Appendix S
Water Supply Assessment (SB 610 and 221 Analysis)

WATER SUPPLY ASSESSMENT

FOR

WEST ROSEVILLE SPECIFIC PLAN AREA
(Fiddyment Ranch/Westpark Properties)

September 12, 2003

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APPENDICIES

INTRODUCTION

Purpose

Senate Bill 610 requires a City or County to request, and the public water system to prepare an assessment of the availability of water supplies for certain large development projects. Such a water supply assessment (WSA) is performed in conjunction with the land-use approval process associated with the project and must include an evaluation of the sufficiency of the water supplies available to the water supplier to meet existing and anticipated future demands, including the demand associated with the project over a twenty-year horizon that includes normal, single-dry and multiple-dry years.

The WSA must identify existing water supply entitlements, water rights, or water service contracts held by the water supplier or relevant to the identified water supply for the proposed project, and include a description of the quantities of water received in prior years by the public water system.

If the public water supplier includes groundwater supplies, the WSA must describe all groundwater basins from which the proposed project will be supplied. For each basin that has not been adjudicated, the assessment should indicate whether the Department of Water Resources has identified the basin as overdrafted, or has projected that the basin will become overdrafted, if present management conditions continue, and should provide a detailed description of the efforts being undertaken in the basin to eliminate the long-term overdraft condition.

If the WSA concludes that additional water supplies are necessary, the public water supplier must submit plans for acquiring the additional water supplies, setting forth the measures that are being undertaken to acquire and develop those supplies. The future water supply projects and programs discussion may be based upon proposed methods of financing, estimated costs, information related to federal, state and local permits and the estimated timeframes within which the public water system expects to be able to acquire the additional supplies.

Project Description

This WSA is prepared for the proposed West Roseville Specific Plan (WRSP), a 3,162-acre mixed use development project proposed west of the existing City of Roseville, west of Fiddyment Road, north of Baseline Road. The WRSP includes 8,430 residential units and a mix of commercial, business professional, light industrial, industrial, open space, park and public land uses. The WRSP is located in unincorporated Placer County and is proposed for annexation to the City of Roseville. **Figure 1** identifies the general location of the proposed WRSP with respect to the existing City limits. Elevations in the area range from 80 to 120 feet above mean sea level.

Pursuant to the California Environmental Quality Act (CEQA), the City is preparing the West Roseville Specific Plan and Sphere of Influence (SOI) Amendment Area Environmental Impact Report (EIR) that evaluates the environmental impact of the proposed WRSP as a component of the document. Information from this WSA is analyzed in the Public Utilities Section of the EIR and this document is incorporated by reference there. The EIR includes extensive analysis of the potential environmental impacts of the water supply options discussed in this document.

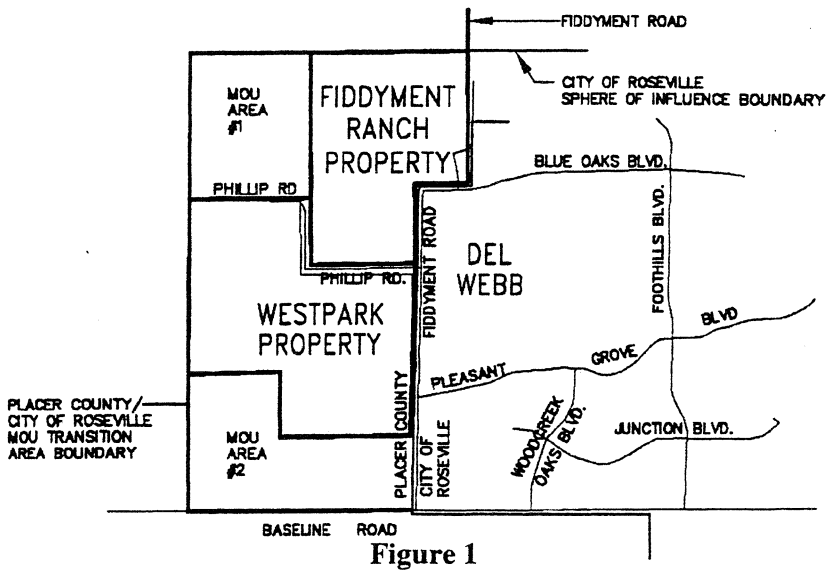


Figure 1

Description of the City of Roseville Service Area

The City of Roseville is located in Northern California's Central Valley, within comfortable driving distance of both the Sierra Nevada Mountains and Pacific Coast. Roseville is located along Interstate 80 approximately midway between the cities of Sacramento and Auburn. The service area is characterized by a mixture of residential, park and recreation, commercial, and industrial land uses.

The City of Roseville's climate is described as mild with abundant sunshine year-round averaging 285 sunny days per year. Total rainfall averages 17.5" with the majority of rainfall between January and March. Summer months rarely experience precipitation. Peak water demands occur during the summer months.

The City's service area is currently divided into five pressure zones. On the existing service area's western edge, pressure is reduced through pressure reducing stations. The proposed WRSP would be included in this westernmost pressure zone. All other pressure zones require boosting or are served by adjacent water agencies that have sufficient pressure to serve these areas. A total of 22 million gallons of storage currently exists in the service area.

Scope of Water Supply Assessment

This WSA discusses historic water supplies, current water supplies, and additional sources of supply that will be available to serve planned future growth. This information is presented consistent with the requirements of SB-610, and includes:

- Descriptions of existing and projected water demand.
- Descriptions of existing and projected water supply sources including:
    - Descriptions of the groundwater basins, surface water and other sources.
    - Opportunities for exchanges or transfers of water on a short-term and long-term basis
    - Descriptions of plans to acquire additional water supplies.
- Assessment of the availability of these sources during normal, single dry, and multiple dry years within a 20-year projection.

The WSA for the proposed WRSP project contains information derived from several sources including:

- City of Roseville. General Plan, 1992, as amended in January 2003.
- City of Roseville. (July 11, 2002). 2002 Urban Water Management Plan.
- Department of Water Resources. (April 3, 2003). Sacramento Valley Groundwater Basin, North American Subbasin. California's Groundwater Bulletin 118.
- Ed Kriz, City of Roseville, personal communication, August and September 2003.
- EIP Associates. (September 2003). Draft – Environmental Impact Report for the West Roseville Specific Plan and Sphere of Influence Amendment.
- EIP Associates. (September 2003). West Roseville Specific Plan.
- Montgomery Watson Harza. (November 6, 2002). Technical Memorandum 1 – Unit Water Demand Revision.
- Montgomery Watson Harza. (April 10, 2003). Technical Memorandum 7 – Water Supply Strategy.
- Montgomery Watson Harza. (January 2003). Groundwater Impact Analysis for Proposed Reason Farms Land Retirement Plan.
- Wood Rodgers, Inc. (May 2003). Master Water Study for West Roseville Specific Plan Area.

Water Code Sections 10910 – 10915 delineate the specific requirements of a WSA. This WSA is structured according to those requirements.

Section 10910(a) Determine if a proposed project is subject to the California Environmental Quality Act (CEQA).

The City of Roseville has made the determination the proposed WRSP project is subject to CEQA as defined in Section 10912(a)(1) "A proposed residential development of more than 500 dwelling units."

Section 10910(b) Identify responsible public water system that will or may supply water to the proposed project.

The City of Roseville is expected to annex the proposed WRSP project area and has been identified as the responsible public water system for the proposed WRSP project.

Section 10910(c)(1) Determine if most recent Urban Water Management Plan (UWMP) includes projected water demand associated with proposed project.

The 2002 UWMP, which was adopted by City of Roseville's Council Resolution No. 02-315 on July 31, 2002 identifies current and projected water supply and demand in 5-year increments for a 20-year period ending in 2020 based on General Plan buildout. Because the WRSP Area is outside the City limits, water demands for the WRSP were not included in the 2002 UWMP. The UWMP will be updated to reflect the water demands associated with the proposed project and as described herein.

Section 10910(c)(2) If demands are included in most recent UWMP, incorporate information from the UWMP in the WSA.

Water demands for the WRSP were not included in the 2002 UWMP.

Section 10910(c)(3) If demands are NOT included in most recent UWMP, discuss existing system's water supplies available during normal, single dry, and multiple dry years during a 20-year projection.

The City of Roseville has three sources of water supply: surface water, recycled water for landscaping, and, in dry years only, groundwater. **Table 1** shows the current water entitlements for the City of Roseville. Supply characteristics for these three sources are described below.

Table 1 Current Projected Water Supplies - City of Roseville (Normal Water Supply Year - Acre-ft/year)					
Water Supply Sources	**2000**	**2005**	**2010**	**2015**	**2020**
Purchased from USBR	32,000	32,000	32,000	32,000	32,000
Purchased from PCWA	30,000	30,000	30,000	30,000	30,000
Purchased from SJWD	0	800	800	800	800
Groundwater	0	0	0	0	0
Recycled Water for Irrigation	1,000	2,200	2,200	2,200	2,200
Total	63,000	65,000	65,000	65,000	65,000

Source: *City of Roseville – 2002 Urban Water Management Plan*

Historic and Currently Available Surface Water

Folsom Lake has been the primary source of water for the City of Roseville since 1971. Through the Folsom Lake intake, Roseville receives untreated surface water from the U.S. Bureau of Reclamation (USBR) and the Placer County Water Agency (PCWA). The untreated surface water is delivered to the City's Barton Road Water Treatment Plant. Roseville maintains interties with PCWA, San Juan Water District (SJWD), the California American Water Company, and the Citrus Heights Water District. Interties are connections between existing distribution systems that can be used to deliver water between districts in the event of water treatment plant or conveyance system disruptions.

The City of Roseville has three surface water contract entitlements for diversions from the American River totaling 62,800 acre-feet per year (AF/yr): a 32,000 AF/yr contract with the USBR for a Central Valley Project (CVP) supply from Folsom Lake; a 10,000 AF/yr contract and two 10,000 AF/yr contract options with the PCWA supplied from the Middle Fork [American River] Project (MFP); and an 800 AF/yr contract with SJWD for delivery of a portion of SJWD's PCWA contract water supply (also provided from the MFP) to the City's service area. Although water contract entitlements total 62,800 AF/yr, the diversions from the American River are limited by the Water Forum Agreement (WFA) to 55,700 AF/yr in wet/average years. In critically dry years, the maximum diversion from the American River is limited to 39,800 AF/yr with a requirement for an additional 20,000 AF/yr of water be made available for release by PCWA. In below average to dry years, the City may divert an amount between 55,700 and 39,800 AF/yr from the American River based on unimpaired flow into Folsom Lake with similar release requirements from PCWA. The City of Roseville participated in the development of the WFA, which provides a framework for future surface water and groundwater supplies in the region through the year 2030 and is a signatory to the Water Forum Agreement. As quantified above, the City's WFA specifies the maximum allowable surface water diversions based on unimpaired flows into Folsom Lake with diversions by the City restricted during dry years, with the objective of supporting environmental needs in the Lower American River.

Historic and Currently Available Recycled Water Supplies

Treated wastewater from the Dry Creek Wastewater Treatment Plant (DCWWTP) located on Dry Creek near the Union Pacific Railroad Yard in Roseville produces recycled water for limited use for some landscape medians, some parks and at golf courses within the City limits.

Historic and Currently Available Groundwater Supplies

The use of groundwater is part of the City of Roseville's current water supply strategy, used for short-term back-up supply during dry years. The City's WFA includes the extraction of up to 6,600 AF/yr of groundwater during the drier and driest WFA hydrologic year types. In addition, 800 AF/yr of groundwater is required to support the loss of surface water from the SJWD during dry years. The City has three wells and a fourth under construction and are maintained primarily for back-up water supply and to improve reliability. The City participated in development of a regional groundwater management plan with PCWA.

Section 10910(c)(4) Discuss projected water supply versus projected water demand for proposed project, existing system, and planned future uses.

The City of Roseville currently supplies surface water for municipal and industrial (M&I) uses. This requires firm surface water contract amounts to ensure that proper supplies are maintained for the residents and businesses relying on this supply of water. The estimates in the UWMP show that in average precipitation years the City of Roseville has sufficient water to meet its customers' needs through 2020 (without the proposed WRSP Area). In times of drought and water shortage, the urban demand is expected to decrease by 10 percent as a result of increased conservation awareness and regulations. Water available from surface water supplies would be supplemented with use of recycled water and groundwater. It is expected that if supply were to be reduced due to shortage consistent with reductions identified in the WFA, existing supply is sufficient to meet existing City-wide demands.

Based on over 70 years of historical hydrology (and WFA restrictions), the 55,700 AF/yr contract surface water supply is assumed to be available to the City in about 83 percent of the years. In about 17 percent of the years, less than 54,900 AF/yr to a minimum of 39,800 AF/yr of surface water would be available per the WFA. Thus, in drought years, supplemental supplies potentially totaling up to 15,900 AF/yr (the difference between the average/wet year supply and the dry year supply) is needed to make up for the dry-year and critically dry-year deficiencies. The City's current strategy for providing supplemental water during dry years consists of: 3,000 AF/yr of recycled water supplies (for non-potable, landscaping use), development of up to 6,600 AF/yr of sustainable groundwater supplies, 800 AF/yr of groundwater to replace SJWD's PCWA contract water, and, during drought conditions, the implementation of up to 5,500 AF/yr of additional conservation efforts (including rationing), which represents a 10 percent reduction in water use.

Existing Water Demand

Unit water demand factors used to develop water demands are outlined in *Technical Memorandum 1 – Unit Water Demand Factor Revision* (MWH, November 6, 2002). A copy of this memorandum is included in **Appendix A** of this WSA.

The City's Urban Water Management Plan (UWMP) was prepared in accordance with California Water Code Division 6, Part 2.6 and includes data, assumptions, and conclusions addressing water demand in the City of Roseville. The City re-evaluated previous water demand factors to determine whether or not existing estimates of water demand reflect actual water use and the extent to which supply could meet existing City-wide demand in addition to the demands of the proposed WRSP.

Revised unit water demand factors were developed by review of the *General Plan Update Water System Study* prepared by Spink in August 1993, statistical analysis of meter data collected by the City of Roseville, and unit demand data from Sacramento County water purveyors (which reflects Sacramento Area Water Forum land use/demand assumptions), Sacramento Water Agency Zone 40, PCWA Zone 1, and other Central Valley cities for each land use category group. The statistical comparison of unit water demand factors were then used to recalculate the unit water demand factors that were, in turn, used to estimate projected demands in the existing City of Roseville. The existing estimated average annual city-wide demand is 32,794 AF/yr.

Projected Water Demand

Projected water demands are based on the updated demand factors from *Technical Memorandum 1 – Unit water Demand Factor Revision* (MWH, November 6, 2002) (**Appendix A**) and *Technical Memorandum 7 – Water Supply Strategy* (MWH, April 2003) (**Appendix B**). Projected demands for the existing general plan area is 51,620 AF/yr based on the revised unit demands.

The ultimate buildout for the existing City of Roseville service area is predicted to be lineal and be reached by the year 2030. Water demands for the WRSP are expected to begin in the year 2005 and linearly increase until reaching buildout by the year 2030. **Table 2** shows the predicted demands in 5 year increments to the year 2030 for the existing City of Roseville service area and the proposed WRSP service area. Development of the proposed WRSP would result in an estimated demand for 7,042 AF of water annually. When combined with City buildout demand, the total demand would be 58,662 AF/yr (see **Table 2**).

Table 2 Current and Projected Water Use (Acre-ft/year)							
Service Area	**2002**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Existing City of Roseville	32,794	34,811	38,173	41,535	44,896	48,258	51,620
West Roseville Specific Plan	0	0	1,408	2,817	4,225	5,634	7,042
Total	32,794	34,811	39,581	44,352	49,121	53,892	58,662

Water Supply vs. Demand

In addition to the City's existing water entitlements shown in Table 2, two assured sources of water in normal years for the WRSP are available. This includes supply from an additional portion of SJWD's PCWA Middle Fork Project water supply (3,200 AF/yr) and recycled water for landscape irrigation from Roseville regional wastewater treatment facilities (1,526 AF/yr). The City has negotiated an agreement with SJWD for the transfer of the additional 3,200 AF/yr during wet years. This allocation is consistent with the WFA. The proposed WRSP project includes infrastructure necessary to convey recycled water for landscape irrigation to the WRSP from regional facilities. **Table 3** details estimated water supply projections associated with several water supply reliability scenarios.

Table 3 Projected Water Supply Reliability at Buildout (Acre-ft/year)					
			Multiple Dry Water Years		
	Normal Water Year	**Single Dry Water Year**	**Year 1**	**Year 2**	**Year 3**
Surface Water Supply	55,700 [1]	39,800 [2]	55,700	47,350 [3]	39,800
SJWD Surface Water Supply	4,000 [6]	0	0	0	0
Groundwater	0	9,604	0	3,344	9,604
Recycled Water for Irrigation [4]	3,726	3,726	3,726	3,726	3,726
Buildout City Demands	(51,620)	(51,620)	(51,620)	(51,620)	(51,620)
Buildout WRSP Demands	(7,042)	(7,042)	(7,042)	(7,042)	(7,042)
Conservation Reduction City [5]	0	5,162	2,581	3,872	5,162
Conservation Reduction WRSP [7]	0	370	370	370	370
Surplus or (Deficit)	4,764	0	3,715	0	0

1. Water Forum Agreement allocation for wet years.
2. Water Forum Agreement allocation for driest years (2002 UWMP)
3. Water Forum Agreement allocation for drier years (2002 UWMP)
4. Recycled water consists of 2,200 Ac-ft/yr for existing City system and 1,526 Ac-ft/yr for WRSP system
5. Conservation Reduction in times of shortage is estimated at 5% for first year of multiple dry year, 7.5% for second year of multiple dry year, and 10% for third year of multiple dry year and single dry year.
6. SJWD water includes 800 AF/yr for Foothills Business Park + 3200 AF/yr for the WRSP. This is wet year supply only.
7. WRSP assumes 5% conservation achievable due to conservation measures taken with original construction.

Section 10910(d)(1) Identify existing water supplies for the proposed project.

Existing surface water, recycled water, and groundwater supplies for the City of Roseville are described under Section 10910(c)(3). Future water supplies for the WRSP are described below.

Future Water Supply Sources

SJWD has an existing contract entitlement with PCWA for up to 25,000 AF/yr for use within Placer County and a long-term wheeling agreement with USBR for accessing the water through Folsom Lake. Certain conditions of that contract allow a portion of the entitlement to be delivered to the City of Roseville if that supply is not needed to meet demands within SJWD's Granite Bay service area in Placer County. The City has entered into a contract with the SJWD for the transfer of an additional amount, up to 3,200 AF/yr, of untreated surface water from this entitlement. During dry years, in accordance with the WFA and consistent with City practice, water conservations measures would be required for the WRSP. The 3,200 AF/yr SJWD water would not be available during dry years for the WRSP, but the recycled water would continue to be used for landscape irrigation even during the driest of years. Even with the recycled water supply and water provided by the City, the total WRSP demand would still exceed supply. The City has committed groundwater for addressing the shortage during dryer and driest years as defined by the Water Forum.

In an effort to minimize impacts to the groundwater basin as a result of dry year extractions, the City is evaluating the feasibility of developing an Aquifer Storage and Recovery (ASR) program. Under such a program, the surface water would be injected into the aquifer in wet years for storage, and then the City's backup groundwater wells would pump the stored water in dry years. The City has a demonstration project at the Diamond Creek well to evaluate the feasibility of using planned wells for injection and storage of treated water.

For the WRSP, during dry-years groundwater would be used to supplement surface water supplies. Impacts to the groundwater basin would be minimized by reducing allowed pumping supporting agricultural lands currently irrigated with groundwater. This would be accomplished at the 1,500-acre Reason Farms property northwest of WRSP Area. The City has contractual right to acquire the Reason Farms property, and will do so in order to produce a regional storm water retention facility. Following the City's acquisition of the property, approximately 1,080 acres can be taken out of rice production.

Future Recycled Water

Pleasant Grove Wastewater Treatment Plant (PGWWTP) on the west side of Phillip Road south of the future extension of Blue Oaks Boulevard will produce recycled water, in addition to recycled water produced by the DCWWTP. The PGWWTP is anticipated to be operational by Fall/Winter 2003.

Current and future recycled water planning efforts for the City of Roseville are described in the Recycled Water Distribution System Feasibility Study (April 2000). The study includes estimates of recycled water demands and describes recycled water distribution system, and identifies features associated with the phased expansion of the system, including recycled water that will be generated by the PGWWTP when it becomes operational.

Section 10910(d)(2)(A) Demonstrate existing water supply entitlements, water rights or water service contracts through written contracts or other proof.

Documentation for water entitlement contracts is contained in **Appendix C.**

Section 10910(d)(2)(B) Provide copy of capital outlay program for financing of a water supply that has been adopted by the public water system.

Financing for the proposed project water supply facilities will be included in the City's Capital Improvement Projects (CIP).

Section 10910(d)(2)(C) Identify any federal, state, and local permits required for construction of the facilities identified for delivering the water supply to the proposed project.

The majority the proposed water transmission facilities will be located in proposed City public right-of-ways with City approved plans. A list of permit requirements for proposed facilities will be identified after the City's review of improvement plans. Anticipated permit requirements include: grading permits and improvement plan drawings.

Section 10910(d)(2)(D) Identify any necessary regulatory approvals required to convey or deliver the water supply to the proposed project.

The State Department of Health Services and the Regional Water Quality Control Board must review and approve an Engineering Report documenting the proposed use of recycled water within the project area prior to recycled water use within the plan area.

In order to convey non-project water (PCWA) through USBR facilities (Folsom Reservoir) a Warren Act wheeling agreement obtained through USBR is required. This agreement has not been approved at this time but is required before water conveyance can occur.

Long term water supply from the CVP is the primary source of water for the City of Roseville. The existing contract is valid through 2011 but Roseville has agreed to early re-negotiation of this contract as required in the Central Valley Project Improvement Act (CVPIA) of 1992. This contract is currently being re-negotiated with USBR with objective of solidifying this water supply for an additional term.

Section 10910(e) Identify other public water system or water contractholders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system for the proposed project.

The City of Roseville is a signatory to the Water Forum Agreement. The Water Forum is a Regional Plan developed by the Sacramento Area Water Forum and Foothill Forum Water Group with the objective for safe, reliable, and environmentally sound water supplies. A number of major stakeholders were involved in the planning process focusing on a Regional Water Agreement, which identified the resources needed to meet 2030 water demands.

In April 1995, the stakeholders agreed on sixty-five Agreements in Principle, which serve to document the Water Forum's progress made to date. A copy of the WFA is available for review online at http://www.waterforum.org/AGREE.HTM .

Section 10910(f)(1) Review any information contained in the UWMP relevant to the identified groundwater supply for the proposed project.

The WRSP was not included in the City's 2002 UWMP because the project was not located within the City when the UWMP was completed. The UWMP will be updated to include the proposed project and groundwater usage will be discussed,

Section 10910(f)(2) Describe any groundwater basin from which the proposed project will be supplied. Include information as to whether the Department of Water Resources has identified the basin as overdrafted or has projected that the basin will become overdrafted.

Description of the Basin

Placer, Sutter, and Sacramento counties are situated in the North American sub-basin located in the eastern central portion of the Sacramento Groundwater Basin. The North American sub-basin is defined by the Bear River on the north, the Feather River on the west, the Sacramento River on the south, and a north-south line extending from the Bear River south to Folsom Lake that passes about 2 miles east of Lincoln. The sub-basin encompasses 351,000 acres (548 square miles). Drainage in the sub-basin is west –southwest at an average five percent grade.

The eastern boundary of the sub-basin is the approximate edge of the alluvial basin, where little or no groundwater flows into or out of the groundwater basin from the Sierra Nevada. The western portion of the sub-basin is a flat flood basin for the Bear, Feather, Sacramento, and American Rivers and several small east-side tributaries. Most of the groundwater is produced in the northern portion of the sub-basin.

Various geologic formations comprise the water-bearing deposits that underlie the region. These formations include an upper aquifer system consisting of the Victor, Fair Oaks, and

Laguna Formations, and a lower aquifer system consisting primarily of the Mehrten Formation. These formations are typically composed of lenses of interbedded sand, silt, and clay interlaced with coarse-grained stream channel deposits. These deposits form a wedge thickening from east to west at a fairly constant rate to a maximum thickness of 2,000 feet near the Sacramento River.

Groundwater occurs in an unconfined to semi-confined state throughout the region. A confined aquifer state occurs in aquifers that have overlying stratum of low permeability. Groundwater under a confined state is described in terms of its piezometric surface elevation rather than a water surface elevation. The piezometric surface elevation is the elevation of water within a piezometer or well that is screened only in the confined or semi-confined aquifer. The groundwater surface elevation is the elevation of water in an unconfined aquifer. Semi-confinement can occur in local areas, and the degree of confinement typically increases with depth. Groundwater in the Victor, Fair Oaks, and Laguna Formations is typically unconfined. The deeper Mehrten Formation, a major source of groundwater, exhibits semi-confined conditions.

Discussion of Overdraft of the Basin

Groundwater levels in southwestern Placer County and northern Sacramento County have generally decreased, with many wells experiencing declines at a rate of about one and one-half feet per year for the last 40 years or more. Some of the largest decreases have occurred in the area of McClellan AFB. Groundwater levels in Sutter and northern Placer Counties generally have remained stable, although some wells in southern Sutter County have experienced declines.

Groundwater elevations have been monitored by DWR for several decades. There are three groundwater wells in the DWR monitoring network in and immediately adjacent to the proposed project area. One well is located adjacent to Pleasant Grove Creek just west of Fiddyment Road in the WRSP Area. A second well is east of the WRSP along Kaseberg Creek southeast of the intersection of Fiddyment and Phillip Roads. The third well is located on City-owned land north of the WRSP. Data for the first well indicate rising groundwater elevations since about 1977, which could be attributable to a decrease in agricultural pumping or recharge into a subsurface channel system. In 2002, the groundwater elevation ranged from 45 to 47 feet above mean sea level (msl). The second well, which has not been monitored since 1993, shows almost stable groundwater elevations since about 1980. Reported groundwater elevations in the well in 1993 were 17 to 20 feet msl. The westernmost well has also been stable since about 1980, and decreased agricultural water use in the area suggests water table levels are rising. In 2002, groundwater elevations ranged from a low of 24 feet msl in November to a high of 17 feet msl in April.

Section 10910(f)(3) Describe the amount and location of groundwater pumped by the public water system for the past five (5) years.

The City has not pumped groundwater from the basin for the past five years. The use of groundwater is part of the City of Roseville's current water supply planning, but it is only used for short-term back-up supply during dry years.

Section 10910(f)(4) Describe the amount and location of groundwater projected to be pumped by the public water system from any basin from which the proposed project will be supplied.

The use of groundwater is part of the City of Roseville's current water supply strategy, used for short-term back-up supply during dry years. The City's plan to address WFA cutbacks includes the extraction of up to 7,400 AF/yr of groundwater during the drier and driest WFA hydrologic year types. The City participated in development of a regional groundwater management plan with PCWA.

Section 10910(f)(5) Analyze the sufficiency of the groundwater from the basin from which the proposed project will be supplied to meet the projected water demand associated with the proposed project.

The City's plan to address WFA cutbacks includes the extraction of up to 7,400 AF/yr of groundwater during the drier and driest year WFA hydrologic year types. The City has three wells and a fourth under construction that are maintained primarily for backup water supply, and additional wells are planned to improve reliability. The City participated in development of a regional groundwater management plan with PCWA.

The City of Roseville is currently utilizing multiple water sources, surface water, recycled water, and groundwater in emergency and dry year situations. The City is also considering future reliability in serving existing customers and potential customers in the WRSP.

In the short-term, the City will continue to rely on its existing entitlements to meet existing water supply needs, and to supply new developments within the existing service area. In the long-term, the City plans to make use of selective groundwater pumping in support of agricultural lands currently irrigated and under City control as a means to supply an additional dry-year groundwater source.

Based upon the City's total projected water supplies for normal, single-dry, and multiple-dry years over a 20-year projection, as demonstrated by this WSA, the City will have sufficient water to meet projected water demands for proposed WRSP in addition to meeting the existing service area's planned future demands. This determination is based on the information provided in this WSA.

APPENDIX A

Technical Memorandum 1 – Unit Demand Factor Revision

TECHNICAL MEMORANDUM

MWH
MONTGOMERY WATSON HARZA

Subject: Task 1 – Unit Water Demand Factor Revision **Date:** November 6, 2002

Prepared By: Ping Chen **File Number:** 1510935

Reviewed By: Marshall Davert

INTRODUCTION

BACKGROUND

The City of Roseville (City) is considering whether to provide water service to urban growth areas along the western boundary of the City. In particular, the City is considering delivery of water to the West Roseville Specific Plan (WRSP) area and the "City of Roseville/Placer County Memorandum of Understanding Transition Area" (together referred to as the "MOU area"). These areas are outside the existing City limits.

Before obligating itself to providing water service to the MOU area, the City desires to evaluate its ability to provide long-term, reliable water supplies to this area while maintaining service to its existing (and future) customers within the City limits. In addition, the cost of delivering water supplies to the MOU Area must not negatively impact the City's existing ratepayers.

City Environmental Utilities (EU) staff and MWH completed a preliminary evaluation of potential water supply alternatives in February 2002. The results of the evaluation were presented to the Roseville City Council. The preliminary evaluation identified a range of water supply alternatives that could potentially provide the City with the ability to provide long-term, reliable water supplies to the MOU area while maintaining service to its existing and future customers within the City limits. Based on the results, the City Council directed staff to more fully develop and evaluate the most promising alternatives, and to return with a recommended course of action.

Previous water supply planning in the City has been based on unit water demand factors, maximum day and peak hour demand factors, and total water demand provided in the *General Plan Update Water System Study* (Spink, August 1993). These factors were modified in the preliminary evaluation based on a limited amount of new data. The new data apparently indicate estimates of water demand in both the City and the MOU Area based on demand factors from the Spink study can be reduced. The consequence of such a reduction is that the existing surface water contract entitlements of the City would be sufficient to provide a portion of the water supplies needed to serve the MOU area. However, revision of demand factors does not create new water supply. Prudence dictates that a portion of the "supplies" derived through revision of the unit demand factors is kept in reserve as a safety factor to protect against the inherent uncertainty of such estimates.

MEMORANDUM OBJECTIVES

The objectives of this memorandum are: 1) to compare the unit water demand factors calculated for the City based on new data with unit water demand factors of agencies with similar water use characteristics (including water districts in Sacramento County, Placer County, and the Central Valley of California), and 2) to recommend revised unit water demand factors for use in completing the water supply investigation for the MOU area.

MEMORANDUM OVERVIEW

This memorandum is organized into six sections:

- **INTRODUCTION** - provides background information and an overview of the memorandum.
- **PREVIOUS WORK** - summarizes the unit water demand factors presented in the Spink study and the revised factors estimated utilizing recently collected data.
- **COMPARISON OF WATER DEMAND FACTORS** - presents a comparison of the revised unit water demand factors against factors gathered from areas with similar water use characteristics.
- **METHODOLOGY** - presents the procedure applied to analyze the data and to estimate revised unit water demand factors.
- **RESULTS AND CONCLUSIONS** - summarizes the results of the analysis.
- **RECOMMENDATIONS** - summarizes the information presented in the memorandum and recommends revised unit demand factors for use in completing the water supply investigation for the MOU area.

PREVIOUS WORK

Previous work has been conducted to estimate the City's unit water demand factors (see the Spink study and work completed by MWH in the aforementioned preliminary evaluation). In both cases, land use based unit water demand factors were calculated on either a gallons per day per acre (gpd/ac) or gallons per day per equivalent residential dwelling unit (gpd/DU) basis.

The data indicate the unit water demand factors included in Spink study likely overestimate current City water use. This is thought to be principally a consequence of the impact of the implementation of water conservation measures in post-1992 home construction.

Table 1 summarizes unit water demand factors by land use category for both the Spink study and the preliminary evaluation completed in February 2002. In comparison to the Spink study, the more recent data show a reduction in water use in every land use category except "Business Professional", "Railroad Yard", and "Public". The data in the residential categories show at least a 25-percent decrease in every category except in one of the "High Density" categories and one of the "Low Density" categories. In the latter two categories, the decreases in the estimated unit water demand factors still exceed 10 percent.

Significant decreases in the "Industrial" categories may be attributed to water conservation and greater weighting of economic considerations used in the design of industrial processes requiring water. The decrease in the "Light Industrial" may have resulted from an increase in operational changes on-site (e.g., self-storage) introduced since completion of the Spink report. The increase in the "Business Professional" category may be the result of more medical offices with a higher average water use than typical professional buildings. The decreases in the "Schools" and "Parks" categories may be attributable to improved irrigation practices and economic considerations.

COMPARISON OF WATER DEMAND FACTORS

The MWH evaluation indicated that the unit water demand factors included in the Spink study could be reduced. Because the MWH study was based on limited data, however, these estimates will require refinement as additional data become available. The water supply strategy developed for the MOU area addresses the need for such refinement by insuring that redundant sources of water supply are available if the anticipated water savings reflected in the revised unit demand factors do not materialize.

When unit water demand factors are available in nearby areas, these data are often used to develop alternative unit water demand factors. In this memorandum, nearby areas used for comparative purposes

included Sacramento County water purveyors [1], Zone 40 of the Sacramento County water Agency, Zone 1 of the Placer County Water Agency (PCWA), and a number of cities located in the Central Valley of California with similar water use characteristics.

Table 1. Comparison of Unit Water Demand Factors

	Land Use Category	MWH Evaluation Average Annual Unit Water Demand Factor	Spink Study Average Annual Unit Water Demand Factor	Percent Difference
		(gpd/DU)	(gpd/DU)	
Residential	LDR (< 3.5 DU/ac)	818	922	-11%
	LDR (3.5 to 5.0 DU/ac)	560	760	-26%
	LMDR (>5.0 to 6.0 DU/ac)	515	685	-25%
	LMDR (>6.0 to 8.0 DU/ac)	438	566	-23%
	MDR (>8.0 to 12.0 DU/ac)	324	425	-24%
	HDR (>12.0 to 16.0 DU/ac)	218	310	-30%
	HDR (>16.0 DU/ac)	165	190	-13%
Commercial		(gpd/ac)	(gpd/ac)	
	Commercial/Retail	2,294	2,678	-14%
	Business Professional	3,207	2,678	20%
	Light Industrial	1,203	2,678	-55%
	Industrial	2,597	3,124	-17%
	Railroad Yard	131	122	7%
	Elementary Schools	2,143	3,881	-45%
	High Schools	2,788	4,571	-39%
	Public (Fire Station, etc)	2,249	2,000	12%
	Park/Recreation	2,377	3,881	-39%

Source: City of Roseville Department of Utilities, Evaluation of Water System Capacity, TM 1- Water Demand Evaluation (MWH, February 2002)

Abbreviations:

LDR – Low Density Residential
LMDR – Low-Medium Density Residential
MDR – Medium Density Residential
HDR – High Density Residential

[1] In 1995, a study to estimate the annual water demand within the Sacramento countywide area was conducted to support the *Sacramento Area Water Forum*. This report provided a comprehensive evaluation of Sacramento county-wide current and projected land use, and correlated unit water demand estimates to those land uses (Boyle, May 1995).

SACRAMENTO COUNTY WATER PURVEYORS

Table 2 summarizes the unit water demand factors for each land use category for water purveyors within Sacramento County. The land use categories are grouped into "residential" and "commercial" in the same manner as in the Spink and MWH studies. The table is incorporated from the Boyle report with some modifications. These modifications include:

- Land use categories such as "Rural Estate", "Agriculture", and "Vacant" which are not applicable to the City of Roseville or have a value of zero have been removed from the original table in Boyle report.
- The water use information for some water purveyors (in particular, the Elk Grove Water Works, Orange Vale Water Company, the Rio Linda/Elverta Community Water District, and San Juan Water District (formerly San Juan Suburban Water District) have been removed. Unit water demand factors for these agencies were determined to be equivalent to the unit water demand factor averages of the other urban water agencies evaluated in the Boyle report.
- The unit water demand factors in **Table 2** are normalized to account for the system loss.

To facilitate comparison of unit water demand factors, the factors for each region were converted to acre-feet per acre (af/ac).

ZONE 40 OF THE SACRAMENTO COUNTY WATER AGENCY

A similar water demand study was conducted in Zone 40 (an area that includes the urban study areas of Sunrise, White Rock, Vintage Park, County Creek, Calvine/Power Inn, Laguna, and Grantline/99). The unit water demand factors evaluated in that study were based on the same land use categories as in the Boyle report. To avoid excessive weight being placed on Zone 40 when calculating the average, the unit water demand factors of one representative area (Sunrise) were incorporated into **Table 2.**

ZONE 1 OF THE PLACER COUNTY WATER AGENCY (PCWA)

PCWA used two sets of unit water demand factors to capture the difference between new and old construction and landscaping practices. The factors in PCWA's Lower Zone 1 are more comparable to the City since both reflect more recent home construction.

To provide a uniform basis of comparison, the PCWA land use categories were regrouped to match the land uses categories in the Boyle study (see **Table 3**). Units have been converted from gpd/DU to acre-feet per acre per year for residential land uses, and gpd/ac to acre-feet per acre per year for commercial and industrial land uses. In addition, PCWA residential factors were based on net acreage rather than gross acreage; thus, a 25-percent downward adjustment in PCWA residential factors was made.

OTHER CENTRAL VALLEY CITIES

Unit water demand factors for other cities in the Central Valley of California are included in the **Table 2** under the heading "Central Valley Average". The cities used included: Modesto, Fairfield, Manteca, Stockton, and Sacramento. The <u>average</u> unit water demand factors are presented in **Table 2.**

METHODOLOGY

Statistical tools were used to analyze the data presented in **Table 2.** First, the mean and standard deviation were calculated for each land use category group (see **Table 2**). Unit water demand factors from the Spink study and the MWH evaluation were excluded from the calculation. To minimize the influence of large areas, arithmetic averages were calculated rather than area-weighted averages.

Unit water demand factors for each land use category were then divided into several ranges of standard deviation intervals. The frequency of occurrence within each interval was calculated by land use type. The frequency of occurrence for each land use category was plotted against the unit water demand factor to construct histograms for each unit water demand factor (see **Figures 1** through **10** located at the end

of this memorandum). Values for the mean, mean minus one standard deviation, and mean plus one standard deviation are noted on each figure.

In addition, the unit water demand factors from the Spink study and the MWH evaluation are indicated on each figure except the "Mixed Land Uses" and Urban Development Area" land use categories. This information was used to evaluate the proposed revised unit water demand factors. In addition, the land use categories in the Spink study and MWH evaluation were normalized to match the Boyle report in **Table 4**.

RESULTS AND CONCLUSIONS

Revised unit water demand factors were developed based on the data presented in **Figures 1** through **10**. As shown in the figures, the unit water demand factors for most areas fall within the range of the "mean minus σ" and the "mean plus σ" (where σ is the standard deviation). Comparison of the histograms with the unit water demand factors from the Spink study and MWH evaluation resulted in three principal observations.

OBSERVATION 1

In the "Single Family – Low Density" land use (see **Figure 1**) and "Multi Family – Medium Density" land use (see **Figure 2**) categories, both the MWH evaluation unit water demand factors are within one standard deviation of the mean. Unit water demand factors within that range are presumed to have a higher confidence level than that outside the range. Therefore, it would be defensible to utilize the unit water demand factors from the MWH evaluation for the "Single Family – Low Density" and "Multi Family – Medium Density" land use categories.

OBSERVATION 2

In the "Commercial and Office", "Industrial", and "Public Recreation" land use categories (see **Figures 4, 5,** and **7**, respectively), both the Spink study and MWH evaluation unit water demand factors are within one standard deviation of the mean. In the "Public Recreation" land use category, the MWH evaluation unit water demand factor is lower than the mean value; the Spink study factor is higher. Therefore, using the mean value of the land use category is presumed to have a higher confidence level than selecting either individual factor.

For the of "Commercial and Office" and "Industrial" land use categories, the unit water demand factors in the Spink study and MWH evaluation are both less than the mean values. In this case, use of the average of the Spink study and MWH evaluation factors is recommended.

OBSERVATION 3

In land use categories "Multi Family – High Density", "Public Quasi-Public, Cemetery, and Miscellaneous", and "Rights-of-Way" (see **Figures 3, 6,** and **8**, respectively), both the Spink study and MWH evaluation unit water demand factors fall outside the one standard deviation of the mean range. This comparison suggests the City's water use is different than nearby areas. For these land use categories, use of the average of the Spink study and MWH evaluation factors is recommended.

The mean value of the land use category is used for the "Mixed Land Uses" and "Urban Development Area" land use categories (see **Figures 9** and **10**) because of the unavailability of the unit water demand factors in the Spink study.

Table 2. Comparison of Unit Water Demand Factors by Land Use Category (af/ac)/yr

Area	Single Family Low Density	Multi Family Medium Density	Multi Family High Density	Comm-ercial & Office	Indus-trial	Public, Quasi-Public, Cemetery & Misc	Public Recrea-tion	Right of Way	Mixed Land Uses	Urban Develop Area	System Loss (%)
Sacramento Suburban (formerly Arcade)	3.27	4.20	4.66	3.50	6.84	1.17	4.89	0.23	2.63	2.63	5.0
Arden Cordova Water Service Company	3.79	4.87	5.41	4.23	4.23	0.34	2.20	0.27	2.68	2.68	7.0
Carmichael	2.70	3.47	3.86	5.01	5.66	0.96	2.59	0.19	2.54	2.54	1.5
California-American Water Company (formerly Citizens Utilities Company of California)	3.54	4.55	5.05	6.11	6.10	1.27	4.80	0.25	2.73	2.73	9.3
Citrus Heights	2.97	3.81	4.23	2.91	6.22	0.70	3.14	0.21	2.53	2.53	1.0
Del Paso Manor	1.93	2.47	2.75	9.60	2.68	0.69	2.73	0.13	2.58	2.58	3.0
Fair Oaks	3.16	4.06	4.51	4.19	6.61	0.30	3.55	0.22	2.75	2.75	10.0
Florin County	2.72	3.51	3.89	2.93	3.02	0.98	4.09	0.19	2.65	2.65	6.0
City of Folsom	2.72	4.88	5.42	1.64	2.42	0.19	3.13	0.27	2.69	2.69	7.5
Fruitridge Vista	3.45	4.44	4.93	3.70	7.25	1.24	5.18	0.25	2.69	2.69	7.5
City of Galt	3.40	4.38	4.86	2.85	3.88	1.21	4.09	0.25	2.69	2.69	7.5
Sacramento Suburban (formerly Northridge)	3.07	3.95	4.39	3.61	0.33	0.55	0.76	0.21	2.68	2.68	7.0
Rancho Murieta CSD	3.22	4.13	4.60	1.22	1.22	0.66	0.86	0.22	2.71	2.71	8.5
Arden Park Vista (SCWA)	3.06	3.93	4.38	3.68	3.16	1.10	4.60	0.22	2.69	2.69	7.5
Tokay Park	3.01	3.87	4.30	3.23	6.31	1.08	4.52	0.22	2.69	2.69	7.5
Sunrise	3.11	3.98	4.43	2.96	2.91	1.12	3.72	0.26	2.70	n/a	7.5
Central Valley Average	2.15	3.25	3.25	2.08	2.36	1.71	2.01	n/a	n/a	n/a	0.0
Lower Zone 1 of PCWA	3.00	4.86	4.66	2.81	3.28	2.81	3.88	n/a	2.81	n/a	0.0
City of Roseville (Spink)	3.78	5.59	2.90	3.00	3.23	3.32	4.35	0.14	n/a	n/a	0.0
City of Roseville (MWH)	2.99	4.25	2.51	2.81	2.07	2.57	2.66	0.15	n/a	n/a	2.0
Minimum:	**1.93**	**2.47**	**2.75**	**1.22**	**0.33**	**0.19**	**0.76**	**0.13**	**2.53**	**2.53**	n/a
Maximum:	**3.79**	**4.88**	**5.42**	**9.60**	**7.25**	**1.71**	**5.18**	**0.27**	**2.75**	**2.75**	n/a
Average:	**3.01**	**4.03**	**4.42**	**3.68**	**4.14**	**1.00**	**3.37**	**0.22**	**2.67**	**2.66**	n/a
Standard Deviation:	**0.46**	**0.61**	**0.68**	**1.87**	**2.09**	**0.60**	**1.31**	**0.03**	**0.07**	**0.07**	n/a

Table 3. Comparison of Land Use Categories between PCWA and Boyle Study

	Placer County Water Agency	Corresponding Land Use Category in Boyle Report
Residential	Rural (>10 ac/DU)	Rural Estate
	Rural (1 to 10 ac/DU)	Rural Estate
	Low Density (<1.0 DU/ac)	Single Family Low Density
	Low Density (1.0 to <2.0 DU/ac)	Single Family Low Density
	Low Density (2.0 to <3.0 DU/ac)	Single Family Low Density
	Low Density (3.0 to <4.0 DU/ac)	Single Family Low Density
	Medium Density (4.0 to <5.0 DU/ac)	Multi Family Medium Density
	Medium Density (5.0 to <7.0 DU/ac)	Multi Family Medium Density
	Medium Density (7.0 to <10.0 DU/ac)	Multi Family Medium Density
	High Density (10.0 to <16.0 DU/ac)	Multi Family High Density
	High Density (16.0 to <21.0 DU/ac)	Multi Family High Density
Commercial	Commercial/Office/Professional	Commercial and Office
	Tourist/Resort Commercial	Commercial and Office
	Business Park/Industrial	Commercial and Office
	Public Facility	Public, Quasi-Public, Cemetery & Misc
	Schools	Public, Quasi-Public, Cemetery & Misc
	Greenbelts (irrigated)	Public Recreation
	Open Space	Vacant
	Urban Reserve	Mixed Land Uses
	Parks	Public Recreation
	Streets	Right of Way
	Mixed Use	Mixed Land Uses
	Fair Grounds	Public, Quasi-Public, Cemetery & Misc
	Golf Courses	Public Recreation
	Lake	Vacant
	Riparian Drainage	Vacant
	Agriculture	—
	Church	Public, Quasi-Public, Cemetery & Misc

Table 4. Comparison of Land Use Categories

	Spink Study and MWH Evaluation	Corresponding Land Use Category in Boyle Report
Residential	LDR (<3.5 DU/ac)	Single Family Low Density
	LDR (<3.5 to 5.0 DU/ac)	Single Family Low Density
	LMDR (>5.0 to 6.0 DU/ac)	Multi Family Medium Density
	LMDR (>6.0 to 8.0 DU/ac)	Multi Family Medium Density
	MDR (>8.0 to 12.0 DU/ac)	Multi Family Medium Density
	HDR (>12.0 to 16.0 DU/ac)	Multi Family High Density
	HDR (>16.0 DU/ac)	Multi Family High Density
Commercial	Commercial/Retail	Commercial and Office
	Business Professional	Commercial and Office
	Light Industrial	Commercial and Office
	Industrial	Public, Quasi-Public, Cemetery & Misc
	Railroad Yard	Public, Quasi-Public, Cemetery & Misc
	Elementary Schools	Public Recreation
	High School	Vacant
	Public (Fire Stations, etc)	Mixed Land Uses
	Parks/Recreation	Public Recreation

RECOMMENDATIONS

Recommended revised unit water demand factors (in af/ac) for use in completing the water supply investigation for the MOU area are presented in **Table 5**. The principal results are the percentage changes shown in the right-most column of the table. These percentage changes were applied to the unit water demand factors in gpd/DU and gpd/ac found in the original Spink study. Those factors were then applied to updated land use categories for the City and the MOU area (see **Table 6**).

Use of the revised unit water demand factors decrease the City's projected water demands relative to the projected water demands utilizing the unit water demand factors presented in the Spink study. Of note, factors recommended for the "Single Family – Low Density" and "Multi Family – Medium Density" land use categories decrease the projected water demands in those land use categories by 21 percent and 24 percent, respectively.

Projected water demands in other land use categories will also be reduced. The recommended revised unit water demand factors are typically less than those found in the Spink study, but greater than those from the MWH evaluation. The percentage reductions range from 3 to 23 percent. In the "Right of Way" land use category, the Spink study and MWH evaluation yielded similar results. Thus, the unit water demand factor does not change appreciably, although a positive percentage change is shown.

Table 5. Comparison of Unit Water Demand Factors (af/ac)

Boyle Report Land Use Category		Spink Study	MWH Evaluation	Recommended Revised Factor	Percent Difference between Revised and Spink Study
Residential	Single Family Low Density	3.78	2.99	*2.99*	*-21%*
	Multi Family Medium Density	5.59	4.25	*4.25*	*-24%*
	Multi Family High Density	2.90	2.51	*2.71*	*-7%*
Commercial	Commercial and Office	3	2.81	*2.91*	*-3%*
	High-rise Regional Office	n/a	n/a	*n/a*	*n/a*
	Industrial	3.23	2.07	*2.65*	*-18%*
	Public, Quasi-public, Cemetery & Misc	3.32	2.57	*2.95*	*-11%*
	Public Recreation	4.35	2.66	*3.37*	*-23%*
	Vacant	n/a	n/a	*n/a*	*n/a*
	Right of Way	0.14	0.15	*0.145*	*4%*
	Mixed Land Uses	n/a	n/a	*2.67*	*n/a*
	Urban Development Area	n/a	n/a	*2.66*	*n/a*

The percentage changes shown on **Table 5** were used to recalculate the unit water demand factors from the Spink study in gpd/DU and gpd/ac. The revised unit demand factors are shown are **Table 6.**

Table 7 summarizes the estimated annual water demands from the City and the MOU area utilized in development of the water supply strategy. The revised unit water demand factors were applied to estimate all future water demand within the MOU area. For the City, however, the unit water demand factors from the Spink study were applied to areas constructed prior to 1992. The revised unit water demand factors were applied only to areas constructed after 1992 (including projected future construction).

Table 6. Comparison of Unit Water Demand Factors (gpd/DU and gpd/ac)

Land Use Category		Spink Study Unit Water Demand Factors	Recommended Percent Change from Spink Study	Recommended Revised Unit Water Demand Factors
Residential	LDR (< 3.5 DU's/Ac)	922 gpd/DU	-21 %	*728 gpd/DU*
	LDR (3.5 to 5.0 DU's/Ac)	760 gpd/DU	-21%	*600 gpd/DU*
	LMDR (>5.0 to 6.0 DU's/Ac)	685 gpd/DU	-24%	*521 gpd/DU*
	LMDR (>6.0 to 8.0 DU's/Ac)	566 gpd/DU	-24%	*430 gpd/DU*
	MDR (>8.0 to 12.0 DU's/Ac)	425 gpd/DU	-24%	*323 gpd/DU*
	HDR (>12.0 to 16.0 DU's/Ac)	310 gpd/DU	-7%	*288 gpd/DU*
	HDR (>16.0 DU's/Ac)	190 gpd/DU	-7%	*177 gpd/DU*
Commercial/Other	Commercial/Retail	2,678 gpd/ac	-3%	*2,598 gpd/ac*
	Business Professional	2,678 gpd/ac	-3%	*2,598 gpd/ac*
	Light Industrial	2,678 gpd/ac	-3%	*2,598 gpd/ac*
	Industrial	3,124 gpd/ac	-18%	*2,562 gpd/ac*
	Railroad Yard	122 gpd/ac	-11%	*109 gpd/ac*
	Elementary Schools	3,881 gpd/ac	-11%	*3,454 gpd/ac*
	High Schools	4,571 gpd/ac	-11%	*4,068 gpd/ac*
	Public (Fire Station, etc)	2,000 gpd/ac	-11%	*1,780 gpd/ac*
	Park/Recreation	3,881 gpd/ac	-23%	*2,988 gpd/ac*
	Open Space/Major ROW	-	+4%	-
	Vacant/Unassigned	-	+4%	-

Table 7. Estimated Average Annual Water Demands based on Revised Unit Demand Factors

Land Use Category		City of Roseville (AF/year)		West Roseville Specific Plan		MOU Areas (AF/year)	
				West Roseville Specific Plan Only (AF/year)	Combined with City (AF/year)	MOU Areas Only (AF/year)	MOU Areas Combined with City (AF/year)
		Estimated Existing Demand	Estimated Ultimate Demand	Estimated Ultimate Demand	Estimated Ultimate Demand	Estimated Ultimate Demand	Estimated Ultimate Demand
Residential	LDR (< 3.5 DU's/Ac)	4,943	5,903	4,010	9,913	4,010	9,913
	LDR (3.5 to 5.0 DU's/Ac)	8,222	13,524	501	14,025	3,903	17,427
	LMDR (>5.0 to 6.0 DU's/Ac)	2,880	3,301	-	3,301	-	3,301
	LMDR (>6.0 to 8.0 DU's/Ac)	1,594	2,030	390	2,420	746	2,776
	MDR (>8.0 to 12.0 DU's/Ac)	401	761	-	761	-	761
	HDR (>12.0 to 16.0 DU's/Ac)	32	115	333	448	333	448
	HDR (>16.0 DU's/Ac)	1,347	1,948	184	2,132	507	2,455
Commercial/Other	Commercial/Retail	2,323	4,929	256	5,185	463	5,392
	Business Professional	987	2,267	14	2,281	160	2,427
	Light Industrial	858	4,120	329	4,449	329	4,449
	Industrial	1,599	3,002	-	3,002	-	3,002
	Railroad Yard	87	72	-	72	-	72
	Elementary Schools	648	573	253	826	520	1,093
	High Schools	408	597	246	843	246	843
	Public (Fire Station, etc)	1,199	1,290	4	1,294	4	1,294
	Park/Recreation	4,628	6,176	824	7,000	1,447	7,623
	Open Space/Major ROW	-	-	-	-	-	-
	Vacant/Unassigned	-	-	-	-	-	-
Sub-Total		32,155	50,608	7,344	57,952	12,668	63,276
System Losses (2%)		638	1,012	147	1,159	254	1,266
TOTAL:		32,794	51,620	7,491	59,111	12,922	64,542

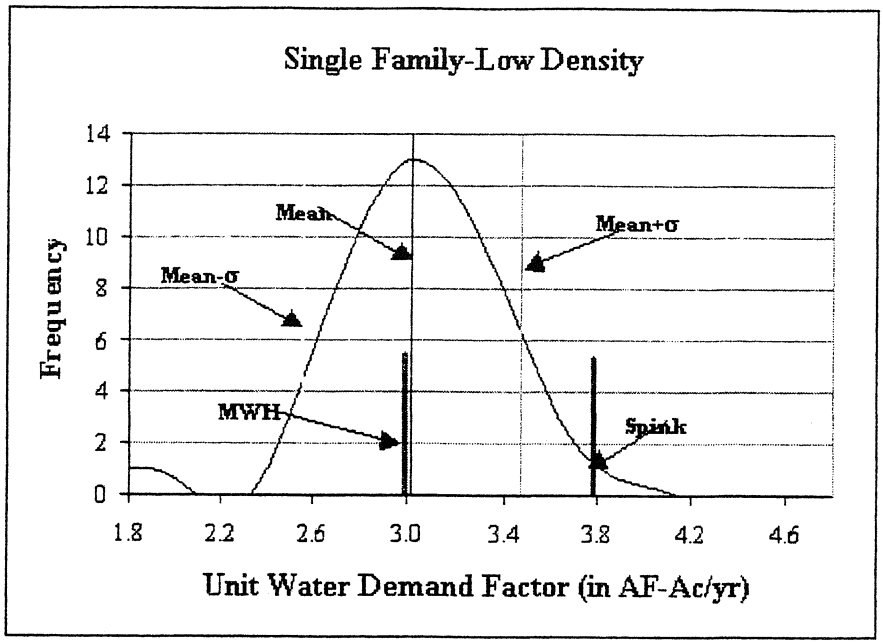


Figure 1. Histogram of Single Family – Low Density

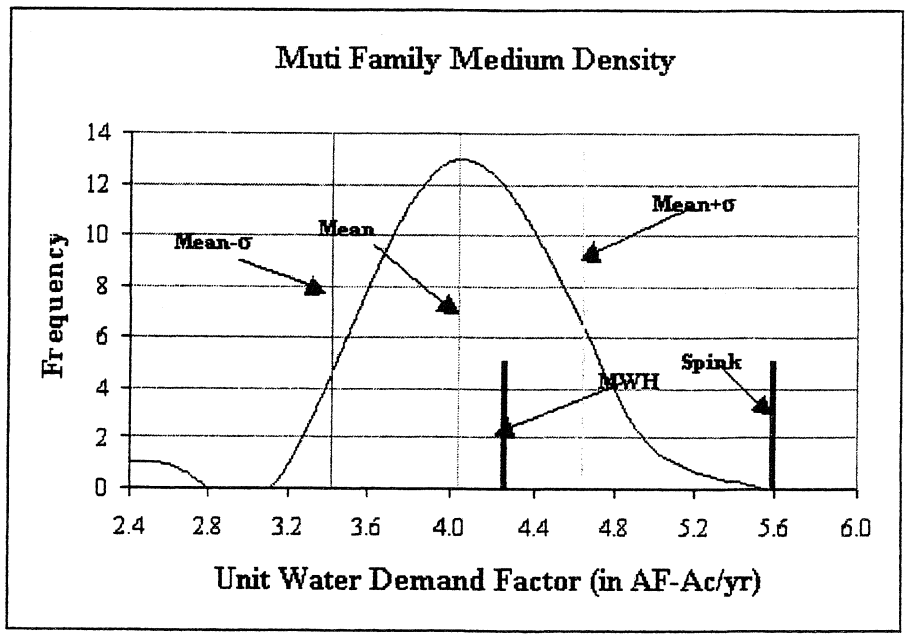


Figure 2. Histogram of Multi Family – Medium Density

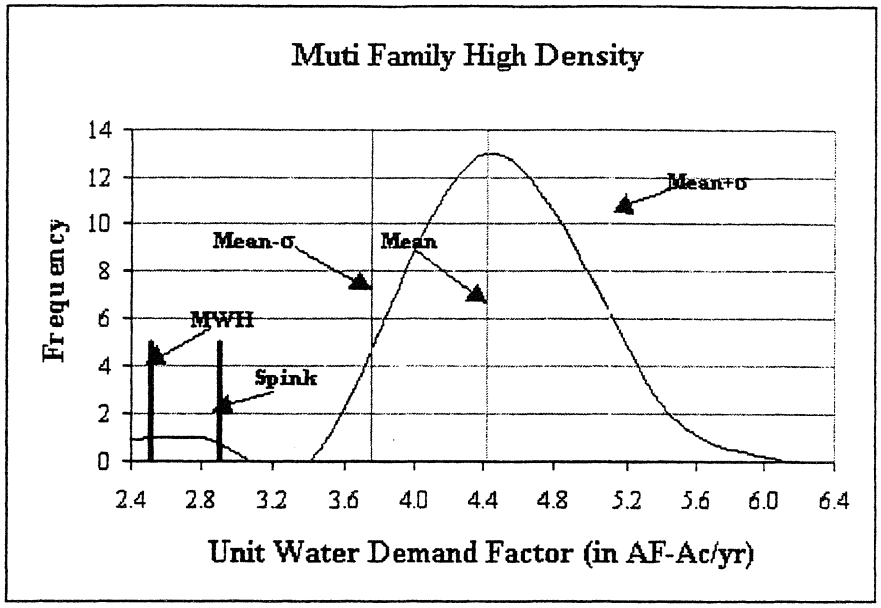


Figure 3. Histogram of Multi Family – High Density

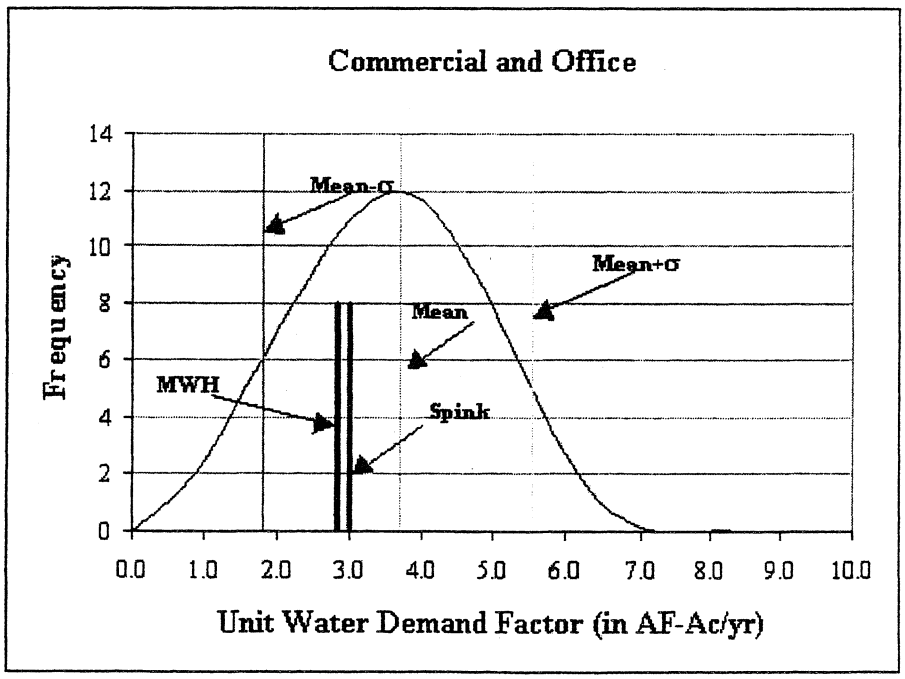


Figure 4. Histogram of Commercial and Office

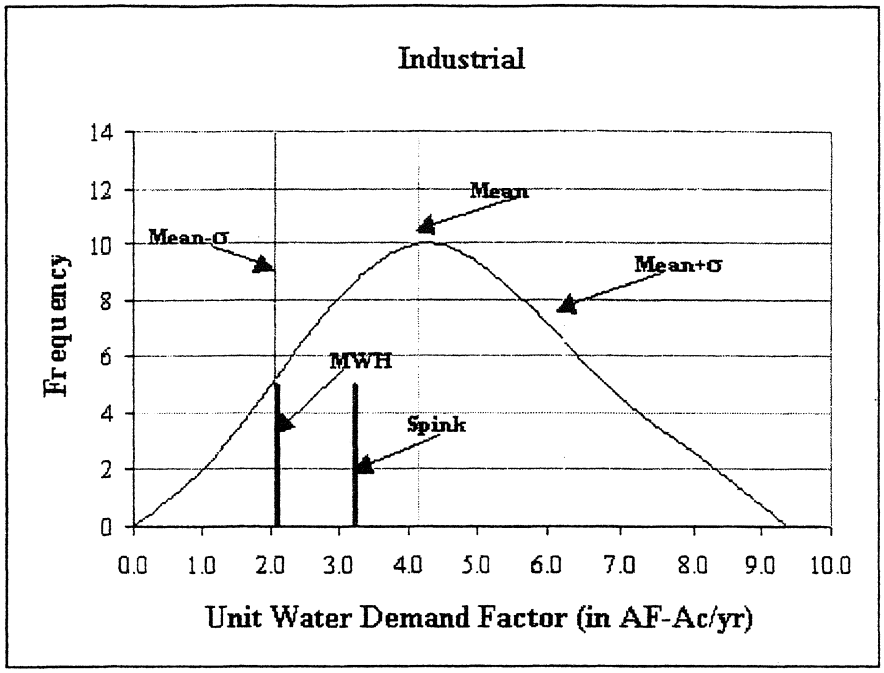


Figure 5. Histogram of Industrial

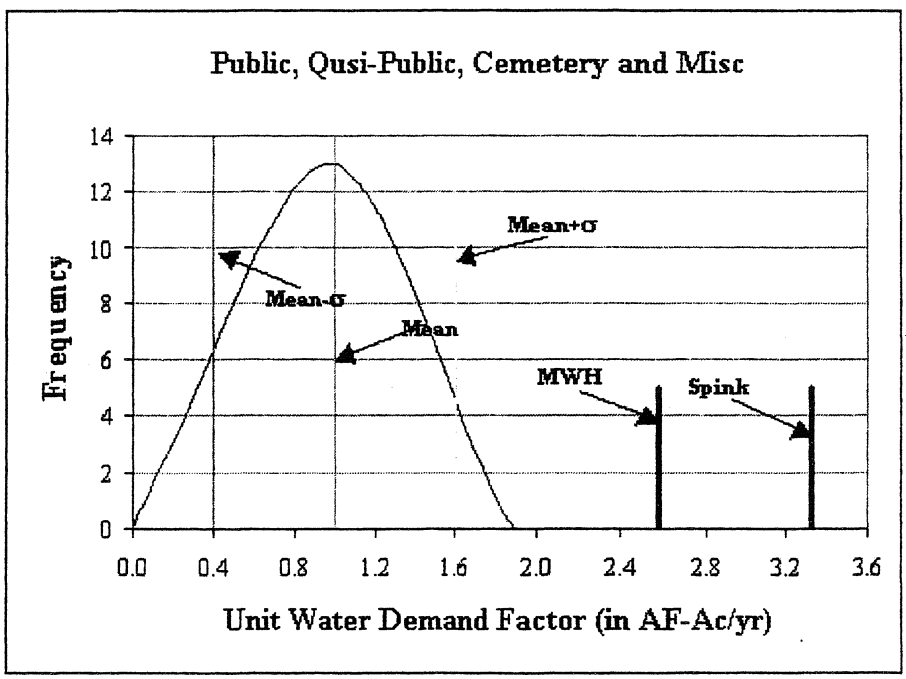


Figure 6. Histogram of Public, Quasi-Public, Cemetery, and Miscellaneous

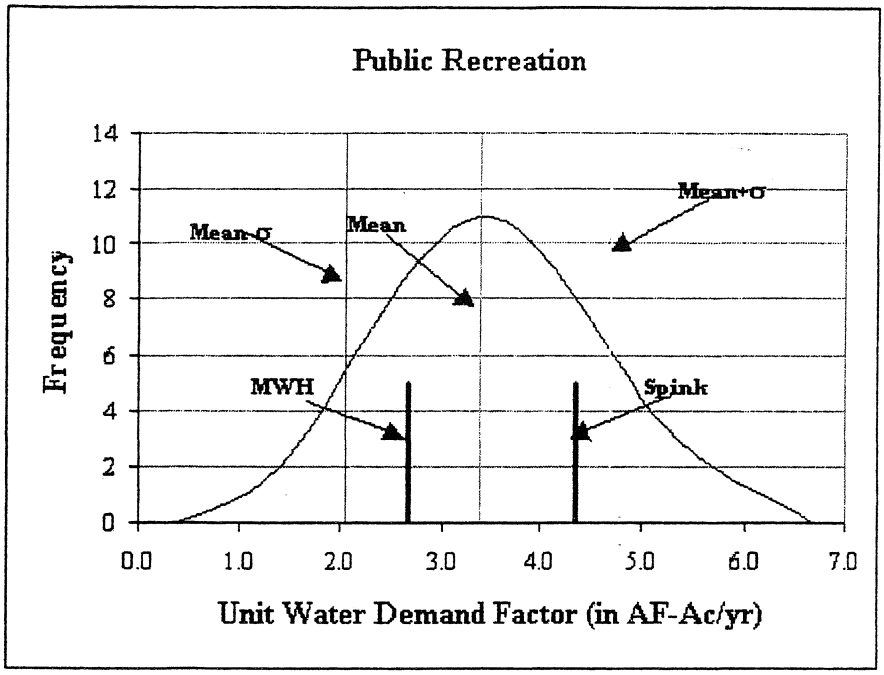


Figure 7. Histogram of Public Recreation

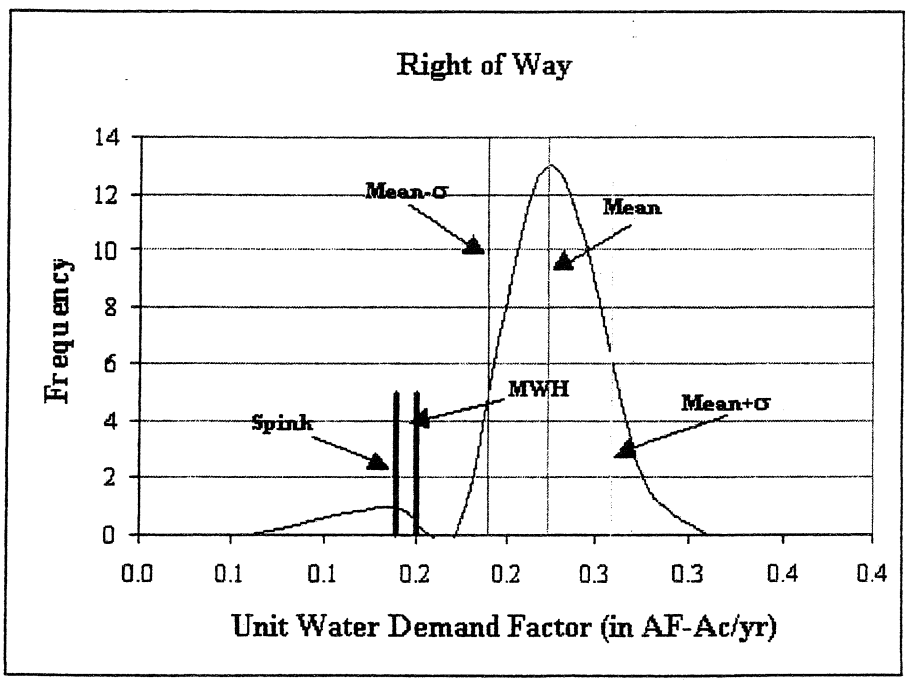


Figure 8. Histogram of Right of Way

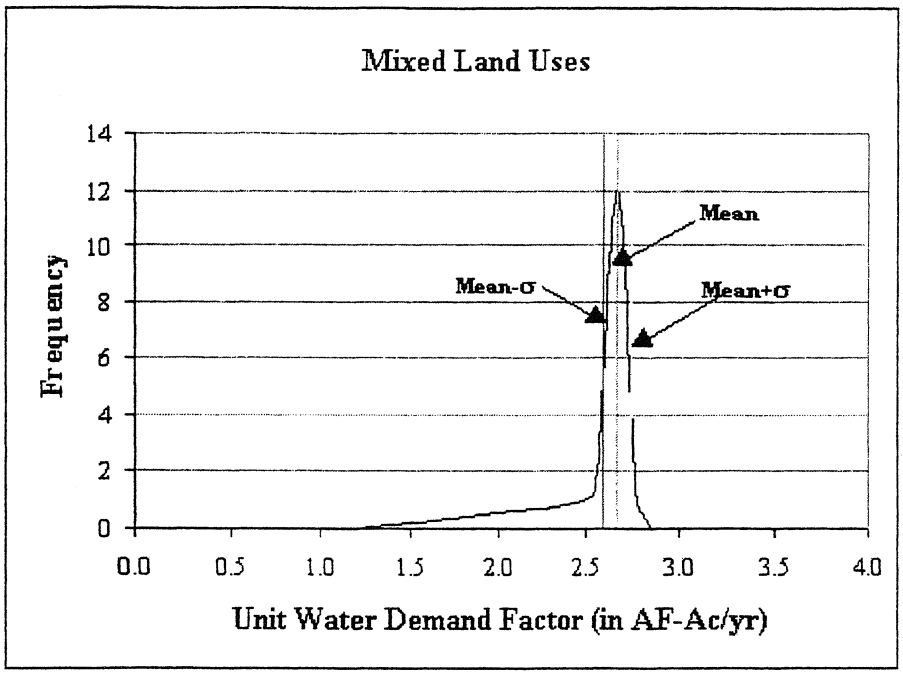


Figure 9. Histogram of Mixed Land Uses

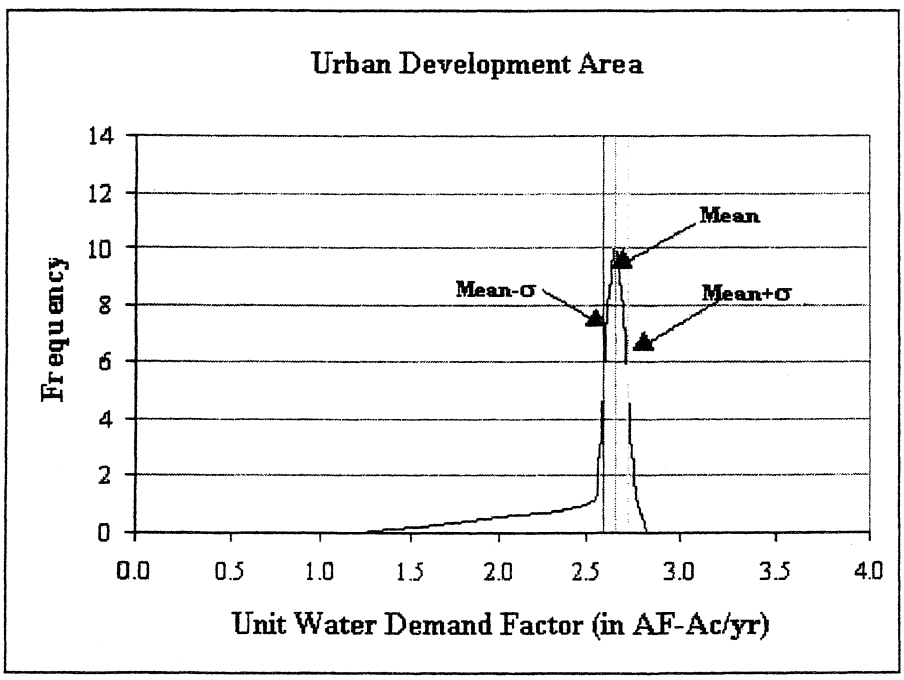


Figure 10. Histogram of Urban Development Area

APPENDIX B

Technical Memorandum 7 – Water Supply Strategy

TECHNICAL MEMORANDUM

MWH
MONTGOMERY WATSON HARZA

Subject:	Task 7: Water Supply Strategy	**Date:**	April 10, 2003
Prepared By:	Marshall Davert	**File Number:**	1510935
Reviewed By:			

INTRODUCTION

BACKGROUND

The City of Roseville (City) is considering whether to provide water service to urban growth areas (outside the existing City limits) along the western boundary of the City. In particular, the City is considering delivery of water to the West Roseville Specific Plan (WRSP) area and the "City of Roseville/Placer County Memorandum of Understanding Transition Area" (Transition area). Together these areas are referred to as the "MOU area".

Two questions must be answered before the City can accept the obligation of providing water service to the MOU area. First, does the City have available supplies to provide long-term, reliable water service to the MOU area while maintaining service to its existing (and future) customers within the City limits? Second, if such water supplies are available, can they be delivered without negatively affecting the City's existing ratepayers?

A preliminary evaluation was completed in February 2002. That evaluation identified a range of water supply alternatives that in aggregate could provide the City with the ability to provide long-term, reliable water supplies to the MOU area while maintaining service to its existing (and future) customers within the City limits. The investigation did not address impacts to existing ratepayers.

Based on the results of the preliminary investigation, the City Council directed City Environmental Utilities (EU) staff to more fully develop and evaluate the most promising alternatives, and to return with a recommended course of action.

OBJECTIVE OF THIS MEMORANDUM

The primary objective of this memorandum is to develop and describe a water supply strategy for meeting projected water demands within the City's existing service area, the WRSP area, and, ultimately, the entire MOU area.

MEMORANDUM OVERVIEW

Previous memoranda provided estimates of existing and projected water demands for both the City and the MOU area and identified alternatives for potentially meeting those demands. This memorandum begins with a summary of the principal results of those memoranda. Following that summary are descriptions of the water supply alternatives identified by EU staff for more thorough analysis. These descriptions include discussion of the operational and physical aspects of specific water supply alternatives. The intent is that the descriptions provide sufficient detail to support the WRSP environmental document. The memorandum concludes with a discussion of the potential timing and sequencing of alternatives.

WATER SUPPLY SETTING

CURRENT AND PROJECTED WATER DEMANDS

The preliminary evaluation provided estimates of current and projected water demands within both the existing City boundaries and the MOU area. Three "levels" of water demand were considered: 1) the City only, 2) the City plus the WRSP area, and 3) the City plus the entire MOU Area. These estimated water demands provide the basis for evaluating potential water supply alternatives and for determining the facilities required to make those alternative supplies available.

The *General Plan Update Water System Study* (Spink, August 1993) served as the City's initial basis for the estimates of water demand. "Revised" estimates of current and projected water demands were determined utilizing recently gathered water meter information. The new data indicate that unit water demands for the majority of land use categories in the City have decreased relative to the estimates used in the 1993 Spink study by almost 25 percent. The primary reason for this decline has been attributed to improved water conservation.

Table 1 presents the land use categories and total water demand for the City's existing service area, the WRSP area, and the entire MOU Area. The projected water demands include that portion of the City served with supplies contracted from the San Juan Water District (namely, Doctor's Ranch and the Foothills Business Park). **Table 1** presents water demands based on the revised unit demand factors.

Table 1. Estimated Average Annual Water Demands based on Revised Unit Demand Factors

Land Use Category		City of Roseville (AF/year)		West Roseville Specific Plan		Entire MOU Area	
				West Roseville Specific Plan (WRSP) Only (AF/year)	WRSP Combined with City (AF/year)	MOU Area Only (AF/year)	MOU Area Combined with City (AF/year)
		Estimated Existing Demand	Estimated Ultimate Demand	Estimated Ultimate Demand	Estimated Ultimate Demand	Estimated Ultimate Demand	Estimated Ultimate Demand
Residential	LDR (< 3.5 DU's/Ac)	4,943	5,903	1,523	7,426	1,523	7,426
	LDR (3.5 to 5.0 DU's/Ac)	8,222	13,524	2,339	15,863	5,741	19,265
	LMDR (>5.0 to 6.0 DU's/Ac)	2,880	3,301	228	3,529	228	3,529
	LMDR (>6.0 to 8.0 DU's/Ac)	1,594	2,030	214	2,244	570	2,600
	MDR (>8.0 to 12.0 DU's/Ac)	401	761	157	918	157	918
	HDR (>12.0 to 16.0 DU's/Ac)	32	115	229	344	229	344
	HDR (>16.0 DU's/Ac)	1,347	1,948	211	2,159	534	2,482
Commercial/Other	Commercial/Retail	2,323	4,929	95	5,024	302	5,231
	Business Professional	987	2,267	57	2,324	203	2,470
	Light Industrial	858	4,120	258	4,378	258	4,378
	Industrial	1,599	3,002	98	3,100	98	3,100
	Railroad Yard	87	72	-	72	-	72
	Elementary Schools	648	573	211	784	478	1,051
	High Schools	408	597	242	839	242	839
	Public (Fire Station, etc)	1,199	1,290	-	1,290	-	1,290
	Park/Recreation	4,628	6,176	1,042	7,218	1,665	7,841
	Open Space/Major ROW	-	-	-	-	-	-
	Vacant/Unassigned	-	-	-	-	-	-
Sub-Total		32,155	50,608	6,904	57,512	12,228	62,836
System Losses (2%)		638	1,012	138	1,150	245	1,257
TOTAL:		**32,794**	**51,620**	**7,042**	**58,662**	**12,473**	**64,093**

Use of the revised unit water demand factors results in an estimated ultimate water demand for the City of 51,620 AF/year (see **Table 1**). The estimated ultimate water demand for the existing City plus the WRSP area is 58,662 AF/year. The estimated ultimate water demand for the existing City plus the MOU area is 64,093 AF/year.

The City's current maximum surface water diversion from Folsom Lake under the Water Forum Agreement (WFA) is 55,700 AF/year. This is also the total volume of water for which the City is currently planning to provide on a reliable basis. This volume is 4,080 AF/year greater than the existing City's revised projected water demand shown on **Table 1** of 51,620 AF/year. As will be discussed later in this memorandum, the intent of the City is to make this water available for use in the MOU area.

The projected deficiency in the City's current water supply, assuming the entire MOU area is annexed into the City, is 8,393 AF/year (64,093 AF/year minus 55,700 AF/year). The projected deficiency in the City's current water supply, assuming only the WRSP area develops, is 2,962 AF/year (58,662 AF/year minus 55,700 AF/year).

CITY'S EXISTING AND POTENTIAL WATER SUPPLY ALTERNATIVES

City's Existing Water Supplies

The City currently has three surface water contract entitlements for diversions from the American River totaling 62,800 AF/year: 1) a 30,000-AF/year contract with the Placer County Water Agency (PCWA) supplied from the Middle Fork Project (MFP); 2) a 32,000-AF/year contract with the United States Bureau of Reclamation (USBR) for a Central Valley Project (CVP) supply; and 3) an 800-AF/year contract with the San Juan Water District for delivery to the City's service area utilizing a portion of San Juan's PCWA contract water supply (also provided from the MFP).

The MFP supply is derived from reservoirs on the Middle Fork of the American River operated by PCWA for purposes of power generation for the Pacific Gas & Electric (PG&E) Company, as well as for water supply. The MFP supply is assumed to be 100 percent reliable (absent a catastrophic event) in all hydrologic year types. The City's CVP contract provides for a diversion from Folsom Lake. This water is considered to be less reliable than the MFP water and is subject to up to 25% deficiencies in "dry years" in accordance with CVP shortage provisions.

The WFA provides a framework for future surface water and groundwater supplies in the region through the year 2030. The City's WFA specifies allowable surface water diversions based on unimpaired inflows into Folsom Lake. Diversions by the City are restricted in dry years with the objective of supporting environmental needs in the lower American River. In particular, the City is obligated to provide water for instream flows in the lower American River to the confluence with the Sacramento River under certain hydrologic conditions. This water is made available through re-operation of the MFP by PCWA. The principal consequence of this obligation is that the availability and reliability for diversions by the City out of Folsom Lake are impacted under certain hydrologic conditions.

Under the WFA, the maximum surface water diversion by the City in wet/average years is limited to 55,700 AF/year. In critically dry years, the maximum diversion is limited to 39,800 AF/year [1]. In below average to dry years, the City may divert an amount between 55,700 and 39,800 AF/year based on unimpaired inflow into Folsom Lake. **Figure 1** shows the percentage of years a given amount of American River surface water is available to the City over 70 years of historical hydrology (based on WFA restrictions). **Figure 1** indicates that 55,700 AF/year will be available to the City in about 83 percent of the years. As a consequence, in 17 percent of the years the City must develop supplemental supplies potentially totaling up to 15,900 AF/year to make up for dry-year and critically dry-year deficiencies. The City's current strategy includes the development of up to 3,000 AF/year of recycled water supplies (for non-potable use), development of up to 7,400 AF/year of sustainable groundwater

[1] The wet/average-year volume includes the 800 AF/year supply contracted from the San Juan Water District for service to Doctor's Ranch and the Foothills Business Park. That supply is not available in the critically dry years.

supplies, and the implementation of up to 5,500 AF/year of additional conservation efforts, including rationing, during severe drought (this represents a 10% reduction in water use).

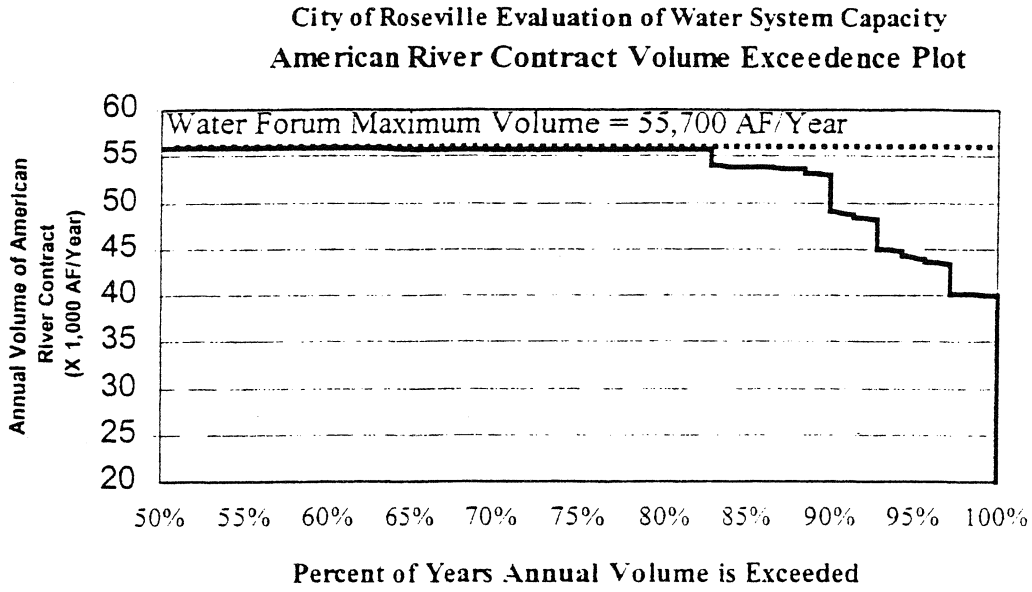


Figure 1. American River Contract Volume Exceedance Based on WFA

The total volume of American River water available for diversion by the City in a given year is also dependent on hydrologic availability; that is, the WFA provides for only a **potential** maximum diversion. In wet/normal years, the WFA maximum of 55,700 AF/year will typically control. In dry and critically dry years, however, it is likely that CVP deficiency criteria will control surface water availability for the City. **Figure 2** indicates that CVP deficiencies will slightly decrease the availability of surface water supplies to the City versus the WFA. CVP shortages govern in approximately 30 percent of the years, leaving 55,700 AF/year available for diversion by the City in about 63 percent of the years (versus the 83 percent "potential" availability provided for in the WFA).

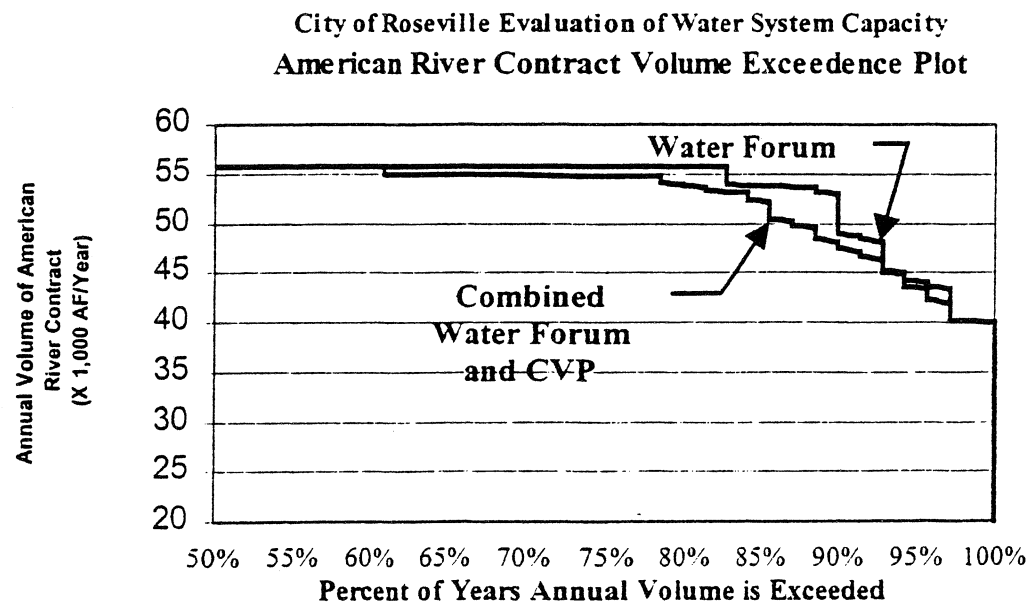


Figure 2. American River Contract Volume Exceedance with CVP Shortages

Note, however, that even with the anticipated reduction in estimated water demands, the revised ultimate water demand projection for the City and the entire MOU area is 64,093 AF/year. If only the WRSP develops, the demand is 58,662 AF/year. These demands exceed both the City's available dry-year surface water supply of 39,800 AF/year and the wet/average-year available surface water supply of 55,700 AF/year.

Thus, if the entire MOU area develops, the City must implement its current plan to provide for up to 15,900 AF/year of supplemental supplies in critically dry years and develop an additional 8,393 AF/year of supplemental supplies (64,093 AF/year minus 55,700 AF/year). Similarly, if only the WRSP area develops, the City must develop 2,962 AF/year of supplies (58,662 AF/year minus 55,700 AF/year) in addition to the planed 15,900 AF/year of supplemental supplies.

Potential Water Supply Alternatives under Investigation

The preliminary investigation identified five potential supplemental water supply alternatives for augmenting the City's existing water supplies with the objective of serving the WRSP and MOU areas:

- Re-allocation of a portion of the 55,700 AF/year "wet/average year" water supply previously earmarked for the City's existing customers made available through recalculation and revision of the unit water demand factors.
- An additional surface water contract entitlement from the San Juan Water District (San Juan)
- Recycled water supplies made available for non-potable use
- A potential future delivery of surface water from a diversion from the Sacramento River
- Sustainable groundwater supplies for use in "drier" and "driest" years. [NOTE: The City's "Guiding Principles" require the use of groundwater result in no net impact to the basin. Consequently, this alternative may include making a groundwater supply available by the annual fallowing or permanent retirement of agricultural lands currently irrigated with groundwater and/or implementation of an aquifer storage and recovery (ASR) program.]

In addition to these five "wet/average year" water supply alternatives, the water supply strategy includes implementation of extraordinary water conservation efforts, including rationing, in the "drier" and "driest" years. The objective of these efforts is to reduce water demands by an additional 5 percent during drought. Such efforts parallel the City's existing WFA that requires a 10 percent reduction in water use during drought.

Results from the preliminary evaluation indicate that none of the identified potential supplemental supplies can entirely meet the anticipated additional water demands associated with the entire MOU area. However, a number of potential combinations of these supplemental supply sources will likely provide enough supply to meet those demands. The challenge for the City is one of timing. That is, the City must be assured that as the water demand associated with MOU area increases over time, the specific supplemental water supplies intended to meet that demand are available and operational.

The five water supply alternatives listed above are described in the sections that follow. Operational and physical aspects of the alternatives are discussed. The memorandum concludes with a discussion of several timing and sequencing strategies for ensuring that the City always has adequate supplies available to meet anticipated demands.

POTENTIAL WATER SUPPLY ALTERNATIVES

UNIT WATER DEMAND FACTOR REVISION

Previous water supply planning in the City has been based on unit water demands, total water demand, and maximum day and peak hour demand factors provided in the *General Plan Update Water System*

Study (Spink, August 1993). These factors were modified in the preliminary evaluation based on a limited amount of new data.

The new data indicate current estimates of water demand in both the City and the MOU area based on demand factors from the Spink study can be reduced (see **Table 1**). The consequence of such a reduction is that the existing surface water contract entitlements of the City are sufficient to provide a portion of the water supplies needed to serve the MOU area without negatively impacting service to its existing (and future) customers within the City limits. In particular, the City's current maximum surface water diversion from Folsom Lake under the WFA is 55,700 AF/year. This volume is 4,080 AF/year greater than the existing City's revised projected water demand shown on **Table 1** of 51,620 AF/year. This water can be made available to the WRSP and the remainder of the MOU area to meet a portion of the projected water demand associated with each area.

Field data were collected to confirm the unit demand factors for the purpose of estimating existing and ultimate water demands within the City and the MOU area. This information will be used to support the policy decision required by the City Council to make the water supply freed up by the revision of the unit water demand factors available to the MOU area.

CONTRACT ENTITLEMENT FROM THE SAN JUAN WATER DISTRICT (SAN JUAN)

San Juan Water District (San Juan) has an existing contract entitlement for up to 25,000 AF/year from PCWA for use within Placer County. Certain conditions of that contract allow a portion of that entitlement to be delivered to the MOU Area (at least on an interim basis) if that supply is not needed to meet demands within San Juan's Granite Bay service area in Placer County. In preliminary discussions, representatives of San Juan have indicated a willingness to contract for delivery to the City of up to 3,200 AF/year of raw water from this entitlement. Representatives of the City and San Juan are conducting negotiations.

Under the anticipated arrangement with San Juan, the City would take delivery of raw surface water out of Folsom Dam at the City's water treatment plant pursuant to San Juan's PCWA contract entitlement. Subsequent to treatment, the water would be conveyed through the City's water transmission and distribution system to the MOU Area. Hydraulic modeling conducted for the preliminary analyses indicated that under certain conditions the City's existing conveyance system has adequate capacity to deliver water to the MOU Area without negatively impacting existing customers. Under other conditions, system hydraulic improvements may be required (for example, additional conveyance or pumping capacity).

Given that San Juan's contract entitlement with PCWA allows delivery of a portion of that entitlement to the City and the likelihood the City currently has sufficient capacity to convey that supply to the MOU area, this supplemental supply can be assumed to be immediately available upon the signing of a contract between the City and San Juan.

There are two principal issues associated with this supplemental supply. First, because of San Juan's WFA, this supply will be available to the City in wet years only. Consequently, a supplemental supply will be required to replace this entitlement in dry years. Second, the duration of the availability of this entitlement must be determined. San Juan's current contract with PCWA has a 25-year duration. Clear renewal conditions are required if the City is to rely on this supply.

RECYCLED WATER SUPPLIES

Recycled water supplies could be made available for non-potable use from either the existing Dry Creek or future Pleasant Grove wastewater treatment plants. The City's *Reclaimed Water Master Plan* will provide the basis for this evaluation. Three recycled water use scenarios were evaluated in the preliminary investigation: a "normal use" scenario, an "aggressive use" scenario, and a "semi-aggressive use" scenario.

The "normal use" scenario considered only the more typical applications of recycled water: parks, golf courses, schools, and publicly landscaped areas. The "normal use" scenario assumed 3,000 AF/year of recycled water use in the existing City service area (consistent with the *Reclaimed Water Master Plan*). For purposes of this memorandum, "normal use" of recycled water was assumed for the existing City.

For the WRSP area and MOU area, however, "semi-aggressive" use of recycled water was assumed. The "semi-aggressive use" scenario assumes "normal use" as the base, but extends potential deliveries to commercial and industrial users, and to multi-family open space areas. This scenario results in the assumed use of approximately 2,638 AF/year of recycled water use in the entire MOU area, with about 1,526 AF/year of that demand assumed to occur within the WRSP area.

The "aggressive use" scenario extends the use of recycled water to meet all outdoor irrigation requirements (including residential) and industrial water demands. This scenario assumes 6,400 AF/year of recycled water use within the MOU area. Recycled water use within the existing City is maintained at 3,000 AF/year. Because initial discussions indicated that implementation of the "aggressive use" scenario is highly unlikely because of cost and permitting issues, it was dropped from further discussion.

The exact timing of the availability of recycled water supplies for delivery to the MOU is not currently known. That timing is dependent upon implementation of the recycled water program identified in the *Reclaimed Water Master Plan* and the availability of recycled supply after the proposed power generating facility has been served. However, given the anticipated rate of increase in water demand over time associated with the MOU area, the likely immediate availability of a contract entitlement from San Juan, and the availability of at least some amount of conserved water, it is likely that recycled water supplies will be available to meet a portion of the non-potable demand in the MOU area as that demand materializes.

PROPOSED SACRAMENTO RIVER DIVERSION

The City has surface water contract entitlements with the CVP and PCWA for reliable sources of surface water supply diverted from Folsom Lake. The City is also investigating an opportunity to receive surface water diverted from the Sacramento River. The City anticipates potential delivery of approximately 7,100 AF/year of treated surface water supply from this project with a maximum day delivery rate of 10.0 million gallons per day (mgd). [NOTE: As described earlier in this memorandum, the City has surface water contract entitlements totaling 62,800 AF/year (a 32,000 AF/year CVP supply plus a 30,000 AF/year contract with PCWA plus an 800 AF/year contract with San Juan). However, the City's diversions from Folsom Lake are limited by its WFA to 55,700 AF/year. The City's intent is to pursue delivery of the remaining 7,100 AF/year (62,800 AF/year minus 55,700 AF/year) from the Sacramento River. The source of this supply could be either the City's CVP or PCWA contract entitlements.]

The USBR began preparation of a feasibility study, an environmental document, and preliminary design for the proposed project in August 2002. That study is being conducted pursuant to Public Law (PL) 106-554, Appendix D, Section 103, which authorizes the Secretary of the Interior to conduct a feasibility study for a Sacramento River, California, diversion project that is consistent with the WFA, and that considers:

- Consolidation of the several diversions of Natomas Mutual Water Company (Natomas) and upgrading fish screens at the consolidated diversion
- The diversion of 35,000 AF/year of water by PCWA
- The diversion of 29,000 AF/year of water for delivery to the Northridge Water District (now the Sacramento Suburban Water District, or SSWD).
- An inter-tie between the consolidated diversion and the Northridge pipeline that delivers water from Folsom Lake

- The potential to accommodate additional diversions of water from the Sacramento River, subject to additional negotiation and agreement among WFA signatories and potentially affected parties upstream on the Sacramento River. [NOTE: As the project has developed, these additional components of the project have come to include: a diversion of up to 7,100 AF/year of a CVP supply to the City of Roseville (likely an exchange for PCWA MFP water on the American River); a diversion of up to 100.0 mgd for the delivery to the City of Sacramento; surface water treatment and storage facilities with a capacity of 228.0 mgd for diversion and delivery to PCWA, SSWD, the City of Roseville and the City of Sacramento; and pipeline systems to deliver treated water to (and interconnect) the existing water distribution facilities of PCWA, SSWD, the City of Roseville, and the City of Sacramento.]

The study will evaluate the feasibility of a Sacramento River Diversion described in the PL 106-554 except for Natomas' diversion consolidation and fish screen upgrade, which is currently being studied under a separate effort. Requirements stipulated in the PL 106-554 for the authorized feasibility study include:

- The study shall include the development of a range of reasonable options, an environmental evaluation, and consultation with federal and State resource management agencies regarding potential impacts and mitigation measures.
- Subject to the availability of appropriations, the Secretary of the Interior is also authorized and directed to provide grants to support local habitat management planning efforts undertaken as part of the consultation required in the feasibility study.
- The study shall be performed in coordination with CALFED efforts.
- The study results will be submitted to the Committee on Resources of the United States House of Representatives and to the Committee on Energy and Natural Resources of the United States Senate within 24 months after the funding is appropriated.

Congress directed the Secretary of the Interior to conduct a feasibility study for a Sacramento River diversion project that was consistent with the WFA. The coequal objectives of the WFA were: (1) provide a reliable and safe water supply for the economic health and planned development of the lower American River basin through the year 2030; and (2) preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River.

Prior to the Water Forum, Reclamation and local agencies completed the American River Water Resources Investigation (ARWRI). The objectives of the ARWRI were to identify future water needs in Sacramento, Sutter, El Dorado, Placer and San Joaquin counties, and to formulate alternatives to meet those needs.

The study will be tiered off two previously completed programmatic studies: the ARWRI and the Water Forum Agreement. The planning objectives of the study include:

- Provide adequate future water supply (year 2030 level) to western Placer and northern Sacramento counties to accommodate planned community growth.
- Reduce future direct diversions from the American River to preserve lower American River environmental and aesthetic values.
- Reduce overdraft of the groundwater basin underlying western Placer and northern Sacramento counties to increase the health of the groundwater basin.
- Increase water supply reliability for all beneficial uses of American River water and indirectly, increase water supply reliability for beneficial uses of the groundwater basin under western Placer and northern Sacramento counties.

These planning objectives are consistent to the objectives of the Water Forum and the ARWRI; however, the study will include a more focused study area, scope, and analyses of project-level details. The anticipated completion schedule for this study effort is three years. Final design and construction of this project would begin subsequent to that effort. Current estimates anticipate that a Sacramento River diversion would be operational by about the year 2010.

GROUNDWATER EXTRACTION AND IMPACT MITIGATION

GROUNDWATER EXTRACTION

The use of groundwater during dry years is part of the City's current water supply planning. As discussed previously, the City's WFA includes the extraction of up to 7,400 AF/year of groundwater during the "drier" and "driest" Water Forum hydrologic year types. The City's current plan is to make those groundwater resources available to its existing customers.

The City also intends to consider the use of groundwater resources to meet water demand within the WRSP and MOU areas during dry years. Such use of groundwater is not explicitly considered in the WFA. Consequently, the City intends to implement measures to mitigate for any potential impacts to the groundwater basin resulting from the extraction of groundwater to meet demands within the WRSP and MOU areas.

IMPACT MITIGATION

Two potential mitigation measures are currently being contemplated: 1) an in-lieu groundwater banking program accomplished through the annual or permanent fallowing of lands currently under irrigation, or 2) an aquifer storage and recovery (ASR) program.

Fallowing or Permanent Retirement of Irrigated Lands

A dry-year or permanent groundwater supply could be made available by the annual fallowing or permanent retirement of agricultural lands currently irrigated with groundwater. In particular, the Reasons Farms property is being evaluated from a physical standpoint to estimate the potential yield of such an in-lieu groundwater banking program.

Aquifer Storage and Recovery (ASR)

As part of its existing water supply plan, the City plans to construct five groundwater extraction wells within its existing service over the next ten years: Diamond Creek (under construction), Sun City, Hewlett Packard, Woodcreek North, and Woodcreek West. These five wells will serve as backup for the City's water distribution system, which relies primarily on treated surface water diverted from Folsom Lake.

The City is also contemplating use of these groundwater wells on a conjunctive use basis or for integration into an aquifer storage and recovery (ASR) program. The City is currently moving forward with a demonstration project at the Diamond Creek well to evaluate the feasibility of using their planned wells for injection and storage of treated surface water. The principal purpose of the demonstration project is to evaluate opportunities to store treated water in the groundwater basin underlying Placer County by direct injection during wet years for extraction to supplement the City's surface water supply during dry years. Such a program could also be exercised seasonally. The principal areas of investigation include: water rights and contract entitlements; regulatory and institutional issues; and hydrogeologic and water quality issues

Injection and storage would occur during wet weather years and during off-peak production periods. Stored water would increase the reliability of the City's water supply during dry years. In addition, stored water could be used for peak shaving during high demand periods. The ultimate sources (and mix) of surface water supplies adopted in the over-all water supply strategy will affect the requirements of (and potentially necessity for) an ASR program. Based upon the outcome of the demonstration

project, a full-scale ASR program may be developed. The timing of the pilot study and the planned evaluation is such that the results of that effort may not be available for up to 18 months. However, the City is attempting to identify elements of the ASR demonstration project work plan that could be accelerated.

POTENTIAL SEQUENCING AND TIMING OF ALTERNATIVES

Ultimately, each of the water supply alternatives will be evaluated in detail to establish the likelihood and timing of operational availability. The intent is to then develop an implementation schedule that sequences the operational start-up of specific projects in such a way that the City can obligate itself to making deliveries to the WRSP and MOU areas without putting its existing ratepayers at risk. That sequencing would ensure that the City is never obligated to deliver a water supply it could not deliver with a high probability in perpetuity. An underlying assumption in these analyses is that the City's current service area is "whole" and that any supplemental water supplies developed are for the purpose of serving the MOU area.

For purposes of this memorandum, the year 2005 is the operational start date for water deliveries to the MOU area. Water demands in both the City and the MOU area are assumed to increase linearly to the year 2030, at which time it is assumed that each will achieve the projected ultimate water demand.

Figures 3 and **4** illustrate the water demands and potential water supplies (in both wet and dry years) for both the WRSP and entire MOU areas, respectively. As demand increases, increments of water supply associated with the supplemental water supplies become operational on an as-needed basis. Based on current understanding of the likely timing of availability, the supplemental water supplies are assumed to become operational in the following order:

- A contract entitlement for 3,200 AF/year of raw surface water from San Juan.
- A "normal" to "semi-aggressive" recycled water supply of approximately 2,638 AF/year to the entire MOU area, with the delivery of approximately 1,526 AF/year to the WRSP area (after delivery to the proposed power generating facility).
- An allocation of 2,316 AF/year of conserved water from the existing City (out of the anticipated total volume of 4,080 AF/year) to the WRSP area. The remaining 1,764 AF/year will be reserved for the remainder of the MOU area.
- In dry years, up to 2,848 AF/year of groundwater extraction will be required to meet demands in the WRSP area. Mitigation for such groundwater extraction would be provided either by annual fallowing or permanent retirement of agricultural lands currently irrigated with groundwater, or through implementation of an ASR program.
- A diversion from the Sacramento River for up to 7,100 AF/year. The Sacramento River diversion will be required for development of the entire MOU area (see **Figure 4**). If the Sacramento River Diversion is not implemented, up to 2,555 AF/year of groundwater must be extracted in wet years and up 5,135 AF/year of groundwater must be extracted in dry years. It is unlikely that annual fallowing or permanent retirement of agricultural lands currently irrigated with groundwater would provide adequate mitigation in such a case. In addition, without the Sacramento River Diversion, there would be insufficient surface water supplies available for implementation of an ASR program (i.e., there would not be any surface water available to bank).

The figures indicate that both the contract entitlement from San Juan and the delivery of recycled water are required to meet the anticipated water demands. The contract entitlement from San Juan is assumed to be implemented immediately. Recycled water is assumed available by the year 2010. The figures also indicate that a combination of groundwater extraction and implementation of a diversion from the Sacramento River will be required for development of the entire MOU area.

Figure 3: Water Supply Strategy for WRSP Area

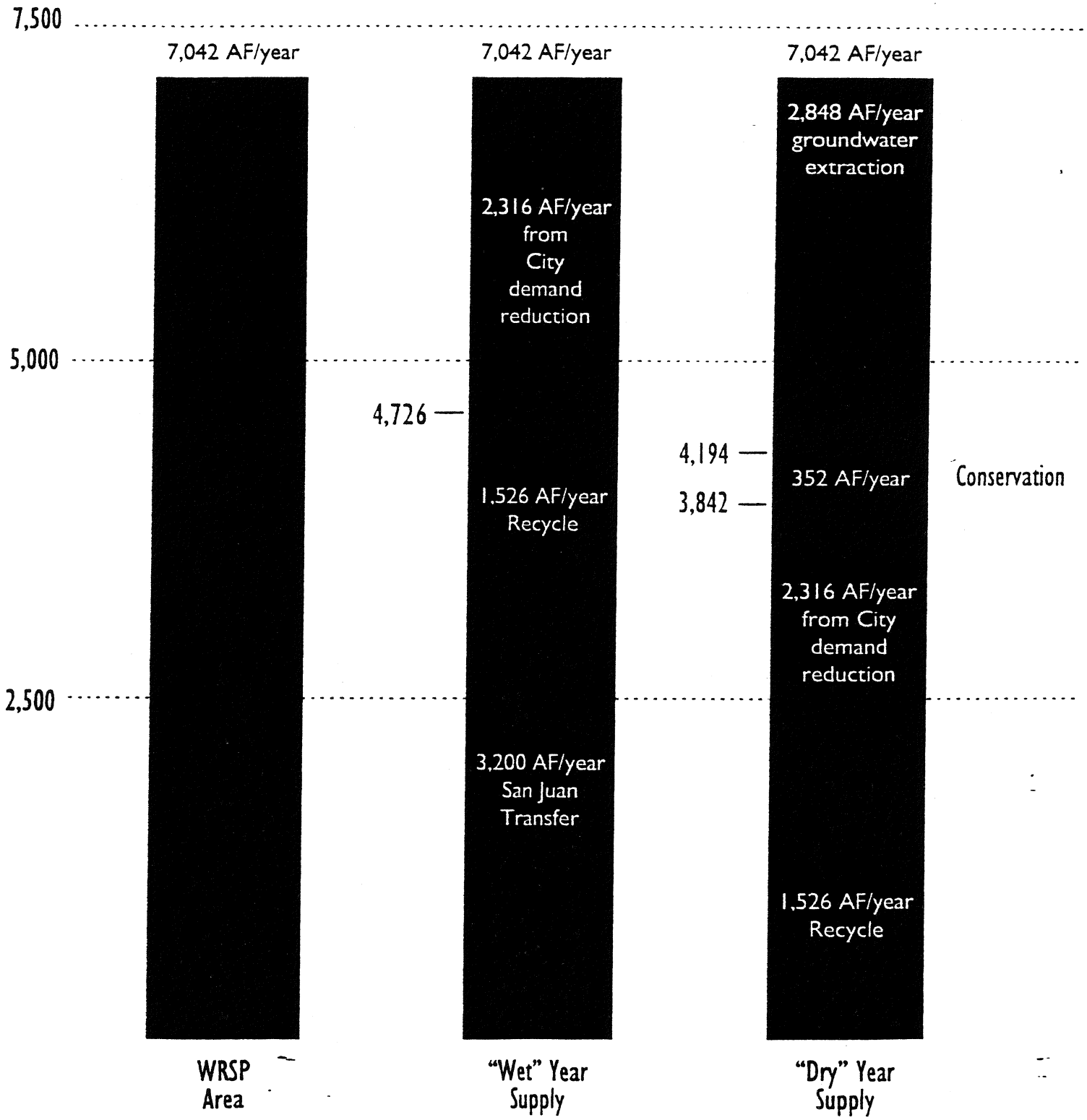
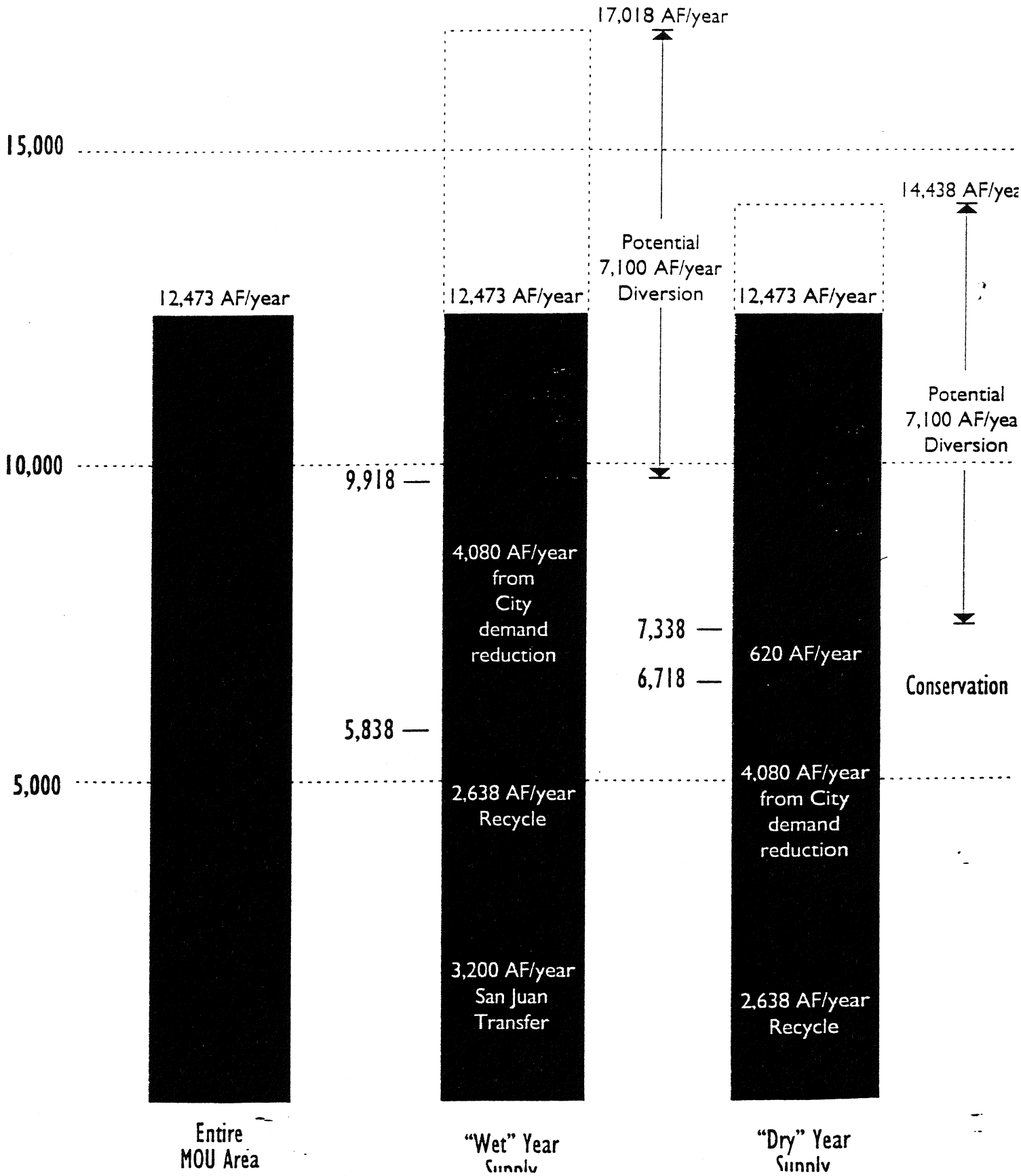


Figure 4: Water Supply Strategy for MOU Area



APPENDIX C

City of Roseville Water Entitlement Contracts

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

CONTRACT NO.
14-06-200-3474A

CONTRACT BETWEEN THE UNITED STATES AND THE CITY OF ROSEVILLE PROVIDING FOR WATER SERVICE

Table of Contents

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

CONTRACT NO.
14-06-200-3474A

CONTRACT BETWEEN THE UNITED STATES AND THE CITY OF ROSEVILLE PROVIDING FOR WATER SERVICE

THIS CONTRACT, made this 9th day of September, 1967, in pursuance generally of the Act of June 17, 1902 (32 Stat. 388), and acts amendatory thereof or supplementary thereto, all collectively hereinafter referred to as the Federal reclamation laws, between THE UNITED STATES OF AMERICA, hereinafter referred to as the United States, and the CITY OF ROSEVILLE, hereinafter referred to as the City, a political subdivision of the State of California, duly organized, existing, and acting pursuant to the laws thereof, with its principal place of business in Roseville, California,

WITNESSETH, That:

EXPLANATORY RECITALS

WHEREAS, the United States is constructing and operating the Central Valley Project, California, for the purpose, among others, of furnishing water for irrigation, municipal, industrial, domestic, and beneficial uses; and

WHEREAS, the United States has constructed and is operating Folsom Dam and Lake as a unit of said Project; and

WHEREAS, investigations of the streamflow of the American River and its tributaries indicate that there will be available for the City a water supply from Folsom Lake for municipal, industrial, and domestic uses; and

WHEREAS, the City desires to contract, pursuant to the Federal reclamation laws and the laws of the State of California, for a water supply from Folsom Lake for the City at the rate and under the conditions hereinafter set forth;

NOW, THEREFORE, in consideration of the covenants herein contained, it is agreed as follows:

DEFINITIONS

1. When used herein, unless otherwise distinctly expressed or manifestly incompatible with the intent hereof, the terms:

(a) "Contracting Officer" shall mean the Secretary of the United States Department of the Interior or his duly authorized representative.

(b) "Project" shall mean the Central Valley Project, California, of the Bureau of Reclamation.

TERM OF CONTRACT

2. (a) This contract shall be effective on January 1, 1971, and shall remain in effect for forty (40) years: Provided, That under

terms and conditions agreeable to the parties, renewals of this contract may be made for successive periods not to exceed forty (40) years each. The terms and conditions of each renewal shall be agreed upon not later than one (1) year prior to the expiration of the then existing contract.

(b) If on January 1, 1971, the City does not own or have available to it for the remainder of the term hereof facilities which in the opinion of the Contracting Officer are adequate for the diversion and conveyance of the water to be made available pursuant to the terms of this contract, this contract shall terminate: Provided, That if such facilities are under construction on that date the Contracting Officer at his option may grant an extension on an annual basis to permit completion of said facilities. Such extension by the Contracting Officer shall not affect the obligation of the City provided in Article 3 of this contract.

WATER TO BE FURNISHED TO CITY

3. (a) The City shall submit in writing to the Contracting Officer not less than fifteen (15) days prior to the date on which it wishes to take initial delivery of water hereunder and on or before December 15 of each year during the term of this contract a schedule, subject to the provisions of subdivisions (c) and (d) of this article and satisfactory to the Contracting Officer, indicating the desired times and quantities for the taking of all water pursuant to this contract during the following year, and the United States within the provisions hereof shall attempt to furnish said water in accordance with said schedule, or any revision thereof satisfactory to the Contracting Officer submitted by the City within a reasonable time before the desired change of the time or quantities for delivery as nearly as may be feasible, as conclusively determined by the Contracting Officer. The City agrees to pay for such scheduled quantities of water.

(b) Each year for a period of five (5) years commencing with 1971 the United States shall furnish and the City each such year shall pay as provided in Article 4 for water from Folsom Lake in the quantities specified in the schedule or any revision thereof submitted by the City in accordance with subdivision (a) and as limited by subdivision (d) of this article:

Provided, That during 1971 the City shall schedule and pay for a minimum of three thousand (3,000) acre-feet of water: Provided further, That the City shall schedule and pay for a minimum of five thousand (5,000) acre-feet of water for each remaining year of the first 5-year period.

(c) Commencing with the year following the period described in subdivision (b) of this article and each year for the remaining period of the contract, the minimum amount of water which the City shall be obligated to schedule and pay for shall be the average annual quantity of water furnished to the City pursuant to this contract during the immediately preceding five years: Provided, however, That the City shall schedule and pay for a minimum of five thousand (5,000) acre-feet for each such year. For the purpose of determining said average annual quantity, the use for the month of December of the last year of the preceding 5-year period will be considered the same as the use during the month of December of the 4th year of such period.

(d) The maximum quantity of water which the United States shall be obligated to furnish to the City in any one year shall be forty thousand (40,000) acre-feet. This maximum quantity of water is based on studies which indicate the City's use of water will be as follows:

Period	Projected Average Annual Use
1971 through 1975	8,300 acre-feet
1976 through 1980	10,800 acre-feet
1981 through 1985	14,100 acre-feet
1986 through 1990	18,300 acre-feet
1991 through 1995	24,000 acre-feet
1996 through 2000	32,000 acre-feet

If the average annual quantity of water furnished to the City pursuant to this contract for any of the above periods is less than the respective projected average annual use as shown in this subdivision, then the projected average annual use for each of the remaining periods and the maximum quantity of forty thousand (40,000) acre-feet shall be reduced to the respective quantities obtained by multiplying the larger quantities by the percentage that the average annual quantity furnished during said period is of the projected average annual use indicated for said period. If during any subsequent period the average annual quantity furnished to the City is less than the respective revised projected average annual use, then further revisions shall be made in the manner set forth in this subdivision: Provided, That the parties may by agreement at any time increase the amount of water required thereafter to be furnished each year to the City during the remainder of the term of this contract.

(e) The right to the beneficial use of water furnished to the City pursuant to the terms of this contract shall not be disturbed so long as the City shall fulfill all of its obligations under this contract and any renewal thereof.

RATE AND METHOD OF PAYMENT FOR WATER

4. (a) The rate for water to be paid pursuant to this contract shall be Nine Dollars ($9) an acre-foot.

(b) Each year the City shall make payment for the amount of water which the City is required to accept and pay for during such year pursuant to Article 3. The City shall pay one-half (1/2) of the amount payable for each year before the first day of each year and shall pay the remainder of said amount before July 1 of said year, or such other later date or dates of the respective year as may be specified by the Contracting Officer in a written notice to the City: Provided, That before initial delivery is made under this contract the City shall pay one-half (1/2) of the amount payable for that year and shall pay the remainder of said amount before July 1 of that year or such later date or dates as may be specified by the Contracting Officer in a written notice to the City: Provided further, That at any time during any year that the quantity of water furnished equals the quantity for which payment has been made as provided for in this article, the City shall pay in advance of any further delivery of water for the total quantity to be furnished to it during that year.

(c) In the event the City is unable, fails, or refuses to divert the quantities of water available in Folsom Lake for diversion by it and required to be paid for pursuant to this contract or in the event the City in any year fails to submit a schedule for delivery as provided in Article 3, said inability, failure, or refusal shall not relieve the City of its obligation to pay for such water, and the City agrees to make payment therefor in the same manner as if said water had been delivered to it in accordance with this contract.

POINTS OF DELIVERY--CONSTRUCTION AND OPERATION OF FACILITIES--MEASUREMENT AND RESPONSIBILITY FOR DISTRIBUTION OF WATER

5. (a) The water to be furnished to the City pursuant to this contract will be delivered at the outlet from the 84-inch pipeline leading from Folsom pumping plant to Hinkle Reservoir or at such other points of delivery as may be agreed upon between the parties. All pumps, pipelines, storage tanks, distribution lines, and other facilities beyond the point of delivery required to take, measure, convey, and distribute water to the water users served by the City shall be constructed or installed by the City without expense to the United States. Operation and maintenance of such facilities and the expense thereof also shall be the sole responsibility of the City. The facilities may be installed, operated, and maintained

on or across property of the United States in the area of such delivery point subject to such restrictions and regulations as to type, location, method of installation, operation, and maintenance as may be prescribed by the Contracting Officer. It is specifically recognized and agreed that this contract does not grant to the City right of access to the waters of Folsom Lake or to the adjacent lands of the United States for any purpose except as provided in this article for installation, operation, and maintenance of facilities.

(b) All water taken pursuant to this article shall be measured by the United States at the points of delivery provided in subdivision (a) of this article with equipment installed, operated, and maintained by the United States. Upon request of the City the accuracy of such measurements may be investigated by either of the parties and any errors appearing therein adjusted.

(c) The United States shall not be responsible for the control, carriage, handling, use, disposal, or distribution of water which may be furnished hereunder beyond the points of delivery, and the City shall hold the United States harmless on account of damage or claim of damage of any nature whatsoever, including property damage, personal injury, or death, arising out of or connected with the control, carriage, handling, use, disposal, or distribution of such water

beyond the points of delivery: Provided, however, That the United States reserves the right to the use of all waste, seepage, and return-flow water derived from water furnished to the City which escapes or is discharged beyond the boundaries of the water users served by the City's distribution system and nothing herein shall be construed as an abandonment or a relinquishment by the United States of the right to such water.

(d) In no event shall the United States at any time be obligated to furnish water at a point of delivery at a rate in excess of sixty-five (65) cubic feet per second. The facilities of the City shall include devices satisfactory to the Contracting Officer which will limit the rate of flow to the City to sixty-five (65) cubic feet per second. The United States shall not be responsible for maintaining or limiting the heads or pressures at which the water is delivered. In the event the City's requirements exceed the above rate of flow the United States will at the request of the City install additional pumping and related facilities, which will remain the property of the United States, to provide water at a higher rate of flow not to exceed one hundred and fifty (150) cubic feet per second. The cost of such facilities shall be paid by the City. Unless otherwise agreed by the parties, said payment shall be made in full upon completion of the facilities.

UNITED STATES NOT LIABLE FOR WATER SHORTAGE OR TEMPORARY REDUCTION

6. (a) There may occur at times a shortage during any year in the amount of water available for furnishing to the City by the United States pursuant to this contract through and by means of the Project, but in no event shall any liability accrue against the United States, or any of its officers, agents, or employees for any damage, direct or indirect, arising therefrom. In any year in which there may occur a shortage from any cause, the Contracting Officer reserves the right to apportion the available water supply among the City and others entitled to receive water from the Project, including but not restricted to those entitled to receive water in satisfaction of rights acquired pursuant to the laws of the State of California. In the event that in any year there is delivered hereunder by reason of such shortage or apportionment or any discontinuance or reduction of service as set forth in subdivision (b) of this article less than the quantity of water which the City otherwise would be entitled to receive hereunder, an adjustment shall be made of the amounts paid or payable by the City in the manner provided in Article 7. Such adjustment shall constitute the sole remedy of the City or anyone having or claiming to have through the City the right to the use of any of the water supply provided for herein.

(b) The United States may temporarily discontinue or reduce the quantity of water to be furnished hereunder for the purpose of investigation, inspection, maintenance, repair, or replacement as may be necessary of any of the Project facilities used for the furnishing of water hereunder, but so far as feasible the Contracting Officer will give the City thirty (30) days notice in advance of such temporary discontinuance or reduction except in cases of emergency when no notice need be given. In the event of any such discontinuance or reduction, upon the resumption of service and if requested by the City, the United States will attempt to deliver the quantity of water which would have been furnished hereunder in the absence of such contingency.

ADJUSTMENTS

7. The amount of any overpayment by the City by reason of the quantity of water actually available hereunder from the Project during any year, as conclusively determined by the Contracting Officer, having been less than the quantity which the City otherwise would have been required to receive and pay for under the provisions of this contract shall be applied first to any accrued indebtedness arising out of this contract then due and owing to the United States by the City and any amount of such overpayment then remaining shall at the option of the City be refunded or credited

upon amounts to become due to the United States from the City under the provisions hereof in the ensuing year.

QUALITY OF WATER

8. The operation and maintenance of Project facilities and the construction of new Project facilities for the provision of Project water under this contract shall be performed in such manner as is practicable to maintain the quality of raw water to be furnished hereunder. The United States is under no obligation to construct or furnish water treatment facilities to maintain or to better the quality of water except to the extent such facilities are part of the Project facilities to be constructed by the United States pursuant to reclamation law or as otherwise required by law. Further, the United States does not warrant the quality of water to be furnished pursuant to this contract.

CHARGES A GENERAL OBLIGATION--LEVIES THEREFOR

9. (a) The City as a whole is obligated to pay to the United States the charges becoming due as provided in this contract notwithstanding the default in the payment to the City by individual water users of assessments, tolls, or other charges levied by the City.

(b) The City will cause to be established, levied, and collected all necessary assessments, tolls, and other charges, and will use all of the authority and resources of the City to meet its obligations hereunder.

ALL BENEFITS CONDITIONED UPON PAYMENT

10. Should any assessment or assessments levied by the City against any tract of land or water user in the City and necessary to meet the obligations of the City under this contract be judicially determined to be irregular or void, or should the City or its officers be enjoined or restrained from making or collecting any assessments upon such land or from such water user as provided for herein, then such tract shall have no right to any water furnished to the City pursuant to this contract, and no water made available by the United States pursuant hereto shall be furnished for the benefit of any such lands or water users, except upon the payment by the landowner of his assessment or a toll charge for such water, notwithstanding the existence of any contract between the City and the owner or owners of such tract. Contracts, if any, between the City and water users involving water furnished pursuant to this contract shall provide that such use shall be subject to the terms hereof. It is further agreed that the payment of charges at the rates and upon the terms and conditions provided for herein is a prerequisite to the right to water furnished to the City pursuant to this contract and no irregularity in levying taxes or assessments by the City nor lack of authority in the City, whether affecting the validity of City taxes or assessments or not, shall be held to authorize or permit any water

user of the City to demand water made available pursuant to this contract unless charges at the rate and upon the terms and conditions provided for herein have been paid by such water user.

REMEDIES UNDER CONTRACT NOT EXCLUSIVE--WAIVERS

11. Nothing contained in this contract shall be construed as in any manner abridging, limiting, or depriving the United States of any means of enforcing any remedy, either at law or in equity, for the breach of any of the provisions hereof which it would otherwise have. Any waiver at any time by either party to this contract of its rights with respect to a default, or any matter arising in connection with this contract, shall not be deemed to be a waiver with respect to any subsequent default or matter.

BOOKS, RECORDS, AND REPORTS

12. The City shall establish and maintain accounts and other books and records pertaining to its financial transactions, water supply, water use, and to such other matters as the Contracting Officer may require. Reports thereon shall be furnished to the United States in such form and on such date or dates as may be required by the Contracting Officer. Each party shall have the right during office hours to examine and make copies of the other party's books and official records relating to matters covered by this contract.

PENALTY FOR DELINQUENT PAYMENTS

13. The City shall pay a penalty on installments or charges which become delinquent computed at the rate of one-half of one percent per month of the amount of such delinquent installments or charges for each day from the date of such delinquency until paid: Provided, That no penalty shall be charged to the City unless such delinquency continues for more than thirty days.

CONTINGENT UPON APPROPRIATION OR ALLOTMENT OF FUNDS

14. The expenditure of any money or the performance of any work by the United States hereunder which may require appropriation of money by the Congress or the allotment of funds shall be contingent upon such appropriation or allotment being made. The failure of the Congress so to appropriate funds or the absence of any allotment of funds shall not relieve the City from any obligations then accrued under this contract and no liability shall accrue to the United States in case such funds are not appropriated or allotted.

OFFICIALS NOT TO BENEFIT

15. (a) No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may arise herefrom, but this restriction shall not be construed to extend to this contract if made with a corporation or company for its general benefit.

(b) No official of the City shall receive any benefit that may arise by reason of this contract other than as a water user and in the same manner as other water users under this contract.

NOTICES

16. (a) Any notice authorized or required to be given to the United States shall be deemed to have been given when mailed, postage prepaid, or delivered to the Regional Director, Region 2, Bureau of Reclamation, Post Office 15011, Sacramento, California 95813. Any notice authorized or required to be given to the City shall be deemed to have been given when mailed in a postage-prepaid or franked envelope, or delivered to the office of the Mayor, City of Roseville.

(b) The designation of the addressee or the address given above may be changed by notice given in the same manner as provided in this article for other notices.

(c) This article shall not preclude the effective service of any such notice or announcement by other means.

ASSIGNMENT LIMITED--SUCCESSORS AND ASSIGNS OBLIGATED

17. The provisions of this contract shall apply to and bind the successors and assigns of the parties hereto, but no assignment or transfer of this contract or any part or interest therein shall be valid until approved by the Contracting Officer.

DETERMINATIONS

18. (a) Where the terms of this contract provide for action to be based upon the opinion or determination of either party to this contract, whether or not stated to be conclusive, said terms shall not be construed as permitting such action to be predicated upon arbitrary, capricious, or unreasonable opinions or determinations.

(b) In the event the City questions any factual determination made by any representative of the Secretary as required in the administration of this contract, any findings as to the facts in dispute thereafter made by the Secretary shall be made only after consultation with the City's governing body.

(c) Except as otherwise provided herein, the Secretary's decision on all questions of fact arising under this contract shall be conclusive and binding upon the parties hereto.

WATER POLLUTION CONTROL

19. The City agrees that it will comply fully with all applicable Federal laws, orders, and regulations, and the laws of the State of California, all as administered by appropriate authorities, concerning the pollution of streams, reservoirs, groundwater, or water courses with respect to thermal pollution or the discharge of refuse, garbage, sewage effluent, industrial waste, oil, mine tailings, mineral salts, or other pollutants. The City further agrees that any contract it may

enter into with a third party for the furnishing of Project water will contain a similar water pollution control article.

ASSURANCE RELATING TO VALIDITY OF CONTRACT

20. Promptly after the execution and delivery of this contract the City shall file and prosecute to a final decree, including any appeal therefrom to the highest court of the State of California, in a court of competent jurisdiction a special proceeding for the judicial examination, approval, and confirmation of the proceedings of the City Council leading up to and including the making of this contract and the validity of the provisions thereof, and this contract shall not be binding on the United States until said proceedings and contract shall have been so confirmed by a court of competent jurisdiction or pending appellate action in any court if ground for appeal be laid.

IN WITNESS WHEREOF, the parties hereto have executed this contract the day and year first above written.

Appd. Sol. Cty.

THE UNITED STATES OF AMERICA

By _____
Regional Director, Region 2
Bureau of Reclamation

CITY OF ROSEVILLE

(SEAL)

By _____

Attest:

Title Vice Mayor

Title Councilman

MP-440

332.

NOV 3 0 1976

City Council
City of Roseville
316 Vernon Street
Roseville, California 95673

Gentlemen:

This letter serves as an amendment to Article 3 of your Contract No. 14-06-200-3474A. Article 3 states that in order to maintain the right to ultimately purchase the maximum quantity of water, the City must purchase certain minimum annual quantities throughout the life of the contract.

Article 3 projected the average annual use as 8,300 acre-feet for the period of January 1, 1971, through December 31, 1975. Bureau records show that the City used or paid for a total of 32,[illegible] acre-feet of water during that period which is an average annual use of 6,640 acre-feet. The City's average annual use was, therefore, 80% of the original projected quantity.

Based on the above figures and the provisions of article 3, it is necessary to reduce the maximum quantity of water the United States is obligated to furnish the City in any one year to 32,000 acre-feet (80% of the original maximum quantity). The projected average annual use is also reduced to 80% of the original quantity. The following table shows both the original and the revised projected average annual use for each contract period.

Contract Period	Projected Average Annual Use	
	Original Acre-Feet	Revised Acre-Feet
1971 through 1975	8,300	6,640
1976 through 1980	10,000	8,040
1981 through 1985	14,100	11,280
1986 through 1990	18,300	14,640
1991 through 1995	24,000	19,200
1996 through 2000	32,000	25,600
2000 on	40,000	32,000
Maximum Quantity	40,000	32,000

United States Department of the Interior

BUREAU OF RECLAMATION

MID-PACIFIC REGIONAL OFFICE
2800 COTTAGE WAY
SACRAMENTO, CALIFORNIA 95825

IN REPLY
REFER TO: MP-440
832.

FILED
DEC 8 1976
CITY OF ROSEVILLE
BY

RECEIVED
DEC 1 1976
OFFICE OF
CITY CLERK

City Council
City of Roseville
316 Vernon Street
Roseville, California 95673

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1996 through 2000	32,000	25,600
2000 on	40,000	32,000
Maximum Quantity	40,000	32,000

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actual water needs and the amounts to be provided in the remaining periods of the existing contract. If, in the future, the need for an amendment appears necessary, we will be pleased to consider your request for such a contract.

Sincerely yours,

M. A. Catino

M. A. Catino
Acting Regional Director

THIS AGREEMENT is made this 20th day of November, 1991, by and between City of Roseville (the "City") a municipal corporation and the Placer County Water Agency (the "Agency"), and

W I T N E S S E T H:

WHEREAS, on May 17, 1989, the Agency and the City entered into a contract relating to the interconnection of their water systems which provided, among other things, an option to Roseville to purchase up to 10,000 acre feet annually of raw water which the Agency has permits to divert from the North Fork of the American River and Folsom Reservoir and a further option to increase that amount, under certain circumstances, from 10,000 to 20,000 acre feet annually. That agreement also provided that the delivery of the option water shall be from either the Agency's present Auburn or Folsom Reservoir diversion points, or from any other diversion points acceptable to the parties that may be approved by the State Water Resources Control Board, and that the delivery shall be pursuant to subsequent agreements and arrangements to be made between the City, the Agency, the USBR and the State Water Resources Control Board.

WHEREAS, on January 25, 1991, the City notified the Agency that it was exercising its option to purchase the 10,000 acre feet

of water annually and that it was also exercising its right to obtain an option to the second 10,000 acre feet annually.

WHEREAS, the parties now desire to enter into a agreement to set forth the terms and conditions for the annual delivery of the 10,000 acre feet of water which the City elected to purchase on January 25, 1991.

NOW, THEREFORE, the parties mutually agree as follows:

1. DEFINITIONS - When used in this agreement, the following terms shall have the meanings hereinafter set forth.

(a) "USBR" shall mean the United States Department of the Interior, Bureau of Reclamation.

(b) "YEAR" shall mean the 12-month period from January 1 through December 31, both dates inclusive.

2. TERM OF AGREEMENT - This agreement shall be effective upon the date first above written and shall remain in effect through the year 2011; provided, however, that if within three years from the date of this agreement (a) the Agency and the City fail to secure adequate assurances from the USBR that the USBR will permit the City to take delivery of the water provided for in this agreement from Folsom Reservoir, or (b) the Agency after using its best efforts fails to obtain from the State Water Resources Control Board approval of any point of rediversion from Folsom Reservoir under the Agency's water right Permits No. 13856 and 13858 that may be needed to enable such water to be delivered to the City, either party may terminate this agreement within 30 days after the end of

the three years by giving the other written notice of its election to do so. Upon such termination by either party the City shall be entitled to a refund of all amounts paid to the Agency pursuant to this agreement, and the City's right to purchase the 10,000 acre feet annually shall cease.

3. AGREEMENT RENEWAL - Renewals of this agreement may be made for successive periods not to exceed twenty (20) years each. The terms and conditions of each renewal shall be agreed upon not later than one year prior to the expiration of the then existing agreement.

4. WATER TO BE FURNISHED TO THE CITY - Each year of this agreement the Agency will provide the City a firm supply of 10,000 acre feet of water from the water available to the Agency annually under its water right permits 13856 and 13858, which amount is hereinafter referred to as the City's annual entitlement.

5. DELIVERY OF WATER - All water to be furnished pursuant to this agreement will be delivered by the Agency into Folsom Reservoir and the City shall be responsible for the transportation of the water out of Folsom Reservoir into the City's facilities, including the payment of any charges made by the USBR relating to the delivering of this water out of Folsom Reservoir. Also, if it is necessary to construct facilities to divert this water out of Folsom Reservoir, the City shall be responsible for all costs of such construction and for processing any necessary approvals for such construction.

6. DELIVERY SCHEDULE - Upon the execution of this agreement, the city shall submit a written schedule to the Agency indicating the times and quantities of water to be taken from Folsom Reservoir by and for the benefit of the City pursuant to this agreement during the remainder of 1991. Thereafter, on or before December 1 of each year, beginning in 1991, the City shall submit a written schedule to the Agency indicating the times and quantities of water to be taken from Folsom Reservoir by or for the benefit of the City pursuant to this agreement during the following year. The Agency shall, consistent with its water rights, the provisions hereof and to the maximum extent feasible, furnish water in accordance with the schedules submitted by the City or any revisions thereof that are satisfactory to the Agency.

7. MEASUREMENT - The City shall measure or cause to be measured all water furnished pursuant to this agreement at the USBR's point of delivery into City facilities. Such measurement shall be with equipment satisfactory to the Agency and the City, and the Agency shall be furnished written reports on the daily deliveries to City. The Agency may inspect such measuring equipment for the purpose of determining the accuracy thereof at any time and any errors appearing therein will be adjusted.

8. WATER SHORTAGES - (a) There may occur at times a shortage or shortages during any year or years in the quantity of water available to the Agency for delivery to the City. In such events no liability shall accrue against the Agency or any of its respective officers, agents or employees for any damage, direct or

indirect, arising from such shortage or shortages. In any year in which there may occur a shortage, from any cause, the Agency reserves the right to equitably apportion in proportion its available water supply among the City and others entitled to receive water from the Agency. If in any year the City is delivered less than the quantity of water which the City otherwise would be entitled to receive hereunder, an adjustment with interest at the legal rate shall be made in the amounts to be paid by the City provided for in Article 11. To the extent of such deficiency in delivery, such adjustment shall constitute the sole remedy of the City or anyone having or claiming to have by, through or under the City, the right to the use of any of the water supply provided for herein.

(b) The Agency may temporarily discontinue or reduce the amount of water to be furnished to the City as provided for herein for the purpose of maintaining, repairing, replacing, investigating or inspecting any of the facilities necessary for the storage or furnishing of water to the City. Insofar as it is feasible, the Agency will give the City due notice in advance of such temporary discontinuances or reductions, except in cases of emergency, in which case no notice need be given. In the event of any such discontinuance or reduction, the Agency will, upon the resumption of service, attempt to approximate delivery of the quantity of water which would have been furnished to the City in the absence of such contingency.

9. WATER QUALITY - The Agency assumed no responsibility with respect to the quality of the water to be furnished pursuant to this agreement and does not warrant the quality of any such water.

10. RESPONSIBILITIES FOR DELIVERY AND DISTRIBUTION OF WATER - Neither the Agency nor its officers, agents or employees shall be liable for the control, carriage, handling, use, disposal, or distribution of water furnished to City hereunder outside of facilities then being operated or maintained by the Agency, nor for claims of damages of any nature whatsoever, including but not limited to property damage, personal injury or death, arising out of or connected with the control, carriage, handling, use, disposal, or distribution of such water beyond said facilities and the City shall indemnify and hold harmless the Agency and its officers, agents and employees from any such damages or claims of damages.

11. RATE AND METHOD OF PAYMENT FOR WATER - For each acre-foot of annual entitlement deliverable to be delivered to the City pursuant to this agreement through 1994, the City shall pay the Agency $7.25. For each acre-foot of annual entitlement deliverable to the City pursuant to this agreement after January 1, 1995, the City shall pay the Agency an amount equal to the price then being quoted by the USBR for new or renewed agreements for water delivered from Folsom Reservoir for domestic, municipal and industrial purposes for that year, but in no event less than $7.25 per acre-foot. Payments for the City's annual entitlements shall

be made to the Agency quarterly in advance on or before January 1, April 1, July 1 and October 1 of each year beginning in 1992.

The parties acknowledge that water was delivered to City by Agency during 1991 prior to this Agreement. City shall pay Agency for such water delivered during 1991 at the rate of $7.75 per acre-foot actually delivered. Payment shall be made on or before January 31, 1992. City shall have no further liability for water delivered or held available during 1991 except for that 10,000 acre feet of water still held available under the unexercised portion of the option agreement.

12. INTEREST ON OVERDUE PAYMENTS - The city shall pay the Agency interest at the legal rate for interest on judgments on any charges that remain unpaid after they become due and payable.

13. OBLIGATION OF CITY TO MAKE PAYMENTS -

(a) Character of Obligation.

The obligations of the City arising out of or pursuant or incidental to this agreement shall constitute general obligations of the City, and the City shall use all the powers and resources available to it under the law to collect the funds necessary for and to pay its obligations to the Agency under this agreement. The City as a whole is obligated to pay to the Agency the payments becoming due under this agreement, notwithstanding any individual default by its water users, constituents or others in the payment to the City of assessments, taxes, tolls, or other charges levied by the City.

(b) Refusal of Water Does Not Affect Obligation.

The City's Failure or refusal to accept delivery of any of its annual entitlement in any year shall in no way relieve it of its obligation to make payments to the Agency for that year's annual entitlement as provided for herein.

14. REMEDIES NOT EXCLUSIVE - The use by either party of any remedy specified for the enforcement of this agreement is not exclusive and shall not deprive the party using such remedy of, or limit the application of, any other remedy provided by law.

15. WAIVER OF RIGHTS - Any waiver at any time by either party of its rights with respect to a breach or default, or any other matter arising in connection with this agreement, shall not be deemed to be a waiver with respect to any other breach, default or matter.

16. ASSIGNMENT - The provisions of this agreement shall apply to and bind the successors and assigns of the respective parties, but no assignment or transfer of this agreement, or any part hereof or interest herein, shall be valid until and unless approved by the Agency.

17. AREA SERVED BY THE CITY - Water delivered to the City pursuant to this agreement shall not be sold or otherwise disposed of by the City for use outside of the City's boundaries, as they may exist from time to time, without the prior written consent of the Agency.

18. OPINIONS AND DETERMINATIONS - Where the terms of this agreement provide for action to be based upon, judgment, approval,

review, or determination of either party, such terms are not intended to be and shall never be construed as permitting such opinion, judgment, approval, review, or determination to be arbitrary, capricious, or unreasonable.

19. NOTICES - All notices that are required either expressly or by implication to be given by any party to the other under this agreement shall be signed for the Agency and for the City by such officers as they may, from time to time, authorize in writing to so act.

Any notices to parties required by this agreement shall be delivered or mailed, U.S. first class postage prepaid, addressed as follows:

CITY

Jerry Jackson
Environmental Utilities
Director
316 Vernon Street, Room 100
Roseville, CA 95678

and

Steve Dillon
Community Development Director
316 Vernon Street, Room 104
Roseville, CA 95678

AGENCY

Richard Milbrodt
General Manager
P.O. Box 6570
Auburn, CA 95604

Either party may amend its address for notice by sending notice to the other party.

20. INSPECTION OF BOOKS AND RECORDS - The proper officers or agents of the City shall have full and free access at all reasonable times to the account books and official records of the

Agency insofar as the same pertain to the matters and things provided for in this agreement, with the right at any time during office hours to make copies thereof at the City's expense, and the proper representatives of the Agency shall have similar rights in respect to the account books and records of the City.

21. INTEGRATION. This is an integrated agreement and contains all of the terms, considerations, understanding and promises of the parties. It shall be read as a whole.

22. ATTORNEY'S FEES. In any action brought by either party to enforce the terms of this agreement, the prevailing party shall be entitled to recover its reasonable attorney's fees.

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation, has authorized the execution of this agreement in duplicate by its City Manager and attested to by its City Clerk under the authority of Resolution No. 91-299, adopted by the Council of the City of Roseville on the 20th day of November, 1991, and Agency has caused this agreement to be executed.

CITY OF ROSEVILLE, a municipal corporation

BY: _____
ALLEN E. JOHNSON
City Manager

PLACER COUNTY WATER AGENCY, a public agency

BY: _____
RICHARD MILBRODT
General Manager

ATTEST:

HELEN FLORANCE
City Clerk

ATTEST:

Secretary

APPROVED AS TO FORM:

MICHAEL F. DEAN
City Attorney

APPROVED AS TO SUBSTANCE:

JERRY JACKSON
Environmental Utilities Director

STEVEN DILLON
Community Development Director

RESOLUTION NO. 91-299

RESOLUTION OF THE COUNCIL OF THE CITY OF ROSEVILLE APPROVING AN AGREEMENT BETWEEN THE CITY OF ROSEVILLE AND PLACER COUNTY WATER AGENCY AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, an agreement for Purchase of Water Supply between the City of Roseville and Placer Couty Water Agency has been prepared and has been reviewed by the Council;

NOW THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said agreement is approved and that the City Manager is authorized to execute it on behalf of the City of Roseville.

PASSED AND ADOPTED by the Council of the City of Roseville this 20th day of November, 1991, by the following vote on roll call:

AYES COUNCILMEMBERS: Pauline Roccucci, Fred M. Jackson, Harry Crabb, Jr., Mel Hamel, Bill Santucci

NOES COUNCILMEMBERS: None

ABSENT COUNCILMEMBERS: None

Bill Santucci
MAYOR

ATTEST:

Helen Florance
City Clerk

The foregoing is a correct copy of the original on file in this office.

ATTEST:
City Clerk of the City of Roseville, California

By _____
Deputy

AGREEMENT BETWEEN
PLACER COUNTY WATER AGENCY AND
CITY OF ROSEVILLE AMENDING AND
SUPPLEMENTING MAY 17, 1989 AGREEMENT

This agreement is made this 6th day of October, 1994, by and between the City of Roseville (the "City"), a municipal corporation, and the Placer County Water Agency (the "Agency"), a public agency.

RECITALS

WHEREAS, on May 17, 1989, the City and the Agency entered into a contract which provided, among other things, options to the City to purchase up to 20,000 acre feet annually of raw water from the Agency; and

WHEREAS, the City has exercised its option to purchase 10,000 acre feet annually of such water and desires to increase its remaining option to purchase water from 10,000 acre feet annually to 20,000 acre feet annually; and

WHEREAS, the parties desire to amend and supplement the May 17, 1989 contract to provide for such an increase in the amount of water which the City has an option to purchase and to set forth new terms for the payments for the option and for water transferred between the parties:

NOW, THEREFORE, the parties mutually agree as follows:

1 The City's option to purchase water from the Agency pursuant to the May 17, 1989 contract, which runs until June 20, 2011, is hereby increased as of the date of this agreement from 10,000 to 20,000 acre feet annually. In order to exercise its option to purchase the last 10,000 acre feet of water, the City shall give the Agency 24 months advance written notice of its intent to do so. The annual fee for the option for this additional 10,000 acre feet shall be either fifty cents per acre foot or 5% of the acre foot price being charged by the Bureau of Reclamation that year for water furnished to the City from Folsom Reservoir for domestic, municipal and industrial purposes, whichever is higher. In all other respects, the terms and conditions of the option remain as provided for in that contract

2. In accordance with the provisions of the May 17, 1989 contract, the City furnished the Agency 78,633,000 gallons of treated water in 1993. The parties hereby agree that in lieu of the Agency paying the City for the water delivered to it in 1993 and for any future deliveries under the May 17, 1989 contract, the Agency will give the City credits towards the payments the City is to make to the Agency for its option rights under that contract.

3. The first sentence of Paragraph 6 of the May 17, 1989 is amended to read:

> The price to be charged by the Agency or the City for treated water provided to the other parties' system pursuant to Paragraphs 3 and 4

will be equal the lowest monthly quantity rate charged by the City for metered service.

rate provided for in the foregoing amended first sentence of Paragraph 6 shall apply to the water furnished to the Agency in and in accordance therewith, the Agency shall give the City a credit of $34,691 on its future option payments

4 Except as amended and supplemented by the above and by the November 20, 1991 agreement between the Agency and the City for a water supply, the May 17, 1989 contract remains in full force and effect

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation, has authorized the execution of this agreement in duplicate by its City Manager and attested to by the City Clerk under the authority of its Resolution No. 94-267 adopted by the Council of the City of Roseville on the 5th day of October 1994, and the Placer County Water Agency has authorized the execution of this agreement in duplicate by the Chairman of its Board of Directors and attested to by its clerk under the authority of its Resolution No. 94- 37 adopted by the Board of Directors of the Agency on the 6th day of October 1994

CITY OF ROSEVILLE,
A Municipal Corporation

By _____
ALLEN E. JOHNSON, Manager

PLACER COUNTY WATER AGENCY,
A Public Agency

By _____
EDWARD NORTON, Chairman

ATTEST:

By _____, City Clerk

APPROVED AS TO FORM:

_____
City Attorney

125330.1

ATTEST:

By _____
BARBARA SLOAN, Clerk
to the Board of Directors

APPROVED AS TO FORM:

_____
Agency Attorney

1991 WATER SUPPLY CONTRACT

This agreement is made this 17th day of January, 1996, by and between the City of Roseville ("the City"), a municipal corporation, and the Placer County Water Agency (the "Agency").

W I T N E S S E T H

WHEREAS, on November 20, 1991, the Agency and the City entered into two contracts, one in which the Agency agreed to furnish the City a water supply in Folsom Reservoir (the "Water Supply Contract") and the other in which the City agreed to wheel Agency water through the City from the Intertie Line to a delivery point in the vicinity of Baseline and Cook Riolo Roads (the "Wheeling Contract"); and

WHEREAS, on October 6, 1994 the Agency and the City supplemented their May 17, 1989 contract which, among other things, provided the City options to purchase water;

WHEREAS, the Water Supply Contract provided that the price to be paid for water made available to the City after January 1, 1995, would be an amount equal to the price then being quoted by the United States Bureau of Reclamation ("USBR") for new or renewed agreements for water delivered from Folsom Reservoir for domestic,

municipal and industrial purposes, but in no event less than $7.25 per acre-foot; and

WHEREAS, in November 1991, both parties assumed that in 1995 and thereafter the USBR would have one uniform price for new or renewed agreements for water delivered from Folsom Reservoir and neither foresaw the passage by Congress of the Central Valley Project Improvement Act in 1992 which requires the addition of a mitigation and restoration payment to USBR charges for water; and

WHEREAS, the parties desire to (a) amend the Water Supply Contract to specify the price the City is to pay the Agency for water in 1995 and thereafter, (b) clarify that there will be no charge by the City for wheeling water for the Agency pursuant to the Wheeling Contract, and (c) to revise the option provisions in the May 17, 1989 contract as supplemented by the October 6, 1994 agreement.

NOW THEREFORE, THE PARTIES MUTUALLY AGREE AS FOLLOWS:

1. Article 11 of the Water Supply Contract is amended to read:

> 11. RATE AND METHOD OF PAYMENT FOR WATER - For each acre foot of annual entitlement deliverable to the City pursuant to this agreement through June 30, 1995, the City shall pay the Agency $7.25. For each acre foot of annual entitlement deliverable to the City from July 1, 1995 through June 30, 1998, the City shall pay the Agency $10.

For each acre foot of annual entitlement deliverable to the City from July 1, 1998 through June 30, 2000, the City shall pay the Agency $11. Beginning on July 1, 2000 and each fiscal year thereafter, the City shall pay the Agency for each acre foot of annual entitlement deliverable to the City an amount equal to the average of the acre foot prices the City, San Juan Water District and the Agency are required to pay to the USBR, exclusive of any mitigation or restoration payments, during that year for water made available to them by the USBR in Folsom Reservoir for domestic, municipal and industrial purposes. If in any year any of the three (the City, San Juan and the Agency) are not required to pay the USBR for water that year, the price the City shall pay the Agency shall be the average of the acre foot prices the other two are required to pay to the USBR that year. Payments for the City's annual entitlements shall be made to the Agency quarterly in advance on or before July 1, October 1, January 1 and April 1 of each fiscal year.

2. The City's option to purchase 20,000 acre-feet annually from the Agency, which runs until June 20, 2011 as

provided for in the May 17, 1989 contract, as modified by the October 6, 1994 contract, is modified as follows:

(a) The City will not purchase more than 5,000 of the 20,000 acre-feet before July 1, 1999.

(b) The City will not purchase more than 10,000 of the 20,000 acre-feet before July 1, 2004.

(c) The City will not purchase more than 15,000 of the 20,000 acre-feet before July 1, 2009.

(d) The City will not purchase any of the 20,000 acre-feet in blocks of less than 5,000 acre-feet.

Except in the case of an emergency, as provided below, in order to exercise any portion of its option to purchase water, the City shall give the Agency 24 months advance written notice of its intent to do so. The annual fee for the option for the first 10,000 acre-feet shall be either $1 per acre foot or ten percent of the acre foot price which the City is required to pay the Agency during that year for water pursuant to Article 11 of the Water Supply Contract, whichever is higher. The annual fee for the

option for the remaining 10,000 acre-feet shall be either $0.50 per acre foot or five percent of the acre foot price the City is required to pay the Agency during that year for water pursuant to Article 11 of the Water Supply Contract, whichever is higher. Notwithstanding any other provisions of this paragraph, if in the event of an emergency the City needs water in addition to that which it has already contracted to purchase from the Agency, and the Agency can make such additional water available to the City during the emergency without jeopardizing the Agency's other customers, the Agency shall offer such water to the City and the City may purchase additional water, up to the amount of the City's then unexercised option rights, at the then current per acre foot price for water provided under the Water Supply Contract. Purchases of such additional water for emergencies shall not be deemed to be exercises of any of the City's option rights provided for in this paragraph 2 and shall not adversely affect such option rights.

3. The City shall not charge the Agency for wheeling water through the City's system pursuant to the provisions of the Wheeling Contract; however, the Agency shall be required to pay for maintenance and repairs on pipelines as provided for in Article 4 of the Wheeling Contract.

IN WITNESS WHEREOF, the City of Roseville, a municipal corporation, has authorized the execution of this agreement in duplicate by its City Manager and attested to by its City Clerk

under the authority of Resolution No. 96-27, adopted by the City of Roseville on the 17th day of January, 199[illegible], and the Agency has authorized the execution of this agreement by its Chairman by its Resolution No. 9[illegible]-____ adopted by the Board of Directors of the Agency on the 8th day of FEBRUARY, 199[illegible]6

CITY OF ROSEVILLE,
A municipal corporation

By: _____
Allen E. Johnson
City Manager

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
City Attorney

PLACER COUNTY WATER AGENCY,
A public agency

By: _____
Chairman, Board of Directors

ATTEST:

_____
Secretary

APPROVED AS TO FORM:

_____
Edward J. Tiedemann
Placer County Water Agency
Attorney

198274.3

RESOLUTION NO. 96-27

APPROVING AN AMENDMENT TO 1991 WATER SUPPLY AGREEMENT BETWEEN CITY OF ROSEVILLE AND THE PLACER COUNTY WATER AGENCY, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, an amendment to the Agreement for water supply dated November 20, 1991, between City of Roseville and The Placer County Water Agency, has been reviewed by the Council;

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said agreement amendment is approved and that the City Manager is authorized to execute it on behalf of the City of Roseville.

PASSED AND ADOPTED by the Council of the City of Roseville this 17th day of January, 1996, by the following vote on roll call:

AYES COUNCILMEMBERS: Mel Hamel, Claudia Gamar, Randolph Graham, Pauline Roccucci, Harry Crabb

NOES COUNCILMEMBERS: None

ABSENT COUNCILMEMBERS: None

MAYOR

ATTEST:

City Clerk

RESOLUTION NO. 96-05 OF THE BOARD OF DIRECTORS OF THE PLACER COUNTY WATER AGENCY APPROVING AGREEMENT WITH THE CITY OF ROSEVILLE AMENDING THE NOVEMBER 20, 1991 WATER SUPPLY CONTRACT

WHEREAS, representatives of the Placer County Water Agency and the City of Roseville have prepared an agreement amending the November 20, 1991 water supply contract between the City and the Agency to revise the payment provisions and the City's option rights set forth in that contract; and

WHEREAS, this Board has reviewed the proposed agreement;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Placer County Water Agency that this Board hereby approves the agreement between the Agency and the City amending the November 20, 1991 water supply contract presented to this Board today and authorizes and directs its Chairman to execute it for and on behalf of the Agency.

The foregoing resolution was duly passed at a regular meeting of the Board of Directors of the Placer County Water Agency on March 7, 1996, by the following vote on roll call:

AYES DIRECTORS:

NOES DIRECTORS:

ABSENT DIRECTORS:

Signed and approved by me after its passage this 7th day of March, 1996.

Chairman, Board of Directors
Placer County Water Agency

ATTEST:

Clerk, Board of Directors
Placer County Water Agency

230840.1

I, Barbara Sloan, Clerk to the Board of Directors of the Placer County Water Agency, certify that the above is a true and correct copy of the resolution adopted at a regular meeting of the Board of Directors of the Placer County Water Agency, held on March 7, 1996.

DATED: March 8, 1996

Clerk, Board of Directors
Placer County Water Agency

MEMORANDUM OF UNDERSTANDING CONCERNING PROPOSED AGREEMENT BETWEEN THE CITY OF ROSEVILLE AND SAN JUAN WATER DISTRICT FOR THE TRANSFER OF WATER

THIS MEMORANDUM UNDERSTANDING is made and entered into this 18th day of June, 2003, by and between the City of Roseville, a municipal corporation ("City"), and San Juan Water District, a public agency in Placer County ("San Juan").

RECITALS

A. City and San Juan desire to enter into the "Agreement Between the City of Roseville and San Juan Water District for Transfer of Water ("Water Transfer Agreement")" in substantially the form set forth in Exhibit A to this Memorandum of Understanding.

B. City and San Juan cannot commit to enter into and implement the Water Transfer Agreement until they have first complied with the California Environmental Quality Act ("CEQA") to the extent required by law.

C. City will be the "lead agency" under CEQA with respect to the transfer of water under the Water Transfer Agreement ("Project"). San Juan will be a "responsible agency" under CEQA with respect to the Project.

NOW, THEREFORE, City and San Juan agree as follows:

City and San Juan intend to execute and perform the Water Transfer Agreement after City has approved and certified a final CEQA compliance document for the Project, and San Juan has considered the City's CEQA document in carrying out San Juan's duties as a responsible agency under CEQA with respect to the Project.

CITY OF ROSEVILLE, a Municipal Corporation.

Patty Quinn for
W. CRAIG ROBINSON
City Manager

SAN JUAN WATER DISTRICT

Kenneth A. Miller
KEN MILLER
President, Board of Directors

8617/A052003pmbREINPUT-MOU
5/20/03

ATTEST:

CAROLYN PARKINSON
City Clerk

ATTEST:

Secretary

APPROVED AS TO FORM:

MARK J. DOANE
City Attorney

APPROVED AS TO SUBSTANCE:

DERRICK WHITEHEAD
Environmental Utilities Director

8617/A052003pmbREINPUT-MOU
5/20/03

AGREEMENT BETWEEN THE CITY OF ROSEVILLE AND SAN JUAN WATER DISTRICT FOR TRANSFER OF WATER

THIS AGREEMENT is made and entered into this ____ day of _____, 2003, by and between the City of Roseville, a municipal corporation ("City"), and San Juan Water District, a public water agency in Placer County ("San Juan"); and

RECITALS

A. San Juan and City entered into an agreement dated February 7, 2001 ("2001 City-San Juan Water Supply Agreement"), under which San Juan provides City 800 acre-feet per year of water under San Juan's water supply contract with Placer County Water Agency ("PCWA") dated December 7, 2000 (the "PCWA Contract"). The PCWA Contract makes available to San Juan a supply of 25,000 acre-feet per year through 2021, and is subject to renewal.

B. City has contracts and options with PCWA for up to 30,000 acre feet per year of Middle Fork Project Water, and a contract with the United States Bureau of Reclamation ("USBR") for 32,000 acre feet per year of Central Valley Project ("CVP") water.

C. City desires to supplement the water supply available within the boundaries of the City, as they may be revised from time to time ("City Service Area") to meet increased anticipated water needs in the City Service Area.

D. San Juan has entered into a contract with the USBR for the conveyance of PCWA Contract Water from Folsom Reservoir to San Juan's water treatment plant (Warren Act Contract No. 6-07-20-W1315; "Warren Act Contract").

E. The Water Forum Agreement ("Water Forum Agreement") is an integrated package of actions that provides a safe and reliable water supply for the region's economic health and planned development, while preserving the fishery, wildlife, recreational and aesthetic values of the Lower American River. City and San Juan are signatories to the Water Forum

Agreement. Each of the water purveyors (including City and San Juan) who have executed the Water Forum Agreement has agreed to a specific plan ("Purveyor-Specific Agreement") that sets forth the manner in which it will comply with the Water Forum Agreement. The respective Purveyor-Specific Agreement of City and San Juan are set forth in Exhibit A to this Agreement.

F. Pursuant to the Water Forum Agreement, San Juan has the right to divert the full amount under its PCWA Contract supply in most years, but is limited in driest years to its 1995 baseline level of use at 10,000 acre feet. San Juan has agreed in its Purveyor-Specific Agreement that it will rely on groundwater supplies to offset reductions in its surface water supplies pursuant to the Water Forum Agreement.

G. Water under the PCWA Contract may be available on a long-term basis for use to meet demands in PCWA's service area, anywhere within the City Service Area, or any other area of mutual benefit, provided the user complies with the terms of the PCWA Contract and San Juan's Purveyor Specific Agreement. San Juan is willing to make 3,200 acre-feet of water ("Transfer Water") per year under this Agreement for use within the City Service Area (in addition to the 800 acre-feet of water per year provided to City by San Juan under the 2001 City-San Juan Water Supply Agreement) for delivery to City for use within the City Service Area.

H. Under the Water Forum Agreement, City identified 54,900 acre feet of water as the requirement to meet build-out demand within the City, and any remaining entitlement of the City may be needed to meet CVP shortages in dry years and/or released to mitigate for future diversions above 1995 baseline levels.

I. San Juan has taken the lead in developing a Regional Water Master Plan with a focus directed toward implementing the Water Forum Agreement through conjunctive use projects identified in the Master Plan.

J. San Juan intends to maximize its conjunctive use efforts with all available sources of water supply, including water available under the PCWA Contract.

K. San Juan and City jointly use facilities to divert and convey water from Folsom Reservoir, and they have made significant expenditures, and expect to make additional expenditures in the future, to improve the capacity and reliability of the facilities used to deliver water supplies to them. In addition, San Juan has expended substantial amounts of money to improve its water conveyance facilities and to implement water conservation measures, which actions have contributed to making water entitlement under the PCWA Contract available for use by City, as proposed in this Agreement. San Juan's activities described in this recitals are referred to as "San Juan's Water Conveyance and Conservation Measures."

L. City and San Juan desire under this Agreement to put the 3,200 acre feet per year of San Juan's Transfer Water to beneficial use within the City Service Area in accordance with the terms of this Agreement.

NOW, THEREFORE, the Parties agree as follows:

1. Obligation to Provide a Supply of Water. Subject to compliance with Section 20 and the other terms and conditions of this Agreement, San Juan will provide 3,200 acre-feet per year under this Agreement of Transfer Water to City for beneficial use within the City Service Area subject to the terms of this Agreement. Nothing in this Agreement will be construed to require San Juan to provide more than 3,200 acre-feet per year of its Transfer Water to City, or water from any source other than the PCWA Contract. (The 3,200 acre-feet per year of Transfer Water provided under this Agreement will be in addition to the 800 acre-feet per year of water provided by San Juan to City under the 2001 City-San Juan Water Supply Agreement.)

2. Point of Delivery to City. The Transfer Water furnished under this Agreement will be delivered by San Juan to the Hinkle Wye facility or such other facility or diversion point as may become available to City or San Juan ("Delivery Point"). City will be responsible for delivery of Transfer Water from the Delivery Point.

3. Approvals for and Scheduling of Transfer Water.

A. Approvals and Reimbursement of Costs. During the Term of this Agreement, San Juan will coordinate San Juan's activities with PCWA and/or USBR as necessary for City to divert Transfer Water at the Delivery Point. The City will reimburse San Juan for all reasonable costs incurred by San Juan under this Agreement and the Water Forum Agreement that are attributable to the delivery of Transfer Water to the City under this Agreement, within thirty days of receiving an invoice from San Juan. San Juan will identify the basis for all reasonable costs billed to the City.

B. Scheduling by San Juan. San Juan will, upon request of City, make Transfer Water available to City by scheduling and coordinating with PCWA and USBR the release and diversion of Transfer Water to the Delivery Point in an amount and at such times as requested by City. San Juan will send written confirmation of water scheduled with PCWA and USBR to City prior to such scheduled deliveries.

C. Scheduling by City. City may schedule the diversion of Transfer Water for beneficial use within City's Service Area following execution of this Agreement, provided that, City will not schedule the initial delivery of Transfer Water under this Agreement until the City has first (1) certified to the District that the Well Projects referred to in Section 9 have been installed and are operational, and (2) scheduled for delivery the 800 acre-feet of water provided by San Juan to City under the 2001 City-San Juan Water Supply Agreement. City will schedule the diversion of Transfer Water with San Juan in advance, on a quarterly basis, on or before January 1, April 1, July 1 and October 1 of each calendar year. For example, deliveries beginning on October 1 will have been scheduled on or before the preceding July 1. Excluding those deliveries specified in Section 7, the maximum amount that may be scheduled in any quarter under this Agreement will be 800 acre feet. A failure of City to schedule water for any period(s) during the Term of this Agreement will not relieve San Juan of the obligation to resume deliveries or schedule deliveries with PCWA and/or the USBR upon resumption of scheduling by City.

4. Measurement. City may use Transfer Water anywhere within the City Service Area. The Parties may agree to an alternative system of measurement of Transfer Water

delivered under this Agreement by subsequent mutual written agreement. City, at its sole expense, will be responsible for the cost of compliance with any measurement requirements imposed pursuant to obtaining the approvals specified in Section 3A of this Agreement, or otherwise required as a condition of San Juan's delivery of Transfer Water to City.

5. Payments For Surface Water.

A. Commencement of Payment Obligations. City's obligation to make the payments for Transfer Water provided for in this Agreement will commence with the first scheduling of delivery of Transfer Water by City in accordance with Section 3, and will continue thereafter throughout the term of this Agreement, irrespective of whether City schedules all or only a portion of the quantity of Transfer Water to be delivered in accordance with Section 3 of this Agreement.

B. Water Deemed Delivered. Water scheduled by City for delivery from San Juan will be presumed delivered pursuant to this Agreement, so long as San Juan has caused Transfer Water to be made available in accordance with Section 3, except that, City will be obligated to pay for Transfer Water that San Juan would have made available to City but for the reductions provided for in Section 8 of this Agreement.

C. Payments for Surface Water. In addition to the reimbursement of costs incurred by San Juan under Section 3A of this Agreement, City will pay to San Juan: (a) the direct pass-through rate paid by San Juan for 3,200 acre-feet per year of Transfer Water, irrespective of whether City schedules all or only a portion to be delivered in accordance with Section 3 (i.e., City will pay for 3,200 acre-feet per year of Transfer Water at the same rate for Transfer Water as San Juan would have paid PCWA had San Juan diverted the Transfer Water for use within San Juan's own service area), (b) five percent of that amount to cover San Juan's administrative costs for administering this Agreement, (c) power costs, if any, incurred by San Juan directly associated with and incurred for the wheeling of Transfer Water to the Delivery Point, and (d) any wheeling charges incurred by San Juan under the Warren Act contract directly associated with and incurred for wheeling of Transfer Water to the City Delivery Point.

D. Credits Against Certain Payments. In the event that San Juan does not deliver Transfer Water to City pursuant to the provisions of Section 8 of this Agreement, San Juan may be able, under the provisions of the Water Forum Agreement, to receive revenue (net of reasonable costs incurred to implement the transfer) for foregoing diversion of that quantity of water and putting it to beneficial use downstream of the confluence of the lower American River and the Sacramento River ("Transfer Revenues"). During a year in which San Juan does not deliver Transfer Water to City pursuant to the provisions of Section 8 of this Agreement, and to the extent that San Juan receives Transfer Revenues for putting the Transfer Water that year to beneficial use downstream of the confluence of the lower American River and the Sacramento River, then San Juan will credit a pro rata (i.e., the quantity of Transfer Water that is transferred compared to the total quantity of water transferred that year by San Juan) of the amount of Transfer Revenues received by San Juan toward the payments that would be due from the City to San Juan under this Section for that year, which credit will not exceed the amount of payments due under this Section that year.

6. Schedule for Payments. Payments provided for in Section 5 of this Agreement will be made by City to San Juan in advance on January 1, April 1, July 1 and October 1 of each calendar year. For example, payment for deliveries beginning on April 1 must be made at any time prior to April 1.

7. Reductions and Discontinuance in Supply of Water. In the event a reduction or discontinuance of Transfer Water delivered occurs due to maintenance, repair, replacement, investigation or inspection of any facilities necessary for the furnishing or storage of Transfer Water to City, no liability will accrue against either Party or any of its respective officers, agents or employees for any damage, direct or indirect, arising from such reduction or discontinuance. Upon resumption of delivery after such reduction or discontinuance, City may divert the quantity of Transfer Water that would have been delivered hereunder in the absence of such reduction or discontinuance.

8. Compliance With Water Forum Agreement. In the event San Juan reduces its

diversion in any year from the American River pursuant to the Water Forum Agreement, San Juan may, in the reasonable exercise of its discretion, deliver no Transfer Water to the City that year, in which case, the City will use the Well Projects referred to in Section 9 or water from other sources to provide water service to the City Service Area.

9. City Well Projects. City will design and construct groundwater wells for a potable water supply to be located in the City's Service Area ("Well Projects") with water production capacity sufficient to provide an alternative water supply within the City Service Area during times when Transfer Water is not available from the District under this Agreement. City will operate and maintain the Well Projects as a source of water for the City Service Area during times when Transfer Water is not available from San Juan under Sections 7 and 8 of this Agreement.

10. Water Quality. All Transfer Water diverted to City under this Agreement will be raw (untreated) water, unless the Parties agree otherwise by written mutual agreement.

11. Payments to San Juan in Recognition of San Juan's Water Conveyance and Conservation Measures. In recognition of San Juan's Water Conveyance and Conservation Measures, which have helped to contribute to making Transfer Water available for use by City under this Agreement, City will pay the sum of $1,340,000 to San Juan within 90 days following the effective date set forth in the preamble to this Agreement.

12. Indemnification. Each Party will defend, indemnify and hold harmless the other Party, its officers, agents and employees from all claims, lawsuits or actions for personal injury, bodily injury (including death), or property damage arising from or out of any intentional or negligent act or omission of the indemnitor, save and except those matters arising from the sole, active negligence of the indemnitee ("Indemnification"). This Indemnification specifically includes, but is not limited to, claims, lawsuits, actions or damages (including reasonable attorneys' fees and litigation costs) arising from or related to the quality or quantity of water delivered pursuant to this Agreement. City will provide Indemnification to San Juan with respect to claims arising from the delivery of Transfer Water past the Delivery Point. The Parties

intend that this section will be broadly construed to effectuate its purpose.

13. Term; Termination and Amendment. The term of this Agreement will be the same as the term of the PCWA Contract and Warren Act Contract, including any renewal thereof, provided that, this Agreement will be subject to renegotiation by the parties in the event that (a) City has failed to put all of the Transfer Water to beneficial use within the City Service Area by December 31, 2016; or (b) the quantity of water provided for under the PCWA Contract is reduced in a renewal of the term of the PCWA Contract. This Agreement will be subject to termination by a Party following a material breach by the other Party. The Parties will consult with each other for a period of time not less than thirty days prior to terminating this Agreement, for the purpose of attempting to resolve a dispute that would be a basis for terminating this Agreement. The Parties may amend or modify this Agreement only upon written mutual agreement.

14. Assignment. Neither Party to this Agreement will assign any of its rights or obligations under this Agreement, except with the prior written consent of the other Party, which will not be unreasonably withheld, except that San Juan may withhold approval of a request from City to use Transfer Water outside the City Service Area. No assignment of this Agreement will relieve the assigning Party of any of its obligations under this Agreement until such obligations have been assumed by the assignee. Any assignment in violation of this section will be void.

15. No Waiver of Rights. Any waiver at any time by either Party hereto of its rights with respect to a breach, default or any other matter arising in connection with this Agreement, will not be deemed to be a waiver with respect to any other breach, default or matter.

16. Attorney's Fees and Venue. In any action brought by either Party to enforce the terms of this Agreement, the prevailing Party will be entitled to recover its reasonable attorneys' fees. Any action arising out of this Agreement will be brought in Placer County, California, regardless of where else venue may lie.

17. Integrated Agreement. This is an integrated Agreement, and contains all of the

terms, considerations, understandings and promises of the Parties. It will be read as a whole.

18. Notices. All notices, invoices, reports, payments or other communications to Parties required by this Agreement will be (a) sent by electronic mail if the receiving party confirms receipt,

RESOLUTION NO. 03-303

APPROVING A MEMORANDUM OF UNDERSTANDING BETWEEN CITY OF ROSEVILLE AND SAN JUAN WATER DISTRICT, AND AUTHORIZING THE CITY MANAGER TO EXECUTE IT ON BEHALF OF THE CITY OF ROSEVILLE

WHEREAS, a memorandum of understanding for the transfer of water, between the City of Roseville and San Juan Water District, has been reviewed by the City Council;

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Roseville that said memorandum of understanding is approved and that the City Manager is authorized to execute it on behalf of the City of Roseville.

PASSED AND ADOPTED by the Council of the City of Roseville this 18th day of June, 20 03, by the following vote on roll call:

AYES COUNCILMEMBERS: Earl Rush, Jim Gray, Gina Garbolino, F.C. "Rocky" Rockholm

NOES COUNCILMEMBERS: None

ABSENT COUNCILMEMBERS: Richard Roccucci

MAYOR

ATTEST:

Assistant City Clerk

PLACER COUNTY
FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Tim Hackworth, Executive Director
Brian Keating, District Engineer
Andrew Darrow, Development Coordinator

July 31, 2003

Garth Gaylord
City of Roseville
Engineering Department
311 Vernon Street
Roseville, CA 95678

RE: West Roseville Specific Plan / Master Drainage Analysis

Dear Garth:

We have reviewed the Master Drainage Analysis dated June 2003 for the subject project and have the following comments. We commented on the subject project's previous submittal in a letter dated October 24, 2002.

1. The master drainage analysis has adequately demonstrated that detention storage would not be beneficial within the portion of the subject project located within the Pleasant Grove Creek Watershed (Fiddyment).

2. Detention storage is recommended by the drainage analysis for the portion of the subject project located within the Curry Creek watershed (Westpark). Per the master drainage analysis, five detention basins are proposed for the Westpark development. These basins will provide approximately 72.6 to 79.6 acre-feet of detention storage during a 100-year storm event. The District requests the opportunity to review the design plans and details for each of the proposed basins.

3. Per the drainage analysis, the total increase in volume runoff from the West Roseville Specific Plan Area is estimated to be 685 acre-feet. It is the District's understanding that the subject project will provide volume runoff mitigation through the City of Roseville's proposed regional retention facility at Reason Farms.

4. Significant amounts of fill are proposed within the limits of both the Curry Creek and Pleasant Grove Creek 100-year floodplains. However, it appears that significant increases in water surface elevations have been avoided through mitigation.

We request the opportunity to review any future drainage analysis revisions or detention basin design plans. Please call me at (530) 889-7541 if you have any questions regarding these comments.

Andrew Darrow, P.E.
Development Coordinator

RECEIVED
AUG 07 2003
BY: Kf

cc: Lori Lawrence, Placer County Planning
Chris Ferrari, Wood-Rodgers, Inc.

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