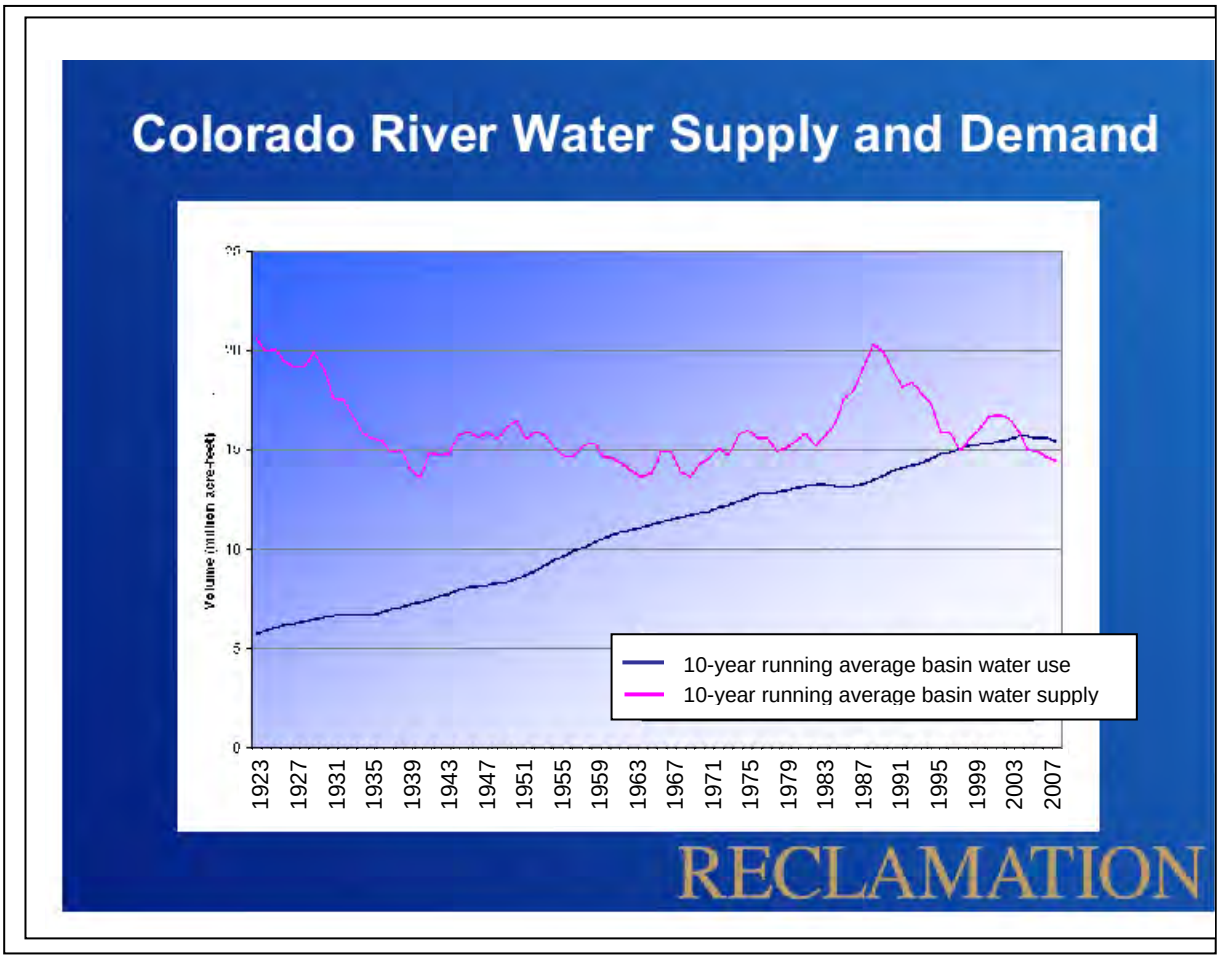
"Water supply and demand imbalances already exist…" on the Colorado River, according to the U.S. Bureau of Reclamation (USBR), the federal agency responsible for managing the Colorado River. It is currently facilitating a study of the river's supply reliability. In citing the need for the study (Attachment 3) USBR states:

> *"Water supply and demand imbalances already exist in some geographic areas in the [Colorado River] Basin and are projected to increase in both magnitude and spatial extent in the future. Storage capacity of approximately four times the average inflow has provided the ability to meet most demands even over periods of sustained drought, such as is currently being experienced. However, studies indicate that droughts of greater severity have occurred in the far past and climate experts and scientists suggest that such droughts are likely to occur in the future. Furthermore, studies have postulated that the average yield of the Colorado River could be reduced by as much as 30 percent due to climate change. Meanwhile, the Basin States include some of the fastest growing urban and industrial areas in the United States.*
>
> *Increasing demands coupled with decreasing supplies may exacerbate imbalances throughout the Basin."*

And in its companion piece, the U.S. Bureau of Reclamation briefly discusses the severe negative impact climate change has already had on the Colorado River (Attachment 4):

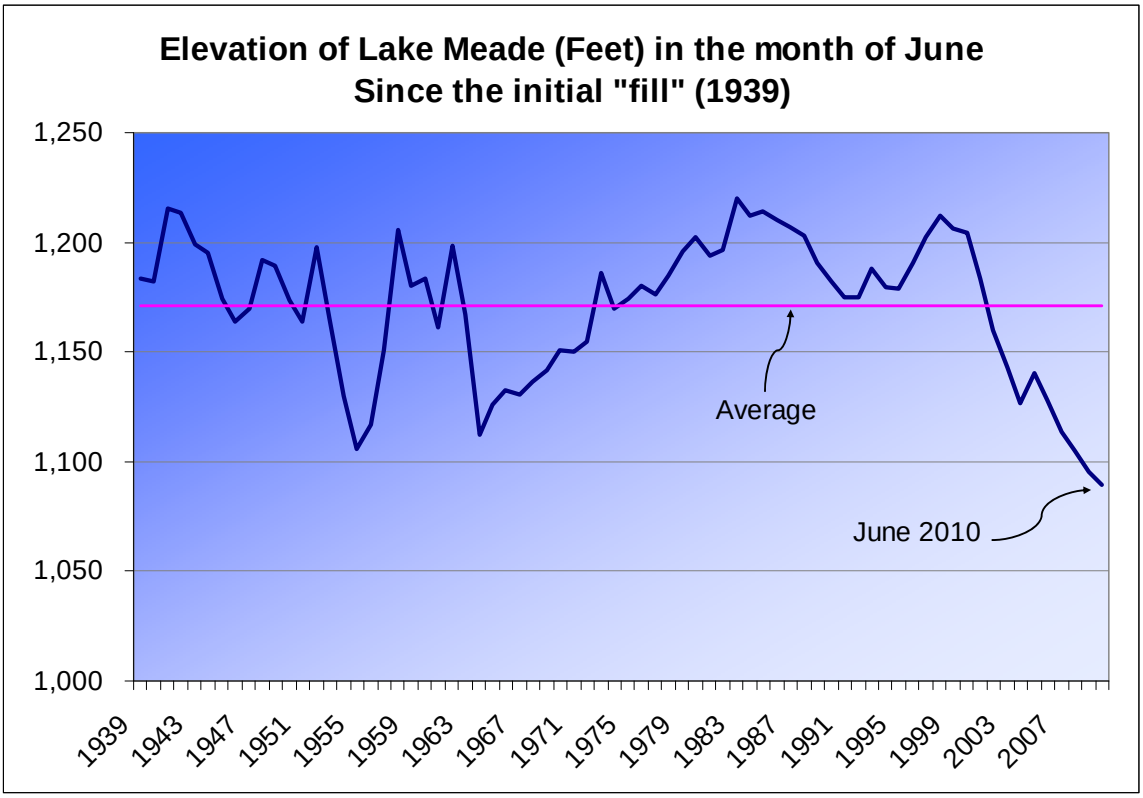
> *"In the Western United States, these changes are not just anticipated for the future, but are being measured today:*
>
> * *Average temperatures are rising, thereby increasing evaporation and perhaps increasing the severity of recent droughts;*
>
> * *A greater portion of winter precipitation is falling in the mountains as rain rather than snow, reducing the winter snowpack;*
>
> * *Winter low temperatures are rising, and the snowpack is melting earlier in the spring; and*
>
> * *Collectively, these trends for precipitation and temperature are producing earlier runoff, making it harder to use the winter precipitation later in the summer.*
>
> *Climate projections published by the Intergovernmental Panel on Climate Change (IPCC) indicate these changes will continue or even accelerate during the twenty-first century. Particularly in the Southwest, there is strong agreement in climate forecasts toward higher temperatures and less runoff into reservoirs. Increased temperatures will also mean increased water demands and increased rates of evaporation."*

The following dramatically illustrates the collision between supply and demand on the Colorado River:



Federal law and international treaty strictly govern who is allowed to divert water from the Colorado River and how much they are allowed to divert on an annual basis. When this system of rights was created, in 1922, it was assumed the average annual flow of water on the river was approximately 16.4 million acre-feet and water rights were allocated accordingly. It turns out the period of time used to estimate the annual average flows was an unusually wet period during the Colorado River's history. The actual average flows are somewhat less than allocated. Average annual flows are now estimated to be in the likely range from about 14.3 down to 13 million acre feet per year; or about 13-percent less and 20-percent less than has been allocated.

This apparent over-allocation and the prolonged drought have reduced storage in Colorado River's main reservoirs to historic lows.



For these reasons it may be prudent to assume a significant probability exists that MWD over estimated the amount of water it could reliably depend on from the Colorado River system.

D. POTENTIAL CURTAILMENT OF WATER TRANSFERS FROM AGRICULTURAL REGIONS TO URBAN SOUTHERN CALIFORNIA

California has an annual right to 4.4 million acre-feet (maf) of Colorado River water. Until recently California diverted significantly more water than this, with virtually all the additional diversions going to urban Southern California. Now, however, California is prevented from diverting more than its entitlement of 4.4 maf. This loss of approximately 0.5 maf came entirely at the expense of MWD and urban Southern California.

The 4.4 maf is allocated within California on a system of priority rights. MWD has the 4th priority rights, meaning other water users in California have more senior rights than MWD. In 2003 California's Colorado River water users and the federal

government executed the Quantification Settlement Agreement (QSA) and other agreements including agreements to transfer massive amounts of water from agricultural area's with more senior rights, to urban Southern California. Many of these other agreements, including the transfer of large amounts of agricultural water to urban Southern California, were only made possible because of the QSA.

Several lawsuits have subsequently been filed. These cases have been consolidated and sorted into phases. The Sacramento Superior Court began hearing the consolidated cases and issued a tentative ruling in December 2009 on Phase 1A of the trial, which addresses the validity of the QSA and 12 other agreements.

The court found in its tentative ruling the QSA is invalid because the financial commitments made by the state exceeded debt limits set in the California Constitution when it made what were open-ended financial commitment to pay for environmental mitigation related to the QSA, regardless of whether the legislature appropriates money for that purpose. The court also tentatively found the 12 contracts and agreements invalid because they were interdependent.

Because MWD assumed, in its 2005 Regional UWMP, that QSA-based transfers would take place in normal, single dry-year and multiple dry-year events, the relevant question for this water availability assessment is: will the final ruling reach substantially the same conclusion as this tentative ruling? If the answer is "Yes", then it seems reasonable to assume that the transfers MWD depended on for supply reliability in its 2005 Regional UWMP will not take place or will take place at significantly lower quantities. The main argument in support of this conclusion is that the potential cost of the environmental mitigation exceeds what the state may be willing to pay (being in the billions of dollars) and may actually exceed the value of the water transferred.

E. OVER ESTIMATED RELIABILITY OF SUPPLIES BY OVER ESTIMATING HOW MUCH WATER WILL BE CONSERVED

In its assumption of 100-percent reliability in its 2005 Regional UWMP, MWD made certain assumptions about how much water would be conserved in Southern California. But two factors may conspire to undermine these conservation estimates.

1. MWD's water shortage allocation plan undermines water conservation targets

MWD has created a method for allocating water to its 26 member agencies in a shortage. Equalizing the percent-reduction to retail customers across its service area is the driving force behind this water shortage allocation plan.

For example,

- Assume MWD requires a 10-percent water reduction and there are two water agencies: one agency has maintained demand over many years at 200 gallons per person per day and another agency, through a tremendous water conservation effort, has reduced from 200 gallons to just 150 gallons per person per day.

- MWD will, all else being equal, limit its water to both agencies so they will only have 90-percent of the water they normally use at the retail level.

- This leaves the agency without conservation with 180 gallons per person per day and the agency that's been conserving with just 135 gallons per person per day.

MWD does provide in its allocation plan a credit to agencies that participate in MWD-sponsored conservation programs, but the credit is typically so small as to be immaterial.

Therefore, a water agency that wants to provide the most water possible to its customers during shortages may determine that conserving water is NOT in the interests of its customers.

This rational calculation by water managers could lead to less conservation in MWD's service area than MWD anticipated in its 2005 Regional UWMP.

For MWD to realize the conservation targets it set for the region in its UWMP, MWD may have to upend the perverse incentive which currently forms the foundation of its allocation strategy.

It is reasonable to assume a continuation of this perverse incentive will make it less likely that MWD will achieve the conservation necessary to meet its goal of 100-percent water reliability through 2030.

2. MWD's over estimating the amount of water conserved through certain programs creates inconsistency between assumed level of water conservation and actual conservation

MWD's 2005 Regional UWMP assumed certain amounts of water will be conserved between 2005 and 2030. These assumptions were based, in part, on a calculation of the effectiveness of MWD's regional conservation programs.

But MWD over estimates the amount of water actually conserved by some of these programs, thereby over estimating the amount of water likely to be conserved between 2005 and 2030. This, in turn, calls into question the assumption of 100-percent reliability through the year 2030.

For example, MWD assumes certain amounts of water are conserved for each weather-based irrigation controller installed. But depending on the study cited, these devices may be conserving just a fraction of the water they are assumed by MWD to be conserving.

MWD is currently experiencing a shortage. And it's reasonable to assume MWD will suffer additional shortages over the next 20 years given the problems facing MWD such as those related to the State Water Project, the Colorado River, the Quantification Settlement Agreement, and MWD seemingly overly optimistic assumptions about water conservation.

Nevertheless, an adequate supply of water is available to meet the needs of existing LBWD customers as well as the new demand placed on LBWD by the **Project** because LBWD has a reliable supply of groundwater and LBWD has sufficient preferential rights to MWD supplies.

V. WATER DEMAND AND SUPPLIES

A. PREFERENTIAL RIGHTS

The 2005 UWMP describes the quantities of water received from LBWD's sole wholesale supplier of water in prior years.

LBWD's existing entitlement for the wholesale supplies is embedded in state law, as described below.

By virtue of certain capital payments to MWD since the early 1930's, Long Beach has acquired certain rights to MWD's water. This entitlement is embedded in State law and comes in the form of a preferential right to MWD supplies. Section 135 of the Metropolitan Water District Act states:

> Sec. 135. [Preferential Right to Purchase Water]: Each member public agency shall have a preferential right to purchase from the district for distribution by such agency, or any public utility therein empowered by such agency for the purposes, for domestic and municipal uses within the agency a portion of the water served by the district which shall, from time to time, bear the same ratio to all of the water supply of the district as the total accumulation of amounts paid by such agency to the district on tax assessments and otherwise, excepting purchase of water, toward the capital cost and operating expense of the district's works shall bear to the total payments received by the district on account of tax assessments and otherwise, excepting purchase of water, toward such capital cost and operating expense.

MWD has validated LBWD's preferential rights on many occasions, including the two correspondences shown in Attachments 5 and 6.

The MWD recalculates each of its member agency's preferential rights on an annual basis. Preferential rights are expressed as a percent of MWD's water. LBWD's currently has a preferential right to about 2.5% of MWD supplies. For example, as shown in the following table, LBWD has a preferential right to receive approximately 37,500 acre-feet of MWD water when MWD only has 1,500,000 acre-feet of supplies:

LBWD's approx Preferential Rights as a Percent of MWD's Imported Water	2.5%	
MWD Supplies *	1,500,000	af / year
LBWD's Preferential Rights	37,500	af / year

* MWD dry-year supplies would include imported water, stored water, water purchased on the spot market, etc.

It is highly unlikely that MWD will ever have less than 1,500,000 acre-feet of water. Indeed, MWD's 2005 Regional UWMP assumes, even during a multi-year dry period, its supply will be more than 50-percent greater than this amount.

LBWD requested and MWD provided (in a letter dated May 13, 2010) a current estimate of MWD's reliability and LBWD's preferential rights (Attachment 6). This current assessment finds MWD 100-percent reliable over the next 20 years under normal, single- and multiple-dry year events, with these caveats:

- The assumption of 100-percent reliability assumes certain minimum amounts of water will be in storage at the beginning of each dry period; and
- Even if MWD might otherwise be 100-percent reliable, it may choose to allocate supplies in order to preserve stored water for the future.

The letter reaffirms LBWD's Preferential Rights, stating:

> *"Section 135 of the Metropolitan Water District Act does not relate to pricing but to amounts of water that can be purchased for domestic and municipal uses within a member agency service area. As such, any member agency is permitted to purchase supplies consistent with the Metropolitan Water District Act, including Section 135." (page 3).*

B. SUPPLIES

The 2005 UWMP identifies the existing and planned sources of water available to LBWD in 5-year increments for the 20-year projection required by the SB 610 WAA. The 2005 UWMP identifies the quantity of water available (with the above caveats) and whether the supplies are entitlements, rights, or service contracts.

All the listed sources of water had been used by LBWD in the past.

The 2005 UWMP provides information on the history and use of the groundwater basin, its adjudication and replenishment and the reliable funding source for maintaining replenishment at adequate levels. This information includes that related to LBWD's rights and history of groundwater extractions and expectations for future groundwater extractions.

The 2005 UWMP provides a description of the groundwater basin, a copy of the adjudication, including information regarding LBWD's rights to pump.

The 2005 UWMP provides a detailed description and analysis of the amount and location of groundwater pumped by LBWD for the five years leading up to its publication.

Because the amount and location of the groundwater that is projected to be pumped by LBWD will be fundamentally similar in the future to that of the recent past, refer to the 2005 UWMP for a detailed description and analysis of the amount and location of groundwater to be pumped.

This assessment does not rely on water supplies never before used. Groundwater was the only source of water when Long Beach was incorporated more than 100 years ago and MWD's imported water has been used in Long Beach every year since approximately 1943.

C. DEMAND

As stated above, because the 2005 UWMP estimates water demand for existing uses, planned future uses, including developments similar to the **Project**, the water demand for the proposed development need not be analyzed more than has been done above.

See the 2005 UWMP for water supply and demand estimates and the impact of population, housing, employment and climate on the estimates, for single- and multiply-year dry conditions, factoring groundwater reliability, MWD supply reliability and preferential rights (with issues raised above), and additional factors adding to reliability.

D. DRY YEAR(S) SUPPLIES

As noted above, although the 2005 UWMP did not specifically site this project (it sited no project in particular), it did account for this and other projects, as explained above. The 2005 UWMP discussions of single and multiple dry-year supplies and demands are incorporated into this WAA by reference.

The following are taken from the 2005 UWMP, showing the total water supply and demand during single and multiple dry-year events. The supply is from the groundwater basin and imported supplies from MWD, and from recycled water.

Table 45 - Projected Single Dry-year Water Supply and Demand Comparison - AF/Yr

	2015	2020	2025	2030
Supply Total	85,700	88,400	89,800	90,800
Demand Total	85,700	88,400	89,800	90,800
Difference (Supply - Demand)	-	-	-	-
Difference as % of Supply	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%

Projected Supply & Demand Comparison During Multiple Dry-year Periods

	2015	2020	2025	2030
Supply Total	85,700	88,400	89,800	90,800
Demand Total	85,700	88,400	89,800	90,800
Difference (Supply - Demand)	-	-	-	-
Difference as % of Supply	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%

VI. ATTACHMENTS

1. Lead Agency request for Water Availability Assessment and Project Description
2. The State Water Project Delivery Reliability Report 2009 (Draft)
3. Colorado River Basin Water Supply and Demand Study
4. The Water Conservation Initiative and Implementation of the Secure Water Act
5. Letter from LBWD to MWD documenting Preferential Rights (dated May 1, 2008)
6. MWD letter updating supply reliability and confirming LBWD's preferential rights (dated May 13, 2010)

LONG BEACH WATER DEPARTMENT
The Standard in Water Conservation &
Environmental Stewardship

Water Availability Assessment
prepared for the
Long Beach Downtown Community Plan
Mixed Use Development
Long Beach, California

Attachments

August 12, 2010

1. Lead Agency request for Water Availability Assessment and Project description

WSA for Downtown Community Plan

Steve Gerhardt to: Matthew Lyons 05/19/2010 05:03 PM

Cc: Michael Mais, Jill Griffiths, Derek Burnham, Jamilla Vollmann, Karen McCormick

Hi Matt,

With this e-mail, Development Services is requesting a Water Supply Assessment for the Downtown Community Plan project. The draft EIR project description is attached. Please note, the project boundary was expanded to include the area to 10th and Alamitos as shown on most of the figures.

The project is the adoption and implementation of the Long Beach Downtown Community Plan, which would replace the existing PD-30 and other zoning within the plan area, and serve as the development ordinance for the Downtown project area. The Long Beach Downtown Community Plan incorporates zoning, development standards, and design guidelines to establish design and development criteria to guide new development in a way that is consistent with the vision for the Downtown.

Full implementation of the Downtown Community Plan would allow up to approximately 5,000 new residential units, 1,500,000 square feet of office space, 480,000 of retail, and 800 new hotel rooms within the Community Plan area beyond projects that already have entitlement. This development is expected to occur over a 25 year time period, through 2035. The EIR will serve as the CEQA clearance for many of these development projects.

We are currently reviewing the Administrative Draft EIR for the community plan and hope to include the WSA in the public draft, which is expected to be released in June, well before the 90-day timeframe for WSA preparation per statute. We are hoping that the recent WSA prepared for the Golden Shore Project will help expedite the preparation process.

If you need any additional information, please let me know.

Thanks!

Steve Gerhardt, AICP
Senior Planner, Advance Planning
Long Beach Development Services
(562) 570-6288
Steve.Gerhardt@LongBeach.gov

Project Description from LB Downtown CP ADEIR.pdf

2. The State Water Project Delivery Reliability Report 2009 (Draft)

State of California
The Resources Agency
Department of Water Resources

DRAFT

The State Water Project Delivery Reliability Report 2009

December 2009

State of California
Arnold Schwarzenegger, Governor

California Natural Resources Agency
Mike Chrisman, Secretary for Natural Resources

Department of Water Resources
Lester A. Snow, Director

Susan Sims
Chief Deputy Director

Kasey Schimke
Asst. Director Legislative Affairs

Matt Notley
Asst. Director of Public Affairs

David Sandino
Chief Counsel

Mark W. Cowin
Deputy Director

Gerald E. Johns
Deputy Director

Jim Libonati
Deputy Director

Ralph Torres
Deputy Director

Assistant Deputy Directors, Integrated Water Management

Rodney Mayer
FloodSAFE

John Andrew
Climate Change

Rick Soehren
Water Use Efficiency

Bay Delta Office
Katherine Kelly, Chief

Modeling Support Branch
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Foreword

The 2009 State Water Project (SWP) Delivery Reliability Report is a bi-annual report on the current and future for SWP water supply conditions, if no significant improvements are made to convey water past the Delta or to store the more-variable run-off that is expected with climate change.

The report shows a continuing erosion of the ability of the SWP to deliver water. For current conditions, the dominant factor for these reductions is the restrictive operational requirements contained in the federal biological opinions. For future conditions, it is these requirements and the forecasted effects of climate change.

Deliveries estimated for the 2009 Report are reduced by the operational restrictions of the biological opinions issued by the U.S. Fish and Wildlife Service in December 2008 and the National Marine Fisheries Service in June 2009 governing the SWP and Central Valley Project operations. The 2007 Report incorporates the interim, and less restrictive, operation rules established by federal Judge Wanger in 2007. The 2005 Report is based upon much less restrictive operational rules contained in the biological opinions issued in 2005.

To illustrate the effect, the median value estimated for the primary component of SWP annual deliveries (Table A) for current conditions in the 2005 Report is 3,170 thousand acre-feet (taf). In the 2007 Report it is 2,980 taf, and in the 2009 Report, it is 2,680 taf. This is an overall reduction of almost 500 taf.

The studies used in this series of reports to estimate future deliveries now also include the potential effects of climate change. The studies for the 2005 report did not include any of these potential effects. For the 2007 report, the changes in run-off patterns and amounts were incorporated into the analyses. For the 2009 studies, the changes in run-off patterns and amounts are included along with a potential rise in sea level. Sea level rise has the potential to require more water to be released to repel salinity from entering the Delta in order to meet the water quality objectives established for the Delta.

The effect of the operational restrictions in addition to the incorporation of potential climate changes impacts amounts to an estimated reduction of 970 taf when the median value for annual SWP deliveries for future conditions in the 2005 report (3,570 taf) is compared to the updated value in the 2009 Report (2,600 taf).

The 2009 Report compares the updated values to those contained in the 2007 Report and provides greater detail on the analytical method used to calculate the estimates. The results of the studies are designed to assist water planners and managers in updating their water management and infrastructure development plans. These results emphasize the need for local agencies to develop a resilient and robust water supply, and a distribution and management system to maximize the efficient use of our variable supply. They also illustrate urgent need to improve the method of conveying water past the Delta in a more

sustainable manner that meets the dual goals of increasing water supply reliability and improving the conditions for endangered and threatened fish species.

Lester A. Snow
Director
California Department of Water Resources
December 2007

3. Colorado River Basin Water Supply and Demand Study

RECLAMATION
Managing Water in the West

Colorado River Basin Water Supply and Demand Study
Basin Study Program

Contact: Deborah Lawler, 801-524-3685
Amber Cunningham, 702-293-8472
Email, ColoradoRiverBasinStudy@usbr.gov

Spanning parts of the seven states of Arizona, California, Colorado, New Mexico, Nevada, Utah, and Wyoming (Basin States), the Colorado River Basin (Basin) is one of the most critical sources of water in the West. The Colorado River and its tributaries provide water for the municipal supply to 30 million people, irrigation of nearly 4 million acres of land, and hydropower facilities that generate more than 4,200 MW, helping to meet the power needs of the West and offset the use of fossil fuels. The Colorado River is also the lifeblood for at least 15 Native American tribes, seven National Wildlife Refuges, four National Recreation Areas, and five National Parks.

Water supply and demand imbalances already exist in some geographic areas in the Basin and are projected to increase in both magnitude and spatial extent in the future. Storage capacity of approximately four times the average inflow has provided the ability to meet most demands even over periods of sustained drought, such as is currently being experienced. However, studies indicate that droughts of greater severity have occurred in the far past and climate experts and scientists suggest that such droughts are likely to occur in the future. Furthermore, studies have postulated that the average yield of the Colorado River could be reduced by as much as 30 percent due to climate change. Meanwhile, the Basin States include some of the fastest growing urban and industrial areas in the United States.

Increasing demands coupled with decreasing supplies may exacerbate imbalances throughout the Basin. The study will:

- analyze water supply and demand imbalances throughout the study area through 2060;
- assess options for resolving such imbalances; and
- develop recommendations to address current and projected imbalances.

Non-Federal cost-share partners include each of the seven Basin States, water management authorities, and irrigation and water districts. Broad support for the study exists among stakeholders throughout the Basin and their input and participation will be sought throughout the study.

The total cost of the study is $2 million (50/50 cost share).

U.S. Department of the Interior
Bureau of Reclamation

4. The Water Conservation Initiative and Implementation of the Secure Water Act

RECLAMATION
Managing Water in the West

U.S. Department of the Interior
Bureau of Reclamation

The Water Conservation Initiative and Implementation of the Secure Water Act

October 2009

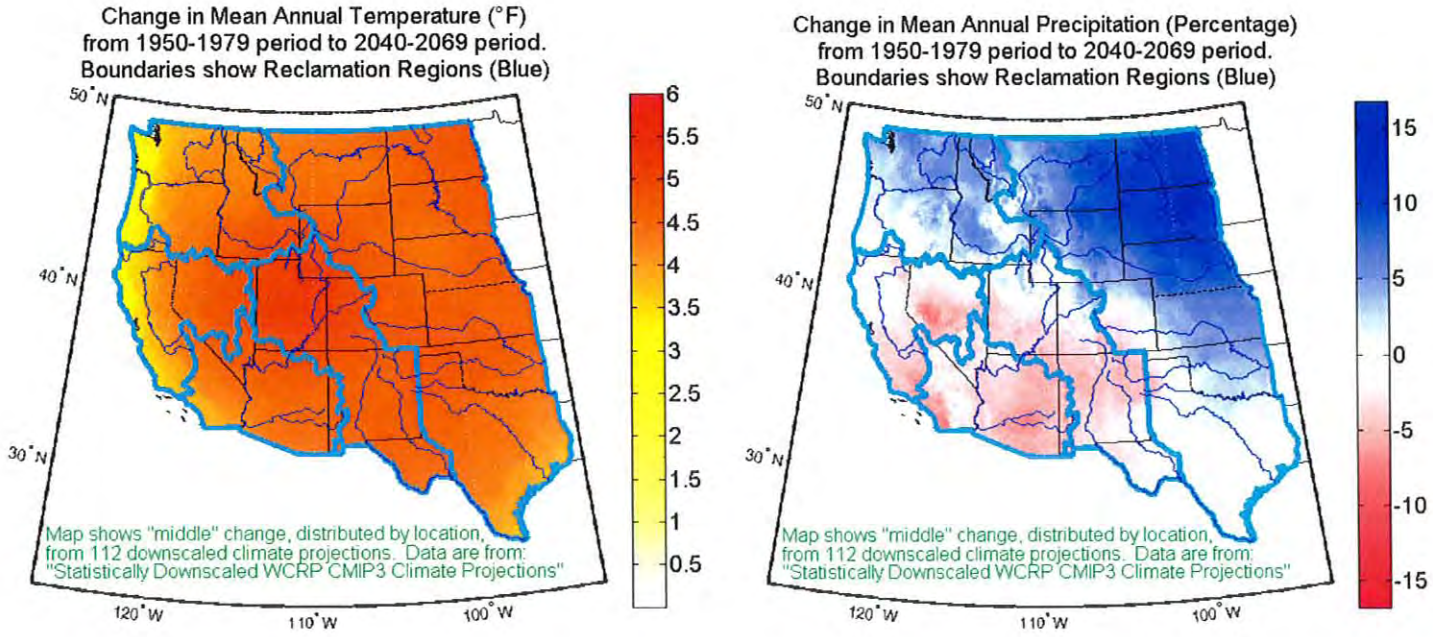
Climate Change and Water Resources

As our climate changes and the earth warms, the most immediate impact is on the hydrologic cycle. Warming impacts where precipitation falls, how much falls, and in what form. These changes directly affect the water supply available for drinking, irrigating crops, generating electricity, supplying industry, and filling our lakes and rivers.

In the Western United States, these changes are not just anticipated for the future, but are being measured today:

- Average temperatures are rising, thereby increasing evaporation and perhaps increasing the severity of recent droughts;
- A greater portion of winter precipitation is falling in the mountains as rain rather than snow, reducing the winter snowpack;
- Winter low temperatures are rising, and the snowpack is melting earlier in the spring; and
- Collectively, these trends for precipitation and temperature are producing earlier runoff, making it harder to use the winter precipitation later in the summer.

Figure 1. Precipitation and Temperature Trends in Western States



Climate projections published by the Intergovernmental Panel on Climate Change (IPCC) indicate these changes will continue or even accelerate during the twenty-first century. Particularly in the Southwest,

there is strong agreement in climate forecasts toward higher temperatures and less runoff into reservoirs. Increased temperatures will also mean increased water demands and increased rates of evaporation.

Climate change will add to the challenges we face today in managing our water supply, water quality, flood risks, wastewater, aquatic ecosystems, and energy production. These new stresses are likely to be felt first in the fastest growing region of the nation – the West. The Western States accounted for 50% of the nation's population growth from 1990 to 2000, with some of the fastest growth in the driest areas.

It has often been said that "water is the lifeblood of the West." This part of our nation is critically dependent upon water for its economic health. To illustrate, the Bureau of Reclamation water projects in the West provide economic benefits conservatively estimated at $21 billion annually. These benefits come from the range of water uses that Reclamation projects support, shown below:

Project Purpose	Total Estimated Benefit Value (2008 $$)
Hydropower	$3.7 billion
Flood Control	$16 million
Irrigation	$11.5 billion
Municipal and Industrial	$4.6 billion
Recreation	$1billion
Total	$21 billion

As the largest wholesale water provider and the second largest producer of hydroelectric power in the West, Reclamation is vitally interested in how climate and other stressors will affect the supply of water in this water-short region.

The Secure Water Act

The fundamental purpose of the Secure Water Act is to provide authority so that the Federal water and science agencies can work together with the States and local water managers to plan for climate change and the other threats to our water supplies, and take action to secure our water resources for the communities, economies, and the ecosystems they support.

Reclamation's strategy for implementing the Secure Water Act includes **collaboration among agencies** to **enhance climate change science**, which will allow us to better **assess the threats to our water systems** and **implement mitigation strategies.** This approach will help us to maintain:

- Water supply, including both surface storage and groundwater aquifers;
- Generation of hydroelectric power;
- Cooling water for thermal power plants;
- River flows to maintain ecosystems and water quality;
- Recreational use of lakes and rivers; and
- Protection from floods and rising sea levels.

Collaboration Among Agencies

The Secure Water Act supports increased collaboration among the Federal water agencies. Reclamation will work together with the lead science agencies in the areas of climate and water, namely the USGS and NOAA, and the Regional Integrated Sciences and Assessments (RISA) university centers to ensure that the best information and science is available for water management.

These partnerships will build on collaborations that have already begun:

- Reclamation has formed, with the USACE, NOAA, and the USGS the Climate Change and Water Working Group (C-CAWWG) to bring the water managers and climate scientists together to create efficient R&D collaborations and information sharing across the federal agencies toward understanding and addressing climate change impacts on Western water supplies and water use.
- Reclamation, the USACE, NOAA and the USGS collaborated to write: *Climate Change and Water Resources Management: A Federal Perspective*, USGS Circular 1331. This report represents the two primary "operating agencies" and the two primary water "science agencies" collaborating to address the need for a comprehensive assessment of approaches for including climate change in water resources management.
- As part of CCAWWG coordination, Reclamation and the USACE are developing detailed descriptions of information and tools that water managers need from the science agencies and other researchers. Perspectives from both State and local water managers will also be sought and included in this report.
- Reclamation is working with the USGS, NOAA, and the RISA program to develop a Climate Change Training program for water managers. In discussions with water managers, a credible, consistent source of climate information and training is always one of the highest priorities identified.
- Reclamation is providing input to NOAA as they plan for the next generation of Global Circulation Models (GCMs) to define the types of outputs that will be of most value to water managers.
- Reclamation is participating in the Postdocs Applying Expertise (PACE) Fellowship program with NOAA to sponsor research activities focused on water management needs. There are currently three active postdocs participating in this program -- two focused on water supply questions for the Colorado River Basin and one studying potential changes to in extreme precipitation events.

Enhancing Climate Change Science

Reclamation will expand its research into the effects of climate change on the water cycle and how that may be managed for now and in the future. Some highlights of the research program and research underway include:

- Creation of a downscaled climate projection archive. This is an archive of GCM projections downscaled to spatial scales useful for water management analyses;
- Evaluations of global climate model projections to determine how flood frequencies may change in the 21st century;
- Evaluation of whether our ability to predict water supply is being diminished by climate change, and identification of possible new, more accurate methods; and
- Evaluation of how various hydrologic forecast models perform under climate change, leading to more informed choices among models.

Assessing Threats to the Water Supply

West-wide Climate Change Risk Assessments

The research and development activities described above will be used to undertake *West-wide Climate Change Risk Assessments.* These assessments will provide consistent projections for all of the major

river basins in the west of how climate change will affect:

- Temperature and precipitation;
- Water supply;
- Water demand and consumptive use; and
- Aquatic habitats.

These assessments will also include reconnaissance-level analysis of how water project operations may be affected. This information will provide a sound and consistent foundation for the Basin Studies and other planning activities that will formulate local and regional mitigation strategies to address climate change and other threats to our water supplies.

Basin Studies

Through the Basin Study Program, Reclamation will partner with basin stakeholders to conduct comprehensive studies to evaluate the impacts of climate change and define options for meeting future water demands in river basins in the West. The Basin Studies will identify adaptation strategies to resolve basin-wide water supply issues, including changes to the operation of water supply systems, modifications to existing facilities, development of new facilities, or non-structural changes. The Basin Studies will build on the West-wide Risk Assessments to develop basin-specific strategies to help meet water demands. By encouraging input from basin stakeholders, the Basin Studies will also build capacity and collaboration in the process of identifying water management solutions.

In FY 2009, Reclamation provided funding to initiate the first three basin studies under this program, including:

- The Colorado River Basin Water Supply and Demand Study ($1 million Reclamation, $1 million matching) covering portions of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming;
- Yakima River Basin Study and Associated Basin Restoration Implementation Plan, covering south central Washington ($1.3 million Reclamation, $1.3 million matching);
- Modeling for the Future of the Milk and St. Mary River Systems in north central and southern Montana ($350,000 Reclamation, $350,000 matching).

The Colorado River study provides an ideal example of the collaborative process that we will employ under the Basin Study Program. The study encompasses the Colorado River Basin (upper and lower) and those areas of the seven basin states -- Wyoming, Colorado, Utah, New Mexico, Arizona, Nevada, and California (Basin States) -- that receive Colorado River water. Cost-share partners include each of the seven Basin States. The proposal is to complete a comprehensive review of water supply and current and long-term demands through 2060 within the Colorado River Basin; to assess options for resolving water supply imbalances; and to develop recommendations for future consideration to address current and projected imbalances. Paramount to the study is an assessment of the potential impacts of climate variability and climate change on water supplies and demands, including impacts on hydropower.

Implementing Mitigation Strategies

The American West is now the fastest growing region of the country and faces serious water challenges. Adequate and safe water supplies are fundamental to the health, economy, security, and ecology of the country. With increased demands for water from growing populations and energy needs, amplified recognition of environmental water requirements, and the potential for decreased supplies due to drought and climate change, a water balance cannot be achieved without water conservation and water reuse. Federal leadership is critical to widespread acceptance and implementation of effective strategies to

mitigate the impacts of climate change. Reclamation will implement projects to help water users adapt to climate change through the Water Conservation Initiative (WCI).

The Water Conservation Initiative

The WCI includes the Basin Study Program, described above, which will help identify the impacts of climate change and identify potential adaptation measures. Climate change adaptation measures identified through the Basin Studies, West-wide Climate Change Risk Assessments, and other programs, can be implemented through the other two components of the WCI, including cost-shared grants for conservation and water management improvement projects, and funding of water reuse and recycling projects through the Title XVI Water Reclamation and Reuse Program. Reclamation will also partner with States, tribes and local entities under the WCI to develop incentives and best practices for implementing water conservation and water recycling projects. Together, these programs form an important part of Reclamation's implementation of the Secure Water Act.

Water Conservation Challenge Grant Program

Water Conservation Challenge Grants (previously Water for America Challenge Grants) provide cost-shared funding for the following types of on-the-ground projects: (1) water conservation and efficiency projects that allow users to decrease diversions and to use or transfer the water saved; (2) water marketing projects with willing sellers and buyers, including water banks, that transfer water to other uses to meet critical needs for water supplies; (3) projects that improve water management by increasing the use of renewable energy, by increasing operational flexibility (constructing aquifer recharge facilities or making system optimization and management improvements), or by addressing endangered species and other environmental issues; and (4) pilot and demonstration projects that address the technical and economic viability of treating and using brackish groundwater, seawater, impaired waters, or otherwise creating new water supplies within a specific locale.

Water Conservation Challenge Grants leverage Federal funding by requiring a minimum of 50 percent non-Federal cost-share contribution. Grants are available to States, tribes, irrigation and water districts, and other entities with water or power delivery authority. Beginning in 2010, Reclamation will also provide cost-shared assistance to universities, non-profits, and organizations with water or power delivery authority for research activities designed to enhance the management of water resources, including developing tools to assess the impacts of climate change on water resources, and research that will increase the use of renewable energy in the management and delivery of water and power. Additionally, to ensure that the most effective conservation and reuse approaches are employed, Reclamation will begin partnering with States, tribes and local entities to develop incentives and best practices in water conservation techniques and water recycling and reuse methodologies.

Since 2004, over 150 challenge grant projects have been funded, combining $36 million in Federal funding with local partnerships to construct over $140 million worth of water management improvements in 16 western states. Projects include such activities as converting leaky dirt canals to pipeline, eliminating water losses due to seepage and evaporation to result in substantial water savings; installation of measuring devices, including Supervisory Control and Data Acquisition (SCADA) systems to improve control over water deliveries and to reduce operational spillage; installation of automation technology to allow more precise, remote control of water diversions and deliveries; and projects involving water marketing such as a pilot water bank in the Deschutes River Basin in Oregon aimed at facilitating the voluntary transfer of water among users.

In addition to those projects funded through annual appropriations, in August 2009 Reclamation announced 13 new Challenge Grant projects that together will receive $40 million in American

Recovery and Reinvestment Act funding to accomplish over $96 million in water management improvements.

Title XVI Water Reclamation and Reuse Program

Title XVI of P.L. 102-575, as amended (Title XVI), provides authority for Reclamation's water recycling and reuse program, titled "Title XVI." The Title XVI program is focused on identifying and investigating opportunities to reclaim and reuse wastewaters and naturally impaired ground and surface water in the 17 Western States and Hawaii. Under the program, Reclamation makes available cost-shared funding for planning, design, and construction of water recycling projects, as well as research and demonstration projects.

For purposes of the Title XVI program, a water reuse project is a project (including the necessary facilities and features) that reclaims and reuses municipal, industrial, domestic, or agricultural wastewater and naturally impaired groundwater and/or surface waters. Consistent with State law, reclaimed water can be used for a variety of purposes, such as environmental restoration, fish and wildlife, groundwater recharge, municipal, domestic, industrial, agricultural, power generation, or recreation. Water reuse is an essential tool in stretching the limited water supplies in the West. Title XVI projects develop and supplement urban and irrigation water supplies through water reuse, thereby improving efficiency, providing flexibility during water shortages, and diversifying the water supply. In FY 2008, approximately 196,000 acre-feet of water was recycled through projects that have received Title XVI Program funding.

In July 2009, Reclamation announced 27 Title XVI projects to receive approximately $135 million in American Recovery and Reinvestment Act funding. These 27 projects will team non-federal sponsors with local communities and the federal government to provide growing communities with new sources of clean water while promoting water and energy efficiency and environmental stewardship. Federal funding will be leveraged to construct a total of more than $675 million in Title XVI projects.

Feasibility Study Authority

The Secure Water Act authorizes Reclamation to conduct feasibility studies to study the feasibility and impacts of constructing infrastructure necessary to address the effects of global climate change on water resources. New infrastructure could include the construction of water supply or water management facilities, or infrastructure to benefit environmental needs or enhance habitat. Once Reclamation has identified climate adaptation strategies in a particular basin through the completion of a Basin Study or other climate analysis, we will provide cost-shared funding for feasibility studies to non-Federal partners to pursue implementation of adaptation strategies. Funding for feasibility studies will be included under the Basin Study Program in future budget cycles.

5. Letter from LBWD to MWD documenting Preferential Rights (dated May 1, 2008)

Long Beach Water Department
The Standard in Water Conservation &
Environmental Stewardship

KEVIN L. WATTIER, GENERAL MANAGER

May 1, 2008

Mr. Timothy F. Brick, Chairman
The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, CA 90012

Dear Chairman Brick:

The City of Long Beach, a member public agency of the Metropolitan Water District of Southern California, acknowledges receipt of the attached letter dated February 8, 2008 from General Counsel Karen L. Tachiki. The letter states that it is Ms. Tachiki's opinion that the adoption by your board of a supply allocation plan, which occurred at your February 2008 board meeting, would not in any way revoke or modify a member agency's statutory preferential rights, granted pursuant to Section 135 of the MWD Act.

The City of Long Beach intends to rely on this opinion in our future water supply planning, including compliance with the Urban Water Management Planning Act (Water Code Sections 10610-10656) and Water Supply Assessments (Water Code Sections 10910-10915 and Government Coded Section 66473.7).

Furthermore, the City of Long Beach hereby reasserts its position that the Metropolitan Water District of Southern California is not currently in compliance with Sections 25, 130 and 132 of the MWD Act, nor has it been for some time in the sale of surplus water for uses other than municipal and domestic purposes. If said noncompliance results in real damages, either financial or otherwise, to the City of Long Beach, the City intends to take such action as necessary to protect its interests.

Sincerely,

William Townsend, President
Long Beach Board of Water Commissioners

Cc: City of Long Beach Mayor Foster & City Councilmembers
Long Beach City Attorney, Robert Shannon
Long Beach Board of Water Commissioners
Long Beach Water Department General Manager, Kevin L. Wattier
Metropolitan Water District Board Members
Metropolitan Water District General Manager, Jeffrey Kightlinger
Metropolitan Water District General Counsel Tachiki
Metropolitan Water District Member Agency Managers

Attachment

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Office of the General Counsel

VIA EMAIL AND U.S. MAIL

February 8, 2008

Mr. Kevin L. Wattier
General Manager
Long Beach Water Department
1800 East Wardlow Road
Long Beach, CA 90807

Dear Kevin:

I understand from Jeff Kightlinger that you requested my opinion whether an action by Metropolitan's Board adopting the proposed water supply allocation plan would result in waiver of the member agency's preferential rights.

Section 135 of the MWD Act grants to each member agency a preferential right to purchase water from Metropolitan for distribution by such agency, in the proportionate amount determined under section 135. This right accrues to the member agency, not to Metropolitan, and it is my opinion that this right cannot be waived by action of the Metropolitan Board adopting the proposed allocation plan.

The proposed supply allocation plan was developed with member agency participation with the goal of providing equitable allocation of water across Metropolitan's service area. In developing the plan it was and continues to be our hope that all member agencies would employ this approach in lieu of other allocation methodologies, including preferential rights.

Because the preferential right to purchase water is a member agency right, it is my opinion that it is not subject to waiver by action of the Metropolitan Board. Only the Legislature, which granted this right to the member agencies, may modify or revoke it. Accordingly, it is my opinion that adoption of the proposed supply allocation plan by Metropolitan's Board would not in any way revoke or modify an agency's preferential rights.

Very truly yours,

Karen L. Tachiki
General Counsel

cc: J. Kightlinger
T. Brick
N. Sutley
J. Quinonez
H. Hansen

6. MWD letter updating supply reliability and confirming LBWD's preferential rights (dated May 13, 2010)

THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

May 13, 2010

Mr. Kevin L. Wattier
General Manager
Long Beach Water Department
1800 East Wardlow Road
Long Beach, CA 90807-4994

Dear Mr. Wattier:

Request for documentation from Metropolitan Water District for a water assessment
by the Long Beach Water Department for a proposed development in the City of Long Beach

Your letter dated April 2, 2010, on the above subject, requested two items from The Metropolitan Water District of Southern California (Metropolitan):

1. The most current 20-year forecast of the reliability of Metropolitan's domestic and municipal supplies for its service area in five-year increments, under the three hydrologic conditions specified by SB 221 and SB 610.

2. The expected Metropolitan differential rate, and/or any other fees or charges, for water purchases exceeding a Water Supply Allocation Plan (WSAP) amount, but less than a preferential right of the City of Long Beach.

Item 1

Attachment A contains the comparison of Metropolitan's supply capabilities and projected demands under the three hydrologies: Single-Dry-Year (repeat of 1977), Multiple-Dry-Year (repeat of 1990-1992) and Average Year (average of 1922-2004). The key assumptions for the analysis and each of Metropolitan's resources – the Colorado River Aqueduct, State Water Project, and In-Region Storage – are also described and summarized in Attachment A.

The tables show that Metropolitan's assumed supply capabilities would be sufficient to meet expected firm demands from 2015 through 2035 under the three specified hydrologies based on the assumptions outlined in Appendix A. It must be noted that a key component to the water supply capability is the amount of water in Metropolitan's storage facilities. Storage is a major component of Metropolitan's dry-year resource management strategy, and so the assumption as to the amount of available storage is critical. Simply put, if Metropolitan storage resources are empty at the time of the given hydrologic events, Metropolitan would likely not have adequate supply capability to meet projected demands without implementing the WSAP. For the purposes of constructing the tables attached to this letter, the assumption used is a simulated median storage level going into each five-year increment, based on the balances of supplies and demands

consistent with the overall assumptions shown in Attachment A. In practical terms, for each condition provided, there is an estimated 50 percent probability that storage levels would be higher than the assumption used, and a 50 percent probability that storage levels would be lower than the assumption used. All storage capability figures shown in the tables reflect actual storage program conveyance constraints. It is important to note that under some conditions, Metropolitan may choose to implement the WSAP in order to preserve storage reserves for a future year, instead of using the full supply capability. This can result in impacts at the retail level even under conditions where there may be adequate supply capabilities to meet firm demands.

The analyses included represent the most current available planning projections on supply and demands. Metropolitan is also in the processes of completing its Integrated Resources Adaptive Management Plan (IRAMP) and the 2010 Regional Urban Water Management Plan. Some of the assumptions may change as a result of those processes. For example, the retail demands included in this analysis incorporate an estimate of an additional 200,000 AF of water conservation. This savings amount represents a preliminary estimate resulting from retail water purveyors implementing minimal compliance to the water use efficiency target of a 20 percent per capita water use reduction by 2020 established under the Delta legislation SB 7x-7. This may be a conservative estimate and will be refined as we gather additional information on how member and local water agencies plan to comply with this legislation, including Metropolitan's effort through the IRAMP.

Item 2

It would be speculative for staff to define the expected Metropolitan penalty rates for differential water purchases exceeding future WSAP amounts. Metropolitan's Board of Directors sets its water rates annually. In addition, the WSAP adopted in February 2008 established a 12 month review of the Plan after implementation. Since Metropolitan implemented the WSAP in July 2009, the process of 12-month review has begun with staff and member agencies. The review process may result in recommendations for changes to the WSAP that could affect future implementation and penalty rates. One potential adjustment under discussion would be limiting reductions for member agencies with average per capita water use of 100 gallons per day or less. While this adjustment is not final, it could provide a benefit to the City of Long Beach in the future, if implemented and if per capita demands drop below 100 gallons per day within the service area of the Long Beach Water Department.

For your reference, the current penalty-rate policy for water purchases over a WSAP allocation is: (1) two times the fully loaded Untreated Tier 2 rate for use between 100 percent and 115 percent of a WSAP allocation and (2) four times the fully loaded Untreated Tier 2 rate for use exceeding 115 percent of a WSAP allocation. There is also a consideration for agencies that exceed a WSAP allocation but do not exceed an equivalent calculation based on an agency's preferential rights percentage. Penalty rates for these agencies are reduced by one times the fully loaded Untreated Tier 2 rate. Metropolitan is adopted water rates for 2010, 2011 and 2012 are included in Attachment B.

Your letter also requested information regarding Metropolitan's policy, if any, regarding charges for water upon the exercise of preferential rights under Section 135 of the Metropolitan Water District Act. Section 135 of the Metropolitan Water District Act does not relate to pricing but to amounts of water that can be purchased for domestic and municipal uses within a member agency service boundary. The Board adopted WSAP does not prevent the delivery of water to a member agency. As such, any member agency is permitted to purchase supplies consistent with the Metropolitan Water District Act, including Section 135.

We hope that the provided information will assist you in the preparation of your water supply assessment. If you have any questions, please contact me at (213) 217- 6686 or Dupadhyay@mwdh2o.com

Very truly yours,

Deven N. Upadhyay

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Attachment A
April, 2010

Metropolitan's firm supplies for its service area under Single Dry Year, Multiple Dry Years, and Average Years

Key Assumptions:

1. Retail Municipal and Industrial water demands are derived using Southern California Association of Governments and San Diego Association of Governments 2007 demographic projections to drive the estimating equations in Metropolitan's MWD-MAIN demand forecasting model.

2. Active Conservation levels are driven by calculating water savings from all active program device-based savings installed to date.

3. Code-Based Conservation levels are driven by calculating water savings from devices covered by existing water conservation ordinances and plumbing codes, with replacement and new construction rates driven by demographic growth consistent with those used to derive retail demand.

4. Additional water savings from retail-level compliance with "20 x 2020" conservation legislation was approximated by linearly ramping up to 200,000 acre-feet of demand reduction by 2020.

5. Local supply estimates, which include groundwater production, Los Angeles Aqueduct deliveries, surface supplies, recycled water and brackish groundwater desalination, are based on estimates of projects and yields that are currently existing and producing water supplies, or are currently under construction.

6. Water resources included are those developed and committed to date, and are shown to grow to their estimated full yields through 2035.

7. Additional Local Resources in the amount of 16 TAF were implemented beginning in 2015, reaching a total of 46 TAF by 2025 to approximate either additional Seawater Desalination or other local recycling or groundwater recovery projects.

8. Colorado River Aqueduct supplies include existing/committed programs along with planned QSA program ramp-up.

9. Colorado River transactions are available to supply additional water up to the CRA capacity of 1.25 MAF on an as-needed basis.

10. State Water Project supplies are estimated under restrictions from current Delta smelt and Chinook salmon Biological Opinions until 2012, after which an Interim Delta Solution was implemented to lessen the impact of the Biological Opinions. A Delta Fix was implemented in 2022, improving the State Water Project to yields approximating those estimated prior to the court rulings and Biological Opinions to protect Delta smelt and Chinook salmon.

11. No access to additional SWP water transfers in addition to any existing/committed water transfers, including State Drought Bank supplies.

12. Metropolitan's existing storage portfolio of approximately 4.9 MAF of surface and groundwater storage, and any existing/committed water transfers.

13. Storage resources reflect median level projections calculated using IRPSIM resource simulation modeling. Simulation modeling is based on the key assumptions listed above and starting storage conditions current as of January 1, 2010.

Attachment A

Single Dry-Year
Supply Capability[1] and Projected Demands
Repeat of 1977 Hydrology
(acre-feet per year)

Forecast Year	2015	2020	2025	2030	2035
Total Supply Programs					
In-Region Storage	666,000	840,000	1,009,000	888,000	756,000
California Aqueduct[2]	1,028,000	1,084,000	1,288,000	1,235,000	1,236,000
Colorado River Aqueduct[3]	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Maximum Supply Capability	**2,944,000**	**3,174,000**	**3,547,000**	**3,373,000**	**3,242,000**
Firm Demands on Metropolitan	**2,168,000**	**2,155,000**	**2,162,000**	**2,203,000**	**2,254,000**
Remaining Shortage[4]	**0**	**0**	**0**	**0**	**0**

[1] Represents Supply Capability for resource programs under listed year type.

[2] California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct.

[3] Maximum CRA deliveries limited to 1.25 MAF including IID-SDCWA transfers and canal linings.

[4] Represents remaining shortage based upon supply capability. Additionally, Metropolitan's Water Supply Allocation Plan can be implemented by it's Board of Directors at any time to manage resources.

Attachment A

Multiple Dry-Year
Supply Capability[1] and Projected Demands
Repeat of 1990-1992 Hydrology
(acre-feet per year)

Forecast Year	2015	2020	2025	2030	2035
Total Supply Programs					
In-Region Storage	248,000	345,000	433,000	396,000	352,000
California Aqueduct[2]	987,000	1,050,000	1,241,000	1,211,000	1,212,000
Colorado River Aqueduct[3]	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Maximum Supply Capability	**2,485,000**	**2,645,000**	**2,924,000**	**2,857,000**	**2,814,000**
Firm Demands on Metropolitan	**2,178,000**	**2,202,000**	**2,220,000**	**2,257,000**	**2,305,000**
Remaining Shortage[4]	**0**	**0**	**0**	**0**	**0**

[1] Represents Supply Capability for resource programs under listed year type.

[2] California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct.

[3] Maximum CRA deliveries limited to 1.25 MAF including IID-SDCWA transfers and canal linings.

[4] Represents remaining shortage based upon supply capability. Additionally, Metropolitan's Water Supply Allocation Plan can be implemented by it's Board of Directors at any time to manage resources.

Attachment A

AverageYear

Supply Capability[1] and Projected Demands

Average of 1922-2004 Hydrologies

(acre-feet per year)

Forecast Year	2015	2020	2025	2030	2035
Total Supply Programs					
In-Region Storage	666,000	840,000	1,009,000	888,000	756,000
California Aqueduct[2]	1,902,000	2,007,000	2,435,000	2,401,000	2,402,000
Colorado River Aqueduct[3]	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Maximum Supply Capability	**3,818,000**	**4,097,000**	**4,694,000**	**4,539,000**	**4,408,000**
Firm Demands on Metropolitan	**1,974,000**	**1,960,000**	**1,962,000**	**2,002,000**	**2,051,000**
Remaining Shortage[4]	**0**	**0**	**0**	**0**	**0**

[1] Represents Supply Capability for resource programs under listed year type.

[2] California Aqueduct includes Central Valley transfers and storage program supplies conveyed by the aqueduct.

[3] Maximum CRA deliveries limited to 1.25 MAF including IID-SDCWA transfers and canal linings.

[4] Represents remaining shortage based upon supply capability. Additionally, Metropolitan's Water Supply Allocation Plan can be implemented by it's Board of Directors at any time to manage resources.

Attachment A

In-Region Storage
Program Capabilities
Year 2015
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Metropolitan Surface Storage (DVL, Mathews, Skinner)	121,000	362,000	362,000
Flexible Storage in Castaic & Perris	33,000	100,000	100,000
Groundwater Storage			
Conjunctive Use	55,000	115,000	115,000
Cyclic Storage	18,000	55,000	55,000
Subtotal of Current Programs	***227,000***	***632,000***	***632,000***
Programs Under Development			
Raymond Basin Groundwater Conjunctive Use	9,000	22,000	22,000
LADWP Groundwater Demonstration Project	12,000	12,000	12,000
Subtotal of Proposed Programs	***21,000***	***34,000***	***34,000***
Maximum Supply Capability	**248,000**	**666,000**	**666,000**

Attachment A

In-Region Storage
Program Capabilities
Year 2020
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Metropolitan Surface Storage			
(DVL, Mathews, Skinner)	156,000	469,000	469,000
Flexible Storage in Castaic & Perris	45,000	134,000	134,000
Groundwater Storage			
Conjunctive Use	89,000	115,000	115,000
Cyclic Storage	29,000	88,000	88,000
Subtotal of Current Programs	***319,000***	***806,000***	***806,000***
Programs Under Development			
Raymond Basin Groundwater Conjunctive Use	14,000	22,000	22,000
LADWP Groundwater Demonstration Project	12,000	12,000	12,000
Subtotal of Proposed Programs	***26,000***	***34,000***	***34,000***
Maximum Supply Capability	**345,000**	**840,000**	**840,000**

Attachment A

In-Region Storage
Program Capabilities
Year 2025
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Metropolitan Surface Storage (DVL, Mathews, Skinner)	191,000	574,000	574,000
Flexible Storage in Castaic & Perris	54,000	162,000	162,000
Groundwater Storage			
Conjunctive Use	115,000	115,000	115,000
Cyclic Storage	41,000	124,000	124,000
Subtotal of Current Programs	***401,000***	***975,000***	***975,000***
Programs Under Development			
Raymond Basin Groundwater Conjunctive Use	20,000	22,000	22,000
LADWP Groundwater Demonstration Project	12,000	12,000	12,000
Subtotal of Proposed Programs	***32,000***	***34,000***	***34,000***
Maximum Supply Capability	**433,000**	**1,009,000**	**1,009,000**

Attachment A

In-Region Storage
Program Capabilities
Year 2030
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Metropolitan Surface Storage			
(DVL, Mathews, Skinner)	156,000	467,000	467,000
Flexible Storage in Castaic & Perris	45,000	135,000	135,000
Groundwater Storage			
Conjunctive Use	115,000	115,000	115,000
Cyclic Storage	46,000	137,000	137,000
Subtotal of Current Programs	***362,000***	***854,000***	***854,000***
Programs Under Development			
Raymond Basin Groundwater Conjunctive Use	22,000	22,000	22,000
LADWP Groundwater Demonstration Project	12,000	12,000	12,000
Subtotal of Proposed Programs	***34,000***	***34,000***	***34,000***
Maximum Supply Capability	**396,000**	**888,000**	**888,000**

Attachment A

In-Region Storage
Program Capabilities
Year 2035
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Metropolitan Surface Storage			
(DVL, Mathews, Skinner)	120,000	360,000	360,000
Flexible Storage in Castaic & Perris	36,000	107,000	107,000
Groundwater Storage			
Conjunctive Use	115,000	115,000	115,000
Cyclic Storage	47,000	140,000	140,000
Subtotal of Current Programs	***318,000***	***722,000***	***722,000***
Programs Under Development			
Raymond Basin Groundwater Conjunctive Use	22,000	22,000	22,000
LADWP Groundwater Demonstration Project	12,000	12,000	12,000
Subtotal of Proposed Programs	***34,000***	***34,000***	***34,000***
Maximum Supply Capability	**352,000**	**756,000**	**756,000**

Attachment A

California Aqueduct
Program Capabilities
Year 2015
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
MWD Table A	567,000	534,000	1,177,000
DWCV Table A	60,000	54,000	127,000
San Luis Carryover [1]	43,000	130,000	130,000
Article 21 Supplies	0	0	3,000
San Bernardino Valley MWD Minimum Purchase	8,000	5,000	20,000
San Bernardino Valley MWD Option Purchase	11,000	13,000	20,000
Yuba River Accord Purchase	22,000	22,000	5,000
Central Valley Storage and Transfers			
Semitropic Program	41,000	39,000	60,000
Arvin Edison Program	46,000	75,000	75,000
San Bernardino Valley MWD Program	7,000	20,000	20,000
Kern Delta Program	47,000	50,000	50,000
Subtotal of Current Programs	***852,000***	***942,000***	***1,687,000***
Programs Under Development			
Delta Improvements	47,000	17,000	119,000
Mojave Groundwater Storage Program	5,000	2,000	29,000
In-Delta Transfers	8,000	8,000	8,000
Drought Water Bank / North of Delta Transfers	25,000	25,000	25,000
SBVMWD Central Feeder	5,000	5,000	5,000
Shasta Return	18,000	18,000	18,000
Semitropic Agricultural Water Reuse Demonstration	11,000	11,000	11,000
IRP SWP Target [2]	16,000	0	0
Subtotal of Proposed Programs	***135,000***	***86,000***	***215,000***
Maximum Supply Capability	**987,000**	**1,028,000**	**1,902,000**

[1] Includes DWCV carryover.

[2] Remaining supply needed to meet IRP target.

Attachment A

California Aqueduct
Program Capabilities
Year 2020
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
MWD Table A	567,000	534,000	1,177,000
DWCV Table A	60,000	54,000	127,000
San Luis Carryover [1]	58,000	175,000	175,000
Article 21 Supplies	0	0	52,000
San Bernardino Valley MWD Minimum Purchase	8,000	5,000	20,000
San Bernardino Valley MWD Option Purchase	11,000	13,000	20,000
Yuba River Accord Purchase	19,000	22,000	3,000
Central Valley Storage and Transfers			
Semitropic Program	41,000	39,000	60,000
Arvin Edison Program	63,000	75,000	75,000
San Bernardino Valley MWD Program	10,000	31,000	31,000
Kern Delta Program	47,000	50,000	50,000
Subtotal of Current Programs	***884,000***	***998,000***	***1,790,000***
Programs Under Development			
Delta Improvements	47,000	17,000	119,000
Mojave Groundwater Storage Program	5,000	2,000	31,000
In-Delta Transfers	8,000	8,000	8,000
Drought Water Bank / North of Delta Transfers	25,000	25,000	25,000
SBVMWD Central Feeder	5,000	5,000	5,000
Shasta Return	18,000	18,000	18,000
Semitropic Agricultural Water Reuse Demonstration	11,000	11,000	11,000
IRP SWP Target [2]	47,000	0	0
Subtotal of Proposed Programs	***166,000***	***86,000***	***217,000***
Maximum Supply Capability	**1,050,000**	**1,084,000**	**2,007,000**

[1] Includes DWCV carryover.

[2] Remaining supply needed to meet IRP target.

Attachment A

California Aqueduct
Program Capabilities
Year 2025
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
MWD Table A	567,000	534,000	1,177,000
DWCV Table A	77,000	60,000	155,000
San Luis Carryover [1]	71,000	212,000	212,000
Article 21 Supplies	0	0	52,000
San Bernardino Valley MWD Minimum Purchase	12,000	8,000	20,000
San Bernardino Valley MWD Option Purchase	12,000	11,000	29,000
Yuba River Accord Purchase	19,000	22,000	3,000
Central Valley Storage and Transfers			
Semitropic Program	46,000	41,000	69,000
Arvin Edison Program	63,000	75,000	75,000
San Bernardino Valley MWD Program	15,000	44,000	44,000
Kern Delta Program	47,000	50,000	50,000
Subtotal of Current Programs	***929,000***	***1,057,000***	***1,886,000***
Programs Under Development			
Delta Improvements	234,000	159,000	439,000
Mojave Groundwater Storage Program	11,000	5,000	43,000
In-Delta Transfers	8,000	8,000	8,000
Drought Water Bank / North of Delta Transfers	25,000	25,000	25,000
SBVMWD Central Feeder	5,000	5,000	5,000
Shasta Return	18,000	18,000	18,000
Semitropic Agricultural Water Reuse Demonstration	11,000	11,000	11,000
IRP SWP Target [2]	0	0	0
Subtotal of Proposed Programs	***312,000***	***231,000***	***549,000***
Maximum Supply Capability	**1,241,000**	**1,288,000**	**2,435,000**

[1] Includes DWCV carryover.

[2] Remaining supply needed to meet IRP target.

Attachment A

California Aqueduct
Program Capabilities
Year 2030
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
MWD Table A	567,000	534,000	1,177,000
DWCV Table A	77,000	60,000	155,000
San Luis Carryover [1]	59,000	176,000	176,000
Article 21 Supplies	0	0	52,000
San Bernardino Valley MWD Minimum Purchase	12,000	8,000	20,000
San Bernardino Valley MWD Option Purchase	12,000	11,000	29,000
Yuba River Accord Purchase	0	0	0
Central Valley Storage and Transfers			
Semitropic Program	46,000	41,000	69,000
Arvin Edison Program	63,000	75,000	75,000
San Bernardino Valley MWD Program	16,000	49,000	49,000
Kern Delta Program	47,000	50,000	50,000
Subtotal of Current Programs	***899,000***	***1,004,000***	***1,852,000***
Programs Under Development			
Delta Improvements	234,000	159,000	439,000
Mojave Groundwater Storage Program	11,000	5,000	43,000
In-Delta Transfers	8,000	8,000	8,000
Drought Water Bank / North of Delta Transfers	25,000	25,000	25,000
SBVMWD Central Feeder	5,000	5,000	5,000
Shasta Return	18,000	18,000	18,000
Semitropic Agricultural Water Reuse Demonstration	11,000	11,000	11,000
IRP SWP Target [2]	0	0	0
Subtotal of Proposed Programs	***312,000***	***231,000***	***549,000***
Maximum Supply Capability	**1,211,000**	**1,235,000**	**2,401,000**

[1] Includes DWCV carryover.

[2] Remaining supply needed to meet IRP target.

Attachment A

California Aqueduct
Program Capabilities
Year 2035
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
MWD Table A	567,000	534,000	1,177,000
DWCV Table A	77,000	60,000	155,000
San Luis Carryover [1]	59,000	176,000	176,000
Article 21 Supplies	0	0	52,000
San Bernardino Valley MWD Minimum Purchase	12,000	8,000	20,000
San Bernardino Valley MWD Option Purchase	12,000	11,000	29,000
Yuba River Accord Purchase	0	0	0
Central Valley Storage and Transfers			
Semitropic Program	46,000	41,000	69,000
Arvin Edison Program	63,000	75,000	75,000
San Bernardino Valley MWD Program	17,000	50,000	50,000
Kern Delta Program	47,000	50,000	50,000
Subtotal of Current Programs	***900,000***	***1,005,000***	***1,853,000***
Programs Under Development			
Delta Improvements	234,000	159,000	439,000
Mojave Groundwater Storage Program	11,000	5,000	43,000
In-Delta Transfers	8,000	8,000	8,000
Drought Water Bank / North Of Delta Transfers	25,000	25,000	25,000
SBVMWD Central Feeder	5,000	5,000	5,000
Shasta Return	18,000	18,000	18,000
Semitropic Agricultural Water Reuse Demonstration	11,000	11,000	11,000
IRP SWP Target [2]	0	0	0
Subtotal of Proposed Programs	***312,000***	***231,000***	***549,000***
Maximum Supply Capability	**1,212,000**	**1,236,000**	**2,402,000**

[1] Includes DWCV carryover.

[2] Remaining supply needed to meet IRP target.

Attachment A

Colorado River Aqueduct
Program Capabilities
Year 2015
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Basic Apportionment – Priority 4	550,000	550,000	550,000
IID/MWD Conservation Program	85,000	85,000	85,000
Priority 5 Apportionment (Surplus)	0	0	91,000
PVID Land Management, Crop Rotation, and Water Supply Program	133,000	133,000	133,000
Lower Colorado Water Supply Project	6,000	6,000	6,000
Lake Mead Storage Program	306,000	400,000	400,000
Quechan Settlement Agreement Supply	13,000	13,000	13,000
Forbearance for Present Perfected Rights	(42,000)	(47,000)	(47,000)
CVWD SWP/QSA Transfer Obligation	(35,000)	(35,000)	(35,000)
DWCV SWP Table A Obligation	(60,000)	(54,000)	(127,000)
DWCV SWP Table A Transfer Callback	32,000	29,000	67,000
DWCV Advance Delivery Account	28,000	25,000	60,000
Drop 2 Reservoir Funding	22,000	66,000	66,000
SNWA Agreement	40,000	40,000	40,000
Subtotal of Current Programs	***1,078,000***	***1,211,000***	***1,302,000***
Programs Under Development			
Additional PVID Transfers (Crop Stressing/Fallowing)	66,000	66,000	66,000
Arizona Programs - CAP	50,000	50,000	50,000
California Indians / Other Ag	10,000	10,000	10,000
ICS Exchange	25,000	25,000	25,000
Expand SNWA Agreement	15,000	15,000	15,000
Agreements with CVWD	35,000	35,000	35,000
Hayfield Groundwater Extraction Project	5,000	5,000	5,000
Subtotal of Proposed Programs	***206,000***	***206,000***	***206,000***
Additional Non-Metropolitan CRA Supplies			
SDCWA/IID Transfer	100,000	100,000	100,000
Coachella & All-American Canal Lining			
To SDCWA	80,000	80,000	80,000
To San Luis Rey Settlement Parties[1]	16,000	16,000	16,000
Subtotal of Non-Metropolitan Supplies	***196,000***	***196,000***	***196,000***
Maximum CRA Supply Capability[2]	**1,480,000**	**1,613,000**	**1,704,000**
Less CRA Capacity Constraint (amount above 1.25 MAF)	*(230,000)*	*(363,000)*	*(454,000)*
Maximum Expected CRA Deliveries[3]	**1,250,000**	**1,250,000**	**1,250,000**
Less Non-Metropolitan Supplies[4]	*(196,000)*	*(196,000)*	*(196,000)*
Maximum Metropolitan Supply Capability[5]	**1,054,000**	**1,054,000**	**1,054,000**

[1] Subject to satisfaction of conditions specified in agreement among Metropolitan, the United States, and the San Luis Rey Settlement Parties

[2] Total amount of supplies available without taking into consideration CRA capacity constraint.

[3] The Colorado River Aqueduct delivery capacity is 1.250 MAF annually.

[4] Exchange obligation for the SDCWA-IID transfer and the Coachella and All American Canal Lining projects.

[5] The amount of CRA water available to Metropolitan after meeting its exchange obligations.

Attachment A

Colorado River Aqueduct
Program Capabilities
Year 2020
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Basic Apportionment – Priority 4	550,000	550,000	550,000
IID/MWD Conservation Program	85,000	85,000	85,000
Priority 5 Apportionment (Surplus)	500,000	356,000	61,000
PVID Land Management, Crop Rotation, and Water Supply Program	133,000	133,000	133,000
Lower Colorado Water Supply Project	6,000	6,000	6,000
Lake Mead Storage Program	400,000	400,000	400,000
Quechan Settlement Agreement Supply	13,000	13,000	13,000
Forbearance for Present Perfected Rights	(47,000)	(47,000)	(47,000)
CVWD SWP/QSA Transfer Obligation	(35,000)	(35,000)	(35,000)
DWCV SWP Table A Obligation	(60,000)	(54,000)	(127,000)
DWCV SWP Table A Transfer Callback	32,000	29,000	67,000
DWCV Advance Delivery Account	28,000	25,000	60,000
Drop 2 Reservoir Funding	22,000	25,000	25,000
SNWA Agreement	40,000	40,000	40,000
Subtotal of Current Programs	***1,667,000***	***1,526,000***	***1,231,000***
Programs Under Development			
Additional PVID Transfers (Crop Stressing/Fallowing)	66,000	66,000	66,000
Arizona Programs - CAP	50,000	50,000	50,000
California Indians / Other Ag	10,000	10,000	10,000
ICS Exchange	25,000	25,000	25,000
Expand SNWA Agreement	15,000	15,000	15,000
Agreements with CVWD	35,000	35,000	35,000
Hayfield Groundwater Extraction Project	5,000	5,000	5,000
Subtotal of Proposed Programs	***206,000***	***206,000***	***206,000***
Additional Non-Metropolitan CRA Supplies			
SDCWA/IID Transfer	161,000	193,000	193,000
Coachella & All-American Canal Lining			
To SDCWA	80,000	80,000	80,000
To San Luis Rey Settlement Parties[1]	16,000	16,000	16,000
Subtotal of Non-Metropolitan Supplies	***257,000***	***289,000***	***289,000***
Maximum CRA Supply Capability[2]	**2,130,000**	**2,021,000**	**1,726,000**
Less CRA Capacity Constraint (amount above 1.25 MAF)	*(880,000)*	*(771,000)*	*(476,000)*
Maximum Expected CRA Deliveries[3]	**1,250,000**	**1,250,000**	**1,250,000**
Less Non-Metropolitan Supplies[4]	*(257,000)*	*(289,000)*	*(289,000)*
Maximum Metropolitan Supply Capability[5]	**993,000**	**961,000**	**961,000**

[1] Subject to satisfaction of conditions specified in agreement among Metropolitan, the United States, and the San Luis Rey Settlement Parties

[2] Total amount of supplies available without taking into consideration CRA capacity constraint.

[3] The Colorado River Aqueduct delivery capacity is 1.250 MAF annually.

[4] Exchange obligation for the SDCWA-IID transfer and the Coachella and All American Canal Lining projects.

[5] The amount of CRA water available to Metropolitan after meeting its exchange obligations.

Attachment A

Colorado River Aqueduct
Program Capabilities
Year 2025
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Basic Apportionment – Priority 4	550,000	550,000	550,000
IID/MWD Conservation Program	85,000	85,000	85,000
Priority 5 Apportionment (Surplus)	0	250,000	53,000
PVID Land Management, Crop Rotation, and Water Supply Program	133,000	133,000	133,000
Lower Colorado Water Supply Project	6,000	5,000	5,000
Lake Mead Storage Program	400,000	400,000	400,000
Quechan Settlement Agreement Supply	13,000	13,000	13,000
Forbearance for Present Perfected Rights	(47,000)	(47,000)	(47,000)
CVWD SWP/QSA Transfer Obligation	(35,000)	(35,000)	(35,000)
DWCV SWP Table A Obligation	(77,000)	(60,000)	(155,000)
DWCV SWP Table A Transfer Callback	41,000	32,000	82,000
DWCV Advance Delivery Account	36,000	28,000	73,000
Drop 2 Reservoir Funding	22,000	25,000	25,000
SNWA Agreement	0	0	0
Subtotal of Current Programs	***1,127,000***	***1,379,000***	***1,182,000***
Programs Under Development			
Additional PVID Transfers (Crop Stressing/Fallowing)	66,000	66,000	66,000
Arizona Programs - CAP	50,000	50,000	50,000
California Indians / Other Ag	10,000	10,000	10,000
ICS Exchange	25,000	25,000	25,000
Expand SNWA Agreement	0	0	0
Agreements with CVWD	35,000	35,000	35,000
Hayfield Groundwater Extraction Project	5,000	5,000	5,000
Subtotal of Proposed Programs	***191,000***	***191,000***	***191,000***
Additional Non-Metropolitan CRA Supplies			
SDCWA/IID Transfer	200,000	200,000	200,000
Coachella & All-American Canal Lining			
To SDCWA	80,000	80,000	80,000
To San Luis Rey Settlement Parties[1]	16,000	16,000	16,000
Subtotal of Non-Metropolitan Supplies	***296,000***	***296,000***	***296,000***
Maximum CRA Supply Capability[2]	**1,614,000**	**1,866,000**	**1,669,000**
Less CRA Capacity Constraint (amount above 1.25 MAF)	*(364,000)*	*(616,000)*	*(419,000)*
Maximum Expected CRA Deliveries[3]	**1,250,000**	**1,250,000**	**1,250,000**
Less Non-Metropolitan Supplies[4]	*(296,000)*	*(296,000)*	*(296,000)*
Maximum Metropolitan Supply Capability[5]	**954,000**	**954,000**	**954,000**

[1] Subject to satisfaction of conditions specified in agreement among Metropolitan, the United States, and the San Luis Rey Settlement Parties

[2] Total amount of supplies available without taking into consideration CRA capacity constraint.

[3] The Colorado River Aqueduct delivery capacity is 1.250 MAF annually.

[4] Exchange obligation for the SDCWA-IID transfer and the Coachella and All American Canal Lining projects.

[5] The amount of CRA water available to Metropolitan after meeting its exchange obligations.

Attachment A

Colorado River Aqueduct
Program Capabilities
Year 2030
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Basic Apportionment – Priority 4	550,000	550,000	550,000
IID/MWD Conservation Program	85,000	85,000	85,000
Priority 5 Apportionment (Surplus)	0	0	13,000
PVID Land Management, Crop Rotation, and Water Supply Program	133,000	133,000	133,000
Lower Colorado Water Supply Project	5,000	5,000	5,000
Lake Mead Storage Program	400,000	400,000	400,000
Quechan Settlement Agreement Supply	13,000	13,000	13,000
Forbearance for Present Perfected Rights	(47,000)	(47,000)	(47,000)
CVWD SWP/QSA Transfer Obligation	(35,000)	(35,000)	(35,000)
DWCV SWP Table A Obligation	(77,000)	(60,000)	(155,000)
DWCV SWP Table A Transfer Callback	41,000	32,000	82,000
DWCV Advance Delivery Account	36,000	28,000	73,000
Drop 2 Reservoir Funding	22,000	25,000	25,000
SNWA Agreement	0	0	0
Subtotal of Current Programs	***1,126,000***	***1,129,000***	***1,142,000***
Programs Under Development			
Additional PVID Transfers (Crop Stressing/Fallowing)	66,000	66,000	66,000
Arizona Programs - CAP	50,000	50,000	50,000
California Indians / Other Ag	10,000	10,000	10,000
ICS Exchange	25,000	25,000	25,000
Expand SNWA Agreement	0	0	0
Agreements with CVWD	35,000	35,000	35,000
Hayfield Groundwater Extraction Project	0	0	0
Subtotal of Proposed Programs	***186,000***	***186,000***	***186,000***
Additional Non-Metropolitan CRA Supplies			
SDCWA/IID Transfer	200,000	200,000	200,000
Coachella & All-American Canal Lining			
To SDCWA	80,000	80,000	80,000
To San Luis Rey Settlement Parties[1]	16,000	16,000	16,000
Subtotal of Non-Metropolitan Supplies	***296,000***	***296,000***	***296,000***
Maximum CRA Supply Capability[2]	**1,608,000**	**1,611,000**	**1,624,000**
Less CRA Capacity Constraint (amount above 1.25 MAF)	*(358,000)*	*(361,000)*	*(374,000)*
Maximum Expected CRA Deliveries[3]	**1,250,000**	**1,250,000**	**1,250,000**
Less Non-Metropolitan Supplies[4]	*(296,000)*	*(296,000)*	*(296,000)*
Maximum Metropolitan Supply Capability[5]	**954,000**	**954,000**	**954,000**

[1] Subject to satisfaction of conditions specified in agreement among Metropolitan, the United States, and the San Luis Rey Settlement Parties

[2] Total amount of supplies available without taking into consideration CRA capacity constraint.

[3] The Colorado River Aqueduct delivery capacity is 1.250 MAF annually.

[4] Exchange obligation for the SDCWA-IID transfer and the Coachella and All American Canal Lining projects.

[5] The amount of CRA water available to Metropolitan after meeting its exchange obligations.

Attachment A

Colorado River Aqueduct
Program Capabilities
Year 2035
(acre-feet per year)

Hydrology	Multiple Dry Years (1990-92)	Single Dry Year (1977)	Average Year (1922-2004)
Current Programs			
Basic Apportionment – Priority 4	550,000	550,000	550,000
IID/MWD Conservation Program	85,000	85,000	85,000
Priority 5 Apportionment (Surplus)	0	0	10,000
PVID Land Management, Crop Rotation, and Water Supply Program	133,000	133,000	133,000
Lower Colorado Water Supply Project	5,000	5,000	5,000
Lake Mead Storage Program	332,000	400,000	400,000
Quechan Settlement Agreement Supply	13,000	13,000	13,000
Forbearance for Present Perfected Rights	(47,000)	(47,000)	(47,000)
CVWD SWP/QSA Transfer Obligation	(35,000)	(35,000)	(35,000)
DWCV SWP Table A Obligation	(77,000)	(60,000)	(155,000)
DWCV SWP Table A Transfer Callback	41,000	32,000	82,000
DWCV Advance Delivery Account	36,000	28,000	73,000
Drop 2 Reservoir Funding	22,000	25,000	25,000
SNWA Agreement	0	0	0
Subtotal of Current Programs	***1,058,000***	***1,129,000***	***1,139,000***
Programs Under Development			
Additional PVID Transfers (Crop Stressing/Fallowing)	66,000	66,000	66,000
Arizona Programs - CAP	50,000	50,000	50,000
California Indians / Other Ag	10,000	10,000	10,000
ICS Exchange	25,000	25,000	25,000
Expand SNWA Agreement	0	0	0
Agreements with CVWD	35,000	35,000	35,000
Hayfield Groundwater Extraction Project	0	0	0
Subtotal of Proposed Programs	***186,000***	***186,000***	***186,000***
Additional Non-Metropolitan CRA Supplies			
SDCWA/IID Transfer	200,000	200,000	200,000
Coachella & All-American Canal Lining			
To SDCWA	80,000	80,000	80,000
To San Luis Rey Settlement Parties[1]	16,000	16,000	16,000
Subtotal of Non-Metropolitan Supplies	***296,000***	***296,000***	***296,000***
Maximum CRA Supply Capability[2]	**1,540,000**	**1,611,000**	**1,621,000**
Less CRA Capacity Constraint (amount above 1.25 MAF)	*(290,000)*	*(361,000)*	*(371,000)*
Maximum Expected CRA Deliveries[3]	**1,250,000**	**1,250,000**	**1,250,000**
Less Non-Metropolitan Supplies[4]	*(296,000)*	*(296,000)*	*(296,000)*
Maximum Metropolitan Supply Capability[5]	**954,000**	**954,000**	**954,000**

[1] Subject to satisfaction of conditions specified in agreement among Metropolitan, the United States, and the San Luis Rey Settlement Parties

[2] Total amount of supplies available without taking into consideration CRA capacity constraint.

[3] The Colorado River Aqueduct delivery capacity is 1.250 MAF annually.

[4] Exchange obligation for the SDCWA-IID transfer and the Coachella and All American Canal Lining projects.

[5] The amount of CRA water available to Metropolitan after meeting its exchange obligations.

Attachment B

Metropolitan Water District of Southern California
Water Rates and Charges

	Effective 1/1/2010	Effective 1/1/2011	Effective 1/1/2012
Tier 1 Supply Rate (dollars per acre-foot)	$101	$104	$106
Delta Supply Surcharge (dollars per acre-foot)	$69	$51	$58
Tier 2 Supply Rate (dollars per acre-foot)	$280	$280	$290
System Access Rate (dollars per acre-foot)	$154	$204	$217
Water Stewardship Rate (dollars per acre-foot)	$41	$41	$43
System Power Rate (dollars per acre-foot)	$119	$127	$136
Full Service Untreated Volumetric Cost ($/AF)			
Tier 1	$484	$527	$560
Tier 2	$594	$652	$686
Replenishment Water Rate: untreated (dollars per acre-foot)	$366	$409	$442
Interim Agricultural Water Program: untreated (dollars per acre-foot)	$416	$482	$537
Treatment Surcharge (dollars per acre-foot)	$217	$217	$234
Full Service Treated Volumetric Cost ($/AF)			
Tier 1	$701	$744	$794
Tier 2	$811	$869	$920
Treated Replenishment Water Rate (treated dollars per acre-foot)	$558	$601	$651
Treated Interim Agricultural Water Program (dollars per acre-foot)	$615	$687	$765
Readiness-to-serve Charge (millions of dollars)	$114	$125	$146
Capacity Charge (dollars per cubic foot second)	$7,200	$7,200	$7,400

Definitions

Tier 1 Supply Rate - recovers the majority of the supply costs.

Tier 2 Supply Rate - a higher block rate that reflects Metropolitan's cost of developing additional supply applied to annual purchase of water above baseline.

Delta Supply Surcharge - recovers the additional supply costs and other costs due to the pumping restrictions on the State Water Project. The Delta Supply Surcharge replaced the Water Supply Surcharge effective with the 2009/10 rates.

System Access Rate - recovers a portion of the capital and operations maintenance costs associated with the delivery of supplies.

System Power Rate - recovers Metropolitan's power costs for pumping water to Southern California.

Water Stewardship Rate - recovers the cost of Metropolitan's financial commitment to conservation, water recycling,

groundwater clean-up and other local resource management programs.

Replenishment Water Rate - a discounted rate for surplus system supplies available for the purpose of replenishing local storage.

Treated Replenishment Water Rate - a discounted rate for surplus system supplies available for the purpose of replenishing local storage.

Interim Agricultural Water Rate - discounted rate for surplus system supplies available for agricultural use. Program is phasing out.

Treated Interim Agricultural Water Program Rate – a discounted rate for surplus system supplies available for the agricultural use. Program is phasing out.

Treatment Surcharge - recovers the costs of treating water.

Readiness-to-Serve Charge - a fixed charge that recovers the cost of the portion of system capacity that provides standby and emergency service.

Capacity Charge - a fixed charge to recover the cost of providing peak capacity within the distribution system.