

# Backbone Improvement Program

## Award of Construction Contract for 5 MG Tank

- History of Backbone System
- The Backbone Improvement Program
- The Public Process
- The Bid Results
- Recommendation



Report # 2

WATER

IMPROV

Kennedy/Jenks Consultants

5 August 2013

### Technical Memorandum

To: John Zhao, David Lippman

From: Roger Null, Tarun Gill

Subject: LVMWD Population and Water Demand Projection - Final  
K/J 1389005\*00

An important element in utility Master Planning is a planning level assessment of future water demands and supply requirements. While the methods utilized to perform local demand

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ary, there are a few criteria that are commonly used to support this effort. These include a population projection based approach and a change in land use based approach. The District has historically used both of these approaches, either as a stand-alone approach or a hybrid of the two in its previous and ongoing forecasting activities. The approach historically been based on the end use or purpose of the planning effort.

Recent and important planning efforts commissioned by the District were the 2010 Urban Water Management Plan (UWMP), and the 2007 Integrated Potable Water, Recycled Water, and Sanitation Master Plans (2007 Master Plan). As required by California Government Code, the UWMP is updated every 5 years. To integrate changing conditions and regulations, the District updates its Master Plan every 5 to 7 years. This Technical Memorandum details the methodology used for population and water demand projections for the service area as an element of this 2013 Integrated Potable Water, Recycled Water, and Sanitation Master Plan Update.

The data sources used for these previous planning efforts and the methodology used in the current Master Plan (MP) to develop population and water demand projections are reinforced.

#### Sources

California Association of Governments (SCAG) Data

Responsible for the development of demographic projections and various integrated data including employment, transportation programs, measures, and strategies of the South Coast Air Quality Management Plan. It maintains two sets of transportation analysis zones for the Regional Transportation Plan (2012-2035) along with socioeconomic data for the more comprehensive data is comprised by 4,109 zones (Tier 1) across the service area. Within each TAZ, SCAG has derived spatial data relating to population, housing, employment under current conditions, and developed projections for the years 2020 and 2035. A detailed and comprehensive dataset was used for this Master Plan project.



Las Virgenes Municipal Water District

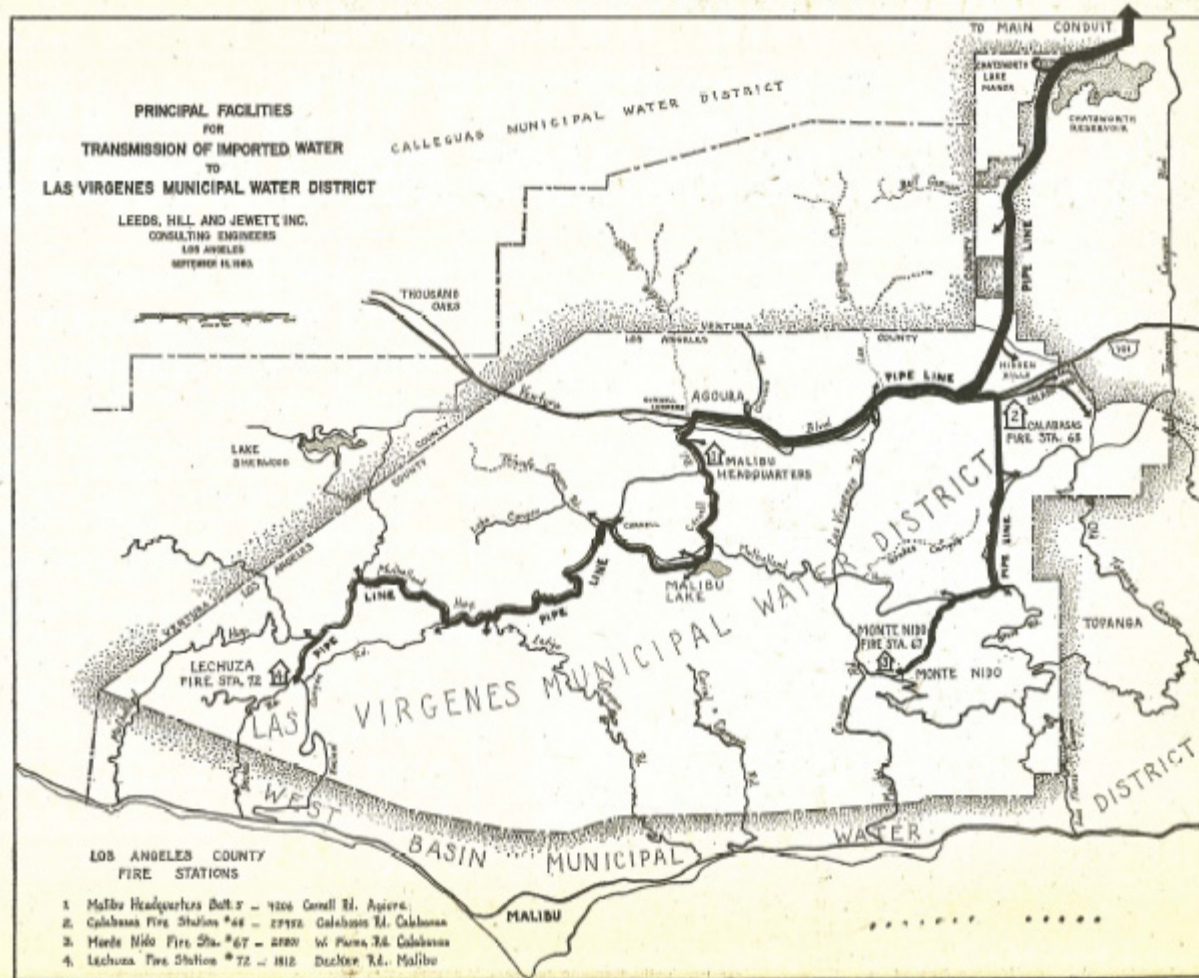
FINAL



# 2010 Urban Water Management Plan

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Map of Primary Pipeline System to Serve Las Virgenes Area



The above map, prepared by Leeds, Hill & Jewett, consulting engineers, shows principal facilities for the transmission of Metropolitan Water District water to

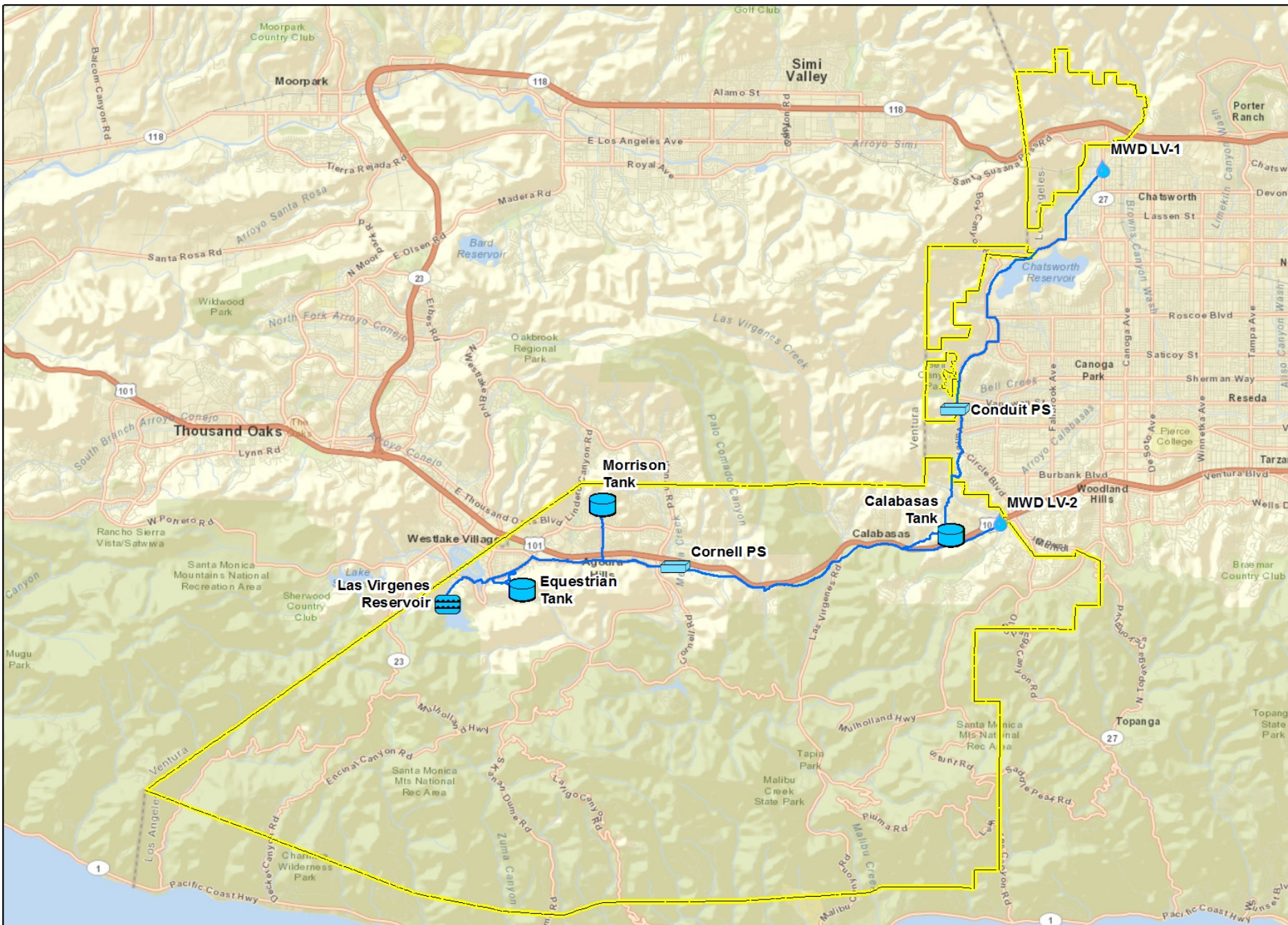
the Las Virgenes Municipal Water District. Pipelines will serve all five fire stations throughout the area and all of the principal residential areas. The water election

next Tuesday, at which bonds to build the pipeline system will be voted, climaxes a campaign launched years ago by civic leaders to obtain Metropolitan water.

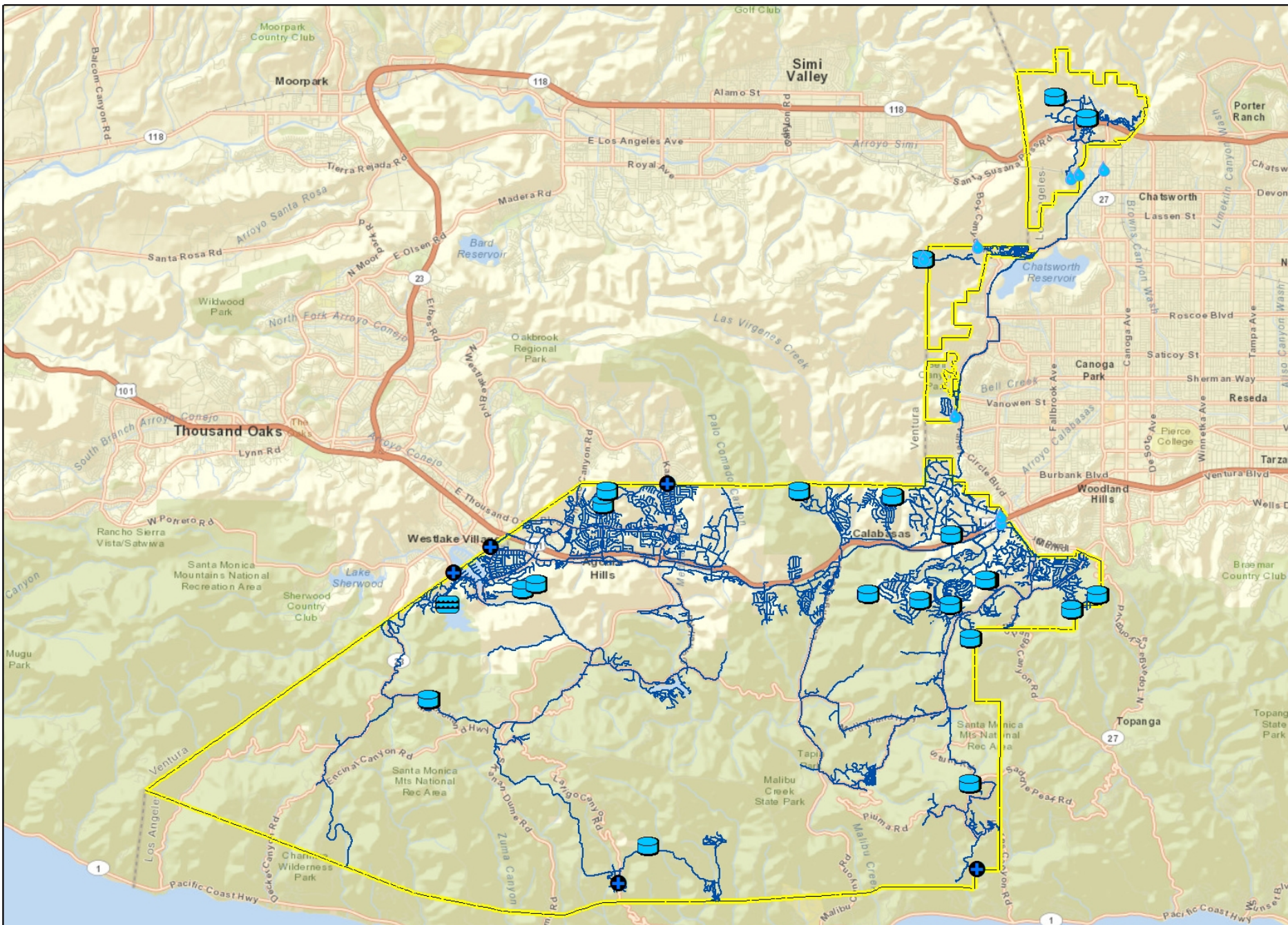


- 1961 Calleguas/Las Virgenes Feeder (West Valley Feeder # 1)
- 1963 Initial Backbone System
  - Calabasas Tank (8 MG), Conduit PS & 20",24" & 30" Mains
- 1971 Equestrian Trails Tank (4.2 MG)
- 1972 Las Virgenes Reservoir, Westlake PS & Cornell PS
- 1978 LV-2 MWD Connection & 1<sup>st</sup> Leg of 42" Main
  - Change from Colorado River Water to State Project Water
- 1982 Cornell PS Expansion
- 1986 Morrison Tank (3 MG)
- 1989 Westlake Filter Plant
- 1990 LV-2 Pump Station
- 2002 Second Leg of 42" Transmission Main
- 2012 Agoura Road Transmission Main
- 2013 Calabasas Transmission Mains





Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012



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# The Backbone Improvement Program

- A deficient of 4 million gallons of storage
- A need for 1 million gallons of future storage
- The need to meet increases in average day and maximum day demand
- Assure sufficient supplies for fire protection
- Provide sufficient system capacity to respond to local and regional emergencies



# Needed Facilities

- Calabasas 30” transmission main (in construction)
- Agoura Hills transmission mains (completed)
- 5 million gallon tank near Las Virgenes Reservoir (design completed)
- Expansion of Westlake Filtration Plant (design scheduled for 2014)
- Modernization of the Westlake Pump Station (design scheduled for 2014)
- CMWD-LVMWD Interconnection (in preliminary design)
- Relocation of MWD connection LV-1

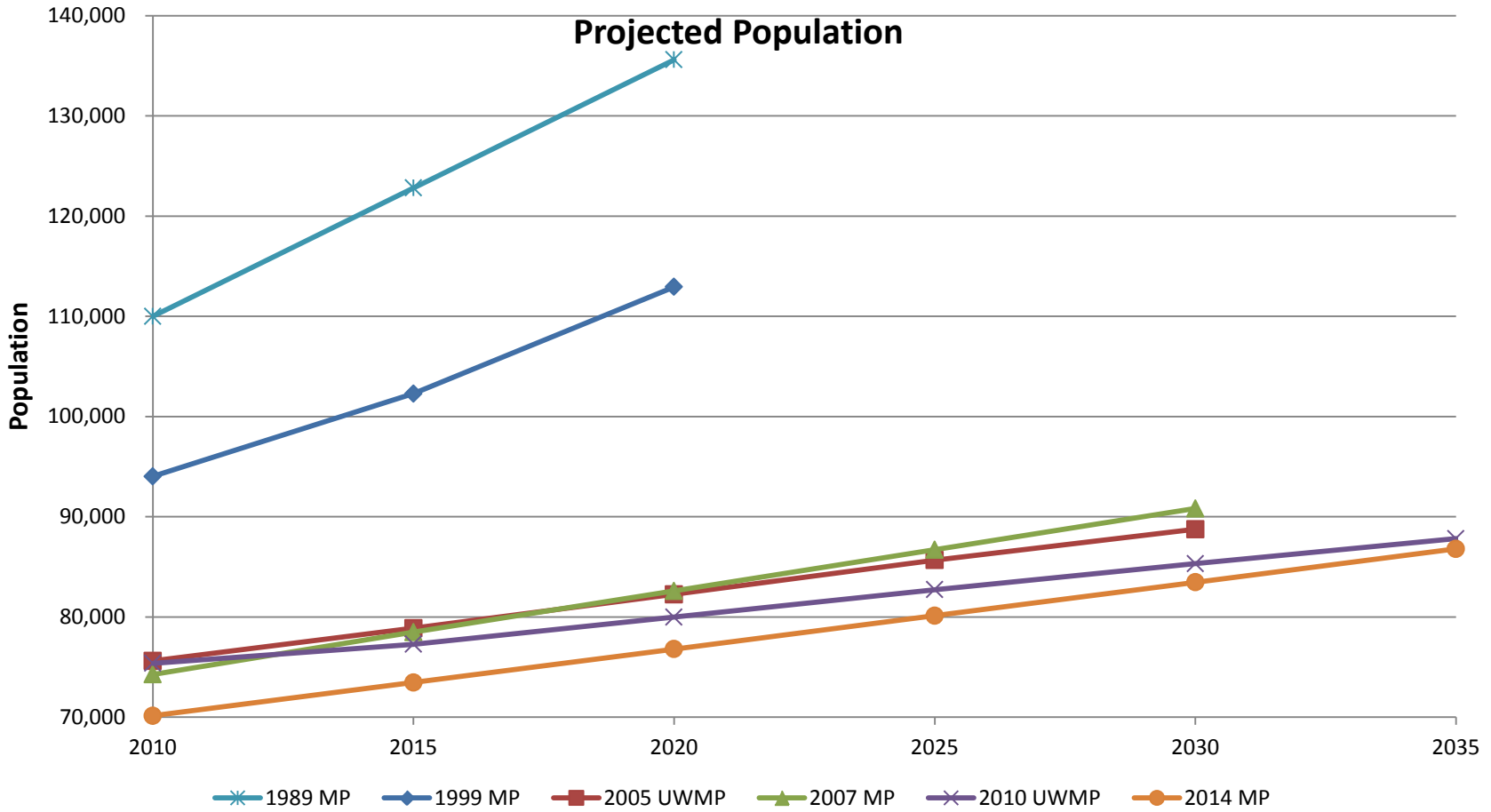




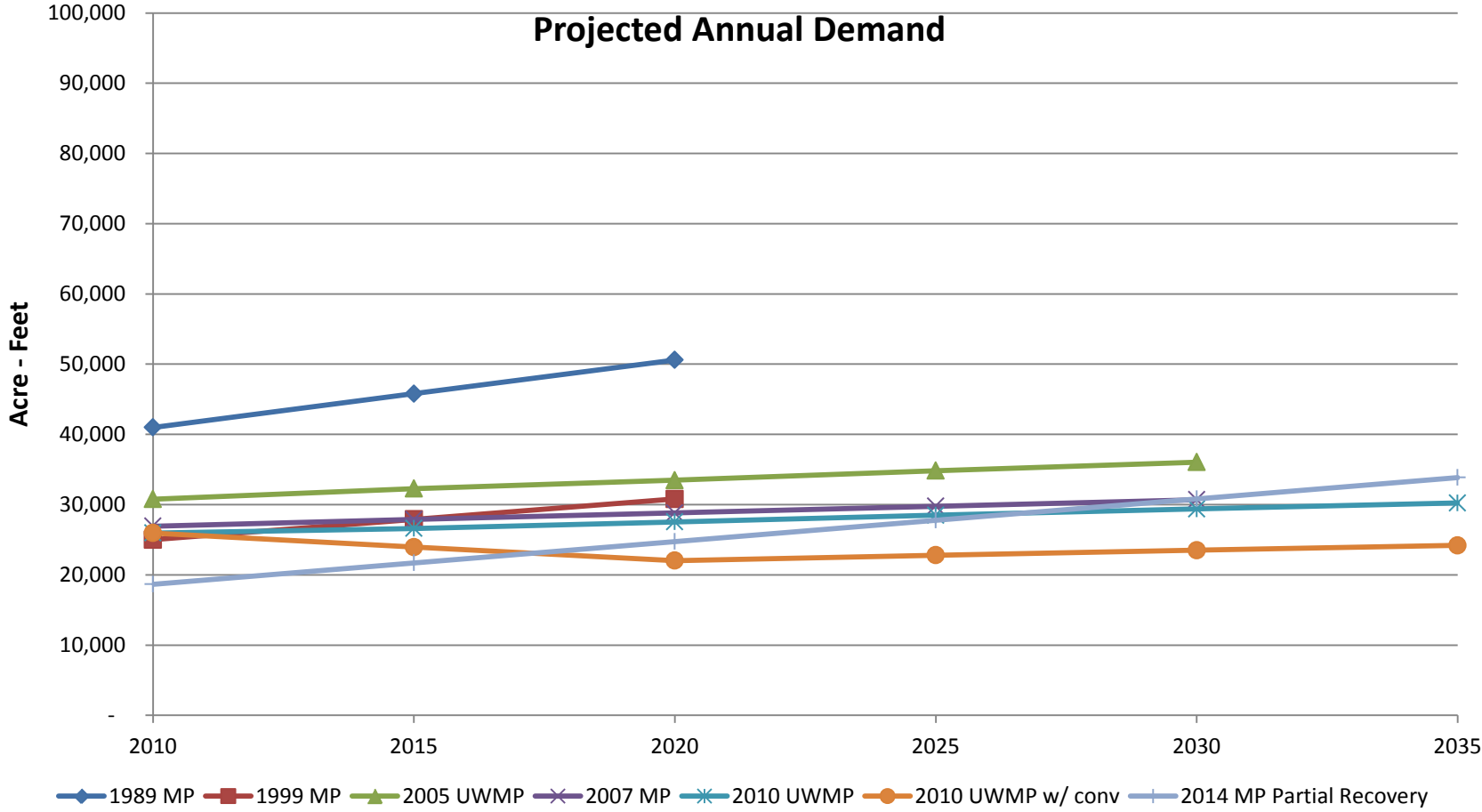
# The Need

- California Code of Regulation, Title 22
  - *“at all times a public water system source(s) shall have the capacity to meet the system’s maximum day demand”*
- Los Angeles County Fire Department Regulation No. 8
  - *“5,000 gallons per minute for 5 hours with a residual pressure of 20 pounds per square inch”*
- Maximum Day Demands
  - *derived from land use and population*
- Local and Regional Emergencies





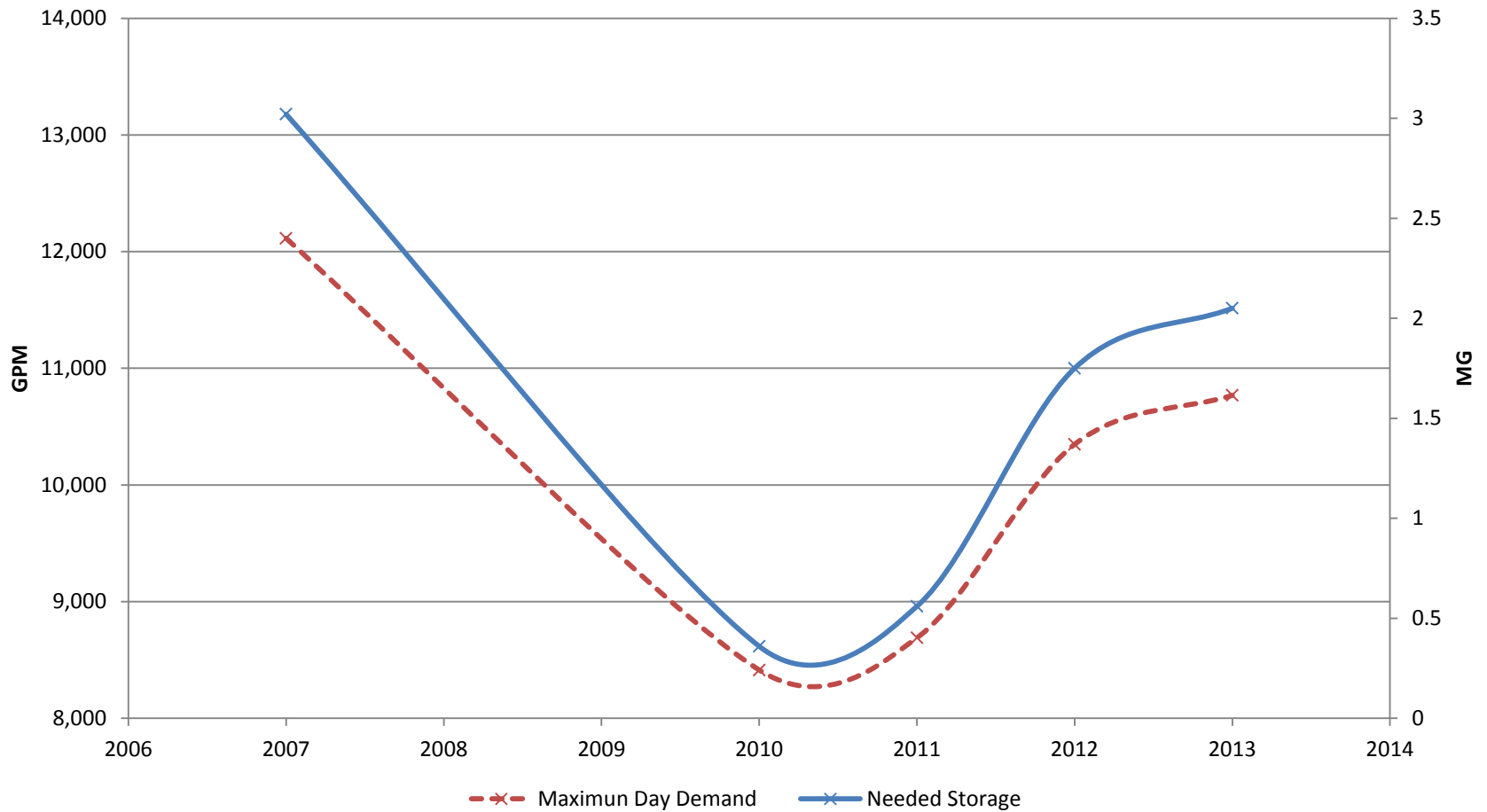
# Projected Annual Demand



### Western Backbone System

Condition	MDD (GPM)	Fire Flow (MG)	Operational (MG)	Emergency (MG)	Storage Required (MG)	Existing Storage (MG)	Needed Storage (MG)
<b>2007 Actual</b>	12,114	1.50	5.09	3.63	10.22	7.20	<b>3.02</b>
<b>2010 Actual</b>	8,414	1.50	3.53	2.52	7.56	7.20	<b>0.36</b>
<b>2011 Actual</b>	8,690	1.50	3.65	2.61	7.76	7.20	<b>0.56</b>
<b>2014 Master Plan - 2012 Actual</b>	10,348	1.50	4.35	3.10	8.95	7.20	<b>1.75</b>
<b>2013 Actual</b>	10,768	1.50	4.52	3.23	9.25	7.20	<b>2.05</b>
<b>2007 MP - 2006 Estimate</b>	13,272	1.50	5.57	3.98	11.06	7.20	<b>3.86</b>
<b>2007 MP - 2030</b>	14,134	1.50	5.94	4.24	11.68	7.20	<b>4.48</b>
<b>2010 UWMP - 2020 w/o conservation</b>	12,711	1.50	5.34	3.81	10.65	7.20	<b>3.45</b>
<b>2010 UWMP - 2020 with conservation</b>	10,169	1.50	4.27	3.05	8.82	7.20	<b>1.62</b>
<b>2010 UWMP - 2030 w/o conservation</b>	13,559	1.50	5.69	4.07	11.26	7.20	<b>4.06</b>
<b>2010 UWMP- 2030 with conservation</b>	10,847	1.50	4.56	3.25	9.31	7.20	<b>2.11</b>
<b>2014 Master Plan - Future System</b>	15,625	1.50	6.56	4.69	12.75	7.20	<b>5.55</b>





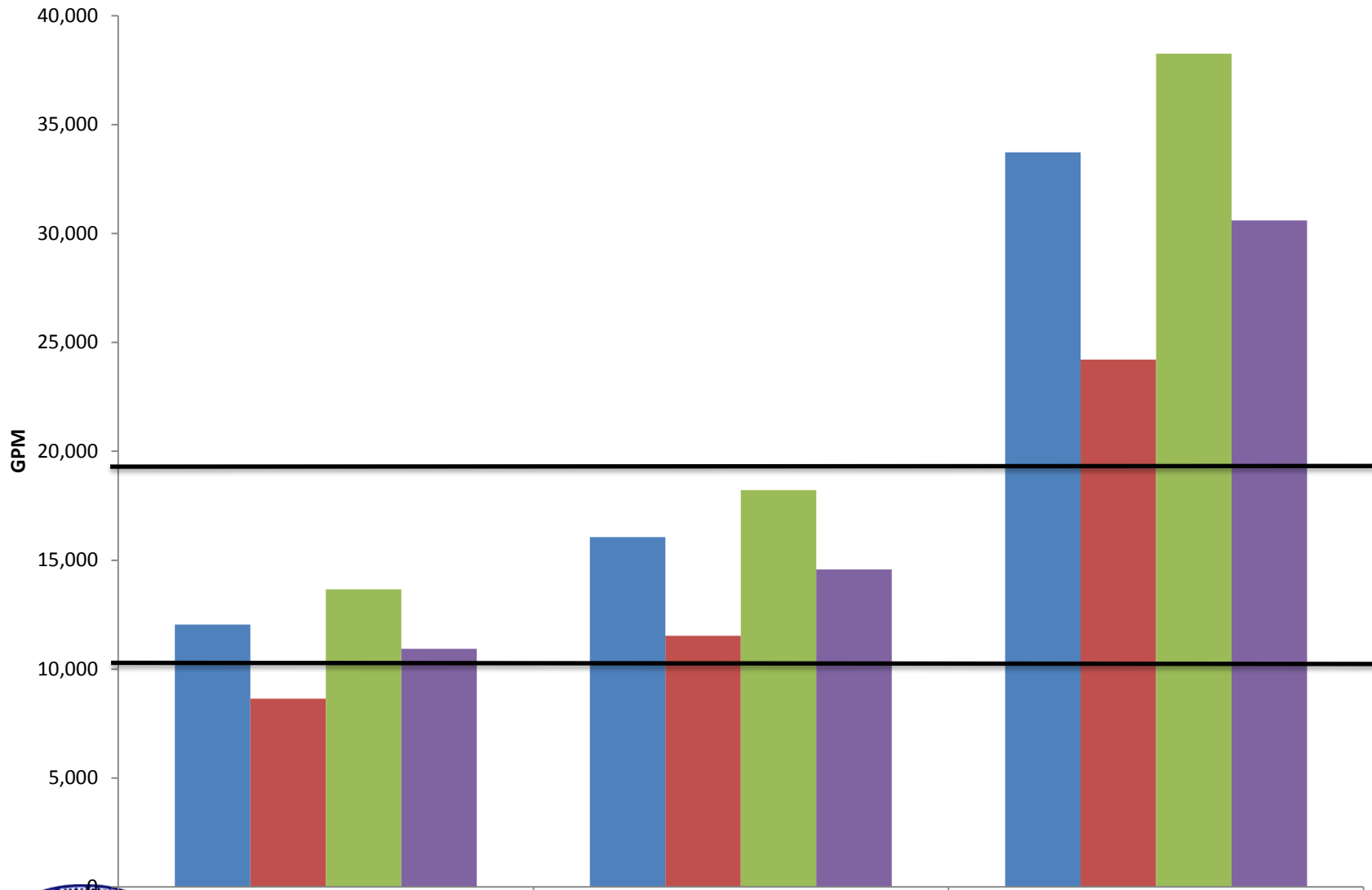
<b>Supply Capacity</b>		
	<b>Current Capacity (gpm)</b>	<b>Future Capacity (gpm)</b>
LADWP @ Kittridge	9,000	9,000
WLFP	9,000	11,800
LADWP @ Germain	1,350	1,350
VCWW & Simi	180	180
	<b>19,530</b>	<b>22,330</b>



### System Deficiency with Current Supply Capacity

Demand Condition (gpm)	2007 Actual	2010 Actual	2020 UWMP without conservation	2020 UWMP with conservation
Winter	12,045	8,645	13,662	10,929
with LADWP				
without LADWP	<b>-24%</b>		<b>-33%</b>	<b>-16%</b>
Spring/Fall	16,060	11,526	18,216	14,572
with LADWP				
without LADWP	<b>-43%</b>	<b>-20%</b>	<b>-50%</b>	<b>-37%</b>
Summer	33,726	24,205	38,253	30,602
with LADWP	<b>-42%</b>	<b>-19%</b>	<b>-49%</b>	<b>-36%</b>
without LADWP	<b>-73%</b>	<b>-62%</b>	<b>-76%</b>	<b>-70%</b>





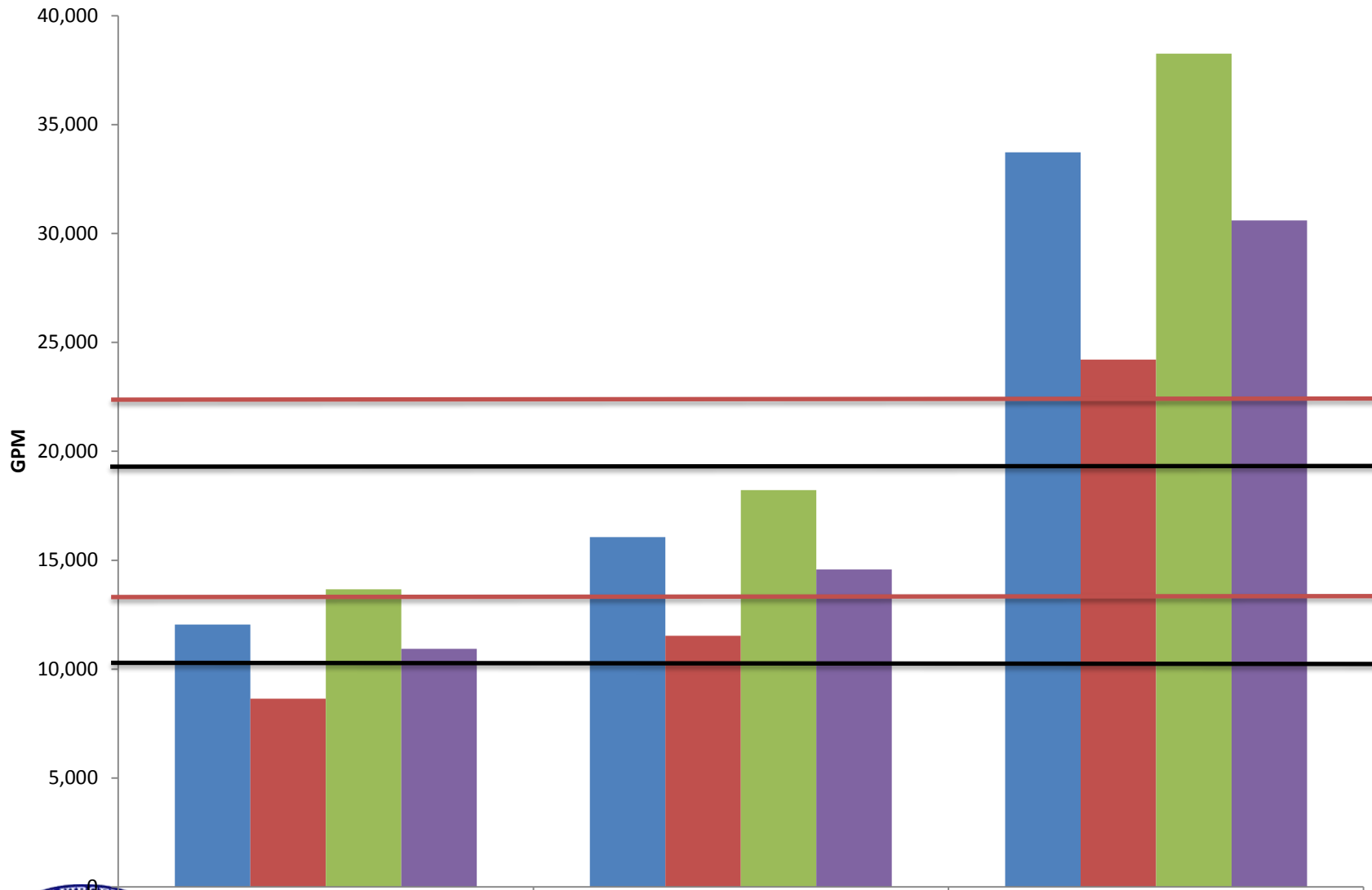
■ 2007 Actual   
 ■ 2010 Actual   
 ■ 2020 UWMP without conservation   
 ■ 2020 UWMP with conservation



### System Deficiency with Future Supply Capacity

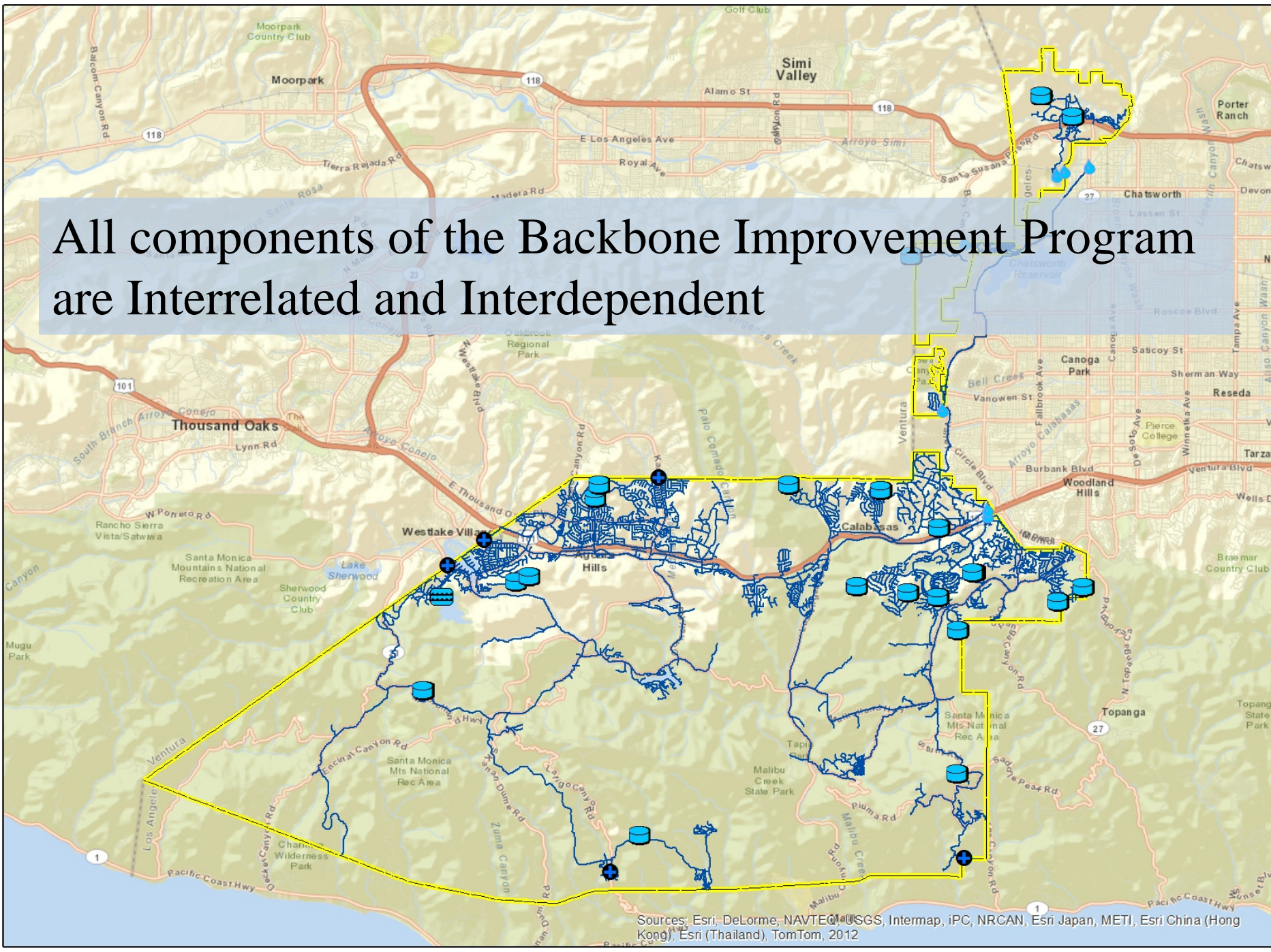
Demand Condition (gpm)	2007 Actual	2010 Actual	2020 UWMP without conservation	2020 UWMP with conservation
Winter	12,045	8,645	13,662	10,929
with LADWP				
without LADWP	<b>-1%</b>		<b>-12%</b>	
Spring/Fall	16,060	11,526	18,216	14,572
with LADWP				
without LADWP	<b>-25%</b>		<b>-34%</b>	<b>-18%</b>
Summer	33,726	24,205	38,253	30,602
with LADWP	<b>-34%</b>	<b>-8%</b>	<b>-42%</b>	<b>-27%</b>
without LADWP	<b>-64%</b>	<b>-51%</b>	<b>-69%</b>	<b>-61%</b>





■ 2007 Actual   
 ■ 2010 Actual   
 ■ 2020 UWMP without conservation   
 ■ 2020 UWMP with conservation

# All components of the Backbone Improvement Program are Interrelated and Interdependent



Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

# The Public Process

- Fifty-one (51) publicly noticed meetings since May 2008
- Since October 2009 thirty-six (36) related to the tank
  - Included three off site workshops
    - July 2011, March 2012, June 2013
- Websites, letters, signage, newspaper adds



# October 2009 to December 2012

- Additional geotechnical investigation at A & C
- Investigation of alternative excavation methods
- Investigation of an access road to site C along the shoreline
- Additional evaluation & analysis of the use of blasting
- Construction traffic and schedule analysis
- Investigation of the possibility of Valley Fever
- Investigation of various routes from Triunfo to site C
- Use of an on site concrete plant versus trucking
- The use of conservation in lieu of storage
- The use of irrigation control in lieu of storage
- Board selected site A as the preferred site in June 2012

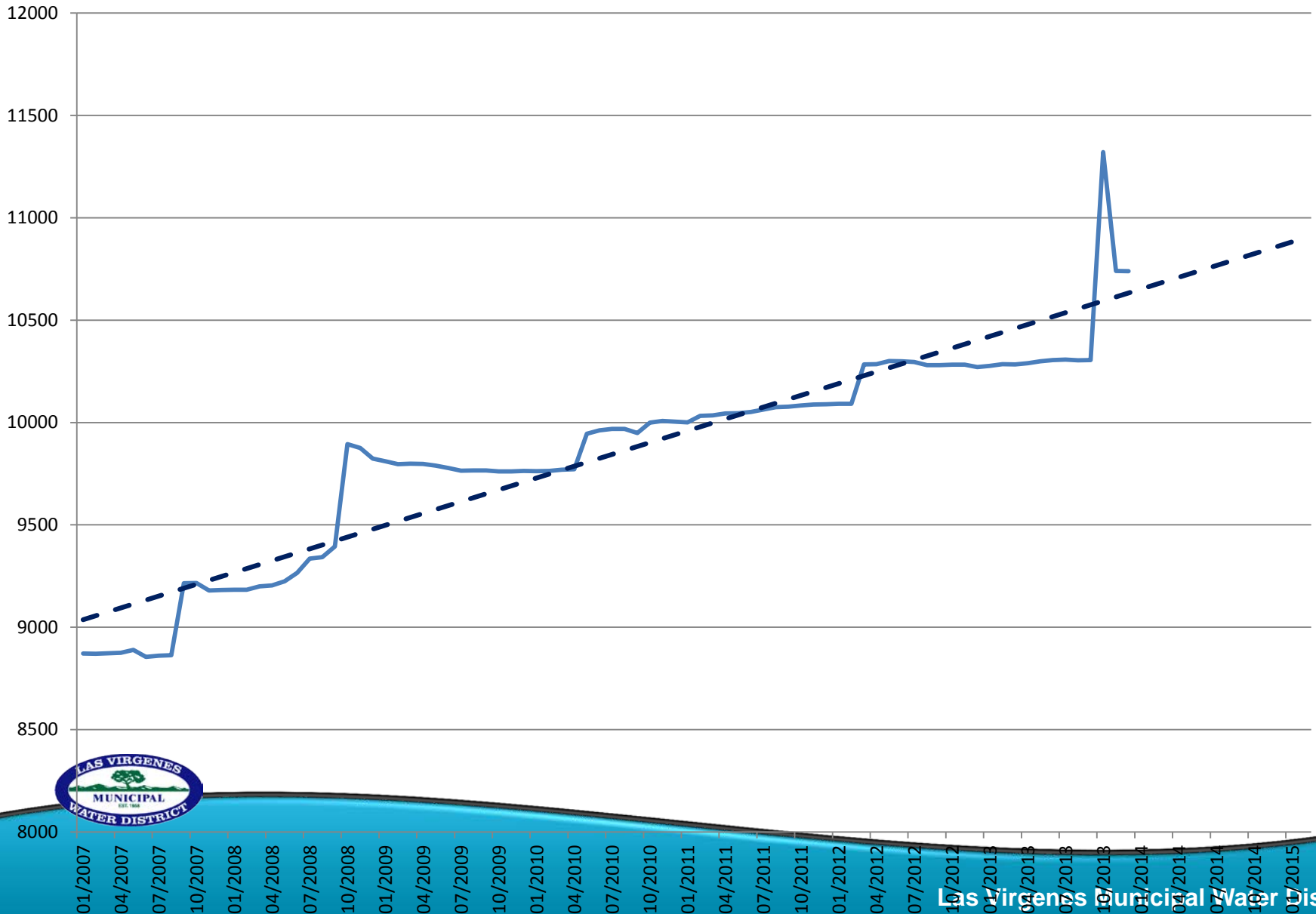


# January 2013 to January 2014

- General Manager's assessment of existing and future storage needs
- Two Board briefings by the LACFD
- A Board briefing by the DPH
- Investigation of 44 alternatives to storage
- A Call for Suggestions for Alternatives to Storage
- Development of Draft MOU and Construction Mitigation Measures with the City of Westlake Village
- A probability and risk management briefing by the General Manager
- Formation of an Ad Hoc Board committee to develop a SOW for a probability analysis
- Call for Bids on October 22, 2013



# Construction Cost Index - Los Angeles



# Program Costs

Component	Oct 2009 Alt Study	Updated Cost	Difference
Agoura Rd Pipeline	\$4,765,100	\$4,150,447	\$614,653
Calabasas Pipeline	\$5,315,050	\$5,053,984	\$261,066
5 MG Tank	\$6,600,000	\$8,900,000	\$2,300,000
Filter Plant Expansion	\$4,150,000	\$2,946,500	\$1,203,500
Pump Station Mod	\$5,950,000	\$5,950,000	
Total	\$26,780,150	\$27,000,931	\$220,781





# Bid Results

Engineer's Estimate	Pacific Hydro Tech	Gateway Pacific	SKAAR Construction
\$8,900,000	\$10,754,620	\$11,214,479	\$15,675,000



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Agoura Rd Pipeline	\$4,765,100	\$4,150,447	\$614,653
Calabasas Pipeline	\$5,315,050	\$5,053,984	\$261,066
5 MG Tank	\$6,600,000	\$10,754,620	\$4,154,620
Filter Plant Expansion	\$4,150,000	\$2,946,500	\$1,203,500
Pump Station Mod	\$5,950,000	\$5,950,000	
Total	\$26,780,150	\$28,855,551	\$2,075,401

