

Contents

Executive Summary	ES-1
ES.1 Report Organization.....	ES-1
ES.2 Service Area Characteristics.....	ES-2
ES.2.1 Service Connections	ES-2
ES.2.2 Land Use.....	ES-2
ES.3 Water Demand.....	ES-3
ES.3.1 Historical Water Production and Consumption.....	ES-3
ES.3.2 Basis for Water Demand Projections	ES-4
ES.3.3 Demographics Impact on Water Demands	ES-5
ES.3.4 Estimated Ultimate Water Demands.....	ES-5
ES.4 Water Supply.....	ES-6
ES.4.1 Availability of Local Supplies.....	ES-6
ES.4.2 Potential Supply Shortage.....	ES-6
ES.4.3 Impacts of Conservation.....	ES-7
ES.4.4 Potential Supply Sources Available to Meet Projected Demands.....	ES-7
ES.4.5 Alternatives to Meet Future Demands	ES-8
ES.5 Water System Evaluation	ES-10
ES.5.1 Erwin Lake/ Sugarloaf/ Lake William.....	ES-10
ES.5.2 Moonridge System	ES-11
ES.5.3 Big Bear Lake.....	ES-11
ES.5.4 Fawnskin.....	ES-12
ES.5.5 Rim Forest.....	ES-13
ES.6 Capital Improvement Plan	ES-13
Section 1 Introduction	1-1
1.1 Background	1-1
1.2 Purpose of the Study	1-2
1.3 Scope of Services.....	1-2
1.4 Report Organization.....	1-2
1.5 Acknowledgements.....	1-3
1.6 Abbreviations.....	1-3
Section 2 Service Area Characteristics.....	2-1
2.1 Introduction.....	2-1
2.2 Service Area Description	2-1
2.2.1 “Big Four” Water System	2-1
2.2.2 Lake William.....	2-3
2.2.3 Fawnskin.....	2-3
2.2.4 Big Bear Lake Shores RV Resort.....	2-4
2.2.5 Rim Forest.....	2-4

2.3	Service Connections	2-4
2.4	Land Use	2-4
2.5	Demographics	2-8
2.6	Climate	2-8
Section 3	Water Demand.....	3-1
3.1	Introduction.....	3-1
3.2	Historic Water Production and Consumption	3-1
3.2.1	Water Production	3-1
3.2.2	Water Consumptions (Sales).....	3-2
3.2.3	Unaccounted-for Water	3-3
3.2.4	Seasonal Fluctuations in Demand.....	3-4
3.3	Basis for Water Demand Projections.....	3-6
3.3.1	2002-03 Billing Information.....	3-6
3.3.2	Equivalent Consumption Units.....	3-7
3.4	Ultimate Water Demand.....	3-8
3.4.1	Demands from New Development.....	3-9
3.4.2	Impacts from Changes in Demographics.....	3-11
3.4.3	Estimated Ultimate Demands.....	3-11
3.4.4	Maximum Day Consumption at Buildout	3-14
3.5	Water Demand by Pressure Zone	3-14
Section 4	Water Supply	4-1
4.1	Introduction.....	4-1
4.2	Supply Requirements.....	4-1
4.3	Ability of Local Supply Sources to Meet Annual Demands.....	4-1
4.3.1	Other Local Groundwater Sources	4-4
4.3.2	Impacts of Conservation.....	4-4
4.4	Potential Supply Sources Available to Meet Projected Demands	4-6
4.5	Alternatives to Meet Future Demands	4-9
Section 5	Existing System Facilities	5-1
5.1	Introduction.....	5-1
5.2	Supply Facilities.....	5-1
5.3	Distribution Facilities	5-6
5.4	Storage Facilities	5-8
5.5	Pumping Facilities	5-9
5.6	Pressure Reducing Valves	5-11
Section 6	Water System Evaluation.....	6-1
6.1	Introduction.....	6-1
6.2	Water System Modeling	6-1
6.3	Sizing Criteria.....	6-1
6.3.1	Pipelines.....	6-1

6.3.2	Storage Facilities	6-2
6.3.3	Pumping Facilities	6-3
6.4	Water System Evaluation	6-3
6.4.1	Erwin Lake/Sugarloaf/Lake William System	6-4
6.4.2	Moonridge System	6-8
6.4.3	Big Bear Lake.....	6-10
6.4.4	Fawnskin.....	6-13
6.4.5	Rim Forest.....	6-14
Section 7	Capital Improvement Program.....	7-1
7.1	Introduction.....	7-1
7.2	Economic Assumptions	7-1
7.2.1	Pipelines.....	7-1
7.2.2	Reservoirs	7-1
7.2.3	Booster Stations	7-2
7.2.4	Wells.....	7-2
7.2.5	Additional Supply Sources	7-2
7.3	Staging of Proposed Improvements	7-2
7.4	Cost Estimates for Recommended Facilities.....	7-4

List of Tables

Table ES-1	Equivalent Consumption Units for Residential Use	ES-4
Table 2-1	Big Four Water System Service Area Elevations.....	2-3
Table 2-2	DWP’s Service Area – Land Use Summary	2-5
Table 2-3	Potential Subdivision of Parcels within DWP’s Service Area	2-7
Table 3-1	Unaccounted-for Water by Water Systems 2005.....	3-5
Table 3-2	Equivalent Consumption Units for Residential Use	3-8
Table 3-3	Average Distribution of Consumption.....	3-10
Table 3-4	Projected Water Demand	3-13
Table 3-5	Current and Projected Water Demand by Pressure Zone (2002-03).....	3-15
Table 4-1	Current and Projected Annual Demand and Supply Requirements by Pressure Zone.....	4-2
Table 4-2	Maximum Perennial Yield Estimate by Subunit (ac-ft/yr)	4-3
Table 4-3	Supply-Demand Balance Assuming Limited Additional Supply Sources	4-5
Table 4-4	Supply-Demand Balance Under Alternative No.1	4-10
Table 4-5	Supply-Demand Balance Under Alternative No. 2	4-12
Table 5-1	GW Supply Sources	5-5
Table 5-2	Summary of Pipelines by System.....	5-7
Table 5-3	Summary of Pipelines by Age	5-7
Table 5-4	Summary of Pipelines by Pressure Zone	5-8
Table 5-5	Summary of Tanks	5-9

Table 5-6	Summary of Booster Stations.....	5-10
Table 5-7	Summary of Pressure Reducing Valves	5-12
Table 6-1	Pipeline Sizing Criteria.....	6-2
Table 6-2	Storage Requirements for Current, Full Development, and 50% Conversion Scenario	6-4
Table 7-1	Capital Improvement Plan – Summary of Improvements	7-5
Table 7-2	Priority 1 Pipeline Improvements	7-6
Table 7-3	Priority 2 Pipeline Improvements	7-7

List of Figures

Figure ES-1	Annual Water Production, Sales, and Unaccounted-for (1992-2005)	ES-3
Figure ES-2	Alternative No. 1	ES-9
Figure ES-3	Alternative No. 2	ES-9
Figure ES-4	DWP Proposed Facilities	ES-14
Figure 2-1	DWP Service Area	2-2
Figure 2-2	Historical/Connections	2-5
Figure 2-3	Parcels that Could be Subdivided.....	2-6
Figure 3-1	Annual Water Production, Sales, and Unaccounted-for Water (1992-2005)	3-2
Figure 3-2	Monthly Production Ratios (2001-2005).....	3-5
Figure 3-3	Distribution of Consumption with Respect to an Equivalent Consumption Unit.....	3-10
Figure 3-4	Consumption for Local and Non-Local Billing Addresses	3-12
Figure 4-1	Alternative No. 1	4-11
Figure 4-2	Alternative No. 2	4-13
Figure 5-1	DWP Existing Facilities Map	5-2
Figure 5-2	Town, Sugarloaf, Moonridge & Erwin Lake System Schematic	5-3
Figure 5-3	Fawnskin, Lake William & Rim Forest System Schematic	5-4
Figure 7-1	DWP Proposed Facilities	7-3