CHAPTER 24 WESTLAKE PLANT ATTACHMENTS

Attachment - WLK - 64053, 64102 and 64107 1 (Thousand Oaks Letter)

Attachment - WLK - 64053, 64102 and 64107 2 (Calleguas Letter)

Attachment - WLK - 64175 1 (Casing Confirmation Email)

Attachment - WLK - 64254 1 (Water Distribution Systems Handbook Excerpt)

Attachment - WLK - 64254 2 (Title 22, CA Code of Regulations, Section 64554(C))

Attachment - WLK - 64254 3 (2010 Westlake Urban Water Management Plan, Figure 3.2.3)

Attachment - WLK - 64495 1 (Figure 5-2)

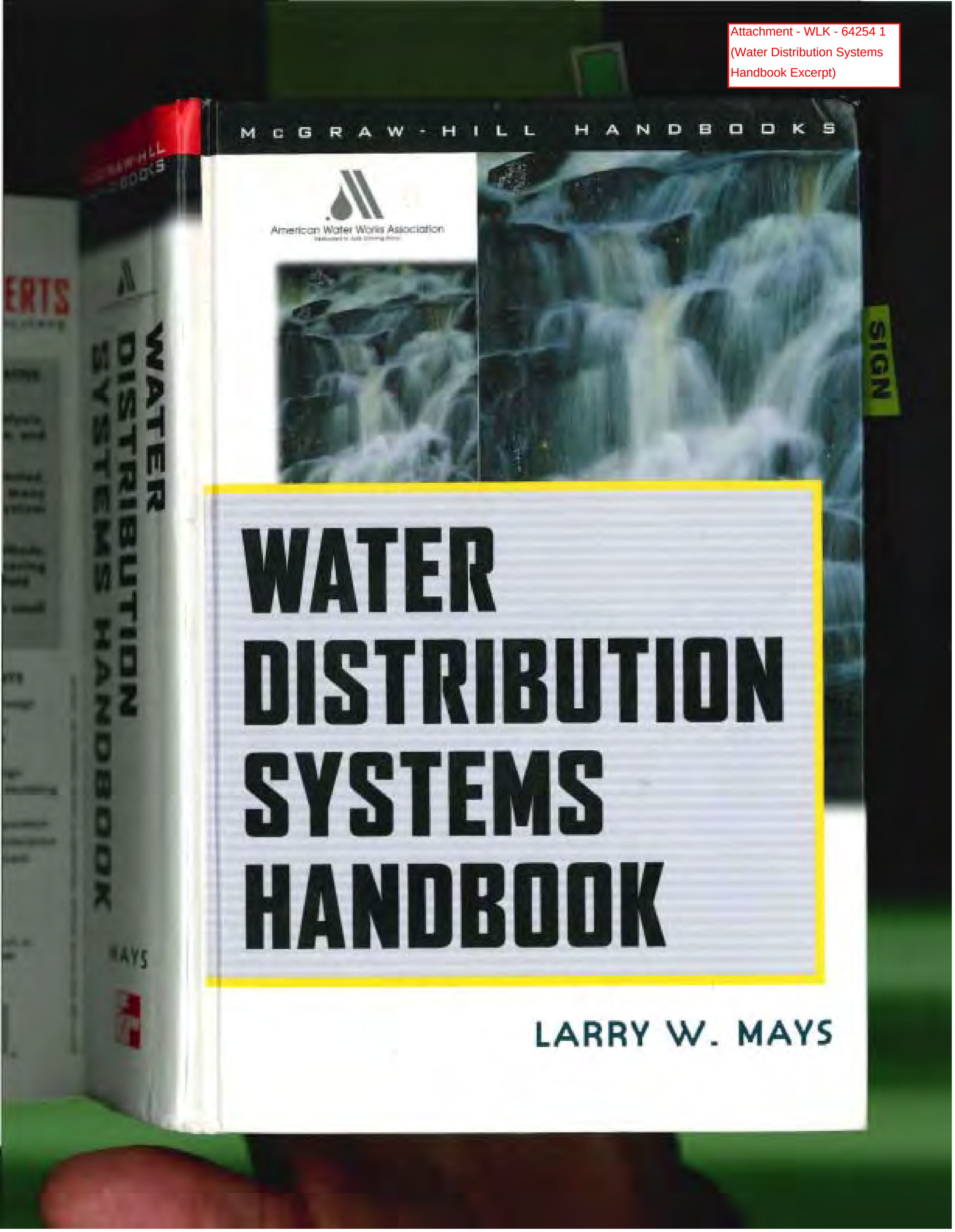
Attachment - WLK - 64495 2 (WSFMP Pg 5-20)

Attachment - WLK - 65407 1 (V208070 Projected Mileage)

From: Danny - County Pipeline [mailto:dannym@countypipeline.com]
Sent: Thursday, March 28, 2013 1:32 PM
To: Varney, Douglas
Subject: Re: 16inch Main

Hey Doug. I've left messages with both my contacts from Caltrans. I have previously requested the detail for this application because I can't find it online. What I do know from previous conversations with Caltrans is that they request a 3/8th wall thickness steel casing to be provided under all bridges where non state owned utilities are concerned. The spec also calls for the casing to be 50% larger than the line it is protecting and installation is required in the entire easement not just under the bridge itself. Please don't hesitate to contact me with any questions. I will forward any info to you I receive from Caltrans. Thanks, Danny

Attachment - WLK - 64254 1 (Water Distribution Systems Handbook Excerpt)



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Water Department.
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CHAPTER 18

RELIABILITY ANALYSIS FOR DESIGN

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18.1 FAILURE MODES FOR WATER DISTRIBUTION SYSTEMS

18.1.1 Need and Justification

Water utilities are implemented to construct. operate, and maintain water supply systems. The basic function of these water utilities is to obtain water from a source, treat the water so that its quality is acceptable, and deliver the desired quantity of water at the desired

18.2.1.5 Emergency Storage. Depending on the size and layout of the distribution system, looping may not be the most efficient means of providing reliability. Distribution storage improves reliability in two ways. First, the existence of water in storage provides an alternate "source" of water in case a distribution segment is lost. Second, storage provides water needed during emergencies such as fires. Storage sizing and location is described in more detail in Chap. 10.

In large systems, tenninal storage far from the source can reduce the cost of distribution mains significantly (both in terms and size and need for redundancy). Adequate storage means that mains serving an area need only meet peak day demands while shorter-term peaks can be met from water in storage. Storage also means that the principal main serving an area can be out of service for a short time without a serious interruption of service.

The reliability of tanks also raises some issues. Pressure zones with a single tank are considerably easier to operate than zones are with multiple tanks. However, tanks must be taken out of service for such processes as inspection, cleaning, and painting. In a pressure zone with a single tank, this means greater difficulty in maintaining pressures in the correct range and in meeting emergency peak demands when the tank is out of service.

18.2.1.6 Backup pumping and control valves. Pumps and control valves (e.g., pressure-reducing valves, pressure-sustaining valves) are two types of equipment that require routine maintenance. Therefore, it is crucial for spare valves and pumps to be available in each pressure zone.

Two valves should serve each pressure zone. Because most control valves require no power, there is some advantage to placing them at different points between the source and the pressure zone being served so that independent paths to the pressure zone are available.

Pumping stations, on the other hand, have much larger requirements in terms of structures, controls, telemetry, and power supply. Therefore, more than one pump usually is placed in each pumping station. The usual rule for the number of pump units is that the station must be able to meet design flows when the largest unit is out of service. In most instances, application of this rule is fairly straightforward. However, consider a small pressure zone (say less than 20 homes) with no elevated storage. A pump station serving this pressure zone might have two small pumps (rougWy 40 gpm) and a fire pump at 750 gpm. The question then is whether there is a need for a spare fire pump. This is a judgment decision based on the likelihood that the fire pump will be needed while the single large pump is out of service.

18.2.1.7 Standby power. The next question regarding pumping station reliability is the need for a standby generator or a pump driven by an internal combustion engine. The need for a generator depends on the availability of storage downstream of the pump station, backup sources of water, and the reliability of the power supply to the station. If there is a backup source of water or if water can flow into the pressure zone by gravity from another SOUTce, then a standby generator usually is not needed.

An internal combustion engine, tied directly to a pump, is generally less expensive than a generator, but a generator provides the ability to use the pump station lighting, controls, and telemetry during a power outage and usually is preferred.

When limited storage is available downstream of the pump station, reliability can be provided by using a portable generator with a electrical transfer switch in the station or by using a portable water pump, provided adequate valving (or two hydrants, one on each side of the station) is available at the station.

18.2.1.8 Emergency controls. Pump stations should be designed so they can operate satisfactorily even if the pump controls fail. For example, variable-frequency drives (VFDs) are often used on pump stations delivering water to dead-end systems with no

(1) If daily water usage data are available, identify the day with the highest usage during the past ten years to obtain MDD; determine the average hourly flow during MDD and multiply by a peaking factor of at least 1.5 to obtain the PHD.

(2) If no daily water usage data are available and monthly water usage data are available:

(A) Identify the month with the highest water usage (maximum month) during at least the most recent ten years of operation or, if the system has been operating for less than ten years, during its period of operation;

(B) To calculate average daily usage during maximum month, divide the total water usage during the maximum month by the number of days in that month; and

(C) To calculate the MDD, multiply the average daily usage by a peaking factor that is a minimum of 1.5; and

(D) To calculate the PHD, determine the average hourly flow during MDD and multiply by a peaking factor that is a minimum of 1.5.

(3) If only annual water usage data are available:

(A) Identify the year with the highest water usage during at least the most recent ten years of operation or, if the system has been operating for less than ten years, during its years of operation;

(B) To calculate the average daily use, divide the total annual water usage for the year with the highest use by 365 days; and

(C) To calculate the MDD, multiply the average daily usage by a peaking factor of 2.25.

(D) To calculate the PHD, determine the average hourly flow during MDD and multiply by a peaking factor that is a minimum of 1.5.

(4) If no water usage data are available, utilize records from a system that is similar in size, elevation, climate, demography, residential property size, and metering to determine the average water usage per service connection. From the average water usage per service connection, calculate the average daily demand and follow the steps in paragraph (3) to calculate the MDD and PHD.

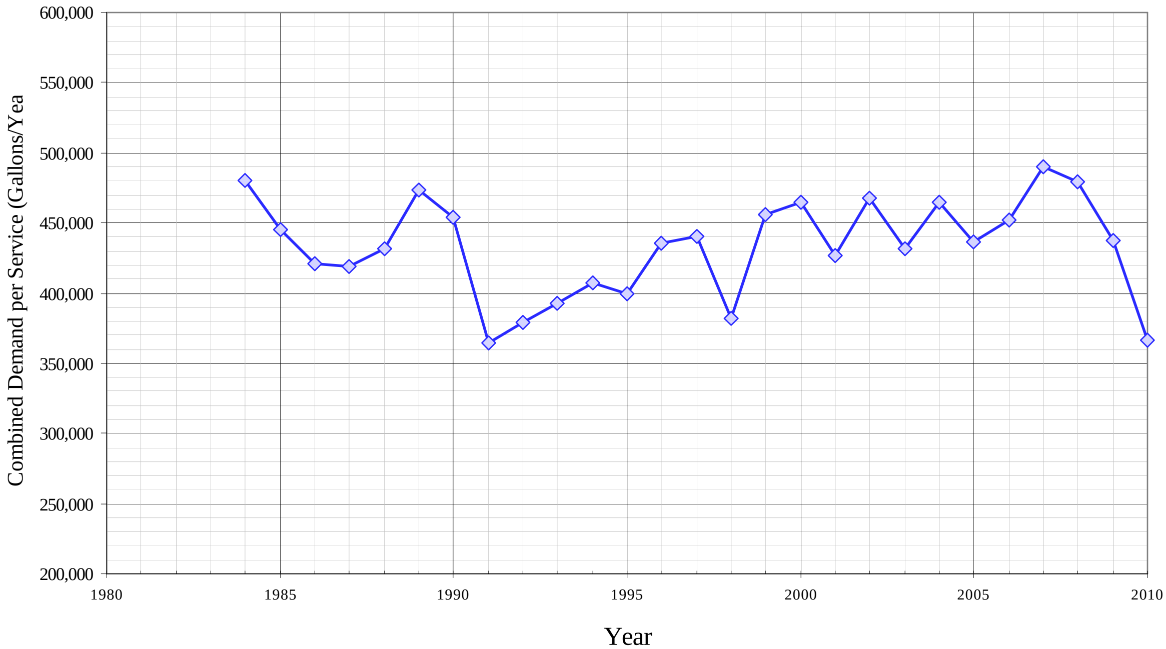
(c) Community water systems using only groundwater shall have a minimum of two approved sources before being granted an initial permit. The system shall be capable of meeting MDD with the highest-capacity source off line.

(d) A public water system shall determine the total capacity of its groundwater sources by summing the capacity of its individual active sources. If a source is influenced by concurrent operation of another source, the total capacity shall be reduced to account for such influence. Where the capacity of a source varies seasonally, it shall be determined at the time of MDD.

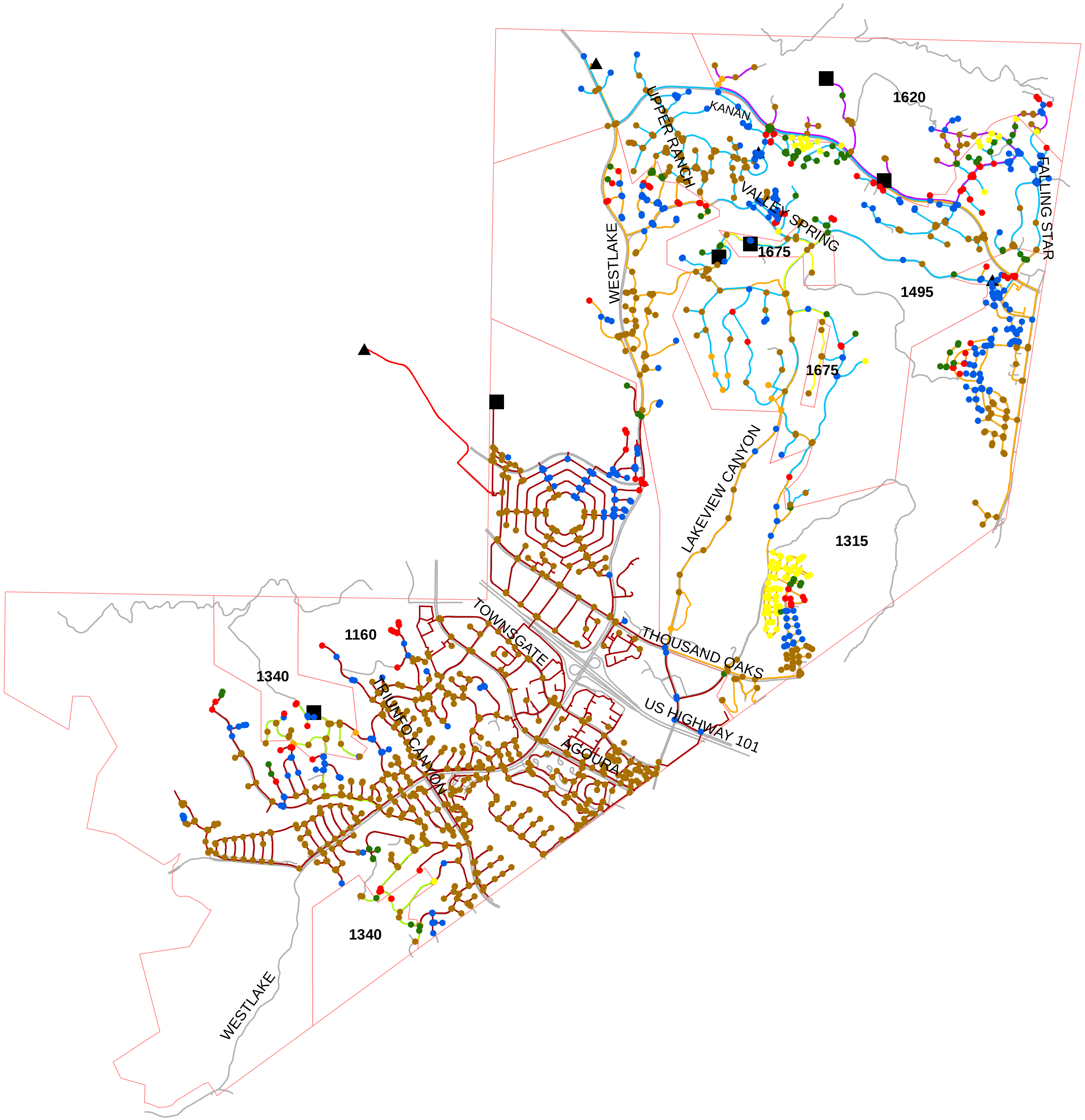
(e) The capacity of a well shall be determined from pumping data existing prior to March 9, 2008, or in accordance with subsection (f) or (g). Prior to conducting a well capacity test pursuant to subsection (g), a system shall submit the information listed below to the Department for review and approval. For well capacity tests conducted

The combined demand for all services fluctuates between 360,000 to 480,000 gallons per service per year, as shown in Figure 3.2-3.

Figure 3.2-3: Historical Demand per Service



The residential customers in the District were able to respond to the mandate for water conservation in 1991 by reducing the demand per service consumption by nearly 21 percent over 1990's level of consumption. When combined with the reductions by other service categories, this resulted in an overall conservation reduction in total demand of 19.7 percent over the regional base year of 1989, and 18.7 over the demand of 1990. Since 1991 demand has steadily increased to pre-drought levels. Since then, demand has risen steadily to pre-drought levels. More recently, demand was reduced sharply almost to historic lows as a result of drought conditions from 2006-2009.



Key to Features

- Tanks
- CMWD Connection
- Streets
- Pressure Zone Boundary

Demand Node PHD Pressures (psi)

- 25 - 40
- 40 - 50
- 50 - 60
- 60 - 80
- 80 - 125
- 125 - 150

Existing Pipes

- CMWD
- 1160
- 1315
- 1340
- 1495
- 1620
- 1675

N

0 2,000 4,000 8,000 Feet

Document: \\Uspas1netapp1\muni\Clients\California Water Service Company\Westlake\14 Electronic Files - Modeling\Final Report\System Evaluation\Figure 5-2.mxd

Date: June 4, 2009

MWH

Existing System PHD Pressures

Figure 5-2

System Velocity Evaluation

The District's calibrated hydraulic model is used to identify the pipeline velocities for the following criteria:

1. Maximum allowable velocity of new pipes at ADD is 5 ft/sec.
2. Maximum allowable velocity of new pipe at PHD is 7 ft/sec.
3. Maximum allowable velocity of new pipe at MDD and FF is 10 ft/sec.
4. Maximum allowable velocity of existing pipe at PHD is 10 ft/sec.
5. Maximum allowable head loss at ADD, MDD, and PHD is 10 feet/ 1000 feet.
6. Maximum allowable head loss at MDD plus FF is 10 feet/ 1000 feet.

The maximum velocity and headloss criterion is not exceeded in any pipeline segments under both existing and build-out conditions. **Figure 5-5** shows the velocity for existing and buildout scenarios.

System Reliability

The storage and emergency supply capacity evaluation includes an evaluation under existing and build-out demand conditions, and recommends additional pumping, storage and backup power to improve system reliability. For this evaluation, the following criteria are used:

- Maximum number of residential lots that can be served by a non-looped water pipeline shall not exceed 25 lots.
- Maintain service for 7 days with a single water source out of service.
- Maintain service at 20 psi with system-wide power failure during 6 hours of highest MDD period
- Maintain Minday demand service for 3 days with a single source out of service and no electrical power.

Customers on Dead-End Pipeline

Only one location (between Via Colinas and Country Valley) with clusters of customers were identified which are served by non-looped pipeline without any additional redundancy. These customers are the same customers with low pressure. Recommendations made earlier in this memo to address low pressure also solve the reliability issues.

City of Thousand Oaks

Municipal Service Center
Public Works Department
1993 Rancho Conejo Boulevard • Thousand Oaks, CA 91320
Phone 805/449.2499 • Fax 805/498.4941 • www.toaks.org

March 18, 2013

Douglas Varney, Superintendent
California Water Service
2524 Townsgate Road, Suite A
Westlake Village, CA 91361

RE: Emergency Interconnects for Water Supply

Dear Mr. Varney,

In an on-going effort to improve emergency preparedness, the City of Thousand Oaks Public Works Department supports water pipeline interconnections with neighboring water agencies. An interconnection to a neighboring water system improves access to water in the event of an emergency, thereby increasing system reliability and strengthening the regional water system. As a follow-up to the City's Water Master Plan, RBF Consulting has identified possible locations for interconnections with the City's water system to California Water Service Company to provide mutual benefit, in most cases. These possible locations include:

Hampshire Road at Foothill Drive
Hillcrest Drive near Duesenburg Drive
Westlake Boulevard at Allyson Court

In addition, the City has recently met with California American Water Company (Cal-Am) to discuss interconnections with their agency. If you have any questions please contact me at 805-376-5032 or rbratcher@toaks.org.

Sincerely,

Rick Bratcher
Utilities Maintenance Supervisor
City Of Thousand Oaks, Public Works

C: Jay T. Spurgin, Public Works Director
John P. Smallis, Public Works Superintendant
Grahame Watts, Administrative Services Manager

DPW:241-10/ll/rb/H:Common/Final/Water/Emergency Interconnect Cal Wt Mar 2013

CALLEGUAS MUNICIPAL WATER DISTRICT

web site: www.calleguas.com

2100 OLSEN ROAD • THOUSAND OAKS, CALIFORNIA 91360-6800 805/526-9323 • FAX: 805/522-5730 • FAX: 805/526-3675

March 19, 2013

Doug Varney
California Water Service Company
2524 Townsgate Road, Suite A
Westlake Village, CA 91361

Subject: Support for Proposed Interconnections between California Water Service Company and the City of Thousand Oaks

Dear Mr. Varney,

This letter is provided to express Calleguas Municipal Water District's (Calleguas') support for three emergency interconnections between California Water Service Company (Cal Water) and the City of Thousand Oaks. As a wholesale provider of imported water with limited system redundancy, we encourage our customers to build interconnections such as these in order to improve reliability and facilitate maintenance and repair activities.

In the case of Cal Water, interconnections are particularly important. Three of Cal Water's four connections to Calleguas' water system are served by a single 36-inch/42-inch diameter pipeline (Lindero Feeder) built in 1967. Due to the age of the pipe, both planned and unplanned outages are likely.

Calleguas will undoubtedly need to perform planned maintenance and rehabilitation projects on the Lindero Feeder as it continues to age. The proposed interconnections would facilitate coordination of outages needed to accommodate this work.

In addition, the chance of a break on the Lindero Feeder is fairly high. Most sections of the pipeline are easily accessible and breaks could be repaired in a few days. However, some sections are deep or lie beneath creeks, concrete caps, or storm channels. These are not easily accessible and repairs could take a few weeks. The proposed interconnections would provide an essential water supply to Cal Water's customers during these unplanned outages.

Please contact me at smulligan@calleguas.com or (805) 579-7115 if you have questions or require additional information.

Sincerely,

Susan B. Mulligan

Susan B. Mulligan
General Manager

Replace		Purchase	MILEAGE	AVG MILES		Projected Mileage			
Year	PID	Year	AS OF	PER YEAR	2013	2014	2015	Note	
							WESTLAKE		
2013	65407	2008	**146,452**	36,613.00	183,065.00	219,678.00	256,291.00	V208070	**V205062 WAS REPLACED IN 2011 BY V211025**