Final

2010 URBAN WATER MANAGEMENT PLAN

Adopted : June 27, 2011

Prepared for:

HI-DESERT WATER DISTRICT

Prepared by:

Kennedy/Jenks Consultants

June 2011

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FINAL
2010 Urban Water Management Plan

June 2011

Prepared for

Hi-Desert Water District
55439 29 Palms Hwy
Yucca Valley CA 92284

K/J Project No. 1089057*00

RESOLUTION 11-12

RESOLUTION OF THE BOARD OF DIRECTORS OF THE HI-DESERT WATER DISTRICT ADOPTING THE 2010 URBAN WATER MANAGEMENT PLAN

WHEREAS, the California Urban Water Management Planning Act, Water Code section 10610 et seq. (the Act) mandates that every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet of water annually, prepare and adopt an updated Urban Water Management Plan (UWMP) at least once every five years on or before December 31, in years ending five and zero; and

WHEREAS, the Hi-Desert Water District (District) is an urban water supplier for purposes of the Act, and approved and adopted its most recent 2005 UWMP and submitted that UWMP to the California Department of Water Resources (DWR); and

WHEREAS, the Water Conservation Act of 2009, Water Code section 10608 et seq. (SBX7-7), extended the time by which urban retail water suppliers must adopt their 2010 UWMPs to July 1, 2011 and, among other things, established requirements for urban retail water suppliers to prepare urban water use targets in accordance with the goals of SBX7-7 to reduce statewide daily per capita water use by 15 percent by the year 2015 and 20 percent by the year 2020; and

WHEREAS, the District is an "urban retail water supplier" for purposes of SBX7-7 because it directly provides potable municipal water to more than 3,000 end users; and

WHEREAS, in accordance with applicable law, including the requirements of the Act and SBX7-7, the District has prepared its 2010 UWMP and has undertaken certain agency coordination, public notice, public involvement and outreach, public comment, and other procedures in relation to its 2010 UWMP; and

WHEREAS, as authorized by Section 10620(e) of the Act, the District has prepared its 2010 UWMP with its own staff, with the assistance of consulting professionals, and in cooperation with other governmental agencies, and has utilized and relied upon industry standards and the expertise of industry professionals in preparing its UWMP, and has also in part utilized and relied upon the DWR Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan (March 2011) and the DWR Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use (For the Consistent Implementation of the Water Conservation Act of 2009) (February 2011) in preparing its 2010 UWMP; and

WHEREAS, in accordance with applicable law, including Water Code sections 10608.26 and 10642, and Government Code section 6066, the District made its

Draft 2010 UWMP available for public inspection, and caused to be published within the jurisdiction of the District at least five notices of public hearing regarding the District's 2010 UWMP, which publication dates included May 18, 2011, May 21, 2011, May 28, 2011, June 1, 2011, and June 8, 2011; and

WHEREAS, the District held two public hearings in the Board Room of the District, located at 55439 29 Palms Highway, Yucca Valley, California 92284, regarding its 2010 UWMP, the first of which was held on June 1, 2011 at 6:00 p.m., and the second of which was held on June 15, 2011 at 6:00 p.m., wherein, among other things, members of the public and other interested entities were provided with the opportunity to be heard in connection with the District's 2010 UWMP and the proposed adoption thereof; and

WHEREAS, pursuant to said June 1, 2011 and June 15, 2011 public hearings on the 2010 UWMP, the District encouraged the active involvement of diverse social, cultural, and economic elements of the population within the District's service area with regard to the preparation and adoption of the 2010 UWMP, allowed input by members of the public and any other interested party regarding all aspects of the 2010 UWMP, allowed community input regarding the District's implementation plan for complying with SBX7-7, considered the economic impacts of the District's implementation plan for complying with SBX7-7, and adopted Method 3 under Water Code section 10608.20(b) for determining the District's urban water use targets; and

WHEREAS, the Board of Directors of the District has reviewed and considered the purposes and requirements and of the Urban Water Management Planning Act and SBX7-7, the contents of the 2010 UWMP, the documentation contained in the administrative record in support of the 2010 UWMP, and all public and agency input received with regard to the 2010 UWMP, and has determined that the factual analyses and conclusions set forth in the 2010 UWMP are supported by substantial evidence.

NOW THEREFORE, BE IT RESOLVED, DETERMINED AND ORDERED BY THE BOARD OF DIRECTORS OF THE HI-DESERT WATER DISTRICT AS FOLLOWS:

1. The District hereby adopts Method 3 under Water Code section 10608.20(b) for determining its urban water use targets, and the 2010 Urban Water Management Plan is hereby approved and adopted and ordered filed with the Secretary of the Board.

2. The General Manager of the District is hereby authorized and directed to include a copy of this Resolution in the District's 2010 Urban Water Management Plan and, in accordance with Water Code section 10644(a), to file the 2010 Urban Water Management Plan with the California Department of Water Resources, the California State Library, and any city or county within which the District provides water supplies within thirty (30) days of this adoption date.

3. The General Manager is hereby authorized and directed, in accordance with Water Code section 10645, to make the 2010 Urban Water Management Plan available for public review during normal business hours not later than thirty (30) days after filing a copy thereof with the California Department of Water Resources.

4. The General Manager is hereby authorized and directed, in accordance with Water Code section 10635(b), to provide that portion of the 2010 Urban Water Management Plan prepared pursuant to Water Code section 10635(a) to any city or county within which the District provides water supplies not later than sixty (60) days after filing a copy thereof with the California Department of Water Resources.

5. The General Manager is hereby authorized and directed to implement the components of the 2010 Urban Water Management Plan in accordance with the Urban Water Management Planning Act and SBX7-7, including, but not limited to, the District's Water Conservation Programs and its Water Shortage Contingency Plan.

6. The General Manager is hereby authorized and directed to recommend to the Board of Directors additional steps necessary or appropriate to effectively carry out the implementation of the 2010 Urban Water Management Plan, the Urban Water Management Planning Act and SBX7-7.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of the Hi-Desert Water District held on the 27th day of June, 2011 by the following vote to wit:

AYES: Stadum, Graham, Munsey, Hough
NOES: None
ABSTAIN: None
ABSENT: Mayes

President of the Hi-Desert Water District and its Board of Directors

ATTEST:

Secretary of the Hi-Desert Water District and its Board of Directors

(SEAL)

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Table of Contents

List of Tables ..... *v*

List of Figures ..... *vi*

List of Appendices ..... *vi*

Section 1: Introduction 1-1

1.1 Overview 1-1
1.2 Purpose 1-1
1.3 Implementation of the Plan 1-2
1.3.1 Joint Preparation of the Plan 1-3
1.3.2 Plan Adoption 1-3
1.3.3 Public Outreach 1-4
1.3.4 Resources Maximization 1-5
1.4 Hi-Desert Water District Background 1-6
1.5 Climate 1-10
1.6 Potential Effects of Global Warming 1-10
1.7 Other Demographic Factors 1-11
1.8 List of Abbreviations and Acronyms 1-12

Section 2: Water Use 2-1

2.1 Overview 2-1
2.2 Population 2-1
2.3 Historic Water Use 2-2
2.4 Existing and Targeted Per Capita Water Use in HDWD Service Area 2-3
2.4.1 Base Daily Per Capita Water Use for SBX7-7 Reduction 2-3
2.4.2 Urban Water Use Targets for SBX7-7 Reduction 2-4
2.5 Projected Water Use 2-5
2.5.1 Water Use Data Collection 2-5
2.5.2 Demand Forecast Methodology 2-6
2.5.3 Water Supply 2-7
2.5.3.1 Low Income Projected Water Demands 2-8
2.6 Other Factors Affecting Water Usage 2-9
2.6.1 Weather Effects on Water Usage 2-9
2.6.2 Conservation Effects on Water Usage 2-10

Section 3: Water Resources 3-1

3.1 Overview 3-1
3.2 MWA SWP Imported Water Supply 3-2
3.2.1 Imported Water Supplies 3-2
3.2.2 MWA Water Supply Reliability 3-4

3.3 Local Water Supplies 3-5
3.3.1 Groundwater 3-5
3.3.1.1 Warren Valley Basin 3-6
3.3.1.2 Ames Valley Basin 3-10
3.3.2 Septic and Irrigation Return Flow 3-13
3.3.3 Potential Supply Inconsistency 3-13
3.4 Planned Water Supply Projects and Programs 3-13
3.4.1 Ames Valley Basin Recharge 3-14
3.5 Transfers, Exchanges, and Groundwater Banking Programs 3-14
3.5.1 Opportunities for Short and Long-Term Transfers and Exchanges 3-14
3.5.2 Groundwater Banking Programs 3-15
3.6 Development of Desalination 3-15
3.6.1 Opportunities for Brackish Water and/or Groundwater Desalination 3-16
3.6.2 Opportunities for Seawater Desalination 3-16

Section 4: Recycled Water 4-1

4.1 Overview 4-1
4.2 Recycled Water Plan 4-1
4.3 Wastewater Generated Within HDWD 4-2
4.3.1 Planned Improvements and Expansions 4-2
4.3.2 Source Water Flow 4-3
4.4 Recycled Water Demand 4-3
4.4.1 Potential Users 4-3
4.4.2 Methods to Encourage Recycled Water Use 4-3

Section 5: Water Quality 5-1

5.1 Overview 5-1
5.2 Imported Water Quality 5-1
5.3 Groundwater Quality 5-2
5.4 Groundwater Protection 5-3
5.4.1 Water Quality Monitoring 5-3
5.4.2 Wellhead Protection 5-3
5.4.3 Identification and Destruction of Abandoned Wells 5-3
5.4.4 Hazardous Materials Response 5-4
5.5 Water Quality Impacts on Reliability 5-4
5.5.1 Groundwater 5-4

Section 6: Reliability Planning 6-1

6.1 Overview 6-1
6.2 Reliability of Water Supplies 6-1
6.3 Average, Single-Dry, and Multiple-Dry Year Planning 6-3

6.3.1 MWA Imported State Water Project Supply 6-3
6.3.2 Local Supplies 6-4
6.3.2.1 Groundwater 6-5
6.3.2.2 Septic and Irrigation Return Flow 6-5
6.4 Supply and Demand Comparisons 6-6
6.4.1 Average/Normal Water Year 6-6
6.4.2 Single-Dry Year 6-6
6.4.3 Multiple-Dry Year 6-6
6.4.4 Summary of Comparisons 6-7

Section 7: Water Demand Management Measures 7-1

7.1 Conservation Program Background 7-1
7.1.1 Regional Efforts 7-1
7.2 California Urban Water Conservation Council 7-2
7.2.1 MOU Compliance 7-2
7.3 Foundational BMPs 7-2
7.3.1 Utility Operations Programs 7-2
7.3.1.1 Operations Practices 7-2
7.3.1.2 Water Loss Control 7-3
7.3.1.3 Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections 7-5
7.3.1.4 Retail Conservation Pricing 7-5
7.4 Education Programs 7-6
7.4.1 Public Information Programs 7-6
7.4.2 School Education Programs 7-8
7.5 Programmatic BMPs 7-9
7.5.1 Residential Programs 7-9
7.5.1.1 Residential Survey and Retrofit Programs and Residential Landscape Audit 7-9
7.5.1.2 High Efficiency Clothes Washers (HECWs) 7-10
7.5.1.3 Water Sense Specification (WSS) Toilets 7-10
7.6 Commercial, Industrial, and Institutional (CII) Programs 7-12
7.6.1 CII Audits 7-12
7.6.2 Waterless Urinal Pilot Study 7-12
7.6.3 Future Opportunities 7-13
7.7 Landscape Programs 7-13
7.7.1 Landscape Ordinance 7-13
7.7.2 Landscape Rates and Budgets 7-13
7.7.3 Cash- for- Grass 7-14
7.8 AB 1420 and SBX7-7 Implementation Plan 7-14
7.9 Evaluating Effectiveness of the DMMs 7-14
7.9.1 Impacts of Conservation 7-14
7.9.2 Economic Impacts 7-15

Table of Contents (cont'd)

Section 8: Water Shortage Contingency Planning 8-1

8.1 Overview 8-1
8.2 Coordinated Planning.....8-1
8.3 Stages of Action to Respond To Water Shortages.....8-1
8.3.1 Long-Term Decline in Basin Reserves.....8-1
8.3.2 Short-Term Shortage 8-2
8.4 Minimum Water Supply Available During Next Three Years.....8-3
8.5 Actions to Prepare for Catastrophic Interruption 8-3
8.5.1 General 8-3
8.5.2 Regional Power Outage Scenarios.....8-4
8.6 Mandatory Prohibitions During Shortages.....8-4
8.7 Consumptive Reduction Methods During Restrictions.....8-5
8.7.1 Supply Shortage Triggering Levels.....8-5
8.7.2 Restrictions and Prohibitions.....8-5
8.7.3 New Demand 8-6
8.8 Penalties for Excessive Use.....8-7
8.9 Financial Impacts of Actions During Shortages.....8-7
8.10 Mechanism to Determine Reductions In Water Use 8-7

References..... *i*

Table of Contents (cont'd)

List of Tables

1-1 Agency Coordination Summary
1-2 Public Participation Timeline
1-3 Climate Data for the Hi-Desert Water District
2-1 HDWD Historical and Current Population Estimates
2-2 HDWD Projected Population Estimates
2-3 Annual Production for HDWD (af)
2-4 Base Daily Per Capita Water Use
2-5 Components of Target Daily Per Capita Water Use
2-6 Projected Water Demands
2-7 Current and Projected Water Deliveries (By Customer Type) (af)
3-1 Summary of Current and Planned Water Supplies (afy)
3-2 DWR Groundwater Basins
3-3 Historical Warren Valley Groundwater Production (afy)
3-4 Warren Valley Projected Groundwater Production (afy)
3-5 Historical Ames Valley Groundwater Production (afy)
3-6 Ames Valley Projected Groundwater Production (afy)
3-7 Perennial Yield of the Warren Valley/Ames Valley Groundwater Basins
3-8 Planned Water Supply Projects and Programs
4-1 Projected Wastewater Flow
4-2 Projected Capacity Wastewater Collected and Treated
4-3 Source Wastewater Flow
6-1 Wholesale Supply Reliability: Single-Dry Year and Multiple-Dry Year Conditions
6-2 Basis of Water Year Data
6-3 Projected Average/Normal Year Supplies and Demand (afy)
6-4 Projected Single-Dry Year Supplies and Demand (afy)
6-5 Projected Multiple-Dry Year Supplies and Demand (afy)
7-1 Water Loss (afy)
7-2 Water Rate Structure
7-3 Public Information Events
7-4 School Education Programs (Number of Classes)
7-5 Residential Water Audits
7-6 Cost-Effectiveness of HECW Rebates

Table of Contents (cont'd)

7-7 Plumbing Retrofit Inspections Performed
7-8 Estimated Current Accounts and Usage for Customer Classes
7-9 CII Audits
7-10 Projected Costs of Conservation Programs
8-1 Rationing and Reduction Goals
8-2 Estimate of Minimum Supply for the Next Three Years
8-3 Mandatory Prohibitions
8-4 Water Reduction Triggering Levels

List of Figures

1-1 HDWD Service Area
1-2 Warren Valley Basin Adjudicated Boundary
2-1 HDWD Historical Annual Production
2-2 Historical HDWD Single-Family (gpcd)
3-1 HDWD Groundwater Basins

List of Appendices

A UWMP Checklist
B Public Outreach Materials
C MWA's Conjunctive Use Agreement for SWP with HDWD
D Warren Valley Judgment Text (*included on CD-ROM*)
E 1991 Warren Valley Basin Management Plan and 1996 Addendum (*included on CD-ROM*)
F 1991 Ames Valley Water Basin Agreement (*included on CD-ROM*)
G Regional Water Quality Control Board (RWQCB) Resolution No. R7-2011-0004
H DWR Approval of HDWD's AB 1420
I Ordinance No. 68 Restrictions on the Use of Water, No. 72 Landscape Irrigation Meters, Water District Code Chapter 5.55 Retrofit Requirements
J AWWA M36 Standard Water Audit Results Fiscal Year 2010
K HDWD Board Policy No. 26-04
L HDWD Resolution No. 90-3

Section 1: Introduction

1.1 Overview

This volume presents the Urban Water Management Plan 2010 (Plan) for the Hi-Desert Water District (District, HDWD) service area. This chapter describes the general purpose of the Plan, discusses Plan implementation, and provides general information about HDWD, and service area characteristics. A list of acronyms and abbreviations is also provided.

1.2 Purpose

An Urban Water Management Plan (UWMP) is a planning tool that generally guides the actions of water management agencies. It provides managers and the public with a broad perspective on a number of water supply issues. It is not a substitute for project-specific planning documents, nor was it intended to be when mandated by the State Legislature. For example, the Legislature mandated that a plan include a section which "describes the opportunities for exchanges or water transfers on a short-term or long-term basis." (California Urban Water Management Planning Act, Article 2, Section 10630(d).) The identification of such opportunities, and the inclusion of those opportunities in a general water service reliability analysis, neither commits a water management agency to pursue a particular water exchange/transfer opportunity, nor precludes a water management agency from exploring exchange/transfer opportunities not identified in the plan. When specific projects are chosen to be implemented, detailed project plans are developed, environmental analysis, if required, is prepared, and financial and operational plans are detailed.

In short, this Plan is a management tool, providing a framework for action, but not functioning as a detailed project development or action. It is important that this Plan be viewed as a long-term, general planning document, rather than as an exact blueprint for supply and demand management. Water management in California is not a matter of certainty, and planning projections may change in response to a number of factors. From this perspective, it is appropriate to look at the Plan as a general planning framework, not a specific action plan. It is an effort to generally answer a series of planning questions including:

- What are the potential sources of supply and what is the reasonable probable yield from them?
- What is the probable demand, given a reasonable set of assumptions about growth and implementation of good water management practices?
- How well do supply and demand figures match up, assuming that the various probable supplies will be pursued by the implementing agency?

Using these "framework" questions and resulting answers, the implementing agency will pursue feasible and cost-effective options and opportunities to meet demands. HDWD will explore enhancing basic supplies from traditional sources such as imported water from the Mojave Water Agency (MWA) as well as other options. These could include groundwater extraction, water exchanges, recycling, desalination, and water banking/conjunctive use.

Specific planning efforts will be undertaken in regard to each option, involving detailed evaluations of how each option would fit into the overall supply/demand framework, how each option may have the potential to impact the environment, and how each option could affect customers. The objective of these more detailed evaluations would be to find the optimum mix of conservation and supply programs that ensure that the needs of the District's existing and future customers are met.

The Urban Water Management Planning Act (Act) requires preparation of a plan that:

- Accomplishes water supply planning over a 20-year period in five-year increments. (HDWD is going beyond the requirements of the Act by developing a plan which spans 25 years.)

- Identifies and quantifies adequate water supplies, including recycled water, for existing and future demands, in normal, single-dry, and multiple-dry years.

- Implements conservation and the efficient use of urban water supplies. Significant new requirements for quantified demand reductions have been added by the Water Conservation Act of 2009 (Senate Bill 7 of Special Extended Session 7 (SBX7-7)), which amends the Act and adds new water conservation provisions to the Water Code.

Notably, the Act states that the components of an UWMP may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. (Water Code § 10615.) A checklist to ensure compliance of this Plan with the requirements of the Act and SBX7-7 is provided in Appendix A.

In short, the Plan answers the question: *Will there be enough water for the Hi-Desert community in future years, and what mix of programs should be explored for making this water available?*

For purposes of this Plan, it is the stated goal of HDWD to provide a sufficient and dependable water supply for its existing and future customers in a safe, efficient, and cost effective manner. Based on conservative water supply and demand assumptions over the next 25 years in combination with the implementation of extraordinary conservation during certain dry years, the Plan is projected to successfully achieve this goal.

1.3 Implementation of the Plan

The Act requires every urban water supplier to prepare and adopt an updated UWMP at least once every five years in years on or before December 31, in years ending in five and zero. SBX7-7 and SB 1478 (2010), among other things, extended the time for urban water suppliers to adopt their 2010 UWMPs to July 1, 2011. Section 10617 of the Act defines an urban water supplier as any supplier that provides water for municipal purposes either directly or indirectly to more than 3,000 customers or supplies more than 3,000 acre-feet (af) of water annually. Currently, HDWD delivers water to over 9,800 connections, therefore requiring the District to prepare and adopt an UWMP. This Plan has been prepared for the HDWD.

1.3.1 Joint Preparation of the Plan

HDWD cooperates with the MWA and other water supply agencies in managing the region's water resources. Particularly because MWA is the wholesale water supplier in the area, the District consulted MWA's Draft 2010 UWMP while preparing this UWMP. Indeed, as set forth in greater detail below, Section 10631(k) of the Act provides that the District may rely upon the information and analyses prepared by MWA for purposes of quantifying the amounts of imported water available to the District and describing the reliability of that supply and vulnerability to seasonal or climatic shortages during average, single-dry and multiple-dry year periods throughout the UWMP planning period. The District notified MWA that the HDWD Plan was being updated and specifically solicited input from MWA. HDWD also coordinated the preparation of its Plan with the local community, and other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies to the extent practicable. For instance, nearby cities including the Town of Yucca Valley, and the County of San Bernardino were notified of the opportunity to provide input regarding the Plan. In addition, in accordance with Section (e) of the Act, water resource specialists with expertise in water resource management were retained to assist the District in preparing the details of the Plan. Agency coordination for this Plan is summarized in Table 1-1.

TABLE 1-1
AGENCY COORDINATION SUMMARY

	Participated in UWMP Develop-ment	Received Copy of Draft	Comment on Draft	Attended Public Meetings	Contacted for Assist-ance	Sent Notice of Intent to Adopt	Not Involved
Mojave Water Agency	✓	✓			✓	✓	
Joshua Basin Water District		✓				✓	
Bighorn-Desert View Water Agency		✓				✓	
Twentynine Palms Water District		✓				✓	
Town of Yucca Valley		✓				✓	
San Bernardino County Planning Department		✓				✓	
Public Advisory Committee		✓	✓	✓		✓	

1.3.2 Plan Adoption

HDWD began preparation of this Plan for the HDWD service area in early 2010. The final draft of the Plan was adopted by the District Board in June 2011 and, in accordance with Sections 10635(b) and 10644(a), copies of the adopted Plan were scheduled for submission to the California Department of Water Resources (DWR), the State Library, the County, and all cities within which the District provides water supplies within 30 days of Board approval. Also within 30 days of Board approval, a copy of the Plan was made available for public review at the

offices of the District during normal business hours. This Plan includes all information necessary to meet the requirements of Water Conservation Act of 2009 (Wat. Code, §§ 10608-10608.64) and the Urban Water Management Planning Act (Wat. Code, §§ 10610-10656).

1.3.3 Public Outreach

HDWD has encouraged community participation in water planning. A public session was held by the HDWD Board of Directors for review and to solicit input on the Draft Plan before its adoption. Interested groups were informed about the development of the Plan along with the schedule of public activities. Notices of public meetings were published in the local press. Copies of the Draft Plan were made available at the Districts offices, on the District's website, and at the local public library, and were sent to the County of San Bernardino, as well as interested parties.

HDWD has and continues to actively encourage community participation in its on-going water management activities and specific water related projects. The District's public participation programs include a Public Advisory Committee consisting of 19 members of the public to hear matters affecting the public. The District also uses radio, public access television, mailings, public meetings, and web-based communications to provide information to the public. The District's public awareness program covers a broad variety of water related topics such as groundwater protection, conservation, water supply, water service reliability, water quality, and others. The District has regularly scheduled Board of Director's meetings that include public comment and information on water issues.

Table 1-2 presents a timeline for public participation during the development of the Plan. A copy of the public outreach materials, including paid advertisements, newsletters, website postings, and invitation letters are attached in Appendix B.

TABLE 1-2
PUBLIC PARTICIPATION TIMELINE

Date	Event	Description
April 12, 2011	Preliminary Draft UWMP	Must notify applicable land use agencies 60 days before first Public Hearing
June 1, 2011	First HDWD Public Hearing	Review contents of Draft UWMP and take comments
June 15, 2011	Second HDWD Public Hearing	UWMP considered for adoption by the HDWD Board

The components of public participation include:

Local Media

- Paid legal notice in local newspapers
- Public Hearing notices to (newspaper and radio)
    - Hi-Desert Star

- Copper Mountain Broadcasting
- KCDZFM

Community-based Outreach

- Building Industry Association (received public hearing notice)
- Desert Communities Association of Realtors (received public hearing notice)
- Builder/Realtor Meeting with the Town of Yucca Valley (HDWD staff attends meetings and gave report on 2010 UWMP)
- Public Advisory Committee

Town/County Outreach

- MWA Planning Division
- County of San Bernardino
- Town of Yucca Valley

Public Availability of Documents

- HDWD website
- District Headquarters
- Local library

1.3.4 Resources Maximization

Several documents were previously developed to enable HDWD to quantify available resources and plan to maximize their use through conservation best management practices, resource development, and source protection, which include the following:

- *HDWD Urban Water Management Plan for Yucca Valley – Supplement A revised April 6, 2010,*
- *HDWD Annual Report of the Warren Valley Basin Watermaster for the Period October 9, 2009 through September 30, 2010,*
- *Mojave Water Agency 2004 Integrated Regional Water Management Plan* (Regional Plan).

Chapter 3 of this Plan describes in detail the water supply available to HDWD for the 20-year period covered in this Plan. Additional discussion regarding documents developed to maximize resources is included in Section 3.3.2 and Chapter 6.

1.4 Hi-Desert Water District Background

HDWD was originally formed as a public agency in 1962 under the name Yucca Valley County Water District. The name was changed to Hi-Desert County Water District in 1971, and became Hi-Desert Water District in 1980. The District acquired Yucca Water Company, Ltd. in 1990, which added 3,000 service connections. Today, the District serves more than 9,800 active connections within a 57-square mile service area includes the Town of Yucca Valley and unincorporated areas within the County of San Bernardino. HDWD primarily relies on three sources of water: Warren Valley Groundwater Basin, Ames/Means (Reche) Valley Groundwater Basin, and the State Water Project through MWA to recharge the Warren Valley Groundwater Basin. As discussed in greater detail below, a portion of the District's groundwater supplies are derived from septic system return flows. Over time, as a sewer system is constructed implemented in the District's service area, septic return flows are projected to decrease and the District is expected to utilize treated wastewater for recharge as an increasing component of its water supply portfolio in future years.

HDWD is one of ten water purveyors within MWA's service area that is required to complete an UWMP. MWA is a State Water Project (SWP) contractor that serves an area of 4,900 square miles of the high desert area.

HDWD is situated above the Warren Valley Groundwater Basin (Basin). The Warren Valley Basin covers approximately 26.9 square miles. Following many years of groundwater overdraft conditions in the Basin, it was adjudicated in 1977 to establish groundwater extraction rights (*Hi-Desert County Water District v. Yucca Water Company, Ltd.* San Bernardino County Superior Court Case No. 172103). Pursuant to the terms of the Judgment, HDWD was awarded the right to produce 896 acre-feet per year (afy) from the Basin. When HDWD acquired Yucca Water Company in 1990, the District's adjudicated water rights under the Judgment increased to 1,622 afy. The HDWD Board of Directors was appointed by the court to serve as the Warren Valley Basin Watermaster. The terms of the Judgment and the District's adjudicated groundwater rights in the Warren Valley Basin are further discussed below.

A secondary groundwater source is the Ames/Means Valley Groundwater Basin (the Ames/Means Basin, sometimes referred to as the Reche Basin) that lies to the north of Yucca Valley. The District obtains approximately 20 percent of its water supply from the Ames/Means Basin to serve a portion of its service area that is located within the Basin. The Bighorn-Desert View Water Agency (BDVWA), Mojave Water Agency and HDWD are working on a recharge project to bring State Water Project supplies to recharge the Ames/Means Basin. HDWD currently has one active well in the Ames/Means Basin (the Mainstream Well), which the District uses to produce up to 800 afy of water pursuant to an agreement with BDVWA. Once the new recharge site is complete, the District will be able to recharge for additional water supplies and increased water supply reliability. Water production in the Ames/Means Basin is currently governed by a 1991 Agreement between HDWD and BDVWA. An amendment to the 1991 Agreement is currently being negotiated to account for the proposed recharge project for the Ames/Means Basin, and to include all pumpers in the Basin and provide for additional groundwater monitoring and management activities. The District's groundwater rights in the Ames/Means Basin and the proposed management structure for that area are further discussed below.

The District's third primary source of water is SWP supplies obtained from MWA through the Morongo Basin Pipeline. Since deliveries began in 1995, this supply has been used to supplement HDWD's local supplies and help meet demand, recharge the Warren Valley Basin, and address historic groundwater overdraft. The District's access to SWP supplies is set forth in the 1991 Morongo Basin Pipeline Agreement between the District, BDVWA, JBWD and MWA, and is further explained in the 2002 Memorandum of Understanding between the MWA and the participating agencies, including the District (MWA 2002). Additional details regarding the District's SWP supplies are further set forth below.

The service area for HDWD is shown on Figure 1-1. The boundaries of the Warren Valley Basin adjudication are shown on Figure 1-2.

FIGURE 1-1
HDWD SERVICE AREA

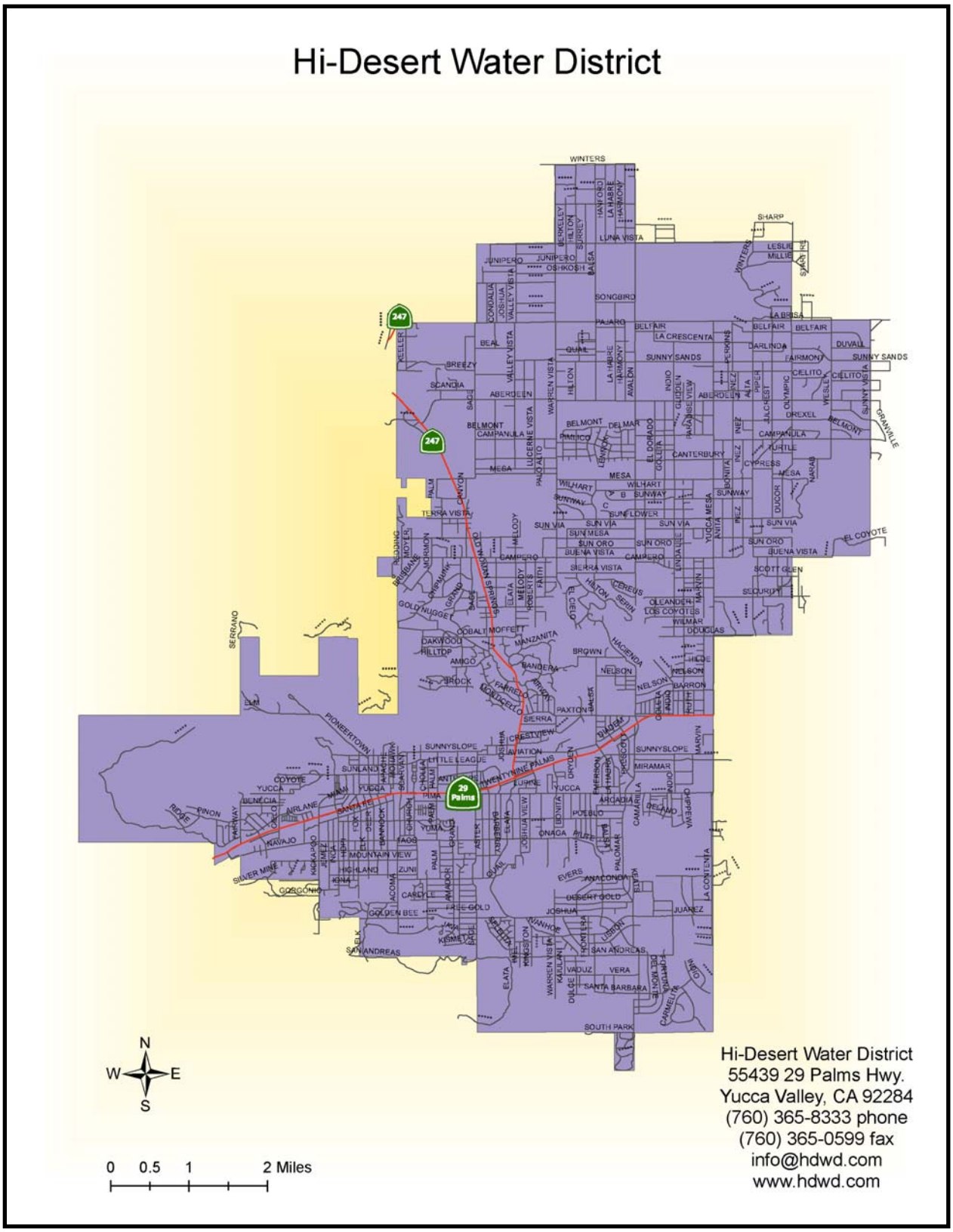
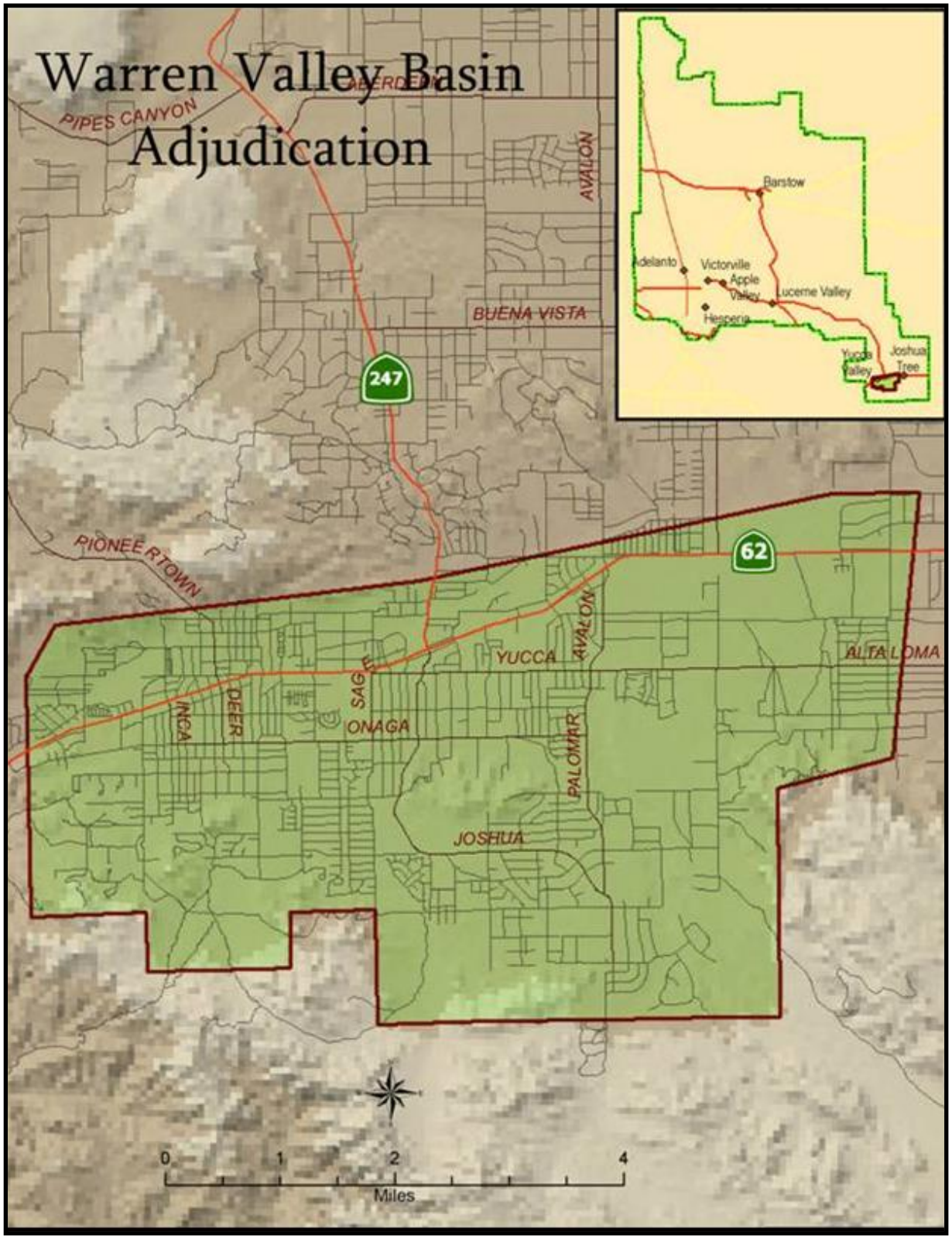


FIGURE 1-2
WARREN VALLEY BASIN ADJUDICATED BOUNDARY



1.5 Climate

Generally, the climate of the area is arid, being very hot and dry in the summer and cooler during the winter. Temperatures can vary from 0°F in winter to above 110°F in the summer. Mean summer temperature is 88°F and in winter is 49°F. Precipitation is nominal and irregular, yet plays a role in groundwater recharge in the region. In the valley and mesa lands, mean annual precipitation is about four inches. On the surrounding mountainous areas, precipitation varies and reaches a maximum of approximately 45 inches on the peaks and ridges.

Representative precipitation and temperature are reported in Table 1-3 for the period from 1935 to 2009. Reference evapotranspiration (ETo) data are provided from 1995 through 2007. Average annual precipitation during the same period was approximately four inches.

TABLE 1-3
CLIMATE DATA FOR THE HI-DESERT WATER DISTRICT

	Jan	Feb	Mar	Apr	May	Jun
Standard Monthly Average ETo[(a)]	1.59	2.20	3.66	5.08	6.83	7.80
Average Rainfall (inches) [(b)]	0.51	0.43	0.37	0.12	0.07	0.01
Average High Temperature (ºF) [(b)]	62.7	67.4	73.9	81.7	90.8	100.0
Average Low Temperature (ºF) [(b)]	35.8	38.8	43.1	49.4	57.4	65.0

	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Standard Monthly Average ETo[(a)]	8.67	7.81	5.67	4.03	2.13	1.59	57.06
Average Rainfall (inches)[(b)]	0.55	0.72	0.42	0.28	0.28	0.48	4.24
Average High Temperature (ºF) [(b)]	105.1	103.1	97.1	85.3	71.7	63.1	83.5
Average Low Temperature (ºF) [(b)]	72.1	70.7	63.8	52.7	41.7	35.9	52.2

Notes:
(a) Yucca Valley Station, CIMIS from 1935-2007.
(b) Twentynine Palms Station, Western Regional Climate Center from 1995-2009.

1.6 Potential Effects of Global Warming

A topic of growing concern for water planners and managers is global warming and the potential impacts it could have on California's future water supplies. DWR's California Water Plan Update 2009 considers how climate change may affect water availability, water use, water quality, and the ecosystem.[1]

Volume 1, Chapter 5 of the California Water Plan, "Managing an Uncertain Future," evaluated three different scenarios of future water demands throughout the State based on alternative assumptions regarding population growth, land use changes, water conservation, and future climate change patterns. Future updates will test different response packages, or combinations of resource management strategies, for each future scenario. These response packages help decision-makers, water managers, and planners develop integrated water management plans that provide for resource sustainability and investments in actions with more sustainable outcomes. In summary, the California Water Plan Update 2009 identified the following

[1] Final California Water Plan Update 2009 Integrated Water Management: Bulletin 160.

conditions that are projected to occur in the future as a result of global climate change: Decrease in snowpack, which is a major part of annual water storage, due to increasing winter temperatures; more winter runoff and less spring/summer runoff due to warmer temperatures; greater extremes in flooding and droughts; greater water demand for irrigation and landscape water due to increased temperatures and their impacts on the water needs of plants; increased sea level rise, which can affect SWP operations.

With specific regard to the SWP, DWR has prepared extensive information and analyses regarding the potential effects of global climate change. As discussed in DWR's "State Water Project Delivery Reliability Report 2009" (2009 SWP Report), issued in August 2010, current literature suggests that global warming is likely to significantly affect the hydrologic cycle, changing California's precipitation patterns and amount that that shown by the historical record. There is evidence that suggests that some changes have already begun to occur, such as Sierra snowmelt starting earlier, more runoff shifting from the spring to the winter, average air temperature increases of one degree Fahrenheit, rising sea levels and an increase in winter flooding frequency. These changes will likely affect water supply planning and decrease the reliability of existing water supply infrastructure and flood management systems.

DWR explains that California's reservoirs and water delivery systems were developed based on historical hydrology and, therefore, under the conditions that may exist with changing climatic conditions, the past may no longer be a good guide for the future. Under the range of potential climate change scenarios that have been predicted, mean temperatures are expected to increase by an additional 1.5 degrees Fahrenheit by mid-century and 3.5 to 11 degrees by the end of the century. The rising air temperatures are expected to continue to reduce snowpack, especially in low elevation watersheds where more precipitation may fall as rain rather than as snow. Reduced snow pack is expected to lead to higher winter runoff and lower spring runoff. This could increase flooding during the winter and reduce river flows in the spring and summer, which may require water managers to evaluate the tradeoffs between flood protection and water supply. Future sea level rise estimates range from 4 to 16 inches by mid-century and 7 to 55 inches by the end of the century. Higher sea levels could threaten the existing levee system in the Delta and increase the intensity and frequency of extreme weather events and risk of damage from storms and high-tide events. Salinity intrusion into the Delta could also require increased releases of freshwater from upstream reservoirs to maintain compliance with water quality standards. (DWR 2009 SWP Report) These potential effects related to global climate change are expressly accounted for in DWR's most recent long-term projections regarding the availability and reliability of SWP supplies. (See additional discussion below regarding SWP delivery amounts.)

1.7 Other Demographic Factors

Water service is provided to residential, commercial, institutional and some industrial customers and for other uses, such as fire protection and system maintenance.

Over the past decade the area served by the District (along with most of California) experienced increases in residential and commercial construction. As the local population has increased, the demand for water has also increased. This trend, however, has changed with the recent economic downturn, which has been marked by reduced demand. It is likely that as the economy turns around the population will begin to increase again.

1.8 List of Abbreviations and Acronyms

The following abbreviations and acronyms are used in this report.

AB	Assembly Bill
ACOE	U.S. Army Corps of Engineers
ACS	American Community Survey
Act	California Urban Water Management Planning Act
Addendum	Addendum to the Warren Valley Basin Management Plan
af	acre-feet
afy	acre-feet per year
AWAC	Alliance for Water Awareness and Conservation
AWWA	American Water Works Association
AWWARF	American Water Works Association Research Foundation
Basin	Warren Valley Groundwater Basin
BDVWA	Bighorn-Desert View Water Agency
BLM	Bureau of Land Management
BMPs	Best Management Practices
CRP	Capital Replacement Project
CCF	One Hundred Cubic Feet
CCR	Consumer Confidence Report
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CII	Commercial/Institutional/Industrial
County	San Bernardino County
CSA	County Service Area
CSD	Community Service District
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
DBP	Disinfection by-products
Delta	Sacramento-San Joaquin Delta
District	Hi-Desert Water District
DMM	Demand Management Measures
DOF	Department of Finance
DRRs	Delivery Reliability Reports
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
DWSAP	Drinking Water Source Assessment Program
EC	Electrical conductivity
Edison	Southern California Edison
EIR	Environmental Impact Report

EPA	Environmental Protection Agency
ETo	Evapotranspiration
FY	fiscal year
GIS	Geographic Information System
gpcd	gallons per capita per day
gpd	gallons per day
gpm	gallons per minute
GWMP	Groundwater Management Plan
HDWD, District	Hi-Desert Water District
HECW	high efficiency clothes washers
HET	high efficiency toilet
IDM	Improvement District Morongo
ILI	infrastructure leakage index
JBWD	Joshua Basin Water District
kW	kilowatt
MBP	Morongo Basin Pipeline
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MEEC	Mojave Environmental Education Consortium
MFR	Multi-Family Residential
M&I	Municipal and Industrial
mgd	million gallons per day
mg/L	milligrams per liter
MMRP	Mitigation, Monitoring and Reporting Program
MOU	Memorandum of Understanding Regarding Water Conservation in California
MWA	Mojave Water Agency
NPDES	National Pollutant Discharge Elimination System
NRW	non-revenue water
PCAs	possible contaminating activities
PHG	Public Health Goal
PIO	Public Information Officer
ppb	parts per billion
ppm	parts per million
Plan	Urban Water Management Plan 2010
PUC	California Public Utilities Commission
PWSS	Public Water System Statistics
RAP	Remedial Action Plan
RO	Reverse Osmosis
RWQCB	Regional Water Quality Control Board
SBX7-7	Senate Bill 7 of Special Extended Session 7
SCAG	Southern California Association of Governments
SFR	Single Family Residential

SMP	Sewer Master Plan
SWP	State Water Project
TAC	Technical Advisory Committee
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
umhos/cm	Micromhos per centimeter
UWMP	Urban Water Management Plan
WIRP	Water Infrastructure Restoration Program
WSS	Water Sense Specification
WSMP	Water System Master Plan
WVBMP	Warren Valley Basin Management Plan
WRF	Water Reclamation Facility

Section 2: Water Use

2.1 Overview

This chapter describes historic and current water usage and the methodology used to project future demands within Hi-Desert Water District's (District's, HDWD's) service area. Water usage is divided into sectors such as residential, industrial, landscape, and other purposes. To undertake this evaluation, existing land use data and new housing construction information were compiled from HDWD. This information was then compared to historical trends for new water service connections and customer water usage information. In addition, weather and water conservation effects on historical water usage were factored into the evaluation.

2.2 Population

Population data was obtained using a two step method that conforms to the DWR approved methodologies for population calculation. First the household size was determined for a service connection within the District's service area and then the number of service connections was multiplied by the household size to obtain the population for the District. The 2000 U.S. Census was used to obtain the number of persons per household for the Town of Yucca Valley in the Year 2000. Also, to get household size numbers for 2006 (or a second data point); data the U.S. Census American Community Survey (ACS) was used. The number of service connections was obtained from annual reports submitted by HDWD to the California Department of Public Health (CDPH). Table 2-1 presents the estimated population from 2000-2009 for HDWD.

TABLE 2-1
HDWD HISTORICAL AND CURRENT POPULATION ESTIMATES

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimated Household Size	2.38[(a)]	2.38	2.37	2.37	2.36	2.36	2.35[(a)]	2.36[(a)]	2.36	2.36
SFR Service Connections[(b)]	7,673	7,738	8,011	7,963	8,713	9,030	9,014	9,194	8,967	8,896
Estimated Population[(c)]	20,523	20,746	21,460	21,413	23,248	24,056	24,078	24,605	24,070	23,902

Notes:
(a) 2000 Household size numbers are taken from 2000 U.S. Census data for the Town of Yucca Valley. 2006 & 2007 household size numbers from the U.S. Census ACS.
(b) CDPH data provided by District.
(c) Population is calculated as household size times the number of Single Family Residential (SFR) service connections. Adjustment: subtract 140 multi-family residential (MFR) buildings. Add 1570 MFR units (excluding 1- and 2-unit buildings) @ 87.4% occupancy = 1372 units from 2006 and after. Before 2006, subtract 47 units from the 1372 for every year before 2006. Therefore, for 2005, subtract 1325 units; 2004, subtract 1278 units; 2003, subtract 1231 units; 2002, subtract 1184 units; 2001, subtract 1137 units; 2000, subtract 1090 units.

Using draft Southern California Association of Governments (SCAG) 2012 Regional Transportation Plan (RTP) growth forecast (baseline of 2008), it is predicted using the Mojave Water Agency (MWA) forecast demand model that the District's service area will grow at a rate of approximately 1.0 percent per year from 2005 through 2035. Table 2-2 presents projected population estimates calculated using information from Table 2-1 and the MWA forecast demand model to project the population to 2035.

TABLE 2-2
HDWD PROJECTED POPULATION ESTIMATES

2005	2010	2015	2020	2025	2030	2035	Annual % Change 2005-2035
24,056	24,601	25,928	27,256	28,481	29,707	30,932	1.0%

Source: MWA's 2010 demand model forecast.

HDWD is utilizing the same forecast population and demand model that MWA created and used for its 2010 Urban Water Management Plan (UWMP). HDWD is a retailer within MWA's service area and, in accordance with Section 10631(k) of the UWMP Act, supplied MWA with the necessary data input for the model for their District. HDWD boundaries are indicated on Figure 1-1 in the previous chapter.

2.3 Historic Water Use

Predicting future water supply requires accurate historic water use patterns and water usage records. Figure 2-1 illustrates the change in water demand since 2000.

Figure 2-1
HDWD Historical Annual Production

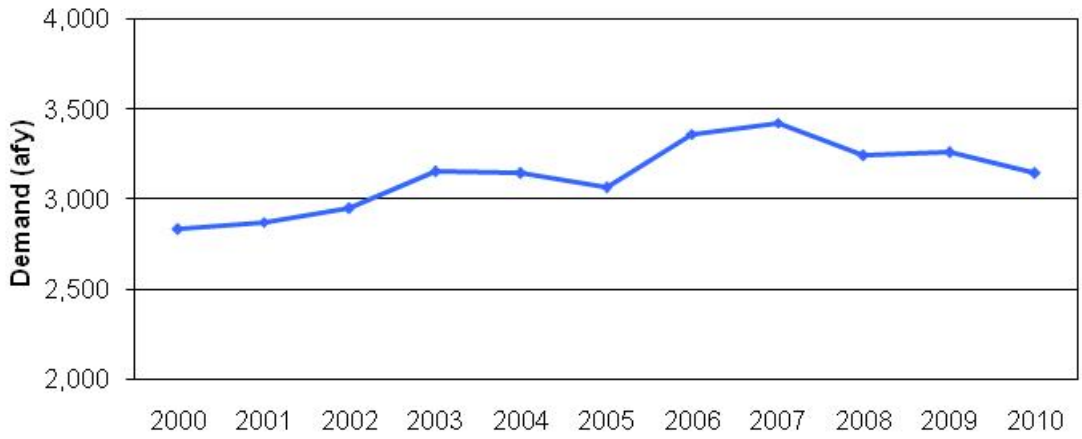


Table 2-3 presents the historical groundwater pumping quantities for the HDWD from 2000 through 2010.

TABLE 2-3
ANNUAL PRODUCTION FOR HDWD (AF)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
HDWD	2,834	2,876	2,948	3,154	3,146	3,066	3,362	3,424	3,245	3,261	3,147

Source: CDPH and California Department of Water Resources (DWR) Public Water System Statistics (PWSS) data.

2.4 Existing and Targeted Per Capita Water Use in HDWD Service Area

2.4.1 Base Daily Per Capita Water Use for SBX7-7 Reduction

As described in Senate Bill 7 of Special Extended Session 7 (SBX7-7), it is the intent of the California legislature to increase water use efficiency and the legislature has set a goal of a 20 percent per capita reduction in urban water use statewide by 2020. The requirements of SBX7-7 apply to retail water suppliers. Consistent with SBX7-7, the 2010 UWMPs must provide an estimate of Base Daily Per Capita Water Use. This estimate utilizes information on population as well as base gross water use. For the purposes of this UWMP, population was estimated as described in the previous Section 2.2, which was according to the DWR approved methodologies for population calculation. Base gross water use is defined as the total volume of water, treated or untreated, entering the distribution system of HDWD, excluding: recycled water; net volume of water placed into long-term storage; and water conveyed to another urban water supplier. This calculation of the Base Daily Per Capita Water Use is limited to HDWD's retail service area (as described in Chapter 1).

The UWMP Act allows urban water retailers to evaluate their Base Daily Per Capita Water Use using a 10 or 15-year period. A 15-year base period within the range January 1, 1990 to December 31, 2010 is allowed if recycled water made up 10 percent or more of the 2008 retail water delivery. If recycled water did not make up 10 percent or more of the 2008 retail water delivery, then a retailer must use a 10-year base period within the range January 1, 1995 to December 31, 2010. Recycled water did not make up 10 percent of the 2008 delivery to the HDWD retail areas and for this reason the Base Daily Per Capita Water Use has been based on a 10-year period. In addition, urban retailers must report daily per capita water use for a five year period within the range January 1, 2003 to December 31, 2010. This 5-year base period is compared to the Target Base Daily Per Capita Water Use to determine the minimum water use reduction requirement (this is described in more detail in the following sections). Table 2-4 reports the data used to calculate the District's Base Daily Per Capita Water Use in gallons per capita per day (gpcd), and the 10-year and 5-year base periods.

TABLE 2-4
BASE DAILY PER CAPITA WATER USE

Base Period Year		Distribution System Population	Annual System Gross Water Use (afy)	Annual Daily Per Capita Water Use (gpcd)	10-Year Average (gpcd)	5-Year Average (gpcd)
Sequence Year	*Calendar Year*					
1	1995	19,940	2,782	125		
2	1996	19,975	2,848	127		
3	1997	20,0	2,719	121		
4	1998	20,092	2,547	113		
5	1999	20,218	2,705	119		
6	2000	20,523	2,834	123		
7	2001	20,746	2,875	124		
8	2002	21,460	2,948	123		
9	2003	21,413	3,154	131		
10	2004	23,248	3,146	121	**122.77**	
11	2005	24,056	3,066	114	121.69	
12	2006	24,078	3,362	125	121.43	
13	2007	24,605	3,424	124	121.72	**122.99**
14	2008	24,070	3,245	120	122.44	120.77
15	2009	23,902	3,261	122	122.67	120.96
			Highest Average Period Selected			**123**

Note: Shaded cells show calendar years used in selected 5-year average.

2.4.2 Urban Water Use Targets for SBX7-7 Reduction

In addition to calculating base gross water use, SBX7-7 requires that HDWD identify their demand reduction targets for year 2015 and 2020 by utilizing one of four options:

- Option 1. 80% of baseline gpcd water use (i.e., a 20% reduction).
- Option 2. The sum of the following performance standards: indoor residential use (provisional standard set at 55 gpcd); plus landscape use, including dedicated and residential meters or connections equivalent to the State Model Landscape Ordinance (80% ETo existing landscapes, 70% of ETo for future landscapes); plus 10% reduction in baseline commercial, industrial institutional use by 2020.
- Option 3. 95% of the applicable state hydrologic region target as set in the DWR "20x2020 Water Conservation Plan" (February, 2010) (20x2020 Plan).
- Option 4. The provisional target method for determining water use targets developed by DWR pursuant to SBX7-7, which is not applicable here.

HDWD's service area is within the Colorado Hydrologic Region (#10) as defined by DWR and this hydrologic region has been assigned a 2020 water use target of 211 gpcd per the DWR 20x2020 Plan published in February 2010. HDWD's daily per capita water use of 123 gpcd for the 5-year base period is well below the 95% target of 200 gpcd. Therefore, to comply with

SBX7-7, the District must reduce its 5-year base period Base Daily Per Capita Water Use by 5%. This results in the 2020 gpcd target for HDWD of 117 gpcd as shown in Table 2-5.

TABLE 2-5
COMPONENTS OF TARGET DAILY PER CAPITA WATER USE

Period	Value		Unit	
10-year period selected for baseline gpcd	*First Year*	1995	*Last Year*	2004
5-year period selected for maximum allowable gpcd	*First Year*	2003	*Last Year*	2007
Highest 10-year Average	123		gpcd	
Highest 5-year Average	123		gpcd	
Compliance Water Use Target (20% Reduction on 10yr)	98		gpcd	
Maximum Allowable Water Use Target (5% Reduction 5yr)	117		gpcd	
2020 Target	**117**		gpcd	
2015 Interim Target	**120**		gpcd	
Methodology Used	Option #3			

HDWD plans to meet the proposed 20x2020 water use target through the continuation of existing methods of conservation that have been proven successful to date, and other methods discussed in Section 2.6.2 and Chapter 7 Demand Management Measures. The District has experienced some slow-down in customer response in some areas such as toilet retrofit and landscape irrigation. In order to achieve the additional water use reductions called for by SBX7-7, the District will focus on pipeline replacement to reduce water loss and conservation measures with the Commercial/Institutional/Industrial (CII) consumers. The District will also continue to explore the option of adding recycled water as a source of supply for non-potable irrigation accounts, which could occur in conjunction with the District's proposed Wastewater Treatment and Water Reclamation Project.

2.5 Projected Water Use

2.5.1 Water Use Data Collection

Current water use data were collected and identified by water use classification (i.e. SFR, multi-family, CII, irrigation, and other), to allow for detailed analysis and for making different assumptions about each type of water use for future years. In addition to water use data, the number of residential service connections was collected to estimate service area population and per capita water use.

For production records, DWR annual PWSS (2009) data were used, if available, because they collect metered water deliveries by customer class and number of connections by customer class. Where DWR data were not available, water production and connection data were gathered from a combination of sources that provided a complete data set, including annual

reports to the CDPH, surveys sent to purveyors by the Alliance for Water Awareness and Conservation (AWAC), and data provided directly from HDWD.

2.5.2 Demand Forecast Methodology

HDWD maintains historical data and works to ensure it has an adequate water supply and the necessary infrastructure to provide water service.

Water uses were broken into five categories, and assumptions were made about each for projections in order to be as accurate as possible. Demand projections were based largely on population growth. Please note that only the water use sectors used in HDWD are discussed. The typical sectors that are not discussed include Industrial or Agricultural, which are not used by the District. All other sectors are explained and the assumptions used in the projection model are described below:

1. Single Family Residential (SFR): Single Family detached dwellings. SFR projections were made based upon gpcd and population (gpcd was converted to acre-feet per year (afy) multiplied by yearly SFR population to calculate demand in afy). For years 2000-08, the gpcd was calculated in the model by converting total SFR demand to gallons per day (gpd) and dividing by SFR population. The average of the gpcd in years 2000-08 was the baseline for gpcd projections, and gpcd is assumed to change depending upon the level of conservation that takes place in future years. The projections were made assuming the GPCD remains at the 2008 level (106 GPCD).

2. Multi-Family Residential (MFR): Multi-Family dwellings. MFR projections used the SFR method with the MFR population calculated as total population minus SFR population.

3. Commercial/Institutional/Industrial (CII): Called Commercial/Institutional in the DWR 2009 PWSS, and defined as “Retail establishments, office buildings, laundries, schools, prisons, hospitals, dormitories, nursing homes, hotels” (not intended to include Industrial/Manufacturing). However, HDWD included metered industrial use in with this category, primarily because they do not separate commercial and industrial customers in their billing systems. Industry included in this category is considered “baseline use” because it accounts primarily for smaller industries and shops associated with the local population, and is expected to grow with population.

   A linear regression method was used to determine the relationship between population growth and CII usage and to project forward using linear regression. Future CII demand is correlated to population using the following formula:

   $$\text{CII demand} = -49.85 + 0.0295x \quad \text{where } x \text{ is the current population}$$

   Because the growth is unpredictable for this water use sector in particular, the model does not assume any conservation in this category.

4. Landscape Irrigation: Defined in the DWR 2009 reporting instructions as “parks, play fields, cemeteries, median strips, and golf courses.” This use category increased at a faster pace than population during the period of 2000-08, most likely because medians

and street landscaping were developed primarily in the construction boom during that period. With 2008 as a baseline, Landscape Irrigation use is projected to increase in proportion with increases in population. There is a large sports park being planned for construction within the next five years that may increase the demand in this user classification.

5. Other: Defined in the DWR 2009 PWSS as "fire suppression, street cleaning, line flushing, construction meters, temporary meters." These uses are assumed to grow with population. Also for HDWD, this category includes disinfection, and compaction needs for the District's Capital Replacement Program (mainline installation). Construction water is likely to have varied significantly over the 2000-08 period due to changing rates of growth, so "Other" use is projected to increase in proportion with increases in population based upon the average per-capita use for the period of 2000-08.

6. Unaccounted: Calculated as the difference between total water production and metered deliveries reported by purveyors. From 2000-08, Unaccounted water averaged approximately 8 percent of total municipal production. The makeup of this category is not known; however, it is likely that this difference is comprised of water pumped to waste from production wells, lost to leaks, water theft, and meter inaccuracies. With a 2008 baseline, unaccounted use is projected to increase in proportion with increases in municipal production. The District expects to reduce water loss due to leaks as pipeline replacement continues, which is described as a demand management measure in Chapter 7.

2.5.3 Water Supply

HDWD currently has four primary sources of water supply – groundwater from Warren Valley Basin, groundwater from Reche/Ames/Means Valley Groundwater Basin, septic system and irrigation return flows to groundwater, and State Water Project (SWP) imports via MWA to recharge the Warren Valley Basin. In the water supply projection analyses prepared for this Plan, the SWP supply is expressed as an annual average, although this source of supply can vary significantly from year to year. Notably, however, because the District's SWP supplies are recharged to groundwater basins (as opposed to being used for direct delivery), and because the District has substantial groundwater storage capacity in the Warren Valley Basin and other areas, the annual fluctuations in SWP supplies do not materially affect the District from a water supply planning perspective. As a practical matter, the District is able to store excess SWP water during above-normal years and draw upon those stored amounts in years when SWP deliveries are below average. Long-term SWP deliveries and the various factors affecting those supplies are further discussed below.

Septic system and irrigation return flow is typically calculated as a percent of the total groundwater pumped. The HDWD 2007 Water System Master Plan (2007 WSMP) reported that during a 13-year period when the average water pumped from the Warren Valley Basin was 2,575 afy, the estimated recharge due to septic and irrigation return was 820 afy. These figures represent an estimated return flow of approximately 32 percent of the groundwater pumped.

Table 2-6 summarizes HDWD's projected water demands through 2035, with and without conservation using the SBX7-7 requirements discussed previously in Section 2.4.

TABLE 2-6
PROJECTED WATER DEMANDS

	2005	2010	2015	2020	2025	2030	2035
Water Demands[(a)] (af)	3,066	3,147	3,934	4,138	4,326	4,515	4,704
GPCD[(b)] (No Conservation)	114	114	135	136	136	136	136
SBX7-7 Req'd GPCD[(c)]	N/A	123	120	117	117	117	117
SBX7-7 Savings[(d)] (af)	N/A	N/A	451	571	599	627	655
Water Demands w/ Conservation[(e)]	**N/A**	**N/A**	**3,483**	**3,567**	**3,727**	**3,888**	**4,049**

Source: Water production report from HDWD in calendar years and MWA's 2010 demand model forecast.

(a) HDWD's demand projections without conservation.
(b) Calculated using the estimated population from Table 2-2.
(c) See Table 2-5.
(d) Calculated as the difference between the projected GPCD without conservation and the SBX7-7 Required GPCD times the population.
(e) HDWD's demand projections with conservation using the SBX7-7 requirements.

Table 2-7 presents the current and projected water deliveries by customer type for HDWD.

TABLE 2-7
CURRENT AND PROJECTED WATER DELIVERIES[(a)] (BY CUSTOMER TYPE) (AF)

Water Use Sector	2005	2010	2015	2020	2025	2030	2035
Metered Single-Family	2,467	2,308	2,222	2,239	2,338	2,436	2,551
Metered Multi-Family	284	250	277	291	304	318	321
Metered Comm/Ind	0	371	715	754	790	827	863
Metered Irrigation	60	49	52	55	58	60	63
Metered Other	0	17	24	26	27	28	22
Unaccounted For/System Losses	255	152	193	202	210	219	229
Total	**3,066**	**3,147**	**3,483**	**3,567**	**3,727**	**3,888**	**4,049**

Source: MWA's 2010 demand model forecast and 2010 deliveries are actual.

(a) Assumes the SBX7-7 target reductions are being met in 2015 and 2020.

2.5.3.1 Low Income Projected Water Demands

Senate Bill 1087 requires that water use projections of a UWMP include the projected water use for single-family and multi-family residential housing for lower income households as identified in the housing element of any city, county, or city and county in the service area of the supplier. (Water Code § 10631.1.) The County of San Bernardino's (County) 2007 General Plan last updated its housing element in April 7, 2007. The County's housing element identifies the number (up to the year 2008) and general locations of low income households in the County. However, the housing element does not project the number or location of low-income households in the future.

Based on the relative lack of information regarding lower-income housing projections in the District's service area over the next 25-year planning horizon, this analysis assumes that the

projected water demands for future lower-income households will not exceed historic trends and are therefore included within the District's future SFR and MFR demand projections and have been calculated according to the same daily per capita water use values to be achieved by the District pursuant to SBX7-7. In addition to the above accounting in this Plan for the projected demands of lower-income households, the District will maintain policies and procedures in accordance with SB 1087 that limit the circumstances in which the District may deny or condition approval of water services or reduce the amount of services applied for by a proposed development that includes housing units affordable to lower income households as follows:

- the District specifically finds that it does not have sufficient water supply as defined in Government Code 66473.7(a)(2), or the District is operating under a water shortage emergency as defined in Section 350 of the Water Code, or the District does not have sufficient water treatment or distribution capacity to serve the needs of the proposed development, as demonstrated by a written engineering analysis and report;

- the District is subject to a compliance order issued by the State Department of Public Health that prohibits new water connections; or

- the applicant fails to agree to reasonable terms and conditions relating to the provision of services from the District, including, but not limited to, the requirements of local, state, or federal laws and regulations or payment of a fee or charge imposed pursuant to Section 66013 of the Government Code.

2.6 Other Factors Affecting Water Usage

A major factor that affects water usage is weather. Historically, when the weather is hot and dry, water usage increases. The amount of increase varies according to the duration of hot, dry weather and the conservation activities imposed. During cool, wet years, historical water usage has decreased, reflecting less water usage for exterior landscaping. This factor is discussed below in detail.

2.6.1 Weather Effects on Water Usage

As set forth in various sections of this Plan, California faces the prospect of significant water management challenges due to a variety of issues including population growth, regulatory restrictions and climate change. Climate change is of special concern because of the range of possibilities and their potential impacts on essential operations, particularly operations of the State Water Project. The most likely scenarios involve accelerated sea level rise and increased temperatures, which will reduce the Sierra Nevada snowpack and shift more runoff to winter months. These changes can cause major problems for the maintenance of the present water export system through the fragile levee system of the Sacramento-San Joaquin Delta. The other much-discussed climate scenario or impact is an increase in precipitation variability, with more extreme drought and flood events posing additional challenges to water managers.[2]

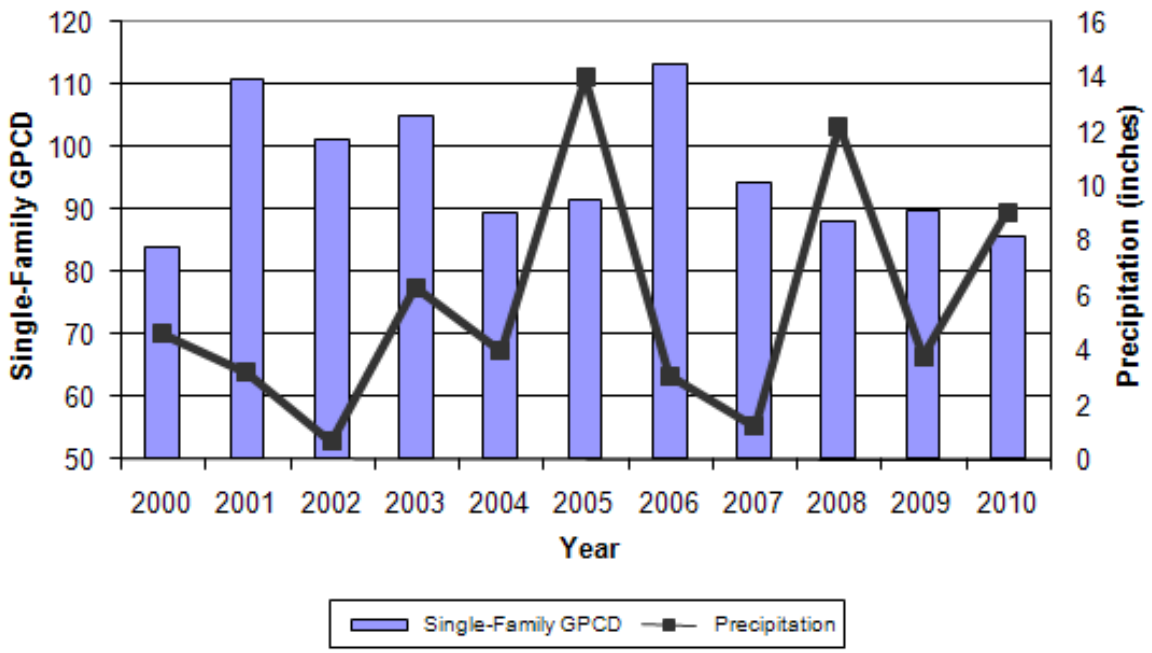
These changes to the SWP water supply would impact HDWD by affecting how much SWP water is available, when it is available, how it can be captured and how it is used due to

[2] Final California Water Plan Update 2009 Integrate Water Management: Bulletin 160.

changes in user behavior. Notably and as further discussed below, the District's groundwater and planned treated wastewater supplies are less vulnerable to change due to variations in weather. Groundwater reserves are available as a reliable supply during periods of reduced surface water, and treated wastewater can be produced regardless of climatic conditions.

As shown in Figure 2-2, HDWD's single-family sector use has fluctuated from 85 to 118 gpcd. Historically this variation in water use was primarily due to seasonal weather variations. However, recent years have shown that other factors such as economic downturn and conservation efforts can also result in reduced water usage.

Figure 2-2
Historical HDWD Single-Family GPCD



*Precipitation data is from the 2010 Annual Report for the Warren Valley Basin Watermaster.

2.6.2 Conservation Effects on Water Usage

In recent years, water conservation has become an increasingly important factor in water supply planning in California. Since the 2005 UWMP, there have been a number of regulatory changes related to conservation including new standards for plumbing fixtures, a new landscape ordinance, a state universal retrofit law, new Green Building standards, demand reduction goals and more.

In 2003, HDWD, MWA, and other water purveyors in the MWA Service Area formed the AWAC. The mission of the AWAC, a coalition of 25 regional organizations, is to promote the efficient use of water and increase communities' awareness of conservation as an important tool to help ensure an adequate water supply. The AWAC has developed water conservation measures that include public information and education programs and initially set a regional goal for the Morongo Basin area to reduce per capita water use 5 percent by 2015. As set forth in greater detail above and below, these efforts have been supplemented by goals recently enacted under SBX7-7 to reduce statewide per capita water use 15 percent by the year 2015 and 20 percent by the year 2020.

Section 3: Water Resources

3.1 Overview

This section describes the water resources available to the Hi-Desert Water District (District, HDWD) for the 25-year period covered by the Plan. These are summarized in Table 3-1 and discussed in more detail below. Both currently available and planned supplies are discussed.

TABLE 3-1
SUMMARY OF CURRENT AND PLANNED WATER SUPPLIES (afy)

Water Supply Source	2010	2015	2020	2025	2030	2035
Existing Supplies						
Local Supplies						
Groundwater Replacement Purchased Through MBP Entitlement[a]	2,569	2,569	2,569	2,569	2,612	2,612
Return from Septic Tanks and Irrigation[b]	820	820	0	0	0	0
Groundwater (Ames Reche Basin)[c]	800	0	0	0	0	0
Groundwater (Warren Valley Basin)[d]	1,622	1,622	1,622	1,622	1,622	1,622
Reserves/Banked Groundwater[e] (Cumulative af)	15,524	20,416	24,480	27,676	29,957	31,279
Total Existing Supplies[d]	**19,713**	**23,805**	**27,049**	**30,245**	**32,569**	**33,891**
Planned Supplies						
Reclamation Recharge Projects[f]	0	0	1,863	2,604	2,737	2,876
Recycled Water[g]	0	0	0	0	0	0
Reche (Ames) Recharge Project[h]	0	703	703	703	703	703
Total Supplies[d]	**19,713**	**24,508**	**29,615**	**33,552**	**36,009**	**37,470**
Total Estimated Demands[i]	**3,147**	**3,483**	**3,567**	**3,727**	**3,888**	**4,029**

(a) See Section 3.2.
(b) See Section 3.3.2.
(c) See Section 3.3.1.2. and 3.4.1.
(d) Per Warren Valley Basin adjudication, see Section 3.3.1.1. To ensure a conservative analysis, the adjudicated rights to the Warren Basin are not reflected in the water supply totals; however, the District maintains legal flexibility to exercise these rights.
(e) See Section 3.5.2. Projections based on the fifteen-year average of 1,074 afy minus increased consumer demand based on 1% growth rate.
(f) See Table 4-1.
(g) See Section 4.4.
(h) See Section 3.4.1.
(i) See Chapter 2 Water Use, Table 2-7. Conservation is factored into these values pursuant to SBX7-7.

The term "dry" is used throughout this chapter and in subsequent chapters concerning water resources and reliability as a measure of supply availability. As used in this Plan, dry years are those years when supplies are the lowest, which occurs primarily when precipitation is lower than the long-term average precipitation. The impact of low precipitation in a given year on a

particular supply may differ based on how low the precipitation is, or whether the year follows a high-precipitation year or another low-precipitation year. For the Mojave Water Agency (MWA), which is the wholesaler of imported State Water Project (SWP) supply for HDWD, a low-precipitation year may or may not affect supplies, depending on how much water is in SWP storage at the beginning of the year. Also, dry conditions can differ geographically. For example, a dry year can be local to the HDWD service area (thereby affecting local groundwater replenishment), local to northern California (thereby affecting SWP water deliveries), or statewide (thereby affecting both local groundwater replenishment and the SWP). When the term "dry" is used in this Plan, statewide drought conditions are assumed, affecting both local groundwater replenishment and SWP supplies at the same time.

The HDWD currently has four primary sources of water supply – imported SWP water purchased from MWA to recharge the Warren Valley Groundwater Basin, adjudicated groundwater in the Warren Valley Basin, additional groundwater rights in the Ames Valley Basin, and septic and irrigation return flows.

3.2 MWA SWP Imported Water Supply

3.2.1 Imported Water Supplies

Imported SWP supplies constitute a significant source of water for the Yucca Valley area. As set forth herein and in MWA's 2010 UWMP, HDWD receives SWP supplies from MWA through the Morongo Basin Pipeline (MBP) and pursuant to the 1991 Agreement for Construction, Operation and Financing of the Morongo Basin Pipeline Project (the MBP Agreement). MWA is a special act district formed by the California Legislature in 1959 and approved by the electorate in 1960 to help meet the water needs within its service area. MWA, in cooperation with other water agencies, is responsible for managing the water resources within its jurisdiction to ensure a sustainable water supply for future uses. (MWA, Regional Plan.) MWA's service area covers over 4,900 square miles and is divided into seven Divisions. MWA is one of the 29 State Water Contractors that holds a direct contract with the California Department of Water Resources (DWR) to receive SWP water.

In 1990, an area known as Improvement District M (IDM) was formed, which is generally coterminous with the boundaries of MWA's Division 2. In the same year, the voters of IDM (by more than two-thirds vote) approved the issuance of $66.5 million in general obligation bonds and the levy of ad valorem taxes to finance the acquisition and construction of the MBP to extend 71 miles from the California Aqueduct near Hesperia to the Yucca Valley area. As set forth in greater detail below, the construction of the MBP and the delivery of SWP supplies to HDWD is part of the physical solution developed pursuant to the 1977 Judgment and adjudication of the Warren Valley Basin. Since MWA is divided into seven Divisions, the MBP Agreement was structured for MWA to provide one-seventh of its SWP allotment to the IDM area. The MBP Agreement then apportions that one-seventh SWP allocation and the transmission capacity of the MBP on a pro-rata basis among the four public water purveyors in the IDM area, namely, HDWD (59%), Bighorn-Desert View Water Agency (9%), County Service Area No. 70 (5%), and Joshua Basin Water District (27%). Transmission capacity of the MBP was originally based on a conceived peak delivery rate of 15 cubic feet per second (cfs), or 10,900 acre-feet per year (afy). Based on actual design and construction, however, and the subsequent addition of a second pumping station along the MBP, MWA has stated that actual

system capacity is approximately 22 cfs, or about 15,930 afy. According to MWA, this additional and available capacity in the MBP can be utilized to deliver significant water supplies to the District's Warren Valley Basin for storage and use. (MWA Letter 11/15/06.)

At the time the District and MWA entered the MBP Agreement in 1991, MWA had a SWP Table A allotment of 50,800 afy. (See 1963 Water Supply Contract between DWR and MWA, Amendment No. 2.) Based on that allotment, the one-seventh allocation of SWP supplies made available to the IDM area was established as 7,257 afy. Accordingly, the District's 59 percent share of that amount under the MBP Agreement is 4,282 afy. The term of the MBP Agreement is either 50 years or the date upon which all bonds issued for the MBP have been retired. Because the bonds could be retired by 2022, and in light of other issues related to the MBP Agreement, the IDM Participants and MWA entered a 2002 Memorandum of Understanding (MWA 2002) wherein the parties agreed, among other things, that their objectives are inherently the same with regard to the MBP Agreement and that the MBP Agreement is intended to extend to at least 2041.

Through subsequent acquisitions of additional SWP supplies, MWA's Table A allotment increased to 75,800 afy in 1998, and in 2009 MWA acquired additional rights that will incrementally increase its SWP Table A allotment to 89,800 afy by 2020. (See 1963 Water Supply Contract between DWR and MWA, Amendment No. 18.) For purposes of this Plan, the District's access to SWP supplies under the MBP Agreement is based on its 59 percent share of the 7,257 afy allotment to the IDM Participants. Notably, however, the MBP Agreement provides the District with the annual first option to take delivery of the percentage shares of the 7,257 allotment that are not utilized by other IDM Participants such as BDVWA and JBWD. Since completion of the MBP, neither BDVWA nor JBWD has requested or received any portion of their SWP supplies. Collectively, they hold a 36 percent share of the total allotment under the MBP Agreement. The District can purchase all or some portion of these amounts on an annual basis for storage in the Warren Valley Basin.

In addition to the SWP supplies available to the District under the MBP Agreement, the District has intermittent access to surplus or unused SWP Table A supplies that can be acquired through MWA.

Beyond the SWP supplies discussed above, in 1994 the District signed a Conjunctive Use agreement with MWA to import additional SWP water through the MBP for recharge in the Warren Valley Basin. In 2004, the agreement was renegotiated to provide greater flexibility to both parties. A copy of this agreement is provided in Appendix C.

Water delivered through the MBP to HDWD is piped to three percolation ponds owned and operated by HDWD. Faults separate the Warren Valley Groundwater Basin into five hydrogeologic units; the west, the midwest, the mideast, the east, and the northeast hydrogeologic units (see Figure 3-1). The two original sites completed in 1995 are west of Highway 247 at Pioneertown, and located in the midwest and mideast hydrogeologic units. In 2006, the HDWD completed a third recharge site east of Pioneertown Road, called Site 3. The addition of Site 3 allows the District to replenish water in the west hydrogeologic unit of the Warren Valley Groundwater Basin (see Figure 3-1), which is a much better subbasin for HDWD to use for recharge because it can store more water and has other operational advantages.

Using these three recharge sites and based on a 300-day per year recharge schedule to allow for scheduled maintenance of the MBP, the District projects the following recharge capabilities from the MBP:

1) At the time the MBP Agreement was entered in 1991, the transmission capacity of the MBP was conceived as 15 cfs, or 10,900 afy. Based on actual design and construction of the system, however, delivery capacity is approximately 22 cfs, or about 15,930 afy.
2) Currently, the total operational recharge capacity at all three sites combined is about 6,800 to 7,000 afy, although this capacity could possibly increase with certain operational changes. (Source: HDWD Operations Dept.)

Historically, the District has averaged 3,464 afy of SWP water deliveries within the Warren Valley Basin (Warren Valley Basin Watermaster 2010).

As indicated above, the District has a reliable contractual right to SWP supplies from MWA pursuant to the 1991 MBP Agreement. Pursuant to the 2002 MOU between the MWA, the District, and other IDM Participants, those parties have agreed that their objectives are inherently the same with regard to the MBP Agreement and that the MBP Agreement is intended to extend to at least 2041. Notwithstanding, because the term of the MBP Agreement could be tied to the retirement of the bonds that were issued for the MBP, which could occur by 2022, MWA has assured the District that SWP supplies will continue to be available to meet historic and projected customer demands within the District and throughout the IDM area. In addition to the particular arrangement between MWA and the IDM Participants for the provision of SWP supplies to Division 2, MWA maintains a carefully managed framework to ensure a sufficient and reliable supply of supplemental imported water throughout its service area.

In this regard, MWA has done extensive research and analysis in preparation of its service area water demand projections for its 2010 UWMP, and has collaborated with the Technical Advisory Committee (TAC) and its participants, including participants in the IDM Agreement, throughout the development of the projections. Importantly, MWA's 2010 UWMP concludes that the total projected water supplies available to MWA, including local supplies and imported supplies from the SWP, will be sufficient to meet total water demands beyond the year 2035.

More specifically, MWA concludes that its projected SWP supplies will be sufficient to meet customer demands for imported water supplies through the year 2035, providing local groundwater storage programs are used to buffer against short-term reductions or disruptions in supply. Section 10631(k) of the UWMP Act provides that the District may rely upon the water supply information, analyses and conclusions provided by MWA for purposes of quantifying the existing and planned amounts of SWP water available to the District throughout the UWMP planning horizon, and for describing the reliability of that supply and vulnerability to seasonal or climatic shortages during average, single-dry and multiple-dry year periods.

3.2.2 MWA Water Supply Reliability

California's Department of Water Resources (DWR's) "State Water Project Delivery Reliability Report 2009" (2009 SWP Report), issued in August 2010, assists SWP contractors in assessing the reliability of the SWP component of their overall supplies. The Report updates DWR's

estimate of the current (2009) and future (2029) water delivery reliability of the SWP. The updated analysis shows that the primary component of the annual SWP deliveries (referred to as Table A deliveries) will be less under current and future conditions, when compared to the preceding report (SWP Delivery Reliability Report 2007).

The updated analyses and conclusions in the 2009 SWP Report are predicated on several conservative assumptions. For instance, the Report assumes that the SWP will be operated for the next 20-year period using existing facilities and will be subject to the current regulatory and operational constraints. The Report also assumes that climate change will have a measurable impact on SWP supplies and those impacts are expressly incorporated into the long-term delivery forecasts. Based on those conditions, and assuming that all contractors will be requesting delivery of their full Table A amounts in most years, the 2009 SWP Report concludes that the SWP will be able to deliver 60 percent of Table A amounts on a long-term average basis. DWR also prepared Delivery Reliability Reports (DRRs) for long-term average SWP supplies to individual state water contractors based upon the unique conditions that impact each contractor. The DRR for MWA indicated average reliability would be 60 percent in 2009 and will increase to 61 percent in 2029. Additional factors having the potential to affect the availability and reliability of SWP supplies are further discussed below.

3.3 Local Water Supplies

HDWD's local supply of water includes groundwater and septic system and irrigation return flows. Both are discussed in the following subsections.

3.3.1 Groundwater

This section presents information about HDWD's groundwater supplies. As indicated above, the District obtains groundwater from two basins, the Warren Valley Basin and the Ames Valley Basin. These basins overlie an area defined in DWR Bulletin 118-03 as the Colorado River hydrologic region (Region 7), as further identified below in Table 3-2. Figure 3-1 shows the DWR groundwater basins in relation to the HDWD service area boundary.

TABLE 3-2
DWR GROUNDWATER BASINS

DWR Basin	Groundwater Basin	Budget Type [(a)]
7-12	Warren Valley	A
7-16	Ames Valley	C

Source: DWR

(a) According to DWR, Type A designates a basin where either a groundwater budget or model exists, or actual extraction data is available, and Type C designates a basin where insufficient data is available to provide an estimate of the groundwater budget or basin extraction.

Currently there are eighteen (18) groundwater wells within the District's water system. Thirteen (13) are active. The total capacity of the active wells is approximately 6,200 gallons per minute (gpm) (10.8 mgd).

3.3.1.1 Warren Valley Basin

This section presents information about HDWD's groundwater supply from the Warren Valley Basin. This section includes a discussion of the objectives from the adopted 1991 "Warren Valley Basin Management Plan" (WVBMP) and the adopted 1996 "Addendum to the Warren Valley Basin Management Plan" (Addendum).

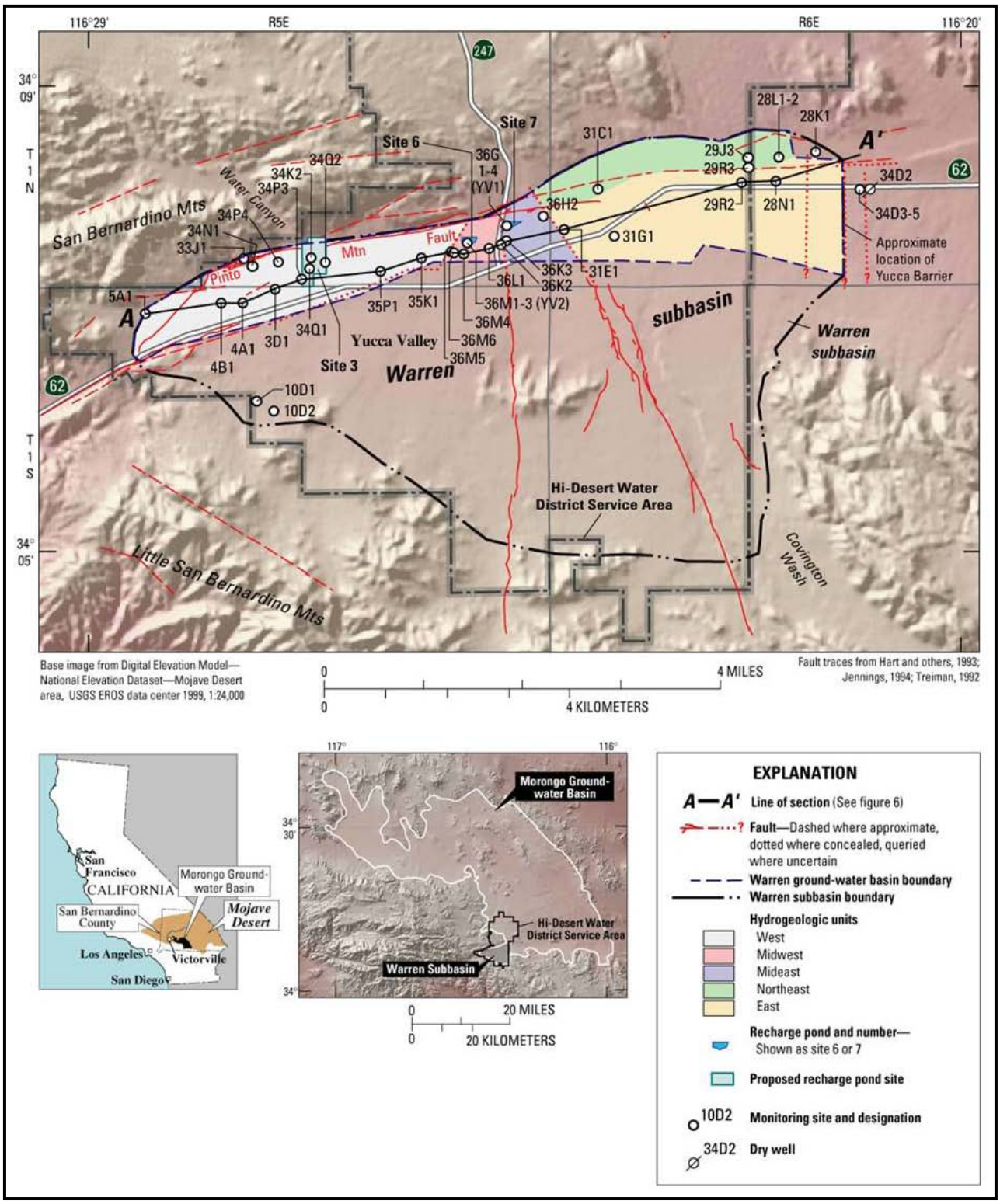
3.3.1.1.1 Groundwater Basin Description

The Warren Valley Basin covers an area of approximately 26.9 miles (17,200 acres) and includes the water-bearing sediments beneath the Town of Yucca Valley and the surrounding area. The Warren Valley Basin is bounded on the north by the Pinto Mountain fault, on the south by the bedrock outcrop of the Little San Bernardino Mountains, on the east by a bedrock constriction called the "Yucca Barrier", and on the west by a bedrock constriction and a topographic divide between the Warren Valley and Morongo Valley. The productive water-bearing materials in the Basin consist of unconsolidated to partly consolidated Miocene to Quaternary continental deposits and are unconfined interbedded gravels, conglomerates, and silts deposited by alluvial fan systems.

Based on information in the District's 2007 Water System Master Plan (WSMP), the Warren Valley Basin has an estimated total storage capacity of approximately 568,000 acre-feet (af), with an estimated usable storage capacity of approximately 160,000 af. The District owns fifteen (15) wells (12 active, 3 inactive) that can be used to pump groundwater from the Warren Valley Basin.

It is estimated that in or around the 1950's, the Warren Valley Basin fell into a state of overdraft condition. As significant growth occurred in the Yucca Valley area, this overdraft condition worsened and groundwater levels declined at an accelerating rate. In its 1972 open-file report on the groundwater resources in the Yucca Valley area, the U.S. Geological Survey (USGS) estimated that the usable supply of groundwater would be depleted by the year 2000 if steps were not taken to correct the historic overproduction of the Basin.

FIGURE 3-1
HDWD WARREN VALLEY GROUNDWATER BASIN



Recognizing the severity of overdraft and the need to create an institutional framework to address the problem, HDWD filed a complaint against the Yucca Water Company and other producers in the Basin which sought to adjudicate all or substantially all of the groundwater rights in the Basin (See Hi-Desert County Water District v. Yucca Water Company, Ltd., San Bernardino County Superior Court Case No. 172103.). In 1977, a Judgment was rendered in the case. A copy of this Judgment is included as Appendix D.

The Judgment established the exclusive rights to extract groundwater from the Warren Valley Basin among overlying and appropriative right holders that were parties to the case. The two appropriative right holders were the District and the Yucca Water Company, Ltd. The District subsequently acquired the Yucca Water Company and its water rights in 1990. The overlying right holders are generally categorized as the Blue Skies County Club, 16 "Minimal Pumpers" with production rights limited to one acre-foot per year, and the Institute of Mental Physics. According the Judgment, groundwater production by the Institute of Mental Physics does not have a significant effect on the Basin because their production is made from a subsurface drainage area known as the zone of transmission that merely intercepts outflow from the Warren Valley Basin. The District's adjudicated groundwater rights in the Basin total 1,622 afy, as shown in Table 3-1 above.

In addition to limiting groundwater extraction rights in the Warren Valley Basin, the Judgment ordered the development of a physical solution for the Basin and established several fundamental elements of that solution. For instance, to allow additional development within the Basin, the Judgment did not limit groundwater production to the Basin's safe yield. In addition, the Judgment states: "In the ultimate development of the lands overlying the Warren Valley Basin, supplemental water supplies will be required. To that end, the lands overlying the Basin were included within the Mojave Water Agency, which has a contractual right to purchase supplemental water from the State Water Resources System." The Court appointed the District as the Watermaster to administer and enforce the provisions of the Judgment, including the requirement to develop a physical solution capable of bringing supplemental water to the Basin.

Over the following years, several studies related to the Warren Valley Basin hydrology and the importation of supplemental water from the State Water Project were developed. As directed by the Court, the Watermaster authorized the preparation of a basin management plan along with administration and implementation. A viable plan to address the groundwater overdraft problems of the Warren Valley Basin was based on clear management objectives.

In 1983, the Watermaster commissioned a geophysical study to determine the configuration and prospective capacity of the Warren Valley Basin. The study resulted in estimates that the Basin contained approximately 45,000 to 59,000 acre-feet of remaining extractable water. Using a depth of 200 feet to the top of the aquifer, the total usable storage capacity of the Warren Valley Basin was estimated to be 160,000 acre-feet. A depth of 200 feet was used since that was the depth to the groundwater table when data collection began, and a 200-foot depth avoids potential water quality impacts from septic effluent and other constituents. As discussed in Section 3.2 above, the principal component of the physical solution developed under the Judgment was the construction of the 71-mile Morongo Basin Pipeline and related facilities to bring SWP supplies to the District. With the addition of the MBP, SWP supplies are now utilized to replenish the Basin and to serve existing, planned and future water demands within the District's service territory.

In addition to the managed framework provided by the Judgment and physical solution, the Warren Valley Basin Watermaster, acting under the continuing jurisdiction of the Court, performs a variety of monitoring and other management activities in accordance with its Rules and Regulations (as amended, July 14, 2004). Among other functions, the Watermaster maintains an Advisory Committee comprised of local citizens and parties to the Judgment that make recommendations to the Watermaster; establishes an annual budget; levies groundwater production assessments; performs groundwater monitoring and measurement; maintains a basin wide water quality protection plan; implements the Basin Management Plan; establishes and administers groundwater storage agreements; and oversees and approves all exchanges, purchases, transfers, sales or leases of water. The Watermaster also prepares an annual report that is submitted to the Court.

3.3.1.1.2 Adopted Groundwater Management Plan

In May of 1991, the Watermaster adopted the Warren Valley Basin Management Plan (WVBMP), which further formulated the District's approach to implementing the physical solution for the Basin. In 1992, the Court revised the estimated safe yield of Basin to 900 afy based on additional studies regarding return flows from precipitation and other forms of recharge. In 1996, the Watermaster published an addendum to the Management Plan (Addendum), and that document continues to provide a foundation for water supply management and planning activities in the Warren Valley Basin. The WVBMP and the Addendum are included in Appendix E.

As indicated in the Addendum, sources of natural recharge to the Warren Valley Basin include direct percolation of precipitation and percolation of ephemeral streamflow from Water Canyon and Covington Canyon. Aside from imported SWP supplies, most other groundwater recharge to the Basin is from septic and irrigation return flows.

As growth continues, the amount of septic system return flow is expected to increase. The 2007 WSMP estimates the septic return flows as about 32 percent of the groundwater production. Accordingly, the 2007 WSMP also includes increased amounts of septic returns as part of the future water supply projections. At this time, a centralized wastewater treatment facility does not exist within the District. However, as further discussed below, design, planning and environmental review processes are underway to construct a wastewater treatment facility to serve the area, which will ensure a high quality source of groundwater recharge supply for the District into the indefinite future.

Water levels continue to be monitored and reported by the Watermaster each year. The current groundwater levels vary from year to year, but levels have increased since the Watermaster began implementation of groundwater recharge using State Water Project water. In the Watermaster's annual report for 2008-09, the six reported wells showed levels 107 to 237 feet above their levels in 1992.

3.3.1.1.3 Available Groundwater Supplies

Past and projected groundwater pumping for the HDWD service area from the Warren Valley Basin is summarized in Tables 3-3 and 3-4.

TABLE 3-3
HISTORICAL WARREN VALLEY GROUNDWATER PRODUCTION (AFY)

	2005	2006	2007	2008	2009	2010
HDWD	2,341	2,830	3,002	2,697	2,676	2,567

Source: Annual Report of the Warren Valley Basin Watermaster, November 2, 2009.

TABLE 3-4
WARREN VALLEY PROJECTED GROUNDWATER PRODUCTION (AFY)

	2010	2015	2020	2025	2030	2035
HDWD	2,567	2,708	2,849	2,991	3,132	3,273

Groundwater production projections are based on demand projections shown in Table 2-7 and account for conservation achieved pursuant to SBX7-7.

3.3.1.2 Ames Valley Basin

3.3.1.2.1 Groundwater Basin Description

As indicated above, the District's second source of local groundwater is obtained from the Ames Valley Basin. As defined by DWR in Bulletin 118, the Ames Valley Basin covers an area of approximately 169.7 square miles (110,000 acres) and is bounded by non-water-bearing rocks of the San Bernardino Mountains on the west, Iron Ridge on the north, and Hidalgo Mountain on the northeast. The Emerson, Copper Mountain, and West Calico faults also form part of the eastern and northern boundaries. A surface water drainage divide with the Copper Mountain Valley Basin forms the southern boundary. The total storage capacity of the Ames Valley Basin is estimated to be approximately 1,200,000 af. (DWR 2004.) The Ames Valley region has been documented as having either historical or current overdraft conditions.

In approximately 1987, the District contracted to construct and receive water from a groundwater production well in the Ames Valley Basin area. The Bighorn-Desert View Water Agency (BDVWA) protested construction of the well, and in 1991 the District and BDVWA entered a settlement agreement (Ames Basin Agreement) which established terms and conditions for the District's production of groundwater from its "Mainstream Well." (A copy of the 1991 Ames Valley Basin Water Agreement is included as Appendix F.) Pursuant to the Ames Valley Basin Water Agreement, the District is entitled to extract up to 800 afy of groundwater from the Ames Valley Basin. That amount may be increased depending on the water needs of property owners within the Ames Valley Basin by an amount equal to 0.5 afy for each new residential meter installed by the District within the Ames Valley Basin. Under the Ames Valley Basin Water Agreement, the parties established and implemented a groundwater monitoring program to ensure the protection of hydrologic resources of the Ames Valley Basin. Under the monitoring program, representatives from the District and BDVWA collect, measure and record well data to ensure water levels and water quality of the Ames Valley Basin are not negatively affected by the District's use of the Mainstream Well. The District's past and projected water produced from the Ames Valley Basin are set forth in Tables 3-5 and 3-6 below.

Recently, MWA and local water providers in the Ames Valley area have been working together to expand the Ames Valley Basin Water Agreement and develop enhanced recharge projects to alleviate overdraft and provide an alternative source of water supply. Among other things, the expanded framework would involve all private and public agency pumpers in the area, and provide a monitoring and management plan for the operation of the groundwater basin with the future Ames (Reche) Valley Recharge Project. In the Ames Valley region, BDVWA has implemented a Water Infrastructure Restoration Program (WIRP) that outlines specific system improvements to remediate deficiencies in infrastructure and operations. Two WIRP projects that are near completion include the Ames Valley Recharge Project and a Groundwater Management Plan (BDVWA GWMP). Local groundwater is currently the sole source of its water supply in the area. However, as detailed above, BDVWA holds a 9 percent share to SWP supplies and MBP capacity under the MBP Agreement, and may purchase SWP water from MWA. Although the infrastructure needed to deliver SWP water to the Ames Valley region already exists, additional facilities are needed to convey imported SWP water to spreading grounds for recharge, storage, and subsequent recovery. A Recharge Feasibility Study, including a groundwater model, is scheduled for completion in 2011 and documents the ability to store and recover SWP water in the Ames Valley Basin.

The BDVWA GWMP is being developed for the BDVWA in parallel with the Recharge Feasibility Study. The BDVWA GWMP will provide groundwater management strategies for a long-term sustainable supply from the Ames Valley area including enhanced aquifer recharge and pumping restrictions. The GWMP is also scheduled for completion in 2011.

BDVWA is the Lead Agency for the WIRP and the GWMP, but the implementation also includes other participating agencies. MWA is a financial participant, while HDWD and San Bernardino County Service Area (CSA) No. 70 are cooperative partners who will benefit through participation in the groundwater storage and recovery program. The GWMP will address the purchase of SWP water for recharge and pumping restrictions in the event that overdraft conditions are not controlled.

For the Ames Valley Basin, a perennial yield of 900 afy was derived from recent groundwater modeling by Todd Engineers for BDVWA. Data and analyses will be documented in the Draft Feasibility Study for the Ames Valley Recharge Project scheduled to be finalized in 2011.

3.3.1.2.2 Available Groundwater Supplies

Past and projected groundwater pumping for the HDWD service area from the Ames Valley Groundwater Basin is summarized in Tables 3-5 and 3-6.

TABLE 3-5
HISTORICAL AMES VALLEY GROUNDWATER PRODUCTION (AFY)

	2005	2006	2007	2008	2009	2010
HDWD	781	358	467	539	627	608

Source: HDWD Yearly Summary Report for 2010.

TABLE 3-6
AMES VALLEY PROJECTED GROUNDWATER PRODUCTION (AFY)

	2010	2015	2020	2025	2030	2035
HDWD	608	641	675	708	742	775

Note: Groundwater production projections are based on demand projections shown in Table 2-7 and account for conservation achieved pursuant to SBX7-7.

Table 3-7 summarizes the net average annual groundwater supplies available to HDWD from the Warren Valley and Ames Valley Basins. Safe or perennial yield of the groundwater basins is based on data as summarized below.

TABLE 3-7
PERENNIAL YIELD OF THE
WARREN VALLEY/AMES VALLEY GROUNDWATER BASINS

Anticipated Supply	Normal Year (afy)	Single-Dry Water Year (afy)	Multiple Dry Water Year (afy)
Warren Valley[(a)]	100	100	100
Ames Valley[(b)]	900	900	900

Notes:
(a) USGS Nishikawa, Densmore et. al., 2003.
(b) Todd Engineers is completing a "Hydrogeologic Feasibility Study and Groundwater Management Plan for the Ames/Reche Project" for the Bighorn Desert View Water Agency, in 2011, that will better define the Ames Valley perennial yield. The perennial yield of 900 afy shown above represents subsurface inflow/recharge to the region only and no return flows are included.

Adequacy of Supply

HDWD's Service Area has limited natural supply, with a large portion of the area relying on MWA's ability to provide SWP water through the Morongo Basin Pipeline. The Warren Valley Basin (i.e. Town of Yucca Valley) was the first to experience obvious overdraft issues and relies on imported water and the three associated recharge sites to support the adjudication.

Sustainability

The Warren Valley adjudication mandates that groundwater extraction from the Warren Valley Basin does not exceed the estimated annual supplies and empowers the HDWD as Watermaster to enforce pumping limits as mandated by the Court. The Watermaster performs monitoring in accordance with the Rules and Regulations of the Warren Valley Watermaster (1995). Monitoring activities currently performed by the Watermaster include water production and verification, water level measurement, and water quality. An annual report is completed by the Watermaster each year to monitor the Warren Valley Basin's production and recharge.

In the Ames Valley, BDVWA, MWA, HDWD, and CSA No. 70 are currently negotiating an agreement to sustainably manage the Ames Valley Basin through the Ames (Reche) Recharge Project. This agreement will replace the 1991 Agreement and Stipulated Judgment and will be accompanied by a GWMP for the Ames Valley Basin. Collectively, the agreement and GWMP will provide the institutional framework for the purchase, recharge, and recovery of imported SWP water through the MWA IDM Agreement for the Ames Valley Basin. The agreement will

contain restrictions on pumping if overdraft conditions are not mitigated. The Ames Valley Basin monitoring program already exists to provide the necessary data for effective management into the future.

3.3.2 Septic and Irrigation Return Flow

As indicated above, septic and irrigation return flows play a key role in the availability and reliability of groundwater supplies available to the District. Currently, all residents and businesses within HDWD's service area use septic systems and subsurface disposal systems to treat and dispose of domestic wastewater. Septic and irrigation return flows are based on 2009 USGS estimates. After 2016, with the completion of the Wastewater Treatment and Water Reclamation Facility (WRF) (see Chapter 4 for details), the District is assuming no septic return. However, there may still be septic return from Phases 2 and 3 of the proposed WRF, but for water supply projections septic return will not be used.

The District's 2007 WSMP reported that during a 13-year period when the average water pumped from the Warren Valley Basin was 2,575 afy, the estimated recharge due to septic and irrigation return was approximately 820 afy. The estimated return was 32 percent of the groundwater pumped. The 2007 WSMP included water supply projections that assumed a continued rate of 32 percent for return of pumped groundwater.

3.3.3 Potential Supply Inconsistency

As fully set forth herein, water provided to customers within the service area of the District is derived from natural and recharged groundwater supplies from the District's 13 active wells. In accordance with the analyses and accounting performed by MWA and the District regarding the variability of imported water supplies, there are no inconsistent water sources that cause reduced deliveries to users within the District's service area. A potential exception may be the use of a well with water quality issues that may prohibit the pumping of that particular well. Currently, the District has in place a nitrate removal facility that treats two wells that were previously high in nitrate levels. The District currently operates a blending facility to comply with drinking water standards.

3.4 Planned Water Supply Projects and Programs

In addition to the District's planned wastewater treatment project discussed herein and in further detail below, Table 3-8 identifies supply enhancement projects planned to be undertaken by the District. These supplies are projected to add an additional measure of reliability to the District's overall water supply portfolio and assist the District in serving projected water demands within its service area.

TABLE 3-8
PLANNED WATER SUPPLY PROJECTS AND PROGRAMS

Name/Type	Planned Delivery (afy)	Retailer Served	Date Supply Available
Ames Valley Basin Recharge[(a)]	703	HDWD	2012

(a) Feasibility study is currently being completed for project.

3.4.1 Ames Valley Basin Recharge

The Ames Valley Recharge project (AKA Reche Recharge Project) will deliver SWP water to the Ames Valley for recharge at the Pipes Wash Spreading Grounds to offset historical overdraft conditions in the region and provide a supplemental water supply for the existing and projected demands of the participating members. This project was originally identified as the Ames/Means Valley Recharge Project, but since recharge is currently planned to occur only in the Ames Valley, it is referred to as the Ames Valley Recharge Project in this document. The recharge project will serve water agencies using groundwater in the area, including BDVWA, HDWD, and CSA No. 70. BDVWA, in cooperation with MWA, is principally in charge of implementing the project, which consists of a feasibility study, approximately 0.75 miles of conveyance pipeline to connect to the Morongo Basin Pipeline, recharge to the Pipes Wash, and the installation of monitoring wells. The initial recharge capacity is planned at 1,500 afy. Based on preliminary drafts of an agreement, HDWD initially will have the ability to utilize approximately 703 afy from this project, plus whatever is stored by HDWD in the Ames Basin minus 5%. The project participants are currently working to finalize the details of the agreement.

3.5 Transfers, Exchanges, and Groundwater Banking Programs

In addition to SWP water supplies, groundwater, and possible future water recycling, HDWD may seek opportunities to purchase water supplies from other water agencies and sources. Transfers, exchanges, and groundwater banking programs, such as those described below, are important elements to enhancing the long-term reliability of the total mix of supplies currently available to meet the needs of the District's customers.

3.5.1 Opportunities for Short and Long-Term Transfers and Exchanges

A current opportunity available to HDWD to increase water supplies is to participate in voluntary water transfer programs. Since the drought of 1987-1992, the concept of water transfer has evolved into a viable supplemental source to improve supply reliability. The practice of water transfers was in part codified into law in 1986. (See California Water Code, Sections 470, 475, 480-483; 1810-1814.) These laws help define parameters for water transfers and set up a variety of approaches through which water or water rights can be transferred among individuals or agencies. According to the California Water Plan Update 2009, up to 27 million afy of water are delivered for agricultural use every year. Over half of this water use is in the Central Valley, and much of it is delivered by, or adjacent to, SWP and Central Valley Project (CVP) conveyance facilities. This proximity to existing water conveyance facilities could allow for the voluntary transfer of water to many urban areas, including HDWD, via the MWA, imported SWP, and the MBP. Such water transfers can involve water sales, conjunctive use and groundwater substitution, and other arrangements, and usually occur as a form of spot, option, or core transfers agreement. The costs of a water transfer would vary depending on the type, term, and location of the transfer. The most likely voluntary water transfer programs would probably involve the Sacramento or southern San Joaquin Valley areas. Additional authorities that support such water transfers and exchanges include, but are not limited to, those found in Water Code section 1005 et seq.

One of the most important aspects of any resource planning process is flexibility. A flexible strategy minimizes unnecessary or redundant investments (or stranded costs). The voluntary

purchase of water between willing sellers and buyers can be an effective means of achieving flexibility. However, not all water transfers have the same effectiveness in meeting resource needs. Through the resource planning process and ultimate implementation, several different types of water transfers could be undertaken.

Notably, MWA as the wholesale water agency, has participated in significant SWP Table A transfers and exchanges on behalf of HDWD and all its retailers, thereby augmenting local water supplies. As provided in MWA's 2010 UWMP, it is projected that MWA will continue to participate in such programs to ensure a sufficient and reliable source of imported water supplies to its retail members.

3.5.2 Groundwater Banking Programs

With recent developments in conjunctive use and groundwater banking, some opportunities exist to improve water supply reliability for HDWD. Conjunctive use is the coordinated operation of multiple water supplies to achieve improved supply reliability. Most conjunctive use concepts are based on storing excess supplies in times of surplus (i.e., in groundwater basins) for use during dry periods and drought when surface water supplies would likely be reduced.

A well-recognized example of groundwater banking programs involves storing available SWP surface water supplies during wet years in groundwater basins in the Central or San Joaquin Valleys. Water can be stored either directly by surface spreading or injection, or indirectly by supplying surface water to farmers for their use in lieu of groundwater pumping. During water shortages, the stored water could be pumped out and conveyed through the California Aqueduct through MWA to HDWD as the banking partner, or used by the farmers in exchange for their surface water allocations, which would be delivered to HDWD via MWA as the banking partner through the California Aqueduct. Several conjunctive use and groundwater banking opportunities are available to HDWD.

HDWD has its own conjunctive use program to take advantage of the fact that additional water is available from the SWP supply via MWA. Groundwater banking is still limited by the ability to store it locally, but many of these opportunities will continue to exist subject to applicable legal, water quality, and capacity issues. MWA supply is still greater than the demand in the service area at times. When available, HDWD buys excess SWP water from MWA to store for future use when SWP supplies are not available. This activity also allows HDWD to take advantage of wet year supplies because of the abundant groundwater storage available in the HDWD's groundwater basins. As of January 2011, the HDWD had over 17,146 af of water banked in the Warren Valley Basin, which was excess SWP that it had purchased from MWA since 1995. As a supply source shown in Table 3-1, projections are based on the fifteen-year banked average of 1,074 afy minus increased 2010 consumer demand of 3,147 afy assuming a one percent growth.

3.6 Development of Desalination

The California UWMP Act requires a discussion of potential opportunities for use of desalinated water (Water Code Section 10631(i)). HDWD has evaluated opportunities for using desalinated water in future supply options. However, at this time, none of the opportunities are practical or economically feasible for HDWD, and HDWD has no current plans to pursue them. Therefore,

desalinated supplies are not included in the supply summaries in this Plan. However, should a future opportunity emerge for HDWD to consider development of desalination, these potential future supply opportunities are described in the following section, including opportunities for desalination of brackish water, groundwater, and seawater. A financial analysis and feasibility study would still need to be completed.

3.6.1 Opportunities for Brackish Water and/or Groundwater Desalination

As discussed in Chapter 5, the groundwater supplies in the HDWD service area are not considered brackish in nature, and desalination is not required. There are brackish supplies near the dry lakes but it is not practical to pump and treat those resources. Moreover, that activity could potentially induce migration of better quality water to the dry lake areas and potentially cause subsidence. However, if financially feasible, HDWD and MWA (a SWP contractor) could team up with other SWP contractors to consider investing in construction of regional groundwater desalination facilities in exchange for SWP supplies. The desalinated water would be supplied to users in communities near the desalination plant(s), and a similar amount of SWP supplies would be exchanged and allocated to HDWD/MWA from the SWP contractor.

In addition, should an opportunity emerge with a local agency other than a SWP contractor, an exchange of SWP deliveries would most likely involve a third party, such as MWA. Most local groundwater desalination facilities would be projects implemented by other retailers of SWP contractors and, if an exchange program was implemented, would involve coordination and wheeling of water through the MWA contractor's facilities to HDWD.

3.6.2 Opportunities for Seawater Desalination

Because the District is not in a coastal area, it is neither practical nor economically feasible for HDWD to implement a seawater desalination program. However, similar to the brackish water and groundwater desalination opportunities described above, HDWD could consider partnering with other retailers and/or team with MWA to invest in the construction of other purveyors' seawater desalination facilities in exchange for SWP supplies.

Section 4: Recycled Water

4.1 Overview

This Section of the Plan describes the future recycled water opportunities available to the Hi-Desert Water District (HDWD, District) service area. The description includes estimates of potential future supply and demand for recycled water resources.

4.2 Recycled Water Plan

HDWD serves potable water to a population of approximately 25,000. Based on the growth projections shown in Table 2-1, the District is planning for a population of over 30,000 by 2035.

All of the customers within the HDWD service area currently dispose of their wastewater using individual sewage disposal systems, or septic tanks. While these septic system return flows have historically contributed to the overall groundwater resources within the District, they have also been identified as a contributor to higher nitrate levels in the Warren Valley Groundwater Basin. In fact USGS estimates 820 afy of septic return to the Warren Valley Groundwater Basin. To protect the local water supply and to ensure the maximum long-term utilization of water resources throughout its service area, the District has developed a plan for a "Wastewater Treatment and Water Reclamation Project."

In 2009, the District adopted a revised "Sewer Master Plan" (SMP). The SMP includes the three-phase development of new sewer collection and treatment systems. As discussed in the SMP, the District plans to construct a water reclamation facility (WRF) to serve the substantial portions of its service area. Under the current proposal, all of the treated effluent produced by the WRF will be diverted to groundwater recharge. There will be no direct reuse of recycled water.

District staff has revised the capacity and scale of the WRF since the initial publication of the SMP in 2009. Initial phasing is proposed to include a 1.5 mgd treatment and production capacity for Phase 1. Additional capacity for Phase 2 and 3 is expected to be 0.5 mgd per phase. The WRF will produce effluent through tertiary advanced treatment that will be delivered to recharge basins at the treatment site and percolated into the east subbasin of the Warren Valley Groundwater Basin. Phase 1 of the WRF is scheduled to be on-line by 2016 to comply with requirements set forth by the Regional Water Quality Control Board (RWQCB) Resolution No. R7-2011-0004. The Resolution, included in Appendix G, amends the existing Basin Plan for the Colorado River Basin Region and sets forth certain prohibitions against septic tank discharges in the Town of Yucca Valley, to address elevated nitrate levels in groundwater due to septic tank discharges. Because the Town lacks a municipal wastewater collection and treatment system, all residents and businesses in Yucca Valley currently use septic systems, subsurface disposal systems, or on-site wastewater treatment package plants (four locations) to treat and dispose of domestic wastewater.

Like many areas in California, the Town has experienced periods of population growth and localized increases in septic system density, such as along the main business corridor, one of

the areas addressed by the Regional Board's Resolution No. R7-2011-0004. However, much of the area of concern has been developed over the period of the last 50 years, with infill development occurring most recently.

Future phases of the WRF beyond the current plan may be necessary to address localized growth in the areas not included in Phases 1, 2, and 3, either by package treatment plants or plans for separate centralized systems.

4.3 Wastewater Generated Within HDWD

As indicated above, over 10,000 households and businesses in Yucca Valley currently dispose of their wastewater using subsurface sewage disposal systems, septic tanks, or on-site wastewater treatment package plants. The District plans to construct a new wastewater collection system, as outlined in the SMP. Table 4-1 summarizes the projected wastewater flow through the year 2035.

TABLE 4-1
PROJECTED WASTEWATER FLOW

	2010	2015	2020	2025	2030	2035
Flow (afy)	820	820	1,863[(a)]	2,604	2,737	2,876

Source: HDWD staff.

(a) Phase 1 of the WRF Project is expected to be on-line in 2016, Phase 2 is planned for 2019 and Phase 3 is planned for 2022 to comply with the Regional Board's Order R7-2011-0004.

The HDWD 2009 Sewer Master Plan details that infill development within the Town of Yucca Valley is forecasted to create an ultimate demand for 6.0 mgd of treatment capacity. If approved by the community, the Phase 1 WRF will provide a 1.5 mgd initial capacity and be on-line by 2016. Implementation of future phases would be coordinated with the Regional Board.

4.3.1 Planned Improvements and Expansions

On August 5, 2009 the HDWD adopted the Mitigated Negative Declaration and Mitigation, Monitoring and Reporting Program (MMRP) for a proposed centralized wastewater treatment facility and collection system. Implementation of the proposed plan is pending community approval. As described in Section 4.2, the planned improvements include a three-phase development of a new sewer collection system and the construction and installation of the WRF.

The Phase 1 sewer collection system will focus on the urban developments in close proximity to State Highway 62 (Twentynine Palms Highway) and HDWD drinking water wells. The Phase 2 collection system would expand to the majority of urban development within the existing HDWD service area. Phase 3 would connect the remaining areas to the south of Phases 1 and 2 and the rest of the northern part of downtown Yucca Valley within the Warren Valley Basin area. Table 4-2 provides the projected wastewater treatment capacity for the HDWD service area.

TABLE 4-2
PROJECTED CAPACITY WASTEWATER COLLECTED AND TREATED

Wastewater Collected and Treated in Service Area	Capacity (mgd)					
	2010	2015	2020	2025	2030	2035
Hi-Desert Water District	0.0	0.0	2.0	2.5	2.5	2.5

Source: For purposes of this Plan, Phases 1 and 2 capacities are projected to come on-line by 2020 and Phase 3 by 2025. Phase 1 is 1.5 mgd and Phases 2 and 3 are 0.5 mgd for each phase.

4.3.2 Source Water Flow

Septic return flows are currently the sole potential source of flows to the proposed WRF within HDWD's service area. The source flows projected to be available are shown in Table 4-3.

TABLE 4-3
SOURCE WASTEWATER FLOW

Source	2010 Flow (mgd)	Projected Flow (mgd)	Projected to be Available for Re-Use (mgd)	Date for Flow Projection
Hi-Desert Water District[(a)]	0.0	2.57	2.57	2035

Note:
(a) Taken from Table 4-1.

4.4 Recycled Water Demand

As indicated above, recycled water is not currently available within the District, and HDWD has no plans to produce recycled water at this time and has not developed plans for serving recycled water within their service area. At this time, all the treated wastewater produced at the proposed WRF will be percolated into the groundwater basin as recharge.

4.4.1 Potential Users

Potential recycled water demand has not yet been evaluated by HDWD at this time.

4.4.2 Methods to Encourage Recycled Water Use

If and when HDWD develops a future recycled water delivery system, methods to encourage recycled water use, such as financial incentives and in-lieu practices, will be analyzed at that time.

Section 5: Water Quality

5.1 Overview

The quality of water is dynamic in nature. This is true, for example, for the State Water Project (SWP) water brought into the Yucca Valley area via the Morongo Basin Pipeline. During periods of intense rainfall or snowmelt, routes of surface water movement are changed, and new constituents are mobilized and enter the water while other constituents are diluted or eliminated. These same basic principles apply to groundwater. For instance, depending on water depth and other factors, groundwater will pass through different layers of rock and sediment and leach different materials from those strata. Water quality is not a static feature of water, and these dynamic variables must be recognized as part of the water supply planning process.

Water quality regulations also change. This is the result of the discovery of new constituents, changing understanding of the health effects of previously known and new constituents, development of new analytical technology, and the introduction of new treatment technology. All water purveyors, including HDWD, are subject to drinking water standards set by the U.S. Environmental Protection Agency (EPA) and the California Department of Public Health (CDPH).

Pursuant to applicable laws, an annual Consumer Confidence Report (CCR) is provided to all residents who receive water from the District. That report includes detailed information about the results of quality testing of the water supplied during the preceding year (CCR, 2009).

Several state, regional and county agencies have jurisdiction and responsibility for monitoring water quality and contaminant sites. Programs administered by these agencies include basin management, waste regulation, contaminant cleanup, public outreach, and emergency spill response.

This section provides a general description of the water quality of both imported water and existing groundwater supplies. A discussion of potential water quality impacts on the reliability of these supplies is also provided.

5.2 Imported Water Quality

The Mojave Water Agency (MWA) is HDWD's wholesale supplier for SWP water. MWA provides imported SWP water to agencies within its service area. The source of SWP water is rain and snow from the west facing Sierra Nevada, Cascade, and Coastal mountain ranges. This water travels to the Sacramento-San Joaquin Delta, which is a network of natural and artificial channels and reclaimed islands at the confluence of the Sacramento and San Joaquin rivers. The Delta forms the eastern portion of the San Francisco estuary, receiving runoff from more than 40% of the state's land area. It is a low-lying region interlaced with hundreds of miles of waterways. From the Delta, the water is pumped into a series of canals and reservoirs, which provides water to urban and agricultural users throughout the San Francisco Bay Area and Central and Southern California. MWA receives SWP water at four locations off the aqueduct. SWP water is transported from MWA to HDWD's service area via the 71-mile long Morongo

Basin Pipeline, which conveys SWP water from the California Aqueduct in the Mojave River watershed near Hesperia to HDWD. HDWD uses the imported water supply for recharge into the District's Warren Valley Groundwater Basin.

One important property of SWP water is the mineral content. SWP water is generally low in dissolved minerals, such as calcium, magnesium, sodium, potassium, iron, manganese, nitrate, and sulfate. Most of these minerals do not have health based concerns. The nitrate content of SWP water is also very low. Although not a human health risk, chloride can have a negative impact on agricultural activities and regulatory compliance for local sanitation agencies. The chloride content of SWP water varies from over 100 milligrams per liter (mg/L) to below 40 mg/L, depending on Delta conditions.

In addition to information and analyses provided in this Plan, data regarding the quantity and quality of SWP water delivered to the MWA service area are more fully described in MWA's 2010 UWMP and in DWR's 2009 SWP Delivery Reliability Report. Although the quality of SWP water varies seasonally, for the period between 2005 and 2009 the average total dissolved solids (TDS) concentration has been approximately 269 mg/L for the Yucca Valley area. These levels meet California drinking water standards.

5.3 Groundwater Quality

HDWD currently obtains its groundwater from thirteen (13) active wells. Twelve (12) wells extract water from the Warren Valley Basin and one (1) extracts from the Ames Valley Groundwater Basin. All of the District's production wells currently satisfy all applicable Maximum Contaminant Levels (MCLs). With the exception of arsenic levels that intermittently exceed the Running Annual Average (RAA) for MCL compliance within two of the District's 13 wells, all water produced from within both the Warren Valley Basin and the Ames Valley Basin meet all federal and state drinking water regulations.

Two of the District's wells that extract water from the lower aquifer portions of the Warren Valley Basin intermittently exceed the MCL for arsenic. One of these wells has been taken off-line pending a solution to reduce the amount of arsenic levels, while the other is currently being treated through a permitted blending process with two low arsenic concentration wells. The current MCL for arsenic is 10 parts per billion (ppb). Arsenic levels within the two wells of concern have been detected as high as 13 ppb and as low as 2 ppb. Both wells produce less than 250 gpm and are not considered critical producing production wells (HDWD Production Records).

As set forth in the District's 2009 CCR, the detected amount of nitrate in the District's groundwater, 12.8 parts per million (ppm), was well within the U.S. EPA MCL of 45 ppm. However, the Regional Water Quality Control Board (RWQCB) has concluded that concentrations of nitrate in the Warren Valley Groundwater Basin may be inconsistent the water quality objectives established by the applicable Basin Plan. In a 2003 Report, "Evaluation of the Source and Transport of High Nitrate Concentrations in Groundwater, Warren Subbasin, California" Water-Resources Investigations Report 03-4009, the U.S. Geological Survey (USGS) concluded that "septage from septic tanks was the primary source of nitrate to the groundwater system." Because the District prides itself on providing its customers a safe and reliable water supply, the District continues the planning and development of the Wastewater

Collection, Treatment, and Reclamation project (as discussed previously in Chapter 4) in order to protect local groundwater resources and ensure the long-term maximization of local water resources within the District.

5.4 Groundwater Protection

The general goal of the District's groundwater protection activities is to maintain the groundwater resources and to ensure a reliable high quality supply. Activities to meet this goal include continued and increased monitoring, data sharing, education and coordination with other agencies that have local or regional authority or programs. To increase its groundwater protection activities, HDWD has been taking the following actions as presented below.

5.4.1 Water Quality Monitoring

Since 1990, community water systems in California have been providing an Annual Water Quality Report to customers under regulations adopted in 1989 by the CDPH. However, the 1996 amendments to the Federal Safe Drinking Water Act and recently adopted federal regulations now require a "Consumer Confidence Report." In addition, California law now requires a similar report to consumers.

This report must contain information on the quality of water delivered by the system and characterize any risks from exposure to contaminants detected in the drinking water. Contaminant levels have previously had a MCL. The Federal Government has now established a Maximum Contaminant Level Goal (MCLG) for each constituent that has an MCL. The State of California is currently establishing their own Public Health Goal (PHG) for each of the same constituents.

5.4.2 Wellhead Protection

Since California has not developed a wellhead protection program, the groundwater portion of the Drinking Water Source Assessment and Protection (DWSAP) Program serves as the wellhead protection program for the State since 1999. The Program consists of drinking water source assessment and source water protection elements. For example, activities such as inventory of possible contaminating activities (PCAs) and vulnerability analysis are part of a complete DWSAP that target protecting the water resources.

5.4.3 Identification and Destruction of Abandoned Wells

In general, the presence of abandoned groundwater wells represents a potential hazard to the quality of a groundwater basin. Abandoned and improperly destroyed wells can act as conduits for contaminants to reach drinking water supplies, and therefore it is vital for the long-term protection of the basin that abandoned wells be located and destroyed.

While it is the landowner's responsibility to destroy an abandoned well, the District and the Watermaster are proactive about making sure that abandoned wells are in fact destroyed. The destruction of abandoned groundwater wells should be performed in accordance with state standards. California Water Code Section 13750.5 requires that those responsible for the

destruction of water wells possess a C-57 Water Well Contractor's License. Whenever a water well is destroyed, a report of completion must be filed with the California DWR within 60 days of the completion of the work. The San Bernardino County (County) Department of Public Health, Division of Environmental Health Services is responsible for permitting and inspecting construction and destruction of wells. Pursuant the Watermaster Rules and Regulations discussed above, Section 10 provides that all abandoned wells shall be filled and capped pursuant to applicable code provisions by the party owning such wells, after Watermaster approval. (Warren Valley Basin Watermaster Rules and Regulations, July 14, 2004, Section 10.)

For all functional and abandoned wells, a "well site control zone," the area immediately surrounding the well alternatively referred to as the "wellhead," needs to be established. The purpose of this zone is to provide protection from vandalism, tampering, or other threats at the well site. The size of this zone can be determined by using a simple radius, or an equivalent area. The well site control zone should be managed to reduce the possibility of surface flows reaching the wellhead and traveling down the unprotected casing. CDPH recommends a minimum radius of 50 feet for well site control zones for all public water systems in the state. The Program applies to the abandoned wells as well as functional activities that could potentially lead to "source water contamination" according to EPA regulations.

5.4.4 Hazardous Materials Response

Currently, county hazardous materials teams handle responses to hazardous materials incidents. Ongoing coordination between HDWD and hazardous materials teams will allow for assessment of the potential for chemical spills to impact groundwater sites. HDWD has established protocols for staff in its "Emergency Response Plan."

5.5 Water Quality Impacts on Reliability

5.5.1 Groundwater

The quality of water dictates numerous management strategies a water purveyor will implement, including, but not limited to, the selection of raw water sources, treatment alternatives, blending options, and modifications to existing treatment facilities. Maintaining and utilizing high quality sources of water simplifies management strategies by increasing water supply alternatives, water supply reliability, and decreasing the cost of treatment. As indicated above, HDWD's source water supplies are generally of good quality. Maintaining high quality source water allows for efficient management of water resources by minimizing costs.

Maintaining the quality of water supplies also increases the reliability of each source by ensuring that deliveries are not interrupted due to water quality concerns. A direct result from the degradation of a water supply source is increased treatment cost before consumption. The poorer the quality of the source water, the greater the treatment cost. Currently, water quality does not affect water supply reliability in the HDWD service area. Maintaining the current level of quality is vital to maintaining a reliable water supply.

The HDWD prides itself on providing customers a safe, reliable water supply. The goal of the District's monitoring program is to detect changes in groundwater quality. By identifying the

occurrence of reduced quality groundwater, preventive and corrective actions can be taken to address the factors creating the poorer quality water which will help maintain long-term water supply reliability.

Section 6: Reliability Planning

6.1 Overview

The Act requires urban water suppliers to assess water supply reliability that compares total projected water use with total projected water supply over the next twenty years in five year increments. The Act also requires an assessment for a single dry year and multiple dry years. This Section presents the reliability assessment for the District's service area.

As stated in HDWD's mission statement, the goal of HDWD is "to *provide a dependable water supply and wastewater treatment for the customers of the Hi-Desert Water District in a safe, efficient, and financially responsible manner.*" This Plan helps HDWD to achieve this goal even during dry periods based on a conservative water supply and demand assumptions over the next 25 years, as discussed in the following sections.

6.2 Reliability of Water Supplies

Each water supply source has its own reliability characteristics. In any given year, the variability in weather patterns around the state may affect the availability of supplies to HDWD's service area differently. For example, from 2000 through 2002, southern California experienced dry conditions in all three years. During the same period, northern California experienced one dry year and two average years. Typically for water management in southern California local groundwater supplies are used to a greater extent when imported supplies are less available due to dry conditions in the north, and larger amounts of imported water supplies are used during periods when northern California has wetter conditions. This pattern of "conjunctive use" has been in effect since State Water Project (SWP) supplies first came to the Yucca Valley area in 1995 via the Morongo Basin Pipeline (MBP). Since the MBP was constructed, SWP supplies from MWA have supplemented the overall supply of the District and helped offset the historic overdraft conditions of the Warren Valley Basin.

As previously discussed in Section 3.2, each SWP contractor's Water Supply Contract contains a Table A amount that identifies the maximum amount of water that the contractor may request. However, the amount of SWP water actually allocated to contractors each year is dependent on a number of factors than can vary significantly from year to year. The primary factors affecting SWP supply availability include hydrologic conditions in northern California, the amount of water in SWP storage reservoirs at the beginning of the year, regulatory and operational constraints, and the total amount of water requested by the contractors. The availability of SWP supplies to MWA and the other SWP contractors is generally less than their full Table A amounts in many years and can be significantly less in very dry years.

DWR's "State Water Project Delivery Reliability Report 2009" (2009 SWP Reliability Report), issued in August 2010, assists SWP contractors in assessing the reliability of the SWP component of their overall supplies. The Report updates DWR's estimate of the current (2009) and future (2029) water delivery reliability of the SWP. The updated analysis shows that the primary component of the annual SWP deliveries (referred to as Table A deliveries) will be less

under current and future conditions, when compared to the preceding report (SWP Delivery Reliability Report 2007).

In the 2009 Report, DWR presents the results of its analysis of the reliability of SWP supplies, based on model studies of SWP operations. In general, DWR model studies show the anticipated amount of SWP supply that would be available for a given SWP water demand, given an assumed set of physical facilities and operating constraints, based on 82 years of historic hydrology. The results are interpreted as the capability of the SWP to meet the assumed SWP demand, over a range of hydrologic conditions, for that assumed set of physical facilities and operating constraints. In these model studies, DWR assumed existing SWP facilities and operating constraints for both the 2009 and 2029 studies. The primary differences between the two studies are an increase in projected SWP contractor demands and an increase in projected upstream demands (which affects SWP supplies by reducing the amount of inflows available for the SWP). DWR presents the SWP delivery capability resulting from these studies as a percent of full contractor Table A amounts, which is 60 percent of Table A as the long-term average supply until 2029, and then 61 percent in 2029 and after.

To estimate supply capability in intermediate years between 2009 and 2029, DWR interpolates between the results of those studies. In accordance with Section 10631(k) of the Act, the District has utilized and relied upon the information and analyses prepared by DWR and MWA for purposes of quantifying the amounts of SWP supplies available to the District and describing the reliability of that supply and vulnerability to seasonal, climatic, or other shortages during average, single-dry and multiple-dry year periods throughout the UWMP planning period.

The detailed information, analyses and conclusions set forth in this 2010 UWMP and the various supporting documentation (such as DWR's 2009 SWP Delivery Reliability Report and MWA's 2010 UWMP) demonstrate the availability and reliability of SWP supplies available to the District through MWA during normal, single-dry, and multiple-dry years over the next 20-year planning horizon and beyond. As analyzed and fully set forth by DWR and MWA, the District also recognizes that various factors exist that can possibly affect the consistency of SWP water supplies and the amount and timing of SWP exports from the Delta. Those factors include, without limitation, legal, regulatory, environmental, and water quality issues affecting threatened and endangered fish species in the Delta, drought conditions, seismic or other emergencies, climate change, or other extraordinary and unforeseen circumstances. Despite these possibilities, the District understands, as noted by the courts, that "some level of uncertainty is a permanent, inherent feature of modern water management which arises from a wide range of scientific and legal regulatory factors that cannot be avoided" and that "water management is subject to the vagaries of climate, competing demands … environmental constraints, and overlapping regulatory regimes of both the federal and state levels." Accordingly, while the District recognizes the various factors that can give rise to the possibility of affecting SWP supplies available to MWA, those possibilities have been expressly accounted for by DWR and are included within its long-term average delivery projections for SWP supplies. In turn, those projections have been utilized by MWA in its 2010 UWMP and are utilized and incorporated into this Plan for purposes of evaluating SWP supplies available to the District.

6.3 Average, Single-Dry, and Multiple-Dry Year Planning

Currently, the HDWD has three sources of water supply – imported SWP water purchased from MWA to recharge the groundwater basins, local groundwater (Warren Valley and Ames Valley Basins), and septic return flows.

These supplies are available to meet demands during average, single-dry, and multiple-dry years. The following sections elaborate on the different supplies available to HDWD during each of the various dry year conditions and what supplies can be expected. Each subsection will explain the criteria used for estimating single-dry and multiple dry supplies that are then used in the comparison tables in Section 6.4.

6.3.1 MWA Imported State Water Project Supply

For this Plan, the availability of SWP supplies from MWA was estimated by multiplying HDWD's SWP supply allocation under the Morongo Basin Pipeline Agreement (4,282 acre-feet per year) by the delivery percentages from DWR's 2009 SWP Reliability Report, discussed below. The three hydrologic conditions required to be evaluated for all UWMPs include:

1. an average year condition,
2. a single-dry year condition, and
3. a multiple-dry year condition.

The delivery percentages used for SWP imported water for each of the above conditions were taken from DWR's 2009 Report based on the 82-year average, 1977, and the 1931-1934 average, for the average year, single-dry year, and multiple-dry year conditions, respectively. The delivery percentages are detailed in Table 6-1 for HDWD.

TABLE 6-1
WHOLESALE SUPPLY RELIABILITY:
SINGLE-DRY YEAR AND MULTIPLE-DRY YEAR CONDITIONS

Wholesaler[(a)]	Average Year[(b)]	Single-Dry Year[(c)]	Multiple-Dry Year[(d)]
California State Water Project (SWP)			
2010			
% of Table A Amount Available	60%	7%	34%
Anticipated Deliveries (afy)	2,569	300	1,459
2030			
% of Table A Amount Available[(e)]	61%	11%	35%
Anticipated Deliveries (afy)	2,612	471	1,499

Notes:
(a) The percentages of Table A amount projected to be available are taken from Table 6.4 and 6.13 of DWR's State Water Project Delivery Reliability Report 2009 (August 2010). Supplies are calculated by multiplying HDWD's entitlement amount of 4,282 af (2010) by the appropriate percentages.
(b) Assumes 60% of Table A amount as the long-term supply until 2029 and then assume 61% in 2029 and after, based on the California Department of Water Resources 2009 contractor Delivery Reliability Report for MWA
(c) Based on the worst case historic single dry year of 1977.
(d) Supplies shown are annual averages over four consecutive dry years, based on the worst-case historic four-year drought of 1931-1934.
(e) See Table 6.13 in DWR's SWP 2009 Report. MWA's 2010 UWMP concludes that the Agency is capable of satisfying the imported water demands of its retail water agencies, including HDWD, through at least 2035. Refer to Table 3-1 in Chapter 3.

The DWR analyses estimate that the SWP deliveries during multiple-dry year periods could average about 34 to 35 percent of Table A amounts and could drop as low as 7 to 11 percent during an unusually dry single year. Table 6-1 summarizes the estimated SWP supply availability in a single dry year (based on a repeat of the worst-case historic hydrologic conditions of 1977) and over a multiple dry year period (based on a repeat of the worst-case historic four-year drought of 1931-1934). During a single-dry or critical year in 2010, as defined by the Sacramento River Index, the SWP will be able to supply an average of 300 acre-feet (af) to HDWD. Similarly in 2010, during a multiple-dry year period (1931-1934), MWA's SWP available supply to HDWD is estimated at 1,459 afy.

Although the 2009 Report presents an extremely conservative projection of SWP delivery reliability, particularly in light of events occurring since its release because it is based on the most up-to-date modeling by DWR, it remains the best available information concerning the SWP for use in preparing this Plan.

6.3.2 Local Supplies

The HDWD local water supplies include groundwater and septic system and irrigation return flows. The following subsections discuss how the estimates for each local supply source were derived for average, single-dry and multiple-dry year periods.

6.3.2.1 Groundwater

As described in Section 3.3, the District obtains groundwater from two basins, the Warren Valley Basin and the Ames Valley Basin. Groundwater production and management in the Warren Valley Basin is subject to requirements set forth in the 1977 Judgment, the Watermaster Rules and Regulations, the 1991 Warren Valley Basin Management Plan (WVBMP) and the 1996 Addendum. HDWD serves as the Watermaster for this adjudicated groundwater basin. Recent groundwater pumping for the HDWD service area from the Warren Valley Basin is summarized in Table 3-3. In 2010, HDWD withdrew 2,567 acre-feet (af) from wells in the Warren Valley Basin.

The District's second source of groundwater is produced from the Ames Valley Basin. Although the Ames Valley Basin has been identified as being in an overdraft condition, the Bighorn-Desert View Water Agency (BDVWA) is developing a Groundwater Management Plan (BDVWA GWMP) and Recharge Feasibility Study for the Basin area. The BDVWA GWMP will provide groundwater management strategies for a long-term sustainable supply from the Ames Valley Basin area, including enhanced aquifer recharge, expanded monitoring, and appropriate pumping restrictions. The GWMP is scheduled for completion in 2011. Recent groundwater pumping for the HDWD service area from the Ames Valley Basin is summarized in Table 3-5. In 2010, HDWD withdrew 489 af from its well in the Ames Valley Basin.

As fully set forth in the Sections above, both groundwater basins are protected by either adjudication or agreement and each utilizes or plans to utilize recharge water to replenish native groundwater supplies to ensure long-term reliability. Even during dry years, however, the Warren Valley and Ames Valley Basin remain as reliable sources for the District because groundwater in storage is sufficient to meet demands in dry years until those supplies can be replenished in years when SWP supplies are available at normal or above-normal levels.

6.3.2.2 Septic and Irrigation Return Flow

As previously discussed in Section 3.3, currently all the residents and businesses within HDWD's service area use septic systems, subsurface disposal systems, or on-site package treatment facilities to treat wastewater flows. Until the HDWD's planned Water Reclamation Facility (WRF) (planned for 2016) is constructed and a sewer collection system is installed for the Town of Yucca Valley (see Chapter 4 for details), the amount of septic return flows providing groundwater recharge is expected to increase as demands increase. The HDWD 2007 Water System Master Plan (2007 WSMP) reported that during a 13-year period when the average water pumped from the Warren Valley Basin was 2,575 afy, the estimated recharge due to septic and irrigation return was 820 afy, which translates to an estimated return of approximately 32 percent of the groundwater pumped. The 2007 WSMP included water supply projections that assumed a continued rate of 32 percent for return of pumped groundwater.

In both single-dry year and multiple-dry year conditions, the septic return flow supply is assumed to remain 100 percent available, where the amount of return flow is tied to the amount of pumped groundwater, whether from the native supply or from imported water recharged to the Basin. In the case of HDWD, the source of water does not affect how much water is returned to the Basin for subsequent reuse by the District. Accordingly, this source will remain constant and will continue to grow until 2016, at which time Phase 1 of the WRF will be completed and the District is expected to produce treated effluent wastewater at efficiency rates

substantially greater than 32 percent, all of which is projected to be utilized for ongoing groundwater recharge activities to increase the long-term supply and reliability of the District's groundwater resources.

6.4 Supply and Demand Comparisons

The available supplies and water demands for HDWD's service area were analyzed to assess the service area's ability to satisfy demands during three scenarios: an average water year, single-dry year, and multiple-dry years. The tables in this section present the supplies and demands for the various drought scenarios for the projected planning period of 2010-2035 in five year increments. Table 6-2 presents the base years for the development of water year data. Tables 6-3, 6-4, and 6-5 at the end of this section summarize, respectively, Average Water Year, Single-Dry Water Year, and Multiple-Dry Year supplies.

TABLE 6-2
BASIS OF WATER YEAR DATA

Water Year Type	Base Years	Historical Sequence
Average Water Year	Average	1922-2003
Single-Dry Water Year	1977	--
Multiple-Dry Water Years	1931-1934	--

6.4.1 Average/Normal Water Year

Table 6-3 summarizes HDWD's water supplies available to meet demands over a 25-year planning period during an average/normal year, utilizing 60 percent of Table A as the long-term average delivery of SWP supply until 2029, and then 61 percent in 2029 and after. As presented in the table, HDWD's water supply is broken down into existing and planned water supply sources, including wholesale (imported) water and local supplies. Demands are shown with the effects of urban demand reduction (conservation) implemented pursuant to SBX7-7 (discussed above).

6.4.2 Single-Dry Year

The water supplies and demands for HDWD's service area over a 25-year planning period were analyzed in the event that a single-dry year occurs, similar to the drought that occurred in California in 1977 as provided by the DWR 2009 SWP Delivery Reliability Report. Table 6-4 summarizes the existing and planned supplies available to meet demands during a single-dry year. Demand during dry years was assumed to increase by 10 percent.

6.4.3 Multiple-Dry Year

The water supplies and demands for HDWD's service area over a 25-year planning period were analyzed in the event that a four-year multiple-dry year event occurs, similar to the drought that occurred during the years 1931 to 1934 as provided by the DWR 2009 SWP Delivery Reliability Report. Table 6-5 summarizes the existing and planned supplies available to meet demands during multiple-dry years. Demand during dry years was assumed to increase by 10 percent.

6.4.4 Summary of Comparisons

As shown by the information and analyses set forth above and below, HDWD is projected to have adequate supplies to meet forecasted demands during average, single-dry, and multiple-dry years throughout the 20-year planning period and beyond.

TABLE 6-3
PROJECTED AVERAGE/NORMAL YEAR SUPPLIES AND DEMAND (AFY)

Water Supply Source	2010	2015	2020	2025	2030	2035
Existing Supplies						
Local Supplies[a]						
Groundwater Replacement Purchased Through MBP Entitlement	2,569	2,569	2,569	2,569	2,612	2,612
Return from Septic Tanks	820	820	0	0	0	0
Groundwater (Ames Valley Basin)	800	0	0	0	0	0
Groundwater (Warren Valley Basin)[b]	1,622	1,622	1,622	1,622	1,622	1,622
Reserves/Banked Groundwater (Cumulative af)	15,524	20,416	24,480	27,676	29,957	31,279
Total Existing Supplies[b]	**19,713**	**23,805**	**27,049**	**30,245**	**32,569**	**33,891**
Planned Supplies[a,c]						
Recharge Projects	0	0	1,863	2,604	2,737	2,876
Recycled Water	0	0	0	0	0	0
Ames (Reche) Recharge Project	0	703	703	703	703	703
Total Supplies[b]	**19,713**	**24,508**	**29,615**	**33,552**	**36,009**	**37,470**
Total Adjusted Demand[d]	**3,147**	**3,483**	**3,567**	**3,728**	**3,888**	**4,049**

Notes:
(a) Taken from Chapter 3 Water Resources, Table 3-1.
(b) Per Warren Valley Basin adjudication, see Section 3.3.1.1. To ensure a conservative analysis, the adjudicated rights to the Warren Basin are not reflected in the water supply totals; however, the District maintains legal flexibility to exercise these rights.
(c) Not needed during average/normal years.
(d) Conservation is assumed in demands using SBX7-7. See Chapter 2 Water Use, Table 2-7.

TABLE 6-4
PROJECTED SINGLE-DRY YEAR SUPPLIES AND DEMAND (AFY)

Water Supply Source	2010	2015	2020	2025	2030	2035
Existing Supplies						
Local Supplies[a]						
Groundwater Replacement Purchased Through MBP Entitlement[b]	300	300	300	300	471	471
Return from Septic Tanks	820	820	0	0	0	0
Groundwater (Ames Valley Basin)	800	0	0	0	0	0
Groundwater (Warren Valley Basin)[c]	1,622	1,622	1,622	1,622	1,622	1,622
Reserves/Banked Groundwater (Cumulative af)	15,524	20,416	24,480	27,676	29,957	31,279
Total Existing Supplies[c]	**17,444**	**21,536**	**24,780**	**27,976**	**30,428**	**31,750**
Planned Supplies[a,d]						
Recharge Projects	0	0	1,863	2,604	2,737	2,876
Recycled Water	0	0	0	0	0	0
Ames (Reche) Recharge Project	0	703	703	703	703	703
Total Supplies[c]	**17,444**	**22,239**	**27,346**	**31,283**	**33,868**	**35,329**
Total Adjusted Demand[e]	3,462	3,831	3,924	4,101	4,277	4,454

Notes:

(a) Taken from Chapter 3 Water Resources, Table 3-1.

(b) SWP supplies are calculated by multiplying HDWD's SWP allotment of 4,282 afy by percentages of single-dry deliveries projected to be available for the worst case single dry year of 1977 (7% in 2009 and 11% in 2029), taken from Tables 6.40 and 6.13 of DWR's 2009 SWP Reliability Report.

(c) Per Warren Valley Basin adjudication, see Section 3.3.1.1. To ensure a conservative analysis, the adjudicated rights to the Warren Basin are not reflected in the water supply totals; however, the District maintains legal flexibility to exercise these rights.

(d) Not needed during this scenario.

(e) Conservation is assumed in demands pursuant to the requirements of SBX7-7. See Chapter 2 Water Use, Table 2-7. Also assumes increase in total demand of 10 percent during dry years.

TABLE 6-5
PROJECTED MULTIPLE-DRY YEAR SUPPLIES AND DEMAND (AFY)

Water Supply Source[a]	2010	2015	2020	2025	2030	2035
Existing Supplies						
Local Supplies[b]						
Groundwater Replacement Purchased Through MBP Entitlement[c]	1,456	1,456	1,456	1,456	1,499	1,499
Return from Septic Tanks	820	820	0	0	0	0
Groundwater (Ames Valley Basin)	800	0	0	0	0	0
Groundwater (Warren Valley Basin)[d]	1,622	1,622	1,622	1,622	1,622	1,622
Reserves/Banked Groundwater (Cumulative af)	15,524	20,416	24,480	27,676	29,957	31,279
Total Existing Supplies[d]	**18,600**	**22,692**	**25,936**	**29,132**	**31,456**	**32,778**
Planned Supplies[e]						
Recharge Projects	0	0	1,863	2,604	2,737	2,876
Recycled Water	0	0	0	0	0	0
Ames (Reche) Recharge Project	0	703	703	703	703	703
Total Supplies[d]	**18,600**	**23,395**	**28,502**	**32,439**	**34,896**	**36,357**
Total Adjusted Demand[f]	3,462	3,831	3,924	4,101	4,277	4,454

Notes:

(a) Supplies shown are annual averages over four consecutive dry years (unless otherwise noted).

(b) Taken from Chapter 3 Water Resources, Table 3-1.

(c) SWP supplies are calculated by multiplying HDWD's SWP allotment of 4,282 afy by percentages of multiple-dry deliveries projected to be available for the worst case four-year drought of 1931-1934 (34% in 2009 and 35% in 2030), taken from Tables 6.4 and 6.13 of DWR's 2009 SWP Reliability Report.

(d) Per Warren Valley Basin adjudication, see Section 3.3.1.1. To ensure a conservative analysis, the adjudicated rights to the Warren Basin are not reflected in the water supply totals; however, the District maintains legal flexibility to exercise these rights.

(e) Not needed during for this scenario.

(f) Conservation is assumed in demands pursuant to the requirements of SBX7-7. See Chapter 2 Water Use, Table 2-7. Also assumes increase in total demand of 10 percent during dry years.

Section 7: Water Demand Management Measures

HDWD has a long standing history of conservation efforts and has been aggressively implementing programs for almost three decades. As a result of these efforts water use in the District is one of the lowest in the Colorado River hydrologic region at 123 gallons per capita per day (gpcd), well below the SBX7-7's hydrologic region target of 211 gpcd in 2020.

7.1 Conservation Program Background

In the early 1980s, the Warren Valley Groundwater Basin experienced an overdraft condition which triggered a temporary moratorium on new meters. This prompted the development of an aggressive, long-term approach to monitoring and reducing water use, which incorporated all the elements of traditional water conservation programs, but focused heavily on regulatory programs and pricing. The District is one of the first in the state to implement tiered rates structures (1981), a mandatory retrofit on resale or account transfer ordinance, and landscape water budget requirements. These elements combined with incentives, waste management, outreach and education have been very effective in reducing the District's water use to an average of 123 gpcd.

7.1.1 Regional Efforts

In August of 2003, Mojave Water Agency (MWA) retailers, including HDWD, decided that a united regional water conservation program was needed and the Alliance for Water Awareness and Conservation (AWAC) was formed under the leadership of the District's wholesaler, Mojave Water Agency. AWAC includes approximately 25 participating agencies primarily in and around the Mojave Desert. AWAC receives funding from the California Department of Water Resources (DWR) and from MWA to implement water savings measures, including outreach, education and customer incentives.

According to the enabling Memorandum of Understanding (MOU), the purpose of the AWAC is to "provide a vehicle to attract support for a regional water conservation program and coordinate implementation of activities by forming partnerships to obtain common, measurable goals." AWAC set three goals that aim to change water-use habits and empower High Desert communities with the tools to ensure adequate supplies of water for future generations:

1. Educate the local communities with the understanding of the importance of water conservation;

2. Provide the local communities with the tools to effectively reduce per capita consumption to targeted goals; and,

3. Reduce regional water use by 10 percent gross per capita by 2010 and 20 percent gross per capita by 2020 (5 percent in the Morongo Basin by 2015) to achieve a sustainable, reliable supply to meet regional water demands. The lower reduction percentage for the Morongo Basin, which includes HDWD, is intended to reflect the reality that current water use in this area is lower than most other parts of the service area. Hi-Desert Water District leads the way as the lowest per capita water use retailer in the Morongo Basin.

AWAC has reported that region-wide water use dropped approximately 22 percent from 2000 through 2008, a period when the area's population increased by 40 percent. These numbers indicate the effectiveness of AWAC's education programs and the policies adopted by HDWD and other participating agencies.

7.2 California Urban Water Conservation Council

HDWD is one of the original signatories to the Memorandum of Understanding Regarding Water Conservation in California (MOU) of the California Urban Water Conservation Council (CUWCC) and remains committed to furthering the goal of effective water conservation efforts within the District's service area. The CUWCC is a consensus-based partnership of agencies and organizations concerned with water supply and conservation of natural resources in California. Although Hi-Desert Water District is not an active member of CUWCC, because it has elected to not renew membership due to financial hardship, it remains committed to the conservation goals of CUWCC. Instead, the funds that would go toward the membership are being allocated locally to the conservation programs.

7.2.1 MOU Compliance

HDWD is pursuing a Best Management Practices (BMP) approach to the MOU compliance and has received DWR approval on its AB 1420 filing (Appendix H). The AB 1420 filing identifies a gpcd approach; however, for the purposes of the UWMP and SBX7-7 compliance, the District has concluded that the BMP approach is most appropriate at this time. This is due to the difficulty to establish a baseline for the gpcd approach, given the long-standing nature of conservation efforts in the District. The District is implementing all of the Foundational BMPs and a number of the Programmatic BMPs. As a result of the overdraft and moratorium in the early 1980s, HDWD started to look seriously at conservation as a tool to address long term supply issues. The District developed a program consisting of tiered rates, mandatory retrofit requirements and water use restrictions, among other things. All have proven highly successful in reducing demand and meeting the MOU objectives to effectively reduce water use. HDWD continually monitors its water production and consumption data to evaluate trends in water use. The District checks for changes in observed water use per service connection and uses that information to periodically evaluate the effectiveness of its conservation programs and the potential need for adjustments.

The following describes the various programs being implemented by the District.

7.3 Foundational BMPs

7.3.1 Utility Operations Programs

7.3.1.1 Operations Practices

a. <u>Conservation Coordinator</u>

The District's conservation program is staffed by various departments. The Public Information Officer (PIO) coordinates the District's water conservation activities and

directly manages the public information and education elements of the program. The Customer Services/Field Services Supervisor coordinates and implements the field portions of the program including residential, CII and landscape audits as well as water waste enforcement. Operations Staff are charged with water loss control.

b. Water Waste Prevention

In 1992, HDWD adopted Ordinance No. 68 which established prohibitions and restrictions on the use of water, penalties for violations and opportunities for appeal (Appendix I). Restrictions include:

- Hose washing of sidewalks, walkways, driveways and parking areas;
- Using potable water to clean, fill, operate or maintain levels in decorative fountains;
- Allowing water leaks;
- Using potable water for irrigation between the hours of 9:00 a.m. and 5:00 p.m. during the high use season (June 1 through September 30);
- Irrigation, regardless of season, in excess of three times per week;
- Limitations on potable water use for construction purposes;
- Using potable water to maintain dirt roads without application to the District;
- Providing water to customers in restaurants only upon request;
- Non-commercial washing of privately owned vehicles, trailers, motor homes, busses or boats must utilize a bucket and a hose equipped with an automatic shut-off nozzle; and
- Use of water for any purpose which results in flooding or run-off onto hardscape, driveways, streets, adjacent lands or into gutters.

Penalties for violating the Ordinance range from a warning notice on first violation to the installation of a restrictor or service shut-off on the third violation.

7.3.1.2 Water Loss Control

The District has identified system water losses as a high priority in its mission to reduce water use and has developed a comprehensive program to address the different types of losses, ranging from system leaks to meter read issues.

The District implemented the AWWA M36 Standard Water Audit methodology for Fiscal Year 2010, receiving a score of 75 with an infrastructure leakage index (ILI) of 1.1 (Appendix J). The results indicate that HDWD is doing well in mitigating its losses. An ILI between 1 and 3 is the optimal tier and is considered good business practice. Suppliers are encouraged to maintain their ILI in this tier if they have costly water and a potential expansion of existing infrastructure is

encouraged if leaks are exacerbated or resources are limited. For more information see: http://www.awwa.org/Resources/WaterLossControl.cfm?ItemNumber=48511&navItemNumber=48158&showLogin=N. Staff will review the comments in the grading matrix for potential options for improving current operations.

The District uses records of total water production and measured consumption to track the volume of water loss, or non-revenue water (NRW) (or "Unaccounted For/System Losses" as listed in Table 2-7). The District's 2007 Water System Master Plan (2007 WSMP) included historical values for NRW, which are summarized in Table 7-1.

TABLE 7-1
WATER LOSS (AFY)

Year	Production	Consumption	Water Loss	Water Loss %
2005/06	3,188	2,894	294	9%
2006/07	3,470	3,312	158	5%
2007/08	3,236	2,946	290	9%
2008/09	3,302	3,032	270	8%
2009/10	3,175	2,958	217	7%

For the years 2005 through 2010, NRW was approximately 10 percent of total production. During that time the percentage NRW varied from 5 to 9 percent.

Observed water leaks are addressed and repaired as quickly as possible. Field personnel are also trained to recognize and address potential main line leaks. The District has meters on all service connections and annually evaluates the NRW lost to leaks or unmonitored use.

The District also has a program to replace the oldest and most leak-prone lines by using its Geographic Information System (GIS) to track the occurrence of leaks. When this information is combined with the pipeline inventory in the GIS, rates of leak occurrence are calculated for different types of pipe. This information is then used to identify and prioritize pipeline replacement projects.

The pipeline replacement program began in 1995; at the time the District budgeted approximately $1,000,000 per year for the program and estimated that it saved about 100 afy through the effort. The District's 2007 WSMP included an update to the pipeline replacement program. As part of a Capital Replacement Program (CRP), the District divided its service area into 22 regions based on geographic location and pressure zone boundaries. A total of approximately 450,000 feet of pipeline replacement projects were identified based on condition or hydraulic deficiencies. Priorities were then calculated for each region based on leaks per unit pipe length and available fire flow. Pipeline replacement projects are currently being implemented to address these priorities. The District averages replacing 30,000 linear-feet of pipeline a year.

The District continues to track and report total production, total metered consumption, and NRW. These reports are reviewed by District management and used to monitor progress on reducing leaks in the system. By using leak occurrence in the prioritization methodology for

pipeline replacements in the CRP, the District continues to reduce the water lost to leaks. The District currently budgets approximately $1,200,000 per year for expenditures on the transmission and distribution system, including leak repairs.

In addition to a pipeline replacement program and a service line replacement program, the District has a water meter replacement program for those meters that have recorded an excess of 2,500 units or 1.8 million gallons of water. Replacing these meters ensures that all of the water flowing through those meters is accurately accounted for and billed.

7.3.1.3 Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

All of HDWD's customers are metered and billed volumetrically on a monthly basis. The District has approximately 9,800 active services and a total of 10,400 service accounts.

Multi-family customers are typically served by a single master meter; however, individual water meters are required for all new multi-family structures. For existing multi-family customers, there is no intention to require conversion to submeters as the conversion would be cost prohibitive.

7.3.1.4 Retail Conservation Pricing

Pricing is one of the most important and effective tools for promoting efficient water use in the HDWD service area. The District was one of the earliest adopters of a tiered rate structure (adopted in 1981) for use as an incentive for conservation. Currently, the structure has four-tiers (Table 7-2). The structure is aggressively tiered with a penalty tier at 150 percent over the conserving tier.[3]

TABLE 7-2
WATER RATE STRUCTURE

Tier	Units (100 cubic feet)	$ per 100 cubic feet
1	0 - 4	$3.40
2	5 -10	$5.30
3	11 - 28	$6.41
4	29 – over	$8.56

The District also has eight large landscape customers with established irrigation budgets as set forth in the District's Landscape Ordinance No. 72. These customers are charged at the Tier 3 rates for water that is used within the budgeted amount, and billed at Tier 4 rates for all water use if they exceed the established budget. Revenue assumptions for the 2011/2012 budget based on the current rate model anticipate revenue, excluding the capital replacement charge, debt charge, standby fees and property tax, to be $7.6 million, of which 75% or $5.7 million is from volumetric consumption revenue.

[3] The Legislature intends that allocation-based conservation water pricing is an alternative method that can be used by public entities to encourage water users to conserve water per California Water Code, Sections 370-375.

7.4 Education Programs

The District runs its Public Information and Education programs in addition to the collaboration with AWAC and MWA.

7.4.1 Public Information Programs

The District has had an active public information program since 1990. The District budgets approximately $30,000 each year for public information activities which include:

- A web site at http://www.hdwd.com which provides information about the District, its conservation programs, water use efficiency tips, a link to the AWAC website and other water related sites.
- Bill inserts, newsletters, DVDs, and, pamphlets that provide information on water conservation.
- Lobby displays and television to air special water related programs.
- District Board meetings which are aired on local cable television.
- Public access television special programs and slides.
- Newspaper and radio public service announcements and paid advertisements.
- Landscape demonstration garden at the District's administration facility.
- Speaker's bureau on water conservation and other District subjects.
- Digital message sign on the Highway.
- District tours.
- Booths at community events.
- Providing resources to Teachers along with classroom presentations and activities.

In addition to the programs it runs independently, the District also benefits from regional collaborations. MWA and AWAC provide outreach, educational and informational materials and literature; public service announcements and paid advertisements; flyers ; a conservation website (http://www.hdawac.org/); brochures and classes to encourage drought-tolerant landscaping, and articles in newsletters, Chamber of Commerce publications and regional newspapers. AWAC also has a speaker's bureau for groups interested in learning about water conservation. In addition, MWA operates a demonstration garden at its headquarters to showcase drought-tolerant plants, assists in hosting and staffing workshops on conservation and sponsors and hosts public events and booths at community functions. Table 7-3 provides a full list of public information events.

The AWAC operational plan highlights public information programs and specifically identifies a number of activities:

- Landscape Templates - developed for homeowners, businesses and landscaping professionals for use in designing desert appropriate landscapes
- Beautiful High Desert Gardening CD-Rom- provides in-depth analysis of plant types, soil types and hydrozones for High Desert species
- High Desert Water-wise Landscaping DVD- promoting water efficient landscaping techniques in design and implementation using a workshop approach
- Nursery Program and Informational Plant Stands- water efficient plant types and desert adaptive species are presented to the public in attractive displays for use by professional plant nurseries
- Outreach Materials- developed for distribution and informational purposes:
    - A Guide to High Desert Landscaping Booklet
    - A Complete Guide to High Desert Water Conservation Booklet
    - High Desert Vegetable Planting Guide
    - Water Efficient and Native Plant Lists
    - Water Efficient Irrigation Pamphlet
    - Water Efficient Landscaping Handout
    - Water-Smart Landscaping Pamphlet
- Plant of the Month- monthly publication in local newspapers illustrating the beauty and efficiency of High Desert natives and water efficient plant types

TABLE 7-3
PUBLIC INFORMATION EVENTS

Activity	Number of Events				
	2006	2007	2008	2009	2010
Paid Advertising	520	520	780	1040	780
Public Service Announcement	6	1	2	5	3
Bill Insert/Newsletter/Brochure	8	10	12	14	14
Demonstration Garden	1	1	1	1	1
Special/Media Events	0	0	3	4	4
Speaker's Bureau	0	1	3	5	3

7.4.2 School Education Programs

The District provides education programs on request (Table 7-4). The District sends a letter to each school offering to speak at a class and/or to provide materials, has developed a teacher newsletter and uses its website to ensure that teachers are aware of the resources available. Materials, which meet California's standards-based curriculum and are classroom-ready, include educational videos and DVDs, lesson plans, and activity sheets. Project Water Education for Teachers (WET) materials are used for classroom activities and lessons are available to the teachers as a resource. District staff has hosted classroom tours to District facilities and conducted a tour of District facilities specifically for teachers. The District also participates in career fairs at the high school and local community college.

TABLE 7-4
SCHOOL EDUCATION PROGRAMS (NUMBER OF CLASSES)

	2006	2007	2008	2009	2010
Grades K-3rd		1	2	2	1
Grades 4th-6th				2	1
Grades 7th-8th					
High School	1	1		1	1
Expenditures ($)	200	300	300	500	300

MWA also supports water conservation education programs in schools within the Morongo Region to promote conservation. The District is an active participant in the local AWAC program. School education is also a cornerstone of AWAC's mission which is highlighted through a number of activities identified in its Operational Plan:

- Educational Partnerships- working with school districts, charter schools, Barstow College, Copper Mountain College, and Victor Valley College
- Mojave Environmental Education Consortium (MEEC) Executive Board Position- developing curriculum and funding environmental education region-wide

- Project WET Training- working with water agency staff to provide educational training in water conservation in order to provide lessons on water conservation to school-aged children

7.5 Programmatic BMPs

The District is utilizing the gpcd approach for MOU compliance. The following sections describe the programs being implemented in the service area.

7.5.1 Residential Programs

HDWD has focused much of its conservation efforts of residential use. Over 90 percent of HDWD's customers are residential, almost 95 percent of which are single family, accounting for the same proportion of total use.

7.5.1.1 Residential Survey and Retrofit Programs and Residential Landscape Audit

The District's audit program was launched in 1990. District staff perform the following audit tasks upon customer request at no charge.

- Checking for leaks in toilets, faucets and showerheads and using the meter to check for any additional silent leaks.
- Checking showerheads and toilets for low flow efficiency.
- Checking irrigation systems and timers for proper functionality.
- Checking for properly wrapped water pipes including swamp cooler lines.
- Educating the customer on how to check for leaks on their own as well as the advantages of low-flow toilets and showerheads and informing of them of any programs that might be appropriate.
- Reviewing the District's seasonal watering hours and other landscape scheduling issues with the customer.

Data on the quantity of survey performed for 2006 through 2010 are shown in Table 7-5. Both single-family and multi-family survey quantities have been combined into one since the data that separates these two classes is not readily available.

The BMP requires surveys be provided to 1.5 percent of residential accounts per year, or about 135 per year for ten years. HDWD has provided an average of 204 surveys per year since 2006.

TABLE 7-5
RESIDENTIAL WATER AUDITS

	2006	2007	2008	2009	2010
Number of Residential (SFR & MFR) Audits	395	280	110	95	141

7.5.1.2 High Efficiency Clothes Washers (HECWs)

HDWD provided its customers with HECW rebates through an AWAC program that ran during 2008 and 2009. AWAC offered a $175 rebate incentive for the purchase of a qualifying HECW with a water saving factor of 6.0 or less. This incentive was available to customers of HDWD as well as customers of the other participating agencies in AWAC.

For HDWD, the program was highly successful. Approximately 300 rebates were distributed to HDWD customers, saving approximately 5.38 afy. AWAC financed the rebates and the District financed the promotional elements of the program including advertisements, ensuring the retailers were educated and had all the application materials and customer bill inserts. The program was discontinued by MWA due to budgetary constraints.

The program, with a rebate of $150, is not cost-effective for HDWD to run on its own, with a cost: benefit of 0.9, as shown in Table 7-6. The assumptions are based on CUWCC estimates from Research and Evaluation Committee Report (8/13/09) which identify a savings per unit of 0.031 afy and a decay rate of 8 percent. Administrative costs of 30 percent are assumed and include customer contact, inspection scheduling, marketing materials and follow up.

TABLE 7-6
COST-EFFECTIVENESS OF HECW REBATES

DWR DMM Review Table	
Cost Effectiveness Summary	
Total Costs	$31,926
Total Benefits	$28,410
Benefit/Cost	0.89
Discount Rate	2.9%
Time Horizon	25 years
Water Savings (afy)	58

7.5.1.3 Water Sense Specification (WSS) Toilets

HDWD was one of the first water agencies in the State to adopt a mandatory retrofit on transfer of service/resale that addresses not only resale but also rental properties. When a service account is transferred into a new name, it triggers a retrofit requirement. In 1990, the District developed a residential and commercial plumbing retrofit program through Resolution No. 90-4 and ultimately adopted it as HDWD Water District Code Chapter 5.55 (Appendix I). The Water Code requires that all fixtures be replaced with low-flow fixtures whenever a structure is sold or rented to a new tenant. The fixtures specified include ultra-low-flush toilets (1.6 gallons per flush (gpf)), showerheads (2.5 gpm), new flow restrictors (2.5 gpm) and self-closing faucets in public restrooms.

In addition, the Water Code sets requirements for new construction, including:

A. Hot water recirculating units must be equipped either with a timer or a thermostat for energy conservation; and all pipes shall be wrapped and insulated.

B. Landscape plans comply with the low water-use guidelines established by HDWD.

C. Water-cooled refrigerating systems must utilize the best available technology for water savings and shall be equipped with one or a combination of the following devices:

    1. Cooling tower;

    2. Evaporative condenser;

    3. An acceptable water recirculating device.

Multiple-dwelling unit structures are considered as one street address. However, such systems must be equipped with:

1. Water regulation valves adjusted to use the minimum amount of water;

2. Thermostats that will positively stop water flow when off.

These requirements are effectively enforced by the District. Prior to the issuance of a will-serve letter issuing water to new meters, for both commercial and residential applicants, the applicant must identify types of fixtures to be installed and sign an agreement that affirms that such fixtures will be installed. Upon completion of the project, a representative of the District inspects the facilities and certifies that the required and designated fixtures have been installed. Service shall be contingent upon such certification and is not provided until fixtures are installed and reinspected. Table 7-7 provides the number of retrofit inspections completed from 2006-2010. The District estimates 90% of residential customers are retrofitted.

TABLE 7-7
PLUMBING RETROFIT INSPECTIONS PERFORMED

	2006	2007	2008	2009	2010
Number of Inspections	432	351	120	106	169

HDWD estimates that approximately 8,032 of the 9,800 active service connections have been retrofitted or 82 percent of the total connections have replaced their older model toilets. This is largely a result of the plumbing retrofit on resale requirements adopted in 1992 (see Section 3.2), combined with natural turnover and rebate programs.

During 2008, 2009 and the first half of 2010, AWAC provided vouchers and rebates for approximately 200 toilets in the HDWD service area. The program offered up to $165 towards the purchase of toilet and was limited to customers in homes built before 1992. HDWD contacted those customers directly who had not previously had a transfer of service or

otherwise triggered the retrofit requirements to inform them of the program and their likely eligibility.

7.6 Commercial, Industrial, and Institutional (CII) Programs

The large majority of HDWD's water use is with single-family residential development; CII and landscape uses combined account for less than 7 percent of total. The estimated breakdown of accounts and usage between customer classes is shown in Table 7-8. The main vehicle for ensuring efficient use among CII customers is the District's conservation-based tiered rates, which discourages water waste through increasing rates as more water is used. The District expects that rates and regulations, combined with the programs described below will result in the required 10 percent decrease, or about 2.3 afy. The District will track individual CII water consumption to determine the effectiveness of the program as described below and quantify the real water savings.

TABLE 7-8
ESTIMATED CURRENT ACCOUNTS AND USAGE FOR CUSTOMER CLASSES

Year		Single Family	Multi-Family	Commercial	Industrial	Irrigation	Total
	# of Accounts	8,740	305	915	102	46	10,108
2010	Usage (af)	2,435	245	86	29	82	2,877

7.6.1 CII Audits

CII customers are eligible to participate in the existing audit program (Section 7.5.1.1). Participation is prompted either by the customer or the District. CII customers typically contact the District for an audit when they receive a high bill or the District contacts the customer when a higher than normal read is detected in billing. Table 7-9 shows the number of CII surveys performed.

TABLE 7-9
CII AUDITS

	2006	2007	2008	2009	2010
Number of CII audits	12	12	6	10	15

7.6.2 Waterless Urinal Pilot Study

In fiscal year (FY) 2010, the District launched a pilot program with public facilities to test the effectiveness of waterless urinals. Six urinals have been installed at a number of sites including the HDWD, the California Welcome Center, the Town of Yucca Valley, and the Boys and Girls Club. Results so far are positive, showing significant savings in water use as well as maintenance and labor. The District is considering expanding this program to its CII customers pending final results of the pilot.

7.6.3 Future Opportunities

The District is exploring the potential for water savings in some of its CII customers, particularly the older hotels in the service area who tend to still have inefficient plumbing fixtures. The District is looking at a variety of water saving opportunities including showerheads for hotels, water brooms, retrofits and efficient landscaping.

7.7 Landscape Programs

A significant element of the AWAC effort is promoting efficient and appropriate desert landscaping. To this end, AWAC recently developed brochures and a Digital Versatile Disk (DVD) specifically addressing the requirements of high desert landscapes. HDWD promotes and distributes these materials within its service area.

Landscape water use is not significant in the District. Dedicated irrigation accounts for less that 3 percent of total use or about 82 afy (Table 7-8) and residential customers do not typically have lawns, and if they do, they tend to be small. Typically developers do not include landscaping in new developments. HDWD has developed a program that combines rates, local ordinances, education and customer support to manage its landscape uses.

7.7.1 Landscape Ordinance

In 1995, the District adopted landscape Ordinance No. 72 (Chapter 5.50), which applies to all new and rehabilitated landscape areas greater than 500 square feet for industrial, commercial, recreational projects, and developer-installed landscaping. A copy of HDWD Ordinance No. 72 is included as Appendix I. As a condition of the issuance of a landscape irrigation meter, plans for proposed landscaping and irrigation of any project must be submitted for review and approval. If the District determines that the estimated annual water use for the project exceeds the monthly maximum allowable water budgets for the project, then the District will deny the application. No landscape irrigation meter will be issued until the District approves the monthly maximum allowable water budgets for the landscaped area.

The Ordinance establishes water budgets and requires water audits to ensure that the irrigation system is operating efficiently. The water budget is allotted based on water tolerant plants and turf limitations. If the budget is exceeded by 10 percent in any given year, then a penalty water rate is applied. For repeat violations, restriction or discontinuance of the irrigation water service is possible until it is demonstrated that the irrigation system and/or landscaping have been corrected to use water in accordance with the monthly maximum allowable water budgets.

HDWD is currently working with the local municipalities to adopt a local version of the California Model Water Landscape Ordinance.

7.7.2 Landscape Rates and Budgets

There are 46 irrigation accounts in the District that have separate irrigation meters from the domestic meter; all are subject to the landscape ordinance, have water budgets filed with the District and typically irrigate well within their budget allocation. These accounts are billed based on the standard tier structure. It is rare that any enforcement is required but District staff

watches for water waste and leaks and send warning letters in those cases. The rates are effective to discourage waste, as they drastically impact a customer's water bills. Most situations monitored and are quickly corrected by the customer voluntarily.

The District has identified eight irrigation accounts that have worked closely with the District to establish budgets according to Ordinance 72 (previously Ordinance 70). To qualify they must use recreational turf such as the Little League Park, Community Center, sports fields, schools and other public parks. The District works closely with these customers providing direct support to manage their allocated budget. These customers are assigned annual and monthly water budgets which are subject to a base and penalty rate. These accounts are billed differently than the other irrigation customers: the base rate is Tier 3 if water use is within the budget, and all the water is billed at Tier 4, if they exceed the budget. HDWD is currently working to enlist the local high school football field into this program.

7.7.3 Cash- for- Grass

Starting in 2008, AWAC offered incentives for the replacement of turf with drought-tolerant landscaping. This program is open to both residential and CII accounts with caps of $3,000 and $10,000 respectively. In the District's service area, a total of 12 customers successfully participated in the program, providing approximately $11,000 in rebates, or 22,000 square feet of turf replacement, and an estimated water savings of 3.6 afy.

7.8 AB 1420 and SBX7-7 Implementation Plan

The SBX7-7 2020 goal for the District has been calculated in Chapter 2 to be 117 gpcd. Water use in 2009 was 120 gpcd. It is expected that continuing with the programs described in the above sections as well as the new programs being considered, will yield compliance by 2020.

HDWD has complied with AB 1420 through a GPCD approach and has received the approval letter from the Department of Water Resources. The District will comply with SBX7-7 using the BMP approach. HDWD is currently implementing all BMPs except for the HECW BMP, from which it is taking an exemption. In addition to BMP implementation, the District relies on its tiered rate structure, mandatory retrofit on resale or account transfer ordinance, landscape water budget requirements. These elements combined with incentives, waste management, outreach and education have been very effective in reducing the District's use.

7.9 Evaluating Effectiveness of the DMMs

The District will continue to track all program activities including outreach activities, rebate distribution, and audits. Program effectiveness and per capita use will be monitored through the billing system.

7.9.1 Impacts of Conservation

It is not expected that, at this time, the conservation programs currently being implemented or scheduled for implementation will have any significant negative effect on water use within the District's service area of affect the District's ability to further reduce demand.

7.9.2 Economic Impacts

Analysis of the requirements for BMP compliance yields are detailed in Table 7-10.

TABLE 7-10
PROJECTED COSTS OF CONSERVATION PROGRAMS

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Meter Replacement	$25,000	$26,000	$27,040	$28,122	$29,246	$30,416	$31,633	$32,898	$34,214
Main Line Replacement	$1,238,741	$1,288,291	$1,339,822	$1,393,415	$1,449,152	$1,507,118	$1,567,403	$1,630,099	$1,695,303
Staffing	$39,254	$41,216	$43,277	$45,441	$47,713	$50,099	$52,604	$55,234	$57,996
Education	$30,000	$31,500	$33,075	$34,729	$36,465	$38,288	$40,203	$42,213	$44,324
Water Awareness	$2,500	$2,625	$2,756	$2,894	$3,039	$3,191	$3,350	$3,518	$3,694
Total	**$1,335,495**	**$1,389,632**	**$1,445,971**	**$1,504,601**	**$1,565,615**	**$1,629,112**	**$1,695,192**	**$1,763,962**	**$1,835,530**

Section 8: Water Shortage Contingency Planning

8.1 Overview

Water supplies may be interrupted or reduced significantly in a number of ways, such as a drought which limits supplies, an earthquake which damages water delivery or storage facilities, a regional power outage, or a toxic spill that affects water quality. This chapter of the Plan describes how Hi-Desert Water District (HDWD, District) plans to respond to such emergencies so that critical needs are met promptly and equitably.

The HDWD has developed two distinct policies for addressing water shortage emergencies. The first is intended for long-term shortage due to a decline in groundwater storage reserves of the groundwater basins. This policy, adopted Board Policy No. 26-04, addresses the response to a long-term water shortage and includes growth restrictions based on three stages of conditions (Appendix K) and as described in this section. The second policy is intended for short-term water shortages, such as a natural disaster or other catastrophic events, and includes a three-stage plan for responding to the shortage. This policy, adopted via Resolution No. 90-3, includes mandatory stages to address a reduction in water supply (Appendix L). Prohibitions, penalties and financial impacts of shortages have been developed by HDWD and are summarized in this chapter. The District also has access to two emergency tie-ins - one with Bighorn-Desert View Water Agency (BDVWA) and one with Joshua Basin Water District (JBWD).

8.2 Coordinated Planning

As discussed in the Chapters above, HDWD has reliable rights and access to imported State Water Project (SWP) supplies through its wholesale contractor Mojave Water Agency (MWA). During past water shortages, HDWD has managed to meet all their demands by pumping groundwater only. Also, HDWD could tie-in to the JBWD or BDVWA for emergency situations.

8.3 Stages of Action to Respond To Water Shortages

The District has two distinct policies for addressing water shortage emergencies. Each of those policies is further described below.

8.3.1 Long-Term Decline in Basin Reserves

In 2004, the District Board adopted Policy No. 26-04 to address situations where the reserves in the groundwater basins drop to a certain level. Prior to 1995, the Warren Valley Groundwater Basin (Basin) had been in an overdraft condition. Upon completion of the Morongo Basin Pipeline in 1995, it was the goal of the District to replenish the Warren Basin and establish sufficient reserves in the event of high growth peaks and droughts that occur on a cyclical basis. Policy No. 26-04 establishes growth restrictions under certain criteria:

- ***Stage 1 Condition*** – Under this condition, a growth restriction of two percent is implemented. This becomes effective when reserves equal or fall below five years of water demand for that particular year.

- ***Stage 2 Condition*** – Under this condition, a growth restriction of one percent is implemented. This becomes effective when reserves equal or fall below four years of water demand for that particular year.

- ***Stage 3 Condition*** – Under this condition, a zero percent growth rate is implemented. This becomes effective when reserves equal or fall below three years of water demand for that particular year.

The growth restrictions would be implemented by limiting the number of new meters sold by the District for new development.

By placing these restrictions, this provides opportunity to once again replenish the reserves within the Warren Basin. Once reserves exceed five years of demand all growth restrictions are lifted.

8.3.2 Short-Term Shortage

In the event the production capacity becomes limited due to a natural disaster or other catastrophe that impairs the District's ability to produce water, Resolution No. 90-3 is in effect which was adopted by the Board in 1990. This Resolution provides various response stages, as summarized in Table 8-1. The initial provisions of the Resolution are implemented when the water supply system reaches 80 percent of capacity for three consecutive days. When demand increases further, Stage 2 becomes effective and places increasing restrictions on water use, particularly outdoor water use. If delivery capacity continues to be inadequate, Stage 3 becomes effective and requests voluntary conservation measures until such time as delivery problems can be mitigated.

TABLE 8-1
RATIONING AND REDUCTION GOALS

Stage	Water Supply Conditions	Demand Reduction Goal
1	Daily water demand is at least 80% of available production capacity for three consecutive days.	10% reduction
2	Daily water demand has reached 90% of available production capacity; remains in effect until daily water demand falls to less than 85% of available production capacity.	30% reduction
3	Daily water demand has exceeded available production capacity.	50% reduction

8.4 Minimum Water Supply Available During Next Three Years

The minimum water supply available during the next three years would occur during a three-year multiple-dry year event between the years 2011 and 2013. As shown in Table 8-2, the total supplies range from approximately 22,000 acre-feet per year (afy) to 24,000 afy during the next three years. All water produced by the District is groundwater, so the water supply availability is not immediately impacted by annual variations in hydrologic conditions. Therefore, it is assumed that the total water demand is remaining the same as during normal years. When comparing these supplies to the demand projections provided in Chapters 2 and 6 of this Plan, if HDWD pumping exceeds the amount of recharge water available, then the Reserves/Banked Groundwater would be drawn down. This situation would not be sustainable over the long-term, but the groundwater basins would not be affected by three years of withdrawing from the Reserves/Banked Groundwater accounts and that is the purpose of such accounts.

TABLE 8-2
ESTIMATE OF MINIMUM SUPPLY FOR THE NEXT THREE YEARS

	Supply (afy)		
Source	**2011**	**2012**	**2013**
Existing Supplies			
Local Supply[a]			
Groundwater Replacement Water Purchased through MBP Entitlement	2,569	2,569	2,569
Return from Septic Tanks	820	820	820
Groundwater (Ames Reche Basin)	800	800	800
Groundwater (Warren Valley Basin)[b]	1,622	1,622	1,622
Reserves/Banked Groundwater (Cumulative af)	16,567	17,577	18,556
Total Existing Supplies[b]	**20,756**	**21,766**	**22,745**
Planned Supplies[c]			
Recharge Projects	0	0	0
Recycled Water	0	0	0
Reche (Ames) Recharge Project	0	0	0
Total Supplies[b]	**20,756**	**21,766**	**22,745**
Total Estimated Demands[d]	3,214	3,281	3,349

Notes:
(a) Taken from Chapter 3 Water Resources, Table 3-1. Local supplies are assumed to be 100% available. Only SWP supplies are reduced.
(b) Per Warren Valley Basin adjudication, see Section 3.3.1.1. To ensure a conservative analysis, the adjudicated rights to the Warren Basin are not reflected in the water supply totals; however, the District maintains legal flexibility to exercise these rights.
(c) Not needed during average/normal years.
(d) Conservation is assumed in demands using SBX7-7. See Chapter 2 Water Use, Table 2-7.

8.5 Actions to Prepare for Catastrophic Interruption

8.5.1 General

The groundwater basins in the District's area are the limiting factor in groundwater production, but are expected to continue to produce reliable supplies even in a catastrophe.

The District can obtain water during emergencies through inter-agency connections. The District has emergency interties with the JBWD and BDVWA. Water can be transferred from the Joshua Basin Water District or Bighorn-Desert View Water Agency to HDWD through transfer via temporary pump and hose connections. These connections are not considered as supply sources, but they can be activated during emergencies.

8.5.2 Regional Power Outage Scenarios

For a major emergency such as an earthquake, Southern California Edison (Edison) has declared that in the event of an outage, power would be restored within a 24 hour period. Following the Northridge earthquake, Edison was able to restore power within 19 hours. Edison experienced extensive damage to several key power stations, yet was still able to recover within a 24 hour timeframe.

HDWD is committed to providing regular service and meeting the needs of the community during any emergency situation. HDWD is obligated to respond to emergencies by using all available resources in the most effective way possible. The District is in the process of revising and updating their "General Emergency Plan", which outlines procedures that can be used to maintain operations during emergency situations.

To specifically address the concerns of water outages due to a regional power outage, HDWD has three 350 kilowatt (kW) generators capable of operating its groundwater wells and booster facilities. In addition, the District has two emergency diesel-powered pumps that are capable of delivering 250 gallons per minute (gpm) and 500 gpm, respectively.

Because of the concerns of water outages due to power loss, the District recently equipped many of its priority water production sites with generator receptacles for easy installation of its generator fleet. The addition of the 500 gpm Godwin pump was added to the District's emergency equipment fleet in 2009 to accommodate the need to boost water at multiple sites during an outage. A 30 kW propane powered generator was also installed to supply the building that houses the District's SCADA system. This generator is installed with an automatic transfer switch to provide seamless operation of the District's SCADA system, if a power outage were to occur.

To fuel its generators, the District maintains a 1,000 gallon diesel fuel supply that is set up on a routine delivery schedule to ensure that reserves remain at satisfactory levels in the event of an emergency. In addition to the diesel storage facility, the District has three 100-gallon diesel fuel tanks mounted to service trucks to move fuel to emergency equipment.

8.6 Mandatory Prohibitions During Shortages

The HDWD Board of Directors has adopted several ordinances, including provisions from the Alliance for Water Awareness and Conservation (AWAC), aimed at water conservation and outlawing wasteful water practices.

On June 17, 1992, the HDWD Board of Directors adopted Ordinance No. 68, which establishes the prohibitions and restrictions on the use of water, as summarized in Table 8-3.

TABLE 8-3
MANDATORY PROHIBITIONS

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Using potable water for street washing	Always
Washing privately owned vehicles, trailers, and boats	1
Irrigation more often than one day per week	1
Filling and refilling pools and spas	1
Use of water for construction	1
Any irrigation	2
Any car washing with the exception of approved commercial	2
Any construction water use	2

8.7 Consumptive Reduction Methods During Restrictions

8.7.1 Supply Shortage Triggering Levels

HDWD will manage water supplies to minimize the social and economic impact of water shortages. The Resolution No. 90-3 is designed to provide a minimum 50 percent of normal supply during a severe or extended water shortage.

Demand reduction stages may be triggered by a shortage of water due to a natural disaster or other catastrophe. The guidelines for triggering the stages are listed in Table 8-4. However, circumstances may arise where the HDWD may deviate from these guidelines, such as in a case where the Governor declares a water shortage emergency and/or institutes a statewide rationing program.

TABLE 8-4
WATER REDUCTION TRIGGERING LEVELS

Stage	Percent Reduction Targets
1	10%
2	30%
3	50%

Source: HDWD Resolution No. 90-3.

8.7.2 Restrictions and Prohibitions

Specific use restrictions and prohibitions for each supply shortage stage taken from the District's 2005 UWMP and from Resolution 90-3 are as follows:

Stage 1:

Restrictions

- Irrigation is limited to one day per week according to the odd or even designation of the last number of the street address.
- No washing of privately owned vehicles, trailers, motor homes, busses, or boats from a private facility is permitted.
- No filling of pools is permitted.
- Construction water usage is not permitted.

Stage 2:

Restrictions

- No irrigation.
- No car washing with the exception of approved commercial.
- No construction water is available.
- Request voluntary reduction in home water use.

Stage 3:

Restrictions

- All Stage 2 restrictions are in effect.
- The community is requested to reduce usage by 50%.

8.7.3 New Demand

As indicated above, District Reserve Policy No. 26-04 provides that water meters issued shall be in accordance with the following staged conditions which shall be reviewed and updated every fiscal year:

A. Stage 1 Condition. A two percent growth limitation would be implemented in the event water reserves in the Warren Valley Basin are equal to or fall below five years (500 percent) of water demand for that particular year.

B. Stage 2 Condition. A one percent growth limitation would be implemented in the event water reserves in the Warren Valley Basin are equal to or fall below four years (400 percent) of water demand for that particular year.

C. Stage 3 Condition. A zero percent growth rate would be implemented in the event water reserves in the Warren Valley Basin are equal to or fall below three years (300 percent) of water demand for that particular year.

8.8 Penalties for Excessive Use

During any time, including declared water shortage emergencies, a customer who violates the mandatory prohibitions and restrictions on the use of water set forth in Ordinance No. 68 is subject to the following penalties:

- First Violation – A written warning notice is provided.
- Second Violation – A written notice with a warning of a flow restriction device or a possible shut-off upon a Third Violation. Commercial or multi-family services may be required to install an irrigation meter.
- Third Violation – The General Manager may direct the installation of a flow restriction device or a shut-off of water service for a period of no less than 48 hours.

8.9 Financial Impacts of Actions During Shortages

Currently, the District has a reserve fund allocated for the purchase of supplemental water. The availability of these funds creates flexibility for purchasing water other than SWP water, especially during times when SWP water is unavailable due to drought or other factors beyond the District's control. Should this be the case, revenues and expenditures of the District would remain unchanged. However, in the event the District experiences temporary system inadequacies, e.g., loss of production capacity, emergency measures would be implemented mandating an immediate reduction of water use by the customers. Depending on duration of the emergency, revenues could ultimately be impacted during this scenario. In this case, the District may be required to utilize discretionary reserve funds to supplement the shortfall and re-evaluate consumption rates during the yearly rate review.

8.10 Mechanism to Determine Reductions In Water Use

Resolution No. 90-3 outlines the restrictions to be implemented in the event of a short-term water production shortage. This resolution serves as the District's water shortage contingency plan. The monitoring procedure is accomplished by production reports that are generated on a daily basis. The report provides a breakdown of each production well along with the quantity produced for the previous day. Based on these production readings, the District is able to determine whether reductions in consumption are occurring per the water shortage restrictions outlined in Resolution 90-3.

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Appendix A

UWMP Checklist

Urban Water Management Plan Checklist (Table I-2, Organized by Legislation)

No.	UWMP Requirement [a]	Hi-Desert Water District
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	2.3, 2.4
2	*Wholesalers:* Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. *Retailers:* Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	1.3.2, Table 1-2, Appendix B
3	Report progress in meeting urban water use targets using the standardized form.	TBD
4	Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	1.3.1, 1.3.3, Table 1-1
5	An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.	1.3.4
6	Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.	1.3.3, notification letters in Appendix B.
7	The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).	1.3.2
8	Describe the service area of the supplier	1.4, Figure 1-1
9	(Describe the service area) climate	1.5, Table 1-3
10	(Describe the service area) current and projected population . . . The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier . . .	2.2, Tables 2-1, 2-2
11	. . . (population projections) shall be in five-year increments to 20 years or as far as data is available.	Tables 2-1, 2-2
12	Describe . . . other demographic factors affecting the supplier's water management planning	1.7

Urban Water Management Plan Checklist (Table I-2, Organized by Legislation)

No.	UWMP Requirement [a]	Hi-Desert Water District
13	Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).	3.2, 3.3, 3.4, Tables 3-1, 3-8
14	(Is) groundwater . . . identified as an existing or planned source of water available to the supplier . . .?	3.3.1
15	(Provide a) copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management. Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	Appendix E, 3.3.1.1
16	(Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater.	3.3.1.1
17	For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board	Appendix D
18	(Provide) a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.	3.3.1.1.1, page 3-8
19	For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.	3.3.1.2.1
20	(Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.	Tables 3-3, and 3-5
21	(Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.	Tables 3-4, and 3-6

Urban Water Management Plan Checklist (Table I-2, Organized by Legislation)

No.	UWMP Requirement [a]	Hi-Desert Water District
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following: (A) An average water year, (B) A single dry water year, (C) Multiple dry water years.	3.3.1.2.2 Table 3-7
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	3.3.3
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	3.5.1
25	Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses: (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof;(I) Agricultural.	2.3, 2.4, 2.5, Table 2-3 to 2-7, Figures 2-1, 2-2
26	(Describe and provide a schedule of implementation for) each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) Water survey programs for single-family residential and multifamily residential customers; (B) Residential plumbing retrofit; (C) System water audits, leak detection, and repair; (D) Metering with commodity rates for all new connections and retrofit of existing connections; (E) Large landscape conservation programs and incentives; (F) High-efficiency washing machine rebate programs; (G) Public information programs; (H) School education programs; (I) Conservation programs for commercial, industrial, and institutional accounts; (J) Wholesale agency programs; (K) Conservation pricing; (L) Water conservation coordinator; (M) Water waste prohibition;(N) Residential ultra-low-flush toilet replacement programs.	Chapter 7
27	A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.	7.9
28	An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.	7.9.1
29	An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.	7.8

Urban Water Management Plan Checklist (Table I-2, Organized by Legislation)

No.	UWMP Requirement [a]	Hi-Desert Water District
30	(Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.	3.4
31	Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.	3.6
32	Include the annual reports submitted to meet the Section 6.2 requirement (of the MOU), if a member of the CUWCC and signer of the December 10, 2008 MOU.	NA
33	Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).	3.2, Table 3-1
34	The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	2.5.3
35	Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.	8.3
36	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.	8.4, Table 8-2
37	(Identify) actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.	8.5
38	(Identify) additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.	8.6

Urban Water Management Plan Checklist (Table I-2, Organized by Legislation)

No.	UWMP Requirement [a]	Hi-Desert Water District
39	(Specify) consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.	8.7
40	(Indicated) penalties or charges for excessive use, where applicable.	8.8
41	An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	8.9
42	(Provide) a draft water shortage contingency resolution or ordinance.	Appendix L
43	(Indicate) a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	8.10
44	Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area	4.2
45	(Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	4.3, Tables 4-1, 4-2
46	(Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	4.3.2, Table 4-3
47	(Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	4.4
48	(Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	4.4
49	(Describe) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.	4.4
50	(Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	4.4.2
51	(Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	4.4

Urban Water Management Plan Checklist (Table I-2, Organized by Legislation)

No.	UWMP Requirement [a]	Hi-Desert Water District
52	The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.	Chapter 5
53	Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	6.3, 6.4, Table 6-1 to 6-5
54	The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.	Appendix B
55	Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	1.3.1, 1.3.3, Table 1-1
56	Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.	1.3.2, 1.3.3, Table 1-2, Appendix B
57	After the hearing, the plan shall be adopted as prepared or as modified after the hearing.	1.3.2, Table 1-2
58	An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.	1.3.2, Table 1-2
59	An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.	1.3.2
60	Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.	1.3.2

a) The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legi

b) The Subject classification is provided for clarification only. It is aligned with the organization presented in Part 1 of this guidebook. A water supplier is

Appendix B

Public Outreach Materials

Review of Draft UWMP Documentation

Welcome home to Hi-Desert Water District ...

Located in the Town of Yucca Valley, approximately 30 minutes north of Palm Springs, in the southern Mojave Desert. The District provides water service to the Town of Yucca Valley and portions of the unincorporated area of San Bernardino County. Through approximately 10,000 service connections the District serves a population of approximately 24,000 people. We are a public agency/special district governed by a five member board, elected by the people.

Our Mission: *To provide a dependable water supply and wastewater treatment for the customers of the Hi-Desert Water District in a safe, efficient, and financially responsible manner.*

Upcoming Events

5/26/2011 9:00 AM	Wastewater Project Information Meeting	
5/27/2011 8:00 AM	Office Closed	
5/28/2011 9:00 AM	Grubstake Days Parade & Fair	at the Yucca Valley Community Center
5/30/2011 8:00 AM	Closed for Memorial Day	
6/1/2011 6:00 PM	Board Meeting	Urban Water Management Plan Public Hearing Notice
6/2/2011 6:00 PM	Wastewater Public Information Meeting	Please RSVP by calling (760) 228-6267
6/6/2011 3:00 PM	Wastewater Project Information Meeting	
6/10/2011 8:00 AM	Office Closed	
6/14/2011 6:30 PM	Public Advisory Committee Meeting	
6/15/2011 6:00 PM	Board Meeting	
6/24/2011 8:00 AM	Office Closed	
7/8/2011 8:00 AM	Office Closed	

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Hi-Desert Water District

What's Making a Splash?

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Septic Prohibitions Passed

Thursday, May 19, 2011

Yucca Valley, CA – The California Regional Water Quality Control Board adopted the Basin Plan Amendment to prohibit septic discharge in portions of Yucca Valley. The prohibition specifically affects properties in the phase 1 area in 2016, phase 2 in 2019 and phase 3 in 2022.

A copy of the septic prohibitions resolution is available in the Hi-Desert Water District lobby for the public to review. You may also contact water district staff for information. Call (760) 861-8031, email wastewater@hdwd.com or visit www.hdwd.com.

Read More

Public Notice - Urban Water Management Plan (Public Hearing)

Tuesday, May 17, 2011

HI-DESERT WATER DISTRICT
PUBLIC HEARING NOTICE
2010 URBAN WATER MANAGEMENT PLAN

Notice is hereby given that on Wednesday, June 1, 2011 at the Hi-Desert Water District, 55439 29 Palms Highway, Yucca Valley, California 92284, at 6:00 p.m., the Board of Directors of the Hi-Desert Water District (District) will conduct a public hearing pursuant to Water Code sections 10642 and 10608.26 to consider and receive comments and input on the District's Draft 2010 Urban Water Management Plan (Draft 2010 UWMP), to allow community input regarding the District's implementation plan for complying with Part 2.55 of the Water Code (SBX7-7), to consider the potential economic impacts of the implementation plan, and to adopt a method pursuant to Water Code section 10608.20(b) for determining the District's urban water use targets. Public input from diverse social, cultural and economic elements of the population is encouraged and will be considered during the finalization of the 2010 UWMP.

On or before May 18, 2011, a copy of the Draft 2010 UWMP shall be available for public review during normal business hours at the offices of the District at the address set forth above. In addition, an electronic version of the Draft 2010 UWMP is accessible at www.hdwd.com. Any written comments regarding the Draft 2010 UWMP must be submitted by the close of business on June 1, 2011 and should be sent to:

Hi-Desert Water District
55439 29 Palms Highway
Yucca Valley, California 92284
Attention: Jennifer Cusack

Public comments can also be made or submitted at the public hearing at the time and place first listed above. Upon conclusion of the public hearing, the Board of Directors of the District may revise, change, modify and/or adopt the 2010 UWMP. Questions regarding the public hearing or the Draft 2010 UWMP should be directed to Jennifer Cusack at (760) 228-6267.

Read More

Obama Administration Affirms Comprehensive Commitment to Clean Water

Thursday, April 28, 2011

Release date: 04/27/2011

Contact Information: (CEQ) Taryn Tuss, 202-456-6998, (EPA) 202-564-6794;

WASTEWATER TREATMENT & WATER RECLAMATION PROJECT

New Year's Resolution
#1 - Learn more about the
Wastewater Project

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www.hdwd.com

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- Wastewater Treatment Project
- Wastewater Public Advisory Committee
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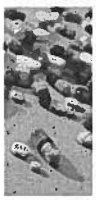

Protect our groundwater

Don't Flush Drugs Down the Drain

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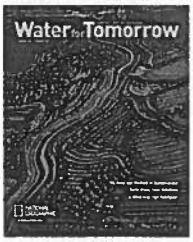

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press@epa.gov, (USDA) 202-720-4623, (DOI) Kendra Barkoff, 202-208-6416, (DOA) Moira Kelley, 703-614-3992

WASHINGTON – Recognizing the importance of clean water and healthy watersheds to our economy, environment and communities, the Obama administration released a national clean water framework today that showcases its comprehensive commitment to protecting the health of America's waters. The framework emphasizes the importance of partnerships and coordination with states, local communities, stakeholders and the public to protect public health and water quality, and promote the nation's energy and economic security.

For nearly 40 years, the Clean Water Act, along with other important federal measures, has been a cornerstone of our effort to ensure that Americans have clean and healthy waters. The administration's framework outlines a series of actions underway and planned across federal agencies to ensure the integrity of the waters Americans rely on every day for drinking, swimming, and fishing, and that support farming, recreation, tourism and economic growth. It includes draft federal guidance to clarify which waters are protected by the Clean Water Act nationwide; innovative partnerships and programs to improve water quality and water efficiency; and initiatives to revitalize communities and economies by restoring rivers and critical watersheds . . .

Read More

Joint Town Council and HDWD Board Meeting

Thursday, April 07, 2011

The Hi-Desert Water District Board of Directors will meet in Special Joint Session with the Town Council of Yucca Valley on Monday, April 11, 2011 from 4:30 p.m. to 5:30 p.m. at the Yucca Valley Community Center in the Yucca Room. The topic of discussion will be the Town's participation in helping to fund the Wastewater Treatment and Water Reclamation Project. This includes the Sales Tax proposal. To view the agenda click here.

Read More

The Regional Board Releases Septic Prohibitions Public Notice

Tuesday, December 21, 2010

The Regional Water Quality Control Board will consider septic prohibitions in Yucca Valley on March 17, 2011. To view information about the septic prohibitions visit http://www.waterboards.ca.gov/rwqcb7/water_issues/programs/basin_planning/.

Read More

Current Archive

Hi-Desert Water District, 55439 29 Palms Hwy, Yucca Valley, CA 92284
Office: 760-365-8333 Fax: 760-365-8673 Email: info@hdwd.com

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HI-DESERT WATER DISTRICT

Public Advisory Committee
Regular Meeting Agenda
Tuesday, April 12, 2011
6:30 p.m.

Location: 55439 29 Palms Hwy, Yucca Valley, CA 92284

Members: Andrew Tuffley, Anne Sholtz, Art Miller, Jr., Barbara Flint, Bill Horne, Bill Osgood, Bryan Heveron, David Cooper, Debra Hidalgo, James Petersen, Joanne Keiter, John Babrowski, Joseph Sabo, Lois Salzmann-Johnson, Michael McBride, R. DeVaughn Howie, Richard Harlan, Richard Quinlan and Ronald Reitenauer

1. CALL TO ORDER/PLEDGE OF ALLEGIANCE

2. ROLL CALL

3. APPROVAL OF AGENDA

4. APPROVAL OF MINUTES
WPAC Minutes February 8, 2011
PAC Minutes February 10, 2011

5. PUBLIC COMMENT
This is the opportunity for members of the public to address the committee on matters within the Committee's jurisdiction. Please limit comments to three (3) minutes or less. State law prohibits Committee members from discussing or taking action on items not included on the agenda.

6. STAFF REPORTS/COMMENTS

7. REORGANIZATION OF COMMITTEE
Committee to select a Committee Chair Person, Co-Chair Person, and Secretary.

8. 2010 URBAN WATER MANAGEMENT PLAN
Staff will present a Draft 2010 Urban Water Management Plan to solicit input from the Public Advisory Committee.

9. BLUE SKIES COUNTRY CLUB PURCHASE UPDATE
Staff will update the Public Advisory Committee on the potential purchase of the Blue Skies Country Club note.

10. WASTEWATER TREATMENT AND WATER RECLAMATION PROJECT UPDATE
Staff to give a report on the Wastewater Treatment and Water Reclamation Project.

11. ROUND TABLE COMMENTS

12. AGENDA ITEMS FOR NEXT MEETING

13. ADJOURNMENT

Posted April 8, 2011
Jennifer Cusack,
Public Information Officer- (HDWD)
Direct (760) 228-6267

Materials related to an item on this Agenda submitted to the Board of Directors after distribution of the agenda packet are available for public inspection in the Hi-Desert Water District office at 55439 29 Palms Hwy, Yucca Valley, California during normal business hours. Such documents are also available on the District website at www.hdwd.com subject to staff's ability to post the documents before the meeting.

If you require special assistance to attend or participate in this meeting, please contact the District at 760.365.8333 at least 48 hours prior to the meeting.

Disruptive Conduct - If any meeting of the Board is willfully disrupted by a person or by a group of persons so as to render the orderly conduct of the meeting impossible, the President may recess the meeting or order the person or persons willfully disrupting the meeting to leave the meeting or to be removed from the meeting. Disruptive conduct includes addressing the Board without first being recognized, not addressing the subject before the Board, repetitively addressing the same subject, failing to relinquish the podium when requested to do so, or otherwise preventing the Board from conducting its meeting in an orderly manner. Your cooperation is appreciated!

Public Advisory Committee
Regular Meeting Agenda
Tuesday, May 10, 2011
6:30 p.m.

Location: 55439 29 Palms Hwy, Yucca Valley, CA 92284

Members: Anne Sholtz, Art Miller, Jr., Barbara Flint, Bill Horne, Bill Osgood, Bryan Heveron, David Cooper, Debra Hidalgo, James Petersen, Joanne Keiter, John Babrowski, Joseph Sabo, Lois Salzmann-Johnson, Michael McBride, R. DeVaughn Howie, Richard Harlan, Richard Quinlan and Ronald Reitenauer

1. CALL TO ORDER/PLEDGE OF ALLEGIANCE

2. ROLL CALL

3. APPROVAL OF AGENDA

4. APPROVAL OF MINUTES
PAC Minutes, February 10, 2011
PAC Minutes, April 12. 2011

5. PUBLIC COMMENT
This is the opportunity for members of the public to address the committee on matters within the Committee's jurisdiction. Please limit comments to three (3) minutes or less. State law prohibits Committee members from discussing or taking action on items not included on the agenda.

6. STAFF REPORTS/COMMENTS

7. COMMITTEE MEMBER RESIGNATION
Committee to accept resignation of Andrew Tuffley.

8. 2010 URBAN WATER MANAGEMENT PLAN
Staff will present a Draft 2010 Urban Water Management Plan and receive written comments from the committee.

9. WASTEWATER PROJECT OUTREACH
Staff to present Summer Outreach efforts and solicit committee ideas and participation.

10. ROUND TABLE COMMENTS

11. AGENDA ITEMS FOR NEXT MEETING

12. ADJOURNMENT

Posted May 10, 2011
Jennifer Cusack,
Public Information Officer- (HDWD)
Direct (760) 228-6267

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Public Meeting Notice Documentation

PROOF OF PUBLICATION
(2015.5 C.C.P.)

STATE OF CALIFORNIA
County of San Bernardino

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of the:

HI-DESERT STAR

a newspaper of general circulation, printed and

published BI-WEEKLY

in the City of YUCCA VALLEY County of San Bernardino, and which news- paper has been adjudged a newspaper of general circulation by the Superior Court of the County of San Bernardino, State of California,

under the date of 11/27 19 61

Case Number 107762 ; that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

6/1, 6/8

all in the years 2011

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at: YUCCA VALLEY, California,
this **8th.** day **June 2011**

Bekie Edelbrock

Signature
Bekie Edelbrock

This space is for the County Clerk's Filing Stamp

Proof of Publication

PO#5973
2010 URBAN WATER MANAGEMENT PLAN

HI-DESERT WATER DISTRICT
PUBLIC HEARING NOTICE
2010 URBAN WATER MANAGEMENT PLAN

Notice is hereby given that on Wednesday, June 15, 2011 at the Hi-Desert Water District, 55439 29 Palms Highway, Yucca Valley, California 92284, at 6:00 p.m., the Board of Directors of the Hi-Desert Water District (District) will conduct a second public hearing pursuant to Water Code sections 10642 and 10608.26 to consider and receive comments and input on the District's Draft 2010 Urban Water Management Plan (Draft 2010 UWMP), to allow community input regarding the District's implementation plan for complying with Part 2.55 of the Water Code (SBX7-7), to consider the potential economic impacts of the implementation plan, and to adopt a method pursuant to Water Code section 10608.20(b) for determining the District's urban water use targets. Public input from diverse social, cultural and economic elements of the population is encouraged and will be considered during the finalization of the 2010 UWMP.

A copy of the Draft 2010 UWMP is available for public review during normal business hours at the offices of the District at the address set forth above. In addition, an electronic version of the Draft 2010 UWMP is accessible at www.hdwd.com. Any written comments regarding the Draft 2010 UWMP must be submitted by the close of business on June 13, 2011 and should be sent to:

Hi-Desert Water District
55439 29 Palms Highway
Yucca Valley, California 92284
Attention: Jennifer Cusack

Public comments can also be made or submitted at the public hearing at the time and place first listed above. Upon conclusion of the public hearing, the Board of Directors of the District may revise, change, modify and/or adopt the 2010 UWMP. Questions regarding the public hearing or the Draft 2010 UWMP should be directed to Jennifer Cusack at (760) 228-6267.
(PUB: S. 6/1, 6/8/2011)

PROOF OF PUBLICATION
(2015.5 C.C.P.)

STATE OF CALIFORNIA
County of San Bernardino

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of the:

HI-DESERT STAR

a newspaper of general circulation, printed and

published BI-WEEKLY

in the City of YUCCA VALLEY County of San Bernardino, and which news- paper has been adjudged a newspaper of general circulation by the Superior Court of the County of San Bernardino, State of California,

under the date of 11/27 19 61

Case Number 107762 : that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

5/18, 5/21, 5/28

all in the years 2011

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at: YUCCA VALLEY, California,
this **28th.** day **May 2011**

Bekie Edelbrock

Signature
Bekie Edelbrock

This space is for the County Clerk's Filing Stamp

Proof of Publication

PO# 5959
PUBLIC HEARING NOTICE
2010 URBAN WATER MANAGEMENT PLAN

HI-DESERT WATER DISTRICT
PUBLIC HEARING NOTICE
2010 URBAN WATER MANAGEMENT PLAN

Notice is hereby given that on Wednesday, June 1, 2011 at the Hi-Desert Water District, 55439 29 Palms Highway, Yucca Valley, California 92284, at 6:00 p.m., the Board of Directors of the Hi-Desert Water District (District) will conduct a public hearing pursuant to Water Code sections 10642 and 10608.26 to consider and receive comments and input on the District's Draft 2010 Urban Water Management Plan (Draft 2010 UWMP), to allow community input regarding the District's implementation plan for complying with Part 2.55 of the Water Code (SBX7-7), to consider the potential economic impacts of the implementation plan, and to adopt a method pursuant to Water Code section 10608.20(b) for determining the District's urban water use targets. Public input from diverse social, cultural and economic elements of the population is encouraged and will be considered during the finalization of the 2010 UWMP.

On or before May 18, 2011, a copy of the Draft 2010 UWMP shall be available for public review during normal business hours at the offices of the District at the address set forth above. In addition, an electronic version of the Draft 2010 UWMP is accessible at www.hdwd.com. Any written comments regarding the Draft 2010 UWMP must be submitted by the close of business on June 1, 2011 and should be sent to:

Hi-Desert Water District
55439 29 Palms Highway
Yucca Valley, California 92284
Attention: Jennifer Cusack

Public comments can also be made or submitted at the public hearing at the time and place first listed above. Upon conclusion of the public hearing, the Board of Directors of the District may revise, change, modify and/or adopt the 2010 UWMP. Questions regarding the public hearing or the Draft 2010 UWMP should be directed to Jennifer Cusack at (760) 228-6267.

(PUB: S. 5/18, 5/21, 5/28/2011)

Board of Directors' Regular Meeting Agenda
Wednesday, June 1, 2011
6:00 p.m.

55439 29 Palms Highway, Yucca Valley, California Ph. 760.365.8333

Action may be taken on any item listed on the Agenda.

1. CALL TO ORDER/PLEDGE OF ALLEGIANCE

2. ROLL CALL

3. APPROVAL OF AGENDA

4. PUBLIC COMMENT

This is the opportunity for members of the public to address the Board on matters within the Board's jurisdiction that are not listed on the agenda. Please limit comments to three (3) minutes or less. State law prohibits the Board of Directors from discussing or taking action on items not included on the agenda.

5. RESOLUTION 11-11 – LOCAL CEQA GUIDELINES

Board to consider adopting Resolution 11-11 amending and adopting local guidelines for implementing the California Environmental Quality Act (Pub. Resources Code §§ 21000 ET SEQ.)

6. PUBLIC HEARING – 2010 URBAN WATER MANAGEMENT PLAN (2010 UWMP)

Board to hold a public hearing pursuant to Water Code sections 10642 and 10608.26 to consider and receive comments and input from the public and other interested parties on all aspects of the District's Draft 2010 Urban Water Management Plan, to allow for community input regarding the District's implementation plan for complying with Part 2.55 of the Water Code (SBX7-7), to consider the potential economic impacts of the implementation plan, and to consider which method to adopt pursuant to Water Code section 10608.20(b) for determining the District's urban water use targets.

A. General Notice and Call
B. President Opens Public Hearing
C. Secretary's Report
D. President Declares Public Hearing Open
E. Public Comments
F. President Declares Public Hearing Closed
G. Board Discussion

No action to be taken. The Board will consider the 2010 UWMP for adoption on June 15, 2011 at the next regular board meeting.

7. WASTEWATER PROJECT UPDATE

8. REPORTS/COMMENTS

(For information purposes only on subjects not covered by the agenda. No action to be taken).

H. Directors' Reports and Comments

I. Managers' Reports

1. **Director of Operations (Mark Ban)**
2. **Chief Financial Officer (Frank Luckino)**
3. **Human Resources (Jill Cohen)**
4. **Public Information Officer (Jennifer Cusack)**
5. **General Manager (Ed Muzik)**

9. FUTURE AGENDA ITEMS REQUESTED BY THE BOARD

10. ADJOURNMENT

Posted May 27, 2011
Jennifer Cusack,
Public Information Officer
Next Resolution: 11-12
Next Ordinance: 83

Materials related to an item on this Agenda submitted to the Board of Directors after distribution of the agenda packet are available for public inspection in the Hi-Desert Water District office at 55439 29 Palms Hwy, Yucca Valley, California during normal business hours. Such documents are also available on the District website at www.hdwd.com subject to staff's ability to post the documents before the meeting.

If you require special assistance to attend or participate in this meeting, please contact the District at 760.365.8333 at least 48 hours prior to the meeting.

This meeting is scheduled to air on Time Warner Cable Channel 10 on May 31st at 10 p.m. and June 4th at 3 p.m.
A copy of the DVD may be borrowed for viewing from the District Office or the Yucca Valley Library.

Disruptive Conduct - If any meeting of the Board is willfully disrupted by a person or by a group of persons so as to render the orderly conduct of the meeting impossible, the President may recess the meeting or order the person or persons willfully disrupting the meeting to leave the meeting or to be removed from the meeting. Disruptive conduct includes addressing the Board without first being recognized, not addressing the subject before the Board, repetitively addressing the same subject, failing to relinquish the podium when requested to do so, or otherwise preventing the Board from conducting its meeting in an orderly manner. Your cooperation is appreciated!

Date: June 15, 2011

To: Board of Directors

From: Ed Muzik, General Manager

Prepared/ Presented by: Jennifer Cusack, Public Information Officer

Second Public Hearing – 2010 Urban Water Management Plan

Recommendation: The Board to hold a public hearing and consider adopting Resolution 11-12 approving the 2010 Urban Water Management Plan.

Fiscal Impact: None

Background: On June 1, 2011, the Board of Directors held a public hearing to hear public comment on the draft 2010 Urban Water Management Plan. **The public comment period ends June 13, 2011 at the close of business (5:00 p.m.).** The District will hold a second public hearing on the Final Draft of the 2010 Urban Water Management Plan and consider it for adoption.

At the June 1, 2011, the comments that were received and included were:

1. Page 3-3 section 3.2.1 – clarify the pipeline limitations were to HDWD only.
2. Page 3-3 section 3.2.2 – correct first sentence to read " . . . MWA will continue to supply a ~~of~~ percentage of the entitled 4,282 . . ."
3. Page 4-3 Table 4-2 was corrected to with the flows projected by staff based on the current phasing schedule.
4. Page 5-2 Section 5/3 the last sentence of the second paragraph. Was amended to read "Levels within these two wells have been detected as high as 13 ppb and as low as 2 ppb. Both wells produce less than 250 gpm. ~~And are not considered critical producing production wells.~~ (Source: HDWD Production Reports).
5. Include legal reference to in section 7.3.1.4 on conservation based rate structures.
6. Legal Review of section 8.8.

In addition to these comments received at the last public comment District legal counsel is performing a complete legal review. Staff will address any written comments received through June 13, 2011 at 5 p.m. A final draft and report will be present at the public hearing on June 15, 2011.

Kennedy/Jenks Consultants, Inc. will be in attendance to present the final draft and address any final comments prior to the Board's consideration for adoption.

Water Code Section 10617 defines an urban water supplier as any supplier that provides water to more than 3,000 service connections or supplies more than 3,000 acre-feet (af) of water annually. Currently, HDWD delivers water to over 9,800 connections, therefore requiring the District to prepare and adopt an UWMP. This Plan has been prepared for the HDWD.

The District contracted with Kennedy/Jenks Consultants, Inc. for the preparation of an Urban Water Management Plan (UWMP). They were also retained by Mojave Water Agency (MWA) to complete the MWA UWMP for 2010. The scope of the work was based on the familiarity of MWA and the desire to have consistency between the documents. Consistency in approach and data will be key to a defensible UWMP, SB610 Water Supply Assessments and SB221 Written Verifications. The plan has been prepared according to the "Guidebook to Assist Water Suppliers in Preparation of a 2010 Urban Water Management Plan" as provided by the Department of Water Resources (DWR). The plan must be ~~submitted~~adopted ~~to DWR~~ by July 1, 2011, and submitted to DWR within 30 days of adoption.

An Urban Water Management Plan (UWMP) is a planning tool that generally guides the actions of water management agencies. It provides managers and the public with a broad perspective on a number of water supply issues. It is not a substitute for project-specific planning documents, nor was it intended to be when mandated by the State Legislature. For example, the Legislature mandated that a plan include a section which "describes the opportunities for exchanges or water transfers on a short-term or long-term basis." (California Urban Water Management Planning Act, Article 2, Section 10630[d]) The identification of such opportunities, and the inclusion of those opportunities in a general water service reliability analysis, neither commits a water management agency to pursue a particular water exchange/transfer opportunity, nor precludes a water management agency from exploring exchange/transfer opportunities not identified in the plan. When specific projects are chosen to be implemented, detailed project plans are developed, environmental analysis, if required, is prepared, and financial and operational plans are detailed.

In short, this Plan is a management tool, providing a framework for action, but not functioning as a detailed project development or action. It is important that this Plan be viewed as a long-term, general planning document, rather than as an exact blueprint for supply and demand management. Water management in California is not a matter of certainty, and planning projections may change in response to a number of factors. It is an effort to generally answer a series of planning questions including:

What are the potential sources of supply and what is the reasonable probable yield from them?

What is the probable demand, given a reasonable set of assumptions about growth and implementation of good water management practices?

How well do supply and demand figures match up, assuming that the various probable supplies will be pursued by the implementing agency?

Using these "framework" questions and resulting answers, the implementing agency will pursue feasible and cost-effective options and opportunities to meet demands. HDWD will explore

enhancing basic supplies from traditional sources such as imported water from the Mojave Water Agency (MWA) as well as other options. These could include groundwater extraction, water exchanges, recycling, desalination, and water banking/conjunctive use.

Specific planning efforts are undertaken in regard to each option, involving detailed evaluations of how each option would fit into the overall supply/demand framework, how each option would impact the environment, and how each option would affect customers. The objective of these more detailed evaluations would be to find the optimum mix of conservation and supply programs that ensure that the needs of the customers are met.

The Urban Water Management Planning Act (Act) requires preparation of a plan that:

- *Accomplishes water supply planning over a 20-year period in five-year increments. (HDWD is going beyond the requirements of the Act by developing a plan which spans 25 years.)*

- *Identifies and quantifies adequate water supplies, including recycled water, for existing and future demands, in normal, single-dry, and multiple-dry years.*

- *Implements conservation and the efficient use of urban water supplies. Significant new requirements for quantified demand reductions have been added by the enactment of SBX7-7, which amends the Act.*

A checklist to ensure compliance of this Plan with the Act requirements is provided in Appendix A.

In short, the Plan answers the question: Will there be enough water for the Hi-Desert community in future years, and what mix of programs should be explored for making this water available?

It is the stated goal of HDWD to provide a dependable water supply and wastewater treatment for the customers of the Hi-Desert Water District in a safe, efficient, and financially responsible manner. Based on conservative water supply and demand assumptions over the next 25 years in combination with conservation of non-essential demand during certain dry years, the Plan successfully achieves this goal.

Mojave Water Agency

HDWD cooperates with the MWA in managing the region's water resources. The District consulted MWA's draft 2010 UWMP while preparing this UWMP. The District notified MWA that the HDWD UWMP is being updated and input was solicited. HDWD coordinated the preparation of the Plan with the local community. Nearby cities including the Town of Yucca Valley and the County of San Bernardino were notified of the opportunity to provide input regarding the Plan. Water resource specialists with expertise in water resource management were retained to assist the District in preparing the details of the Plan. Agency coordination for this Plan is summarized in Table 1-1.

Community Participation

HDWD has encouraged community participation in water planning. A public session was held by the HDWD Board of Directors for review and to solicit input on the Draft Plan before its adoption. Interested groups were informed about the development of the Plan along with the schedule of public activities. Notices of public meetings were published in the local press.

Copies of the Draft Plan were made available on the District's website, at the local public library and sent to the County of San Bernardino, as well as interested parties.

HDWD has and continues to actively encourage community participation in its on-going water management activities and specific water related projects. The District's public participation programs include a Public Advisory Committee consisting of 19 members of the public to hear matters affecting the public. The District also uses radio, public access television, mailings, public meetings, and web-based communications to provide information to the public. The District's public awareness program covers water related topics such as groundwater protection, conservation, water supply, water service, etc. The District has regularly scheduled Board of Director's meetings that include public comment and information on water issues.

Copies of the public outreach materials, including paid advertisements, newsletters, website postings, and invitation letters are attached.

PUBLIC PARTICIPATION TIMELINE

Date	Event	Description
April 12, 2011	Preliminary Draft UWMP	Must notify Planning Groups 60 days before first Public Hearing
June 1, 2011	First HDWD Public Hearing	Review contents of Draft UWMP and take comments
June 15, 2011	Second HDWD Public Hearing	UWMP considered for approval by the HDWD Board

HI-DESERT WATER DISTRICT

March 29, 2011

San Bernardino County Building/Planning Department
385 N Arrowhead Avenue
San Bernardino, CA 92415-0181

Subject: Urban Water Management Plan (UWMP)

Dear Sir/Madam:

Hi-Desert Water District is updating its Urban Water Management Plan for 2010, as required under the Urban Water Management Planning Act. You are being provided this notice pursuant to Water Code, section 10621, subdivision b of the Act, which requires an urban water supplier to notify any city or county within which it provides water that it is reviewing its plan and considering changes to the plan. Additionally, when a draft UWMP is available for public review, a copy will be sent to you. We are required to adopt the UWMP by July 1, 2011.

While the Act only requires that an urban water supplier hold one public hearing before adopting a plan, in order to ensure sufficient opportunity for public feedback, input and suggestions concerning the 2010 UWMP, two public hearings will be scheduled.

The first public hearing will be held June 1, 2011 at 6 p.m. and the second on June 15, 2011 at 6 p.m. Both will be held at the Hi-Desert Water District office at 55439 29 Palms Highway, Yucca Valley, CA 92284.

If you have any questions, please contact me at (760) 228-6269.

Sincerely,

Ed Muzik

Ed Muzik
General Manager

55439 29 Palms Hwy., Yucca Valley, CA 92284-2503 / 760.365.8333 / fax: 760.365.0599 / www.hdwd.com / email: info@hdwd.com

HI-DESERT WATER DISTRICT

March 29, 2011

San Bernardino County Building Department
57407 Twentynine Palms Hwy., Ste F
Yucca Valley, CA 92284

Subject: Urban Water Management Plan (UWMP)

Dear Sir/Madam:

Hi-Desert Water District is updating its Urban Water Management Plan for 2010, as required under the Urban Water Management Planning Act. You are being provided this notice pursuant to Water Code, section 10621, subdivision b of the Act, which requires an urban water supplier to notify any city or county within which it provides water that it is reviewing its plan and considering changes to the plan. Additionally, when a draft UWMP is available for public review, a copy will be sent to you. We are required to adopt the UWMP by July 1, 2011.

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If you have any questions, please contact me at (760) 228-6269.

Sincerely,

Ed Muzik

Ed Muzik
General Manager

55439 29 Palms Hwy., Yucca Valley, CA 92284-2503 / 760.365.8333 / fax: 760.365.0599 / www.hdwd.com / email: info@hdwd.com

HI-DESERT WATER DISTRICT

March 29, 2011

Shane Stueckle
Town of Yucca Valley
58928 Business Center Drive
Yucca Valley CA 92284

Subject: Urban Water Management Plan (UWMP)

Dear Shane:

Hi-Desert Water District is updating its Urban Water Management Plan for 2010, as required under the Urban Water Management Planning Act. You are being provided this notice pursuant to Water Code, section 10621, subdivision b of the Act, which requires an urban water supplier to notify any city or county within which it provides water that it is reviewing its plan and considering changes to the plan. Additionally, when a draft UWMP is available for public review, a copy will be sent to you. We are required to adopt the UWMP by July 1, 2011.

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If you have any questions, please contact me at (760) 228-6269.

Sincerely,

Ed Muzik

Ed Muzik
General Manager

55439 29 Palms Hwy., Yucca Valley, CA 92284-2503 / 760.365.8333 / fax: 760.365.0599 / www.hdwd.com / email: info@hdwd.com

HI-DESERT WATER DISTRICT

March 29, 2011

Mark Nuaimi
Town of Yucca Valley
57090 Twentynine Palms Hwy
Yucca Valley CA 92284

Subject: Urban Water Management Plan (UWMP)

Dear Mark:

Hi-Desert Water District is updating its Urban Water Management Plan for 2010, as required under the Urban Water Management Planning Act. You are being provided this notice pursuant to Water Code, section 10621, subdivision b of the Act, which requires an urban water supplier to notify any city or county within which it provides water that it is reviewing its plan and considering changes to the plan. Additionally, when a draft UWMP is available for public review, a copy will be sent to you. We are required to adopt the UWMP by July 1, 2011.

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The first public hearing will be held June 1, 2011 at 6 p.m. and the second on June 15, 2011 at 6 p.m. Both will be held at the Hi-Desert Water District office at 55439 29 Palms Highway, Yucca Valley, CA 92284.

If you have any questions, please contact me at (760) 228-6269.

Sincerely,

Ed Muzik
General Manager

55439 29 Palms Hwy., Yucca Valley, CA 92284-2503 / 760.365.8333 / fax: 760.365.0599 / www.hdwd.com / email: info@hdwd.com

Appendix C

MWA's Conjunctive Use Agreement for SWP with HDWD

WARREN VALLEY BASIN CONJUNCTIVE USE AGREEMENT
BETWEEN
MOJAVE WATER AGENCY,
HI-DESERT WATER DISTRICT
AND
WARREN VALLEY BASIN WATERMASTER

This AGREEMENT is made this 28th day of October, 2004, by and between the Mojave Water Agency (hereinafter "MWA"), the Hi-Desert Water District (hereinafter "HDWD"), and the Warren Valley Basin Watermaster (hereinafter "WVBW").

RECITALS

A. WVBW is the entity established by San Bernardino Superior Court pursuant to the Judgment filed by the Superior Court on September 16, 1977, in the case entitled Hi-Desert County Water District v. Yucca Water Company, LTD., et al. (hereinafter "Judgment") to administer and enforce the provisions of the Judgment and any subsequent instructions or orders of the Superior Court under the Judgment.

B. HDWD is a County Water District organized and operating pursuant to California Water Code section 30000, et seq.

C. MWA is organized and operating according to special legislative act under the California Water Code, Appendix 97.

D. MWA has a Contract with the California Department of Water Resources to obtain up to 50,800 acre-feet of water annually from the State Water Project. MWA is obligated to make available to the Project Participants in the Morongo Basin Pipeline Contract up to one-seventh of its annual allotment from the State Water Project, subject to the terms of the Agreement for Construction, Operation and Financing of the Morongo Basin Pipeline Project (hereinafter "Morongo Basin Pipeline Contract").

E. HDWD is a party to the Judgment and a Project Participant in the Morongo Pipeline Contract. HDWD is allotted 59 percent or up to 4,282 acre-feet per year of State Water Project water, subject to the provisions of the Morongo Basin

Pipeline Contract. This Agreement is intended to allow additional State Water Project water, in excess of HDWD'S allotment pursuant to the Morongo Basin Pipeline Contract, to be stored in the Warren Valley Groundwater Basin for later extraction and use exclusively by HDWD or by the other parties to the Judgment, through the WVBW, in accordance with the WVBW Rules and Regulations, the Judgment, the Physical Solution, and any subsequent instructions or orders of the Superior Court under the Judgment.

F. The primary purposes of this Agreement are to more efficiently use the water supplies available to the MWA and the HDWD, and to make supplemental water supplies available to the WVBW in the event the Safe Yield of the Basin falls below the combined Adjudicated Water Rights in the Basin of the parties to the Judgment besides HDWD. State Water Project water delivered to the Basin pursuant to this Agreement shall be credited to a "MWA Storage Water Account."

G. The State Water Project water storage operations provided for in this Agreement were analyzed pursuant to the California Environmental Quality Act (Public Resources Code Section 21000, et seq.) ("CEQA"). A mitigated negative declaration was prepared by MWA (State Clearinghouse No. 93052082), and a Notice of Determination was filed in 1993.

H. The terms of this Agreement are intended to result in an equitable sharing of costs between MWA, HDWD, and WVBW.

DEFINITIONS

Adjudicated Water Rights – Water rights established by the Judgment

Basin – Warren Valley Basin

Conjunctive Use – The storage of imported water in the Basin for later extraction and use

HDWD – Hi-Desert Water District

HDWD Spreading Basins – The HDWD groundwater recharge area adjacent to the terminus of the Hi-Desert Pipeline and future extensions thereof

Initial Storage Requirement – Water to be stored in the Basin and credited to the MWA Storage Water Account, in the amount of 2,500 acre-feet exclusive of Provision for Shrinkage Water, before withdrawals can be made by HDWD or WVBW

Judgment – The Judgment of the Superior Court of the State of California for the County of San Bernardino filed on September 16, 1977, in the case entitled Hi-Desert County Water District v. Yucca Valley Water Company, Ltd., et al., Case No. 172103

Mitigation Measures – The mitigation measures set forth at Section 4 of the Initial Study dated Ma 1993 prepared by Dodson & Associates for the Morongo Basin Pipeline Extension Proposed by MWA

Morongo Basin Pipeline Contract – The Agreement for Construction, Operation and Financing of the Morongo Basin Pipeline Project dated as of December 1, 1990

MWA - Mojave Water Agency

MWA Storage Water – Water delivered to the Point of Delivery by MWA in excess of water delivered by MWA pursuant to and required by the Morongo Basin Pipeline Contract

MWA Storage Water Account – An accounting of the total amount of MWA Storage Water

Physical Solution – The Warren Valley Basin Management Plan dated May 1, 1991 prepared by Kennedy/Jenks/Chilton for the MVBW

Point of Delivery – The location at which MWA Storage Water is delivered and measured, as established pursuant to Section 9 of this Agreement

Provision for Shrinkage Water – The amount of water in the MWA Storage Water Account necessary to account for potential permanent losses of MWA Storage Water due to evaporation from the HDWD Spreading Basins and from the aquifers within the Basin, pursuant to Section 6 of this Agreement. The Provision for Shrinkage Water delivered to the Basin pursuant to Section 6 of this Agreement is considered not reclaimable.

WVBW – Warren Valley Basin Watermaster

AGREEMENT

In consideration of the foregoing recitals and the covenants contained herein the Parties to this Agreement hereby agree as follows:

Section 1. Delivery, Amount, and Ownership of Stored Water – MWA may, subject to the conditions of this Agreement, deliver State Water Project water which will be stored in the Basin until such time as needed exclusively by HDWD or WVBW. The amount of water to be stored in the Basin for MWA hereunder shall not be limited provided, however, that the Basin does not experience adverse effects pursuant to Section 3. In the event of an adverse condition, the Parties shall meet and confer pursuant to Section 3. Except for water delivered to the Basin as Provision for Shrinkage Water under the provisions of Section 6 of this Agreement, title to State Water Project water delivered by MWA pursuant to this Agreement shall remain vested in MWA until transferred to HDWD or WVBW pursuant to Section 11 of this Agreement.

Section 2. Conformity with the Judgment and Physical Solution - The Judgment contemplates the delivery of State Water Project water by MWA to HDWD as supplemental water to reverse a long-term trend of groundwater overdraft in the Basin.

(a) WVBW has caused an engineering study to be conducted which describes the "Physical Solution" for the Basin. The Physical Solution likewise contemplates delivery of State Water Project water by MWA to HDWD to reverse the overdraft condition of the Basin, and also contemplates the conjunctive use of the Basin to store imported water supplies. This Agreement is intended to be in conformity with both the Judgment and the Physical Solution.

Section 3. Implementation of Agreement –Notwithstanding any other provisions of this Agreement, the Parties hereto recognize that implementation of this

Agreement may be restricted if it is determined that conjunctive use operations authorized under this Agreement would adversely affect the Basin. Adverse effects include, but are not limited to, subsidence or permanent loss of storage capacity due to compaction of water-bearing soils, or due to a continuous decline of Basin water levels. If any of the Parties hereto is informed or believes that implementation of this Agreement or any part hereof may adversely affect the Basin, that Party ("First Party") shall give notice to the other Parties hereto containing a general description of the First party's information or belief. All Parties hereto shall meet and confer within ten (10) business days after written notice by the First Party. If the Parties hereto are unable to resolve the matter after meeting and conferring, then the First Party shall commence dispute resolution proceedings in accordance with Section 20 of this Agreement.

Section 4. MWA Storage Water – From time to time, MWA may have opportunity to receive water from the State Water Project in excess of HDWD's annual request for any given year. MWA, in conjunction with HDWD and the WVBW, will store this excess water in the Basin in accordance with this Agreement. All costs associated with delivering the water to the HDWD Spreading Basins shall be borne by MWA, including the cost of the water at the State Water Project turnout, if applicable. MWA shall notify HDWD at least thirty (30) days in advance of intent to deliver MWA Storage Water Account to the Basin. MWA and HDWD shall mutually agree on storage water delivery schedules. The MWA Storage Water Account deliveries shall not interfere with delivery of HDWD's water pursuant to HDWD's allotment under the Morongo Basin Pipeline Contract. All State Water Project water, less aquifer losses pursuant to Section 6, provided by MWA and delivered to HDWD or WVBW for storage in the Basin will be credited to the MWA Storage Water Account.

Section 5. Protection of Other MWA Water Users – It is the objective of MWA, HDWD, and WVBW that this Agreement shall not adversely affect the rights of parties to the Judgment or other water users within MWA as they are defined in the Judgment and/or in the Morongo Basin Pipeline Contract.

Section 6. Aquifer Losses – MWA agrees to pre-deliver 1,935 acre-feet of MWA Storage Water from the aquifer within the basin as the Provision for Shrinkage Water losses. The initial 1,935 acre-feet is based on a 15% loss factor on the delivery of 12,900 acre-feet (initial storage goal for MWA based upon a three-year Contractual demand from HDWD). Cumulative deliveries exceeding the initial goal of 12,900 acre-feet shall be reduced by a 15% loss factor on a per acre-foot basis and shall be debited from the MWA Storage Account.

Section 7. Water Available to MWA – Except for aquifer losses, transportation losses, and evaporative losses from spreading basins, MWA Storage Water shall be available to MWA in cumulative amount equal to the amount of water credited to the MWA Storage Water Account, minus the Provision for Shrinkage Water amount. MWA Storage Water available to MWA is to be stored for the exclusive benefit of HDWD and the other parties to the Judgment, through WVBW.

Section 8. Initial Storage Requirement – MWA agrees that at least 2,500 acre-feet, excluding the Provision for Shrinkage Water, must be credited to the MWA Storage Water Account before withdrawals can be made pursuant to Section 11.

Section 9. Point of Delivery – MWA Storage Water shall be delivered to and measured at the HDWD Spreading Basins, or at any other mutually-agreed-upon Point of Delivery.

Section 10. Conditions of Service – The extraction of MWA Storage Water from the Basin shall conform to the Rules and Regulations of MWA with regard to the sale of supplemental water within the jurisdiction of MWA, and to the WVBW Rules and Regulations.

Section 11. MWA Storage Water Account Withdrawals – Withdrawals from the MWA Storage Account shall be determined by MWA providing, however, that the Initial Storage Requirement is fulfilled pursuant to Section 8. At the discretion of MWA, MWA's Contractual delivery requirements to HDWD, as requested by HDWD through its water order, may be met in total or part by allocating a portion of the water stored in the MWA Storage Account providing, however, that an adverse condition of the Basin does not exist as provided for in Section 3. As a result of the sale of stored water to HDWD, MWA's account shall be debited by an equal amount. In the event of an adverse condition the Parties shall meet and confer pursuant to Section 3. Water in the MWA Storage Water Account shall be deemed to be transferred to HDWD or WVBW upon MWA's written notification to HDWD of the transfer and payment to MWA at a price equal to the current purchase price established by MWA for water delivered to HDWD pursuant to the water rates set annually in accordance with the Morongo Basin Pipeline Contract. It is hereby agreed that there is no charge, rent, assessment or expense incurred by MWA by reasons of HDWD spreading and storing the MWA Storage Water Account pursuant to this Agreement. No easement, license, or other right is granted by this Agreement for the use of pipelines, wells, flood control channels, spreading basins, or any other physical facilities or land.

Section 12. HDWD Indemnification – HDWD agrees to indemnify, defend and hold harmless MWA, it directors, officers, employees, and agents from any and all

claims including, but not limited to, property damage, personal injury or death arising or alleged to arise out of or connected with HDWD's physical control, carriage, handling, use or distribution of storage water made available by MWA one said water has been delivered to groundwater replenishment facilities or other mutually agreed delivery point, except for the active negligence or willful misconduct of MWA.

Section 13. MWA Indemnification – MWA agrees to indemnify, defend, and hold harmless HDWD, it directors, officers, employees, and agents from any and all claims, whether filed in a court of law or with an administrative agency, arising or alleged to arise out of or connected with the storage program implemented pursuant to this Agreement, including, but no limited to, claims contesting the legal validity of the program, excepting the active or willful negligence of HDWD.

Section 14. Indemnification of WVBW – HDWD and MWA hereby indemnify and hold harmless WVBW, its director, officers, employees, and agents from any and all costs, damages, or liability resulting or alleged to result from this Agreement, and shall share equally in providing WVBW with the defense or costs of the defense of any action brought against WVBW, its directors, officers, employees or agents arising or alleged to arise by reason of this Agreement.

Section 15. Term of Contract – This Agreement shall become effective as of the date first written above, and shall automatically renew annually as of the date of this Agreement unless terminated by one of the Parties pursuant to Sections 16 or 17.

Section 16. Termination by HDWD and WVBW – In the event that both HDWD and WVBW terminate this Agreement, HDWD and WVBW agree to pay MWA for the water in the MWA Storage Water Account, except Provision for Shrinkage Water, at a price equal to the then current price established by MWA for water delivered to

HDWD pursuant to its allotment under the Morongo Basin Pipeline Contract. Such repayments by HDWD and WVBW for termination under this Section are due and payable upon termination. Termination of this Agreement by either HDWD or WVBW shall operate to terminate only the terminating Party's participation in this Agreement. Both HDWD and WVBW must terminate this Agreement in order for termination of the Agreement itself to be effective under this Section.

Section 17. Termination by MWA – In the event that MWA terminates or is unable to fulfill its obligations under this Agreement, water remaining in the MWA Storage Water Account, except Provision for Shrinkage Water, shall be available for use by HDWD or WVBW upon payment to MWA at a price calculated in accordance with Section 11. The remaining balance in the MWA Storage Water Account shall be liquidated in volumetric amounts not to exceed the annual requests made by HDWD, or as otherwise mutually agreed upon by the Parties.

Section 18. Notices – any notice, tender or delivery to be given hereunder by any Party hereto to the others shall be effected by personal delivery in writing or by registered or certified mail, postage prepaid, return receipt requested, and shall be deemed communicated as of mailing or incase of personal delivery, as of actual receipt. Mailed notices shall be addressed as set forth below, but each Party may change its address by written notice in accordance with this section.

To WVBW: Executive Secretary
WARREN VALLEY BASIN WATERMASTER
55439 Twentynine Palms Highway
Yucca Valley, California 92284-2503

To HDWD: General Manager
HI-DESERT WATER DISTRICT
55439 Twentynine Palms Highway
Yucca Valley, California 92284-2503

To MWA: General Manager
MOJAVE WATER AGENCY
22450 Headquarters Drive
Apple Valley, California 92307

Section 19. Dispute Resolution – Any dispute or controversy arising or alleged to arise out of, under, or in connection with, or in relation to the Agreement, and any amendments, thereof, or the breach thereof, shall be submitted to a panel of three arbitrators for arbitration in accordance with the following procedures:

All Parties hereto shall be entitled to receive notice of and participate in any dispute resolution proceedings implemented pursuant to this Section. However, the only two Parties entitled to appoint arbitrators at any given time pursuant to this Section shall be MWA and the other Party entitled to purchase water in the MWA Storage Water Account on the date of initiation of dispute resolution proceedings as set forth in Section 11.

The Party desiring arbitration shall initiate dispute resolution proceedings by giving written notice to the other Parties hereto containing a general description of the controversy to be submitted to arbitration. If the Party initiating arbitration is also entitled to designate an arbitrator, then the written notice shall also designate by name and address, an arbitrator appointed by the Party initiating arbitration who has agreed to at as arbitrator and who has substantial water basin management experience. The other Party entitled to appoint an arbitrator shall notify the Party requesting arbitration in writing within ten (10) business days after written notice by the Party initiating arbitration of an arbitrator and who has substantial water basin management experience. If the Party initiating arbitration is not entitled to appoint an arbitrator, then both of the other Parties hereto shall notify the Party initiating arbitration of their respective appointment

of arbitrators in accordance with the procedure set forth in this Section 20. The two appointed arbitrators shall appoint a third arbitrator who has agreed to act as arbitrator and who has substantial water basin management experience.

The two appointed arbitrators shall promptly give written notice of the arbitration hearing which shall take place within sixty (60) days after the date of the arbitrators' hearing notice. All Parties hereto may participate in the arbitrations hearing.

The arbitration hearing shall take place in San Bernardino County, California.

The cost of the arbitration shall be paid by WVBW, HDWD, and MWA equally. The results of such arbitration may be appealed by any Party hereto to the Court having jurisdiction over the Judgment, and thereafter as provided by law.

Section 20. Attorneys Fees – The Court having jurisdiction over the Judgment, or the panel of arbitrators shall assign and determine which Party, if any, shall pay attorneys fees and costs.

Section 21. Amendments – This is an entire Agreement and supersedes only those prior agreements oral or written between the Parties to this Agreement regarding the subject matter thereto, and cannot be amended unless in writing, with specific reference hereto, and cannot be amended unless in writing, with specific reference hereto by Parties authorized to be charged. Failure by any Party to enforce any provisions shall not constitute a waiver of said Party's right to enforce subsequent violation of the same or any other provisions.

Section 22. Inurement – This Agreement shall not be assigned by any Party without the express written consent of the other Parties hereto. This Agreement shall e binding upon and inure to the benefit of the successors and assigns of the Parties hereto.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be duly executed by its authorized officers.

WARREN VALLEY BASIN WATERMASTER

By: _____
Bob Stadum, President

Attest: _____
Lee Pearl, Executive Secretary

Approved as to Form: _____
John E. Brown, Legal Counsel

HI-DESERT WATER DISTRICT

By: _____
Bob Stadum, President

Attest: _____
Lee Pearl, Secretary

Approved as to Form: _____
John E. Brown, Legal Counsel

MOJAVE WATER AGENCY

By: _____
Richard D. Hall, President

Attest: _____
Michael L. Page, Secretary

Approved as to Form: _____
William J. Brunick, Legal Counsel

WARREN VALLEY BASIN CONJUNCTIVE USE AGREEMENT
BETWEEN
MOJAVE WATER AGENCY,
HI-DESERT WATER DISTRICT,
AND
WARREN VALLEY BASIN WATERMASTER

This AGREEMENT is made this 28th day of February, 1995, by and between the Mojave Water Agency (hereinafter "MWA"), the Hi-Desert Water District (hereinafter "HDWD"), and the Warren Valley Basin Watermaster (hereinafter "WVBW").

RECITALS

A. WVBW is the entity established by San Bernardino Superior Court pursuant to the Judgment filed by the Superior Court on September 16, 1977, in the case entitled Hi-Desert County Water District v. Yucca Water Company, Ltd., et al. (hereinafter "Judgment") to administer and enforce the provisions of the Judgment and any subsequent instructions or orders of the Superior Court under the Judgment.

B. HDWD is a County Water District organized and operating pursuant to California Water Code section 30000, et seq.

C. MWA is organized and operating according to special legislative act under the California Water Code, Appendix 97.

D. MWA has a contract with the California Department of Water Resources to obtain up to 50,800 acre-feet of water annually from the State Water Project. MWA is obligated to make available to the Project Participants in the Morongo Basin Pipeline Contract up to one-seventh of its annual allotment from the State Water Project, subject to the terms of the Morongo Basin Pipeline Contract.

E. HDWD is a party to the Judgment and a Project Participant in the Morongo Pipeline Contract. HDWD is allotted 59 percent or up to 4,282 acre-feet per year of State Water Project water, subject to the provisions of the Morongo Basin Pipeline Contract. This Agreement is intended to allow additional State Water Project water, in excess of HDWD's allotment pursuant to the Morongo Basin Pipeline Contract, to be stored in the Warren Valley Groundwater Basin for later extraction and use exclusively by HDWD or by the other parties to the Judgment, through the WVBW, in accordance with the WVBW Rules and Regulations, the Judgment, the Physical Solution, and any subsequent instructions or orders of the Superior Court under the Judgment.

F. The primary purposes of this Agreement are to more efficiently use the water supplies available to the MWA and the HDWD, and to make supplemental water supplies available to the WVBW in the event the Safe Yield of the Basin falls below the combined Adjudicated Water Rights in the Basin of the parties to the Judgment besides HDWD. State Water Project water delivered to the Basin pursuant to this Agreement shall be credited to a "MWA Storage Water Account."

G. The State Water Project water storage operations provided for in this Agreement were analyzed pursuant to the California Environmental Quality Act (Public Resources Code Section 21000, et seq.) ("CEQA"). A mitigated negative

declaration was prepared by MWA (State Clearinghouse No. 93052082), and a Notice of Determination was filed in 1993.

H. The terms of this Agreement are intended to result in an equitable sharing of costs between MWA, HDWD, and WVBW.

DEFINITIONS

Adjudicated Water Rights - Water rights established by the Judgment

Basin - Warren Valley Basin

Conjunctive Use - The storage of imported water in the Basin for later extraction and use

HDWD - Hi-Desert Water District

HDWD Spreading Basins - The HDWD groundwater recharge area adjacent to the terminus of the Hi-Desert Pipeline and future extensions thereof

Initial Storage Requirement - Water to be stored in the Basin and credited to the MWA Storage Water Account, in the amount of 500 acre-feet exclusive of Provision for Shrinkage Water, before withdrawals can be made by HDWD or WVBW

Judgment - The Judgment of the Superior Court of the State of California for the County of San Bernardino filed on September 16, 1977, in the case entitled Hi-Desert County Water District v. Yucca Valley Water Company, Ltd., et al., Case No. 172103

Mitigation Measures - The mitigation measures set forth at Section 4 of the Initial Study dated May 1993 prepared by Tod Dodson & Associates for the Morongo Basin Pipeline Extension Proposed by MWA

Moronogo Basin Pipeline Contract - The Agreement for Construction, Operation and Financing of the Morongo Basin Pipeline Project dated as of December 1, 1990

MWA - Mojave Water Agency

MWA Storage Water - Water delivered to the Point of Delivery by MWA in excess of water delivered by MWA pursuant to and required by the Morongo Basin Pipeline Contract

MWA Storage Water Account - An accounting of the total amount of MWA Storage Water

Physical Solution - The Warren Valley Basin Management Plan dated May 1, 1991 prepared by Kennedy/Jenks/Chilton for the WVBW

Point of Delivery - The location at which MWA Storage Water is delivered and measured, as established pursuant to Section 9 of this Agreement

Provision for Shrinkage Water - The amount of water in the MWA Storage Water Account necessary to account for potential permanent losses of MWA Storage Water due to evaporation from the HDWD Spreading Basins and from the aquifers within the Basin, pursuant to Section 6 of this Agreement. The Provision for Shrinkage Water delivered to the Basin pursuant to Section 6 of this Agreement is considered not reclaimable.

WVBW - Warren Valley Basin Watermaster

AGREEMENT

In consideration of the foregoing recitals and the covenants contained herein the Parties to this Agreement hereby agree as follows:

Section 1. Delivery, Amount, and Ownership of Stored Water -- MWA may, subject to the conditions of this Agreement, deliver State Water Project water which will be stored in the Basin until such time as needed exclusively by HDWD or WVBW. The amount of water to be stored in the Basin for MWA hereunder shall not exceed 10,000 acre-feet at any point in time. Except for water delivered to the Basin as Provision for Shrinkage Water under the provisions of Section 6 of this Agreement, title to State Water Project water delivered by MWA pursuant to this Agreement shall remain vested in MWA until transferred to HDWD or WVBW pursuant to Section 11 of this Agreement. The amount of water authorized to be stored in the Basin under Section 1 of

this Agreement may be increased or decreased in accordance with the procedure set forth in Section 3.

Section 2. Conformity with the Judgment and Physical Solution --

(a) The Judgment contemplates the delivery of State Water Project water by MWA to HDWD as supplemental water to reverse a long-term trend of groundwater overdraft in the Basin.

(b) WVBW has caused an engineering study to be conducted which describes the "Physical Solution" for the Basin. The Physical Solution likewise contemplates delivery of State Water Project water by MWA to HDWD to reverse the overdraft condition of the Basin, and also contemplates the conjunctive use of the Basin to store imported water supplies. This Agreement is intended to be in conformity with both the Judgment and the Physical Solution.

Section 3. Implementation of Agreement -- At the present time, there is insufficient information on the physical characteristics of the Basin to predict with certainty the storage capabilities and limitations of the Basin. Additional information on the Basin will be developed during the term of this Agreement. Notwithstanding any other provisions of this Agreement, the Parties hereto recognize that implementation of this Agreement may be restricted if it is determined that conjunctive use operations authorized under this Agreement would adversely affect the Basin. Adverse effects include but are not limited to, subsidence or permanent loss of storage capacity due

to compaction of water bearing soils. If any of the Parties hereto is informed or believes that implementation of this Agreement or any part hereof may adversely affect the Basin, that Party ("First Party") shall give notice to the other Parties hereto containing a general description of the First Party's information or belief. All Parties hereto shall meet and confer within ten (10) business days after written notice by the First Party. If the Parties hereto are unable to resolve the matter after meeting and conferring, then the First Party shall commence dispute resolution proceedings in accordance with Section 20 of this Agreement.

Section 4. MWA Storage Water -- MWA will make available State Water Project water from the California Aqueduct for storage in the Basin. All State Water Project water provided by MWA and delivered to HDWD or WVBW for storage in the Basin in excess of HDWD's allotment under the Morongo Basin Pipeline Contract shall be credited to the MWA Storage Water Account. Storage water made available by MWA pursuant to this Agreement will be stored in the Basin through a program of spreading and percolation. Subject to the terms and conditions of this Agreement, MWA shall have discretion to deliver MWA Storage Water in the manner and time most convenient and cost-effective for MWA, except that MWA Storage Water shall in no way interfere with delivery of HDWD's water pursuant to HDWD's allotment under the Morongo Basin Pipeline Contract.

Section 5. Protection of Other MWA Water Users -- It is the objective of MWA, HDWD, and WVBW that this Agreement shall not adversely affect the rights of parties to the Judgment or other water users within MWA as they are defined in the Judgment and/or in the Morongo Basin Pipeline Contract.

Section 6. Aquifer Losses -- MWA agrees to maintain a credit of 600 acre-feet for Provision for Shrinkage Water in the MWA Storage Water Account at all times to account for potential permanent losses of MWA Storage Water due to evaporation from the HDWD Spreading Basins and from the aquifers within the Basin. The amount of Provision for Shrinkage Water that MWA is required to maintain as a credit in the MWA Storage Water Account shall be modified as necessary in accordance with the provisions of Section 3 or Section 19. MWA agrees to accept the losses by evaporation and transportation of State Water Project water prior to its delivery to HDWD or WVBW at the Point of Delivery.

Section 7. Water Available to MWA -- Except for aquifer losses, transportation losses, and evaporative losses from spreading basins, MWA Storage Water shall be available to MWA in a cumulative amount equal to the amount of water credited to the MWA Storage Water Account, minus the Provision for Shrinkage Water amount. MWA Storage Water available to MWA is to be stored for the exclusive benefit of HDWD and the other parties to the Judgment, through WVBW.

Section 8. Initial Storage Requirement -- MWA agrees that at least 500 acre-feet in addition to the Provision for Shrinkage

Water must be credited to the MWA Storage Water Account before withdrawals can be made by HDWD, or by any of the parties to the Judgment through the WVBW.

Section 9. Point of Delivery -- MWA Storage Water shall be delivered to and measured at the HDWD Spreading Basins, or at any other mutually-agreed-upon Point of Delivery.

Section 10. Conditions of Service -- The extraction of MWA Storage Water from the Basin shall conform to the Rules and Regulations of MWA with regard to the sale of supplemental water within the jurisdiction of MWA, and to the WVBW Rules and Regulations.

Section 11. Compensation by MWA -- In consideration for spreading and storing the MWA Storage Water, and subject to the WVBW Rules and Regulations, HDWD shall have the exclusive right to purchase all or any portion of the water in the MWA Storage Water Account, except the Provision for Shrinkage Water, at any point in time as long as the Safe Yield of the Basin is sufficient to satisfy the Adjudicated Water Rights of the other parties to the Judgment, and WVBW shall have the exclusive right to purchase all or any portion of the water in the MWA Storage Water Account, except the Provision for Shrinkage Water, at any point in time that the Safe Yield of the Basin is insufficient to satisfy the Adjudicated Water Rights in the Basin of the other parties to the Judgment. Water in the MWA Storage Water Account shall be deemed to be transferred to HDWD or WVBW upon HDWD's or WVBW's written notification to MWA of the transfer and payment to

MWA at a price equal to the then current purchase price established by MWA for water delivered to HDWD pursuant to its allotment under the Morongo Basin Pipeline Contract. Upon such transfer, MWA's interest in the transferred water shall be vested in HDWD or WVBW, and the MWA Storage Water Account shall be debited in an equal amount. It is hereby agreed that there is no charge, rent, assessment or expense incurred by MWA by reasons of HDWD spreading and storing the MWA Storage Water pursuant to this Agreement. No easement, license, or other right is granted by this Agreement for the use of pipelines, wells, flood control channels, spreading basins, or any other physical facilities or land by any entity besides HDWD and the other parties to the Judgment through the WVBW. No water right is created or granted by this Agreement.

Section 12. HDWD Indemnification -- HDWD agrees to indemnify, defend and hold harmless MWA, its directors, officers, employees, and agents from any and all claims including, but not limited to, property damage, personal injury or death arising or alleged to arise out of or connected with HDWD's physical control, carriage, handling, use or distribution of storage water made available by MWA once said water has been delivered to groundwater replenishment facilities or other mutually agreed delivery point, except for the active negligence or willful misconduct of MWA.

Section 13. MWA Indemnification -- MWA agrees to indemnify, defend, and hold harmless HDWD, its directors, officers,

employees, and agents from any and all claims, whether filed in a court of law or with an administrative agency, arising or alleged to arise out of or connected with the storage program implemented pursuant to this Agreement, including, but not limited to, claims contesting the legal validity of the program, excepting the active or willful negligence of HDWD.

Section 14. Indemnification of WVBW -- HDWD and MWA hereby indemnify and hold harmless WVBW, its directors, officers, employees, and agents from any and all costs, damages, or liability resulting or alleged to result from this Agreement, and shall share equally in providing WVBW with the defense or costs of the defense of any action brought against WVBW, its directors, officers, employees or agents arising or alleged to arise by reason of this Agreement.

Section 15. Term of Contract -- This Agreement shall become effective as of the date first written above, and shall expire on December 31, 2015, unless renewed by mutual agreement of the Parties hereto. Upon mutual consent, the Parties hereto may extend the terms of this Agreement at any time prior to 180 days before its expiration. Upon expiration of this Agreement, all water remaining in the MWA Storage Water Account, except Provision for Shrinkage Water, shall be purchased by HDWD at the then current purchase price as established by MWA.

Section 16. Termination by HDWD and WVBW -- In the event that both HDWD and WVBW terminate this Agreement prior to the expiration date, HDWD and WVBW agree to pay MWA for the water in

the MWA Water Storage Account, except Provision for Shrinkage Water, at a price equal to the then current price established by MWA for water delivered to HDWD pursuant to its allotment under the Morongo Basin Pipeline Contract. Such repayments by HDWD and WVBW for termination under this Section are due and payable upon termination. Termination of this Agreement by either HDWD or WVBW shall operate to terminate only the terminating Party's participation in this Agreement. Both HDWD and WVBW must terminate this Agreement in order for termination of the Agreement itself to be effective under this Section.

Section 17. Termination by MWA -- In the event that MWA terminates or is unable to fulfill its obligations under this Agreement prior to the expiration date, HDWD shall charge MWA for the use of HDWD's physical facilities, including the Basin itself, the Hi-Desert Pipeline and appurtenant facilities, and HDWD Spreading Basins, and for hydrologic services rendered in connection with this Agreement. Water remaining in the MWA Storage Water Account, except Provision for Shrinkage Water, shall be available for use by HDWD or WVBW upon payment to MWA of the MWA purchase price from the California Department of Water Resources, plus the costs to MWA for transportation and delivery to HDWD at the Point of Delivery, until the MWA Storage Water Account is depleted. Withdrawal of water under this Section shall be accounted for on a first-in-first-out basis. In no case shall the charge by HDWD to MWA for the use of HDWD's physical facilities, including the Basin itself, Hi-Desert Pipeline

appurtenant facilities, and Hi-Desert Spreading Basins, and hydrologic service rendered in connection with this Agreement exceed the total value of the water in the MWA Storage Water Account as calculated under this section.

Section 18. Notices -- Any notice, tender or delivery to be given hereunder by any Party hereto to the others shall be effected by personal delivery in writing or by registered or certified mail, postage prepaid, return receipt requested, and shall be deemed communicated as of mailing or in case of personal delivery, as of actual receipt. Mailed notices shall be addressed as set forth below, but each Party may change its address by written notice in accordance with this section.

To WVBW:	Executive Secretary WARREN VALLEY BASIN WATERMASTER 6955 Old Woman Springs Road Yucca Valley, California 92284
To HDWD:	General Manager HI-DESERT WATER DISTRICT 6955 Old Woman Springs Road Yucca Valley, California 92284
To MWA:	General Manager MOJAVE WATER AGENCY 22450 Headquarters Apple Valley, California 92307

Section 19. Agreement Administration -- To provide for necessary coordination for the operation of this Agreement, each entity shall appoint their respective General Managers or their designees as Agreement Administrators. The Agreement Administrators shall develop and implement a program to monitor

the status of the storage of water within the Basin pursuant to this Agreement, and shall adjust annually the amount of Provision for Shrinkage Water as necessary to compensate for any additional State Water Project water losses. The Agreement shall develop and implement a Groundwater Table Monitoring Program and a Groundwater Quality Monitoring Program to comply with Mitigation Measures 70 and 71. Both programs shall be developed and implemented in coordination with the Basin monitoring activities conducted by WVBW pursuant to the Judgment and court orders thereunder. The Agreement Administrators shall also prepare an annual report summarizing the results of the monitoring program. The annual report prepared pursuant to this Section shall be prepared in December for the previous water year combined with the annual report on the Basin required to be prepared by WVBW and submitted to the Court pursuant to the Judgment and subsequent Court orders thereunder. The costs of any monitoring and reporting, and/or the cost of any facilities necessary to implement the Agreement Administrators' monitoring program, above and beyond those otherwise required for the monitoring programs implemented by WVBW, HDWD, and MWA shall be shared equally by WVBW, HDWD, and MWA.

Section 20. Dispute Resolution -- Any dispute or controversy arising or alleged to arise out of, under, or in connection with, or in relation to the Agreement, and any amendments thereof, or the breach thereof, shall be submitted to

a panel of three arbitrators for arbitration in accordance with the following procedures:

All Parties hereto shall be entitled to receive notice of and participate in any dispute resolution proceedings implemented pursuant to this Section. However, the only two Parties entitled to appoint arbitrators at any given time pursuant to this Section shall be MWA and the other Party entitled to purchase water in the MWA Storage Water Account on the date of initiation of dispute resolution proceedings as set forth in Section 11.

The Party desiring arbitration shall initiate dispute resolution proceedings by giving written notice to the other Parties hereto containing a general description of the controversy to be submitted to arbitration. If the Party initiating arbitration is also entitled to designate an arbitrator, then the written notice shall also designate by name and address, an arbitrator appointed by the Party initiating arbitration who has agreed to act as arbitrator and who has substantial water basin management experience. The other Party entitled to appoint an arbitrator shall notify the Party requesting arbitration in writing within ten (10) business days after written notice by the Party initiating arbitration of an arbitrator appointed by the other Party who has agreed to act as arbitrator and who has substantial water basin management experience. If the Party initiating arbitration is not entitled to appoint an arbitrator, then both of the other Parties hereto shall notify the Party initiating arbitration of their respective

appointment of arbitrators in accordance with the procedure set forth in this Section 20. The two appointed arbitrators shall appoint a third arbitrator who has agreed to act as arbitrator and who has substantial water basin management experience.

The two appointed arbitrators shall promptly give written notice of the arbitration hearing which shall take place within sixty (60) days after the date of the arbitrators' hearing notice. All Parties hereto may participate in the arbitration hearing.

The arbitration hearing shall take place in San Bernardino County, California.

The cost of the arbitration shall be paid by WVBW, HDWD, and MWA equally. The results of such arbitration may be appealed by any Party hereto to the Court having jurisdiction over the Judgment, and thereafter as provided by law.

Section 21. Attorneys Fees -- The Court having jurisdiction over the Judgment, or the panel of arbitrators shall assign and determine which Party, if any, shall pay attorneys fees and costs.

Section 22. Amendments -- This is an entire Agreement and supersedes only those prior agreements oral or written between the Parties to this Agreement regarding the subject matter thereto, and cannot be amended unless in writing, with specific reference hereto by Parties authorized to be charged. Failure by any Party to enforce any provisions shall not constitute a waiver

of said Party's right to enforce subsequent violation of the same or any other provisions.

Section 23. Inurement -- This Agreement shall not be assigned by any Party without the express written consent of the other Parties hereto. This Agreement shall be binding upon and inure to the benefit of the successors and assigns of the Parties hereto.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be duly executed by its authorized officers.

WARREN VALLEY BASIN WATERMASTER

By: _____
Howard K. Laverty, President

Attest: _____
Charles E. Bryant, Secretary

Approved as to Form: _____
Susan M. Trager, Attorney for
Hi-Desert Water District

HI-DESERT WATER DISTRICT

By: _____
Howard K. Laverty, President

Attest: _____
Charles E. Bryant, Secretary

Approved as to Form: _____
Susan M. Trager, Attorney for
Hi-Desert Water District

MOJAVE WATER AGENCY

By: _____
President

Attest: _____
Secretary

Approved as to Form: _____
Attorney for Mojave Water Agency

Appendix D

Warren Valley Judgment Text (*included on CD-ROM*)

Appendix E

1991 Warren Valley Basin Management Plan and 1996 Addendum
(*included on CD-ROM*)

Appendix F

1991 Ames Valley Basin Water Agreement (*included on CD-ROM*)

Appendix G

Regional Water Quality Control Board (RWQCB)
Resolution No. R7-2011-0004

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

RESOLUTION NO. R7-2011-0004

Amending the Water Quality Control Plan for the Colorado River Basin Region to Prohibit Septic Tank Discharges in the Town of Yucca Valley, San Bernardino County

WHEREAS, the California Regional Water Quality Control Board, Colorado River Basin Region (hereinafter Regional Water Board), finds that:

1. An updated Water Quality Control Plan for the Colorado River Basin (Basin Plan) was adopted by the Regional Water Board on November 17, 1993, approved by the State Water Resources Control Board (State Water Board) on February 17, 1994, and approved by the Office of Administrative Law (OAL) on August 3, 1994. This Basin Plan has been updated to include amendments adopted by the Regional Water Board through December 2008.

2. The Basin Plan may be amended in accordance with the California Water Code (CWC) Section 13240 et seq.

3. The Basin Plan has narrative groundwater quality objectives, which state in relevant part: "The Regional Board's objective is to minimize the quantities of contaminants reaching any groundwater basin. This could be achieved by establishing management practices for major discharges to land. Until the Regional Board can complete investigations for the establishment of management practices, the objective will be to maintain the existing water quality where feasible." (Basin Plan, Chapter 3, Section IV.)

4. Water Code Section 13243 authorizes the Regional Water Board to specify certain conditions or areas where discharges of specific types of waste will not be permitted.

5. Water Code Section 13280 requires that a determination that discharge of waste from existing or new individual disposal systems or from community collection and disposal systems, which utilize subsurface disposal, should not be permitted shall be supported by substantial evidence in the record. Such evidence shall demonstrate that the discharge of waste from such disposal systems will result in violation of water quality objectives, will impair present or future beneficial uses of water, will cause pollution, nuisance, or contamination, or will unreasonably degrade the quality of any waters of the state.

6. The Town of Yucca Valley is in the southwestern area of the Mojave Desert, approximately 25 miles north of Palm Springs and 100 miles east of Los Angeles, in San Bernardino County. This southwestern part of the Mojave Desert is bordered to the north by the San Bernardino Mountains and to the south by the Little San Bernardino Mountains. The Town of Yucca Valley is the main population center in this area, and the current population is estimated at 24,000.

7. The Town of Yucca Valley (Town) is in the southwest corner of the Morongo Groundwater Basin. The Warren Valley Groundwater Subbasin (Warren Subbasin) is part of the Morongo Groundwater Basin, and it includes water-bearing sediments beneath the Town and the surrounding area. The Subbasin is bounded to the north by the Pinto Mountain fault, to the south by the Little San Bernardino Mountains, to the east by a bedrock constriction called the "Yucca Barrier", and to the west by a bedrock constriction/topographic divide that separates Warren Valley from Morongo Valley. Water-bearing deposits in the Warren Subbasin cover about 5.5 square miles (mi^2) of the 19 mi^2 Subbasin area.

8. The Morongo Groundwater Basin and Warren Subbasin are within the Joshua Tree Hydrologic Unit. The Basin Plan specifies the following beneficial uses for the Joshua Tree Hydrologic Unit:

   i. Municipal and domestic supply (MUN)
   ii. Industrial Process Supply (IND)

9. State Water Board Resolution No. 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State," hereinafter Resolution No. 68-16) requires a regional board, when regulating a discharge of waste, to maintain high quality waters of the state (i.e., background water quality) until it is demonstrated that any change in quality is consistent with:

   i. the maximum benefit to the people of the state,
   ii. will not unreasonably affect present and anticipated beneficial uses of waters, and
   iii. will not result in water quality less than that prescribed in policies (e.g., violation of any Water Quality Objective (WQO)).

10. The Hi-Desert Water District (HDWD) is the water purveyor for the Town. It was also designated as the Water Master for the basin when the basin was adjudicated by the San Bernardino County Superior Court in 1977.

11. As the Town's population increased, ground water levels declined. From 1940 to 1994, ground water levels had declined about 300 feet in some areas of the Warren Subbasin. In 1995, HDWD initiated an artificial ground water recharge program to reverse the decline in ground water levels. As a result of the recharge effort, groundwater levels have recovered as much as 250 feet and nitrate concentrations have increased above the USEPA drinking water maximum contaminant level of 45 mg/L.

12. In a U.S. Geological Survey (USGS) 2003 report titled "Evaluation of the Source and Transport of High Nitrate Concentrations in Groundwater, Warren Subbasin, California" Water-Resources Investigations Report 03-4009 (USGS Report), the USGS concluded that "septage from septic tanks was the primary source of nitrate (NO_3) to the ground-water system". (USGS Report, p. 1.)

13. High nitrate concentrations in water used for domestic supply may cause methemoglobinemia ("blue baby syndrome") in infants six months or younger that consume water with nitrate levels that exceed the maximum contaminant level (MCL). These infants may become seriously ill and die, if untreated.

14. Concentrations of nitrates in the Warren Subbasin have violated the Basin Plan's water quality objectives for groundwater.

15. The Town currently has no municipal sanitary sewer or wastewater treatment systems.

16. The proposed Basin Plan Amendment is contained in Attachment A, incorporated herein and made part of this resolution. The amendment modifies Chapter 4 of the Basin Plan: Section II.H, Septic Systems.

17. The proposed amendment enacts a prohibition on discharges of wastewater from septic systems in areas of the Town of Yucca Valley scheduled for sewer installation in the three phases defined in HDWD's Sewer Master Plan (see Attachment B) according to the following schedule:

    - Phase 1 by May 19, 2016
    - Phase 2 by May 19, 2019
    - Phase 3 by May 19, 2022

18. Regional Water Board staff prepared a report titled "Staff Report In Support Of A Basin Plan Amendment To Prohibit The Discharge of Wastewater Into The Ground from Septic Systems In The Town of Yucca Valley" (hereinafter referred to as Staff Report), dated December 2010.

19. The Staff Report has undergone scientific peer review as required by California Health and Safety Code Section 57004. The peer review panel concluded that the proposed amendment to the Basin Plan is needed and scientifically warranted, particularly in the high density areas of the Town of Yucca Valley.

20. Findings in the Staff Report indicate that the discharges of wastes from septic systems in the Town have adversely impacted groundwater quality. Accordingly, staff has concluded that the continued discharge of wastes from the septic systems will result in further degradation of water quality and conditions of pollution, contrary to Resolution No. 68-16 and in violation of Basin Plan water quality standards for the Warren Subbasin.

21. The Regional Water Board has considered and responded to all comments submitted by the peer review panel.

22. The Regional Water Board considered factors in CWC Section 13241, including economic considerations, to develop the proposed amendment. The cost of implementing the amendment is reasonable given the beneficial uses of groundwater that are being threatened and impacted. This proposed Amendment of the Basin Plan will also result in improved groundwater quality.

23. The Staff Report describes the proposed amendment, evaluates a range of reasonable alternatives to comply with the Amendment, provides a cost estimate for the proposed implementation program, and identifies potential sources of financing, as required by CWC Section 13141.

24. The regulatory action proposed meets the "necessity" standard of the Administrative Procedure Act, Government Code Section 11353, subdivision (b).

25. The basin planning process is certified by the Secretary for Natural Resources as a regulatory program exempt from the requirements to prepare an Environmental Impact Report, Negative Declaration, and Initial Study (Title 14, California Code of Regulations (CCR), Section 15241(g)). However, a certified program is subject to other provisions in the California Environmental Quality Act (CEQA), such as the requirement to avoid significant adverse effects to the environment where feasible (Pub. Resources Code, Section 21000 et seq). Regional Water Board staff prepared the required documentation to adopt the amendment, including an environmental checklist and written report (23 CCR Section 3777).

26. Regional Water Board staff held a CEQA scoping meeting on December 18, 2007, to receive comments on the draft amendment and to identify significant issues to consider.

27. Regional Water Board staff completed an environmental checklist indicating no significant adverse effects, individually or cumulatively, to the environment from implementing the Amendment.

28. In accordance with state and federal regulations (23 CCR Section 3775, 40 CFR 25, and 40 CFR 131), Regional Water Board staff circulated for review and comment a Notice of Public Hearing, a Notice of Filing, the Staff Report, the environmental checklist, and draft proposed amendment to interested individuals and public agencies, including persons with expertise identifying environmental impacts from implementing the amendment.

29. On March 17, 2011, the Regional Water Board held a public workshop in the Town of Yucca Valley and heard and considered comments pertaining to this Basin Plan amendment.

30. On May 19, 2011, the Regional Water Board held a public hearing and heard and considered all comments pertaining to the Basin Plan amendment.

NOW THEREFORE BE IT RESOLVED THAT:

1. Pursuant to CWC Section 13240 et seq., the Regional Water Board, after considering the entire record, including oral comments made at the hearing, hereby approves the Staff Report, and adopts the Basin Plan Amendment as set forth in Attachment A.

2. Pursuant to CWC Section 13245, the Executive Officer is hereby directed to forward the Basin Plan Amendment administrative record to the State Water Board for review and approval.

3. Pursuant to CWC Sections 13245 and 13246, the Regional Water Board hereby requests that the State Water Board approve the Basin Plan Amendment, then forward the amendment with supporting documents, to OAL for approval.

4. The Executive Officer is directed to transmit to the California Department of Fish and Game payment of its required CEQA filing fee for certified regulatory programs (currently set at $965.50), which include this Basin Plan Amendment, as prescribed by California Fish and Game Code Section 711.4 and implementing regulations set forth at 14 CCR Section 753.5.

5. If, during the review and approval process, Regional Water Board staff, the State Water Board, and/or OAL determine that minor, non-substantive changes to the language of the amendment are needed for clarity or consistency, the Executive Officer may authorize such change(s), and shall inform the Regional Water Board accordingly.

6. After OAL approval of the Basin Plan Amendment, the Executive Officer is directed to request the State Water Resources Control Board to file, on behalf of the Regional Water Board, a Notice of Decision (NOD) with the Secretary for Natural Resources in accordance with Public Resources Code Section 21080.5(d)(2)(E), and 23 CCR Section 3781(b), and to include with the NOD a copy of the CEQA filing fee paid to the California Department of Fish and Game.

I, Robert Perdue, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of the Resolution adopted by the California Regional Water Quality Control Board, Colorado River Basin Region, on May 19, 2011.

Robert L Perdue

ROBERT PERDUE
Executive Officer

ATTACHMENT A

An Amendment to the Water Quality Control Plan for the Colorado River Basin Region to Prohibit the Discharge of Wastewater Into the Ground From Septic Systems In The Town Of Yucca Valley in San Bernardino County.

AMENDMENT

Chapter 4, Section II.H (Septic Systems), add the following subsection entitled:

Town of Yucca Valley

Pursuant to Section 13280 of the California Water Code, the discharge of wastewater from new or existing individual disposal systems on parcels within Phase 1, Phase 2, and Phase 3 of the Hi-Desert Water District Sewer Master Plan (Final Report, January 2009) is prohibited with certain exceptions noted below.

A. Time Schedule for Implementation

The prohibition shall become effective for all parcels within Phase 1 of the Hi-Desert Water District Sewer Master Plan by May 19, 2016, or when a municipal sewage collection system becomes available, whichever occurs first.

The prohibition shall become effective on parcels within Phase 2 of the Hi-Desert Water Districts Sewer Master Plan by May 19, 2019, or when a municipal sewage collection system becomes available, whichever occurs first.

The prohibition shall become effective on parcels within Phase 3 of the Hi-Desert Water Districts Sewer Master Plan by May 19, 2022, or when a municipal sewage collection system becomes available, whichever occurs first. All three phases are shown in Attachment B.

A municipal sewage collection system is defined as “available” once the system is operational, and is located within 500 lineal feet of an existing or proposed new disposal system discharge.

B. Reporting

Pursuant to Section 13225 of the California Water Code, by January 1, 2012, the Hi-Desert Water District (HDWD) shall submit to the Regional Water Board a report describing an implementation plan to comply with the May 19, 2016, the May 19, 2019, and the May 19, 2022 prohibition dates.

Thereafter, HDWD shall submit bi-annual reports to the Regional Water Board by January 1st and July 1st of each year regarding any actions taken by HDWD or any other person or entity in order to achieve compliance by the above deadlines.

HDWD will be contracting with USGS to study further the impact from septic system discharges in Phases 2 and 3. HDWD will be submitting the results of the study to the Regional Water Board for consideration of modification of the Prohibition.

C. Prohibition Exemptions

Exemptions to this Prohibition shall be considered and may be granted by the Regional Water Board on a case-by-case basis pursuant to an application submitted to the Executive Officer by any person or entity that is subject to the Prohibition (Discharger). Such exemptions shall be based upon the weight of the evidence demonstrating the existence of unique conditions applicable to the Discharger, its discharge, and its property in question. These conditions include, but are not limited to, technical, environmental, or economic conditions that would make connection to the collection system or installation of an on-site advanced treatment and disposal system technically impracticable or economically excessively burdensome. To be considered for an exemption, the Discharger shall apply to the Executive Officer for relief in writing and document the conditions that would make connection to the collection system or installation of an advanced on-site treatment and disposal system technically impracticable or economically excessively burdensome. The application shall also include:

a) Written quotes from three State licensed commercial contractors regarding the estimated cost to install, operate, and maintain the advanced on-site treatment and disposal system; and
b) A financial statement regarding the applicant's average income for the last five years, and the applicant's most recent property value assessment.

The Regional Water Board shall give substantial consideration to applications accompanied by a letter of support for the exemption from HDWD.

The Executive Officer shall have thirty (30) days from receipt of the application to notify the Discharger in writing whether the application is complete. Following receipt of a complete application, the Executive Officer shall make a preliminary determination of whether the Discharger qualifies for an exemption and shall make a recommendation to the Regional Water Board based on that determination whether the exemption should be granted or denied. The Executive Officer shall then notify the Discharger in writing regarding that recommendation and when the matter will be scheduled for the Regional Water Board's consideration at a public hearing.

D. Compliance Assurance and Enforcement

It is the Regional Water Board's objective to work cooperatively with the Dischargers who are subject to this Prohibition to help them achieve compliance with the terms of the Prohibition. Consistent with this objective, the Executive Officer shall assist the Dischargers achieve compliance with the terms of this Basin Plan amendment. In this regard, the Executive Officer shall continue to assist the Town of Yucca Valley and HDWD obtain financial assistance and, within forty-five (45) days following approval of the amendment by the California Office of Administrative Law (OAL), shall notify in writing all Dischargers regarding:

a) the key deadlines of this Prohibition,
b) options available to comply with the amendment, and
c) sources of potential financial and technical assistance.

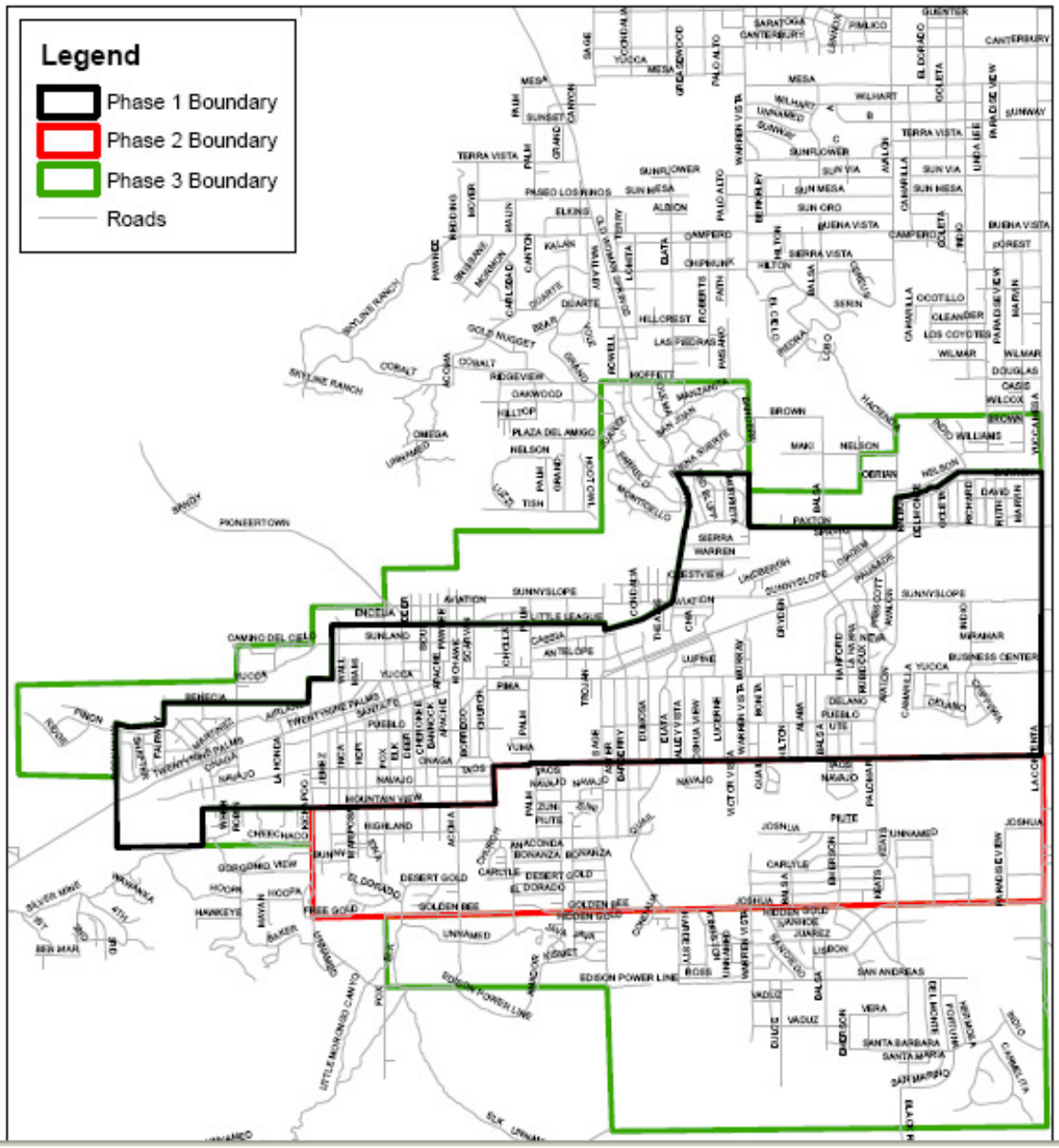
The Regional Water Board recognizes that there may be circumstances where a Discharger is not responsive to staff compliance efforts. In these cases, the State Water Resources Control Board's Water Quality Enforcement Policy provides clear guidance on the options available to the Regional Water Board to bring the Discharger into compliance. In these circumstances, the Regional Water Board enforcement staff shall implement prompt, consistent, predictable, fair, and progressive enforcement to bring the Discharger into compliance at the earliest practicable date with the terms of this Prohibition. Towards this end, the Regional Water Board staff may take any combination of the following actions, as the circumstances of the case may warrant:

- Issue Notice of Non-Compliance letters;
- Issue an order pursuant to Section 13267 of the California Water Code to ensure that a Discharger submits, in a prompt and complete manner, a technical report to bring its discharge into compliance with this Prohibition;
- Issue a Cleanup and Abatement order pursuant to Section 13304 of the California Water Code against any Discharger who violates the Prohibition and/or threatens a condition of nuisance or pollution;
- Prepare for consideration of adoption by the Regional Water Board, a Cease and Desist order pursuant to Section 13301 of the California Water Code against any Discharger who violates the Prohibition;
- Issue Administrative Civil Liability Complaints, as provided for by the California Water Code, against any responsible party who fails to comply with Regional Water Board orders and/or the Prohibition.

The Executive Officer is hereby directed to provide the Regional Water Board an annual written report regarding overall progress to achieve compliance with the terms of this prohibition. The first annual report shall be due on May 23, 2012.

ATTACHMENT B

HDWD SEWER MASTER PLAN PHASES



Appendix H

DWR Approval of HDWD's AB 1420

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

November 23, 2009

RECEIVED
NOV 30 2009

Mr. Ed Muzik
General Manager
Hi-Desert Water District
55439 29 Palms Highway
Yucca Valley, California 92284-2503

Dear Mr. Muzik:

The Department of Water Resources (DWR) has reviewed the Hi-Desert Water District Water District's (HDWD) Self-Certification Statement – Table 1 submitted by HDWD on October 22, 2009, regarding implementation of the Urban Best Management Practices (BMPs).

The purpose of DWR's review is to determine eligibility of HDWD to receive water management grant or loan funds. DWR has followed the *Compliance with AB 1420 Requirements* dated June 1, 2009. For detailed information, please visit www.owue.water.ca.gov/finance/index.cfm.

Based on DWR's review of the information in Table 1, HDWD has and is currently implementing the BMPs consistent with AB 1420 and, therefore, is eligible to receive water management grant or loan funds.

DWR reserves the right to request additional information and documentation to substantiate the accuracy of the information provided in Table 1. Additionally, DWR may reverse or modify its eligibility determination and notify you if it finds inaccuracies in the supporting documentation or in Table 1.

If you have any questions, please contact me at (916) 651-9666 or Jodi Evans at 651-7026.

Sincerely,

B. Davidoff

Baryohay Davidoff, Chief
Agricultural Water Management Planning
And Financial Assistance

Appendix I

Ordinance No. 68 Restrictions on the Use of Water,
Ordinance No. 72 Landscape Irrigation Meters,
Water District Code Chapter 5.55 Retrofit Requirements

Ordinance No. 68 Restrictions on the Use of Water

ORDINANCE No. 68

AN ORDINANCE OF THE BOARD OF DIRECTORS OF THE HI-DESERT WATER DISTRICT, SAN BERNARDINO CALIFORNIA, ESTABLISHING PROHIBITIONS AND RESTRICTIONS ON THE USE OF WATER AND RESCINDING ORDINANCE NO. 67

BE IT ORDAINED BY THE BOARD OF DIRECTORS OF THE HI-DESERT WATER DISTRICT AS FOLLOWS:

SECTION 1. Recision The Board of Directors of the Hi-Desert Water District hereby rescinds Ordinance No. 67 in its entirety.

SECTION 2. Findings

A. A water shortage condition continues to exist within the Hi-Desert Water District due to the continuing overdraft of the Warren Valley Basin; and

B. An adequate water supply is important to the longevity of the community served by Hi-Desert Water District, and all water consumers should know and act with this knowledge in regard to the use of water; and

C. The water uses prohibited and restricted by this Ordinance are hereby determined to be non-essential.

SECTION 3. Prohibitions and Restrictions on the Use of Water

A. No hose washing of sidewalks, walkways, driveways, parking areas, patios, porches or verandas, or any hardscape, unless required by a regulatory agency for health or safety reasons;

B. No water shall be used to clean, fill, operate or maintain levels in decorative fountains, unless such water is part of a recycling system;

C. No person shall knowingly permit water to leak from any facility within his/her premises;

D. No use of potable water is permitted to irrigate, water or sprinkle grass, lawns, groundcover, shrubbery, crops, vegetation and trees between the hours of 9:00 a.m. and 5:00 p.m. during the high use season which begins June 1 and terminates September 30 of each year. During this season, watering shall

be permitted on any three(3) days of the week, of the customer's choice, but shall not exceed three(3) days of any week.

In the low season beginning October 1 and ending May 31, watering is permitted at the discretion of the individual customer according to the weather conditions taking into account temperature and wind factors. During this season, watering shall be permitted on any three(3) days of the week, of the customer's choice, but shall not exceed three(3) days of any week.

E. Water shall be allowed for construction purposes, including by not limited to debrushing of vacant land, compaction of fills and pads, trench backfill and other construction uses, but shall be used in an efficient manner and not result in run-off. A representative of the owner or builder shall be on site during such water use. The use of "rainbird" type sprinklers is not recommended.

F. Potable water from within the District shall not be used to maintain dirt roads without application to the District.

G. Restaurants shall provide water to customers only upon request.

H. Non-commercial washing of privately owned vehicles, trailers, motor homes, busses or boats will not be permitted except from a bucket and a hose equipped with an automatic shut-off nozzle which may be used for a quick rinse.

I. No use of water for any purpose, except as provided herein, which results in flooding or run-off onto hardscape, driveways, streets, adjacent lands or into gutters shall be permitted.

SECTION 4. Penalty for Violation The penalties for violating the prohibitions and restrictions set forth in Section 3 of this subject Ordinance are as follow:

A. First Violation - Warning notice

B. Second Violation - Written notice of second violation, and a warning of flow restriction device or possible shutoff upon a Third Violation. In addition, upon a commercial or multi-family service receiving the subject Second Violation, the District

may install an irrigation meter. Within twenty(20) days of such installation, the commercial or multi-family service must have undertaken to install all the necessary connections to the irrigation meter.

C. Third Violation - The General Manager may direct the installation of a flow restriction device or shut-off of service for a period of no less than 48 hours.

SECTION 5. Appeal

A. Any person wishing to appeal parts of this Ordinance shall do so in writing to the District.

B. The Conservation Coordinator shall review and make decisions on the granting of the appeal and the issuance of a variance.

C. If an applicant for appeal disagrees with the decision, the request may be appealed to the General Manager.

D. If the General Manager and the applicant are unable to reach an accord, then the request for appeal shall be heard by the Conservation Committee of the Board of Directors who shall then refer it to the Board of Directors at a regularly scheduled meeting with a recommendation for approval or denial.

E. All appeals shall be reported monthly to the Board of Directors as part of the Manager's Report.

SECTION 6. Future Restrictions

All users of water within the District's service area are hereby put on notice that further prohibitions and restrictions may hereafter become necessary, and that such users shall be subject to all further prohibitions, restrictions, rules and regulations as may be imposed.

Such changes may be instituted by resolution and shall not require the rescinding of this Ordinance as a whole but shall allow the change, through resolution, of parts.

Subsequent Emergency Orders shall supersede parts of this Ordinance when there is a conflict.

SECTION 7. Definitions The terms user, consumer and customer used herein shall apply to every person, firm, partnership, association, corporation, county, state or local agency, political subdivisions, district or entity of every kind within the District service area except the Hi-Desert Water District.

SECTION 8. Purpose and Intent It is the purpose and intent of this Ordinance to limit the use of water to beneficial purposes only and to prohibit and restrict the unnecessary and wasteful use of water except to the extent expressly authorized by the terms of this Ordinance.

SECTION 9. Ordinance Controlling The provisions of this Ordinance shall prevail and control in the event of any inconsistency between this Ordinance and any other rule, regulation or code of this District, except as later amended by resolution or emergency rule.

SECTION 10. Effective Date This Ordinance shall be effective upon its adoption.

ADOPTED this 17th day of June, 1992

President of the Hi-Desert Water District and of the Board of Directors thereof.

ATTEST:

Secretary of the Hi-Desert Water District and of the Board of Directors thereof.

(SEAL)

STATE OF CALIFORNIA)
)
COUNTY OF SAN BERNARDINO)

I, Charles E. Bryant, Secretary of the Board of Directors of the Hi-Desert Water District, DO HEREBY CERTIFY that the foregoing ordinance, being Ordinance No. 68, was duly adopted by the Board of Directors of said District at a regular meeting of said Board held on the 17th day of June, 1992, and that it was so adopted by the following vote:

AYES: Directors Dalton, Flowers, Skidmore, Zarakov, and Duran

NOES: None

ABSENT: None

ABSTAIN: None

Secretary of the Hi-Desert Water District and of the Board of Directors thereof.

(SEAL)

Ordinance No. 72 Landscape Irrigation Meters

Ordinance No. 72
An Ordinance of the Board of Directors of the Hi-Desert Water District Establishing Conditions, Prohibitions, and Restrictions on Landscape Irrigation Meters

BE IT ORDAINED BY THE BOARD OF DIRECTORS OF THE HI-DESERT WATER DISTRICT AS FOLLOWS:

SECTION 1. Authority.

This Ordinance is adopted pursuant to the authority granted by the state legislature pursuant to California Water Code Sections 375 through 377.

SECTION 2. Findings.

A. Hi-Desert Water District is the only retail supplier of municipal water for the benefit of persons and entities within its service area, including the Town of Yucca Valley and a portion of the County of San Bernardino.

B. An adequate water supply is necessary to the longevity of the community serviced by Hi-Desert Water District.

C. The conditions, prohibitions, and restrictions on landscape irrigation meters set forth in this ordinance are necessary to reduce the quantity of water used within Hi-Desert Water District's service area for the purpose of conserving the Hi-Desert Water District's water supplies to meet existing and projected water demands.

D. This ordinance is hereby found to be a Class 8 Categorical Exemption under the California Environmental Quality Act, California Public Resources Code Section 21000, et seq. (CEQA). Specifically, this ordinance is exempt from CEQA under Title 14 California Code of Regulations Section 15308, which exempts actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment.

SECTION 3. Applicability.

This ordinance applies to all new and rehabilitated landscaping installed after the effective date of this ordinance for public agency projects and private development projects that

are served by a separate irrigation meter, including but not limited to, industrial, commercial, and recreational projects, and developer-installed landscaping in multi-family residential developments, and any other landscaped areas served by a separate irrigation meter.

SECTION 4. Exceptions.

This ordinance shall not apply to:

(1) Homeowner-installed landscaping at single-family and multi-family projects.

(2) Cemeteries.

(3) Registered historical sites.

(4) Ecological restoration projects and mined-land reclamation projects that do not require a permanent irrigation system.

(5) Any project with a Landscaped Area less than 500 square feet.

SECTION 5. Definitions.

The words used in this ordinance have the meaning set forth below:

A. "ALLOWABLE PERCENTAGE" or "ET ADJUSTMENT FACTOR" means a factor of 0.66 that, when applied to Reference Evapotranspiration adjusts for plant factors and Distribution Uniformity (as set forth in Exhibit A), and determines the Maximum Allowable Water Budget for an individually metered Landscaped Area.

B. "ALLOWABLE PERCENTAGE" or "ET ADJUSTMENT FACTOR" for Recreational Areas, means a factor of 0.85 that, when applied to Reference Evapotranspiration adjusts for plant factors and Distribution Uniformity, and determines the Maximum Allowable Recreation Area Water Budget.

C. "CROP COEFFICIENT" OR "KC" means a factor, expressed as a decimal, that, when multiplied by Reference Evapotranspiration, estimates the amount of water used by a specific plant. A list of plants and their corresponding KC values is set forth in the Water Use Classification of Landscape Species (WUCOLS) Guide published by the University of California Cooperative Extension. A copy of the WUCOLS Guide will be maintained in the Hi-Desert Water District's headquarters for review and photocopying at the applicant's expense.

D. "ESTIMATED ANNUAL WATER USE" or "EAWU" means the Estimated Annual Water Use for the Landscaped Area as calculated in the Landscape

Documentation Package pursuant to Section 7 below. It is based upon Reference Evapotranspiration, the Crop Coefficient of the plants involved, and the size of the Landscaped Area. The EAWU for a Landscaped Area equals the sum of the estimated water use of all Hydrozones in the project's Landscaped Areas. The EAWU for the Landscaped Area shall not exceed the Maximum Allowable Water Budget for the Landscaped Area. The method for calculating Estimated Annual Water Use is set forth in Exhibit "A."

E. "ESTABLISHMENT PERIOD" means the first 12 months after installation of the plants in the Landscaped Area.

F. "EVAPOTRANSPIRATION" means the quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time.

G. "HYDROZONE" means a portion of the Landscaped Area having plants with similar water needs that are served by a valve or a set of valves with the same schedule.

H. "LANDSCAPE DOCUMENTATION PACKAGE." For projects with a Landscaped Area between 500 and 2,500 square feet, a Landscape Documentation Package means completed worksheets including all information as specified in Exhibits A, B and C to this Ordinance. For projects with a Landscaped Area of 2,500 square feet or greater, a Landscape Documentation Package means a Title Sheet, a Layout, a Planting Plan, an Irrigation Plan, and completed worksheets including all information as specified in Exhibits A, B and C to this Ordinance signed by a California registered landscape architect, if required by the District. For Recreational Areas, a Landscape Documentation Package means a Planting Plan, an Irrigation Plan and completed worksheets including all information specified in Exhibits A, C and D to this Ordinance signed by a California registered landscape architect, if required by the District.

I. "LANDSCAPED AREA" means
Only that area where landscape material will be planted and served by an individual irrigation meter.

J. "MAXIMUM ALLOWABLE WATER BUDGET" means the annual maximum allowable water use calculated for the Landscaped Area pursuant to Section 7. It is based upon the Reference Evapotranspiration, the Allowable Percentage, and the size of the Landscaped Area. The method for calculating Maximum Allowable Water Budget is set forth in Exhibit "B."

K. "MAXIMUM ALLOWABLE RECREATIONAL AREA WATER BUDGET" means the annual maximum allowable water use calculated for the Recreational

Area pursuant to Section 7. It is based upon the Reference Evapotranspiration, the Allowable Percentage defined for the Recreational Area, and the size of the Recreational Area. The method for calculating Maximum Allowable Recreational Area Water Budget is set forth in Exhibit "D."

L. "MONTHLY ADJUSTMENT FACTOR" or "MAF" means a factor, expressed as a decimal, that, when multiplied by the Maximum Allowable Water Budget for a Landscaped Area, determines the Monthly Maximum Allowable Water Budgets for that project. MAFs are based upon monthly historic average Reference Evapotranspiration for the Victorville California Irrigation Management Information System ("CIMIS") Service Area, Sunset Climate Zone 11, and WULCOS Guide Region No. 5 (High and Intermediate Desert Region). The MAFs for the twelve months of the year are listed in Exhibit "C."

M. "MONTHLY MAXIMUM ALLOWABLE WATER BUDGETS" means the maximum water use allowable for each calendar month for the Landscaped Area as calculated pursuant to Section 7. The method for calculating Monthly Maximum Allowable Water Budgets is set forth in Exhibit "C."

N. "RECREATIONAL AREA" means a Landscaped Area intended for use for active play or recreation such as sports fields or school yards.

O. "REFERENCE EVAPOTRANSPIRATION" means a standard measurement of environmental parameters which affect the water use of plants. Reference Evapotranspiration is given as 74.4 inches of water per year, and represents the annual historic average evapotranspiration of a large field of 4"-6" actively growing cool-season grass that is well watered and located in the area of San Bernardino County. Reference Evapotranspiration is used as the basis of determining the Maximum Allowable Water Budget so that regional differences in climate can be accommodated.

P. "REHABILITATED LANDSCAPING" means any modifications to an existing Landscaped Area that require a permit and result in a Landscaped Area 500 square feet or larger.

Q. "VALVE" means a device used to control the flow of water in the irrigation system.

SECTION 6. Condition for Issuance of Landscape Irrigation Meters.

As a condition of the issuance of a landscape irrigation meter, the applicant shall submit plans for the proposed landscaping and irrigation of any project subject to this ordinance to Hi-Desert Water District for review and approval in conformity with the procedure set forth in

Section 7. The plans must conform to the provisions of this ordinance. No landscape irrigation meter will be issued until the Hi-Desert Water District approves the Monthly Maximum Allowable Water Budgets for the Landscaped Area. Any plants may be used in the Landscaped Area, providing the Estimated Annual Water Use for the Landscaped Area does not exceed the Monthly Maximum Allowable Water Budgets for the Landscaped Area.

SECTION 7. Procedures For Issuance of Landscape Irrigation Meters.

A. When applying to the Hi-Desert Water District for irrigation water service to a project subject to this ordinance, the applicant must provide a completed Landscape Documentation Package for the project as specified in Section 5(H) of this Ordinance. No irrigation water service will be authorized by the Hi-Desert Water District for any project subject to this ordinance until the District reviews and approves the Landscape Documentation Package in accordance with this ordinance.

B. The applicant must also submit a deposit, as established by the District, to cover all estimated Hi-Desert Water District fees for processing the application.

C. After receipt of a complete Landscape Documentation Package and payment in full of the District's processing fee, the Hi-Desert Water District will determine the Monthly Maximum Allowable Water Budgets for the Landscaped Area.

D. If the Hi-Desert Water District determines that the Estimated Annual Water Use for the project does not exceed the Monthly Maximum Allowable Water Budgets for the project, the Hi-Desert Water District will approve the application and execute a Landscape Irrigation Water Agreement for the project substantially in the form attached as Exhibit E to this Ordinance. The executed Landscape Irrigation Water Agreement must be signed by the applicant and returned to Hi-Desert Water District together with payment in full of applicable water service fees in order to be effective. A project that does not exceed its Maximum Allowable Water Budget shall be exempt from the restrictions on irrigation times included in Section 3(D) of Hi-Desert Water District Ordinance No. 68.

E. If the Hi-Desert Water District determines that the Estimated Annual Water Use for the project exceeds the Monthly Maximum Allowable Water Budgets for the project, then the District will deny the application and provide the applicant with a written confirmation of its determination, including an explanation of the basis for its determination.

F. Hi-Desert Water District's landscape plan check program is not intended to ensure the adequacy, efficiency, or functional ability of any landscaping or irrigation system. The intent of the landscape plan check is to ensure that all individually-

metered landscape irrigation projects applicable to this ordinance are assigned Monthly Maximum Allowable Water Budgets, and to prohibit use of water for landscape irrigation purposes in excess of such assigned Monthly Maximum Allowable Water Budgets.

SECTION 8. Prohibitions and Restrictions on Landscape Irrigation Meters.

A. Use of water in excess of the Monthly Maximum Allowable Water Budgets established for an irrigation meter is prohibited and shall be subject to restriction and/or other penalty in accordance with this ordinance.

B. After the twelve-month Establishment Period, each Landscaped Area must use water within the limits of the Monthly Maximum Allowable Water Budgets assigned to it pursuant to Section 7.

C. Written notice of water use in excess of the applicable Monthly Maximum Allowable Water Budgets will be sent by the Hi-Desert Water District to the billing address for the subject irrigation meter. Upon notification of such excess water use, the customer must take whatever corrective action is necessary within a reasonable period of time to bring the water usage into conformity with the applicable Monthly Maximum Allowable Water Budgets.

D. After the Establishment Period, any Landscaped Area that exceeds its Monthly Maximum Allowable Water Budgets for two consecutive months will be subject to one (1) or more of the following penalties, to be imposed by the General Manager of the Hi-Desert Water District with the right of appeal to the Board of Directors of the Hi-Desert Water District:

(1) Imposition of a penalty water rate on water usage in excess of the applicable Monthly Maximum Allowable Water Budgets.

(2) Restriction or discontinuance of the irrigation water service until it is demonstrated to the General Manager's satisfaction that the irrigation system and/or landscaping have been corrected to use water in accordance with the Monthly Maximum Allowable Water Budgets. All costs of service termination and reactivation must be paid by the customer.

(3) Commencement of legal proceedings to abate the violation as a waste and unreasonable use of water.

E. After the Establishment Period, all Landscaped Areas shall be field audited in accordance with current State of California Department of Water Resources guidelines for water auditing, to determine the "Distribution Uniformity" of the

irrigation system, as that term is defined in the guidelines. An irrigation system that fails to meet or exceed a Distribution Uniformity of 0.625 shall be modified and re-audited. Landscaped Areas between 500 and 2,500 square feet shall be exempt from the requirement of a field audit unless and until water use after the Establishment Period exceeds the Monthly Maximum Allowable Water Budgets for two consecutive months.

F. Hi-Desert Water District shall not in any way be held liable or responsible for any claims or losses related to imposition of any penalty under this ordinance.

SECTION 9. Ordinance Controlling.

The provisions of this ordinance shall prevail and control in the event of any inconsistency between this ordinance and any other rule, regulation or code of Hi-Desert Water District, except as later amended by resolution or emergency rule.

Ordinance No. 70 is hereby rescinded.

SECTION 10. Effective Date.

This ordinance shall be effective upon its adoption.

ADOPTED this 18th day of July, 2001.

President of the Hi-Desert Water District
and of the Board of Directors thereof

ATTEST:

Secretary of the Hi-Desert Water District
and of the Board of Directors thereof

(SEAL)

EXHIBIT A
ESTIMATED ANNUAL WATER USE

NOTE: The variables used in the following calculations are defined in Section 5 of Ordinance No. 72.

The estimated annual water use for the entire Landscaped Area per individual irrigation meter shall be determined by following these steps:

STEP 1 Calculate the estimated annual water use (EAWU) for each hydrozone in the Landscaped Area (per the formula in this exhibit).

STEP 2 Add the EAWU of all hydrozones in the Landscaped Area.

STEP 3 Round off the sum of EAWU for all hydrozones to the nearest whole number as follows: if $\geq$ .5, round UP; if $\leq$ .49, round DOWN.

The estimated annual water use of a hydrozone can be calculated using the following formula:

$$EAWU = \frac{(74.4)(KC)(HA)}{(DU)(1200)}$$

EAWU = Estimated Annual Water Use in billing units per year (one billing unit = 100 cubic feet = 748 gallons)

74.4 = Reference evapotranspiration in inches of water per year

KC = Crop coefficient (for a specific plant from the Water Use Classification of Landscape Species ("WUCOLS" Guide)

HA = Hydrozone Area in square feet

DU = Distribution Uniformity of the irrigation system expressed as a decimal (found later in this exhibit)

1200 = Conversion factor to produce an answer in billing units (to convert the answer to gallons, multiply the formula by 748)

Typical irrigation system Distribution Uniformity (DU) for the various types of irrigation heads or emitters are expressed in the following decimals:

Standard Spray Sprinkler Head	=	.65
Single Nozzle Rotary Head	=	.75
Multiple Nozzle Rotary Head	=	.85
Micro Spray Sprinkler Head	=	.80
Standard Bubbler Head in Basin	=	.75
Pressure Compensating Bubbler	=	.95
Non-Compensating Drip Emitter	=	.70
Pressure Compensating Drip Emitter	=	.90

EXAMPLE CALCULATION for a small, individually-metered landscape project with two hydrozones and a total Landscaped Area of 8,000 square feet:

EAWU for hydrozone no. 1 = $\frac{(74.4)(0.5)(3{,}000)}{(0.9)(1{,}200)}$ = 103.33 billing units

EAWU for hydrozone no. 2 = $\frac{(74.4)(0.5)(5{,}000)}{(0.7)(1{,}200)}$ = 221.43 billing units

SUBTOTAL = 103.33 + 221.43 = 324.76 billing units (round off to nearest whole number per previous instructions)

TOTAL EAWU FOR THIS PROJECT = 325 billing units per year

NOTE: The EAWU for the total established Landscaped Area per individual irrigation meter SHALL NOT EXCEED the annual Maximum Allowable Water Budget for that Landscaped Area (refer to EXHIBIT B).

EXHIBIT B
ANNUAL MAXIMUM ALLOWABLE WATER BUDGET

NOTE: The variables used in the following calculations are defined in Section 5 of Ordinance No. 72.

The annual Maximum Allowable Water Budget for the total Landscaped Area per individual irrigation meter shall be determined by following these steps:

STEP 1 Calculate the annual Maximum Allowable Water Budget (AMAWB) (per the formula in this exhibit).

STEP 2 Round off the AMAWB to the nearest whole number as follows: if $\geq .5$, round UP; if $\leq .49$, round DOWN.

The annual Maximum Allowable Water Budget for the total Landscaped Area per individual irrigation meter shall be calculated using the following formula:

$$AMAWB = \frac{(74.4)(0.66)(TLA)}{1200}$$

AMAWB = Annual Maximum Allowable Water Budget in billing units per year (one billing unit = 100 cubic feet = 748 gallons)

74.4 = Reference evapotranspiration in inches of water per year

0.66 = Allowable percentage

TLA = Total Landscaped Area per meter in square feet

1200 = Conversion factor to produce an answer in billing units (to convert the answer to gallons, multiply the formula by 748)

EXAMPLE CALCULATION for an individually-metered landscape project with a total Landscaped Area of 40,000 square feet:

$$AMAWB = \frac{(74.4)(0.66)(40{,}000)}{1200}$$

= (1636.80 rounded off to the nearest whole number per previous instructions)

= 1637 billing units per year

EXHIBIT C
MONTHLY MAXIMUM ALLOWABLE WATER BUDGET

NOTE: The variables used in the following calculations are defined in Section 5 of Ordinance No. 72.

The schedule of Monthly Maximum Allowable Water Budgets for the total Landscaped Area per individual irrigation meter shall be determined by following these steps:

STEP 1 Calculate the Monthly Maximum Allowable Water Budget (MMAWB) for each month of the year (per the formula in this exhibit)

STEP 2 Round off each MMAWB to the nearest whole number as follows: if $\geq .5$, round UP; if $\leq .49$, round DOWN

Each Monthly Maximum Allowable Water Budget for the total Landscaped Area per individual irrigation meter shall be calculated using the following formula:

MMAWB = (AMAWB)(MAF)

MMAWB = Monthly Maximum Allowable Water Budget in billing units per the month chosen to be calculated

AMAWB = Annual Maximum Allowable Water Budget in billing units per year (rounded off to the nearest whole number and calculated per instructions in EXHIBIT B or EXHIBIT D for Recreational Areas)

MAF = Monthly Adjustment Factor for the month chosen to be calculated and taken from the following table:

Jan	0.031	May	0.125	Sep	0.100
Feb	0.042	Jun	0.134	Oct	0.079
Mar	0.066	Jul	0.151	Nov	0.038
Apr	0.090	Aug	0.132	Dec	0.024

EXAMPLE CALCULATION for the MMAWB for the month of August for an individually-metered landscape project with a total Landscaped Area of 40,000 square feet and an AMAWB of 1637 billing units per year:

MMAWB	=	(1637)(0.132)
	=	(216.08 rounded off to the nearest whole number per previous instructions)
	=	216 billing units for the month of August

EXHIBIT D
MAXIMUM ALLOWABLE RECREATIONAL AREA WATER BUDGET

NOTE: The variables used in the following calculations are defined in Section 5 of Ordinance No. 72.

The annual Maximum Allowable Water Budget for the total Recreational Area Landscaped Area per individual irrigation meter (or combined with the meter for other Landscape Areas on the same site/project), shall be determined by following these steps:

STEP 1 Calculate the annual Maximum Allowable Recreational Area Water Budget (AMARAWB) (per the formula in this exhibit)

STEP 2 Combine the AMARAWB with the AMAWB when one exists

STEP 3 Round off the AMARAWB (or the combined number) to the nearest whole number if $\geq .5$, round UP; if $\leq .49$, round DOWN.

The annual Maximum Allowable Water Budget for the total Recreational Area Landscape Area per individual irrigation meter (or combined with the meter for other Landscape Areas on the same site/project), shall be calculated using the following formula.

$$\text{AMARAWB} = \frac{(74.4)(0.85)(\text{TLA})}{1200}$$

AMARAWB = Annual Maximum Allowable Recreational Area Water Budget in billing units per year (one billing unit = 100 cubic feet = 748 gallons)

74.4 = Reference evapotranspiration in inches of water per year

0.85 = Allowable percentage

TLA = Total Landscape Area per meter in square feet

1200 = Conversion factor to produce an answer in billing units (to convert the answer to gallons, multiply the formula by 748)

EXAMPLE CALCULATIONS for an individually-metered landscape project with a total Recreational Area Landscape Area of 43,560 square feet:

$$\text{AMARAWB} = \frac{(74.4)(0.85)(43{,}560)}{1200}$$

= (2295.61 rounded off to the nearest whole number per previous instructions)

= 2296 billing units per year

EXHIBIT E
LANDSCAPE IRRIGATION WATER AGREEMENT

Applicant: _____

Legal Description: Section __, Lot __, APN

Application has been made and all fees paid to Hi-Desert Water District for landscape irrigation water service to the above described parcel. Upon request of the Applicant within 12 months after this date, an irrigation meter will be installed and irrigation water service shall be served upon demand. Otherwise this letter shall be null and void, and the Hi-Desert Water District shall have no obligation to serve.

Irrigation service is conditioned upon Applicant's compliance with the terms and conditions included in the District's Ordinance No. 72. The Monthly Maximum Allowable Water Budgets established for the above-described parcel pursuant to Ordinance No. 72 are as follows:

January	____	May	____	September	____
February	____	June	____	October	____
March	____	July	____	November	____
April	____	August	____	December	____

Use of water in excess of the Monthly Maximum Allowable Water Budgets is prohibited and shall be subject to restriction and/or other penalty in accordance with Ordinance No. 72. In determining whether a Monthly Maximum Allowable Water Budget has been exceeded, adjustments will be made as appropriate to accommodate extraordinary fluctuations in the actual evapotranspiration rate.

Sincerely,

HI-DESERT WATER DISTRICT

General Manager

I understand, agree to, and accept the above described conditions of irrigation water service by the Hi-Desert Water District. I represent that I am authorized by the Applicant to execute this agreement.

Applicant: _____ Date: _____

Water District Code Chapter 5.55 Retrofit Requirements

Chapter 5.55
RETROFIT REQUIREMENTS

Sections:

5.55.010 Retrofit requirements.
5.55.020 Required certification of fixtures.
5.55.030 Requirements of water saving fixtures.
5.55.040 Specific requirements for new construction.
5.55.050 Variances.
5.55.060 Allowances.

* Prior legislation: Ord. 38.

5.55.010 Retrofit requirements.

A. Prior to the issuance of a will serve from the Hi-Desert Water District, for both commercial and residential applicants, the applicant must identify types of fixtures to be installed and sign an agreement that affirms that such fixtures will be installed. Upon completion of the project, a representative of the Hi-Desert Water District shall inspect the facilities and certify that the required and designated fixtures have been installed. Service shall be contingent upon such certification and will not be provided until such fixtures are installed and reinspected.

B. Any building which is being substantially remodeled (i.e., any building where plumbing fixtures are removed and replaced because of structural or cosmetic remodeling; or any building which makes structural changes other than original construction affecting plumbing) shall replace existing fixtures with ultra-low flow toilets or water closets, showerheads and faucets.

C. Prior to transfer of ownership of either commercial or residential property, all existing structures shall be retrofitted, if not already so, with ultra-low flow toilets or water closets, showerheads and faucets that conform to the standards expressed in this chapter. Prior to transfer of water service, both the transferor and the transferee shall certify in writing that the property has been retrofitted in conformance with this chapter, and service shall be transferred and continued upon inspection and certification of said property by a representative of the Hi-Desert Water District.

D. Upon change of user of property, as in rental properties changing tenants, owner shall sign certification that said property has been retrofitted, if not already so, and shall have service transferred and continued upon inspection of said property by a representative of the Hi-Desert Water District. [Res. 90-04 § 1].

5.55.020 Required certification of fixtures.

The plumbing fixtures and devices required to be installed pursuant to this chapter shall be certified by the International Association of Plumbing and Mechanical Officials and comply with all applicable American National Standards Institute standards. [Res. 90-04 § 2].

5.55.030 Requirements of water saving fixtures.
A. Toilets, water closets, urinals and flushometer valves designed to use a maximum of 1.6 gallons of water per flush shall be utilized only.

B. Showerheads, except where provided for safety reasons, shall be installed and will not allow a water flow rate in excess of 2.5 gallons per minute. The flow limitation device must be a permanent and integral part of the showerhead and must not be removable to allow flow rates in excess of 2.75 gallons per minute.

C. Faucets (general) installed in all lavatory, kitchen, and bar sinks shall be equipped with a flow control device or aerator which will not allow a water flow rate in excess of 2.5 gallons per minute.

D. Faucets (Public Restrooms). In addition to the general requirements set forth in subsection (C) of this section, lavatory faucets located in restrooms intended for use by the general public shall be of the metering or self-closing type. [Amended during 2010 codification; Res. 90-04 § 3].

5.55.040 Specific requirements for new construction.
A. Hot water recirculating units shall be required in all new construction and they must be equipped either with a timer or a thermostat for energy conservation; and all pipes shall be wrapped and insulated.

B. All new construction prior to issuance of will serve shall submit plans to the district showing exterior landscape development and are required to comply with the low water use guidelines established by the district.

C. Water-cooled refrigerating systems must utilize the best available technology for water savings and shall be equipped with one or a combination of the following devices:

1. Cooling tower;

2. Evaporative condenser;

3. An acceptable water recirculating device.

D. The provisions of subsection (C) of this section shall not apply to systems with an aggregate total of two tons or less or a rating of two horsepower or less and located at one street address. Multiple-dwelling unit structures are considered as one street address. However, such systems must be equipped with:

1. Water regulation valves adjusted to use the minimum amount of water;

2. Thermostats that will positively stop water flow when off. [Res. 90-04 § 4].

5.55.050 Variances.
Allowances of variance can be set by the general manager for a specific amount of time and until the requirement can be met if certain products are not available at the

time required, but changes must be made within a 90-day period and are subject to inspection by a representative of the district. [Res. 90-04 § 5].

5.55.060 Allowances.

In the event the building inspector finds that the plumbing situation or drainage situation is such that there is not sufficient water to flow the sewage to the septic tank, there will be an allowance made. [Res. 90-04 § 6].

This page of the Hi-Desert Water District Code is current through Ordinance 82, passed November 17, 2010, and Resolution 10-32, passed October 20, 2010.
Disclaimer: The Hi-Desert Water District has the official version of the Hi-Desert Water District Code. Users should contact the Hi-Desert Water District for ordinances and resolutions passed subsequent to the ordinance and resolution cited above.

District Website: http://www.hdwd.com/ (http://www.hdwd.com/)
District Telephone: (760) 228-6267
Code Publishing Company (http://www.codepublishing.com/)

Appendix J

AWWA M36 Standard Water Audit Results Fiscal Year 2010

AWWA Water Loss Control Committee (WLCC) Free Water Audit Software v4.2

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WAS v4.2

PURPOSE: This spreadsheet-based water audit tool is designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. It provides a "top-down" summary water audit format, and is not meant to take the place of a full-scale, comprehensive water audit format.

USE: The spreadsheet contains several separate worksheets. Sheets can be accessed using the tabs towards the bottom of the screen, or by clicking the buttons on the left below. Descriptions of each sheet are also given below.

THE FOLLOWING KEY APPLIES THROUGHOUT:

- Value can be entered by user
- Value calculated based on input data
- These cells contain recommended default values

Please begin by providing the following information, then proceed through each sheet in the workbook:

NAME OF CITY OR UTILITY: Hi Desert Water District COUNTRY: US

REPORTING YEAR: 2010 START DATE(MM/YYYY): 07/2009 END DATE(MM/YYYY): 06/2010

NAME OF CONTACT PERSON: Mark Ban E-MAIL: markb@hdwd.com TELEPHONE: 760-365-8333 Ext. 212

PLEASE SELECT PREFERRED REPORTING UNITS FOR WATER VOLUME: Acre-feet

Click to advance to sheet… Click here: ? for help about units and conversions

Instructions	The current sheet
Reporting Worksheet	Enter the required data on this worksheet to calculate the water balance
Water Balance	The values entered in the Reporting Worksheet are used to populate the water balance
Grading Matrix	Depending on the confidence of audit inputs, a grading is assigned to the audit score
Service Connections	Diagrams depicting possible customer service connection configurations
Definitions	Use this sheet to understand terms used in the audit process
Loss Control Planning	Use this sheet to interpret the results of the audit validity score and performance indicators

Comments:

Add comments here to track additional supporting information, sources or names of participants

1)Volume From Own Sources = Production Records 2) Master Meter Error Adjustment = HDWD is now testing source meters for accuracy through an outside source. Future plans to incorporate SCADA with metered production. 3) HDWD does not receive imported water for distribution. 4) Water exports are limited to "Black Rock Canyon Campground". 5) Auto tabulated 6) Billed metered taken from Springbrook Custom Reports to align with total weighted average of customer retail unit cost. 7) HDWD meters all customer connections including "bulk use" 8) Depicts the amounts of water metered through HDWD facilities, capital replacement projects, and periodic flushing. 9) Auto tabulated. 10) Auto tabulated 11) Auto

If you have questions or comments regarding the software please contact us at: wlc@awwa.org

AWWA WLCC Free Water Audit Software: Reporting Worksheet

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WAS v4.2

Back to Instructions

? Click to access definition

Water Audit Report for: Hi Desert Water District
Reporting Year: 2010 | 7/2009 - 6/2010

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

WATER SUPPLIED

<< Enter grading in column 'E'

Volume from own sources:	7	3,174.780	acre-ft/yr	
Master meter error adjustment (enter positive value):	2	0.000	under-registered	acre-ft/yr
Water imported:	n/a	0.000	acre-ft/yr	
Water exported:	7	2.590	acre-ft/yr	
WATER SUPPLIED:		3,172.190	acre-ft/yr	

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:
Billed metered:	7	2,696.200	acre-ft/yr		
Billed unmetered:	n/a	0.000	acre-ft/yr		
Unbilled metered:	10	4.570	acre-ft/yr		
Unbilled unmetered:		39.652	acre-ft/yr	1.25%	

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: 2,740.422 acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption)

431.768 acre-ft/yr

Apparent Losses

				Pcnt:	Value:
Unauthorized consumption:		7.930	acre-ft/yr	0.25%	

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	5	41.128	acre-ft/yr	1.50%	
Systematic data handling errors:	10	1.000	acre-ft/yr		
Apparent Losses:		50.059			

Choose this option to enter a percentage of billed metered consumption. This is NOT a default value

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 381.709 acre-ft/yr

WATER LOSSES: 431.768 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 475.990 acre-ft/yr

= Total Water Loss + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	8	300.0	miles
Number of active AND inactive service connections:	6	10,455	
Connection density:		35	conn./mile main
Average length of customer service line:	10	0.0	ft (pipe length between curbstop and customer meter or property boundary)
Average operating pressure:	6	97.0	psi

COST DATA

Total annual cost of operating water system:	9	$7,171,859	$/Year
Customer retail unit cost (applied to Apparent Losses):	8	$4.82	$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	9	$462.28	$/acre-ft

PERFORMANCE INDICATORS

Financial Indicators

Non-revenue water as percent by volume of Water Supplied:	15.0%
Non-revenue water as percent by cost of operating system:	4.2%
Annual cost of Apparent Losses:	$105,103
Annual cost of Real Losses:	$176,456

Operational Efficiency Indicators

Apparent Losses per service connection per day:	4.27	gallons/connection/day
Real Losses per service connection per day*:	32.59	gallons/connection/day
Real Losses per length of main per day*:	N/A	
Real Losses per service connection per day per psi pressure:	0.34	gallons/connection/day/psi
Unavoidable Annual Real Losses (UARL):	346.74	acre-feet/year
From Above, Real Losses = Current Annual Real Losses (CARL):	381.71	acre-feet/year
Infrastructure Leakage Index (ILI) [CARL/UARL]:	1.10	

* only the most applicable of these two indicators will be calculated

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 75 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Customer metering inaccuracies
3: Water exported

For more information, click here to see the Grading Matrix worksheet

Appendix K

HDWD Board Policy No. 26-04

Board of Directors Policy

Subject	Policy Number	Date Adopted
Issuing "Will Serve" Commitment Letters and the Installation of New Water Services and Rescinding Policy 23-03.	26-04	03-24-04

Background:
In December, 2002, Policy 23-02 was adopted by the Board due to the District's recharge activities since 1995, the potential for new growth in the community, and the adoption of SB 221 by the California State Legislature. This policy rescinded Policy No. 3-90.

SB 221 became effective in October, 2001. This bill requires developers constructing 500 dwelling units or more to file with the Department of Real Estate evidence supporting the existence of sufficient water supplies for their subdivision over the next 20 years. Upon request from the appropriate party and within 90 days, the District will be required to provide this information, i.e. Urban Water Shortage Contingency Plan, Warren Valley Basin Management Plan, Water Supply Master Plan, etc.

In December, 2003, the Court for the Watermaster approved an alternate proposal for allocating water meters. The 2% method was replaced with a program that bases growth according to water recharged in the Warren Valley Basin. Under the 2% growth scenario, the limitation was directly placed on water demand from year to year. In essence, water demand for each consecutive year could only increase by 2%. In order to effectively administer this program, the water demand allotted for any given year would require a conversion to water meters. In the event the allotted water meters were sold, no more would be available until the following year when a new allotment was calculated. However, unsold water meters could be rolled over to the following year less the previous 5th year - that would in essence create a reserve of water meters.

The primary difference between the 2% growth scenario and the alternative approved by the Court is the direct relationship between groundwater in reserves and actual growth. The alternative removes all restrictions on growth, unless certain water reserves in the groundwater basin reach a predetermined level.

Policy:
It is the Policy of the Board of Directors of the Hi-Desert Water District that water meters issued shall be in accordance with the following staged conditions which shall be reviewed and updated every fiscal year (see Exhibit 'A'):

Stage 1 Condition – A 2% growth limitation would be implemented in the event water reserves in the Warren Valley Basin are equal to or fall below 5 years (500%) of water demand for that particular year.

Stage 2 Condition – A 1% growth limitation would be implemented in the event water reserves in the Warren Valley Basin are equal to or fall below 4 years (400%) of water demand for that particular year.

Stage 3 Condition – A 0% growth rate would be implemented in the event water reserves in the Warren Valley Basin are equal to or fall below 3 years (300%) of water demand for that particular year.

The procedure for issuing new water meters is the following:

Non-Subdivision Developments

1. The issuance of new meters is subject to limitation pursuant to the previously mentioned staged conditions.

2. Upon payment of the Acquisition of Service fee (pre-paid meters excluded) and a completed application, the meter will be installed within 5 calendar days for installation levels 1 and 2. For installation levels of 3 and 4, the meter will be installed within 10 calendar days. If the meter cannot be installed within the prescribed time frame, the customer will be notified of an installation date.

3. The actual installation cost (pre-paid meters excluded) will be billed to the applicant and shall be due and payable within 30 days.

4. Meters will be installed within 12 months after payment of the Acquisition of Service fee. In the event the applicant seeks an extension beyond the 12 month period, a written request may be submitted to the District requesting additional time. Each request will be considered on a case by case basis.

5. In the event the water meter (pre-paid meters excluded) is not installed within the 12 month period, the District shall refund the Acquisition of Service fee and applicable installation charges, less an administrative fee, to the applicant.

Subdivision Developments (5 units or greater)

1. The issuance of new meters is subject to limitation pursuant to the previously mentioned staged conditions.

2. The District will comply with SB 221 (if applicable) by providing the necessary documentation by the time prescribed.

3. Will Serve commitment agreements will be consistent with information provided

pursuant to SB 221 (if applicable) and additionally contain any necessary conditions for providing future water service, i.e. infrastructure improvements.

4. Upon payment of the Acquisition of Service fee, the meter will be installed within 5 calendar days for installation level 1. For installation levels of 2, 3 and 4, the meter will be installed within 10 calendar days.

5. The actual installation cost will be billed to the applicant and shall be due and payable within 30 days.

6. Meters will be installed within 12 months after payment of the Acquisition of Service fee. In the event the applicant seeks an extension beyond the 12 month period, a written request may be submitted to the District requesting additional time. Each request will be considered on a case by case basis.

7. In the event the water meter is not installed within the 12 month period, the District shall refund the Acquisition of Service fee and applicable installation charges, less an administrative fee, to the applicant.

HDWD
Water Reserve Levels
(Acre Feet)

F/Y	+ Water Recharged	+ Safe Yield	- BSCC, IMP, M.P. (1)	- HDWD WVB Demand	= Net Recharge	Cumulative Recharge	Reserve (Years)
1994/95	1,340	450	175	604	1,011	1,011	1.3
1995/96	3,586	900	330	1,440	2,716	3,727	2.1
1996/97	4,776	900	424	1,955	3,297	7,024	3.0
1997/98	3,962	900	353	1,786	2,723	9,747	4.6
1998/99	2,211	900	342	1,840	929	10,676	4.9
1999/00	3,633	900	258	2,248	2,027	12,703	5.1
2000/01	3,891	900	330	2,168	2,293	14,996	6.0
2001/02	2,361	900	503	2,034	724	15,720	6.2
2002/03	2,987	900	256	2,721	910	16,630	5.6

(1) BSCC = actual usage, IMP = 14 AF and M.P. = 16 AF

Appendix L

HDWD Resolution No. 90-3

RESOLUTION NO. 90-3

A RESOLUTION OF THE HI-DESERT WATER DISTRICT ESTABLISHED AS AN EMERGENCY AND DROUGHT MEASURE THAT IS RESPONSIVE TO DISTRICT PRODUCTION CAPABILITIES IN ORDER TO MAINTAIN THE ABILITY TO PROVIDE FOR BASIC DOMESTIC, HEALTH AND FIRE PROTECTION NEEDS

WHEREAS, the Hi-Desert Water District describes as its priority of service to provide for the basic domestic, health and fire protection needs of the people within its service area,

WHEREAS, there are times when production system capabilities are inadequate to provide for these needs due to the increased demands placed upon the system by unnecessary uses of water,

WHEREAS, the definitions of what is considered to be unnecessary are: ornamental and recreational landscape, carwashing, filling of swimming pools and fountains, construction uses as defined below, wasteful practices as defined in Conservation Ordinance No. 61 and any other uses of water that may be liberally construed to be wasteful,

THE BOARD OF DIRECTORS hereby establish this resolution to insure that the District can continue to supply the basic needs of the community without threat to the production system, which is enacted as follows:

SECTION 1. Conditions of response

(A) On a daily basis, the General Manager shall receive a report concerning the supply system capacity. This report is based upon total system production capabilities in relation to the actual runtime of the system.

(B) Stage 1 responses will be placed in effect when the production capacity is at 80 percent for three (3) consecutive days, only one of which will include a weekend day. Stage 1 is then in effect for 15 days and is then subject to Board review to determine whether to remove or continue or increase restrictions.

(C) Stage 2 response is put in place when the production capacity reaches 90 percent and is in place until demand is reduced to less than 85 percent and the General Manager determines that it is prudent to reduce restrictions.

(D) Stage 3 automatically goes into effect in the event that any portion of the production and booster system fails resulting in a loss or reduction of service. Stage 3 also will be put in place in the event that all efforts to prevent the production capacity from reaching 100 percent fails. Stage 3 is reduced when full service is restored and production capacity is reduced to safe levels as determined by the General Manager.