HOMEWOOD MOUNTAIN RESORT

WATER SUPPLY ASSESSMENT

Prepared By:

Nichols Consulting Engineers
1185 South Arlington Ave, Suite 111
Reno, NV 89509
(775) 329-4955

HOMEWOOD
Mountain Resort

Draft Final
September 2011

TABLE OF CONTENTS

I. Introduction 1

II. Project Description 2

II.A. Project Location 2

II.B. Project Description 2

II.C. Project Land Use Summary 3

III. Water Supply 4

IV. Estimated Water Demand 7

IV.A. Estimated Project Water Demand 7

IV.B. Service Area Water Demand 9

IV.C. Water Demand Projections 11

V. Water Supplied 13

V.A. TCPUD Water Supply 13

V.B. MCWC Water Supply 16

V.C. Snowmaking Supply 16

V.D. Groundwater Supply 16

VI. Sufficiency of Supplies to Meet Demand 18

VII. Additional Potential Water Supplies 20

VIII. Conclusions 24

IX. References 24

APPENDICES

Appendix A: Project Maps

Appendix B: TCPUD 2010 Urban Water Management Plan

Appendix C: Fire Flow and Storage Analysis

Appendix D: Water Capital 5-Year Plan

I. INTRODUCTION

The purpose of the Homewood Mountain Resort Water Supply Assessment (WSA) is to determine the existing water supply and demand, the projected water demand of the Homewood Mountain Resort (HMR) Master Plan Project (Project), and the ability of the supply to meet the projected water demand. This WSA will be utilized in the preparation of the joint Environmental Impact Report (EIR)/ Environmental Impact Statement (EIS) being prepared by Placer County and the Tahoe Regional Planning Agency (TRPA) for the HMR project. Because the Project does not meet the definition of a "project" under Section 10912 of the Water Code, a formal WS under Senate Bill (SB) 610 (Water Code, § 10910 et seq.) is not required for the project. Nevertheless, for informational purposes, this WSA presents the information required for a formal WSA prepared under SB 610.

There are two water supply alternatives for the proposed project analyzed in this WSA. This WSA will present water supply and demand projections separately for each alternative. Under Alternative 1, a hypothetical scenario is analyzed wherein the Tahoe City Public Utility District (TCPUD) would be the sole water provider for the entire project area. Note that such a scenario would require annexation into the portion of the Project site currently served by Madden Creek Water Company (MCWC) of the TCPUD service area, subject to approvals, including TCPUD Board Approval and MCWC concurrence. In Alternative 2, Madden Creek Water Company (MCWC) and TCPUD would supply water to certain portions of the project area as is currently the case. A further explanation of these alternatives can be found in Section III. Snowmaking supply and demand is anticipated to be the same under either alternative.

The draft WSA prepared in connection with the Draft Environmental Impact Report/Draft Impact Statement (Draft EIS/EIR) for the Homewood project relied, in part, on information presented in the 2005 Urban Water Management Plan (2005 UWMP) adopted by the TCPUD. Since the Draft EIS/EIR was released, the TCPUD has adopted a 2010 Urban Water Management Plan (2010 UWMP) (TCPUD July, 2011). As a result, the information in this WSA has been updated to reflect the information presented in TCPUD's 2010 UWMP and to include additional information received from TCPUD and MCWC concerning water supply and demand in the region as well as information regarding infrastructure to deliver water to the project. Finally, information concerning snowmaking for the Project has been added to this WSA.

II. PROJECT DESCRIPTION

II.A. Project Location

The proposed project area is located in Placer County, California on the Homewood (Township 14 North/Range 16 East, Sections 1, 2, 11, and 12) 7.5-minute United States Geological Survey (USGS) quadrangle and is located in the Madden Creek and Homewood Creek Watersheds.

Vegetation communities in this region include annual grasslands and forbs, upper montane mixed chaparral, Jeffrey pine, and mixed conifer. Elevation ranges from approximately 6,230 to 7,400 feet within the proposed project area. Slopes in the proposed project areas range from 1 to 30%.

Long, relatively mild winters and short, dry summers characterize the climate of the region. Precipitation normally falls in the form of snow during the winter months. During the summer, there are infrequent thunderstorms. The western side of the Lake Tahoe Basin receives about 32 inches of average annual total precipitation. Climate characteristics that can affect water supply and management in the proposed project area are provided in Table 1.

Table 1
Climatic Data

Month	Standard Monthly Average Eto[1]	Average Rainfall (inches)	Average Snowfall (inches)	Average Temperatures (ºF)
January	0	6.01	36.5	40.4
February	0	5.70	40.9	42.0
March	0	4.57	28.0	45.1
April	0	1.87	12.5	51.2
May	4.27	1.25	3.2	60.0
June	5.23	0.77	0.3	68.2
July	5.98	0.33	0	77.5
August	5.35	0.46	0	77.0
September	3.16	0.9	0.4	70.0
October	1.57	1.95	2.4	60.0
November	0	4.25	17.1	47.9
December	0	4.25	17.1	41.4

Notes:
1. Eto = Estimated Evapotranspiration (inches).

Source: TCPUD, UWMP (2011) Table 4.1

II.B. Project Description

The proposed project includes a mixed-use base area to the north, a residential base area to the south, a mid-mountain lodge and beginner ski area, irrigated landscape, and snowmaking operations (Appendix A – Figure A1: Preliminary Conceptual Master Plan). These development areas are described in further detail below.

North Base Area. This area is approximately 16 acres and will include up to 56 residential

condominiums, up to 30 penthouse condominium units, and up to 75 traditional hotel rooms. Additionally, up to 40 two-bedroom for sale condominiums, up to 13 workforce housing units, and up to 25,000 square feet (sf) of commercial floor area (CFA) and 30,000 sf skier services will be included.

South Base Area. This area is approximately 6 acres and will include up to 95 residential condominiums and chalets. The residential condominiums and chalets will be spread throughout the South Base area in one central condominium building and a series of 48 "chalets". The residential units will replace the existing children's facilities, ski school, and day lodge buildings.

APN 097-060-035 (located between North and South Base Areas). Plans propose to develop up to 16 townhomes above Sacramento Road on a 2.5 acre Planned Development lot located on a portion of APN 097-060-035.

Mid-Mountain. The Mid-Mountain will include: a new approximately 15,000 sf day lodge with a gondola terminal; a new "learn to ski" lift; a food and beverage facility with outdoor dining; small sundry outlet; and an outdoor swimming facility for use during the summer months. Additionally, a rubber tire vehicle maintenance facility will replace the existing full vehicle shop/maintenance facility.

Irrigation. The irrigation area consists of approximately 7.83 acres of irrigated landscape located throughout the project site. The north base and south base areas will include 5.36 acres and 2.22 acres respectively of low, medium and high water use landscape. The mid-mountain area will include 0.25 acres of medium water use landscape.

Snowmaking Operations. Snowmaking operations at HMR currently cover approximately 23.8 acre and use 14 million gallons of water per year (MGY) (43.7 AF/Y) (assuming three feet of total machine-made snow cover per season). Under the proposed project, a total of 60.8 MGY (187 AF/Y), is expected to be required for snowmaking operations, including existing and proposed terrain (Snow Machine, Inc. 2010).

II.C. Project Land Use Summary

The proposed project lies within TRPA Plan Area Statement (PAS) 157- Homewood/Tahoe Ski Bowl and PAS 159 – Homewood/Commercial. TRPA PASs serve as the General and Community Plan for this region. Currently, the property is exclusively used for ski and concessions operation. Seasonal summer uses include wedding receptions, concerts, farmers market, and other events.

PAS 157 land use is classified as "recreation." This area currently contains existing facilities that support downhill skiing. The PAS encourages continual "opportunities for downhill skiing within guidelines prepared through ski area master plans and scenic restoration plans." The proposed improvements are permissible uses pursuant to TRPA Code of Ordinances Chapters 18 and 51, and are permitted in PAS 157.

PAS 159 land use is classified as "tourist." This area is a mixture of small commercial services, two marinas, a sea plane base, motel facilities, and some residential use. The area is 90% built out and the land coverage and disturbance is high. The proposed improvements are permissible uses pursuant to TRPA Code of Ordinances Chapters 18 and 51, and are permitted in PAS 159.

III. WATER SUPPLY ALTERNATIVES

There are two water supply alternatives for the proposed project. This WSA presents water supply and demand projections separately for each alternative. Snowmaking demand and supply for the project would be the same under either alternative, and is discussed below.

Alternative 1 – TCPUD Water Supply

The Tahoe City Public Utilities District (TCPUD) was established in 1938 and is authorized under the State of California Public Utility District Act with all powers and functions of a utility district. TCPUD's service area is located along the west shore of Lake Tahoe, along State Routes 89 and 28, and runs approximately from Dollar Point southward to Emerald Bay.

The TCPUD operates five distinct water supply systems (Tahoe City Sub-regional, Rubicon, McKinney/Quail, Alpine Peaks, and Tahoe-Truckee Forest Tract). Because water is not diverted from one Sub-district to another, the Sub-districts are considered separate entities (Laliotis 2009). The South Base area of the project, is located within the McKinney/Quail Sub-district. The McKinney-Quail Sub-district is functionally isolated from other portions of the TCPUD service area.

In Alternative 1, TCPUD would be the sole potable water provider for the entire project area, which includes the development areas of the North Base, South Base, APN 097-060-035, and Mid-Mountain as well as the irrigation operations. APN 097-060-035 and Mid-Mountain are currently outside the boundaries of any water service area and annexation of these areas into either the TCPUD (or MCWC) service area would be required. Note that the Project site in Alternative 1 does not have the concurrence of the TCPUD or MCWC at this time but is included in this Assessment in order to provide a range of water supply alternatives. Based on the project description (Section 2), Alternative 1 will create the following connections for the TCPUD:

North Base:
- 56 residential condominiums
- 30 penthouse condominium units
- 75 traditional hotel rooms
- 40 two-bedroom for sale condominiums
- 13 workforce housing units
- 25,000 sf retail/commercial (CFA)
- 30,000 sf skier services

South Base:
- 95 residential condominiums and chalets

APN 097-060-035 (located between North and South Base Areas):
- 16 townhomes

Mid-Mountain:
- 15,000 sf day lodge (CFA)
- Maintenance Facility (equivalent to 1 dwelling unit)

Irrigation Operations:

- 7.83 acres of low, medium and high water use landscape plants.

Alternative 1 - Project Totals (excluding snowmaking operations):

7.83 acres irrigated landscape
326 dwelling units
70,000 sf CFA

Alternative 2 – MCWC and TCPUD Water Supplies

In Alternative 2, MCWC and TCPUD would supply water to portions of the project area (Appendix A – Figure A2: Service Boundary Exhibit). MCWC would provide water to the North Base as is currently the case. TCPUD would provide water to the South Base, APN 097-060-035, and Mid-Mountain (collectively referred to as the South Base herein).

Based on the project description (Section 2), Alternative 2 will create the following connections for MCWC and TCPUD:

MCWC Service Connections

North Base:

- 56 residential condominiums
- 30 penthouse condominium units
- 75 traditional hotel rooms
- 40 two-bedroom for sale condominiums
- 13 workforce housing units
- 25,000 sf retail/commercial (CFA)
- 30,000 sf skier services

Irrigation Operations:

- North Base includes 5.36 acres of low, medium and high water use landscape plants.

Alternative 2 - Project Totals for MCWC (excluding snowmaking operations):

5.36 acres irrigated landscape
214 dwelling units
55,000 sf CFA

TCPUD Service Connections

South Base:

- 95 residential condominiums and chalets

APN 097-060-035 (located between North and South Base Areas):

- 16 townhomes

Mid-Mountain:

- 15,000 sf day lodge (CFA)
- Maintenance Facility (equivalent to 1 dwelling unit)

Irrigation Operations:

- South Base & Mid Mountain include 2.47 acres of low, medium and high use landscape plants.

Alternative 2 - Project Totals for TCPUD (excluding snowmaking operations):

2.47 acres irrigated landscape
112 dwelling units
15,000 sf CFA

Snowmaking

Snowmaking operations at HMR currently cover approximately 23.8 acres and use 14.2 million gallons (43.6 acre-feet) per year (assuming three feet of total artificial snow cover per season). The current water pumping capacity is 1,300 gallons per minute. Under the proposed project, a total of 60.8 MGY (187 AF/Y), is expected to be required for snowmaking operations, including existing and proposed terrain (Snow Machine Inc., 2010). The proposed water supplies for snowmaking are:

- The TCPUD McKinney Well No. 1, currently producing raw water at 300 gallons per minute, and tested by TCPUD as capable of producing 1,000 gallons per minute (Kleinfelder, 1994, Kleinfelder 2009);
- HMR well in the North Base area gravel parking lot, not currently operating but capable of producing raw water at 800 gallons per minute. When operational, flows are restricted to 500 gallons per minute due to the size of the pipe on the discharge side of the well pump and the tank in the pump house. It is expected that the HMR well in the North Base will be made operational during the first phase of construction of the Master Plan, which is focused at the North Base.

Although it is not anticipated that additional snowmaking supplies would be required to meet snowmaking demands, other potential snowmaking water supply sources include:

- MCWC domestic water supplied at 300 gallons per minute, available from 6:00 PM to 6:00 AM.
- TCPUD domestic water from the Crystal Way Well and Lake Tahoe, supplied to the South Base area at 300 gallons per minute, available from 6:00 PM to 6:00 AM (requires the use of a cooling tower.

Snowmaking Operations Totals (either water supply alternative):

60.8 MGY (14.2 MGY existing plus 46.6 MGY proposed)

IV. ESTIMATED WATER DEMAND

Water Code Section 10910

> *(c) (2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).*
>
> *(3) If the projected water demand associated with the proposed project was not accounted for in the most recently adopted urban water management plan, or the public water system has no urban water management plan, the water assessment for the project shall include a discussion with regard to whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses.*

TCPUD's 2010 UWMP included projections of water demand and supply for its entire service area, including the McKinney/Quail Sub-district, in which a portion of the proposed project site is located. The remainder of the project site is within the MCWC service area. The TCUPUD 2010 UWMP did not include projections for the proposed project and the MCWC has no UWMP. This WSA, therefore, includes a discussion regarding TCPUD's and MCWC's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection that will meet the projected water demand associated with the proposed project under the two water supply alternatives, in addition to meeting TCPUD's and WCWC's existing and planned future uses.

Although the proposed project was not specifically accounted for in TCPUD's 2010 UWMP, the UWMP provides relevant information concerning existing and projected water demand and water supplies for the McKinney-Quail sub-area, and TCPUD's service area generally. This assessment relies on and summarizes the information contained in TCPUD's 2010 UWMP.

IV.A. ESTIMATED PROJECT WATER DEMAND

To determine the projected water demand, per dwelling unit and per 1,000 sf of the CFA for the project, an analysis of three similar resort projects (The First Ascent, 22 Station, and the Resort at Squaw Creek Midrise projects) located in the Squaw Valley (6.5 miles north of the project area) was performed. This analysis used meter data from 2005 to 2009 to calculate the annual demands for domestic and commercial use. Through this analysis, it was determined that a domestic water demand of 0.14 AF/Y (0.046 MGY) per dwelling unit, and a commercial water demand of 0.07 AF/Y (0.023 MGY) per 1,000 sf CFA would be appropriate demand rates for a resort in the Tahoe Basin with a similar magnitude of development.

Landscape irrigation demands were estimated for each area by the project landscape architect, L+P Design Works, using State of California Department of Water Resources Statewide Integrated Water Management Program Water Budget Workbook.

Snowmaking demands were calculated by using a conversion formula of 200,000 gallons of water per 1 acre, 1 ft deep of useable machine-made snow. This is the most commonly used formula for this calculation. Because water for snowmaking would be supplied through separate sources than water to

meet other project demands, snowmaking demands are evaluated separately, below.

Alternative 1

The projected values for the proposed project, shown in Table 2, were calculated using the demand rates described above (Residential – 0.14 AF/Y [0.046 MGY] per unit and Commercial – 0.07 AF/Y [0.023 MGY] per 1,000 sf CFA). Based on schematic design, 10.8 AF/Y (3.5 MGY) of water will be required for irrigation.

Table 2
Projected Annual Project Demand (without snowmaking) – Alternative 1

Proposed Project Water Demands	2015 (MGY)	2020 (MGY)	2025 (MGY)	2030 (MGY)
Residential	15	15	15	15
Commercial	1.6	1.6	1.6	1.6
Irrigation	3.5	3.5	3.5	3.5
Total	**20.1**	**20.1**	**20.1**	**20.1**

Alternative 2

North Base – MCWC Service Area

The projected water demand for the North Base (MCWC Service Area), shown in Table 3, were calculated using the demand rates described above (Residential – 0.14 AF/Y [0.046 MGY] per unit and Commercial – 0.07 AF/Y [0.023 MGY] per 1,000 sf CFA). Based on schematic design, 8.3 AF/Y (2.7 MGY) of water will be required for irrigation in the North Base.

Table 3
Projected Annual Project Demand (without snowmaking) – Alternative 2 – North Base (MCWC Service Area)

Proposed Project Water Demands	2015 (MGY)	2020 (MGY)	2025 (MGY)	2030 (MGY)
Residential – North Base	9.8	9.8	9.8	9.8
Commercial – North Base	1.3	1.3	1.3	1.3
Irrigation – North Base	2.7	2.7	2.7	2.7
Total	**13.8**	**13.8**	**13.8**	**13.8**

South Base – TCPUD Service Area (McKinney/Quail Sub-district)

The projected values for the proposed project (TCPUD Service Area) were calculated using the demand rates described above (Residential – 0.14 AF/Y [0.046 MGY] per unit and Commercial – 0.07 AF/Y [0.023 MGY] per 1,000 sf commercial floor area. Based on schematic design, 2.45 AF/Y (0.80 MGY) of water will be required for irrigation. Table 4 shows projected project water demand for the South Base area.

Table 4
Projected Annual Project Demand (without snowmaking) – Alternative 2 – South Base (TCPUD)

Proposed Project Water Demands	2015 (MGY)	2020 (MGY)	2025 (MGY)	2030 (MGY)
Residential – South Base	5.2	5.2	5.2	5.2
Commercial – South Base	0.3	0.3	0.3	0.3
Irrigation – South Base	0.8	0.8	0.8	0.8
Total	**6.3**	**6.3**	**6.3**	**6.3**

Snowmaking

The Project Applicant commissioned a report entitled "Homewood Mountain Resort, Snowmaking Planning" (Snowmakers, Inc. ("SMI"), 2010) to assess project demand, supplies and distribution for project snowmaking. The report concludes that a total of 60.8 MGY will be required to meet project snowmaking demands, for both existing and proposed terrain.

IV.B. SERVICE AREA WATER DEMAND

TCPUD Water Demand

Past Water Deliveries

According to TCPUD's 2010 UWMP, in 2005, TCPUD served approximately 145 commercial service connections, 3,518 single family connections and 62 multi-family connections. Table 5 provides a breakdown of actual 2005 volume of TCPUD water use.

Table 5
TCPUD Water Deliveries – Actual 2005

	Metered		**Not Metered**		**Total**
Water use sectors	**Number of Accounts**	**Volume (MGY)**	**Number of Accounts**	**Volume (MGY)**	**Volume (MGY)**
Residential	0	0	3,580	537	537
Commercial[1]	145	73	0	0	73

Industrial	n/a	0	n/a	0	0
Institutional/Governmental	n/a	0	n/a	0	0
Landscape	n/a	0	n/a	0	0
Agriculture	n/a	0	n/a	0	0
Other	n/a	0	n/a	0	0
Total	145	73	3,580	537	610

Notes:
1. Only commercial accounts were metered prior to 2009.

Source: TCPUD, UWMP (2011) Table 3.4

Within the McKinney/Quail Sub-district, TCPUD delivered a total of 32.2 million gallons of surface water and a total of 42.3 million gallons of groundwater in 2005 (Laliotis, 2011).

Present Water Deliveries

Table 6 presents the actual water deliveries from 2010 as metered by TCPUD.

Table 6
TCPUD Water Deliveries – Actual 2010

	Metered		**Not Metered**		**Total**
Water use sectors	**Number of Accounts**	**Volume (MGY)[1]**	**Number of Accounts**	**Volume (MGY)**	**Volume (MGY)**
Residential	3,719	342	0	0	342
Commercial	148	39	0	0	39
Industrial	n/a	0	n/a	0	0
Institutional/Governmental	43	19	n/a	0	19
Landscape	n/a	0	n/a	0	0
Agriculture	n/a	0	n/a	0	0
Other	n/a	0	n/	0	0
Total	3,910	399	0	0	399

Source: TCPUD, UWMP (2011) Table 3.5

Within the McKinney/Quail Sub-district, TCPUD delivered a total of 20.7 MGY of surface water and 26.1 MGY of groundwater in 2010 (Laliotis, 2011).

MCWC Water Demand

Past and Present Water Deliveries

Existing demand for the MCWA service area is 59.8 MGY (Marr, 2011). Based on information provided by MCWC on September 6, 2011, MCWC currently meets the water demand of its customers (160 connections). Based on these facts, it is assumed that MCWA supplied approximately 59.8 MGY of groundwater to its service area in 2005 and in 2010.

IV.C. WATER DEMAND PROJECTIONS

TCPUD Water Demand Projections – Without the Proposed Project

The TCPUD 2010 UWMP included projected TCPUD water demands at five year increments between 2015 and 2030. Water demand projections in the 2010 UWMP were based on demographic population projections for single family, multi-family, commercial, and institutional/governmental users. The 2010 UWMP assumed that no growth in the commercial or institutional demands would occur because those land uses are built out and any changes would be the result of redevelopment of existing services. Residential uses were assumed to increase slightly. Table 7 shows projected TCPUD water deliveries through 2030 without the proposed project.

Table 7
TCPUD Total Water Deliveries – Projected (Without Project)

Water Use Sector	2015 (MGY)	2020 (MGY)	2025 (MGY)	2030 (MGY)
Residential	347	351	356	360
Commercial	39	39	39	39
Industrial	0	0	0	0
Institutional/Governmental	19	19	19	19
Landscape	0	0	0	0
Agriculture	0	0	0	0
Other	0	0	0	0
Total	405	409	414	418

Source: TCUPD, UWMP (2011) Tables 3.6-3.8

Table 8 shows projected water deliveries in the McKinney/Quail Sub-district without the proposed project through the year 2030.

Table 8
TCUPD McKinney/Quail Sub-district Water Deliveries – Projected (Without Project)

2015 (MGY)	2020 (MGY)	2025 (MGY)	2030 (MGY)
59.7	60.5	61.3	62.1

Source: TCPUD, Water Master Plan, 2002; Updated data provided by Laliotis, 2011
Reference:
Annual. Avg. Daily Demand Per Service* ***319 gallons*
2010 Total Customers:* ***506*
**Demand Growth Projections increase by 1.35% every 5 years (TCPUD, 2011).*

MCWC Water Demand Projections – Without the Proposed Project

Table 9 shows projected water deliveries within the MCWC service area through the year 2030.

Table 9
MCWC Water Deliveries – Projected (Without Project)[1]

2015 (MGY)	2020 (MGY)	2025 (MGY)	2030 (MGY)
59.8	59.8	59.8	59.8

Notes: 1 - no growth is assumed to occur in the MCWC Service Area absent the proposed Project (Marr, 2011)

Source: Twomey, 2010; Marr, 2011

TCPUD Water Demand Projections – With the Proposed Project

Alternative 1

Under Alternative 1, it is assumed that all the project's water demands, other than snowmaking demands, would be met through TCPUD water. Table 10 provides future water projections for the TCPUD service area, including the proposed project (Alternative 1) (excluding snowmaking demands).

Table 10
TCPUD Water Deliveries – Projected With Proposed Project (excluding snowmaking) – Alternative 1

Water Use Sector	2015 (MGY)[1]	2020 (MGY)	2025 (MGY)	2030 (MGY)
Residential	362	366	371	375
Commercial	40.6	40.6	40.6	40.6
Industrial	0	0	0	0
Institutional/Governmental	19	19	19	19
Landscape	3.5	3.5	3.5	3.5
Agriculture	0	0	0	0
Other	0	0	0	0
Total	**425.1**	**429.1**	**434.1**	**438.1**

Table 11 provides future projections for the McKinney/Quail Sub-district including the proposed project.

Table 11
TCUPD McKinney/Quail Sub-district Water Deliveries – Projected With Project (excluding snowmaking) – Alternative 1

2015 (MGY)	2020 (MGY)	2025 (MGY)	2030 (MGY)
79.8	80.6	81.4	82.2

Source: TCPUD, Water Master Plan, 2002; Laliotis, 2011

Alternative 2

Under Alternative 2, TCPUD would supply water to the South Base and Mid-Mountain, but not the North Base. Table 12 provides future water projections for the TCPUD service area, including the proposed project (Alternative 2).

Table 12
TCPUD Water Deliveries – Projected (With Proposed Project) – Alternative 2

Water Use Sector	2015 (MGY)	2020 (MGY)	2025 (MGY)	2030 (MGY)
Residential	352.2	356.2	361.2	365.2
Commercial	39.3	39.3	39.3	39.3
Industrial	0	0	0	0

Institutional/Governmental	19	19	19	19
Landscape	0.8	0.8	0.8	0.8
Agriculture	0	0	0	0
Other	0	0	0	0
Total	**424.3**	**424.3**	**424.3**	**424.3**

Table 13 provides future water projections for the McKinney/Quail Sub-district of the TCPUD service area, including the proposed Project.

Table 13
TCUPD McKinney/Quail Sub-district Water Deliveries – Projected - With Project (excluding snowmaking) – Alternative 2

2015 (MGY)	2020 (MGY)	2025 (MGY)	2030 (MGY)
66.0	66.8	67.6	68.4

MCWC Water Demand Projections – With the Proposed Project

MCWC would not provide water to the proposed project under Alternative 1. Under Alternative 2, MCWC would supply water to the North Base, but not the South Base and Mid-Mountain. Table 14 provides future projections for the MCWC service area, including the proposed project (Alternative 2).

Table 14
MCWC Water Deliveries – Projected With Project – (excluding snowmaking) – Alternative 2

2015 (MGY)	2020 (MGY)	2025 (MGY)	2030 (MGY)
73.6	73.6	73.6	73.6

Demands on Proposed Snowmaking Supplies (Alternatives 1 and 2)

As discussed in Section II, above, the existing and proposed snowmaking demands are anticipated to be supplied through two sources: (1) the HMR well in the North Base area gravel parking lot and (2) the TCPUD McKinney Well No. 1(non-potable). These sources are considered separate from the TCPUD and MCWC water supplies evaluated under Water Supply Alternatives 1 and 2 because the wells would not supply water for consumptive uses and would only be used to meet HMR snowmaking demands. A total of 60.8 MGY (187 AF/Y), is expected to be required for snowmaking operations, including existing and proposed terrain (SMI, 2010).

V. WATER SUPPLIES

V.A TCPUD WATER SUPPLY

Up until the late 1980's, the TCPUD diverted most of its domestic water directly from Lake Tahoe. In response to stricter water quality requirements for surface water diversions that came about in the late 1980's (i.e. the Surface Water Treatment Rule), the TCPUD chose to reduce its dependence on surface diversions and begin a program to develop groundwater sources. With the exception of seasonal diversions from Lake Tahoe to augment supply for the McKinney/Quail Sub-district, the TCPUD now relies on groundwater to meet normal demands. During 2010, groundwater provided approximately 95% of the TCPUD's water supply (TCPUD, 2011).

Within the McKinney/Quail Sub-district, TCPUD has, in the past, experienced difficulties meeting summer peak water demands. The McKinney/Quail Sub-district was served exclusively from the Crystal Way Well until the summer of 2004. The well was installed in 1996 and put online in 1997. Since placed into service, the well experienced a continual drop in both static and dynamic pumping levels until 2003 when air became entrained during pump operation. The well output was decreased to 350 GPM from 500 GPM to relieve the air entrainment. To provide additional supply, in late 2004, the TCPUD installed and operated an interim surface water treatment system for the treatment of surface water from Lake Tahoe. About the same time the interim surface water system was brought on line, the Crystal Way Well had begun to entrain air again. Significant recovery of the Crystal Way Well occurred following startup of the surface water system. This indicates that the average annual system demand prior to the implementation of the surface water system was greater than the yield of the aquifer. Currently, the Crystal Way Well is sufficient to meet demands through the winter season. The TCPUD has operated the interim surface water treatment plant successfully to meet summer peak demands since 2004. The TCPUD 5-year Capital Improvement Plan earmarks funds for planning, design, and construction of a permanent surface water treatment plant by 2012 (TCPUD, 2011) (Appendix D).

The permanent water treatment plant will increase the yield at the McKinney-Quail intake from 300 GPM to 500 GPM. This additional flow capability may be utilized to rest the Crystal Way Well for longer periods, allowing for additional recharge of that aquifer. TCPUD's 2010 UWMP assumes that 50 percent of the current flow from the Crystal Way Well will be replaced by the expanded McKinney-Quail intake supply (TCPUD, 2011). TCPUD plans on running the interim surface water treatment system as necessary to meet peak summer demands until a permanent treatment facility is brought on line, anticipated to occur in 2013 (TCPUD, 2011).

TCPUD Surface Water Rights

Public Law 101-618 (Settlement Act) was enacted to provide "for the settlement of water right claims on the Fallon Paiute Shoshone Indian Tribes and for other purposes." Section 204 of the Settlement Act would limit California's total gross diversions in the Lake Tahoe Basin to 23,000 acre-feet per year. Section 205 of the Settlement Act requires the development of an operating agreement for the Truckee River reservoirs, including Lake Tahoe. This operating agreement is referred to as the Truckee River Operating Agreement (TROA).

The TROA was executed by the State of California and the State of Nevada in September 2008, but has not yet been implemented. Under the TROA, the total annual gross diversions for use within the Lake Tahoe Basin from all natural sources, including groundwater, and under all rights in the Basin cannot exceed 34,000 acre-feet/year. From this total, and consistent with the Settlement Act, 23,000 acre-feet/year are allocated to the State of California. Other than the TCPUD the major water purveyors on the California side of Lake Tahoe include the South Tahoe Public Utility District and the North Tahoe Public Utility District. The portion to be allocated to TCPUD has not been finalized, so an exact quantification of available future supply is not possible at this time.
Information concerning TCPUD's groundwater rights is presented in section IV.D, below.

TCPUD Current and Planned Water Supply

The TCPUD has adopted a 5-year Capital Improvement Program (CIP) beginning in 2009 and ending in 2013. The CIP includes future water supply projects. The primary focus of the 5-year CIP is providing high-quality and reliable water sources. Under the 5-year CIP source planning, design, and project development will be prioritized for the McKinney and Tahoe City Main systems. Focus in the

McKinney/Quail Sub-district will be on surface water treatment.

Table 15 summarizes TCPUD's current and planned water supply sources in over a 20-year projection. Supply and demand are not anticipated to change from normal to single and multiple dry years (TCPUD, 2011). Table 15, therefore, represents TCPUD's current and planned water supplies in normal, single and multiple dry years. Additional information regarding TCPUD's current and planned groundwater supply is presented in section IV.D, below.

Table 15
TCPUD Current and Planned Water Supply

Water Supply Source	2010 (MGY)	2015[1] (MGY)	2020[1] (MGY)	2025[1] (MGY)	2030[1] (MGY)
TCPUD Produced Groundwater					
Tahoe City Wells No. 2, 3	288	288	288	288	288
Tahoe Tavern Well	33	33	33	33	33
Highlands Well	39	39	39	39	39
Rubicon Wells #1, #2 and #3	7	7	7	7	7
Crystal Way Well	26	26	26	26	26
Total TCPUD Produced Groundwater	436	436	436	436	436
TCPUD Produced Surface Water					
McKinney-Quail Intake[2]	21	35	35	35	35
Tahoe City Main Source Augmentation[3]	-	-	145	145	145
Total TCPUD Produced Surface Water	21	35	180	180	180
Purchased Water Supplies (Non-Wholesale)					
Squaw Valley PSD	3	3	3	3	3
Total Purchased Water Supply	3	3	3	3	3
Total	460	474	619	619	610

Notes:
1. Future well supplies are expected to maintain at current levels unless otherwise stated.
2. Expanded McKinney-Quail Plant will increase max. flow from 300 to 500 GPM, and approximately 67 GPM average.
3. New Tahoe City Main surface water source planned at 1,000 GPM max. and approximately 275 GPM average flow.

Source: TCPUD, UWMP (2011) Table 4.1

As can be seen from Table 15 above, within the McKinney/Quail Sub-district, TCPUD water supply during normal years, dry, and multiple dry years would consist of 26 MGY of Crystal Way Well water each year over the 20-year projection and 21 MGY of surface water from the McKinney-Quail Intake under current conditions and 35 MGY of surface water from the McKinney-Quail Intake under future conditions through 2030.

V.B MCWC WATER SUPPLY

MCWC does not utilize surface water. Groundwater is the sole water source for MCWC, which is discussed in section V.D, below.

V.C SNOWMAKING SUPPLY

As discussed in Section II, above, the existing and proposed snowmaking demands are anticipated to be supplied through two sources: (1) the HMR well in the North Base area gravel parking lot and (2) the TCPUD McKinney Well No. 1(non-potable). The HMR well is not currently operating, but is capable of producing raw water at 800 gallons per minute, which translates to 69.1 MGY. The TCPUD McKinney Well No. 1, currently produces raw water at 300 gallons per minute (25.9 MGY), and tested by TCPUD as capable of producing 1,000 gallons per minute, or 86.5 MGY (Kleinfelder, 1994; Kleindfelder, 2009). (Calculations based on operating snowmaking equipment from November 1 to the end of February). All water demand placed on the HMR well and TCPUD McKinney Well No. 1 are associated with existing and proposed HMR snowmaking operations. No other water users currently rely or are anticipated to rely on the TCPUD McKinney Well No. 1 or the HMR well. Combined water supply from the McKinney Well No. 1 and the HMR well is 155.5 MGY. It is expected based on the relatively high gallons per minute rates for the McKinney Well No. 1 and HMR well, as tested, both wells would produce sufficient water supply to meet HMR existing and proposed snowmaking demands during a range of conditions, including during normal, dry, and multiple dry years.

V.D GROUNDWATER SUPPLY

Water Code section 10910 provides that if a water supply for a proposed project include groundwater, the WSA shall include:

> *(f)(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.*
>
> *(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, 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 bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the publicwater system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.*
>
> *(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*
>
> *(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*
>
> *(5) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project. A water supply assessment shall not be required to include the information required by this paragraph if the public*

> *water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.*

Additional requirements are found in:

Water Code 10631(b):

(1) 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.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater that is projected to be pumped by the urban water supplier for the past 5 years.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier.

Water Code 10910(f)(5): An analysis of the sufficiency of the groundwater from the basin…to meet the projected water demand associated with the proposed project.

Basin Characteristics

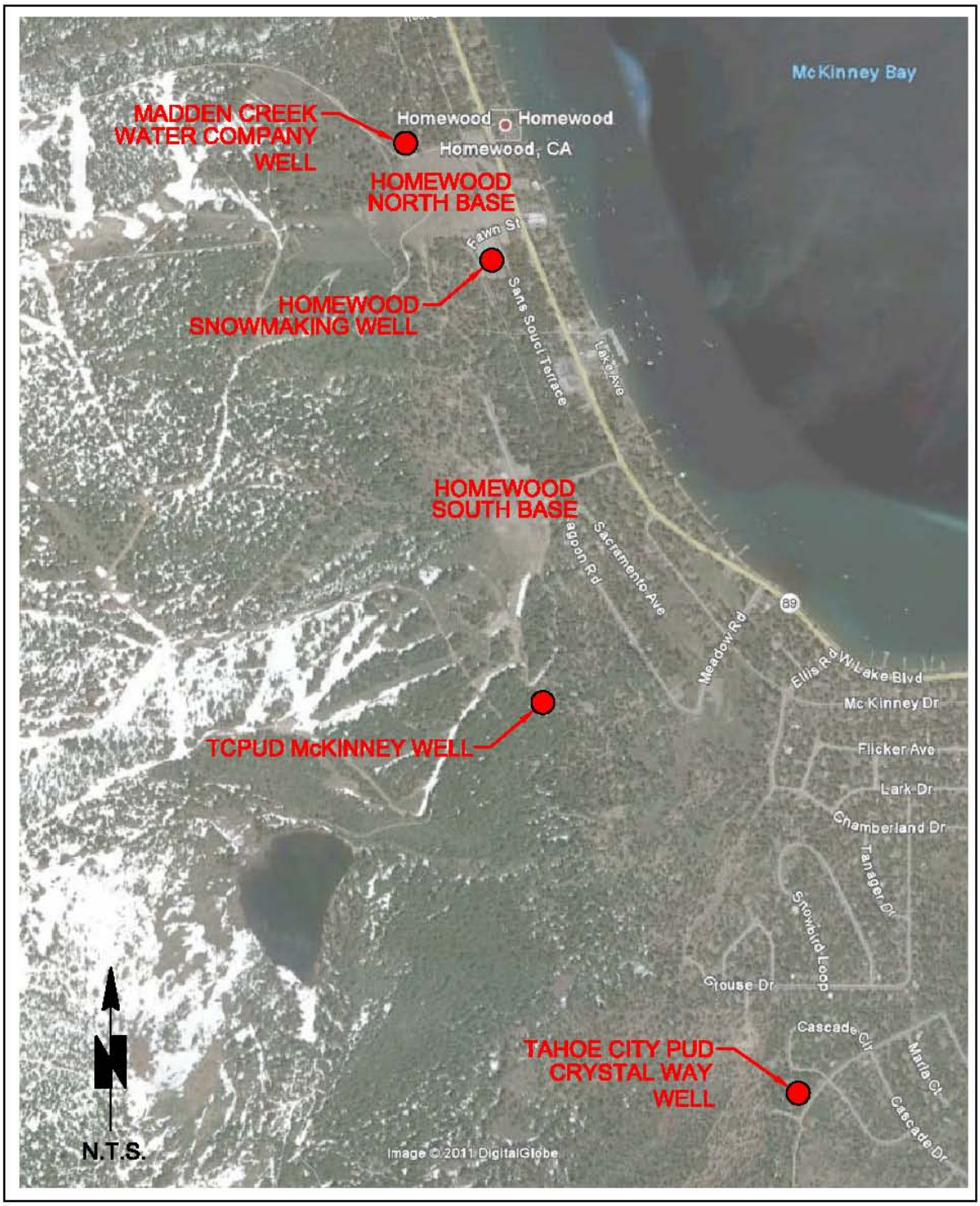
The California Department of Water Resources (DWR) defines a groundwater basin as an alluvial aquifer or a stacked series of alluvial aquifers with reasonably well-defined boundaries in lateral direction and a definable bottom (DWR, 2003). DWR currently delineates 431 groundwater basins in the State of California and 24 basins are subdivided into sub-basins. All of TCPUD's and MCWC's groundwater wells are within the Lahontan Hydrologic Basin (TCPUD, 2011). The North Lahontan Basin includes three sub-basin areas on the west side of Lake Tahoe: Tahoe Valley North, South, and West. The proposed project is within the Tahoe Valley West Sub-basin. (TCPUD, 2011, Figure 4-1).

According to DWR Bulletin 118-80, "No basins in the Northern Lahontan Hydrologic Study Area are identified as subject to critical conditions of overdraft." Bulletins 160-93 and 160-98, California's Water Plan Update, reiterated this statement of no evidence of overdraft. Bulletin 160-98 added that no overdrafts are expected in the North Lahontan Hydrologic Study Area, even in drought years, by 2020.

DWR Bulletin 118 (2/27/04) for the Tahoe Valley West Sub-basin does not identify the sub-basin as being in overdraft. That bulletin states that "changes in groundwater storage [in the Tahoe Valley West Sub-basin] have been minimal.

Historical Groundwater Production

Figure 1 shows the location of groundwater wells that supply the McKinney/Quail Sub-district and MCWC service.



Nichols Consulting Engineers, Chtd.
1885 S. Arlington Ave., Suite 111
Reno, NV 89509
(775) 329-4955

GROUNDWATER WELL LOCATION MAP
HOMEWOOD VILLAGE RESORT

FIGURE 1

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
CKC	A514.05.14		09/08/2011		

Table 16 provides a summary of the volumes of water produced from TCPUD and MCWC wells for the last five years.

Table 16
Historic Groundwater Production by TCPUD and MCWC

	2006 (MGY)	2007 (MGY)	2008 (MGY)	2009 (MGY)	2010 (MGY)
North Lahontan Basin	639.8	658.8	627.8	537.8	495.8

Source: TCPUD, UWMP (2011) Table 4.2 (re. TCPUD historic pumping); Twomey (2010) (re. MCWC historic pumping); Combined total reflected in table.

Future Anticipated Groundwater Production in Normal, Dry, and Multiple Dry Water Years

According to TCPUD's 2010 UWMP, it is assumed that TCPUD will continue to pump groundwater at approximately 279 MGY in future years after development of surface source augmentation projects as described in TCPUD's Capital Improvement Plan. Table 17 summarizes future anticipated TCPUD groundwater volume projected to be pumped through 2030. As noted, TCPUD does not anticipate supplies to change from normal year to single and multiple dry years based on historic delivery rates (TCUPD, 2011).

Table 17
TCPUD Groundwater Volume Projected to be Pumped in Normal, Dry and Multiple Dry Years

Basin	2015 (MGY)	2020 (MGY)	2025 (MGY)	2030 (MGY)
North Lahontan Groundwater Basin	436	436	436	436

Source: TCPUD, UWMP (2011) Table 4.3

Table 18 summarizes future anticipated TCPUD groundwater volume projected to be pumped to serve the McKinney/Quail Sub-district.

Table 18
TCPUD Groundwater Volume Projected to be Pumped to Serve the McKinney/Quail Sub-district and MCWC Service Area in Normal, Dry, and Multiple Dry Year Conditions

	2015 (MGY)	2020 (MGY)	2025 (MGY)	2030 (MGY)
Crystal Way Well (TCPUD)	26	26	26	26
MCWC groundwater supplies[1]	157.7	157.7	157.7	157.7

1. Supply is 432,000 gpd = 157.7 MGY = 484 AF/Y (Twomey, 2010)

Source: TCPUD, UWMP (2011) Table 4.1; Twomey (2010)

VI. SUFFICIENCY OF SUPPLIES TO MEET DEMAND

TCPUD has met its historical water demand primarily through groundwater sources. The recent stabilization of groundwater trends combined with recent reductions in water demands throughout the system due to conservation and leak detection suggest long term reliability. There is little buffer of excess capacity, however, and it is unknown whether recent trends will continue. TCPUD considers the development of existing surface water sources quite feasible considering the source availability (Lake Tahoe) and existing water rights, and this potential is already being explored in TCPUD's CIP (TCPUD, 2011). Lastly, should conditions warrant, water sales to adjoining suppliers could be terminated, thereby increasing availability to TCPUD customers. According to TCPUD's 2010 UWMP,

these factors make it highly unlikely that TCPUD would ever have to import water from other regions.

Reliability of Water Supply in Normal, Single Dry, and Multiple Dry Years

In 1995, West Yost & Associates and Luhdorff and Scalmanini prepared a report titled, "Groundwater Resource Investigation of the Tahoe City Main Service Area". The existing TCPUD wells were found to be adequate to provide sufficient pumping capacity to satisfy the ultimate build-out average demands for each of the water supply system areas serviced by TCPUD.

Nevertheless, as described in section V.A, "TCPUD Water Supply," above, in the past, TCPUD has experienced difficulties meeting summer peak water demands within the McKinney/Quail Sub-district. The TCPUD has operated an interim surface water treatment plant successfully to meet summer peak demands since 2004. The TCPUD 5-year CIP earmarks funds for planning, design, and construction of a permanent surface water treatment plant by 2013. TCPUD plans on running the interim surface water treatment system as necessary to meet peak summer demands until a permanent treatment facility is brought online (TCPUD, 2011).

Comparison of Water Supply and Demand - Alternative 1

Table 19 compares current supply and future demands, including the project's non-snowmaking demands, in normal, single dry and multiple dry years within the McKinney/Quail Sub-district of the TCPUD.

Table 19
Projected Water Supply vs. Water Demand within TCPUD McKinney-Quail Sub-district (excluding snowmaking)

Normal, Dry, Multiple Dry Years		Water Supply and Demand (MGY)				
		2010	2015	2020	2025	2030
Supply Total	Surface Water	21	35	35	35	35
	Groundwater	26	26	26	26	26
	Total	**47**	**61**	**61**	**61**	**61**
Demand Total	McKinney/Quail Sub-District	47	59.7	60.5	61.3	62.1
	Project	0.0	20.1	20.1	20.1	20.1
	Total	**47**	**79.8**	**80.6**	**81.4**	**82.2**
Difference		-0	-18.8	-19.6	-20.4	-21.2

Comparison of Water Supply and Demand - Alternative 2

MCWC Service Area

Table 20 summarizes projected normal, dry, and multiple-dry year supply versus demand in the MCWC Service Area, through 2030 under Alternative 2.

Table 20
Projected Water Supply vs. Water Demand within MCWC Service Area (excluding snowmaking) – Alternative 2

Normal, Dry, Multiple Dry Years		Water Supply and Demand (MGY)				
		2010	2015	2020	2025	2030
Supply Total	Surface Water	-	-	-	-	-
	Groundwater	157.7	157.7	157.7	157.7	157.7

	Total	**157.7**	**157.7**	**157.7**	**157.7**	**157.7**
Demand Total	MCWC	59.8	59.8	59.8	59.8	59.8
	Project (North Base)	0.0	13.8	13.8	13.8	13.9
	Total	**59.8**	**73.6**	**73.6**	**73.6**	**73.6**
Difference		97.9	84.1	84.1	84.1	84.1

TCPUD Service Area

Table 21 summarizes projected normal, dry, and multiple year supply versus demand in the TCPUD McKinney Sub-District service area through 2030 under Alternative 2.

Table 21
Projected Water Supply vs. Water Demand within TCPUD McKinney/Quail Sub-district (excluding snowmaking) – Alternative 2

Normal, Dry, Multiple Dry Years		Water Supply and Demand (MGY)				
		2010	2015	2020	2025	2030
Supply Total	Surface Water	21	35	35	35	35
	Groundwater	26	26	26	26	26
	Total	**47**	**61**	**61**	**61**	**61**
Demand Total	McKinney/Quail Sub-district	47	59.7	60.5	61.3	62.1
	Project (South Base)	0.0	6.3	6.3	6.3	6.3
	Total	**47**	**66.0**	**66.8**	**67.6**	**68.4**
Difference		0	-5.0	-5.8	-6.6	-7.4

Comparison of Snowmaking Water Supply and Demand

Existing and proposed snowmaking operations at the HMR site are anticipated to require 60.8 MGY. As discussed in Section IV.C, above, the TCPUD McKinney Well No. 1 and the HMR can supply a total of 140.76 MGY (60.6 MGY from HMR well and 78.2 MGY from McKinney Well No. 1), which is more than sufficient to meet the existing and proposed snowmaking demands of 60.8 MGY. A portion of the water used for snowmaking would be recharged into the aquifer along with natural snow.

VII. ADDITIONAL POTENTIAL WATER SUPPLIES

Water Code Section 10911
(a) If, as a result of its assessment, the public water system concludes that its water supplies are, or will be, insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. If the city or county, if either is required to comply with this part pursuant to subdivision (b), concludes as a result of its assessment, that water supplies are, or will be, insufficient, the city or county shall include in its water assessment its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. Those plans may include, but are not limited to, information concerning all of the following:
(1) The estimated total costs, and the proposed method of financing the costs, associated with acquiring the additional water supplies.
(2) All federal, state, and local permits, approvals, or entitlements that are anticipated to be required in

> *order to acquire and develop the additional water supplies.*
> *(3) Based on the considerations set forth in paragraphs (1) and (2), the estimated timeframes within which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), expects to be able to acquire additional water supplies.*

As shown in Section V, sufficient MCWC water is available to meet MCWC demand under Alternative 2 through 2030 in normal, dry, and multiple dry years. Sufficient well water is also available to meet HMR's existing and proposed snowmaking demands. TCPUD's existing water supply for the McKinney/Quail Sub-district, however, is currently at capacity for its existing customers, and there is not excess capacity available to serve the proposed project. Additional infrastructure will be required in order to meet TCPUD's existing and future demands within the McKinney/Quail Sub-district, including the proposed project's demands, as discussed below.

TCPUD Lake Tahoe Surface Water Treatment and Delivery Infrastructure

Infrastructure for the McKinney-Quail Water Service Area water system is near the end of its service life and many elements are undersized to meet current requirements. Regulatory mandates for surface water treatment, water quality source redundancy and fire protection have changed since the system was designed. To meet critical water deficiencies, TCPUD prepared a 5-year, $26.2 million CIP to replace and upgrade its facilities through 2013. In the project area, the CIP includes the McKinney-Quail Secondary Source Projects to meet local, State, and federal requirements with a permanent surface water treatment facility for diversions from Lake Tahoe. Specifically, TCPUD plans to construct a Water Treatment Plan (WTP) to replace its existing temporary WTP in this McKinney/Quail Sub-district. The new WTP would be sized for TCPUD's domestic water needs (constructed at TCPUD's expense) and the HMR project's domestic water needs (paid for by HMR). It is likely that the facility would be sized to include some amount of regional expansion capacity to serve adjacent water companies, which would be constructed at TCPUD's expense (Homolka, 2010).

There are two alternatives being investigated by TCPUD for the WTP project:

1. Alternative 1 would be to use TCPUD's existing Chamber's Landing lake intake and build a new WTP facility at one of two potential locations. This alternative could also involve approximately 1,200 feet of raw water pipe from the existing Chamber's Landing intake to the new WTP facility, as well as connections to the existing distribution system.
2. Alternative 2 would be to retrofit and use TCPUD's existing lake intake at the McKinney Shores Homeowners Beach and build a new WTP facility at Homewood's South Lodge area. This alternative could also involve approximately 2,400 feet of raw water pipe from the lake intake to the new WTP facility, as well as connections to the existing distribution system.

(Homolka, 2010).

The new WTP would be constructed in 2013, prior to project operations.

With the new WTP in place, sufficient TCPUD water supply would be available to meet TCPUD's water demands within the McKinney/Quail Sub-district, including the proposed project's water demands.

Water Conservation

TCPUD's 2010 UWMP provided the following discussion regarding regulations and restrictions on

water use in the TCPUD service area during water shortages. As indicated, however, TCPUD has historically been able to meet its demands in normal, dry and multiple dry years.

> In 2009, the TCPUD adopted Ordinance 264…to preserve water resources, reduce the risk and severity of water shortages when drought or natural disaster occurs and to establish a drought preparedness and response plan. Table 22 lists the phases of water restrictions that TCPUD adopted to deal with a water shortage.
>
> An emergency water conservation plan is necessary to minimize the effect of the water shortages that can arise on short notice during natural disasters or drought conditions. Upon declaration of a Stage 2 or Stage 3 drought response, the General Manager shall be authorized to implement and enforce any or all of the drought response measures identified herein.
>
> Drought Response Stages 2 and 3 will be declared by the Board of Directors. In emergency situations the General Manager may declare a Drought Response Stage 2 or 3 initially, to be followed up with Board of Directors' declaration as soon as reasonably possible. Each drought response stage will be triggered by specific conditions related to the operating capacities of the TCPUD's water sources and the water distribution system. Examples may include but not limited to severe local drought conditions, significant depletion of pumping capacity due to mechanical failure or aquifer depletion, major distribution system failures such as water or transmission main failure, water tank failure, natural disasters such as fire, weather or earthquake events, or long term power outages.
>
> The drought response stage chosen will vary on the severity of the situation. Following the declaration of any drought response stage, the TCPUD will implement appropriate response actions. If emergency conditions warrant the rationing or emergency conservation of water, Owners will be notified through local media news releases, public postings and billing inserts.
>
> Implementation of Stage 2 or 3 may result in an increased level of monitoring by TCPUD's staff to ensure compliance. The District will continually monitor drought conditions and promptly recommend that the drought response stage level increase if conditions worsen. The General Manager will rescind Stage 2 or Stage 3 levels if warranted by improved conditions.

[Table 22]
Regulations and Restrictions on Water Use [in the TCPUD Service Area] in the Event of a Water Shortage

Phase	Action
Stage 1	• Owners shall not waste water and shall maintain all water service lines, from the point of delivery to the premises served, in good repair. Further, the Owner shall implement the following water conservation measures, under normal, nonemergency conditions. • Metering: Tiered Water Consumption Charges. Owners shall be assessed and pay a flat monthly water rate based upon size of water service as well as a charge for water consumption based

	upon a tiered billing structure, as identified in the current District water rate schedule. This billing structure is designed to encourage conservation, as the charge per thousand gallons of water consumed increases as water use increases. • Repair of Water Leaks Any leak in plumbing and / or irrigation systems shall be repaired when found, but in any case within ten (10) days of notice by the District to repair. • Water Runoff Use of potable water which results in flooding or runoff in gutters, streets or onto adjacent property is not allowed. • Vehicle Wash Automatic shutoff valves or nozzles will be used whenever a hose is used for cleaning vehicles. This subsection does not apply to any commercial car washing facility that utilizes a recycling system to capture or reuse water. Washing of vehicles is exempted where the health, safety and welfare of the public is dependent upon frequent vehicle cleanings, such as snow removal vehicles and garbage trucks. • Cleaning of Surfaces Automatic shutoff valves or nozzles will be used whenever a hose is used for cleaning or clearing walkways, patios, tennis courts, decks, driveways, parking areas or other improved areas, whether paved or unpaved. Unrestricted hoses may be used to alleviate immediate fire or sanitation hazards. • Construction Water. All water hoses used in connection with any construction activity shall be equipped with an automatic shutoff nozzle. • Fire Hydrant Use Permit A District Hydrant Use Permit must be obtained before use of any fire hydrant for any purpose other than fire suppression or emergency aid.
Stage II	• Designated Irrigation Days Established • New Construction Landscaping Notwithstanding any other provision of this ordinance, water used for irrigating landscaping for new construction shall be limited to new landscaping planted to comply with the Tahoe Regional Planning Agency's Best Management Practices (BMPs,) defensible space, or for any other reason, as follows: • Irrigation of Public Facilities Where it is in the interest of public health and safety or where facilities are open to the public, the General Manager may permit extended periods of irrigation of public facilities provided that: • Swimming Pool Filling. The complete filling with water of outdoor swimming pools is prohibited without written authorization by the General Manager. • All food service and drinking establishments will serve drinking water to their customers only upon request by the customers.
Stage III	• The use of water for other than domestic and commercial non-irrigation use is prohibited except irrigation of public facilities may be permitted.

In the event that Phase II is enforced or the shortage is expected to last longer than a few days, TCPUD may activate standby lake pumps. An emergency operations agreement has been established with the Department of Public Health (DPH) to allow the existing lake diversions to be used. Chlorination equipment with metering pumps would be installed on each of the intakes to meet DHS requirements. TCPUD keeps this equipment and hypochlorite solution in stock at all times. The lake intakes with the chlorination equipment can be activated in one day, if needed. The only service areas that do not have a standby lake intake is the Rubicon System and the Alpine Peaks System. If lake intakes are not available or functional, TCPUD would contract to have potable water hauled from a fully operational water system to storage tanks in the affected system. TCPUD keeps a file on sources of emergency generators, water tanks, and other equipment that could be needed in a water shortage emergency.

In addition, TCPUD's agreement with the North Tahoe Public Utility District allows TCPUD to discontinue service to North Tahoe, if necessary, thereby saving 150,000 to 162,000 gallons per day.

(TCPUD, 2011).

VIII. CONCLUSIONS

With implementation of the necessary water treatment and delivery infrastructure to provide TCPUD surface water to the McKinney/Quail Sub-district and the proposed project site, in combination with groundwater supplies, there is a reasonable likelihood that sufficient water will be available to meet project water demands though 2030, in addition to existing and planned future uses within the McKinney/Quail Sub-district and the MCWC service area under normal, dry and multiple dry year conditions under either water supply alternative.

IX. REFERENCES

BGCE (Beaudin Ganze Consulting Engineers). (2007). *Homewood Mountain Resort Development Water, Gas, and Electric Energy Use Projection*. Truckee, CA.

County of Placer. (2008). "Notice of Preparation of a Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the Homewood Mountain Resort Master Plan Project, 5145 Westlake Boulevard, Placer County, Homewood, California." In conjunction with the Tahoe Regional Planning Agency.

DWR (California Department of Water Resources). (2003). California's Groundwater: Bulletin 118 Update 2003.

HMR (Homewood Mountain Resort). (2009). Homewood Mountain Resort Snowmaking Planning Report. Prepared by SMI Snowmakers, Midland, MI.

Homolka, Matt, P.E. TCPUD. Letter regarding Homewood Mountain Resort Ski Area Master Plan EIR/EIS. December 17, 2010.

Kleinfelder Inc., Summary of Phase IV Municipal Well Installation and Aquifer Testing of McKinney Well No. 1. Tahoe City Public Utility District, McKinney Bay, CA. January 28, 1994. Job 30-1057-23.004.

Kleinfelder Inc., Personal Communications, November, 25 2009.

Laliotis, Tony. (2009). Tahoe City Public Utility District, Director of Utilities. Personal communication with M. Comer on May 1, 2009.

Laliotis, Tony. (2011). Tahoe City Public Utility District, Director of Utilities. Personal correspondence with Jack Norberg on August 31, 2011.

Madden Creek (Madden Creek Water Company). (2007). Personal communication with Nichols Consulting Engineers on December 21, 2007.

Marr, Chuck (MCWC), Personal communication with Jack Norberg (Nichols Consulting Engineers), on September 6, 2011.

Rolf Jensen & Associates (Fire Protection Consultants). (2009). *Homewood Resort Code Analysis Report (Preliminary)*. Las Vegas, NV.

Snow Machines, Inc. 2010. Homewood Mountain Resort Snowmaking Planning. Report prepared for Homewood Mountain Resort. September 17, 2010. Snow Machines, Inc. Midland, MI.

TCPUD (Tahoe City Public Utility District). (2002). *Water Master Plan*. Prepared by West Yost & Associates, Tahoe City, CA.

TCPUD, (2006). *2005 Urban Water Management Plan*. Prepared by Auerbach Engineering Corporation, Tahoe City, CA.

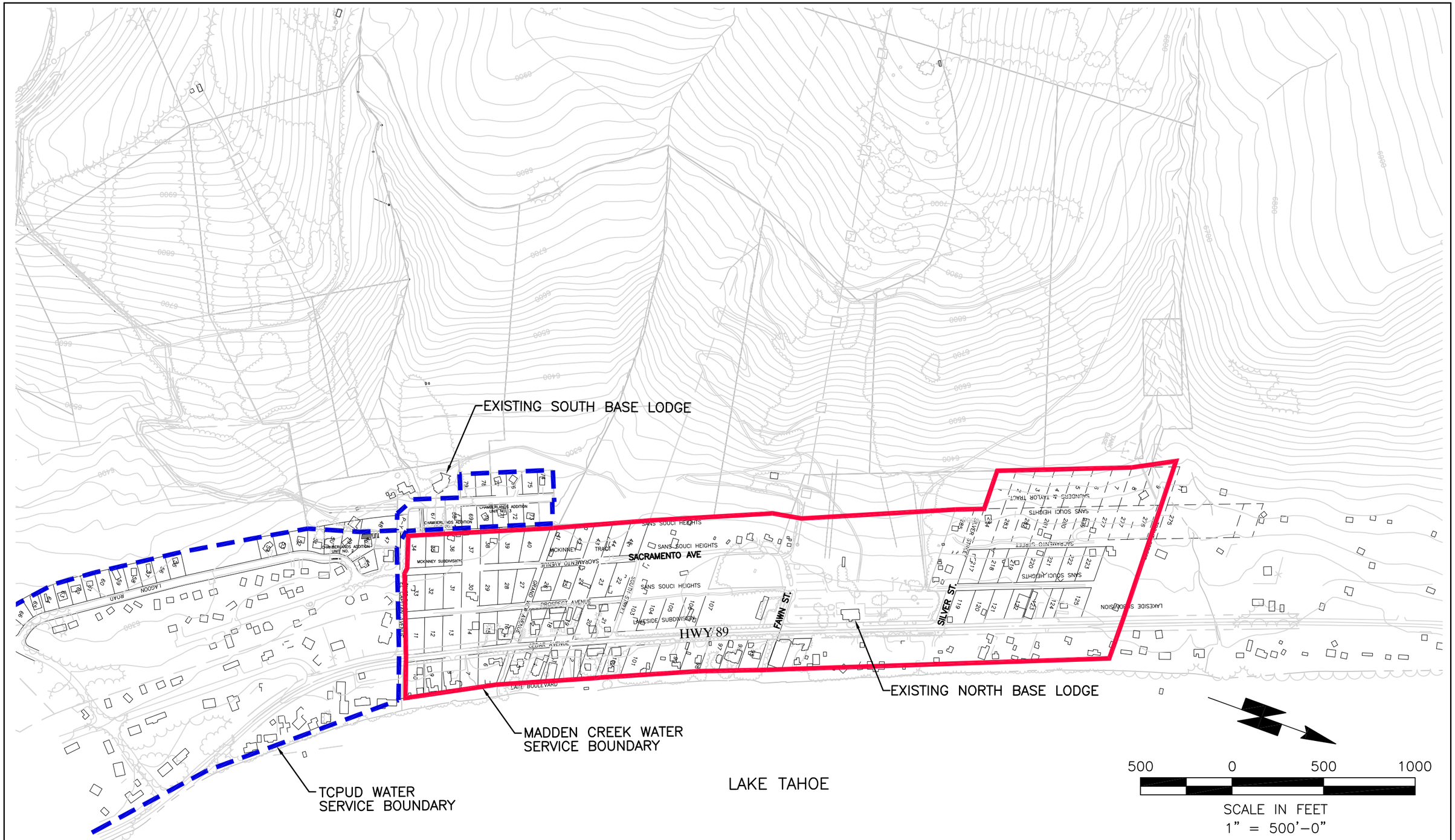
TCPUD, (2011). *2010 Urban Water Management Plan*. Prepared by Auerbach Engineering Corporation, Tahoe City, CA.

Thodal, Carl E. 1997. Hydrogeology of Lake Tahoe Basin, California and Nevada, and Results of a Ground-Water Quality Monitoring Network, Water Years 1990-1992. Water-Resources Investigations Report 97-4072. USGS. 53 p.

APPENDIX A

PROJECT MAPS

Double Troubles
Cedar Ridge
Quail Chair
The Face
Gondola
Residential
Residential
Tahoe Ski Bowl Way
Townhomes
Earthen Amphitheatre
Skier Services / Residential
Hotel Lodge
Sacramento Ave
Sacramento Ave
Tahoe Ski Bowl Way
Shuttle Stop
Shuttle Stop
Residential
Retail
Retail
Ice Skate Pond
Parking
Museum
Employee Housing
Residential
Silver Street
South Street
Shuttle Stop
Hwy 89
Hwy 89
Homewood Marina
West Shore Cafe Marina
Obexers Marina
HOMEWOOD
Mountain Resort
Conceptual Base Area Master Plan



Nichols Consulting
Engineers, Chtd.
1885 S. Arlington Ave., Suite 111
Reno, NV 89509
(775) 329-4955

HOMEWOOD VILLAGE RESORT
TCPUD/MADDEN CREEK WATER CO.
SERVICE BOUNDARY EXHIBIT

FIGURE
A2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
CKC	A514.02.14		09-28-09	

APPENDIX B

TCPUD 2010 URBAN WATER MANAGEMENT PLAN

2010 URBAN WATER MANAGEMENT PLAN

Tahoe City Public Utility District

July 1, 2011

AUERBACH
ENGINEERING CORPORATION

Tahoe City Public Utility District

2010 Urban Water Management Plan

July 1, 2011

AUERBACH ENGINEERING CORPORATION

P.O. BOX 5399 • 3092 NORTH LAKE BLVD. • TAHOE CITY • CALIFORNIA 96145
VOICE (530) 581-1116 • FAX (530) 581-3162 • WWW.AUERBACHENGINEERING.COM

TABLE OF CONTENTS

Description **Page No.**

SECTION 1 PLAN PREPARATION 1-1

1.1 Introduction 1-1
1.1.1 Structure of Urban Water Management Plan 1-1
1.1.2 Due Date for Urban Water Management Plan 1-1
1.2 Coordination 1-2
1.2.1 Coordination with Appropriate Agencies 1-2
1.2.2 City and County Notification and Participation 1-2
1.2.3 Public Participation 1-3
1.3 Plan Adoption, Submittal and Implementation 1-3
1.4 Environmental Review 1-4
1.5 Definitions 1-4

SECTION 2 SYSTEM DESCRIPTION 2-1

2.1 Service Area Physical Description 2-1
2.1.1 Demographics 2-4
2.1.2 Climate Characteristics 2-8
2.2 Service Area Population 2-8

SECTION 3 SYSTEM DEMANDS 3-1

3.1 Baselines And Targets 3-1
3.1.1 Methodology 3-1
3.1.2 Methods to Achieve the Demand Reduction Target 3-3
3.2 Water Demands 3-3
3.2.1 Past Water Deliveries 3-4
3.2.2 Present Water Deliveries 3-5
3.3 Water Demand Projections 3-6
3.4 Additional Water Uses and Losses 3-8
3.5 Total Water Demands 3-9

SECTION 4 SYSTEM SUPPLIES 4-1

4.1 Water Sources 4-1
4.2 Groundwater 4-2
4.3 Description of TCPUD Groundwater Basin 4-3
4.4 Transfer Opportunities 4-7
4.5 Desalination Water Opportunities 4-7
4.6 Recycled Water Opportunities 4-8
4.7 Future Water Projects 4-9
4.7.1 Background 4-9
4.8 Water Rights 4-12

SECTION 5 WATER SUPPLY RELIABILITY & WATER SHORTAGE CONTINGENCY PLAN 5-1

5.1 Water Supply Reliability 5-1
5.2 Water Shortage Contingency Plan 5-6
5.2.1 Background 5-6
5.2.2 Enforcement 5-9
5.2.3 Natural Disasters 5-9
5.2.4 Impact on Revenues and Expenditures 5-10
5.2.5 Mechanism for Determining Reductions 5-10
5.3 Water Quality 5-10
5.3.1 Groundwater 5-10
5.3.2 Surface Water 5-12

SECTION 6 DEMAND MANAGEMENT MEASURES 6-1

6.1 Background 6-1

APPENDIX

Attachment A – Notice of Public Hearing
Attachment B – Adopting Resolution
Attachment C – Ordinance 264
Attachment D – Water Conservation Program
Attachment E – School Education Program
Attachment F – Water Conservation Coordinator
Attachment G – 2011 Billing Rates

LIST OF TABLES

Description **Page No.**

Table 1.1 Coordination with Appropriate Agencies 1-2
Table 2.1 TCPUD Service Area Climatic Data 2-8
Table 2.2 Historical Full-Time Residential Service Area Population – Placer County Portion [1] 2-9
Table 2.3 Historical Full-Time Residential Service Area Population – El Dorado County Portion [1] 2-10
Table 2.4 Historical and Projected Full-Time Resident Population [1] 2-11
Table 2.5 Population Based on Residential Unit Occupancy [1] 2-11
Table 2.6 Current and Projected Average Population [1] 2-12
Table 3.1 Base Daily Per Capita Water Use – 10 Year Range 3-1
Table 3.2 Base Daily Per Capita Water Use – 5 Year Range 3-2
Table 3.3 Current Per Capita Water Use 3-3
Table 3.4 Water Deliveries – Actual 2005 3-4
Table 3.5 Water Deliveries – Actual 2010 3-6
Table 3.6 Water Deliveries –Projected 2015 3-7
Table 3.7 Water Deliveries –Projected 2020 3-7
Table 3.8 Water Deliveries –Projected 2025 and 2030 3-8
Table 3.9 Water Sales to Other Water Agencies 3-8
Table 3.10 Additional Water Losses 3-9
Table 3.11 Total Water Use 3-9
Table 4.1 TCPUD Current and Planned Water Supply 4-2
Table 4.2 TCPUD Current Groundwater Volume Pumped 4-6
Table 4.3 TCPUD Groundwater Volume Projected to be Pumped 4-7
Table 4.4 Future Water Supply Projects 4-10
Table 5.1 Basis of Water Year Data 5-6
Table 5.2 Regulations and Restrictions on Water Use in the Event of a Water Shortage 5-8
Table 5.3 Most Recent Water Quality Sampling Results for Arsenic 5-11

LIST OF FIGURES

Description **Page No.**

Figure 2-1 TCPUD Water Service Area 2-2
Figure 2-2 Tahoe City Main System 2-3
Figure 2-3 McKinney/Quail and Rubicon Systems 2-5
Figure 2-4 Tahoe Truckee Forest Tract System 2-6
Figure 2-5 Alpine Peaks System 2-7
Figure 4-1 North Lahontan Basin 4-5
Figure 5.1 TC-2 Well Static Water Levels 5-3
Figure 5.2 TC-3 Well Static Water Levels 5-4
Figure 5.3 Historic Precipitation Trends 5-5

SECTION 1 PLAN PREPARATION

1.1 INTRODUCTION

To comply with the California Urban Water Management Planning Act of 1983 (Act) including amendments that have been made to the Act, urban water suppliers must submit an Urban Water Management Plan to the California Department of Water Resources (DWR) every five years. Under the Act, urban water suppliers are defined as suppliers, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers. The Tahoe City Public Utility District (TCPUD) fits the definition of an urban water supplier and is therefore required to submit an Urban Water Management Plan (UWMP) to DWR. The TCPUD and Auerbach Engineering Corporation (AEC) project team prepared the 2010 Urban Water Management Plan (2010 UWMP) to comply with the Act.

The project team followed the guidance provided in DWR's, "Guidebook to Assist Water Suppliers in the Preparation of a 2010 Urban Water Management Plan." Sections 10610 through 10656 of the California Water Code (Code) detail the information that must be included in this report. Amendments to the Act now require that total projected water use be compared to water supply sources over the next 20 years in 5-year increments. The Code also requires the information be shown for a single dry water year and multiple dry water years. This section of the 2010 UWMP describes various Code requirements for UWMP preparation, coordination, public participation, and adoption.

In 2009, the Water Conservation Act of 2009 (also known as SB 7X-7) was adopted. This legislation created additional requirements regarding urban water management plans. These requirements are documented in Section 10608 of the Code.

1.1.1 Structure of Urban Water Management Plan

The outline of this UWMP follows the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan", dated March 2011, developed by the DWR. The sections and subsections following the guidebook and all information requested in the UWMP guidelines and Code are described herein.

1.1.2 Due Date for Urban Water Management Plan

<u>Code Section 10621(a):</u>

Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.

In accordance with Code Section 10621(a), the due date for TCPUD's 2010 UWMP was December 31, 2010, however due to recent revisions of the Code; the deadline for completion of the 2010

UWMP was extended to July 1, 2011. UWMP's will be due every five years thereafter in years ending in five and zero. TCPUD is currently working under their March 2006 UWMP.

1.2 COORDINATION

1.2.1 Coordination with Appropriate Agencies

Code Section 10620(d)(2):

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.

In accordance with Code Section 10620(d)(2), the TCPUD coordinated the preparation of the 2010 UWMP as summarized in Table 1.1.

Table 1.1 Coordination with Appropriate Agencies
TCPUD 2010 UWMP

Interested Agencies	A Copy of the Notice of Public Review and Intent to Adopt the 2010 UWMP was Delivered	Commented on the Draft UWMP	Attended Public Hearing on the UWMP
North Tahoe Public Utility District	X		
South Tahoe Public Utility District	X		
Placer County Water Agency	X		
Placer County Dept. of Public Works	X		
El Dorado County Dept. of Public Works	X		
Truckee Donner Public Utility District	X		
Squaw Valley Public Service District	X		
Alpine Springs Company Water District	X		

1.2.2 City and County Notification and Participation

Code Section 10621(b):

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.

Notification was sent to all appropriate agencies on May 9, 2011, as shown above in Table 1.1.

Code Section 10635(b):

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.

The 2010 UWMP will be made available no later than 60 days after submission to the DWR to Placer County Water Agency and the El Dorado County Water Agency.

1.2.3 Public Participation

Code Section 10642:

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. 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. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

In accordance with Code Section 10642, the 2010 UWMP, the TCPUD conducted a public hearing on the matter during a special Board Meeting on July 1, 2011. Notices of the public hearing were published in a local newspaper two times prior to the public hearing date. Draft copies of the UWMP were also made available for public review at the TCPUD's office at 221 Fairway Drive, Tahoe City, California and on their website. In addition, the TCPUD provided notices of the time and place of hearing to Placer and El Dorado counties. A copy of the Notice of Public Hearing is included in the Appendix, Attachment A.

1.3 PLAN ADOPTION, SUBMITTAL AND IMPLEMENTATION

Code Section 10621(c):

Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.

The TCPUD's Board of Directors adopted the 2010 UWMP on July 1, 2011. A copy of the adopting Resolution is included in the Appendix, Attachment B.

Code Section 10643, 10644(a) and 10645:

An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

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.

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.

The TCPUD's Board of Directors adopted the 2010 UWMP on July 1, 2011 for implementation. A copy of the adopting Resolution is included in the Appendix, Attachment B. The TCPUD will submit the 2010 UWMP to the California State Library as well as those agencies referenced in Section 1.2.2 within 30 days of the adoption date. The TCPUD will also make the final 2010 UWMP available for public review at their office as well as on their website.

1.4 ENVIRONMENTAL REVIEW

Code Section 10652:

The California Environmental Quality Act (Division 13 [commencing with Section 21000] of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

In accordance with Code Section 10652, preparation and adoption of the 2010 UWMP are exempt from the California Environmental Quality Act (CEQA), subject to the limitations set forth in the Code.

1.5 DEFINITIONS

There are five related terms that are used throughout this document. In order to properly understand the issues facing the TCPUD in the future, it is necessary that these terms are defined:

- Water Consumption: the amount of water used by customers and billed as sales. In the TCPUD's case, this is the amount that would be billed as sales with all the meters in use.

- Water Demand: the amount of water used within a water distribution system. Water demand is comprised of two components: water consumed (billed as sales) and unaccounted-for water.

- Water Production: the amount of water introduced into the water system. System-wide water demand should equal the total water production. Discussions of water production capacity involve facilities such as wells and treatment plants used to introduce water into the distribution system to meet demand.

- Water Supply: the total amount of water available to be used on an annual basis, provided that sufficient water production capacity exists.

- Gross Water Use: The total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding recycled water; additions to long-term storage; conveyances for use by another urban water supplier, and water delivered for agricultural use.

SECTION 2 SYSTEM DESCRIPTION

2.1 SERVICE AREA PHYSICAL DESCRIPTION

Code Section 10631(a):

A plan shall be adopted in accordance with this chapter and shall do all of the following:

(a) Describe the service area of the supplier; including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. 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 and shall be in five-year increments to 20 years or as far as data is available.

Pursuant to Code Section 10631(a), this section of the 2010 UWMP discusses the various demographics that affect water use in the service area, including population and climate.

The TCPUD was established in 1938 and is authorized under the State of California Public Utility District Act with all powers and functions of a utility district. The TCPUD provides water, sewer, and recreational facilities and services to a portion of the west and north shore areas of Lake Tahoe encompassing unincorporated portions of Placer and El Dorado counties. The TCPUD currently serves water to approximately 3,910 connections. As of 2010, all water connections are metered. The water service area is depicted on Figure 2-1.

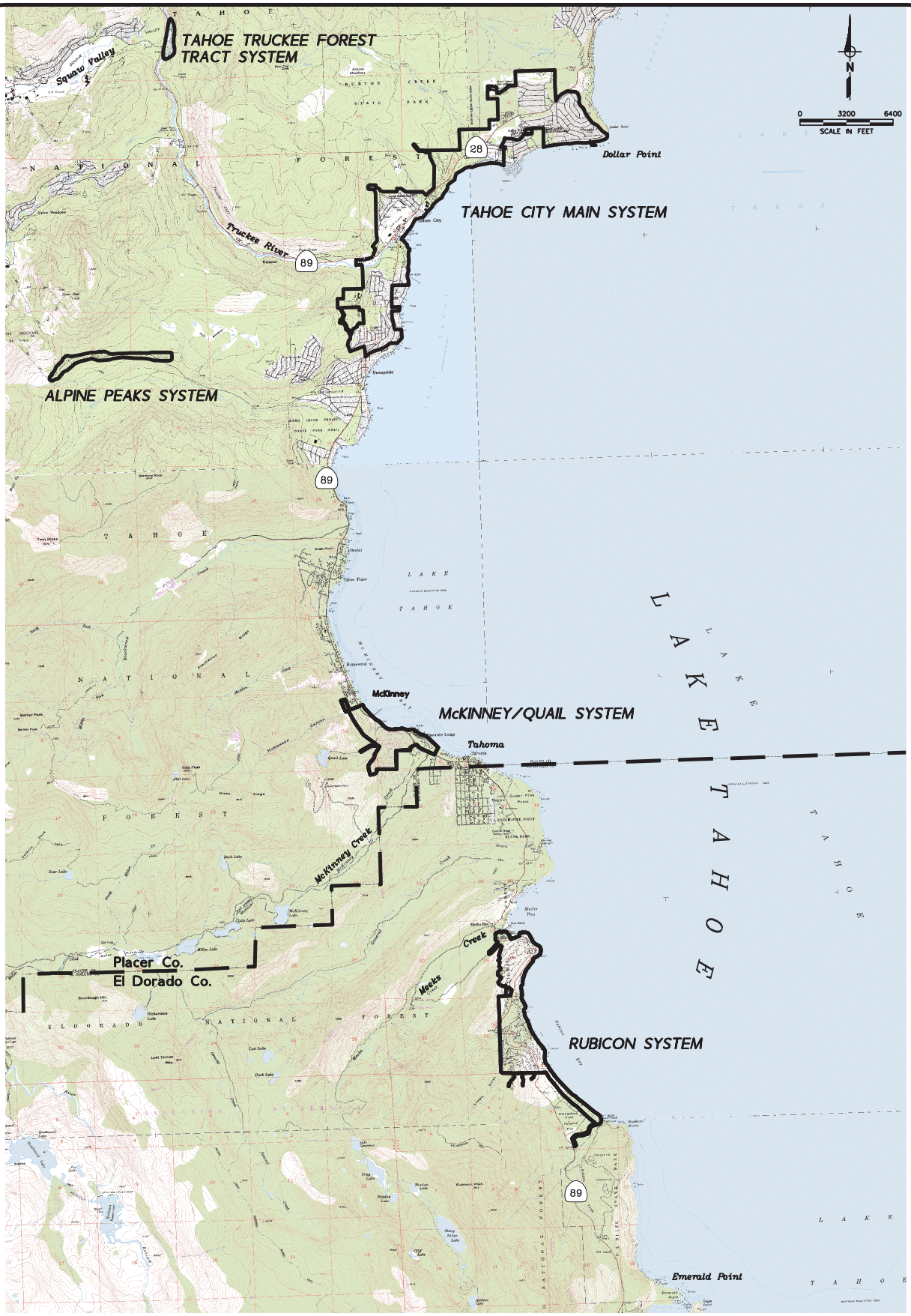
The TCPUD service area currently consists of five separate and distinct sub-regional water systems, as follows:

- Tahoe City Main
- Rubicon
- McKinney/Quail
- Alpine Peaks
- Tahoe-Truckee Forest Tract

The Tahoe City Main system provides water to service connections in an area that extends from Dollar Point to Tahoe Tavern. Major water system facilities for the Tahoe City Main system are shown in Figure 2-2.

The North Tahoe Public Utility District (NTPUD) is a water purveyor northeast of Tahoe City and receives supplemental water from the TCPUD through a service connection in the Highlands area. The Tahoe City Main system also provides water to the Lake Forest Water Company (LFWC) an investor-owned utility located near Dollar Point.[1]

[1] The TCPUD supplied retail water to the LFWC from 2001 through 2010. The TCPUD was granted operational possession of the LFWC on January 14, 2011, through eminent domain proceedings. Ownership of the LFWC has not been determined as of the date of adoption of this report.



LEGEND:

COUNTY BOUNDARY

WATER SERVICE AREA BOUNDARY

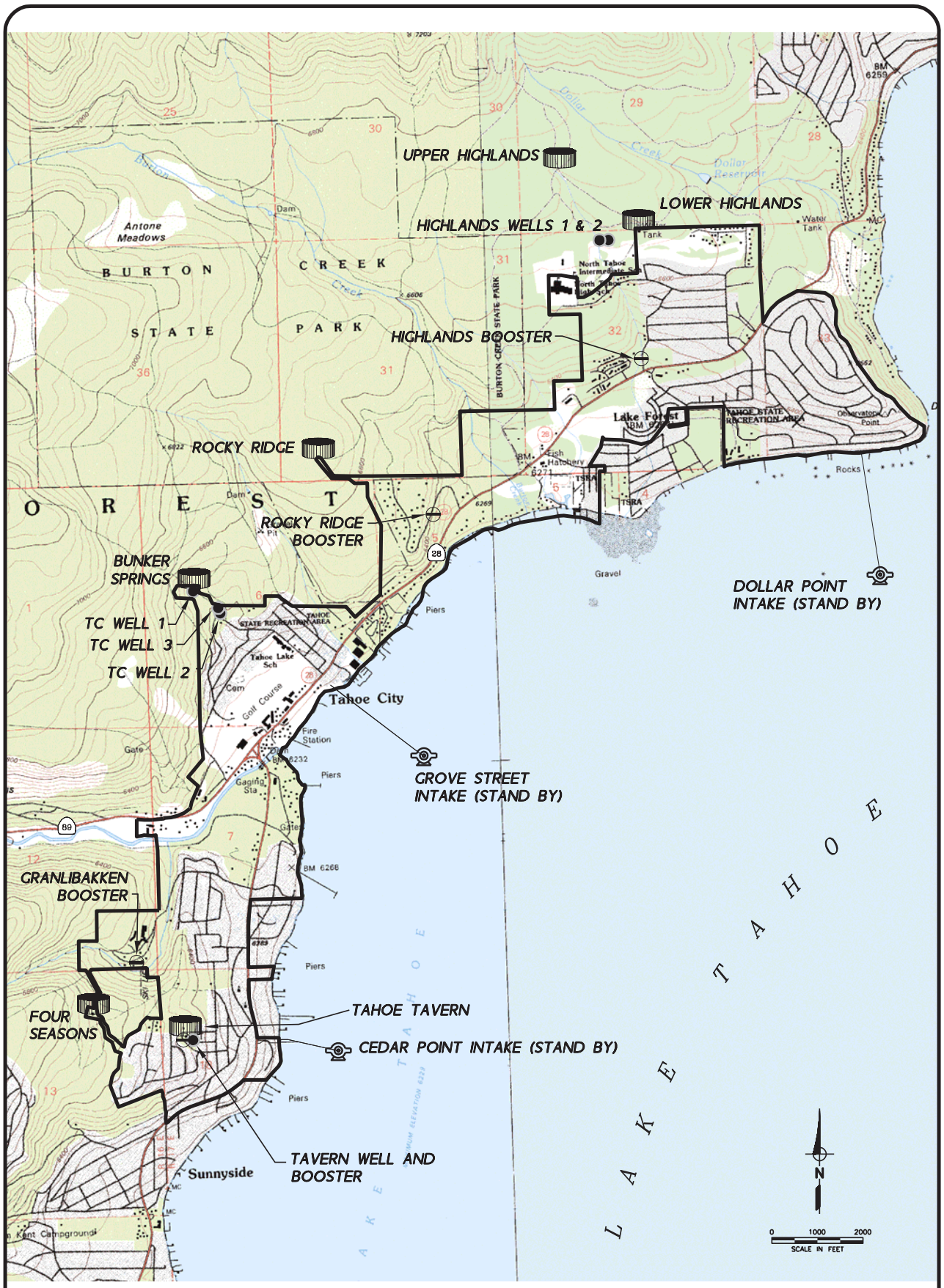
NOTES:

QUADRANGLE BASE MAPS ARE USGS DIGITAL RASTER GRAPHICS (DRG) IMAGE FILES.
WATER SERVICE AREA BOUNDARY IS APPROXIMATE.

Tahoe City Public Utility District

WATER SERVICE AREA
Figure 2-1

AUERBACH ENGINEERING CORPORATION



LEGEND:

- TANK
- SURFACE WATER (LAKE) INTAKE
- WELL / SPRING
- BOOSTER PUMPING STATION
- WATER SERVICE AREA BOUNDARY

NOTES:

QUADRANGLE BASE MAPS ARE USGS DIGITAL RASTER GRAPHICS (DRG) IMAGE FILES.
WATER SERVICE AREA BOUNDARY IS APPROXIMATE.

Tahoe City Public Utility District

WATER SYSTEM FACILITIES
Figure 2-2

AUERBACH ENGINEERING CORPORATION

The Rubicon system serves the area between Meeks Bay and Bliss State Park, including the Meeks Bay Vista system and the former Tamarack Mutual Water System (acquired during the 1990's). Major water system facilities for the Rubicon system are shown in Figure 2-3.

The McKinney/Quail system extends from Homewood, south and east along the shoreline to McKinney Creek. The areas north of Homewood and south of Tahoma are not served by TCPUD at this time. Major water system facilities for the McKinney/Quail system are shown in Figure 2-3.

The Tahoe-Truckee Forest Tract system was added to the TCPUD service area in 1998 and serves properties along State Route 89 to the eastern end of Squaw Valley Road. The TCPUD operates and maintains the water delivery system, but the Squaw Valley Public Service District supplies water to this system as shown in Figure 2-4.

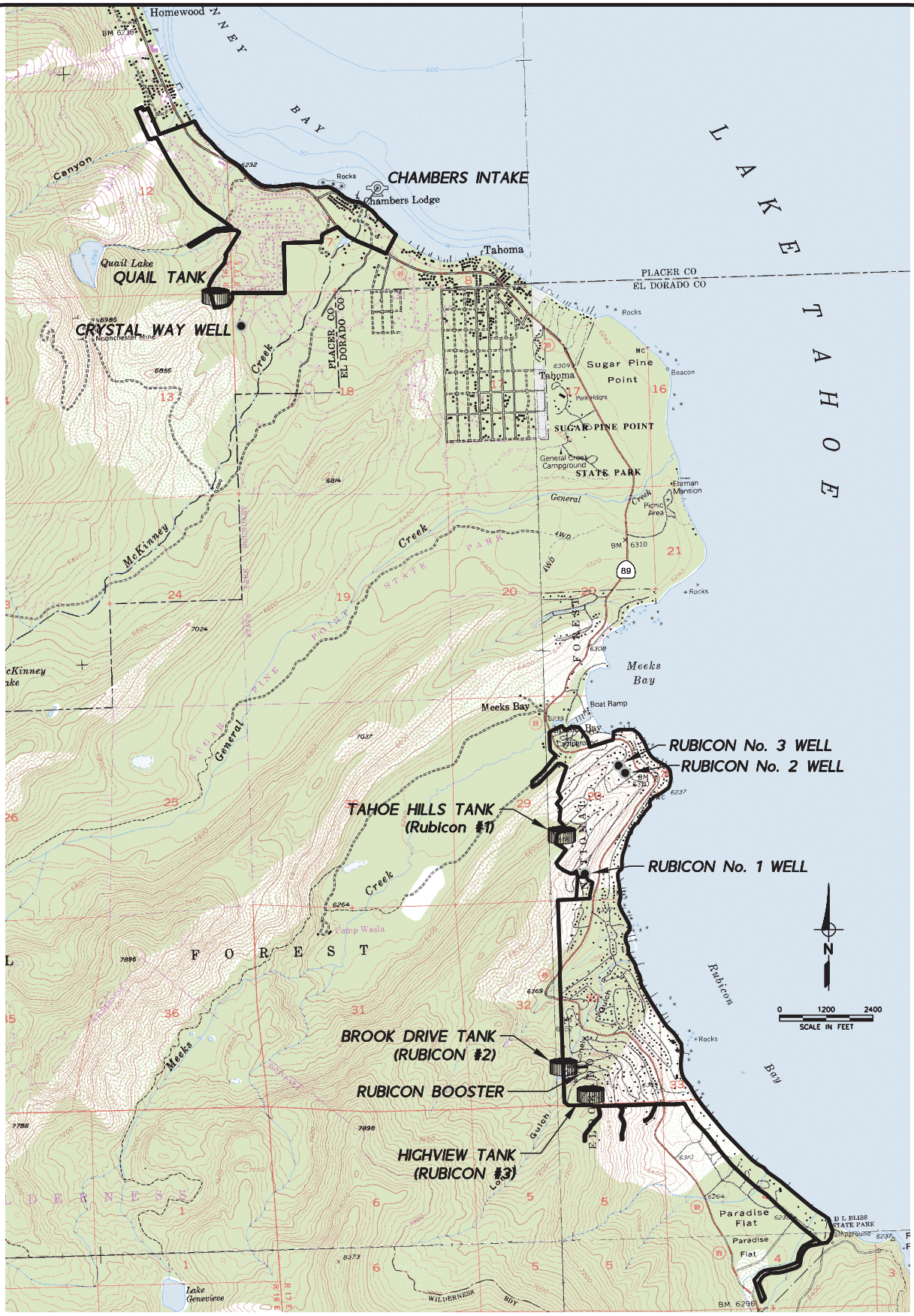
The Alpine Peaks system is a small system about 5 miles west of Tahoe City, serving the area west of Tahoe Tavern. The Alpine Peaks system provides water from Riley's Spring as shown in Figure 2-5.

2.1.1 Demographics

Lake Tahoe is the dominant geographic feature of the TCPUD service area and is world renowned for its crystal clear water. Lake Tahoe is approximately 12 miles wide and 22 miles long, with a surface area of 192 square miles and 75 miles of shoreline. With a maximum depth of 1,645 feet, Lake Tahoe is the tenth deepest lake in the world. Maximum elevation of the Lake's surface is 6,229 feet above sea level.

The Lake Tahoe Region has historically been a tourism destination, drawing visitors primarily from the major population centers of the Sacramento Valley and San Francisco Bay Area, and to a lesser degree from Reno, Nevada. Major activities in the region include winter and summer outdoor recreation, as well as casino gaming (in the north and south shore areas within Nevada). The region also provides tourist, commercial and indoor entertainment facilities. The undeveloped areas of the Lake Tahoe region are predominantly publicly owned. Public ownership is increasing, largely through the efforts of federal and state land acquisition programs. The dominant form of transportation to the area is by private automobile; however, buses, taxis, and other modes accommodate some trips. There are seven highways that allow access to the region, four in California and three in Nevada.

The TCPUD service area consists primarily of single family residences with a relatively small number of commercial and institutional accounts. There are few multi-family units in the service area. This is the result of the historical development of the area as a second-home and vacation community for visitors from the major population centers within easy driving distance. Approximately 85% of the single family properties within the TCPUD service area are owned by non-resident individuals or businesses. A portion of these homes are occupied through short term or longer term vacation rentals, however, a significantly larger portion are vacant for large blocks of time during the year. See the discussion under Section 2.2, Service Area Population for details of this impacts of this on population estimates.



LEGEND:

- TANK
- SURFACE WATER (LAKE) INTAKE
- WELL / SPRING
- BOOSTER PUMPING STATION
- WATER SERVICE AREA BOUNDARY

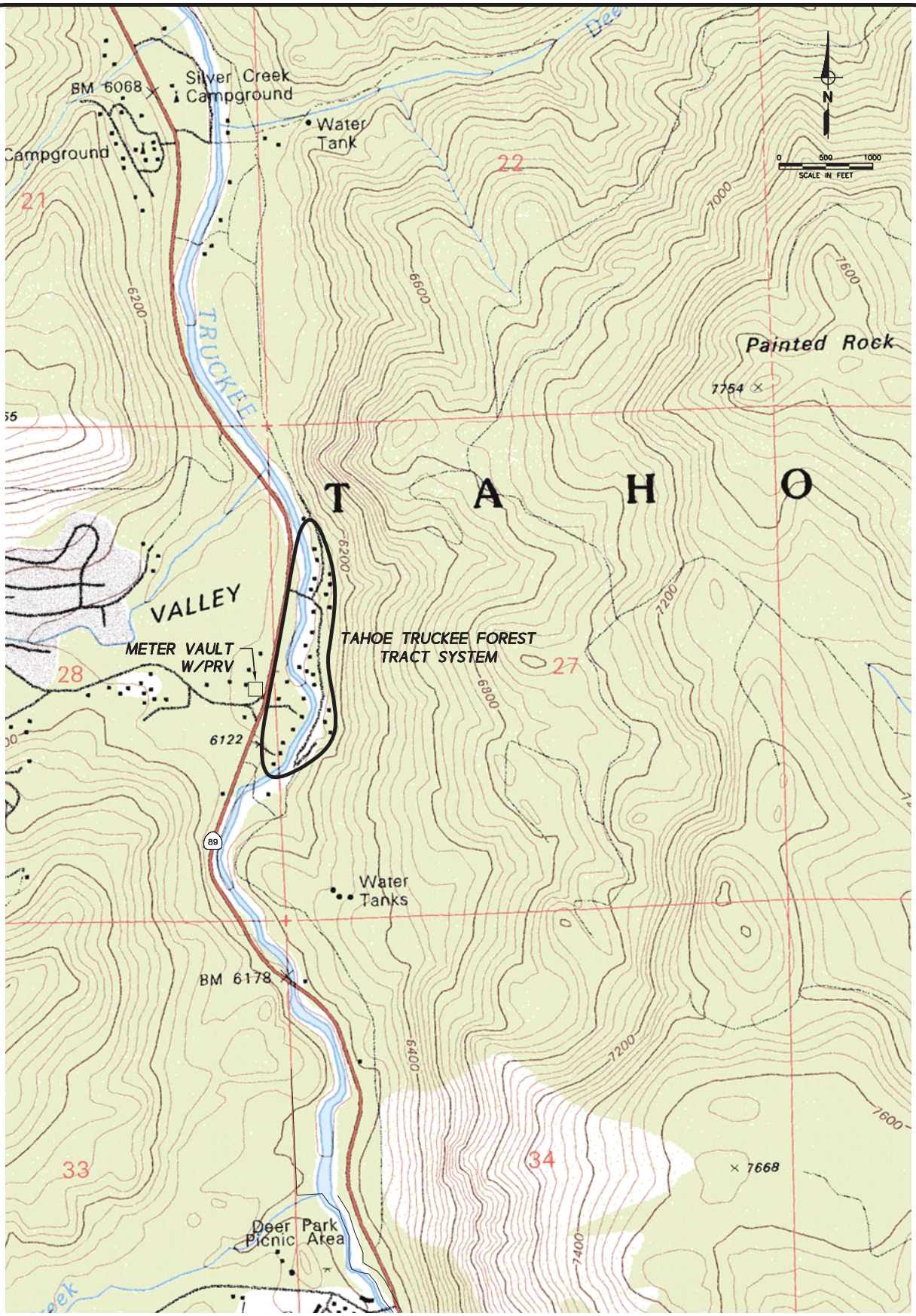
NOTES:

QUADRANGLE BASE MAPS ARE USGS DIGITAL RASTER GRAPHICS (DRG) IMAGE FILES.
WATER SERVICE AREA BOUNDARY IS APPROXIMATE.

Tahoe City Public Utility District

WATER SYSTEM FACILITIES
Figure 2-3

AUERBACH ENGINEERING CORPORATION



LEGEND:

- WATER SERVICE AREA BOUNDARY
- METER VAULT

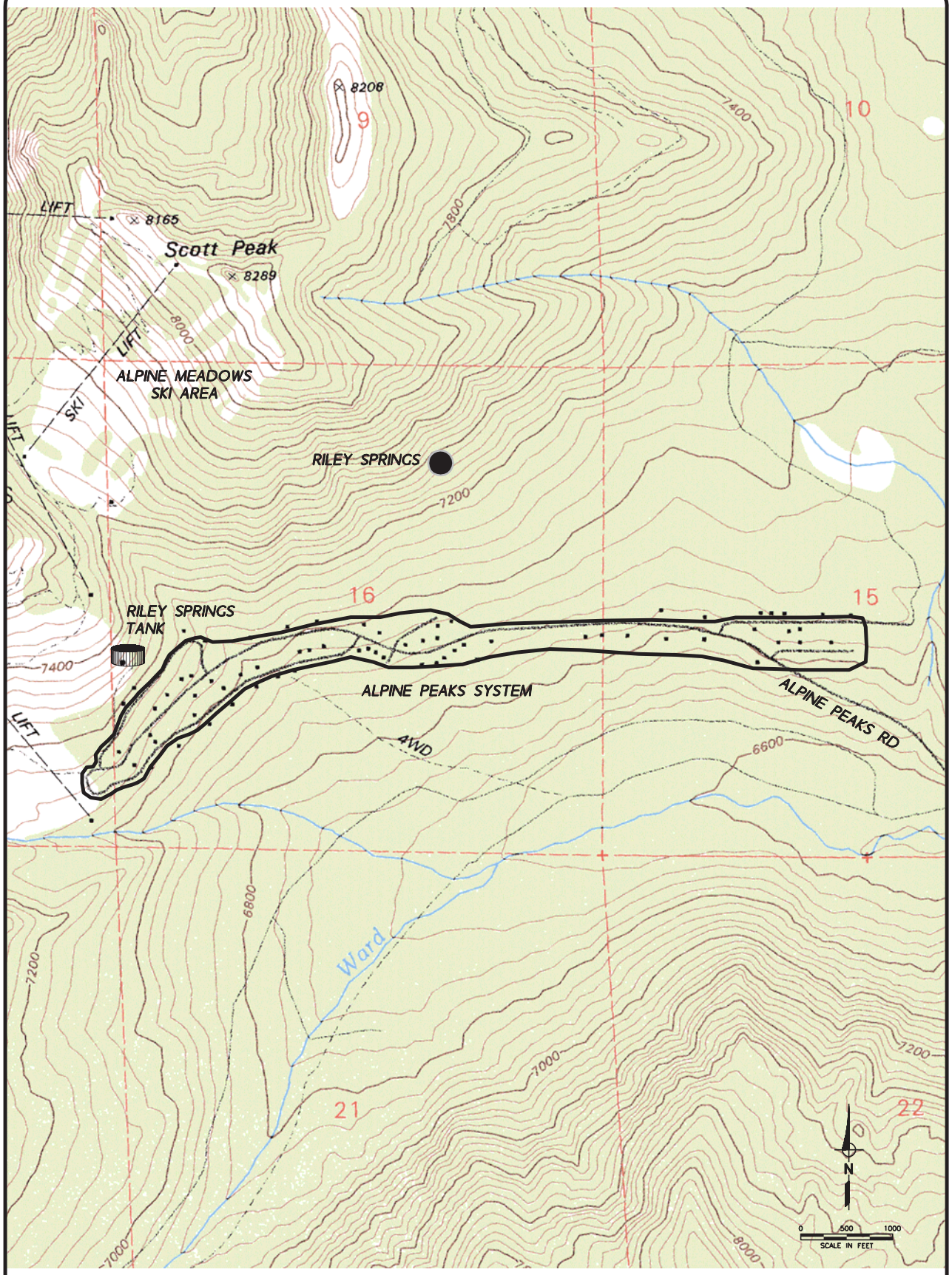
NOTES:

QUADRANGLE BASE MAPS ARE USGS DIGITAL RASTER GRAPHICS (DRG) IMAGE FILES.
WATER SERVICE AREA BOUNDARY IS APPROXIMATE.

Tahoe City Public Utility District

WATER SYSTEM FACILITIES
Figure 2-4

AUERBACH ENGINEERING CORPORATION



LEGEND:

- TANK
- WELL / SPRING
- WATER SERVICE AREA BOUNDARY

NOTES:

QUADRANGLE BASE MAPS ARE USGS DIGITAL RASTER GRAPHICS (DRG) IMAGE FILES.
WATER SERVICE AREA BOUNDARY IS APPROXIMATE.

Tahoe City
Public Utility District

WATER SYSTEM FACILITIES
Figure 2-5

AUERBACH ENGINEERING CORPORATION

2.1.2 Climate Characteristics

The topography of the Lake Tahoe region consists chiefly of steeply sloping mountains surrounding moderately sloping areas near the Lake where most development has occurred. Elevations of the peaks surrounding Lake Tahoe range from 8,000 feet to almost 11,000 feet above sea level. Long, relatively mild winters and short, dry summers characterize the climate of the region. The majority of precipitation falls in the form of snow during the winter months. The TCPUD service area receives about 32 inches of average annual precipitation. Climate characteristics that can affect water supply and management in the TCPUD service area are provided in Table 2.1.

Table 2.1 TCPUD Service Area Climatic Data
TCPUD 2010 UWMP

Month	Standard Monthly Average Eto[1]	Average Rainfall (inches)[2]	Average Snowfall (inches)[2]	Average Temperatures (°F)[2]
January	0	6.01	36.5	40.4
February	0	5.70	40.9	42.0
March	0	4.57	28.9	45.1
April	0	1.87	12.5	51.2
May	4.27	1.25	3.2	60.0
June	5.23	0.77	0.3	69.2
July	5.98	0.33	0	77.5
August	5.35	0.46	0	77.0
September	3.16	0.9	0.4	70.0
October	1.57	1.95	2.4	60.0
November	0	4.25	17.1	47.9
December	0	4.69	27.6	41.4

Notes:
1. Eto = Estimated Evapotranspiration (inches). Western Regional Center (http://www.wrcc.dri.edu/climatedata.html)
2. NOAA National Weather Service (http://www.weather.gov/climate/xmacis.php?wfo=rev). The data is for Tahoe City, CA 96145 and is an average from years 1971-2011

2.2 SERVICE AREA POPULATION

Population estimates within the service area complicated by a number of factors, the least of which is the lack of correlation between census tracts and service area in portions of El Dorado County. TCPUD's water service area is split by two counties, Placer and El Dorado. Census data has been acquired from 1990, 2000 and 2010 (where available) to present the historical perspective of population changes for the service area. These estimates have been adjusted to reflect the portion of the population within the service area that is served water by the TCPUD, as a large percentage of the population is within other private water companies. Lastly, the estimates are adjusted further to reflect the high percentage of seasonal and vacation properties in the service area, and the utilization

of those properties during peak seasons. This adjustment is necessary to allocate demands to a large transient group that is not counted in this service area by the US Census.

The housing stock within the service area is relatively fixed due to strict land use controls imposed on the area by the Tahoe Regional Planning Agency (TRPA). The total number of residential connections within the service area has not grown nor is expected to grow significantly from new construction or even redevelopment of the existing housing stock due to these controls.

Table 2.2 presents the historical data for Placer County.

Table 2.2 Historical Full-Time Residential Service Area Population – Placer County Portion [1]
TCPUD 2010 UWMP

	1990/2000 Census ID	1990 Population	2000 Population	Change	2010 Census ID	2010 Population	Change
	201.01	598	808	35%	22300	709	-12%
	201.02	788	1,086	38%	22100	961	-12%
	201.03	1026	1,058	3%	22200	909	-14%
	201.04	1511	1,806	20%	20104	1288	-29%
Total Census Area		3,923	4,758	21%		3,867	-19%
TCPUD Water Customers (52.7%)[2]		**2,067**	**2,507**			**2,038**	**-19%**

Notes:
1. Census tracts in Placer County are reasonably well matched with the TCPUD sewer service area.
2. TCPUD's service area includes approximately 7,400 sewer connections, and approximately 3,900 water connections (including commercial). The remainder of the water customers are served from investor-owned or other municipal water districts which lie within the TCPUD sewer service area.

El Dorado County population data is less thorough as only a small portion of the census tract includes TCPUD's service area. For this reason, population estimates have been developed utilizing somewhat different methods than Placer County, although it is based upon population and housing data retrieved from the US Census Bureau. Table 2.3 presents these calculations. Note that 2010 census data was not retrievable for the census tract studied.

Table 2.3 Historical Full-Time Residential Service Area Population – El Dorado County Portion [1]
TCPUD 2010 UWMP

	1990	2000	1990-2000 Change	2010	2000-2010 Change
Census Tract 305.3[1]	909	1,158	27%	No Data	No Data
Total Residential Water Connections		606			
Census Tract 305.3 Data					
Units Occupied (19.5%)		492			
Units Vacant (80.5%)		2,029			
Occupied Residential Connections		118			
Owners @ 2.13 pers/unit		70%			
Renters @ 2.6 pers/unit		30%			
Owner Population		176			
Renter Population		92			
Total Full-Time Resident Population	**211**[2]	**268**	**27%**	**236**[3]	**-12%**[3]

Notes:
1. Census Tract 305.3 includes all of South Lake Tahoe as well as portions of El Dorado County lying along Highway 50, well outside TCPUD's service area. Population information is presented to establish trends and changes.
2. 1990 population calculated based on overall change in Tract 305.3 during the 10-year period.
3. 2010 data extrapolated from changes in population in the adjacent census tract in Placer County (022300), as demographics are similar.

Projections of population growth in the region were developed by the TRPA as part of their Threshold Evaluation process in 2000. This was estimated at 0.4% annual growth. Considering the relatively drastic reductions in permanent full-time population since those estimates were made, and considering the lack of growth in housing stock of any kind due to environmental regulations, it seems reasonable that projections of population growth over the next 20 years should stay within the realm of the peak population already counted in 2000.

The table below presents the combined County population historical data, assuming a straight-line change between decennial census events, and assumes a straight line change back to 2000 population levels over the next 20 years.

Table 2.4 Historical and Projected Full-Time Resident Population [1]
TCPUD 2010 UWMP

Year	1990	1995	2000	2005	2010	2015	2020	2025	2030
Full-Time Population	2,278	2,527	2,775	2,525	2,274	2,399	2,524	2,650	2,775

Notes:
1. This population table is presented as information, and the information is not used for estimates of population associated with water demands. See discussion below.

As discussed previously, full-time resident population in the TCPUD service area represents only a fraction of the residential water users. As the majority of the housing stock in the service area is single family residential vacation property (only utilized seasonally, and in some cases only for very short periods of time), some re-analysis of the population estimates is appropriate and necessary to accurately project water demands on a per-capita basis. This is possible due to metering data (since 2008) that clearly indicates the properties that are occupied during any month of the year.

Monthly population estimates based on the District's water connections and residential occupancy is represented in Table 2.5:

Table 2.5 Population Based on Residential Unit Occupancy [1]
TCPUD 2010 UWMP

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
% of Units Occupied	46%	48%	50%	55%	60%	80%	90%	72%	70%	68%	41%	46%
# Units Occupied	1,735	1,811	1,886	2,075	2,263	3.018	3,395	2,716	2,640	2,565	1,547	1,735
Residential Population	3,689	4,038	4,206	4,626	5,047	6,729	7,570	6,056	5,888	5,720	3,449	3,869
Avg. Total Population (2000)[3]	5,089											

Notes:
1. Total residential units in the service area based on District data is 3,772.
2. Average residential occupancy is 2.23 persons per unit based on Placer County Census Tracts 201.1 thru 201.4.
3. Based on District and census data in 2000.

Residential population is influenced significantly by seasonal usage of the existing housing stock. The trends of tourism and vacation patterns are completely independent of full-time residential population in the service area.

Growth of residential service connections in the District would have an effect on population, based on the analysis above. The TCPUD reports approximately 10 new service connections per year. Based

on Table 2.5, 1.35 persons (for the purposes of water demand projections utilizing per capita demand targets) are generated for each new connection in the District. Every 5 years this translates to an increase in population of 68 persons.

Population will change more significantly in response to weather patterns and economic conditions than it will to changes in the resident population. This has a limit, of course, in the sense that should all the seasonal housing stock at some point be taken out of the rental and vacation market and converted to full-time residential uses, this would have a significant impact on service area population. This has never been the trend in the region, and as explained in the discussion under demographics, Tahoe is primarily a vacation destination, and the majority of homes in the region were built as vacation properties and not full time residences.

Population based on residential occupancy been projected through 2030 at five year increments as shown in Table 2.6.

Table 2.6 Current and Projected Average Population [1]
TCPUD 2010 UWMP

Year		**2010**	**2015**	**2020**	**2025**	**2030**
Average Population		5,089	5,157	5,225	5,293	5,361

Notes:
1. Average population based on residential occupancy of District housing stock.

SECTION 3 SYSTEM DEMANDS

3.1 BASELINES AND TARGETS

3.1.1 Methodology

Code Section 10608.20(e):

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.

The actual usage and projected water demands are presented in this section. Methodology 3, as presented in the 2010 UWMP Guidebook was used to determine Base Daily Per Capita Water Use.

The first base period is a 10-year continuous period used to calculate baseline per capita water use per Section 10608.20. The 10-year base period of 1998-2007 was selected as there was accurate gross water usage data and there was no unusual weather conditions that would distort the water use data. Table 3.1 presents the 10-year base period.

Table 3.1 Base Daily Per Capita Water Use – 10 Year Range
TCPUD 2010 UWMP

Base period year		Distribution System Population[1]	Daily System Gross Water Use (MGD)[2]	Annual Daily per Capita Water Use (GPCD)[3]
Sequence Year	Calendar Year			
Year 1	1998	5,089	1.81	356
Year 2	1999	5,089	1.92	377
Year 3	2000	5,089	1.91	375
Year 4	2001	5,089	2.02	397
Year 5	2002	5,089	1.94	381
Year 6	2003	5,089	1.79	352
Year 7	2004	5,089	1.83	360
Year 8	2005	5,089	1.65	324
Year 9	2006	5,089	1.66	326
Year 10	2007	5,089	1.77	348
10-Year Average Base Daily Per Capita Water Use				**360**

Notes:
1. Distribution system population is based on residential unit occupancy.
2. MGD = Million Gallons per Day.
3. GPCD = Gallons per Capita per Day.

As Base Daily Per Capita Water Demands exceed 100 GPCD in the 10-year base period, a second base period is necessary to determine minimum water use reduction targets per Section 10608.22. The 5-year period between 2003 and 2007 has been selected for this analysis.

Table 3.2 Base Daily Per Capita Water Use – 5 Year Range
TCPUD 2010 UWMP

Base period year		Distribution System Population[1]	Daily System Gross Water Use (MGD)[2]	Annual Daily per Capita Water Use (GPCD)[3]
Sequence Year	Calendar Year			
Year 1	2003	5,089	1.79	352
Year 2	2004	5,089	1.83	360
Year 3	2005	5,089	1.65	324
Year 4	2006	5,089	1.66	326
Year 5	2007	5,089	1.77	348
5-Year Average Base Daily Per Capita Water Use				**342**

Notes:
1. Distribution system population is based on residential unit occupancy.
2. MGD = Million Gallons per Day.
3. GPCD = Gallons per Capita per Day.

Water demands within the TCPUD service area are higher than statewide averages due to the seasonal nature of the region, and the tourism-based economy. As previously discussed, occupancy varies substantially throughout the year based on seasonal use of vacation homes and single-family rental properties. As the region is within 4-hours drive to over 6 million people in major urban centers such as San Francisco, Sacramento and Reno, much of the peak-season (June through August) water demands are delivered to day-users who are not reflected in population counts either by the US Census Bureau or through population estimates based on occupancy. These visitors impact commercial connections such as restaurants and hotels, and may rent other properties in the service area for one or two nights through a weekend. As those water demands are difficult to quantify in population estimates and cannot be segregated from the Gross Water Use, the Base Per Capita Water Demands appear to be higher than normal. In fact, when individual connections are examined for properties where the residential status is known to be full-time residents or long term rental occupants, calculated per-capita water demands are easily within statewide averages.

Section 10608.22 of the Code requires that a water supplier develop a year 2020 water use target and a year 2015 interim target. These targets are intended to meet the goal of reducing statewide per capita water consumption by 20 percent by the year 2020, as established by the California Legislature.

Base Daily Per Capita Water Use – 10-Year Range 360 GPCD

Base Daily Per Capita Water Use – 5 Year Range 342 GPCD

2020 Target (80% of 10-Year Base)	288 GPCD
Interim Target (95% of 5-Year Base)	325 GPCD
2015 Target (Midpoint of 2020 Target)	324 GPCD

3.1.2 Methods to Achieve the Demand Reduction Target

Per Table 3.3, the TCPUD has already met the 2020 target for demand reduction based on Gross Water Demands in 2010. The primary reasons for the GPCD reductions shown in 2008-2010 were the installation of residential water meters, implementing a conservation-based rate structure, and an aggressive customer leak detection program. The District will now focus on water audits and water loss management strategies as well as all other DMM's discussed in Section 6 of this report to maintain compliance with its Urban Water Use targets.

Table 3.3 Current Per Capita Water Use
TCPUD 2010 UWMP

	Calendar Year	Distribution System Population[1]	Daily System Gross Water Use (MGD)[2]	Annual Daily per Capita Water Use (GPCD)[3]
	2008	5,089	1.63	320
	2009	5,089	1.37	269
	2010	5,089	1.25	246

Notes:
1. Distribution system population is based on residential unit occupancy.
2. MGD = Million Gallons per Day.
3. GPCD = Gallons per Capita per Day.

3.2 WATER DEMANDS

Code Section 10631(e)(1):

A plan shall be adopted in accordance with this chapter and shall do all of the following:

…(e)(1) Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (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, conjunctive use, and (I) agriculture.

Within the TCPUD service area, water is primarily used for residential and commercial purposes. There is no significant industrial, manufacturing or agricultural use of water in the TCPUD service area. Residential water use is primarily to provide for indoor needs. Landscape irrigation demands are generally very low, except in mid to late summer. After 2008, institutional/governmental entities were metered. The industrial, manufacturing, and agricultural use of water use is not expected to

grow due to the fact that there is no significant industrial, manufacturing or agricultural use of water in the TCPUD service area.

In 2005, the TCPUD served approximately 145 commercial service connections, 3,518 single family connections and 62 multi-family connections. Commercial use accounts for about 12% of the total water demand and is not expected to change significantly because it is assumed that the District's commercially zoned area is at build out. Except for the parks, there is very little recreational water demand. The golf course located in the service area has a private water supply, and some snow-making water is received from TCPUD.

3.2.1 Past Water Deliveries

Table 3.4 provides a breakdown of actual 2005 volume of water use.

Table 3.4 Water Deliveries – Actual 2005
TCPUD 2010 UWMP

	Metered		Not metered		Total
Water use sectors	**Number of Accounts**	**Volume (MGY)[1]**	**Number of Accounts**	**Volume (MGY)**	**Volume (MGY)**
Single family	0	0	3,518	526	526
Multi-family	0	0	62	11	11
Commercial[2]	145	73	0	0	73
Industrial	n/a	0	n/a	0	0
Institutional/Governmental	n/a	0	n/a	0	0
Landscape	n/a	0	n/a	0	0
Agriculture	n/a	0	n/a	0	0
Other	n/a	0	n/a	0	0
Total	145	73	3,580	537	610

Notes:
1. MGY = Million Gallons per Year
2. Only commercial accounts were metered prior to 2009.

3.2.2 Present Water Deliveries

With the exception of summer time surface water diversions to augment supply in the McKinney/Quail System, the TCPUD currently relies on groundwater to meet normal demands. Due to restricted growth in the service area, future demands are expected to stay relatively flat, or increase only slightly due to growth restrictions in the service area. Therefore the groundwater supply is seen as a sufficient source for the future. Since 1980, the TCPUD has kept records on monthly production for all supply sources. There are typically two periods of peak demand. The first occurs from Memorial Day weekend through Labor Day weekend and the second occurs during the winter months. The peak months during the winter are largely determined by snow conditions, and the visitor populations associated with snow-dependent recreation activities, but are typically the months of December and February. From 1980 to 2000, the maximum demand for a one-month period was 135 million gallons (July 1998).

Table 3.5 presents the actual water deliveries from 2010 as metered by the TCPUD.

Table 3.5 Water Deliveries – Actual 2010
TCPUD 2010 UWMP

	Metered		Not metered		Total
Water Use Sectors	**Number of Accounts**	**Volume (MGY)[1]**	**Number of Accounts**	**Volume (MGY)**	**Volume (MGY)**
Single family	3,670	334	0	0	334
Multi-family	49	8	0	0	8
Commercial	148	39	0	0	39
Industrial	n/a	0	n/a	0	0
Institutional/Governmental	43	19	0	0	19
Landscape	n/a	0	n/a	0	0
Agriculture	n/a	0	n/a	0	0
Other	n/a	0	n/a	0	0
Total	3,910	399	0	0	399

Notes:
1. MGY = Million Gallons per Year

From 2005 to 2010, the number of multi-family connections decreased from 62 to 49, a 20% decrease. This decrease is due to reclassification when metering was instituted. Also, the commercial service connections increased from 145 in 2005 to 148 in 2010, and institutional/governmental users began metering which increased the service connections by 43.

3.3 WATER DEMAND PROJECTIONS

The projected water demands at five year increments between 2015 and 2030 have been calculated below. Water demand projections are based on demographic population projections for single family, multi-family, commercial, and institutional/governmental users. No growth is expected in commercial or institutional water demands as those land uses are built out and any changes would be the result of redevelopment of existing services. As discussed previously, residential population will increase slightly based on a small increase in the number of residential units.

Tables 3.6 – 3.8 present the projected water deliveries for 2015-2030.

Table 3.6 Water Deliveries –Projected 2015
TCPUD 2010 UWMP

	Metered		Not metered		Total
Water Use Sectors	**Number of Accounts**	**Volume (MGY)[1]**	**Number of Accounts**	**Volume (MGY)**	**Volume (MGY)**
Single family	3,720	339	0	0	339
Multi-family	49	8	0	0	8
Commercial	148	39	0	0	39
Industrial	n/a	0	n/a	0	0
Institutional/Governmental	43	19	0	0	19
Landscape	n/a	0	n/a	0	0
Agriculture	n/a	0	n/a	0	0
Other	n/a	0	n/a	0	0
Total	3,960	405	0	0	405

Notes:
1. MGY = Million Gallons per Year

Table 3.7 Water Deliveries –Projected 2020
TCPUD 2010 UWMP

	Metered		Not metered		Total
Water Use Sectors	**Number of Accounts**	**Volume (MGY)[1]**	**Number of Accounts**	**Volume (MGY)**	**Volume (MGY)**
Single family	3,770	343	0	0	343
Multi-family	49	8	0	0	8
Commercial	148	39	0	0	39
Industrial	n/a	0	n/a	0	0
Institutional/Governmental	43	19	0	0	19
Landscape	n/a	0	n/a	0	0
Agriculture	n/a	0	n/a	0	0
Other	n/a	0	n/a	0	0
Total	4,010	409	0	0	409

Notes:
1. MGY = Million Gallons per Year

Table 3.8 Water Deliveries –Projected 2025 and 2030
TCPUD 2010 UWMP

	2025 Metered		2030 Metered	
Water Use Sectors	**Number of Accounts**	**Volume (MGY)[1]**	**Number of Accounts**	**Volume (MGY)**
Single family	3,820	348	3,870	352
Multi-family	49	8	49	8
Commercial	148	39	148	39
Industrial	n/a	0	n/a	0
Institutional/Governmental	43	19	43	19
Landscape	n/a	0	n/a	0
Agriculture	n/a	0	n/a	0
Other	n/a	0	n/a	0
Total	4,060	414	4,110	418

Notes:
1. MGY = Million Gallons per Year

3.4 ADDITIONAL WATER USES AND LOSSES

The TCPUD supplies the North Tahoe Public Utility District and the LFWC with water. The TCPUD is in the process of acquiring the LFWC through Eminent Domain. As of the date of this report, that process is not complete, but should be within the next year. Table 3.9 presents the actual water sales and projected water sales.

Table 3.9 Water Sales to Other Water Agencies
TCPUD 2010 UWMP

Water Distributed	**2005 (MGY)[1]**	**2010 (MGY)**	**2015 (MGY)**	**2020 (MGY)**	**2025 (MGY)**	**2030 (MGY)**
North Tahoe Public Utility District	23	25	27	29	31	33.5
Lake Forest Water Company[2]	9	15	n/a	n/a	n/a	n/a
Total	32	41	27	29	31	33.5

Notes:
1. MGY = Million Gallons per Year
2. The TCPUD supplied retail water to the LFWC from 2001 through 2010. The TCPUD was granted operational possession of the LFWC on January 14, 2011, through eminent domain proceedings. Ownership of the LFWC has not been determined as of the date of adoption of this report.

Table 3.10 presents the unaccounted for water which is defined to be the difference between water produced and water sold to customers. This difference between water produced and metered water use includes system flushing, leak repair flushing, hydrant leaks, leaking valves and leaking pipes.

The TCPUD completed its meter installation prior to 2010, therefore the first year of comprehensive data on system losses that was available was 2010.

The TCPUD is currently at 13.5% additional water loss compared to the current water production. The TCPUD expects this percentage to lower every year due to their ongoing program to identify and repair District leaks, the DMMs, and replacement of older steel water mains. Therefore, the projected additional water loss as a percentage of the total water demand has not been increased over the next 20 years.

Table 3.10 Additional Water Losses
TCPUD 2010 UWMP

Water Use	2005 (MGY)[1]	2010 (MGY)	2015 (MGY)	2020 (MGY)	2025 (MGY)	2030 (MGY)
Saline Barriers	0	0	0	0	0	0
Groundwater Recharge	0	0	0	0	0	0
Conjunctive Use	0	0	0	0	0	0
Raw Water	0	0	0	0	0	0
Recycled Water	0	0	0	0	0	0
System Losses	0	63	63	63	63	63
Total	0	63	63	63	63	63

Notes:
1. MGY = Million Gallons per Year

3.5 TOTAL WATER DEMANDS

The TCPUD's total water usage is presented in Table 3.11 including actual data from 2010 and projected to 2030 based on population growth as discussed in Section 2.

Table 3.11 Total Water Use
TCPUD 2010 UWMP

Water Distributed	2010 (MGY)[1]	2015 (MGY)	2020 (MGY)	2025 (MGY)	2030 (MGY)
Total Water Deliveries[2]	399	405	409	414	418
Additional Water Uses and Losses	63	63	63	63	63
Total	462	468	472	477	481

Notes:
1. MGY = Million Gallons per Year
2. Includes sales to other water agencies.

SECTION 4 SYSTEM SUPPLIES

4.1 WATER SOURCES

Code Section 10631(b):

A plan shall be adopted in accordance with this chapter and shall do all of the following:

…(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments.

As required by Code Section 10631(b), this section of the 2010 UWMP discusses the TCPUD's existing and planned sources of water supply.

Up until the late 1980's, the TCPUD diverted most of its domestic water directly from Lake Tahoe. In response to stricter water quality requirements for surface water diversions that came about in the late 1980's (i.e. the Surface Water Treatment Rule), the TCPUD chose to reduce its dependence on surface diversions and embarked on a program to develop groundwater sources. With the exception of seasonal diversions from Lake Tahoe to augment supply for the McKinney/Quail System, the TCPUD now relies on groundwater to meet normal demands. During 2010, groundwater provided approximately 95% of the TCPUD's water supply.

Future water supplies are planned for development to augment existing sources. The augmentation projects are included in the TCPUD's Capital Improvement Plan. Table 4.1 provides a summary of TCPUD's current and planned water supply sources.

Future surface water supply development in the Tahoe City Main system is planned to consist of a new intake (replacing existing abandoned intakes) and a treatment plant to supply approximately 1,000 GPM to the system. This improvement will also provide a source at the east end of the Tahoe City Main system, reducing the reliance on the Tahoe City Wells and the existing transmission main to serve that area. Annual contribution to the total supply is estimated to be on the order of 300 GPM.

Future surface water supply development at the McKinney-Quail Intake will increase the yield from 300 GPM to 500 GPM. This additional flow capability may be utilized to rest the Crystal Way Well for longer periods, allowing for additional recharge of that acquifer. It is therefore assumed that 50% of the current flow from the Crystal Way Well will be replaced by the expanded McKinney-Quail Intake supply.

Table 4.1 TCPUD Current and Planned Water Supply
TCPUD 2010 UWMP

Water Supply Source	2010 (MGY)	2015[1] (MGY)	2020[1] (MGY)	2025[1] (MGY)	2030[1] (MGY)
TCPUD Produced Groundwater					
Tahoe City Wells No. 2, 3	288	288	288	288	288
Tahoe Tavern Well	33	33	33	33	33
Highland Wells	39	39	39	39	39
Rileys Spring	7	7	7	7	7
Rubicon Wells #1, #2 and #3	43	43	43	43	43
Crystal Way Well	26	26	26	26	26
Total TCPUD Produced Groundwater	436	436	436	436	436
TCPUD Produced Surface Water					
McKinney-Quail Intake[3]	21	35	35	35	35
Tahoe City Main Source Augmentation[2]	-	-	145	145	145
Total TCPUD Produced Surface Water	21	35	180	180	180
Purchased Water Supplies (Non-Wholesale)					
Squaw Valley PSD	3	3	3	3	3
Total Purchased Water Supply	3	3	3	3	3
Total	460	474	619	619	619

Notes:
1. Future well supplies are expected to maintain at current levels unless otherwise stated.
2. New Tahoe City Main surface water source planned at 1,000 GPM max. and approximately 275 GPM average flow.
3. Expanded McKinney-Quail plant will increase max. flow from 300 to 500 GPM, and approximately 67 GPM average flow.

4.2 GROUNDWATER

Code Section 10631(b)(1):

. . .If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

(1) 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.

The TCPUD completed a Water Master Plan Update in April 2002 (West Yost & Associates, 2002, "Tahoe City Public Utility District Water Master Plan"). The 2002 Master Plan serves as the primary guidance document for managing TCPUD water systems, including its groundwater supplies. Given the size of the 2002 Master Plan, a copy is not included with this UWMP; however, TCPUD will make a copy available upon request from DWR.

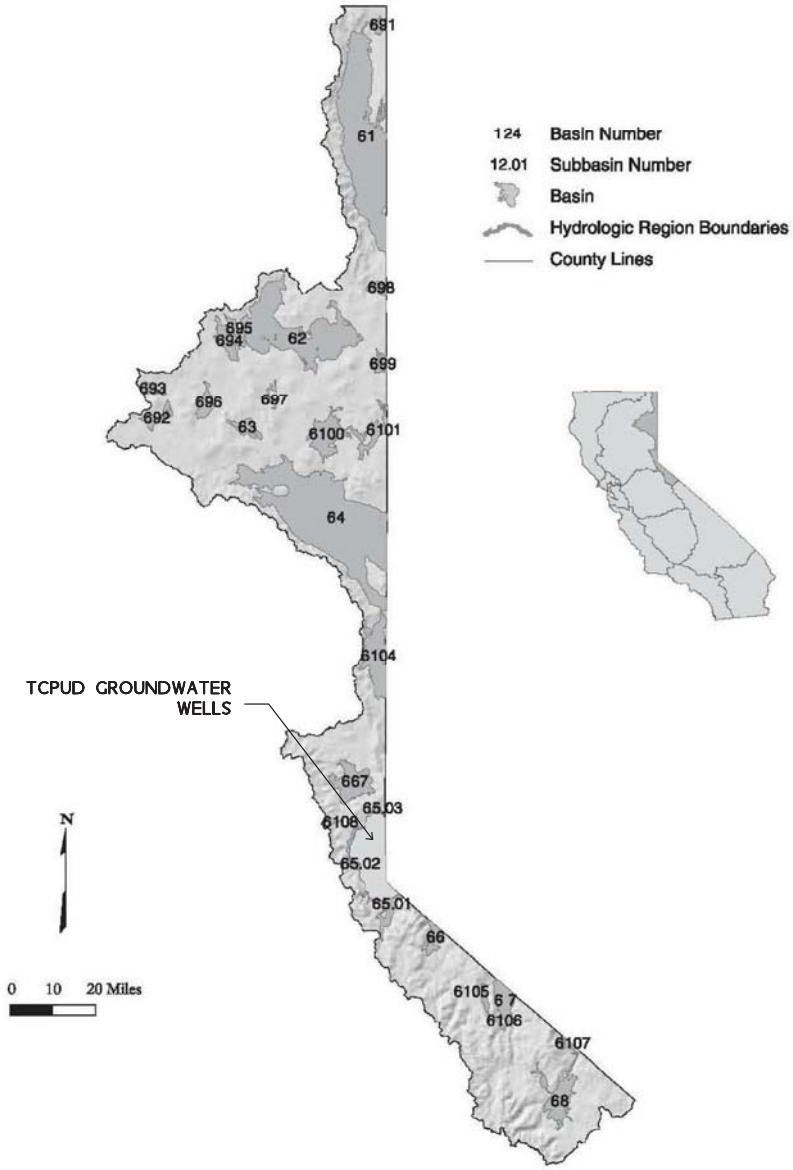
4.3 DESCRIPTION OF TCPUD GROUNDWATER BASIN

Code Section 10631(b)(2):

. . . If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

The California Department of Water Resources (DWR) defines a groundwater basin as an alluvial aquifer or a stacked series of alluvial aquifers with reasonably well-defined boundaries in a lateral direction and a definable bottom (DWR, 2003). DWR has currently delineated 431 groundwater basins in the State of California and 24 basins are subdivided into sub-basins. Figure 4-1 presents the North Lahontan Hydrologic Basin, which contains all of the TCPUD's groundwater wells.



Basins and Subbasins of the North Lahontan Hydrologic Region

Basin/subbasin	Basin name
6-1	Surprise Valley
6-2	Madeline Plains
6-3	Willow Creek Valley
6-4	Honey Lake Valley
6-5	Tahoe Valley
6-5.01	Tahoe Valley South
6-5.02	Tahoe Valley West
6-5.03	Tahoe Valley North
6-6	Carson Valley
6-7	Antelope Valley
6-8	Bridgeport Valley
6-67	Martis (Truckee) Valley
6-91	Cow Head Lake Valley
6-92	Pine Creek Valley
6-93	Harvey Valley
6-94	Grasshopper Valley
6-95	Dry Valley
6-96	Eagle Lake Area
6-97	Horse Lake Valley
6-98	Tuledad Canyon
6-99	Painters Flat
6-100	Secret Valley
6-101	Bull Flat
6-104	Long Valley
6-105	Slinkard Valley
6-106	Little Antelope Valley
6-107	Sweetwater Flat
6-108	Olympic Valley

Tahoe City Public Utility District

NORTH LAHONTAN BASIN
Figure 4-1

Groundwater recharge in the Tahoe Basin is primarily from infiltration of snow and precipitation into the soil, faults and fractures in bedrock, and decomposed granite that overlies much of the bedrock, and into unconsolidated basin-fill deposits. Groundwater is recharged over the entire extent of the flow path, except where the land surface is impermeable or where the groundwater table coincides with land surface. Stream flow also recharges ground water when the water-table altitude is lower than the water surface altitude of the stream.[2]

As the wells within the basin are fracture flow (not alluvial basins) changes in groundwater storage are difficult to predict. The groundwater in the District's service area basin is not adjudicated; therefore there are no pumping limitations. The DWR has not identified the basin as over-drafted, nor is it projected to become over-drafted.

Code Section 10631(b),(3):

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.

The locations of the TCPUD's groundwater wells are shown in Figure 2-2, 2-3 and 2-5. Table 4.2 provides a summary of the volumes of water produced from TCPUD wells for the last 5 years, and identifies the United States Geological Survey (USGS) groundwater basin designations for those wells.

Table 4.2 TCPUD Current Groundwater Volume Pumped
TCPUD 2010 UWMP

Basin	Metered or Unmetered	2006 (MGY)[1]	2007 (MGY)	2008 (MGY)	2009 (MGY)	2010 (MGY)
North Lahontan Basin	Metered	580	599	568	478	436

Notes:
1. MGY = million gallons per year.

Code Section 10631(b),(4):

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.

As shown in Table 4.3, all TCPUD groundwater is located in the North Lahontan USGS Groundwater Basin, which is not an Adjudicated Groundwater Basin. According to Bulletin 118-80, "No basins in the Northern Lahontan Hydrologic Study Area are identified as subject to critical conditions of

[2] Thodal, Carl E. 1997. Hydrogeology of Lake Tahoe Basin, California and Nevada, and Results of a Ground-Water Quality Monitoring Network, Water Years 1990-1992. Water- Resources Investigations Report 97-4072. USGS. 53 p.

overdraft." Bulletins 160-93 and 160-98, California's Water Plan Update, reiterated the statement of no evidence of overdraft. Bulletin 160-98 added that no overdrafts are expected in the North Lahontan Hydrologic Study Area, even in drought years, by 2020.

It is assumed that the TCPUD will continue to pump groundwater at approximately 279 MGY in future years after development of surface source augmentation projects as described n the Capital Improvement Plan.

Table 4.3 TCPUD Groundwater Volume Projected to be Pumped
TCPUD 2010 UWMP

Basin	2015 (MGY)[1]	2020 (MGY)	2025 (MGY)	2030 (MGY)
North Lahontan Groundwater Basin	436	436	436	436

Notes:
1. MGY = million gallons per year.

4.4 TRANSFER OPPORTUNITIES

Code Section 10631(d):
Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

With the exception of the LFWC, the TCPUD has no imminent plan to acquire or connect to any adjacent water companies. Over the past 8 years, TCPUD has provided the North Tahoe Public Utility District an average of 23 MGY. This sale could be limited in the event of an emergency or inadequate safe yield in TCPUD watersheds. In general, the District reviews all opportunities to provide regional water source and distribution solutions where possible.

4.5 DESALINATION WATER OPPORTUNITIES

Code Section 10631(i):

Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.

There are currently no plans for desalination of groundwater.

4.6 RECYCLED WATER OPPORTUNITIES

Code Section 10633 (a-g):

The plan shall 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, and shall include all of the following:

a) *A description of 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.*

b) *A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.*

c) *A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.*

d) *A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*

e) *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.*

f) *A description of 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.*

g) *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.*

The District provides wastewater collection services to approximately 7,800 connections spanning from the Dollar Point area, south to Emerald Bay. The District's wastewater collection system consists of over 180 miles of gravity and forced sewer mains, and 21 sewer pumping stations. All collected raw sewage is conveyed out of the Lake Tahoe basin through a large diameter gravity pipeline know as the Truckee River Interceptor (TRI) which is owned and operated by the Tahoe Truckee Sanitation Agency (TTSA). The TRI conveys all raw sewage from the North and West Shores of Lake Tahoe approximately 17 miles to Truckee, California and is treated there by the TTSA at an advanced water reclamation plant. On average the District's sewer collection service area conveys approximately 0.8 million gallons per day (mgd) of raw wastewater to the TTSA treatment facility.

TTSA also provides wastewater treatment services for the communities of North Lake Tahoe, Alpine Meadows, Squaw Valley, Truckee and Northstar. TTSA is a state-of-the-art 9.6 million gallon per day (mgd) advanced water reclamation plant and provides primary and secondary treatment, phosphorus removal, biological nitrogen removal, disinfection, and effluent filtration. Because of its location in the pristine Lake Tahoe-Truckee River area, the plant is required to meet some of the most stringent discharge requirements in the country. Final effluent polishing is achieved by routing the effluent through the Soil Aquifer Treatment system, having the soil remove additional constituents as the effluent percolates through it.

Two distinct provisions make the use of recycled water unlikely in the District's water service area. Much of the sewage systems and wastewater treatment facilities in the area were constructed in response to the passage of the Porter-Cologne Water Quality Control Act (Act) in 1969. In basic terms, the Act mandated that all sewage and/or treated effluent be exported from the Lake Tahoe Basin. In addition to this Act, in November 1990, the Truckee-Carson-Pyramid Lake Water Rights Settlement Act, Title II of Public Law 101-618 [104 Stat. 3289, 3294] was signed into law by the Federal Government. Section 204.c.1.G of the Act essentially prohibits the reduction in return flow of treated wastewater to the Truckee River without the acquisition of preexisting water rights or an offset returning Truckee River basin groundwater to the river or its tributaries.

These two provisions, coupled with the fact that the treatment facility is located over 17 miles away from the District's service area make the use of recycled water very unlikely in the near future.

4.7 FUTURE WATER PROJECTS

4.7.1 Background

Code Section 10632(h):
(h) Include a description of 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.

The TCPUD has adopted a 5-Year CIP beginning in 2009 and ending in 2013. This plan includes future water supply projects. Table 4.4 provides a summary of planned water supply projects for the

TCPUD service area from 2010 through 2013. The primary focus of the 5-Year Capital Plan is providing high-quality and reliable water sources. Under the Five-Year Capital Plan, source planning, design, and project development will be prioritized for the McKinney and Tahoe City Main systems. Focus in the McKinney system will be on surface water treatment.

The TCPUD will carry on their annual program to perform leak detection in areas of concern. Most of these areas contain older thin-wall steel pipe. Prioritization and capital budgeting will continue to support the long-term replacement of this infrastructure.

Table 4.4 Future Water Supply Projects
TCPUD 2010 UWMP

	2011 Project Description	District Funds		2012 Project Description	District Funds
1	McKinney Secondary Source Engineering Report	$100,000	1	McKinney Secondary Source (P&D)	$410,375
2	Tahoe City Main Source & Storage Alternatives Study	$71,156	2	Tahoe City Source/ Storage Augmentation P&D	$142,313
3	TRPA BMP Projects	$10,000	3	TRPA BMP Projects	$40,000
4	Seismic Modifications to Tanks	$25,000	4	Seismic Modifications to Tanks	$75,000
5	Public Projects Relocations Upgrades (EIP)	$50,000	5	Water System Master Metering Preliminary Plan	$10,000
6	Highlands Subdivision Fire Hydrant Project	$189,802	6	Public Projects Relocations Upgrades (EIP)	$50,000
7	Four Seasons Tank Line Replacement (P&D/Const)	$328,458	7	Four Seasons Tank Line Replacement	$226,560
8	Woodview to Woodhill Wtr Main Connection (P&D/Cst)	$154,283	8	Bunker Water Tank Const.	$1,875,650
9	Bunker Water Tank Replacement (P&D)	$297,850	9	Lower Highlands Booster Pump Station (P&D)	$132,000
			10	Upper Ellis Rd. WLR (P&D)	$24,480
10	Sacramento Ave. Hydrant	$10,000	11	Rubicon Tank #1 Water Feed Line Replacement (P&D)	$19,800
11	Tahoe Hills Hydrant Project	$30,000			
12	Old Dollar Point Pump Stat. PRV & Conn Imp. (P&D)	$36,600	12	Old Dollar Point Pump Stat. PRV & Conn Imp. (Const.)	$215,940
13	Lower Ellis & Quail Creek *Roads WLR (P&D/Const)*	$321,553	13	Grouse Drive WLR (P&D)	$67,800
			14	Lower Ellis & Quail Creek Roads WLR (Const)	$239,304
14	*Moana Circle WLR (Prel.)*	$10,000			
15	Observation/Edgewater PRV Station (Const.)	$61,240	15	Moana Circle WLR (P&D)	$31,520
			16	Rubicon tank #1 Interior Coating	$50,000
16	Grove Street Intake Building Modifications (LST 5)	$50,000			
			17	Crystal Way Well Modifications (sanding)	$50,000
17	Lower Highlands Tank Recoating	$154,000			
			18	Lake Forest Systems Replacement	$1,266,828
18	Lower Highlands Tank Ladder Modifications	$10,000			
19	Rocky Ridge Tank Recoating	$40,000			
20	Lake Forest System Replacement	$1,266.827			
	Water Subtotal 2011	**$3,216,769**		**Water Subtotal 2012**	**$4,927,570**

Table 4.4 Cont. Future Water Supply Projects
TCPUD 2010 UWMP

	2013 Project Description	District Funds
1	McKinney-Quail Secondary Source Const.	$4,130,000
2	Tahoe City Source/ Storage Augmentation P&D	$853,875
3	Seismic Modifications to Tanks	$75,000
4	Water System Master Metering (P&D/const.)	$30,000
5	Public Projects Relocations Upgrades (EIP)	$50,000
6	Upper Ellis Rd. WLR (Const)	$144,432
7	Rubicon Tank #1 Water Feed Line Replacement (Const)	$116,820
8	Grouse Drive WLR (Const)	$400,020
9	Lower Meeks Bay PRV	$70,000
10	Riley's Spring Vault Rbld	$62,000
11	Highview Booster Pump Station Vault Rehab	$ 23,000
12	Portable Generators	$120,000
13	Lower Highlands Booster Pump Station Improv.	$708,000
14	Moana Circle WLR	$ 244,968
	Water Subtotal 2013	**$7,028,115**

	2014 Project Description	District Funds
1	Tahoe City Source/ Storage Augmentation Const.	$4,144,852
2	Rubicon System Master Plan (P&D)	$143,400
3	Water System Master Metering	$250,000
4	Public Projects Relocations Upgrades (EIP)	$50,000
5	The Drive WLR (P&D)	$37,040
6	Dardanelles WLR (P&D)	$27,360
7	Ellis to Lagoon WLR (P&D)	$30,000
8	Lighthouse Meter Install	$30,000
9	Four Seasons Tank Exterior coating	$40,000
10	Highlands Well Chlorination Room	$77,000
	Water Subtotal 2014	**$4,829,652**

	2015 Project Description	District Funds
1	Tahoe City Source/ Storage Augmentation Const.	$1,381,617
2	Rubicon Transmission Improvement Projects (P&D)	$544,920
3	The Drive WLR (Constr)	$218,536
4	Dardanelles WLR (Const)	$161,424
5	Ellis to Lagoon WLR (P&D)	$177,000
	Water Subtotal	**$2,483,497**

4.8 WATER RIGHTS

Public Law 101-618 (Settlement Act) was enacted to provide "for the settlement of water rights claims of the Fallon Paiute Shoshone Indian Tribes and for other purposes." Section 204 of the Settlement Act would limit California's total gross diversions in the Lake Tahoe Basin to 23,000 acre-feet per year. Section 205 of the Settlement Act requires the development of an operating agreement for the Truckee River reservoirs, including Lake Tahoe. This operating agreement is referred to as the Truckee River Operating Agreement (TROA). Among a host of purposes, the TROA will provide for operation of the Truckee River Reservoirs and other reservoirs to properly implement the California and Nevada allocations of Lake Tahoe and Truckee River water and enhance fish, wildlife and recreational beneficial uses of water within the Truckee River Basin.

TROA received final approval in 2008 of the Environmental Impact Statement/and Environmental Impact Report (EIR/EIS), completion of other state and federal requirements and ratification by concerned parties. The final TROA was the result of negotiations between the United States Departments of the Interior and Justice, the State of California, the State of Nevada, the Pyramid Lake Paiute Tribe of Indians, Sierra Pacific Power Company, and other entities in the State of California and the State of Nevada.

As mentioned above, the Settlement Act allocates 23,000 acre-feet per year total diversions from the Lake Tahoe Basin to the State of California. This allocation is for use within the Lake Tahoe Basin from all natural sources, including both direct diversions from Lake Tahoe and groundwater. Other than the TCPUD, the major water purveyors on the California side of Lake Tahoe include the South Tahoe Public Utility District and the North Tahoe Public Utility District. TCPUD will be required to conform to the TROA once it is adopted. The portion to be allocated to TCPUD has not been finalized, so an exact quantification of available future supply is not possible at this time.

SECTION 5 WATER SUPPLY RELIABILITY & WATER SHORTAGE CONTINGENCY PLAN

5.1 WATER SUPPLY RELIABILITY

Code Section 10620(f):

Describe water management tools and options to maximize resources and minimize the need to import water from other regions.

The TCPUD has met its historical water demands primarily through groundwater sources. The recent stabilization of these trends combined with recent reductions in water demands throughout the system due to conservation and leak detection suggests long term reliability, however relies on the current trends to continue with very little buffer of excess capacity. In addition, development of existing surface water sources is quite feasible considering the source availability (Lake Tahoe) and existing water rights, and this potential is already being explored in the TCPUD's capital improvement program. Lastly, should conditions warrant, water sales to adjoining suppliers could be terminated, thereby increasing available supply to TCPUD customers. These factors make it highly unlikely that the TCPUD would ever have to import water from other regions.

Code Section 10631(c):

A plan shall be adopted in accordance with this chapter and shall do all of the following:

…(c) 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:

(1) An average water year.

(2) A single dry water year.

(3) Multiple dry water years.

In 1995, West Yost & Associates and Luhdorff and Scalmanini prepared a report titled, "Groundwater Resources Investigation of the Tahoe City Main Service Area," hereinafter referred to as Groundwater Resources Investigation. The existing TCPUD wells were found to be adequate to provide sufficient pumping capacity to satisfy the ultimate build-out average demands for each of the water supply system areas serviced by TCPUD. There were, however, concerns regarding long-term water supply in the Tahoe City wells (TC-2, and TC-3) in the Tahoe City Main System.

TC-1 (Bunker Well) was drilled in 1956 to a depth of 223 feet. Following installation of TC-2 and TC-3, the static water surface elevation continually dropped until the well was dewatered. In addition, TC-2 and TC-3 have experienced significant static water level declines since installation. In 2003, TC-2 had

been sufficiently dewatered to entrain air in the water during pumping operation. In late 2003, TC-2 was deepened to approximately the same depth as TC-3.

The concerns regarding the wells in the Tahoe City Main System have been mitigated by the reduction in water production due to system improvements and the installation of meters. The decline in water demands has resulted in stabilization of the static water levels in both Tahoe City wells, as is depicted in Figures 5.1 and 5.2.

The TCPUD has, in the past, experienced difficulties meeting summer peak water demands with the McKinney/Quail System. The McKinney/Quail System has been served exclusively from the Crystal Way Well until the summer of 2004. The well was installed in 1996 and put online in 1997. Since placed into service, the well experienced a continual drop in both static and dynamic pumping levels until 2003 when air became entrained during pump operation. The well output was decreased to 350 gallons per minute (gpm) from 500 gpm to relieve the air entrainment. To provide additional supply, in late 2004, the TCPUD installed and operated an interim surface water treatment system for the treatment of surface water from Lake Tahoe. About the same time the interim surface water system was brought on line, the Crystal Way Well had begun to entrain air again. Significant recovery of the Crystal Way Well occurred following startup of the surface water system. This clearly indicates that the average annual system demand prior to the implementation of the surface water system was greater than the yield of the aquifer. Currently, the Crystal Way Well is sufficient to meet demands through the winter season. The TCPUD has operated the interim surface water treatment plant successfully to meet summer peak demands since 2004. The TCPUD 5-year CIP earmarks funds for planning, design, and construction of a permanent surface water treatment plant by 2012. TCPUD plans on running the interim surface water treatment system as necessary to meet peak summer demands until a permanent treatment facility is brought on line.

Figure 5-3 presents precipitation data for the Tahoe City area, based on information from the Western Regional Climate Center for the past 20 years. Average precipitation is 31.5” annually in the region. Single dry years and multiple dry years have occurred in the period from 1990-1992, 1994, 2001-2004, and 2007-2009. There has been little correlation between the static water levels in the Tahoe City wells and precipitation. During those dry periods, overall water production was significantly higher than it is today or is expected to be in the future. As the TCPUD has already experienced single dry and multiple dry years and provided substantially more water to it’s customers than it does currently or plans to in the future, TCPUD believes that there currently is sufficient supply to provide water during similar single dry and multiple dry years.

Figure 5.1 TC-2 Well Static Water Levels

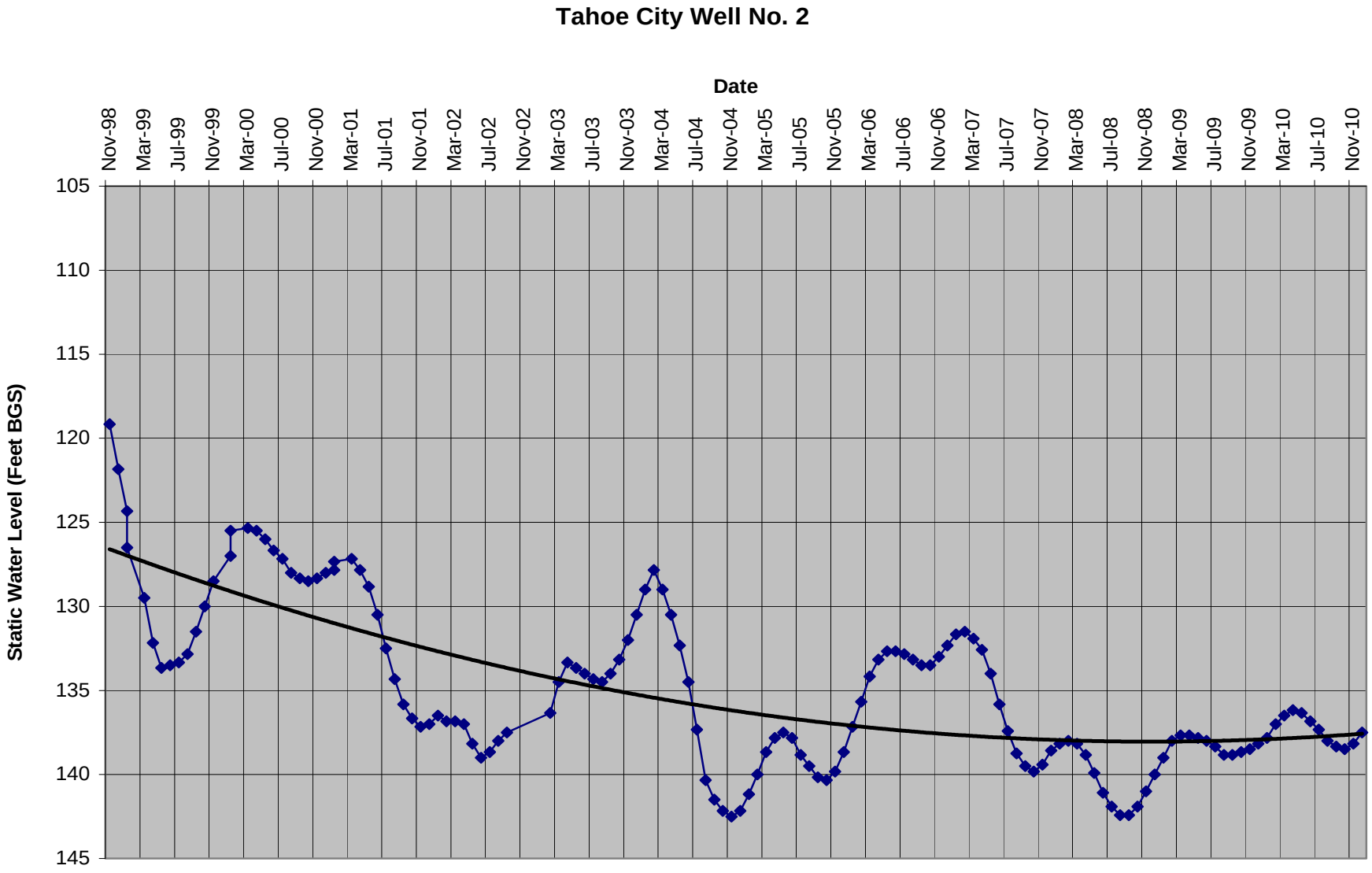
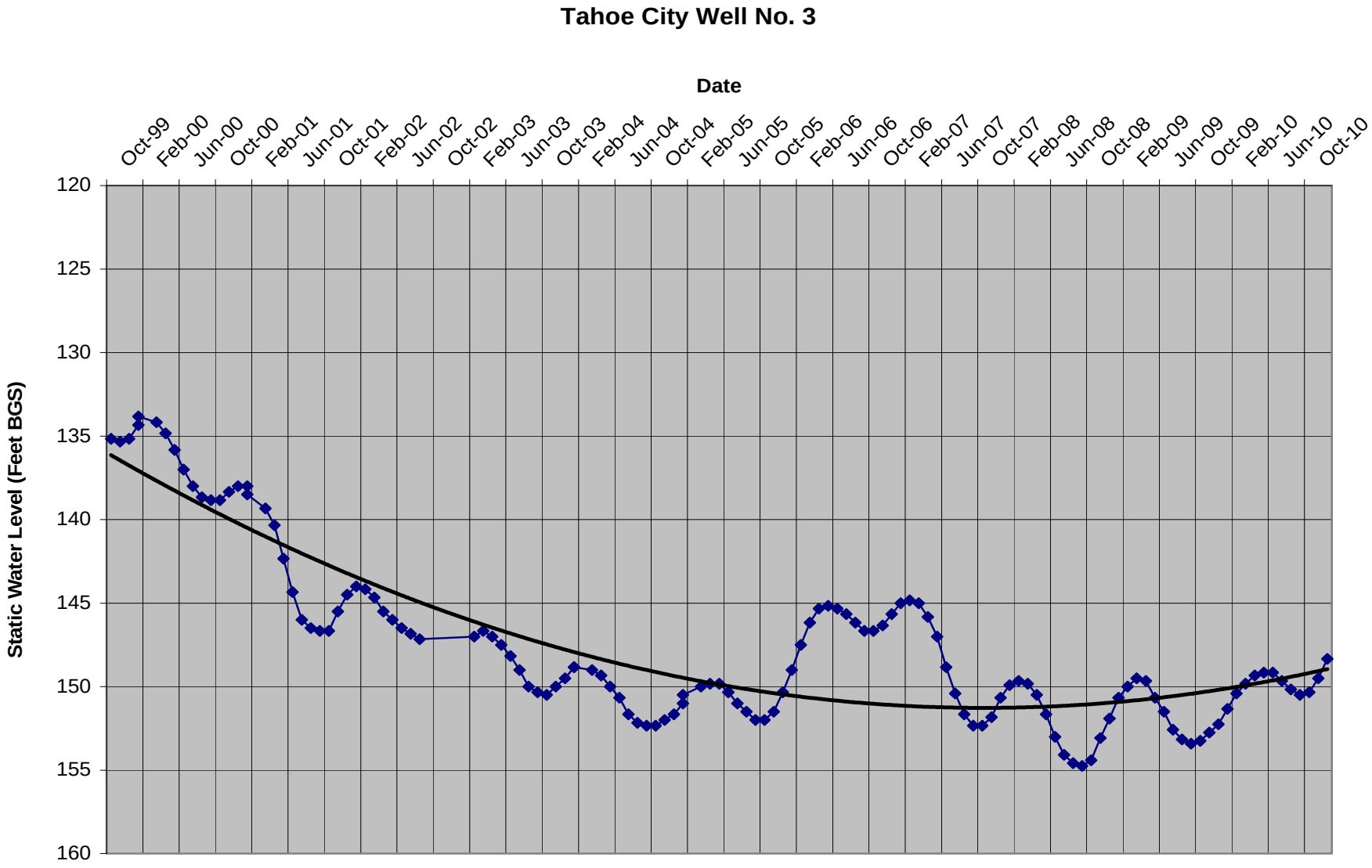


Figure 5.2 TC-3 Well Static Water Levels



TCPUD 2010 UWMP
Figure 5.3

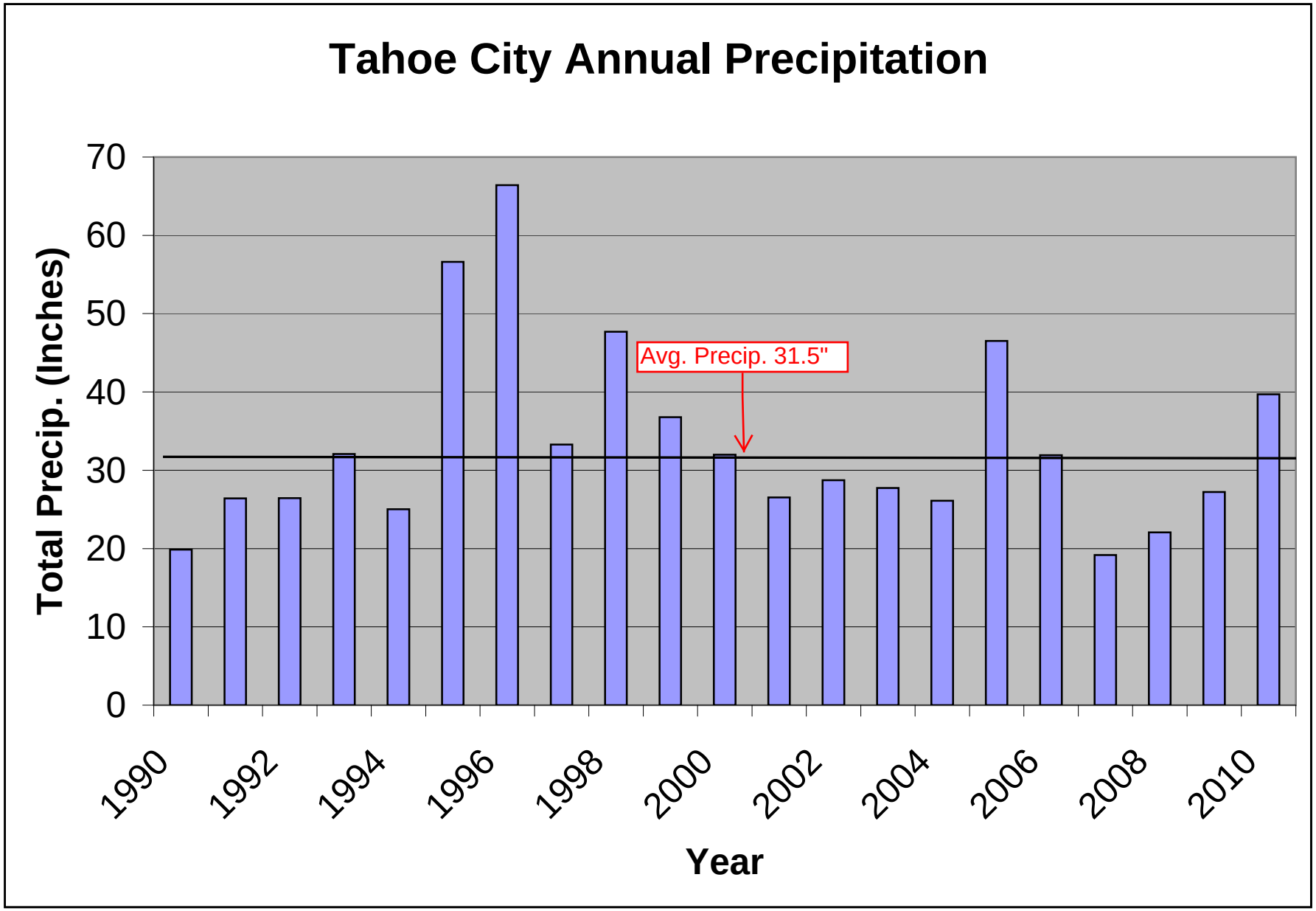


Table 5.1 Basis of Water Year Data TCPUD 2010 UWMP		
Water Year Type	Base Year(s)	Historical Sequence
Normal Water Year	2000	1990-2010
Single-Dry Water Year	2007	
Multiple-Dry Water Year	2007-2009	

5.2 WATER SHORTAGE CONTINGENCY PLAN

5.2.1 Background

Code Section 10632(a)-(i):

The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:

A. 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.

B. 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.

C. 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.

D. 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.

E. 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.

F. Penalties or charges for excessive use, where applicable.

G. *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.*

H. *A draft water shortage contingency resolution or ordinance.*

I. *A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.*

In accordance with Code Section 10632, this Section discusses regulations and restrictions on water use in the TCPUD service area during water shortages.

In 2009, the TCPUD adopted Ordinance 264 (Appendix C), to preserve water resources, reduce the risk and severity of water shortages when drought or natural disaster occurs and to establish a drought preparedness and response plan. Table 5.2 lists the phases of water restrictions that TCPUD adopted to deal with a water shortage.

An emergency water conservation plan is necessary to minimize the effect of the water shortages that can arise on short notice during natural disasters or drought conditions. Upon declaration of a Stage 2 or Stage 3 drought response, the General Manager shall be authorized to implement and enforce any or all of the drought response measures identified herein.

Drought Response Stages 2 and 3 will be declared by the Board of Directors. In emergency situations the General Manager may declare a Drought Response Stage 2 or 3 initially, to be followed up with Board of Directors' declaration as soon as reasonably possible. Each drought response stage will be triggered by specific conditions related to the operating capacities of the TCPUD's water sources and the water distribution system. Examples may include but not limited to severe local drought conditions, significant depletion of pumping capacity due to mechanical failure or aquifer depletion, major distribution system failures such as water or transmission main failure, water tank failure, natural disasters such as fire, weather or earthquake events, or long term power outages. The drought response stage chosen will vary on the severity of the situation.

Following the declaration of any drought response stage, the TCPUD will implement appropriate response actions. If emergency conditions warrant the rationing or emergency conservation of water, Owners will be notified through local media news releases, public postings and billing inserts. Implementation of Stage 2 or 3 may result in an increased level of monitoring by TCPUD's staff to ensure compliance. The District will continually monitor drought conditions and promptly recommend that the drought response stage level increase if conditions worsen. The General Manager will rescind Stage 2 or Stage 3 levels if warranted by improved conditions.

Table 5.2 Regulations and Restrictions on Water Use in the Event of a Water Shortage
TCPUD 2010 UWMP

Phase	Action
Stage I	• Owners shall not waste water and shall maintain all water service lines, from the point of delivery to the premises served, in good repair. Further, the Owner shall implement the following water conservation measures, under normal, non-emergency conditions: • Metering: Tiered Water Consumption Charges. Owners shall be assessed and pay a flat monthly water rate based upon size of water service as well as a charge for water consumption based upon a tiered billing structure, as identified in the current District water rate schedule. This billing structure is designed to encourage conservation, as the charge per thousand gallons of water consumed increases as water use increases. • Repair of Water Leaks Any leak in plumbing and / or irrigation systems shall be repaired when found, but in any case within ten (10) days of notice by the District to repair. • Water Runoff Use of potable water which results in flooding or runoff in gutters, streets or onto adjacent property is not allowed. • Vehicle Wash Automatic shutoff valves or nozzles will be used whenever a hose is used for cleaning vehicles. This subsection does not apply to any commercial car washing facility that utilizes a recycling system to capture or reuse water. Washing of vehicles is exempted where the health, safety and welfare of the public is dependent upon frequent vehicle cleanings, such as snow removal vehicles and garbage trucks. • Cleaning of Surfaces Automatic shutoff valves or nozzles will be used whenever a hose is used for cleaning or clearing walkways, patios, tennis courts, decks, driveways, parking areas or other improved areas, whether paved or unpaved. Unrestricted hoses may be used to alleviate immediate fire or sanitation hazards. • Construction Water. All water hoses used in connection with any construction activity shall be equipped with an automatic shutoff nozzle. • Fire Hydrant Use Permit A District Hydrant Use Permit must be obtained before use of any fire hydrant for any purpose other than fire suppression or emergency aid.

	Cont. Regulations and Restrictions on Water Use in the Event of a Water Shortage TCPUD 2010 UWMP
Stage II	• Designated Irrigation Days Established • New Construction Landscaping Notwithstanding any other provision of this ordinance, water used for irrigating landscaping for new construction shall be limited to new landscaping planted to comply with the Tahoe Regional Planning Agency's Best Management Practices (BMPs,) defensible space, or for any other reason, as follows: • Irrigation of Public Facilities Where it is in the interest of public health and safety or where facilities are open to the public, the General Manager may permit extended periods of irrigation of public facilities provided that: • Swimming Pool Filling. The complete filling with water of outdoor swimming pools is prohibited without written authorization by the General Manager. • All food service and drinking establishments will serve drinking water to their customers only upon request by the customers.
Stage III	• The use of water for other than domestic and commercial non-irrigation use is prohibited except irrigation of public facilities may be permitted.

In the event that Phase II is enforced or the shortage is expected to last longer than a few days, TCPUD may activate standby lake pumps. An emergency operations agreement has been established with the Department of Public Health (DPH) to allow the existing lake diversions to be used. Chlorination equipment with metering pumps would be installed on each of the intakes to meet DHS requirements. TCPUD keeps this equipment and hypochlorite solution in stock at all times. The lake intakes with the chlorination equipment can be activated in one day, if needed. The only service areas that do not have a standby lake intake is the Rubicon System and the Alpine Peaks System. If lake intakes are not available or functional, TCPUD would contract to have potable water hauled from a fully operational water system to storage tanks in the affected system. TCPUD keeps a file on sources of emergency generators, water tanks, and other equipment that could be needed in a water shortage emergency.

In addition, TCPUD's agreement with the North Tahoe Public Utility District allows TCPUD to discontinue service to North Tahoe, if necessary, thereby saving 150,000 to 162,000 gallons per day.

5.2.2 Enforcement

Violation or failure to comply with regulations or restrictions in the event of a water shortage could result in a loss of water service to the individual(s) or agency. Further enforcement language is presented in Ordinance 263, Appendix C.

5.2.3 Natural Disasters

In the event of a natural disaster or a threat to public health, TCPUD would coordinate its actions with the Placer and El Dorado County Public Health Departments and other relevant agencies. Disaster

response would be consistent with the Standardized Emergency Management System and the California State Office of Emergency Services' Guidance for California's Mutual Aid System.

5.2.4 Impact on Revenues and Expenditures

A significant reduction in consumption due to a water shortage event would not significantly impact TCPUD revenue. In 2010, only 19% of total revenue from water charges was received from consumption only. Expenditures related to a water shortage event are not anticipated to be impactful and would be absorbed by existing staff time and existing operational budgets.

5.2.5 Mechanism for Determining Reductions

As discussed in DMM3, the TCPUD can audit up to 11 DMA's thereby measuring any required reductions as frequently as necessary based on the water shortage event and location.

5.3 WATER QUALITY

Code Section 10634:

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.

5.3.1 Groundwater

In general, the groundwater quality is very good. Hardness ranges from 40 parts per million (ppm) to approximately 70 ppm as calcium carbonate. Groundwater quality of the District's current sources is not expected to have any significant effect on the water management strategies or water supply reliability during this period.

Arsenic:

The U.S. Environmental Protection Agency (USEPA) has promulgated new regulations regarding arsenic in drinking water supplies. The new arsenic regulations became effective January 23, 2006 and set the maximum concentration for arsenic at 10 parts per billion (ppb).

Table 5.3 presents 2010 sampling results for arsenic in TCPUD wells.

Table 5.3 Most Recent Water Quality Sampling Results for Arsenic
2010 UWMP TCPUD

Supply System	Arsenic Concentration (ppb) (2)
Tahoe City Main:	
Highlands Well No. 1	5.2
Highlands Well No. 2	2.5
Bunker Springs Bunker (TC-1)	Not in Service
Bunker Springs Lower (TC-2)	ND[2]
Bunker Springs Middle (TC- 3)	3.1
Tahoe Tavern Well	ND
McKinney/Quail:	
Crystal Way Well	ND
Rubicon:	
Rubicon No. 1 (Silvertip)	ND
Rubicon No. 2 (Lakeview)	ND
Rubicon No. 3 (Ridge)	ND
Alpine Peaks:	
Riley's Spring	ND

Notes:
1. ppb = parts per billion.
2. ND = contaminant was not detected above the reporting limit of 2.0 ppb.

From Table 5.2, the most recent water quality sampling of TCPUD wells did not detect the presence of arsenic in concentrations greater than the newly established maximum contaminant level (MCL) of 10 ppb. At this point in time, it does not appear that arsenic concentrations will affect water supply reliability.

Radon:

Preliminary announcements from USEPA have indicated that the maximum allowable radon level will likely be reduced from 4,000 picocuries per liter (pCi/L) to 300 pCi/L. The TCPUD is not currently required to monitor for radon; however, according to the 2002 Water Master Plan, radon has been detected in all wells of the Tahoe City Main System, the Rubicon System, the McKinney/Quail System (Crystal Way Well), and the Alpine Peaks System (Riley's Spring) at levels greater than the proposed MCL of 300 pCi/L. The proposed radon limit is under review and may be set a level higher than 300 pCi/L. In addition, the proposed radon limit has not been promulgated and no compliance dates have been set. Because of the wide range of regulatory alternatives, it is not possible to assess the impact radon limits will have on water supply management.

5.3.2 Surface Water

The high quality of Lake Tahoe surface water as a drinking water source has been proven over many decades. Prior to the Surface Water Treatment Rule (SWTR), many Utilities around Lake Tahoe used chlorinated, but unfiltered Lake Tahoe water as a primary source. Following the implementation of the SWTR many Utilities converted to groundwater, however, many still use Lake Tahoe as a primary source. Modern filtration techniques are very effective at treating Lake Tahoe water to meet the most current Enhanced SWTR regulations. However, several Utilities still maintain filtration avoidance waivers and serve unfiltered Lake Tahoe water today. Other potential water quality issues associated with Lake Tahoe Surface water include Radon, as discussed above. Water quality of Lake Tahoe is not expected to have any significant effect on the water management strategies or water supply reliability during this period.

SECTION 6 DEMAND MANAGEMENT MEASURES

6.1 BACKGROUND

Code Section 10631(f),(g):

A plan shall be adopted in accordance with this chapter and shall do all of the following:

…(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of 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.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) 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.

(4) 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.

(g) 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 non-economic 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.

The following discussion is intended to satisfy the requirements under Code Section 10631(f) and (g) for a discussion of Demand Management Measures (i.e. water conservation measures) implemented by TCPUD. TCPUD has estimated the ongoing cost of the water conservation DMM's at approximately $15,000 per year, plus the cost of the leak detection program discussed below.

DMM-1. Water Survey Programs for Single-family Residential and Multi-family Residential Customers. During previous drought years, TCPUD performed audits on several multi-family units. As a general service to its customers, TCPUD provides conservation recommendations upon request from single-family residences and multiply-family residences. In addition, procedures require that a survey be performed prior to rebate processing.

DMM-2. Residential Retrofits. TCPUD requires the installation of water conserving fixtures for all new construction and remodeling. This applies to toilets, showerheads, and faucets. This requirement is included in the TCPUD's Ordinance 264. The following excerpt from Section 6.22 pertains to new construction and remodeling:

> WATER CONSERVATION – Pursuant to Section 1010 – Water Conservation of the 1991 Uniform Plumbing Code (UPC), the maximum discharge flow rates for plumbing fixtures fittings shall be in accordance with applicable standards listed in Chapter 2 of the UPC. In addition, flush volumes for low consumption and water saver water closets and urinals shall be in accordance with applicable standards listed in Chapter 2 of the UPC. All plumbing fixtures for new construction shall meet the following low flow requirements as per Water Conservation Ordinance No. 264.
>
> Toilets — 1.3 gallon/flush (gpf) or less
>
> Showers — 2.5 gallon/minute (gpm) or less
>
> Faucets — 2.2 gpm or less

Water pressure shall not exceed 60 psi within residential or non-residential structures. Pressure will be checked at final inspection of new construction, reconstruction and remodel to ensure compliance.

TCPUD has implemented a Water Conservation Rebate Program. This includes an appliance program, an irrigation efficiency program and a high efficiency toilet program. These programs and descriptions discussed further below are in the Appendix, Attachment D.

DMM-3. System Water Audits, leak detection, and repair. TCPUD performs monthly and annual water audits of its system using AWWA guidance from Manual M36 and the AWWA Water Loss Control Committee (WLCC) Free Water Audit Software v4.2. The TCPUD audits all water service areas monthly which are broken down into eleven District Metered Areas (DMA's). TCPUD has an active leak detection and line repair program. Any reported or suspected visible leaks are verified by testing the leaking water for chlorine residual. The leak is then located using sonic equipment, excavated, and repaired. Annual leak surveys are provided by an outside consultant and consist of ten days of fieldwork. The emphasis is on areas of historical leakage as well as areas of steel pipe in the water system. On the average approximately 30-60 gallons per minute of leakage are detected and corrected annually. The 2002 Water Master Plan recommended a steel pipe replacement program to target suspected old and leaking pipes. Pipe replacement is often prioritized according to the results of leak detection surveys. TCPUD has begun leak detection surveys (see above) with good results and will continue to actively search for water system leaks. Since 2000 the District has replaced over 10,000 LF of steel water main.

Customer Leak Detection: The TCPUD also uses its automated meter reading (AMR) system to notify customers of potential customer side leaks. The TCPUD AMR system is capable of detecting usage indicative of a leak on the customer side and set's an electronic flag to indicate a potential customer leak. This flag is downloaded from the AMR system into the TCPUD accounting/billing program and, if the flag is present, provides the customer with a distinct leak notification on their monthly billing statement.

TCPUD has budgeted $10,000 each year for leak detection investigations.

DMM-4. Metering with commodity rates for all new connections and retrofit of existing connections. The TCPUD installed 100% of the water meters on all residential services, commercial services and institutional/governmental services within their service area. As stated above, the installation of meters has resulted in a decline in water production due to customer side leak detection and conservation through consumption billing.

Large landscape conservation programs and incentives. TCPUD has implemented a Water Conservation Rebate Program. This includes an appliance program, an irrigation efficiency program and a high efficiency toilet program. These programs and descriptions are in the Appendix, Attachment E.

DMM-5. High-efficiency washing machine rebate programs. TCPUD has implemented a Water Conservation Rebate Program. This includes an appliance program, an irrigation efficiency program and a high efficiency toilet program. These programs and descriptions are in the Appendix, Attachment E.

DMM-6. Public Information programs. TCPUD provides public education and information programs on water conservation through a number of means:

- TCPUD provides lists of recommended drought resistant plants to the local nurseries and flyers suggesting the use of drip irrigation systems versus overhead spray irrigation systems.
- TCPUD includes articles on water conservation in its spring quarterly newsletter to customers discouraging the unnecessary watering of natural vegetation.
- TCPUD has distributed information on the plumbing code revisions that mandate water-conserving fixtures in new buildings and additions.
- TCPUD mails letters of "notice to repair" to specific homeowners when a water leak on their service line is found and timely repair is not performed.
- The presence of the leak indicator on a customer meter is provided on customer's monthly billing.
- TCPUD mails an annual newsletter and annual Consumer Confidence Report to all its customers. The annual newsletter typically contains suggestions for water conservation.
- TCPUD representatives occasionally attend the homeowners' association meetings within the service area and always encourage homeowners to participate and support water conservation efforts.
- TCPUD provides information on water conservation programs and practices to local service organizations such as Rotary International, Resort Associations, Kiwanis, and others upon request.

The implementation of this DMM is ongoing and no measure of effectiveness has been developed to quantify water savings. Costs are included in the overall $15,000 TCPUD conservation budget.

DMM-7. School education programs. The TCPUD has contracted with the Sierra Watershed Education Partnership (SWEP) to provide a conservation, education and outreach program in the schools. Their goal is to develop a youth led service learning project within the service area. The TCPUD's contact and scope of work with SWEP has been included in the Appendix, Attachment F.

DMM-8. Conservation programs for commercial, industrial, and institutional accounts. TCPUD provides audits and conservation recommendations in response to requests from commercial businesses, and during rebate requests. TCPUD staff usually reviews

commercial conservation efforts during any routine inspection, whether it is for sewer or water issues. Cost of this DMM is included in the general TCPUD conservation budget.

DMM-9. Wholesale agency programs. TCPUD is a water retailer, not a water wholesaler, and therefore this DMM is not applicable.

DMM-10. Conservation pricing. Consumption billing began in 2009 when all residential service meters were installed. An increasing block rate structure has been adopted by the Board. A breakdown of the 2011 billing rates is included in the Appendix, Attachment G.

DMM-11. Water conservation coordinator. TCPUD has designated an existing employee as the Water Conservation Coordinator. The Water Conservation Coordinator's certifications have been included in the Appendix, Attachment H.

DMM-12. Water waste prohibitions. TCPUD has the authority to discontinue water service to those connections considered "chronic water wasters". The connections are subject to a standard fee to re-initiate service. This authority is used only during critical periods of the year. This DMM does not cost TCPUD much to maintain and is included in the overall conservation budget.

DMM-13. Residential ultra-low-flush toilet replacement programs. TCPUD has implemented a Water Conservation Rebate Program. This includes an appliance program, an irrigation efficiency program and a high efficiency toilet program. These programs and descriptions are in the Appendix, Attachment E.

In conclusion, all the DMM's have been implemented to varying degrees, and have contributed to the success of the water conservation efforts. This is evidenced by the substantial decline in water demands after the installation of meters, initiation of the increasing block rate structure, and leak detection programs made possible by customer metering.

APPENDIX

Attachment A

(Notice of Public Hearing)

NOTICE OF PUBLIC REVIEW PERIOD AND PUBLIC HEARING
ON THE TAHOE CITY PUBLIC UTILITY DISTRICT
2010 URBAN WATER MANAGEMENT PLAN

Notice is hereby given that the Board of Directors of the Tahoe City Public Utility District (TCPUD) is considering the adoption of an Urban Water Management Plan. A copy of the 2010 Urban Water Management Plan (Plan) is available at the TCPUD office and on the TCPUD's website, at the address below.

On **July 1, 2011**, the TCPUD Board of Directors will hold a public hearing during a special board meeting at the TCPUD Board Room located at 221 Fairway Drive, Tahoe City, CA. At **8:10 AM**, or as soon thereafter as possible, the TCPUD Board of Directors will receive public comment on the Plan.

Interested parties are invited to express their views during the public hearing in written or oral form, or to submit written views prior to the time of the public hearing at the TCPUD offices, by regular mail at the address below or by email to: gcharlton@tcpud.org

Notice is further given that upon completion of said public hearing, the TCPUD Board of Directors will be adopting the Plan as prepared or modified.

Ginger Charlton, District Clerk

TAHOE CITY PUBLIC UTILITY DISTRICT
221 Fairway Drive
P.O. Box 5249
Tahoe City, CA 96145
(530) 583-3796

http://www.tahoecitypud.com/

SIERRA SUN

Serving the Truckee Community since 1869

RECEIVED

JUN 29 2011

TAHOE CITY
P.U.D

Proof and Statement of Publication

P.O. Box 1888
Carson City, NV 89702
Phone (775) 881-1201
Fax (775) 887-2408

Account Number: #1064263

Legal Account
Tahoe City Public Utility District
PO Box 5249
Tahoe City, CA 96145
Attn: Jess Weigel

Melissa Saavedra says:
That (s)he is a legal clerk of the **SIERRA SUN**, a newspaper published Wednesday & Friday at Truckee, in the State of California.

Public Hearing
July 1, 2011

Ad# 6643792

of which a copy is hereto attached, was published in said newspaper for the full required period of **2 times** commencing on **June 15, 2011,** and ending on **June 22, 2011,** all days inclusive.

Signed: _____

STATEMENT:

Date	Amount	Credit	Balance
6/22/11	$141.92	$ 0.00	$141.92

NOTICE OF PUBLIC REVIEW PERIOD AND PUBLIC HEARING ON THE TAHOE CITY PUBLIC UTILITY DISTRICT 2010 URBAN WATER MANAGEMENT PLAN

Notice is hereby given that the Board of Directors of the Tahoe City Public Utility District (TCPUD) is considering the adoption of an Urban Water Management Plan. A copy of the 2010 Urban Water Management Plan (Plan) is available at the TCPUD office and on the TCPUD's website, at the address below.

On **July 1, 2011,** the TCPUD Board of Directors will hold a public hearing during a special board meeting at the TCPUD Board Room located at 221 Fairway Drive, Tahoe City, CA. At **8:10 AM,** or as soon thereafter as possible, the TCPUD Board of Directors will receive public comment on the Plan.

Interested parties are invited to express their views during the public hearing in written or oral form, or to submit written views prior to the time of the public hearing at the TCPUD offices, by regular mail at the address below or by email to: gcharlton@tcpud.org Notice is further given that upon completion of said public hearing, the TCPUD Board of Directors will be adopting the Plan as prepared or modified.

Ginger Charlton, District Clerk

TAHOE CITY PUBLIC UTILITY DISTRICT
221 Fairway Drive
P.O. Box 5249
Tahoe City, CA 96145
(530) 583-3796

http://www.tahoecitypud.com/

Pub: June 15, 22, 2011 **Ad#6643792**

Attachment B

(Adopting Resolution)

RESOLUTION No. 11-19
OF
TAHOE CITY PUBLIC UTILITY DISTRICT
ADOPTING THE 2010 URBAN WATER MANAGEMENT PLAN

WHEREAS, the California Legislature enacted Assembly Bill 797 (Water Code Section 10610 et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet of water annually, prepare an Urban Water Management Plan (UWMP), the primary objective of which is to plan for the conservation and efficient use of water; and

WHEREAS, the Tahoe City Public Utility District (TCPUD) is an urban water supplier of water providing water to over 3,000 customers; and

WHEREAS, the UWMP shall be periodically reviewed at least once every five years, and that the TCPUD shall make any amendments or change to its UWMP which are indicated by the review; and

WHEREAS, the TCPUD has therefore, prepared and made available for public review a draft UWMP, and a properly noticed public hearing regarding the UWMP was held by the TCPUD on July 1, 2011; and

WHEREAS, the UWMP must be adopted after public review and hearing by July 1, 2011, and filed with the California Department of Water Resources within thirty days of adoption; and

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the TCPUD, as follows:

1. That the above recitations are true and correct.

2. That the 2010 Urban Water Management Plan is adopted in substantial form as presented.

PASSED AND ADOPTED by the Board of Directors at a meeting duly called and held within the TCPUD on the 1st day of July, 2011 by the following roll call vote:

AYES: Wilkins; Henrikson; Friedman; Reinkens; Treabess
NAYES: None
ABSENT: None

TAHOE CITY UTILITY DISTRICT

Ron Treabess

Ron Treabess, President

ATTEST:

Terri Viehmann

Terri Viehmann, District Clerk

Attachment C

(Ordinance 264)

Tahoe City Public Utility District

Ordinance 264

Water Conservation
and
Drought Response Standards

Adopted June 23, 2009

General Manager
Cindy Gustafson

Board of Directors
Erik Henrikson, President
Dan Wilkins, Vice President
Lou Reinkens
Ron Treabess
Judy Friedman

Section 1

General Policies Governing Water Conservation and Drought Response Standards

1.01 GENERAL

Ordinance 264 of the Tahoe City Public Utility District (hereinafter referred to as "District,") establishes water conservation requirements and drought response standards.

1.02 PURPOSE

The purpose of this Ordinance is to preserve water resources, reduce the risk and severity of water shortages when drought or natural disaster occurs and to establish a drought preparedness and response plan. The prevention of water waste is an environmentally sound way to protect, conserve and prevent unacceptable diminution of the District's water supplies, while minimizing costs to the District and expense to its customers.

This Ordinance establishes drought response stages and measures to ensure that the water resources available to the District are put to the maximum beneficial use, that unreasonable use or unreasonable method of use is prevented, and that conservation of water is accomplished in the interest of District customers and for the health, safety and welfare of the public.

This Ordinance provides for the Board of Directors to establish, when funds are available, a rebate program for District water customers to encourage conservation and reduce consumer costs.

1.03 WATER WASTE PROHIBITED

No Owner shall waste water or cause, use or permit the use of water received from the District for residential, commercial, industrial, governmental or any other purpose in any manner contrary to any provision in this Ordinance.

Mandatory drought response measures shall be implemented based upon the declaration of drought response stages. No Owner shall use water in quantities in excess of the use permitted by the conservation stage in effect pursuant to this Ordinance.

1.04 APPLICATION

This Ordinance applies to all Owners, customers and users who occupy or control water use on any premise within the District's water service area and to those water users and their customers whose parcels are within or outside of District boundaries and who receive service through contract with the District.

1.04.1 Contracted Sales

When the District enters into a contract for the sale of water to a public or private water system or entity, within or outside District boundaries, the system and its customers shall comply with all conditions contained herein. It shall be the responsibility of the system owner or the person signatory to the contract to ensure that all water conservation conditions are satisfied by their customers.

1.04.2 Owner Defined

The term “Owner” as used in this Ordinance, shall mean parcel owner, customer, water user, customer under contract or their water customers.

1.05 AUTHORITY

Nothing contained within this Ordinance shall be construed to limit the authority of the Board of Directors to amend, supplement or change this Ordinance or any rules and regulations applicable thereto at any time.

1.06 EFFECTIVE DATE

This Ordinance shall become effective 30 days from date of adoption, and the rates and schedules specified shall become applicable with the billing cycle following the effective date.

1.07 PRIOR ORDINANCES REVOKED

To the extent that any of the existing and prior ordinances of the District applicable to its water system are inconsistent herewith, all such prior water ordinances shall be deemed revoked upon this Ordinance becoming effective to the extent that they are inconsistent.

1.08 EXISTING CHARGES

Existing fees and charges in effect when this Ordinance is adopted shall remain in effect unless specifically changed by this Ordinance.

1.09 INTERPRETATION

The General Manager of the District is charged with interpretation, regulation and enforcement of the provisions of this Ordinance.

1.10 ADMINISTRATION

The provisions of this Ordinance shall be administered and enforced by the District through the General Manager, who may delegate such enforcement to one or more employees or contractors of the District.

1.11 DETERMINATION OF CONSERVATION STAGE

The District operates four separate water systems – Tahoe City, Alpine, McKinney-Quail and Rubicon. Stage 1 applies to water served from all water systems. Stage 2 and Stage 3 Drought response stages will be determined based upon each water system’s available supply.

Drought Response Stages 2 and 3 shall be called independently by water system, and shall be based upon supply and demand of available water within each system. Drought Response Stages 2 and 3 shall be determined by the Board of Directors.

1.12 VIOLATIONS

In order to protect the health, safety and welfare of the community, the District shall serve any Owner found to be violating any provision of this Ordinance with written notice, in accordance with Section 3, stating the nature of the violation and providing a reasonable time limit for the

satisfactory correction. If a violation is not corrected within the time limit prescribed, the General Manager shall exercise their authority to disconnect the water service from the District's system based upon the severity of the violation. Disconnect and reconnect fees shall be assessed per the District's fee schedule.

1.13 REQUESTS FOR EXEMPTION OR DEVIATION

All requests for exemption or deviation from these standards shall be submitted, in writing, by the Owner to the General Manager. The Owner must obtain written permission and not assume that permission will be forthcoming for exemptions or deviations. The District will charge a fee to process the exemption request in accordance with the District fee schedule.

The General Manager may temporarily or permanently exempt Owners from the provisions of this Ordinance, or impose reasonable conditions in lieu of compliance, if the General Manager finds that any of the following conditions exist:

1.13.1 Serious Economic Hardship

The requirements would cause an unnecessary and undue economic hardship upon the Owner, threatening the Owner's primary source of income as an individual or a business.

1.13.2 Adverse Impact on Health and Safety

Strict compliance would create an emergency condition, as determined by the Board, adversely affecting the health, protection or safety of the Owner or the public.

1.14 APPEALS

Any person who is dissatisfied with any determination made under this Ordinance may at any time within 30 days after such determination make an appeal. The first appeal will be made to the General Manager. Should the applicant be dissatisfied with the decision of the General Manager, a subsequent appeal may be made to the Board of Directors within 30 days of the General Manager's decision.

1.14.1 Appeal to General Manager

Any person who is dissatisfied with any determination made under this Ordinance may at any time within 30 days after such determination, appeal to the General Manager by giving written notice to the General Manager and to the Clerk of the Board of Directors. The appeal shall set forth the events and circumstances leading to the appeal, the nature of the ruling or interpretation from which relief is sought, the nature of the impact of the ruling on the appellant's property or business, together with any other reasons for the appeal.

The General Manager shall investigate the matter appealed and shall make a written decision, which shall be mailed to the appellant within 30 days of receipt of the appeal. If the dispute involves an amount of charges, the appellant shall pay the amount disputed in full when the charges are due. Any charge paid under protest will be refunded to the appellant should the General Manager determine that the charges were wrongfully made.

1.14.2 Appeal to Board of Directors

Any person who is dissatisfied with any determination made by the General Manager may at

any time within 30 days after such determination, appeal to the Board of Directors by giving written notice to the Manager and to the Clerk of the Board of Directors. The appeal shall set forth the events and circumstances leading to the appeal, the nature of the ruling or interpretation from which relief is sought, the nature of the impact of the ruling on the appellant's property or business, together with any other reasons for the appeal.

The Manager shall transmit to the Board of Directors a report upon the matter appealed. The Board of Directors shall cause written notice to be given at least ten (10) days prior to the time fixed for hearing to all persons affected by such application of the time and place fixed by the Board of Directors for hearing such appeal. The Board shall consider all testimony and make a decision, which shall be mailed to the appellant within 30 days of the date of the Board action. The Board of Directors may, at any time, upon its own motion, revise any determination made by the Manager.

If the dispute involves an amount of charges, the appellant shall pay the amount disputed in full when the charges are due. Any charge paid under protest will be refunded to the appellant should the Board of Directors determine that the charges were wrongfully made.

1.15 SEVERABILITY

If any section, paragraph, sentence, clause or phrase of this Ordinance or any part thereof is for any reason held to be invalid, such decision shall not affect the validity of the remaining portions of this Ordinance or any part thereof. The Board hereby declares that it would have passed each section, paragraph, sentence, clause or phrase thereof, irrespective of the fact that any one or more sections, paragraphs, sentences, clauses or phrases be declared invalid.

Section 2

Water Conservation
Drought Response Stages

2.01 WATER CONSERVATION REQUIREMENTS DROUGHT RESPONSE STAGE 1 - NORMAL CONDITIONS

Owners shall not waste water and shall maintain all water service lines, from the point of delivery to the premises served, in good repair. Further, the Owner shall implement the following water conservation measures, under normal, non-emergency conditions:

2.01.1 Metering: Tiered Water Consumption Charges

Owners shall be assessed and pay a flat monthly water rate based upon size of water service as well as a charge for water consumption based upon a tiered billing structure, as identified in the current District water rate schedule. This billing structure is designed to encourage conservation, as the charge per thousand gallons of water consumed increases as water use increases.

2.01.2 Repair of Water Leaks

Any leak in plumbing and / or irrigation systems shall be repaired when found, but in any case within ten (10) days of notice by the District to repair.

2.01.3 Water Runoff

Use of potable water which results in flooding or runoff in gutters, streets or onto adjacent property is not allowed.

2.01.4 Vehicle Wash

Automatic shutoff valves or nozzles will be used whenever a hose is used for cleaning vehicles. This subsection does not apply to any commercial car washing facility that utilizes a recycling system to capture or reuse water. Washing of vehicles is exempted where the health, safety and welfare of the public is dependent upon frequent vehicle cleanings, such as snow removal vehicles and garbage trucks.

2.01.5 Cleaning of Surfaces

Automatic shutoff valves or nozzles will be used whenever a hose is used for cleaning or clearing walkways, patios, tennis courts, decks, driveways, parking areas or other improved areas, whether paved or unpaved. Unrestricted hoses may be used to alleviate immediate fire or sanitation hazards.

2.01.6 Construction Water

All water hoses used in connection with any construction activity shall be equipped with an automatic shutoff nozzle.

2.01.7 Fire Hydrant Use Permit

A District Hydrant Use Permit must be obtained before use of any fire hydrant for any purpose other than fire suppression or emergency aid.

2.01.8 Water Pressure

Water pressure shall not exceed 60 psi within residential or non-residential structures. Pressure will be checked at final inspection of new construction, reconstruction and remodel to ensure compliance.

2.01.9 Low-Flow Plumbing Fixtures

a) Residential Units, Apartments, and Condominiums
Residential New Construction or Complete Reconstruction

Low-flow fixtures are required in all residential structures that are subject to the new construction or tear down/rebuild District permit process, as follows:

i. Showerheads must be 2.5 gpm or less,
ii. Toilets must be ultra low-flow (ULFT) or high-efficiency (HET)
iii. Dual flush toilets qualify as HET
iv. Faucets must be 2.2 gpm or less

b) Residential Units, Apartments, and Condominiums
Residential Remodel or Retrofit

Where a residential structure is subject to the District's remodel permit process, all existing showerheads, toilets and faucets within the remodel area of the residential unit must be replaced with low-flow showerheads, ULFTs or HETs.

c) Commercial Structures
New Construction or Complete Reconstruction

Low-flow fixtures are required in all new or completely reconstructed commercial structures that are subject to the District permit process, as follows:

i. Showerheads must be 2.5 gpm or less
ii. Toilets must be ultra low-flow (ULFT) or high-efficiency (HET)
iii. Dual flush toilets qualify as HET
iv. Faucets must be 2.2 gpm or less

d) Commercial Retrofit

Where a commercial structure is subject to the District's permit process, all existing showerheads, toilets and faucets within the unit being remodeled must be replaced with low-flow showerheads, ULFTs or HETs. Units within a multi-unit commercial structure that are not being remodeled are not subject to being retrofit.

2.01.10 Landscape Irrigation

a) Winterization of Irrigation Systems

Operation of irrigation systems shall be discontinued and properly winterized by November 1st every year or earlier depending on temperatures.

b) Landscape Irrigation Controls on New Construction Irrigation Systems

Any new irrigation systems installed, in conjunction with new construction or

complete reconstruction, within the District must be equipped with rain sensing devices that will halt irrigation after a specified rainfall, and/or moisture sensors that use a probe in the soil to monitor soil water content, and/or freeze sensors that turn off sprinkler valves when the temperature drops below a preset level. These devices must be approved by the District as to number, type and settings.

c) State Model Landscape Ordinance

All residential and commercial new construction shall conform with the requirements of the State of California Model Landscape Ordinance, Title 23, Division 2, California Code of Regulations, Chapter 2.7 or applicable local ordinances superseding the State ordinance.

2.01.11 Restrictions on Irrigation during Times of Day, Precipitation or Low Temperatures

Landscaping, lawns and open ground must not be watered: **(1)** between the hours of 9:00 AM and 9:00 PM, **(2)** at any time while it is raining or snowing and/or **(3)** where the air temperature is less than 40 degrees Fahrenheit.

2.01.12 Visitor-Serving Facilities

In order to promote public awareness of the need to conserve water and not waste water, the owner and manager of each hotel, motel, restaurant, convention and other visitor-serving facility shall display placards or decals provided by the District in places visible to all customers.

2.01.13 Public Entities

In order to promote public awareness of the need to conserve water and not waste water, all public entities shall display placards or decals, provided by the District, in places visible to all customers.

2.01.14 Indiscriminate Use

Owners shall not use water in a manner that is wasteful and without reasonable purpose.

2.01.15 Exceptions

The provisions of this section are not applicable to the uses of water which are necessary to protect public health and safety or for essential governmental services, such as police, fire and other similar emergency services.

2.02 DECLARATION, IMPLEMENTATION AND TERMINATION OF DROUGHT RESPONSE STAGES 2 AND 3

An emergency water conservation plan is necessary to minimize the effect of the water shortages that can arise on short notice during natural disasters or drought conditions. Upon declaration of a Stage 2 or Stage 3 drought response, the General Manager shall be authorized to implement and enforce any or all of the drought response measures

identified herein.

Drought Response Stages 2 and 3 will be declared by the Board of Directors. In emergency situations the General Manager may declare a Drought Response Stage 2 or 3 initially, to be followed up with Board of Directors' declaration as soon as reasonably possible. Each drought response stage will be triggered by specific conditions related to the operating capacities of District water sources and the water distribution system. Examples may include but not limited to severe local drought conditions, significant depletion of pumping capacity due to mechanical failure or aquifer depletion, major distribution system failures such as water or transmission main failure, water tank failure, natural disasters such as fire, weather or earthquake events, or long term power outages. The drought response stage chosen will vary on the severity of the situation.

Following the declaration of any drought response stage, the District will implement appropriate response actions. If emergency conditions warrant the rationing or emergency conservation of water, Owners will be notified through local media news releases, public postings and billing inserts. Implementation of Stage 2 or 3 may result in an increased level of monitoring by District staff to ensure compliance.

The District will continually monitor drought conditions and promptly recommend that the drought response stage level increase if conditions worsen. The General Manager will rescind Stage 2 or Stage 3 levels if warranted by improved conditions.

2.03 WATER CONSERVATION REQUIREMENTS DROUGHT RESPONSE STAGE 2 – SIGNIFICANT WATER SHORTAGE

In addition to Drought Response Stage 1 requirements, Stage 2 requires that:

2.03.1 Designated Irrigation Days Established

a) Properties with street addresses that end in an even number may irrigate only on Monday, Wednesday and Friday; properties with street addresses ending in an odd number may irrigate only on Sunday, Tuesday and Thursday. There will be no irrigation permitted on Saturday. An individual irrigation zone in a property's irrigation system shall not irrigate more than 45 minutes per day, unless the zone is irrigated exclusively by drip or other low-flow irrigation systems.

b) Irrigation exclusively utilizing drip systems shall be exempt from designated irrigation days.

2.03.2 New Construction Landscaping

Notwithstanding any other provision of this ordinance, water used for irrigating landscaping for new construction shall be limited to new landscaping planted to comply with the Tahoe Regional Planning Agency's Best Management Practices (BMPs,) defensible space, or for any other reason, as follows:

a) Newly planted sod will be exempt for forty-five (45) days from the date it was installed.

b) Seeded lawns, whether by hydro-seed or other means, will be exempt for sixty (60) days from the date of application.

c) Bedding plants, including annuals and perennials, will be exempt for fifteen (15) days from the date of planting.

d) The property owner, or his/her designee, must notify the District verbally or in writing to obtain an exemption for the establishment of new vegetation as outlined above.

2.03.3 Irrigation of Public Facilities

Where it is in the interest of public health and safety or where facilities are open to the public, the General Manager may permit extended periods of irrigation of public facilities provided that:

a) A hand-held hose with an automatic shut-off is used, or

b) A hand-held, faucet filled bucket of five (5) gallons or less is used, or

c) A drip or low-flow irrigation system is used, or

d) Daytime use of public facilities prevents irrigation of all zones on the designated days listed under 2.03.1(a).

2.03.4 Swimming Pool Filling

The complete filling with water of outdoor swimming pools is prohibited without written authorization by the General Manager.

2.03.5 Food Service and Drinking Establishments

All food service and drinking establishments will serve drinking water to their customers only upon request by the customers.

2.04 WATER CONSERVATION REQUIREMENTS DROUGHT RESPONSE STAGE 3 – WATER SHORTAGE EMERGENCY

A Stage 3 drought response is triggered by deterioration in local water system indicators in conjunction with a drought status above normal for the Lake Tahoe Basin, a failure of key water system components, and/or a failure to significantly reduce water demand in Stage 2.

During Stage 3, Drought Response Stages 1 and 2 restrictions apply and the Board may designate specific areas for further restrictions including, but not limited to the following:

2.04.1 Prohibition of Water Use Except for Domestic and Commercial Non-

Irrigation Use
The use of water for other than domestic and commercial non-irrigation use is prohibited except irrigation of public facilities may be permitted pursuant to Section 2.03.3.

Section 3
Violations

3.01 NOTICE OF VIOLATION

If any person fails or refuses to comply with the provisions of this Ordinance, the General Manager or the manager's designee shall provide the person with a written notice of the violation and an opportunity to correct the non-compliance. The written notice will:

a) Be posted or presented at the site of the noncompliance
b) Be mailed to the property owner
c) State the time, date and place of the violation
d) Provide a general description of the violation
e) State the means to correct the violation
f) State a date by which correction is required
g) State the possible consequences of failing to correct the violation

If the violation is not corrected to the District's satisfaction within the time frame specified, the District may restrict the water service to the property or disconnect the service. In addition to correcting the violation, the Owner will be billed administrative fees on their account.

3.02 PROCEDURES

3.02.1 First Violation

Following adoption of this Ordinance, first violations will result in a friendly reminder in the form of a notice posted on or near the front door, personal contact with the customer, a phone call and/or a letter advising the Owner of the violation, in accordance with Section 3.01 a through g.

3.02.2 Second Violation

For a second violation within one calendar year, the Owner will be notified in writing. If the correction is not made within ten (10) to thirty (30) days of the District's notice to the Owner (based upon severity of the violation,) an administrative fee will be assessed in accordance with the District fee schedule. The fee shall be added to the Owner's water service charges at the property where the violation occurred. If not corrected within thirty (30) days, a flow-restrictor may be installed by the District.

3.02.3 Third Violation

For a third violation within one calendar year, the Owner will be notified in writing. An administrative fee in accordance with the District's fee schedule will be added to the Owner's water service charges at the property where the violation occurred. If not corrected within ten (10) days of written notice, a flow-restricting device will be installed on the Owner's service connection, and the costs associated with the installation and removal will be billed on the Owner's monthly water billing.

3.02.4 Fourth Violation

For the fourth and subsequent violations within one calendar year, an administrative fee in accordance with the District's fee schedule shall be added to the Owners' water service charges at the property where the violation occurred. In addition, a flow-restricting device will be installed on the Owner's service connection, and the costs associated with the installation and removal will be billed to the Owner.

If not corrected within ten (10) days of written notice, the District may discontinue the Owner's water service at the property where the violation occurred in accordance with District procedures. Reconnection shall only be permitted when there is reasonable protection against future violations, as determined by the District.

3.03 ENFORCEMENT COSTS

The District may correct any violation of this Ordinance and bill the Owner for costs and expenses in enforcing the provisions of this Ordinance, including staff time for investigation and monitoring for compliance, if the Owner refuses to comply. Charges shall be added to the Owner's bill for the property where the enforcement costs were incurred. The District may also take such action as may be allowed by statute.

3.04 TERMINATION OF SERVICE

Failure to correct the violation may result in termination of water service to the parcel on which the violation occurred.

Section 4

Rebate Program

4.01 REBATE PROGRAM ESTABLISHED

A rebate program is established to encourage Owners to replace older toilets with more efficient ultra low-flow and high efficiency toilets, to install high efficiency washers and to install irrigation controls that conserve water.

It is the Owner's responsibility to ensure that the high efficiency toilets, clothes washers and irrigation controls meet District rebate requirements prior to purchase. A list of approved toilets, clothes washers and irrigation controls is available at the District Administrative office.

Rebates are given only if funding is still available and on a first-come first-served basis. Applications submitted after funding is exhausted will be processed in the following calendar year in the order received.

To be eligible to receive rebates, District water customers shall be in full compliance with District Cross Connection Control Regulations contained within District Ordinance No. 263.

4.01.1 High Efficiency Toilet Rebates

a) The District will provide a rebate in an amount equal to the purchase price of the toilet, up to an amount identified in the District's current fee schedule, for retrofitting from 1.6-gallon or more per flush toilets to high-efficiency toilets (single and dual-flush) having a flush capacity of 1.3 gallons or less.

b) <u>The installation of a 1.6-gallon per flush toilet does not qualify for a rebate.</u>

c) A rebate may be given for a maximum of two (2) toilets per parcel in any one year, provided funding is available. Rebates are given only if funding is available and on a first come first serve basis. Applications submitted after funding is exhausted will be processed in the following calendar year in the order received.

d) The Owner is responsible for the proper disposal of the removed toilet(s.)

4.01.2 Irrigation System Hardware Rebates

Irrigation system rebates have been developed to help Owners save water and money by increasing the efficiency of their irrigation systems. The program offers rebates in accordance with the rebate schedule.

a) Rain Sensors

Rain sensors that catch moisture and prevent or limit the sprinkler system

from watering during precipitation must:

i. Be installed and operated per the manufacturers specification.
ii. Automatically break the circuit to the solenoid valves of the sprinkler system after precipitation
iii. Be adjustable to shut off at varying amounts of rainfall
iv. Affect the entire irrigation system, and
i. Be purchased, installed and operational prior to application for rebate

b) Soil Moisture Sensors

Soil moisture sensors that determine the amount of moisture in the soil must**:**

i. Be calibrated and installed according to manufacturers' specifications
ii. Be carefully installed to avoid air gaps between the sensor and the soil
iii. Affect the entire irrigation system, and
iv. Be purchased, installed and operational prior to application for rebate

c) Temperature Gauges

Temperature sensing gauges must

i. Be calibrated and installed according to manufacturers' specifications
ii. Be set to disable irrigation when the ambient air temperature drops below 40 degrees Fahrenheit.
iii. Affect the entire irrigation system, and
iv. Be purchased, installed and operational prior to application for rebate

4.01.3 High Efficiency Clothes Washers

The District will provide a rebate to Owners who purchase and install a qualified high efficiency clothes washer. The clothes washer must:

a) Be purchased on or after the date of this ordinance
b) Be on the current list of Energy Star qualified clothes washers, as found at www.energystar.gov
c) Be a replacement appliance
d) Be purchased and installed prior to application for rebate

4.02 WATER USE SURVEY

The Owner must request a water use survey prior to filing a request for rebate. Please schedule a visit at your home or business with a District Conservation Specialist. The benefits of a water use survey include:

a) Identifying simple ways to save water
b) Determining the water efficiency of toilets, showerheads, faucets, clothes washers, dishwashers, and other indoor and outdoor water using equipment
c) Identifying simple water-efficiency measures and repairs
d) Helping to control water costs
e) Testing toilets for leakage using leak detection dye tablets
f) Providing retrofit low-flow faucet pressure reducers

g) Evaluating lawn and irrigation characteristics and recommending design modifications
h) Customizing home irrigation schedule if needed
i) Confirming compliance with District cross connection control policies

4.03 REBATE FORM

After the water use survey has been completed by District staff, in order to receive a rebate the owner must:

a) Obtain a rebate form from the District Administrative Office, or download the form from the District's website – www.tcpud.org.
b) Complete the form
c) Attach the original purchase receipt for the product. *Receipts must be delivered to the District accompanied by a rebate form within one year of purchase of the high efficiency toilet(s,) clothes washer or the irrigation controls.*
d) Mail the form and original receipt to TCPUD, Rebate Program, P.O. Box 5249, Tahoe City, CA, 96145, or
e) Deliver the completed form, with the original receipt attached, to the District Administrative Office, 221 Fairway Drive, Tahoe City

4.04 AVAILABILITY OF REBATE PROGRAM

The toilet and clothes washer rebate program is only available to current District water and sewer customers, while the landscape control rebate program is only for current District water customers. Rebates are given only if funding is still available and on a first-come first-served basis. Applications submitted after funding is exhausted will be processed in the following calendar year in the order received. The rebate program may be discontinued at any time, at the discretion of the Board of Directors.

To be eligible to receive rebates, District water customers shall be in full compliance with District cross connection control regulations contained within District Ordinance No. 263.

Water Conservation Fee Schedule

Disconnect water service as a result of ordinance violation	$	60.00 minimum, billed at actual cost
Reconnect water service as a result of ordinance violation	$	60.00 minimum, billed at actual cost
Process request for exemption	$	30.00 per exemption request
Administrative fee - 2nd Violation	$	50.00
Administrative fee – 3rd Violation	$	100.00
Administrative fee – 4th Violation	$	300.00
Additional monitoring and compliance enforcement costs	Actual cost	

Water Conservation Device Rebate Schedule

	Conditions: Residential and Commercial Parcels	**Conditions: Condominiums**
Irrigation System Controls: Rain Sensor Soil Moisture Sensor Freeze Gauge	• Any 1 Control, Actual cost up to $50 maximum • Any 2 Controls, Actual cost up to $75 maximum • All 3 Controls, Actual cost up to $100 maximum • Maximum $100 per parcel	• Any 1 Control, $50 maximum • Any 2 Controls, $75 maximum • All 3 Controls, $100 maximum • 1 – 20 units, maximum $100 • 20 – 40 units, maximum $200 • >40 units, maximum $300
High Efficiency Washer	• Actual cost, up to $100 – water customers • Actual cost, up to $50 – sewer only customers • Maximum 1 washer per parcel • Must be rated “Energy Star”	• Actual cost, up to $100 – water customers • Up to $50 - sewer only customers • Maximum 1 washer per condominium unit • Must be rated “Energy Star”
High Efficiency Toilet *New Construction or Reconstruction* HET Toilets only	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $17 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet - sewer only customers • Maximum = # of toilets per condominium unit

High Efficiency Toilet *Retrofit 3.0 GPF to HET*	• Actual cost, up to $100 per toilet – water customers • Actual cost, up to $50 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $100 per toilet – water customers • Actual cost, up to $50 per toilet – sewer only customers • Maximum = # of toilets per condominium unit up to 2 toilets
High Efficiency Toilet *Retrofit 1.6 GPF to HET*	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet – sewer only customers • Maximum = # of toilets per condominium unit

GPF: Gallons per Flush

HET: High Efficiency Toilet, Single or Dual flush toilets with 1.3 GPF capacity or less

Attachment D

(Water Conservation Program)

Tahoe City Public Utility District

High Efficiency Toilet Rebate Program

The Program:

- The Tahoe City Public Utility District provides a rebate amount equal to the rebate schedule below.
- Installation of a 1.6-gallon per flush toilets does not qualify for a rebate.
- See the web site – http://www.epa.gov/WaterSense/pp/find_het.htm or http://www.epa.gov/WaterSense/pubs/toilets.htm for list of Water Sense toilets.
- Original purchase receipts must be sent in with this request. Receipts older than one year will not be accepted.
- Customer requests for multiple rebates or more must be pre-approved.
- Rebates are limited and subject to available funds.
- Rebates are only available for current District customers.

To Receive a Rebate:

- Schedule a Water Use Survey. Call 530-583-3796 x30.
- Save your original purchase receipt.
- Pick up a rebate form from our offices or download a form from our website at www.tcpud.org.
- Complete the rebate form, attach the original receipt, provide any required model verification, and drop off the form and receipt at our District office located at 221 Fairway Drive, Tahoe City, or mail to TCPUD, Rebate Program, P.O. Box 5249, Tahoe City, CA 96145
- The District may require a site inspection to verify installation

Rebate Schedule:

	Conditions: Residential and Commercial Parcels	**Conditions: Condominiums**
Irrigation System Controls: Rain Sensor Soil Moisture Sensor Freeze Gauge	• Any 1 Control, Actual cost up to $50 maximum • Any 2 Controls, Actual cost up to $75 maximum • All 3 Controls, Actual cost up to $100 maximum • Maximum $100 per parcel	• Any 1 Control, $50 maximum • Any 2 Controls, $75 maximum • All 3 Controls, $100 maximum • 1 – 20 units, maximum $100 • 20 – 40 units, maximum $200 • >40 units, maximum $300
High Efficiency Washer www.energystar.gov	• Actual cost, up to $100 – water customers • Actual cost, up to $50 – sewer only customers • Maximum 1 washer per parcel • Must be rated "Energy Star"	• Actual cost, up to $100 – water customers • Up to $50 - sewer only customers • Maximum 1 washer per condominium unit • Must be rated "Energy Star"

	Conditions: Residential and Commercial Parcels	**Conditions: Condominiums**
High Efficiency Toilet *New Construction or Reconstruction* HET Toilets only	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $17 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet - sewer only customers • Maximum = # of toilets per condominium unit up to 2 toilets
High Efficiency Toilet *Retrofit 3.0 GPF to HET*	• Actual cost, up to $100 per toilet – water customers • Actual cost, up to $50 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $100 per toilet – water customers • Actual cost, up to $50 per toilet – sewer only customers • Maximum = # of toilets per condominium unit up to 2 toilets
High Efficiency Toilet *Retrofit 1.6 GPF to HET* www.epa.gov/watersense	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet – sewer only customers • Maximum = # of toilets per condominium unit up to 2 toilets

GPF: Gallons per Flush

HET: High Efficiency Toilet, Single or Dual flush toilets with 1.3 GPF capacity or less

Tahoe City Public Utility District

High Efficiency Washer Rebate Program

The Program:

- The Tahoe City Public Utility District provides a rebate amount equal to the rebate schedule below.
- The clothes washer must be Energy Star rated. Refer to www.energystar.gov/ or http://www.energystar.gov/index.cfm?c=clotheswash.pr_clothes_washers
- Original purchase receipts must be sent in with this request. Receipts older than one year will not be accepted.
- Customer requests for multiple rebates or more must be pre-approved.
- Rebates are limited and subject to available funds.
- Rebates are only available for current District customers.

To Receive a Rebate:

- Schedule a Water Use Survey. Call 530-583-3796 x30.
- Save your original purchase receipt.
- Pick up a rebate form from our offices or download a form from our website at www.tcpud.org.
- Complete the rebate form, attach the original receipt, provide any required model verification, and drop off the form and receipt at our District office located at 221 Fairway Drive, Tahoe City, or mail to TCPUD, Rebate Program, P.O. Box 5249, Tahoe City, CA 96145
- The District may require a site inspection to verify installation

Rebate Schedule:

	Conditions: Residential and Commercial Parcels	**Conditions: Condominiums**
Irrigation System Controls: Rain Sensor Soil Moisture Sensor Freeze Gauge	• Any 1 Control, Actual cost up to $50 maximum • Any 2 Controls, Actual cost up to $75 maximum • All 3 Controls, Actual cost up to $100 maximum • Maximum $100 per parcel	• Any 1 Control, $50 maximum • Any 2 Controls, $75 maximum • All 3 Controls, $100 maximum • 1 – 20 units, maximum $100 • 20 – 40 units, maximum $200 • >40 units, maximum $300
High Efficiency Washer www.energystar.gov	• Actual cost, up to $100 – water customers • Actual cost, up to $50 – sewer only customers • Maximum 1 washer per parcel • Must be rated "Energy Star"	• Actual cost, up to $100 – water customers • Up to $50 - sewer only customers • Maximum 1 washer per condominium unit • Must be rated "Energy Star"

	Conditions: Residential and Commercial Parcels	Conditions: Condominiums
High Efficiency Toilet *New Construction or Reconstruction* HET Toilets only	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $17 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet - sewer only customers • Maximum = # of toilets per condominium unit up to 2 toilets
	•	•
High Efficiency Toilet *Retrofit 3.0 GPF to HET*	• Actual cost, up to $100 per toilet – water customers • Actual cost, up to $50 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $100 per toilet – water customers • Actual cost, up to $50 per toilet – sewer only customers • Maximum = # of toilets per condominium unit up to 2 toilets
High Efficiency Toilet *Retrofit 1.6 GPF to HET* www.epa.gov/watersense	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet – sewer only customers • Maximum = # of toilets per condominium unit up to 2 toilets

GPF: Gallons per Flush

HET: High Efficiency Toilet, Single or Dual flush toilets with 1.3 GPF capacity or less

Tahoe City Public Utility District

Irrigation System Controls Rebate Program

The Program:

- The Tahoe City Public Utility District provides a rebate amount equal to the rebate schedule below.
- The program offers rebates on Rain Sensors, Soil Moisture Sensors, and Temperature Gauges.
- The Sensors or Gauges must be purchased, installed and operational prior to application for rebate.
- Original purchase receipts must be sent in with this request. Receipts older than one year will not be accepted.
- Customer requests for multiple rebates or more must be pre-approved.
- Rebates are limited and subject to available funds.
- Rebates are only available for current District customers.

To Receive a Rebate:

- Schedule a Water Use Survey. Call 530-583-3796 x30.
- Save your original purchase receipt.
- Pick up a rebate form from our offices or download a form from our website at www.tcpud.org.
- Complete the rebate form, attach the original receipt, provide any required model verification, and drop off the form and receipt at our District office located at 221 Fairway Drive, Tahoe City, or mail to TCPUD, Rebate Program, P.O. Box 5249, Tahoe City, CA 96145
- The District may require a site inspection to verify installation

Rebate Schedule:

	Conditions: Residential and Commercial Parcels	**Conditions: Condominiums**
Irrigation System Controls: Rain Sensor Soil Moisture Sensor Freeze Gauge	• Any 1 Control, Actual cost up to $50 maximum • Any 2 Controls, Actual cost up to $75 maximum • All 3 Controls, Actual cost up to $100 maximum • Maximum $100 per parcel	• Any 1 Control, $50 maximum • Any 2 Controls, $75 maximum • All 3 Controls, $100 maximum • 1 – 20 units, maximum $100 • 20 – 40 units, maximum $200 • >40 units, maximum $300

	Conditions: Residential and Commercial Parcels	Conditions: Condominiums
High Efficiency Washer www.energystar.gov	• Actual cost, up to $100 – water customers • Actual cost, up to $50 – sewer only customers • Maximum 1 washer per parcel • Must be rated "Energy Star"	• Actual cost, up to $100 – water customers • Up to $50 - sewer only customers • Maximum 1 washer per condominium unit • Must be rated "Energy Star"
High Efficiency Toilet *New Construction or Reconstruction* HET Toilets only	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $17 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet - sewer only customers • Maximum = # of toilets per condominium unit up to 2 toilets
High Efficiency Toilet *Retrofit 3.0 GPF to HET*	• Actual cost, up to $100 per toilet – water customers • Actual cost, up to $50 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $100 per toilet – water customers • Actual cost, up to $50 per toilet – sewer only customers • Maximum = # of toilets per condominium unit up to 2 toilets
High Efficiency Toilet *Retrofit 1.6 GPF to HET* www.epa.gov/watersense	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet – sewer only customers • Maximum = # of toilets per condominium unit up to 2 toilets

GPF: Gallons per Flush

HET: High Efficiency Toilet, Single or Dual flush toilets with 1.3 GPF capacity or less

Water Conservation Device Rebate Schedule

	Conditions: Residential and Commercial Parcels	Conditions: Condominiums
Irrigation System Controls: Rain Sensor Soil Moisture Sensor Freeze Gauge	• Any 1 Control, Actual cost up to $50 maximum • Any 2 Controls, Actual cost up to $75 maximum • All 3 Controls, Actual cost up to $100 maximum • Maximum $100 per parcel	• Any 1 Control, $50 maximum • Any 2 Controls, $75 maximum • All 3 Controls, $100 maximum • 1 – 20 units, maximum $100 • 20 – 40 units, maximum $200 • >40 units, maximum $300
High Efficiency Washer	• Actual cost, up to $100 – water customers • Actual cost, up to $50 – sewer only customers • Maximum 1 washer per parcel • Must be rated "Energy Star"	• Actual cost, up to $100 – water customers • Up to $50 - sewer only customers • Maximum 1 washer per condominium unit • Must be rated "Energy Star"
High Efficiency Toilet *New Construction or Reconstruction* HET Toilets only	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $17 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet - sewer only customers • Maximum = # of toilets per condominium unit (up to 2 toilets)
High Efficiency Toilet *Retrofit 3.0 GPF to HET*	• Actual cost, up to $100 per toilet – water customers • Actual cost, up to $50 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $100 per toilet – water customers • Actual cost, up to $50 per toilet – sewer only customers • Maximum = # of toilets per condominium unit up to 2 toilets
High Efficiency Toilet *Retrofit 1.6 GPF to HET*	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet – sewer only customers • Maximum 2 toilets per parcel	• Actual cost, up to $33 per toilet – water customers • Actual cost, up to $15 per toilet – sewer only customers • Maximum = # of toilets per condominium unit (up to 2 toilets)

GPF: Gallons per Flush

HET: High Efficiency Toilet, Single or Dual flush toilets with 1.3 GPF capacity or less

Water Conservation Rebate Programs

Now it's easier than ever to save water and lower your water bills. Just sign up for one of our water conservation cash rebate programs!

Appliance Program

Energy Star Clothes Washers qualify for a rebate equaling the actual purchase price up to $100 for water customers and $50 for sewer customers. Maximum 1 washer per parcel/condominium unit.

Irrigation Efficiency Program

Rain Sensor, Soil Moisture Sensor, Freeze Gauge
Any 1 Control, Actual cost, up to $50
Any 2 Controls, Actual cost up to $75
Any 3 Controls, Actual cost up to $100

Residential and Commercial maximum rebate $100 per parcel
Condominium maximum rebate 1-20 units $100, 20-40 units $200, >40 units $300

High Efficiency Toilet (HET) Program

New Construction or Reconstruction; HET Toilets Only—For commercial and single family residential water customers rebates total actual cost up to $33 per toilet and sewer only customers $17 per toilet, maximum 2 toilets. Condominium residents rebates total actual cost up to $33 per toilet for water customers and sewer only customers $15 per toilet, maximum toilets equaling the number of toilets in the condominium unit.

1.3

Retrofit 3.0 GPF to HET- For commercial and single family residential water customers rebates total actual cost up to $100 per toilet and sewer only customers $50 per toilet, maximum 2 toilets. Condominium residents rebates total actual cost up to $100 per toilet for water customers and sewer only customers $50 per toilet, maximum 2 toilets.

1.3

Retrofit 1.6 GPF to HET- For commercial and single family residential water customers rebates total actual cost up to $33 per toilet and sewer only customers $15 per toilet, maximum 2 toilets. Condominium residents rebates total actual cost up to $33 per toilet for water customers and sewer only customers $15 per toilet, maximum toilets equaling the number of toilets in the condominium unit.

GPF: Gallons Per Flush

HET: High Efficiency Toilet, Single or Dual flush toilets with 1.3 GPF capacity or less

How to Qualify

- You must be a TCPUD customer.
- If you are a water customer you must be in full compliance with District cross connection regulations.
- Have purchased and installed the equipment in your business or residence after August 1, 2009.
- Complete and submit a cash rebate program application to the District with proof of purchase.
- Allow an inspection of your equipment and/or measures by an authorized District representative.

If you have questions or would like more information, call the District's Conservation Specialist at 530 583-3796 x 32.

Conservation rebate funds are limited and available on a first come first served basis. All rebates are at the discretion of the District. We will attempt to contact you within 2 weeks of receipt of this form.

221 Fairway Drive
P. O. Box 5249
Tahoe City, CA 96145

Application for TCPUD Cash Rebate

Applicant's name (please print) - Last, first

TCPUD Account Number

Name to whom rebate is to be issued

Mailing address

Telephone

Email

Location of installation

Type of equipment or measure (submit separate application for each)

COPY OF RECEIPT REQUIRED

I certify that I have installed at the property identified above:

____ High-efficiency toilet(s) at 1.3 gpf maximum

____ Single or Dual Flush HE toilet(s) at 1.3 gpf maximum

____ High-efficiency Energy Star rated clothes washer

____ Irrigation System Controls: Rain Sensor, Soil Moisture Sensor, Freeze Gauge)

Signature

Turn to the Tahoe City Public Utility District for Your Water Conservation Needs

The water conservation cash rebate programs and water surveys are only a few of the ways the District can help you save water at your home or business. We also offer:

- Water Conservation Line, 583-3796 x 32
- Home and Business Water Surveys
- Presentations to Organizations and Schools

When you save water, the whole community wins. Turn to the Tahoe City Public Utility District for water and money saving ideas. www.tahoecitypud.com

Mail or deliver Application to
Tahoe City Public Utility District
P. O. Box 5249 (221 Fairway Drive)
Tahoe City, CA 96145, 530 583-3796

Tahoe City Public Utility District

Water Conservation Cash Rebate Programs

www.tahoecitypud.com

TAHOE CITY PUBLIC UTILITY DISTRICT
WATER REBATE INSPECTION

Date _____

Time _____

☐ New Construction(NC) ☐ Remodel ☐ Retrofit

Owner _____ APN _____

Street Address _____ _____ Subdivision

Contact Person _____ UB Account # _____

Phone _____

TCPUD Water Customer ☐ Y ☐ N **TCPUD Sewer Only Customer** ☐ Y ☐ N

☐ **Toilet** ☐ **Washer** ☐ **Irrigation Controls**

Toilet:

Retrofit:

Removing ☐ 3.0 gpf Quantity _____
☐ 1.6 gpf Quantity _____

Installing ☐ HET 1.3 gpf Quantity _____
☐ Single flush 1.3 gpf Quantity _____
☐ Dual flush 1.3 gpf Quantity _____

NC or Remodel:

Removing ☐ 3.0 gpf Quantity _____
☐ 1.6 gpf Quantity _____

Installing ☐ HET 1.3 gpf Quantity _____
☐ Single flush 1.3 gpf Quantity _____
☐ Dual flush 1.3 gpf Quantity _____

Washer:

Removing _____

Installing _____
Must be Energy Star qualified.
See http://www.energystar.gov/index.cfm?c=clotheswash.pr_clothes_washers.

Irrigation System Hardware:

☐ Rain Sensors ☐ Soil Moisture Sensors ☐ Temperature Gauges

Brand _____

Model _____

When was irrigation system installed _____

When was your last backflow prevention assembly test completed? _____

How was the new sensor or gauge installed? ☐ Yourself ☐ Licensed irrigation contractor

If licensed irrigation contractor, please provide the following information:

Company Name: _____

Name of Contractor: _____

Company Address: _____

Phone Number: _____

Date of Installation: _____

Signature of Licensed Contractor: _____

TCPUD Inspectors Signature: _____ Date: _____

Attachment E

(School Education Programs)

SCOPE OF WORK

Sierra Watershed Education Partnerships (SWEP) Conservation Education & Outreach Campaign

SWEP will develop a youth led service learning project with an empowering educational benefit while addressing and improving water conservation knowledge and practices within the TCPUD service area. This project will deliver conservation kits to a minimum of 1,150 students, staff, and parents within the North Tahoe area. The SWEP Envirolution club, will inform and educate the public about this project during the Earth Day 2011 Trashion show, potentially reaching 2,000 people.

How:
The SWEP Envirolution club is a group of over 30 Truckee High students who are engaging in service learning projects throughout the local community, with a current focus on water quality and water conservation. The club members have created an educational assembly called the Trashion show, in which they create artsy outfits made from under-recyclable and non-biodegradable materials. Each outfit has an environmental message that promotes conservation, efficiency and personal action. The goal of the Trashion show assembly is to empower students to take action at home, at school, and within their community.

These assemblies are adapted to meet the goals of the TCPUD Conservation program, including water conservation outfits and specific messages regarding the TCPUD program.

Envirolution students will hand out agreed upon materials provided by the TCPUD to all students, parents, and staff at each school at which they conduct a Trashion show. As part of the Trashion show, the purpose for each item being handed out will be explained, in addition to facts about conservation.

What SWEP will provide:
Direct education, outreach and promotion of TCPUD Conservation program to a minimum of 1,150 students, parents, and staff in the North Tahoe area K-12 schools through the Trashion show educational assembly.

Distribution of approximately 1,150 Conservation kits to K-12 students, parents, and staff in the District's service area.

Assembly of Conservation kits for giveaway as part of the Trashion show educational assemblies.

Conduct at minimum one public show that highlights the TCPUD Conservation program and recognizes the TCPUD as a sponsor of the Trashion show.

A final report, including photos with the appropriate Model Release Forms, for the District to use on their website and in other media outreach.

School site follow up, where appropriate.

SWEP will work in conjunction with TCPUD staff to develop cooperative partnerships for this program within the Tahoe Truckee Unified School District (TTUSD) boundaries on the North Shore.

Outcomes:

Distribution of 1,150 Water Conservation kits. Increased involvement and awareness of local water conservation programs.

What the TCPUD will provide:

The TCPUD will provide $2,000 for SWEP to develop and coordinate assemblies at all North Tahoe school sites, to develop cooperative partnerships for a region wide water conservation outreach program and to help establish and Envirolution club at North Tahoe High School.

TCPUD will provide funds for any materials that are handed out at above mentioned assemblies.

TCPUD will communicate with SWEP staff before purchase of any materials to be handed out by Envirolution students at assemblies.

Timeline:
Project Start: April 1, 2011
Project End: April 1, 2012

April 23, 2011:
- Public Trashion show at the Truckee Tahoe Earth Day at Village at Squaw Valley.

May 2011-August 2011:
- Develop partnerships, conservation kits and materials for school assemblies.
- Public appearances by Envirolution students, where appropriate, for the purpose of project outreach, with a maximum of two appearances.

September 2011-December 2011:
- School assemblies and Envirolution club development at North Tahoe HS.

January 2012-April 2012
- School site follow up, where appropriate
- Project evaluation with all partners

Attachment F

(Water Conservation Coordinator)

AMERICAN WATER WORKS ASSOCIATION

®

CALIFORNIA-NEVADA SECTION

Be it known that Barbara M. Smith having submitted acceptable evidence of qualification by education, training, and experience is hereby granted this Certificate of competency as a

Grade 1

Conservation Practitioner

Witness our Hand and Seal,

This

California-Nevada Section

File with your certificate

Water Use Efficiency Practitioner Grade 1

Cert. No.: 1424

Exp. Date 4/30/2013

Certification Administrator

Linda R. Blish

Certification Director
California-Nevada Section AWWA

Linda R. Blish

Certification Administrator
California-Nevada Section AWWA

CALIFORNIA WATER ENVIRONMENT ASSOCIATION

Certification of Competence

THIS IS TO CERTIFY THAT

Barbara Smith

HAVING SUBMITTED ACCEPTABLE EVIDENCE OF QUALIFICATIONS BY EDUCATION, TRAINING AND EXPERIENCE IS HEREBY GRANTED THIS CERTIFICATION OF COMPETENCY AS A

GRADE I

COLLECTION SYSTEM MAINTENANCE

Expires On 1/31/2012

Certificate No. 625

Pei Chin-Low, President
California Water Environment Association

Mike Neri, Chair
Technical Certification Program

AMERICAN WATER WORKS ASSOCIATION

®

CALIFORNIA-NEVADA SECTION

Be it known that *Barbara M. Smith* having submitted acceptable evidence of qualification by education, training, and experience is hereby granted this Certificate of competency as a

Backflow Prevention Assembly General Tester

This Sat

Witness our Hand and Se

Timothy Lee Burton
Certification Director
California-Nevada Section AWWA

William S. Campbell
Certification Administrator
California-Nevada Section AWWA

California-Nevada Section
American Water Works Association

File with your certificate

BACKFLOW PREVENTION TESTER

Cert. No.: 09470

Exp. Date 11/30/2011

William S. Campbell
Certification Administrator

AMERICAN WATER WORKS ASSOCIATION

CALIFORNIA-NEVADA SECTION

Be it known that **Barbara M. Smith** having submitted acceptable evidence of qualification by education, training, and experience is hereby granted this Certificate of competency as a

Cross-Connection Control Program – Specialist

Witness our Hand and Seal,

This

Linda K. Blair
Certification Director
California-Nevada Section AWWA

William S. Campbell
Certification Administrator
California-Nevada Section AWWA

California-Nevada Section
American Water Works Association

File with your certificate

Cross-connection Control Specialist

Cert. No.: 02056

Exp. Date: 10/31/2011

William S. Campbell
Certification Administrator

Attachment G

(2011 Billing Rates)

TAHOE CITY PUBLIC UTILITY DISTRICT
2011 WATER RATES
EFFECTIVE APRIL 1, 2011 BILLING

WATER SERVICE SIZE	RESIDENTIAL MONTHLY BASE RATES	COMMERCIAL MONTHLY BASE RATES	CONNECTION FEES
METER - .75"	$ 52.00	$ 63.00	$ 2,500.00
METER - 1.00"	$ 80.00	$ 101.00	$ 3,000.00
METER - 1.25"	$ 101.00	$ 123.00	
METER - 1.50"	$ 123.00	$ 147.00	$ 6,000.00
METER - 2.00"	$ 165.00	$ 197.00	$ 9,600.00
METER - 2.50"		$ 246.00	
METER - 3.00"	$ 251.00	$ 295.00	$ 21,000.00
METER - 4.00"	$ 331.00	$ 391.00	as determined
METER - 6.00"	$ 493.00	$ 585.00	as determined
METER - 8.00"	$ 663.00	$ 783.00	as determined

MONTHLY WATER USAGE RATES:

RESIDENTIAL - per 1,000 gallons	0 -- 8,000	$	1.40
	8,001 -- 20,000	$	1.85
	20,001 -- 40,000	$	2.35
	in excess of 40,001 gallons	$	5.00
COMMERCIAL - per 1,000 gallons	0 -- 8,000	$	4.35
	in excess of 8,001 gallons	$	5.70

PRIVATE FIRE SYSTEMS (sprinklers) SIZES VARY (size based on point of connection)	$26.00/inch	$ 1,200.00
FIRE HYDRANT (on private property) SIZES VARY (size based on point of connection)	$26.00/inch	$ 1,200.00

APPENDIX C

FIRE FLOW AND STORAGE ANALYSIS

NICHOLS CONSULTING ENGINEERS, Chtd.
Engineering and Environmental Services

1885 S Arlington Ave., Suite 111 • Reno, NV 89509 • 775.329.4955 • FAX 775.329.5098

MEMORANDUM

Date:	August 10, 2011	**Project #:**	A514.05.14
To:	Homewood Village Resorts, LLC		
From:	NCE		
Subject:	Fire Flow and Storage Analysis		

This memorandum summarizes fire flows and water storage requirements for the proposed Homewood development. A Preliminary Code Analysis was completed by Rolf Jensen & Associates (dated 04/14/2009) outlining the construction type and square footage for each building of the proposed development. Information obtained from the Rolf Jensen analysis was used in conjunction with Appendix BB of the 2010 California Fire Code to determine the required fire flow and flow durations for the proposed development.

Storage requirements are typically based on some combination of fire storage, operating storage and operating reserve as well as the system's water production capability. To be conservative, this analysis does not include production sources and relies solely on above ground tank storage.

Fire Flow

Each building area and construction type was reviewed for fire flow requirements per the 2010 California Fire Code. The following buildings have the most stringent requirements of the proposed buildings and were used as a basis for the fire flow requirements.

- North Base Lowrise Building P, Construction Type IIB, 50,000 square feet
- Residential South Base Building B (Residential Rooms), Construction Type IIIB, 48,000 square feet
- South Base Parking Garage, Construction Type IIB, 50,000 square feet

Table BB105.1 gives a fire flow and duration of 4,750 gpm for 4 hours for the three buildings listed above. The Code allows a reduction in required fire flow of up to 75% when the building is provided with an approved automatic sprinkler system. The Code further requires that the minimum fire flow be at least 1,500 gpm. The proposed buildings will be provided with automatic fire sprinkler systems. The potential reduced flow required would be (4,750 gpm) (.25)= 1,187 gpm, however, the minimum required fire flow of 1,500 gpm will control.

Therefore, the required fire flow is 1,500 gpm for 4 hours, which equates to a required storage capacity for fire protection of 360,000 gallons.

Draft

Operating and Reserve Storage

For this analysis, a reasonable volume for operating storage is the average day demand. A conservative volume for reserve storage, in the amount of 25% of operating storage will be used. The water demand is projected to be 62 acre feet per year (AFY) for the project. Based on a total demand of 62 AFY, average day demand is 55,000 gallons. Reserve storage would therefore be 14,000 gallons.

Required On-site Storage

Total volume for the required fire, operating and reserve storage:
360,000 + 55,000 + 14,000 = 429,000 gallons.

Proposed Onsite Storage

Total proposed on-site storage is 500,000 gallons, (2) Tanks at 250,000 gallons each to be located at mid-mountain.

APPENDIX D

WATER CAPITAL 5-YEAR PLAN

TCPUD
Water Capital
5-Year Plan

PROJECT NAME	NEED	2009		2010		2011		2012		2013		Project Total (5 Year)
		Project Phase	Project Budget	Project Phase	Project Budget	Project Phase	Project Budget	Project Phase	Project Budget	Project Phase	Project Budget	
Programs	(Defined Below)											
McKinney-Quail Secondary Source Engineering Report	Mandate			P&D	$ 75,000							$ 75,000
McKinney-Quail Secondary Source Projects	Mandate			P&D	$ 410,375	CONST	$ 2,100,000					$ 2,510,375
Tahoe City Main Source & Storage Study	Indust. Std.*			P&D	$ 71,156							$ 71,156
Tahoe City Main Source & Storage Augmentation Projects	Indust. Std.*					P&D	$ 260,906	P&D	$ 735,281	CONST-I	$ 4,144,852	$ 5,141,039
	SUBTOTAL		**$ -**		**$ 556,531**		**$ 2,360,906**		**$ 735,281**		**$ 4,144,852**	**$ 7,797,570**
System-Wide Projects												
Condo/Facility/Production Water Meters	Mandate	P&D/CONST	$ 1,000,000									$ 1,000,000
Fire Hydrant Coverage & Flow Test Analysis	Mandate	P&D	$ 15,000									$ 15,000
TRPA BMP Projects (District-Owned Water Properties)	Mandate	P&D/CONST	$ 30,000	P&D/CONST	$ 30,000	P&D/CONST	$ 60,000					$ 120,000
Seismic Analyses - Tanks	Seismic			P&D	$ 40,000	P&D/CONST	$ 75,000	P&D/CONST	$ 75,000	P&D/CONST	$ 75,000	$ 265,000
Water System Master Metering	Indust. Std.							Prelim	$ 10,000	P&D	$ 30,000	$ 40,000
Misc. System Improvments (Opportunity/Contingency Funds)	All			P&D/CONST	$ 50,000	P&D/CONST	$ 50,000	P&D/CONST	$ 50,000	P&D/CONST	$ 50,000	$ 200,000
	SUBTOTAL		**$ 1,045,000**		**$ 120,000**		**$ 185,000**		**$ 135,000**		**$ 155,000**	**$ 1,640,000**
Area-Specific Projects												
McKinney Estates / Chambers Interconnection	Mandate	P&D/CONST	$ 100,000									$ 100,000
Tahoe Tavern Heights Water Disribution System Improvements	Fire	P&D	$ 200,709	CONST	$ 1,301,303							$ 1,502,012
Four Season Tank to Woodview Transmission Line	Fire		Above		Above							$ -
Woodview to Woodhill Water Main Connection	Fire		Above		Above							$ -
Alpine Way Water Main Extension and PRV	Fire		Above		Above							$ -
Edelweiss PRV Modifications	Fire		Above		Above							$ -
Edelweiss Transmission Line Extension	Fire		Above		Above							$ -
Woodland Area System Improvements	Fire		Above		Above							$ -
Highlands Subdivision Fire Hydrant Project	Mandate			P&D	$ 67,620	CONST	$ 346,920					$ 414,540
Bunker Water Tank Replacement	Fire/Seismic			PRELIM	$ 48,300	P&D	$ 249,550	CONST	$ 1,875,650			$ 2,173,500
Tahoe Tavern Well & Booster Pump Sta. Rehabilitation	Fire					P&D	$ 159,500	CONST-I	$ 355,500	CONST-II	$ 500,000	$ 1,015,000
Sacramento Ave. Hydrant Installation	Mandate							CONST	$ 10,000			$ 10,000
Tahoe Hills Hydrant Project	Mandate							CONST	$ 30,000			$ 30,000
	SUBTOTAL		**$ 300,709**		**$ 1,417,223**		**$ 755,970**		**$ 2,271,150**		**$ 500,000**	**$ 5,245,052**
Small or Operational Projects												
Tahoe City Emergency Water Source (Grove Street)	Indust. Std.	CONST	$ 50,000									$ 50,000
Rocky Ridge & Highlands Booster Roof Replacement	Fire	CONST	$ 11,000									$ 11,000
Water Tank UPS Systems (Non Generator Sites)	Indust. Std.	CONST	$ 12,500	CONST	$ 12,500							$ 25,000
Crystal Way Well Modifications (Sanding)	Repair/Refurb.			CONST	$ 50,000							$ 50,000
Rubicon Tank No. 1 Interior Coating	Repair/Refurb.			CONST	$ 50,000							$ 50,000
Lower Highlands Tank Recoating	Repair/Refurb.			CONST	$ 154,000							$ 154,000
Lower Highlands Tank Ladder Modifications	Mandate			CONST	$ 10,000							$ 10,000
Lower Meeks Bay Pressure Reducing Valve	Indust. Std.									CONST	$ 70,000	$ 70,000
Riley Springs Vault Rehabilitation	Repair/Refurb.									CONST	$ 62,000	$ 62,000
Highview Booster Pump Station - Vault Rehabilitation	Repair/Refurb.									CONST	$ 23,000	$ 23,000
	SUBTOTAL		**$ 73,500**		**$ 276,500**		**$ -**		**$ -**		**$ 155,000**	**$ 505,000**
	WATER GRAND TOTALS	**2009**	**$ 1,419,209**	**2010**	**$ 2,370,254**	**2011**	**$ 3,301,876**	**2012**	**$ 3,141,431**	**2013**	**$ 4,954,852**	**$ 15,187,622**

NEEDS - Terms Used Defined Below

Mandate - Projects to meet requirements imposed by local, State, or Federal Agency, Code, or Law including; the California Fire Code, California Water Code, the California Department of Public Health (water system regulators), Tahoe Regional Planning Agency, Lahontan Regional Water Quality Control Board, Placer County, El Dorado County, and the North Tahoe and Meeks Bay Fire Protection Districts.

Fire - Projects to address major fire protection deficiencies within the District or to protect major District facilities from fire.

Seismic - Projects to address seismic instability of major District facilities.

Industry Standard - Projects to bring portions of the water or sewer system into compliance with minimum industry standards. These standards are recommended to prevent system failures, spills, or contamination; to improve emergency response; and to provide minimum levels of service at the District's most vulnerable locations. Asterisk (*) added to projects that are likely to become Mandates within the planning period.

Repair/Refurbishment - Projects to repair, replace, refurbish, or otherwise extend the service life of the existing utility infrastructure.