Attachment A

Changes to the Urban Water Management Plan Requirements Since 2005

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Changes to the Urban Water Management Plan Act Since 2005

Change	Water Code Citation	Summary
Notification	10621(b)	Added: Provide at least 60 days notification to any city or county within which the supplier provides water for the public hearing required by Section 10642.
DMM Compliance	10631(j)	Changed: Members of the CUWCC will be considered in compliance with the DMM evaluation (10631 (f) and (g)) if they comply with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated December 10, 2008 and by submitting their CUWCC annual reports.
Wholesale Suppliers Source Water	10631(j)	Deleted: Text identifying the specific types of water an urban water supplier may seek information from a wholesaler supplier. The option to seek information from a wholesale supplier is not deleted, just the identification of source water types.
Lower Income housing water use projections	10631.1	Added: Water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households (Health and Safety Code Section 50079.5) will be provided. These water use projections are to assist a supplier in complying with Government Code Section 65589.7 to grant priority of the provision of service to housing units affordable to lower income households.
Linkage of DMM to State grant or loan program	10631.5(a)	Changed: After January 1, 2009, eligibility for state-funded grants or loans will be conditioned on the implementation of Section 10631 DMMs. If a DMM is not currently being implemented, then the urban water supplier submits to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement.. If a DMM is not locally cost-effective (the present value of the local benefits is less than the present value of local costs to implement the DMM), then the water supplier will submit supporting documentation and the DWR will provide a determination within 120 days of UWMP submittal.
DMM Compliance	10631.5(b)	Added: DWR will consult with other agencies and public input and develop eligibility requirements for meeting compliance with DMM implementation. Determination of DMM compliance will be based on an individual water agencies implementation or participation with a regional group. An individual water agency will not be denied eligibility if another participating regional agency does not comply with each of the DMMs
Determination of Grant and Loan Eligibility	10631.5(c)	Added: Grant and loan eligibility, based on DMM compliance, will be included in the funding guidelines.
	10631.5(d)	Added: The administering agency will request and eligibility determination from DWR regarding “the requirements of this section”. DWR will respond within 60 days.
	10631.5(e)	Added: The water supplier may submit copies of its annual reports and other relevant documents to assist DWR in determining implementation or scheduling of the water suppliers DMMs. Water suppliers that are signatories of the CUWCC MOU may submit its annual reports to support its DMM activities.
	10631.5(f)	Added: “This section” is in effect only until July 1, 2016, after which it is repealed, unless another statute is enacted.

Changes to the Urban Water Management Plan Act Since 2005

Change	Water Code Citation	Summary
New DMM Independent Technical Panel	10631.7	Added: DWR, with the CUWCC, will convene a technical panel to provide information and recommendations to DWR and the Legislature on new DMMs, technologies, and approaches. There is further language on the panel members and timing.
Potential Recycled Water Uses UWMP Distribution	10633(d) 10644(a)	Added: Indirect potable reuse is to be considered as an option for a potential use of recycled water. Added: A copy of the UWMP will also be submitted to the California State Library no later than 30 days after its adoption
Exemplary UWMP Elements	10644(b)	Added: 'Exemplary' elements of individual plans are to be identified in the 2011 Legislative Report
Exemplary UWMP Elements	10644(c)	Added: (1), (2), and (3). Clarifying that "exemplary" DMMs are those that achieve water saving significantly above the levels established by DWR to meet the requirements of 10631.7. The results are to be distributed to the panel convened pursuant to Section 10631.7 and the public.
Retail Deadline	144644(j)(1)	Added: An urban retail water supplier is granted an extension to July 1, 2011, for adoption of an urban water management plan.
Wholesaler Deadline	144644(j)(2)	Added: An urban wholesale water supplier whose urban water management plan . . .is granted an extension to July 1, 2011, to permit coordination between an urban wholesale water supplier and urban retail water suppliers.
	10657	Deleted.

Abbreviations
UWMP = Urban Water Management Plan
DWR = California Department of Water Resources
CUWCC = California Urban Water Conservation Council
DMM = Demand Management Measure

References
1. *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan*; Table B-1 (DWR, 2010)

Attachment B

California Water Code Division 6, Part 2.55 and Part 2.6

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Section L: California Water Code, Division 6, Part 2.55: Water Conservation

The following sections of California Water Code Division 6, Part 2.55, are available online at http://www.leginfo.ca.gov/calaw.html.

Chapter 1. General Declarations and Policy	§10608-10608.8
Chapter 2. Definitions	§10608.12
Chapter 3. Urban Retail Water Suppliers	§10608.16-10608.44

Legislative Counsel's Digest

Senate Bill No. 7
Chapter 4

An act to amend and repeal Section 10631.5 of, to add Part 2.55 (commencing with Section 10608) to Division 6 of, and to repeal and add Part 2.8 (commencing with Section 10800) of Division 6 of, the Water Code, relating to water.

[Approved by Governor November 10, 2009. Filed with Secretary of State November 10, 2009.]

Legislative Counsel's Digest

SB 7, Steinberg. Water conservation.

(1) Existing law requires the Department of Water Resources to convene an independent technical panel to provide information to the department and the Legislature on new demand management measures, technologies, and approaches. "Demand management measures" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

This bill would require the state to achieve a 20% reduction in urban per capita water use in California by December 31, 2020. The state would be required to make incremental progress towards this goal by reducing per capita water use by at least 10% on or before December 31, 2015. The bill would require each urban retail water supplier to develop urban water use targets and an interim urban water use target, in accordance with specified requirements. The bill would require agricultural water suppliers to implement efficient water management practices. The bill would require the department, in consultation with other state agencies, to develop a single standardized water use reporting form. The bill, with certain exceptions, would provide that urban retail water suppliers, on and after July 1, 2016, and agricultural water suppliers, on and after July 1, 2013, are not eligible for state water grants or loans unless they comply with the water conservation requirements established by the bill. The bill would repeal, on July 1, 2016, an existing requirement that conditions

eligibility for certain water management grants or loans to an urban water supplier on the implementation of certain water demand management measures.

(2) Existing law, until January 1, 1993, and thereafter only as specified, requires certain agricultural water suppliers to prepare and adopt water management plans.

This bill would revise existing law relating to agricultural water management planning to require agricultural water suppliers to prepare and adopt agricultural water management plans with specified components on or before December 31, 2012, and update those plans on or before December 31, 2015, and on or before December 31 every 5 years thereafter. An agricultural water supplier that becomes an agricultural water supplier after December 31, 2012, would be required to prepare and adopt an agricultural water management plan within one year after becoming an agricultural water supplier. The agricultural water supplier would be required to notify each city or county within which the supplier provides water supplies with regard to the preparation or review of the plan. The bill would require the agricultural water supplier to submit copies of the plan to the department and other specified entities. The bill would provide that an agricultural water supplier is not eligible for state water grants or loans unless the supplier complies with the water management planning requirements established by the bill.

(3) The bill would take effect only if SB 1 and SB 6 of the 2009–10 7th Extraordinary Session of the Legislature are enacted and become effective.

The people of the State of California do enact as follows:

SECTION 1. Part 2.55 (commencing with Section 10608) is added to Division 6 of the Water Code, to read:

Part 2.55. Sustainable Water Use and Demand Reduction

Chapter 1. General Declarations and Policy

10608. The Legislature finds and declares all of the following:

(a) Water is a public resource that the California Constitution protects against waste and unreasonable use.

(b) Growing population, climate change, and the need to protect and grow California's economy while protecting and restoring our fish and wildlife habitats make it essential that the state manage its water resources as efficiently as possible.

(c) Diverse regional water supply portfolios will increase water supply reliability and reduce dependence on the Delta.

(d) Reduced water use through conservation provides significant energy and environmental benefits, and can help protect water quality, improve streamflows, and reduce greenhouse gas emissions.

(e) The success of state and local water conservation programs to increase efficiency of water use is best determined on the basis of measurable outcomes related to water use or efficiency.

(f) Improvements in technology and management practices offer the potential for increasing water efficiency in California over time, providing an essential water management tool to meet the need for water for urban, agricultural, and environmental uses.

(g) The Governor has called for a 20 percent per capita reduction in urban water use statewide by 2020.

(h) The factors used to formulate water use efficiency targets can vary significantly from location to location based on factors including weather, patterns of urban and suburban development, and past efforts to enhance water use efficiency.

(i) Per capita water use is a valid measure of a water provider's efforts to reduce urban water use within its service area. However, per capita water use is less useful for measuring relative water use efficiency between different water providers. Differences in weather, historical patterns of urban and suburban development, and density of housing in a particular location need to be considered when assessing per capita water use as a measure of efficiency.

10608.4. It is the intent of the Legislature, by the enactment of this part, to do all of the following:

(a) Require all water suppliers to increase the efficiency of use of this essential resource.

(b) Establish a framework to meet the state targets for urban water conservation identified in this part and called for by the Governor.

(c) Measure increased efficiency of urban water use on a per capita basis.

(d) Establish a method or methods for urban retail water suppliers to determine targets for achieving increased water use efficiency by the year 2020, in accordance with the Governor's goal of a 20-percent reduction.

(e) Establish consistent water use efficiency planning and implementation standards for urban water suppliers and agricultural water suppliers.

(f) Promote urban water conservation standards that are consistent with the California Urban Water Conservation Council's adopted best management practices and the requirements for demand management in Section 10631.

(g) Establish standards that recognize and provide credit to water suppliers that made substantial capital investments in urban water conservation since the drought of the early 1990s.

(h) Recognize and account for the investment of urban retail water suppliers in providing recycled water for beneficial uses.

(i) Require implementation of specified efficient water management practices for agricultural water suppliers.

(j) Support the economic productivity of California's agricultural, commercial, and industrial sectors.

(k) Advance regional water resources management.

10608.8.

(a) (1) Water use efficiency measures adopted and implemented pursuant to this part or Part 2.8 (commencing with Section 10800) are water conservation measures subject to the protections provided under Section 1011.

(2) Because an urban agency is not required to meet its urban water use target until 2020 pursuant to subdivision (b) of Section 10608.24, an urban retail water supplier's failure to meet those targets shall not establish a violation of law for purposes of any state administrative or judicial proceeding prior to January 1, 2021. Nothing in this paragraph limits the use of data reported to the department or the board in litigation or an administrative proceeding. This paragraph shall become inoperative on January 1, 2021.

(3) To the extent feasible, the department and the board shall provide for the use of water conservation reports required under this part to meet the requirements of Section 1011 for water conservation reporting.

(b) This part does not limit or otherwise affect the application of Chapter 3.5 (commencing with Section 11340), Chapter 4 (commencing with Section 11370), Chapter 4.5 (commencing with Section 11400), and Chapter 5 (commencing with Section 11500) of Part 1 of Division 3 of Title 2 of the Government Code.

(c) This part does not require a reduction in the total water used in the agricultural or urban sectors, because other factors, including, but not limited to, changes in agricultural economics or population growth may have greater effects on water

use. This part does not limit the economic productivity of California's agricultural, commercial, or industrial sectors.

(d) The requirements of this part do not apply to an agricultural water supplier that is a party to the Quantification Settlement Agreement, as defined in subdivision (a) of Section 1 of Chapter 617 of the Statutes of 2002, during the period within which the Quantification Settlement Agreement remains in effect. After the expiration of the Quantification Settlement Agreement, to the extent conservation water projects implemented as part of the Quantification Settlement Agreement remain in effect, the conserved water created as part of those projects shall be credited against the obligations of the agricultural water supplier pursuant to this part.

Chapter 2. Definitions

10608.12. Unless the context otherwise requires, the following definitions govern the construction of this part:

(a) “Agricultural water supplier” means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water. “Agricultural water supplier” includes a supplier or contractor for water, regardless of the basis of right, that distributes or sells water for ultimate resale to customers. “Agricultural water supplier” does not include the department.

(b) “Base daily per capita water use” means any of the following:

(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

(c) “Baseline commercial, industrial, and institutional water use” means an urban retail water supplier's base daily per capita water use for commercial, industrial, and institutional users.

(d) “Commercial water user” means a water user that provides or distributes a product or service.

(e) “Compliance daily per capita water use” means the gross water use during the final year of the reporting period, reported in gallons per capita per day.

(f) “Disadvantaged community” means a community with an annual median household income that is less than 80 percent of the statewide annual median household income.

(g) “Gross water use” means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:

(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier.

(2) The net volume of water that the urban retail water supplier places into long-term storage.

(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier.

(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.

(h) “Industrial water user” means a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development.

(i) “Institutional water user” means a water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.

(j) “Interim urban water use target” means the midpoint between the urban retail water supplier's base daily per capita water use and the urban retail water supplier's urban water use target for 2020.

(k) "Locally cost effective" means that the present value of the local benefits of implementing an agricultural efficiency water management practice is greater than or equal to the present value of the local cost of implementing that measure.

(l) "Process water" means water used for producing a product or product content or water used for research and development, including, but not limited to, continuous manufacturing processes, water used for testing and maintaining equipment used in producing a product or product content, and water used in combined heat and power facilities used in producing a product or product content. Process water does not mean incidental water uses not related to the production of a product or product content, including, but not limited to, water used for restrooms, landscaping, air conditioning, heating, kitchens, and laundry.

(m) "Recycled water" means recycled water, as defined in subdivision (n) of Section 13050, that is used to offset potable demand, including recycled water supplied for direct use and indirect potable reuse, that meets the following requirements, where applicable:

(1) For groundwater recharge, including recharge through spreading basins, water supplies that are all of the following:

(A) Metered.

(B) Developed through planned investment by the urban water supplier or a wastewater treatment agency.

(C) Treated to a minimum tertiary level.

(D) Delivered within the service area of an urban retail water supplier or its urban wholesale water supplier that helps an urban retail water supplier meet its urban water use target.

(2) For reservoir augmentation, water supplies that meet the criteria of paragraph (1) and are conveyed through a distribution system constructed specifically for recycled water.

(n) "Regional water resources management" means sources of supply resulting from watershed-based planning for sustainable local water reliability or any of the following alternative sources of water:

(1) The capture and reuse of stormwater or rainwater.

(2) The use of recycled water.

(3) The desalination of brackish groundwater.

(4) The conjunctive use of surface water and groundwater in a manner that is consistent with the safe yield of the groundwater basin.

(o) "Reporting period" means the years for which an urban retail water supplier reports compliance with the urban water use targets.

(p) "Urban retail water supplier" means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.

(q) "Urban water use target" means the urban retail water supplier's targeted future daily per capita water use.

(r) "Urban wholesale water supplier," means a water supplier, either publicly or privately owned, that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes.

Chapter 3. Urban Retail Water Suppliers

10608.16.

(a) The state shall achieve a 20-percent reduction in urban per capita water use in California on or before December 31, 2020.

(b) The state shall make incremental progress towards the state target specified in subdivision (a) by reducing urban per capita water use by at least 10 percent on or before December 31, 2015.

10608.20.

(a) (1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.

(2) It is the intent of the Legislature that the urban water use targets described in subdivision (a) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020.

(b) An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):

(1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.

(2) The per capita daily water use that is estimated using the sum of the following performance standards:

(A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.

(B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.

(C) For commercial, industrial, and institutional uses, a 10-percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.

(3) Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.

(4) A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:

(A) Consider climatic differences within the state.

(B) Consider population density differences within the state.

(C) Provide flexibility to communities and regions in meeting the targets.

(D) Consider different levels of per capita water use according to plant water needs in different regions.

(E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.

(F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.

(c) If the department adopts a regulation pursuant to paragraph (4) of subdivision (b) that results in a requirement that an urban retail water supplier achieve a reduction in daily per capita water use that is greater than 20 percent by December 31, 2020, an urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may limit its urban water use target to a reduction of not more than 20 percent by December 31, 2020, by adopting the method described in paragraph (1) of subdivision (b).

(d) The department shall update the method described in paragraph (4) of subdivision (b) and report to the Legislature by December 31, 2014. An urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may adopt a new urban daily per capita water use target pursuant to this updated method.

(e) An urban retail water supplier shall include in its urban water management plan required pursuant to Part 2.6 (commencing with Section 10610) due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.

(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).

(h) (1) The department, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part, including, but not limited to, both of the following:

(A) Methodologies for calculating base daily per capita water use, baseline commercial, industrial, and institutional water use, compliance daily per capita water use, gross water use, service area population, indoor residential water use, and landscaped area water use.

(B) Criteria for adjustments pursuant to subdivisions (d) and (e) of Section 10608.24.

(2) The department shall post the methodologies and criteria developed pursuant to this subdivision on its Internet Web site, and make written copies

available, by October 1, 2010. An urban retail water supplier shall use the methods developed by the department in compliance with this part.

(i) (1) The department shall adopt regulations for implementation of the provisions relating to process water in accordance with subdivision (l) of Section 10608.12, subdivision (e) of Section 10608.24, and subdivision (d) of Section 10608.26.

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

(j) An urban retail water supplier shall be granted an extension to July 1, 2011, for adoption of an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) due in 2010 to allow use of technical methodologies developed by the department pursuant to paragraph (4) of subdivision (b) and subdivision (h). An urban retail water supplier that adopts an urban water management plan due in 2010 that does not use the methodologies developed by the department pursuant to subdivision (h) shall amend the plan by July 1, 2011, to comply with this part.

10608.22. Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph (3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.

10608.24.

(a) Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.

(b) Each urban retail water supplier shall meet its urban water use target by December 31, 2020.

(c) An urban retail water supplier's compliance daily per capita water use shall be the measure of progress toward achievement of its urban water use target.

(d) (1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:

(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.

(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.

(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.

(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.

(e) When developing the urban water use target pursuant to Section 10608.20, an urban retail water supplier that has a substantial percentage of industrial water use in its service area, may exclude process water from the calculation of gross water use to avoid a disproportionate burden on another customer sector.

(f) (1) An urban retail water supplier that includes agricultural water use in an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) may include the agricultural water use in determining gross water use. An urban retail water supplier that includes agricultural water use in determining gross water use and develops its urban water use target pursuant to paragraph (2) of subdivision (b) of Section 10608.20 shall use a water efficient standard for agricultural irrigation of 100 percent of reference evapotranspiration multiplied by the crop coefficient for irrigated acres.

(2) An urban retail water supplier, that is also an agricultural water supplier, is not subject to the requirements of Chapter 4 (commencing with Section 10608.48), if the agricultural water use is incorporated into its urban water use target pursuant to paragraph (1).

10608.26.

(a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.

(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.

(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.

(b) In complying with this part, an urban retail water supplier may meet its urban water use target through efficiency improvements in any combination among its customer sectors. An urban retail water supplier shall avoid placing a disproportionate burden on any customer sector.

(c) For an urban retail water supplier that supplies water to a United States Department of Defense military installation, the urban retail water supplier's implementation plan for complying with this part shall consider the United States Department of Defense military installation's requirements under federal Executive Order 13423.

(d) (1) Any ordinance or resolution adopted by an urban retail water supplier after the effective date of this section shall not require existing customers as of the effective date of this section, to undertake changes in product formulation, operations, or equipment that would reduce process water use, but may provide technical assistance and financial incentives to those customers to implement efficiency measures for process water. This section shall not limit an ordinance or resolution adopted pursuant to a declaration of drought emergency by an urban retail water supplier.

(2) This part shall not be construed or enforced so as to interfere with the requirements of Chapter 4 (commencing with Section 113980) to Chapter 13 (commencing with Section 114380), inclusive, of Part 7 of Division 104 of the Health and Safety Code, or any requirement or standard for the protection of public health, public safety, or worker safety established by federal, state, or local government or recommended by recognized standard setting organizations or trade associations.

10608.28.

(a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:

(1) Through an urban wholesale water supplier.

(2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).

(3) Through a regional water management group as defined in Section 10537.

(4) By an integrated regional water management funding area.

(5) By hydrologic region.

(6) Through other appropriate geographic scales for which computation methods have been developed by the department.

(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

10608.32. All costs incurred pursuant to this part by a water utility regulated by the Public Utilities Commission may be recoverable in rates subject to review and approval by the Public Utilities Commission, and may be recorded in a memorandum account and reviewed for reasonableness by the Public Utilities Commission.

10608.36. Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

10608.40. Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans submitted pursuant to Section 10631. The data shall be reported using a standardized form developed pursuant to Section 10608.52.

10608.42. The department shall review the 2015 urban water management plans and report to the Legislature by December 31, 2016, on progress towards achieving a 20-percent reduction in urban water use by December 31, 2020. The report shall include recommendations on changes to water efficiency standards or urban water use targets in order to achieve the 20-percent reduction and to reflect updated efficiency information and technology changes.

10608.43. The department, in conjunction with the California Urban Water Conservation Council, by April 1, 2010, shall convene a representative task force consisting of academic experts, urban retail water suppliers, environmental organizations, commercial water users, industrial water users, and institutional water users to develop alternative best management practices for commercial, industrial, and institutional users and an assessment of the potential statewide water use efficiency improvement in the commercial, industrial, and institutional sectors that would result from implementation of these best management practices. The taskforce, in conjunction with the department, shall submit a report to the Legislature by April 1, 2012, that shall include a review of multiple sectors within commercial, industrial, and institutional users and that shall recommend water use efficiency standards for

commercial, industrial, and institutional users among various sectors of water use. The report shall include, but not be limited to, the following:

(a) Appropriate metrics for evaluating commercial, industrial, and institutional water use.

(b) Evaluation of water demands for manufacturing processes, goods, and cooling.

(c) Evaluation of public infrastructure necessary for delivery of recycled water to the commercial, industrial, and institutional sectors.

(d) Evaluation of institutional and economic barriers to increased recycled water use within the commercial, industrial, and institutional sectors.

(e) Identification of technical feasibility and cost of the best management practices to achieve more efficient water use statewide in the commercial, industrial, and institutional sectors that is consistent with the public interest and reflects past investments in water use efficiency.

10608.44. Each state agency shall reduce water use on facilities it operates to support urban retail water suppliers in meeting the target identified in Section 10608.16.

Section K: California Water Code, Division 6, Part 2.6: Urban Water Management Planning

The following sections of California Water Code Division 6, Part 2.6, are available online at http://www.leginfo.ca.gov/calaw.html.

Chapter 1. General Declaration and Policy	§10610-10610.4
Chapter 2. Definitions	§10611-10617
Chapter 3. Urban Water Management Plans	
Article 1. General Provisions	§10620-10621
Article 2. Contents of Plans	§10630-10634
Article 2.5. Water Service Reliability	§10635
Article 3. Adoption And Implementation of Plans	§10640-10645
Chapter 4. Miscellaneous Provisions	§10650-10656

Chapter 1. General Declaration and Policy

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2.

(a) The Legislature finds and declares all of the following:

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.

(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

Chapter 2. Definitions

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. “Demand management” means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. “Customer” means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. “Efficient use” means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. “Person” means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

Chapter 3. Urban Water Management Plans

Article 1. General Provisions

10620.

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d) (1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621.

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

(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

Article 2. Contents of Plans

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter that shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of

water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) (1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(A) An average water year.

(B) A single dry water year.

(C) Multiple dry water years.

(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

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

(e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

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

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.

(B) Residential plumbing retrofit.

(C) System water audits, leak detection, and repair.

(D) Metering with commodity rates for all new connections and retrofit of existing connections.

(E) Large landscape conservation programs and incentives.

(F) High-efficiency washing machine rebate programs.

(G) Public information programs.

(H) School education programs.

(I) Conservation programs for commercial, industrial, and institutional accounts.

(J) Wholesale agency programs.

(K) Conservation pricing.

(L) Water conservation coordinator.

(M) Water waste prohibition.

(N) Residential ultra-low-flush toilet replacement programs.

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

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

(j) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivisions (f) and (g) by complying with all the provisions of the “Memorandum of Understanding Regarding Urban Water Conservation in California,” dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.

(k) Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

10631.1.

(a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code,

as identified in the housing element of any city, county, or city and county in the service area of the supplier.

(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirement under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

10631.5.

(a) (1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the federal American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4) (A) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the

department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, “not locally cost effective” means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b) (1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2) (A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

(i) Compliance on an individual basis.

(ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.

(B) The department may require additional information for any determination pursuant to this section.

(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

(c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).

(d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.

(e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit annual reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

(f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statute, that is enacted before July 1, 2016, deletes or extends that date.

10631.7. The department, in consultation with the California Urban Water Conservation Council, shall convene an independent technical panel to provide information and recommendations to the department and the Legislature on new demand management measures, technologies, and approaches. The panel shall consist of no more than seven members, who shall be selected by the department to reflect a balanced representation of experts. The panel shall have at least one, but no more than two, representatives from each of the following: retail water suppliers, environmental organizations, the business community, wholesale water suppliers, and academia. The panel shall be convened by January 1, 2009, and shall report to the

Legislature no later than January 1, 2010, and every five years thereafter. The department shall review the panel report and include in the final report to the Legislature the department's recommendations and comments regarding the panel process and the panel's recommendations.

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(f) Penalties or charges for excessive use, where applicable.

(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

(h) A draft water shortage contingency resolution or ordinance.

(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water

supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

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

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

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

(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Article 2.5. Water Service Reliability

10635.

(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand

assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

Article 3. Adoption and Implementation of Plans

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644.

(a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the exemplary elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

(c) (1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report those water demand management measures adopted and implemented by specific urban water suppliers, and identified pursuant to Section 10631, that achieve water savings significantly above the levels established by the department to meet the requirements of Section 10631.5.

(2) The department shall distribute to the panel convened pursuant to Section 10631.7 the results achieved by the implementation of those water demand management measures described in paragraph (1).

(3) The department shall make available to the public the standard the department will use to identify exemplary water demand management measures.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

Chapter 4. Miscellaneous Provisions

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the “Memorandum of Understanding Regarding Urban Water Conservation in California” is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or

applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

Attachment C

Urban Water Management Plan Completion Checklist

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Urban Water Management Plan Checklist

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)	System Demands		4.3.1 Base Daily Water Use 4.3.2 Urban Water Use Target 4.3.3 Compliance Daily Water Use
2	*Wholesalers:* Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. *Retailers:* Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	System Demands	Retailer and wholesalers have slightly different requirements	N/A
3	Report progress in meeting urban water use targets using the standardized form.	10608.40	Not applicable	Standardized form not yet available	N/A
4	Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	10620(d)(2)	Plan Preparation		1.4.1 Coordination with other Agencies
5	An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.	10620(f)	Water Supply Reliability . . .		5.4 Recycled Water 7.2 Demand Management Measure Reporting
6	Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.	10621(b)	Plan Preparation		1.4.1 Coordination with other Agencies Attachment D- Notification Letters and Public Hearing Notices
7	The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).	10621(c)	Plan Preparation		1.4 Preparation and Adoption Attachment E- Resolution Adopting the City of Mountain View 2010 UWMP

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
8	Describe the service area of the supplier	10631(a)	System Description		2 Service Area
9	(Describe the service area) climate	10631(a)	System Description		2.3 Climate
10	(Describe the service area) current and projected population . . . The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier . . .	10631(a)	System Description	Provide the most recent population data possible. Use the method described in “Baseline Daily Per Capita Water Use.” See Section M.	2.2 Population and Employment
11	. . . (population projections) shall be in five-year increments to 20 years or as far as data is available.	10631(a)	System Description	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	2.2 Population and Employment
12	Describe . . . other demographic factors affecting the supplier's water management planning	10631(a)	System Description		2.2 Population and Employment
13	Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).	10631(b)	System Supplies	The ‘existing’ water sources should be for the same year as the “current population” in line 10. 2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	5 Supply Sources 5.6 Projected Water Supply Availability and Production

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
14	(Is) groundwater . . . identified as an existing or planned source of water available to the supplier . . .?	10631(b)	System Supplies	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	5 Supply Sources 5.3 Local Groundwater
15	(Provide a) copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management. Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)	System Supplies		Attachment H - SCVWD Groundwater Management Plan 5.2.3 Groundwater (under SCVWD Supply) 5.3 Local Groundwater
16	(Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater.	10631(b)(2)	System Supplies		5.3 Local Groundwater 5.3.2 thru 5.3.8 - Geology thru MV Groundwater Use.
17	For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board	10631(b)(2)	System Supplies		N/A
18	(Provide) a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.	10631(b)(2)	System Supplies		N/A
19	For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.	10631(b)(2)	System Supplies		5.2.3 Groundwater (under SCVWD supply) 5.3.1 Groundwater Management 5.3.4 Recharge Areas 5.3.5 Santa Clara Subbasin Groundwater Level Trends

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
20	(Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.	10631(b)(3)	System Supplies		Figure 3-2 Water Service Area Details 5.3.7 Santa Clara Subbasin GW Quality 5.3.8 MV Groundwater Use Table 5-1 Historical GW Production
21	(Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.	10631(b)(4)	System Supplies	Provide projections for 2015, 2020, 2025, and 2030.	5.6 Projected Water Supply Availability and Production Table 5-6 Projected Water Supply Prod.; Fig. 5-7
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following: (A) An average water year, (B) A single dry water year, (C) Multiple dry water years.	10631(c)(1)	Water Supply Reliability . . .		6 Water Supply Reliability 6.6 Water Demand and Supply Comparison
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)	Water Supply Reliability . . .		6 Water Supply Reliability 7.2 Demand Management Measure Reporting
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)	System Supplies		6.5.2 Transfer and Exchange Opportunities
25	Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses: (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof;(I) Agricultural.	10631(e)(1)	System Demands	Consider “past” to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	4.1 Current and Historical Water Demand 4.2 Projected Future Water Demand Fig. 4-2 Water Use by Customer Sector Table 4-5 Projected Water Demand by Customer Sector

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
26	(Describe and provide a schedule of implementation for) each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) Water survey programs for single-family residential and multifamily residential customers; (B) Residential plumbing retrofit; (C) System water audits, leak detection, and repair; (D) Metering with commodity rates for all new connections and retrofit of existing connections; (E) Large landscape conservation programs and incentives; (F) High-efficiency washing machine rebate programs; (G) Public information programs; (H) School education programs; (I) Conservation programs for commercial, industrial, and institutional accounts; (J) Wholesale agency programs; (K) Conservation pricing; (L) Water conservation coordinator; (M) Water waste prohibition;(N) Residential ultra-low-flush toilet replacement programs.	10631(f)(1)	DMMs	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	7.2 Demand Management Measure Reporting 7.5 Conservation Program Implementation
27	A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.	10631(f)(3)	DMMs		7.3 Monitoring (under Water Conservation)
28	An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.	10631(f)(4)	DMMs		7.4 Conservation Savings

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
29	An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.	10631(g)	DMMs	See 10631(g) for additional wording.	7.5 Conservation Program Implementation
30	(Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.	10631(h)	System Supplies		6.5 Potential Future Water Supply Projects
31	Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.	10631(i)	System Supplies		6.5.1 Development of Desalinated Water

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
32	Include the annual reports submitted to meet the Section 6.2 requirement (of the MOU), if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	DMMs	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	Not Included. See 7.1.3 California Urban Water Conservation Council
33	Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).	10631(k)	System Demands	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	1.4.1 Coordination with Other Agencies
34	The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)	System Demands		4.2.3 Water Demand for Lower Income Households
35	Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.	10632(a)	Water Supply Reliability . . .		8 Water Shortage Contingency Plan 8.5 Stages of Action 8.6 Demand Reduction
36	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.	10632(b)	Water Supply Reliability . . .		8.2 Estimated Minimum Three Year Supply

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
37	(Identify) actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.	10632(c)	Water Supply Reliability . . .		9 Catastrophic Supply Interruption Plan
38	(Identify) additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.	10632(d)	Water Supply Reliability . . .		8.6 Demand Reduction
39	(Specify) consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.	10632(e)	Water Supply Reliability . . .		8.6 Demand Reduction Stage 4: Greater than 40 percent Water Supply Reduction
40	(Indicated) penalties or charges for excessive use, where applicable.	10632(f)	Water Supply Reliability . . .		8.11 Enforcement
41	An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	10632(g)	Water Supply Reliability . . .		8.10 Revenue Impacts of a Water Shortage
42	(Provide) a draft water shortage contingency resolution or ordinance.	10632(h)	Water Supply Reliability . . .		Attachment K - Draft Water Shortage Ordinance
43	(Indicate) a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)	Water Supply Reliability . . .		8.7 Water Use Monitoring
44	Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area	10633	System Supplies		1.4.1 Coordination with Other Agencies 5.4 Recycled Water

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
45	(Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)	System Supplies		5.4.1 Waste Water Treatment Process 5.4.2 Current and Projected Wastewater Generation
46	(Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)	System Supplies		5.4 .1 Waste Water Treatment Process 5.4.2 Current and Projected Wastewater Generation
47	(Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)	System Supplies		5.4 Recycled Water 5.4.3 Development of the Recycled Water Program 5.4.4 Recycled Water Service Area
48	(Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)	System Supplies		5.4.7 Current and Projected Recycled Water Uses 5.4.8 Other Potential Uses of Recycled Water 5.4.9 Recycled Water Optimization Plan
49	(Describe) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.	10633(e)	System Supplies		5.4.7 Current and Projected Recycled Water Uses
50	(Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)	System Supplies		5.4.5 Encouraging the Use of Recycled Water 5.4.9 Recycled Water Optimization Plan
51	(Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)	System Supplies		5.4.9 Recycled Water Optimization Plan

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
52	The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.	10634	Water Supply Reliability . . .	For years 2010, 2015, 2020, 2025, and 2030	6 Water Supply Reliability 6.3 Water Quality Impacts on Supply Reliability
53	Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)	Water Supply Reliability . . .		6.6 Water Demand and Supply Comparison
54	The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.	10635(b)	Plan Preparation		1.4.2 Public Outreach and Plan Adoption
55	Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	10642	Plan Preparation		1.4.2 Public Outreach and Plan Adoption Attachment D - Notification Letters and Public Hearing Notices.

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
56	Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.	10642	Plan Preparation		1.4 Preparation and Adoption Attachment D - Notification Letters and Public Hearing Notices.
57	After the hearing, the plan shall be adopted as prepared or as modified after the hearing.	10642	Plan Preparation		1.4 Preparation and Adoption Attachment E – Resolution Adopting the City of Mountain View 2010 UWMP
58	An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.	10643	Plan Preparation		1.4 Preparation and Adoption Attachment E – Resolution Adopting the City of Mountain View 2010 UWMP
59	An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.	10644(a)	Plan Preparation		1.4.2 Public Outreach and Plan Adoption Attachment E – Resolution Adopting the City of Mountain View 2010 UWMP
60	Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.	10645	Plan Preparation		1.4.2 Public Outreach and Plan Adoption Attachment E – Resolution Adopting the City of Mountain View 2010 UWMP

a The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.

b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.

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Attachment D

Notification Letters and Public Hearing Notices

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List of Organizations and Groups Receiving Notification about Mountain View's 2010 Urban Water Management Plan

County of Santa Clara
Santa Clara Valley Water District
San Francisco Public Utilities Commission
Bay Area Water Supply and Conservation Agency
Bay Area Water Supply and Conservation Agency Member Agencies
City of Palo Alto Regional Water Quality Control Plant
East Palo Alto Sanitary District
Town of Los Altos Hills
Mountain View Neighborhood Associations
Russian, Latino, Chinese, and Jewish Community Liasons
Mountain View Chamber of Commerce
Central Business Association
Tuolumne River Trust
Sierra Club
Sustainable Silicon Valley
Green Mountain View
Green Town Los Altos

CITY OF MOUNTAIN VIEW

Public Works Department • Public Services Division
231 N. Whisman Road • Post Office Box 7540 • Mountain View, CA 94039-7540 • 650-903-6329 • FAX 650-962-8079

April 13, 2011

BAWSCA
155 BOVET ROAD SUITE 302
SAN MATEO CA 94404

NOTICE OF PREPARATION OF URBAN WATER MANAGEMENT PLAN UPDATE

Dear BAWSCA Member Agencies:

The Urban Water Management Plan Act (California Water Code §10610-10656) requires the City of Mountain View to update its Urban Water Management Plan (UWMP) every five years. The UWMP evaluates Mountain View's water supply and demand, and provides a blueprint for meeting the community's long-term water supply objectives. We are currently reviewing our UWMP, which was last updated in 2005, and invite you to participate in this process.

Proposed revisions to the UWMP will be made available for public review and public hearings will be held in mid-2011. For additional information or to receive e-mail notifications about the UWMP, please visit our web page at *www.mountainview.gov/UWMP* or contact:

Elizabeth Flegel
City of Mountain View
Public Works Department—Public Services Division
231 North Whisman Road
Mountain View, CA 94043
(650) 903-6774
elizabeth.flegel@mountainview.gov

Sincerely,

Gregg A. Hosfeldt
Assistant Public Works Director

GAH / EF / 2 / PSD / 703-04-07-11L^

cc: PWD, SCE—Turner, WCC

CITY OF MOUNTAIN VIEW
Public Works Department • Public Services Division
231 N. Whisman Road • Post Office Box 7540 • Mountain View, CA 94039-7540 • 650-903-6329 • FAX 650-962-8079

May 2, 2011

BAWSCA
155 BOVET ROAD SUITE 302
SAN MATEO CA 94404

PUBLIC HEARING—2020 URBAN WATER USE TARGET METHODOLOGY

Dear BAWSCA Member Agencies:

The purpose of this letter is to provide an update regarding the City of Mountain View's 2010 Urban Water Management Plan (UWMP) development process. As part of the 2010 UWMP, Mountain View must develop an urban water use target for the year 2020. California law requires that the community be given an opportunity to provide input on the implementation plan for achieving Mountain View's 2020 urban water use target.

The Mountain View City Council will accept public comments and consider adopting a methodology for determining the City's 2020 urban water use target at their regularly scheduled meeting on May 10, 2011. For additional information, please visit our web page at *www.mountainview.gov/UWMP*.

Sincerely,

Gregg A. Hosfeldt
Assistant Public Works Director

GAH/EF/5/PSD
703-05-02-11L-E-1^

cc: PWD, SCE—Turner, WCC

CITY OF MOUNTAIN VIEW
Public Works Department • Public Services Division
231 N. Whisman Road • Post Office Box 7540 • Mountain View, CA 94039-7540 • 650-903-6329 • FAX 650-962-8079

June 1, 2011

BAWSCA
155 BOVET ROAD SUITE 302
SAN MATEO CA 94404

NOTICE OF PUBLIC HEARING FOR ADOPTION OF THE 2010 URBAN WATER MANAGEMENT PLAN

Dear BAWSCA Member Agencies:

The Mountain View City Council will accept public comments and consider adopting the City's 2010 Urban Water Management Plan at their regularly scheduled meeting on:

Tuesday, June 14, 2011, 6:30 p.m.
Mountain View City Hall
500 Castro Street
Mountain View, CA 94041

The proposed 2010 Urban Water Management Plan is available for review on-line at *www.mountainview.gov/uwmp,* or in person at the Mountain View Public Library (585 Franklin Street) and the Public Works Department (500 Castro Street).

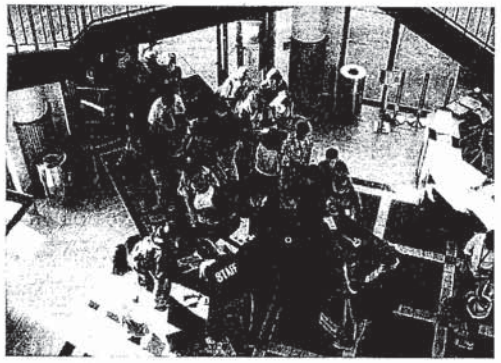
Sincerely,

Gregg A. Hosfeldt
Assistant Public Works Director

GAH/EF/5/PSD
703-06-01-11L-E-1^

cc: PWD, SCE—Turner, WCC

For additional information about the high-speed project, please visit www.mountainview.gov or call the Public Works Department at (650) 903-6523. The CHSRA Authority website is www.chighspeedrail.ca.gov.



YOUTH ACTION PLAN

The City Council adopted the Youth Action Plan (YAP) recently, which defines a common philosophy and vision for youth programs and services citywide. The YAP development process included input from the City Council, City staff, and local youth organizations. The Plan was developed in conjunction with the current update to the General Plan and alignment to the City's Recreational Plan, the long-range document that is used to guide future youth development.

The Plan sets eight areas that youth services provided by the City will foster including:

- strong families
- civic engagement
- internal collaboration
- community collaboration
- youth programs
- staff as role models
- healthy living
- personal safety

To download the Youth Action Plan, visit the City's website or E-mail Kimberly Castro, Youth Resources Manager, at kim.castro@mountainview.gov.

energy saving devices and information about additional ways to save energy and money in the home.

The Energy Upgrade Mountain View program is being paid for by Federal Energy Efficiency and Conservation Block Grant funding, and is one of several City efforts currently underway to meet the City's goal of reducing community-wide greenhouse gas emissions below 2005 levels.

For more information about Energy Upgrade Mountain View, please visit www.energyupgrademv.org or call the Public Works Department at (650) 903-6311.

URBAN WATER MANAGEMENT PLAN

The City of Mountain View is currently reviewing and updating its Urban Water Management Plan (UWMP). The purpose of a UWMP is to ensure that adequate water supplies are available to meet existing and future water demands. As part of a UWMP, water suppliers are required to assess water demands and supplies over a 20-year planning horizon and report on various water conservation efforts. The UWMP also incorporates water shortage contingency planning and drought response actions.

The California Water Code requires that urban water suppliers with 3,000 or more service connections or supplying 3,000 or more acre-feet of water per year update their UWMP every five years. Mountain View's UWMP was last updated in 2005. Any proposed revisions to the City's UWMP will be made available for public review and adopted following a public hearing in mid-2011. All customers are welcome to participate in this process. For additional details regarding the UWMP update, contact Elizabeth Flegel, Water Conservation Coordinator, at (650) 903-6774 or elizabeth.flegel@mountainview.gov.

See www.conservewater.mountainview.gov for helpful water conservation information

station. The City Council reviewed preliminary plans and discussed the developer's proposal for a lower density product last November. Public hearings for the Alternate Master Plan are expected this Spring.

NEW PARAMEDIC EQUIPMENT

The Fire Department received a $180,000 Assistance to Firefighting Grant to fund nine Lifepak-15 monitor/defibrillators. The defibrillators are medical diagnostic equipment used by Fire Department Paramedics in treating patients. The new equipment replaces older equipment and has been placed into service on all of the City's fire engines.

FREE WATER-WISE LANDSCAPE CLASSES

In partnership with Bay Area Water Supply and Conservation Agency, the City of Mountain View is hosting four landscape education classes this Spring to help consumers use water more efficiently.

- **Make the Switch, Convert to Drip!** – Saturday, April 9th, 10:00 a.m. -1:00 p.m. Step-by-step process of converting your spray irrigation system to drip irrigation.
- **So Long, Thirsty Lawn** – Thursday, April 28th, 6:00 – 9:00 p.m. Water-efficient lawn management, turf alternatives, and lawn replacement techniques.
- **Kid-Friendly Water-Wise Gardens** – Saturday, May 14, 10:00 a.m. – 1:00 p.m. Outdoor learning and play with butterfly gardens, parent-child garden activities, and child-safe plants and materials.
- **The Water-Wise Plant Palette** – Thursday, May 26, 6:00 – 9:00 p.m. Attractive plant combinations and seasonal interest plants.

For more details and to register for a class, call (650) 349-3000 or E-mail landscape@bawsca.org. Space is limited and reservations are made on a first-come, first-served basis.

SJ# 2091881

CITY OF MOUNTAIN VIEW
NOTICE OF PUBLIC HEARING
CITY COUNCIL

NOTICE IS HEREBY GIVEN that Tuesday, the 10th day of May, 2011, at the hour of 6:30 p.m. or as soon thereafter as the matter can be heard in the Council Chambers at City Hall, 500 Castro Street, Mountain View, has been set as the time and place for public hearing on the following items:

1. Pursuant to California Water Code (Division 6, Part 2.6), the Mountain View City Council will accept public comments and consider adopting a methodology for determining the City's 2020 urban water use target. The 2020 urban water use target is one of the several components to be included in the City's 2010 Urban Water Management Plan, which is currently being updated. California law requires that the community be given an opportunity to provide the input on the implementation plan for achieving Mountain View's 2020 urban water use target. Pleas call (650) 903-6216 or e-mail conservewater@mountainview.gov if you have any questions.

2. Consideration of amendments to the North Shoreline Boulevard Precise Plan, a Planned Community Permit, Development Review Permit, Heritage Tree Removal Permit and the adoption of a Mitigated Negative Declaration for a new two-story, 70,000 square foot life science/research and development building with an existing 51.8-acre office campus along Stierlin Court at the southeast corner of North Shoreline Boulevard and Crittenden Lane in the North Shoreline Boulevard (P3) Precise Plan area. The project site is at 2011-2091 Stierlin Court.

3. An appeal of the Zoning Administrator's approval of a Planned Community Permit to modify a landscaped area for the Planned Community Heatherstone located at 880 Heatherstone Way.

Interested parties may appear and be heard. Written statements may be submitted to the City Clerk, P.O. Box 7540, Mountain View, California, 94039. Legal challenges may be limited to those issues or objections raised at the public hearing orally or in written correspondence delivered to the City Clerk at, or prior to, the public hearing.

Dated this 29th day of April, 2011.
Lorrie Brewer, MMC
City Clerk
4/29/11

SJ-2091881#

Printed in the San Jose Post Record newspaper

CITY OF MOUNTAIN VIEW
NOTICE OF PUBLIC HEARING
CITY COUNCIL

NOTICE IS HEREBY GIVEN that Tuesday, the 14th day of June, 2011, at the hour of 6:30 p.m. or as soon thereafter as the matter can be heard in the Council Chambers at City Hall, 500 Castro Street, Mountain View, has been set as the time and place for public hearing on the following items:

1. Revisions to the City of Mountain View's 2010 Urban Water Management Plan (UWMP). The UWMP evaluates Mountain View's water supply and demand, and provides a blueprint for meeting the community's long-term water supply objectives. Mountain View's UWMP was last updated in 2005. The proposed updated UWMP is available for review online at www.mountainview.gov/uwmp, or in person at the Mountain View Public Library (585 Franklin St) and the Public Works Department (500 Castro Street).

Please call (650) 903-6216 if you have any questions about the UWMP update process.

Interested parties may appear and be heard. Written statements may be submitted to the City Clerk, P.O. Box 7540, Mountain View, California, 94039. Legal challenges may be limited to those issues or objections raised at the public hearing orally or in written correspondence delivered to the City Clerk at, or prior to, the public hearing.

Dated this 27th day of May, 2011.
Lorrie Brewer, MMC
City Clerk
5/27, 6/3/11

SJ-2110235#

Printed in the San Jose Post Record newspaper

CITY OF MOUNTAIN VIEW

PUBLIC NOTICE
2020 URBAN WATER USE TARGET

The Mountain View City Council will accept public comments and consider adopting a method for determining the City's 2020 urban water use target at their regularly scheduled meeting on:

Tuesday, May 10, 2011, 6:30 p.m.
Mountain View City Hall
500 Castro Street

More info at www.mountainview.gov/uwmp

Posted on the Mountain View Voice website (http://www.mv-voice.com) from 4/28/11 to 5/4/11

CITY OF MOUNTAIN VIEW

PUBLIC HEARING
2010 URBAN WATER MANAGEMENT PLAN

The Mountain View City Council will accept public comments and consider adopting the City's 2010 Urban Water Management Plan at their regularly scheduled meeting on:

Tuesday, June 14, 2011, 6:30 p.m.
Mountain View City Hall
500 Castro Street

The proposed 2010 Urban Water Management Plan is available for review online at *www.mountainview.gov/uwmp* or in person at these Mountain View locations:

Public Library (585 Franklin St.)
Public Works Department (500 Castro St.)

Printed in the Mountain View Voice newspaper on 6/2/11 and 6/911

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Attachment E

Resolution Adopting the City of Mountain View 2010 Urban Water Management Plan

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CITY OF MOUNTAIN VIEW
RESOLUTION NO. 17619
SERIES 2011

A RESOLUTION ADOPTING THE
CITY OF MOUNTAIN VIEW 2010 URBAN WATER MANAGEMENT PLAN

WHEREAS, the California Urban Water Management Planning Act requires that urban water suppliers providing water to more than 3,000 customers or supplying more than 3,000 acre-feet of water per year prepare an Urban Water Management Plan; and

WHEREAS, the City is an urban water supplier serving over 17,000 water customers and supplying over 10,000 acre-feet of water annually; and

WHEREAS, the City's last Urban Water Management Plan was prepared in 2005; and

WHEREAS, an updated Urban Water Management Plan must be adopted by the City Council by July 1, 2011 and filed with the California Department of Water Resources within 30 days of adoption; and

WHEREAS, the City has prepared and circulated a draft 2010 Urban Water Management Plan for public review and properly noticed a public hearing regarding said Plan held by the City Council on June 14, 2011; and

WHEREAS, the Mountain View City Council considered the 2010 Urban Water Management Plan, staff report and all public testimony on June 14, 2011;

NOW, THEREFORE, BE IT RESOLVED that the City of Mountain View:

1. Adopts the Mountain View 2010 Urban Water Management Plan.

2. Authorizes the Public Works Director or his designee to file the 2010 Urban Water Management Plan with the California Department of Water Resources, the California State Library and the County of Santa Clara within 30 days of adoption as described in Section 10644(a) of the California Water Code.

3. Authorizes the Public Works Director to implement the 2010 Urban Water Management Plan in accordance with State law.

The foregoing Resolution was regularly introduced and adopted at a Regular Meeting of the City Council of the City of Mountain View, duly held on the 14th day of June, 2011, by the following vote:

AYES:	Councilmembers Abe-Koga, Bryant, Inks, Macias, Means, Vice Mayor Kasperzak and Mayor Siegel
NOES:	None
ABSENT:	None
NOT VOTING:	None

ATTEST:

LORRIE BREWER, MMC
CITY CLERK

APPROVED:

JAC SIEGEL
MAYOR

I do hereby certify that the foregoing resolution was passed and adopted by the City Council of the City of Mountain View at a Regular Meeting held on the 14th day of June, 2011, by the foregoing vote.

City Clerk
City of Mountain View

EF/6/RESO
703-06-14-11R-E^

Attachment F

2020 Urban Water Use Target Method 4 Calculator

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User Input -- Provisional Method 4 Target

Target Calculation Option (select one): * Calculate Targets Using Default Indoor Residential Savings

* = Required Data

Water Supplier Name: * City of Mountain View

10-15 Year Baseline Water Use Information

Baseline Period: * 1995-2004

Midpoint of Baseline Period: 1999

Baseline Water Use GPCD: * 180.0

Population in Midpoint Year: * 68,711

5 Year Baseline Water Use Information

Baseline Period: * 2006-2010

Baseline Water Use GPCD: * 157.0

95% of 5-Year Baseline GPCD: 149.2

Unmetered Connections

Number of Unmetered Connections in 1999: * 0

Water Use By Unmetered Connections In 1999: * 0 Acre-Feet

Baseline CII Water Use[1]

CII Water Use in 1999: * 3432.9 Acre-Feet

Per Capita Use: 44.6 GPCD

[1]CII = Commercial, Industrial, Institutional.

If you have chosen to calculate targets using the Default Indoor Residential Savings, you do not need to complete the remaining tables.
Go to the "Calculated Targets" worksheet.

Optional Data Needed to Calculate Targets Using the Indoor Residential Savings Calculators

NOTE: You only need to complete the tables below if you have chosen to calculate targets using the indoor residential savings calculators.
The data you enter here is used to calculate the 2020 water saving values for residential toilets, washers, and showerheads.
If you are using the Default Indoor Residential Savings you do not need to enter this data.

Persons and Plumbing Fixtures Per Household

Units Per Household:	Single Family	Multi Family
Persons		
Toilets		
Showers		

Residential Housing Units

Year		Single Family	Multi Family
1991			
1992			
1993			
1994			
1995			
1996			
1997			
1998			
1999			
2000	Row Not Used -->		
2001	Row Not Used -->		
2002	Row Not Used -->		
2003	Row Not Used -->		
2004	Row Not Used -->		
2005	Row Not Used -->		

The table below shows average shower and toilet counts per household for major metropolitan areas. The table is based on 2003 data published by the American Housing Survey.

		Single Family		Multi Family	
SMSA Code	SMSA name	Showers	Toilets	Showers	Toilets
360	Anaheim-Santa Ana	1.92	2.33	1.25	1.44
680	Bakersfield	1.64	1.96	1.38	1.48
2840	Fresno	1.62	1.91	1.19	1.29
4480	Los Angeles-Long Beach	1.58	1.93	1.19	1.34
5170	Modesto	1.79	1.99	1.23	1.58
5775	Oakland	1.77	2.07	1.17	1.36
6000	Oxnard-Ventura	1.87	2.22	1.16	1.37
6780	Riverside-San Bernardino	1.81	2.05	1.37	1.51
6920	Sacramento	1.69	1.99	1.14	1.21
7120	Salinas-Seaside-Monterey	1.72	2.09	1.00	1.15
7320	San Diego	1.92	2.21	1.25	1.39
7360	San Francisco	1.79	2.20	1.15	1.25
7400	San Jose	1.98	2.33	1.24	1.39
7480	Santa Barbara-Santa Maria-Lompoc	1.60	1.80	1.00	1.10
7500	Santa Rosa-Petaluma	2.26	2.43	1.00	1.20
8120	Stockton	1.58	1.87	1.11	1.11
8720	Vallejo-Fairfield-Napa	1.91	2.31	1.11	1.26
	CA urban average	1.75	2.08	1.20	1.35

Imputed Service Area Population 1999

NOTE: If imputed service area population differs by more than 5% from the service area population entered above, you should revise your persons per household or dwelling unit estimates.

Enter Group Quarters Population in 1999: *(estimate using census data)*

Imputed Single Family Population in 1999: 0 *(persons per household x dwelling units)*

Imputed Multi Family Population in 1999:	0	*(persons per household x dwelling units)*
Imputed Service Area Population in 1999:	0	

Service Area Population Entered Above: 68,711

WARNING: Imputed service area population differs from service area population you entered above by more than 5%!

Toilet Saturation In 1999

NOTE: You can enter toilet saturation levels in 1999 or let the model calculate them. Select which method the calculator should use.

Toilet Saturation Estimation Option (select one): 2. Have calculator estimate saturation

OPTION 1: Complete the following table if you selected Option 1 -- Enter my own saturation estimate.

	Estimated % of Toilets in 1999 by Flush Volume				
	5 gpf	3.5 gpf	1.6 gpf	1.28 gpf	Total
Single Family					0.0%
Multi Family					0.0%

How was saturation estimated?

{Use this field to describe how toilet saturation was estimated}

OPTION 2: Complete the following table if you selected Option 2 -- Have calculator estimate saturation.

		Conservation Program Toilet Replacements				
		Single Family			Multi Family	
Year		ULFT	HET		ULFT	HET
1991						
1992						
1993						
1994						
1995						
1996						
1997						
1998						
1999						
2000	Row Not Used -->					
2001	Row Not Used -->					
2002	Row Not Used -->					
2003	Row Not Used -->					
2004	Row Not Used -->					
2005	Row Not Used -->					

Showerhead Saturation In 1999

NOTE: You can enter showerhead saturation levels in 1999 or let the model calculate them. Select which method the calculator should use.

Showerhead Saturation Estimation Option (select one): 2. Have calculator estimate saturation

OPTION 1: Complete the following table if you selected Option 1 -- Enter my own saturation estimate.

	LF	Non LF	Total
Estimated % of Low Flow Showerheads in Residential Homes in 1999:		100.0%	100.0%

How was saturation estimated?

{Use this field to describe how showerhead saturation was estimated}

OPTION 2: Complete the following table if you selected Option 2 -- Have calculator estimate saturation.

Year		*Number of Residential Showerheads Distributed/Installed*
1991		
1992		
1993		
1994		
1995		
1996		
1997		
1998		
1999		
2000	Row Not Used -->	
2001	Row Not Used -->	
2002	Row Not Used -->	
2003	Row Not Used -->	
2004	Row Not Used -->	
2005	Row Not Used -->	

Clothes Washer Average Water Factor (WF) In 1999

NOTE: You can enter average WF for residential clothes washers in 1999 or let the model calculate it. Select which method the calculator should use.

Clothes Washer WF Estimation Option (select one): 2. Have calculator estimate the average WF

OPTION 1: Complete the following table if you selected Option 1 -- Enter my own WF estimate.

	Single Family	Multi Family
Average clothes washer WF in 1999:		

How was average WF estimated?

{Use this field to describe how average WF was estimated}

OPTION 2: Complete the following table if you selected Option 2 -- Have calculator estimate the average WF.

Number of Clothes Washer Incentives by WF

Year		8.5-9.5 WF	6.0-8.5 WF	< 6.0 WF
1999				
2000	Row Not Used -->			
2001	Row Not Used -->			
2002	Row Not Used -->			
2003	Row Not Used -->			
2004	Row Not Used -->			
2005	Row Not Used -->			

Target Calculation -- Provisional Method 4 Target

Step 1. Calculation of Landscape Water Use and System Water Loss

Urban Supplier	1995-2004 Baseline GPCD	—	Assumed Indoor Residential per Capita Water Use GPCD	—	CII per Capita Water Use GPCD	=	Estimated Landscape Water Use and System Water Loss GPCD
City of Mountain View	180.0		70.0		44.6		65.4

Step 2. Calculation of Savings Using BMP Calculators

(Alternate) STEP 2 BEING USED TO CALCULATE TARGET

Urban Supplier	Indoor Residential Savings Calculators					+	Metering Savings BMP 1.3	+	CII Savings BMP 4	+	Land-scape + Water Loss Savings 21.6%	=	Total Savings GPCD
	Single Family Toilets	Multi Family Toilets	Resi-dential Washers	Resi-dential Showers	Total IR Savings								
City of Mountain View	XXXX	XXXX	XXXX	XXXX	XXXX		XXXX		XXXX		XXXX		XXXX

(Alternate) Step 2. Calculation of Savings Using Default Indoor Residential Savings

Urban Supplier	Default Resi-dential Indoor Savings	+	Metering Savings BMP 1.3	+	CII Savings BMP 4	+	Land-scape + Water Loss Savings 21.6%	=	(alt) Total Savings GPCD
City of Mountain View	15.0		0.0		4.5		14.1		33.6

Step 3. Calculation of Urban Water Use Targets

Urban Supplier	1995-2004 Baseline GPCD	—	Total Savings GPCD	=	**Computed 2020 Target GPCD**	→	**Less Than 95% of 5-Year Baseline**	→	**Final 2020 Target**	→	**Final 2015 Target**
City of Mountain View	180.0		33.6		**146.4**		**TRUE**		**146.4**		**163.2**

Attachment G

Resolution Adopting the 2020 Urban Water Use Target Methodology

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CITY OF MOUNTAIN VIEW
RESOLUTION NO. 17602
SERIES 2011

A RESOLUTION APPROVING THE USE OF METHOD 4: WATER SAVINGS TO DETERMINE THE CITY OF MOUNTAIN VIEW'S 2020 URBAN WATER USE TARGET AND 2015 INTERIM URBAN WATER USE TARGET

WHEREAS, the City of Mountain View recognizes the importance of water conservation and is committed to promoting and practicing the sustainable use of its water resources; and

WHEREAS, the California Legislature enacted the Water Conservation Act of 2009 to reduce State-wide urban water use by 20 percent by the year 2020, which requires each urban retail water supplier to develop an urban water use target for the year 2020 and an interim urban water use target for the year 2015; and

WHEREAS, the City as an urban retail water supplier must adopt one of four methods outlined in the California Water Code for determining urban and interim urban water targets; and

WHEREAS, the City has considered each of the four methods for calculating its urban and interim urban water targets; and

WHEREAS, the fourth method outlined in the California Water Code (Method 4: Water Savings) is based on estimated savings resulting from residential high-efficiency plumbing fixtures and other conservation programs.

NOW, THEREFORE, BE IT RESOLVED that the City of Mountain View:

1. Adopts Method 4: Water Savings, as outlined in California Water Code Section 10608.20(b), to determine the City of Mountain View's urban water use target.

2. Authorizes the urban water use target determined by Method 4: Water Savings for use in the City of Mountain View's 2010 Urban Water Management Plan.

The foregoing Resolution was regularly introduced and adopted at a Regular Meeting of the City Council of the City of Mountain View, duly held on the 10th day of May, 2011, by the following vote:

AYES:	Councilmembers Abe-Koga, Bryant, Inks, Macias, Means, Vice Mayor Kasperzak and Mayor Siegel
NOES:	None
ABSENT:	None
NOT VOTING:	None

ATTEST:

LORRIE BREWER, MMC
CITY CLERK

APPROVED:

JAC SIEGEL
MAYOR

I do hereby certify that the foregoing resolution was passed and adopted by the City Council of the City of Mountain View at a Regular Meeting held on the 10th day of May, 2011, by the foregoing vote.

City Clerk
City of Mountain View

EF/6/RESO
703-05-10-11R-E^

Attachment H

Santa Clara Valley Water District Groundwater Management Plan

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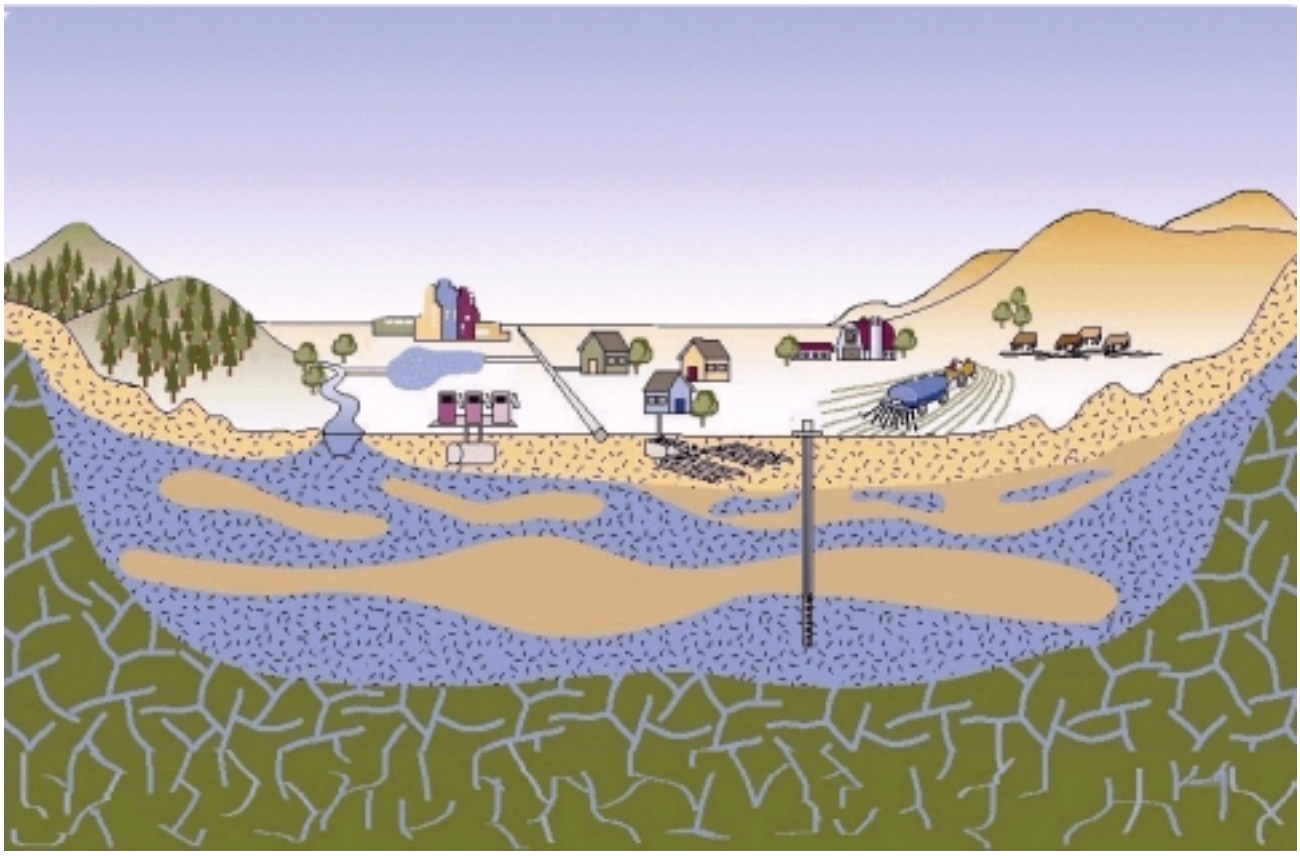
Santa Clara Valley Water District
Groundwater Management Plan



July 2001

Santa Clara Valley Water District

SANTA CLARA VALLEY WATER DISTRICT

Santa Clara Valley Water District Groundwater Management Plan

Prepared by

Vanessa Reymers	Assistant Engineer II
Tracy Hemmeter	Program Administrator

Under the direction of

Behzad Ahmadi
Unit Manager
Groundwater Management Unit

Keith Whitman
Deputy Operating Officer
Water Supply Management Division

Walter L. Wadlow
Chief Operating Officer
Assistant General Manager

DISTRICT BOARD OF DIRECTORS

Rosemary Kamei, Vice Chair	District 1	Tony Estremera, Chair	At Large
Joe Judge	District 2	Sig Sanchez	At Large
Richard P. Santos	District 3		
Larry Wilson	District 4		
Greg Zlotnick	District 5		

ACKNOWLEDGMENTS

OVERSIGHT MANAGER	Keith Whitman Deputy Operating Officer Water Supply Management Division
PROJECT SPONSOR	William G. Molnar
PROJECT MANAGER	Behzad Ahmadi
REPORT CONTRIBUTORS	
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Background	Behzad Ahmadi Tracy Hemmeter
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Groundwater Quality Management	Behzad Ahmadi Randy Behrens Frances Brewster Ellen Fostersmith Tracy Hemmeter Seena Hoose Luis Jaimes Roger Pierno
Summary	Vanessa Reymers

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ACRONYMS USED

af – acre-feet
BMP – Best Management Practices
CEQA – California Environmental Quality Act
CIMIS – California Irrigation Management Information System
CVP – Central Valley Project
DEIR – Draft Environmental Impact Report
DRASTIC – Depth to water table, net Recharge, Aquifer media, Soil media, Topography, Impact of the vadose zone, and hydraulic Conductivity
DWR – Department of Water Resources
DWSAP – Drinking Water Source Assessment and Protection
EIR – Environmental Impact Report
EPA – Environmental Protection Agency
GIS – Geographic Information Systems
InSAR – Interferometric Synthetic Aperture Radar
IWRP – Integrated Water Resources Plan
LUSTOP – Leaking Underground Storage Tank Oversight Program
MCL – Maximum Contaminant Level
MOU – Memorandum of Understanding
MTBE – Methyl Tert Butyl Ether
NPDES – National Pollution Discharge Elimination System
NTU – Nephelometric Turbidity Unit
PCB - Polychlorinated biphenyl
RWQCB – Regional Water Quality Control Board
SBA – South Bay Aqueduct
SBWRP – South Bay Water Recycling Program
SCRWA – South County Regional Wastewater Authority
SCVWCD – Santa Clara Valley Water Conservation District
SCVWD – Santa Clara Valley Water District
SWRCB – State Water Resources Control Board
USGS – United States Geological Survey
UST – Underground Storage Tank
VOC – Volatile Organic Compound
WHP – Wellhead Protection Program
WMI – Watershed Management Initiative
WTP – Water Treatment Plant

EXECUTIVE SUMMARY

The Santa Clara Valley Water District (District) has managed the groundwater basin in Santa Clara County (County) since the early 1930s and is nationally recognized as a leader in groundwater management. The District works in conjunction with local retailers, the Regional Water Quality Control Board, and other agencies to ensure a safe and healthy supply of groundwater. In 2000, the groundwater basin supplied nearly half of the 390,000 acre-feet used in the County.

The District is the groundwater management agency in Santa Clara County as authorized by the California legislature under the Santa Clara Valley Water District Act (District Act), California Water Code Appendix, Chapter 60. Since its creation, the District has worked to minimize subsidence and protect the groundwater resources of the County under the direction of the District Act. As stated in the District Act, the District's objectives related to groundwater management are to recharge the groundwater basin, conserve water, increase water supply, and to prevent waste or diminution of the District's water supply.

The mission of the District is a healthy, safe, and enhanced quality of living in Santa Clara County through the comprehensive management of water resources in a practical, cost-effective, and environmentally-sensitive manner. In the Global Governance Commitment adopted by the District Board of Directors, it is stated that the conjunctive management of the groundwater basins is an integral part of the District's comprehensive water supply management program.

The District has always effectively managed the groundwater basin to fulfill the objectives of the District Act and its mission. The goal of these groundwater management efforts has been, and continues to be, ***to ensure that groundwater resources are sustained and protected***.

The Groundwater Management Plan formally documents the District's groundwater management goal and describes programs in place that are designed to meet that goal. The following programs are documented in the plan:

- Groundwater supply management programs that replenish the groundwater basin, sustain the basin's water supplies, help to mitigate groundwater overdraft, and sustain storage reserves for use during dry periods.

- Groundwater monitoring programs that provide data to assist the District in evaluating and managing the groundwater basin.

- Groundwater quality management programs that identify and evaluate threats to groundwater quality and prevent or mitigate contamination associated with those threats.

This plan serves as the first step toward a more formal and integrated approach to the management of groundwater programs, and to the management of the basin overall. The

various groundwater management programs and activities described in this document demonstrate that the District is proactive and effective in protecting the County's groundwater resources.

Recommendations

The groundwater management programs described in the Groundwater Management Plan were developed and implemented before the Board of Directors adopted the Ends Policies in 1999, and were therefore not driven by these formally documented ends. As the District is now guided by these policies, we need to ensure that the outcomes of our groundwater management programs match those of the Ends Policies. In addition, we need to ensure that existing programs are integrated and effective in terms of achieving the District's groundwater management goal.

Although the District manages the basin effectively, there is room for improvement of the groundwater management programs in terms of meeting these outcomes. Specific areas where further analysis is recommended include:

1. **Coordination between the Groundwater Management Plan and the Integrated Water Resources Plan (IWRP) –** As the District's water supply planning document through year 2040, the IWRP has identified the operation of the groundwater basin as a critical component to help the District respond to changing water supply and demand conditions. Planning and analysis efforts for future updates of the Groundwater Management Plan and the IWRP need to be integrated in order to provide a coordinated and comprehensive water supply plan for Santa Clara County.

2. **Integration of groundwater management programs and activities** – Individual groundwater management programs tend to be implemented almost independently of other programs. A more integrated approach to the management of these programs, and to the management of the basin overall needs to be developed. Integration of these programs and improved conjunctive use strategies will result in more effective basin management.

3. **Optimization of recharge operations** – As artificial recharge is critical to sustaining groundwater resources, an analysis of the most effective amount, location, and timing of recharge should be conducted.

4. **Improved understanding of the groundwater basin** – In general, the existing groundwater management programs seem to focus on managing the basin to meet demands and protecting the basin from contamination and the threat of contamination. However, improving the District's understanding of the complexity of the groundwater basin is critical to improved groundwater management. The more we know about the basin, the better we can analyze the impact of different groundwater scenarios and management alternatives.

5. **Effective coordination and communication with internal and external agencies** – Improved communication and coordination will lead to improved groundwater

management programs. Increased sharing of ideas, knowledge, and technical expertise among people involved with groundwater at the District will result in increased knowledge, well-coordinated and efficient work, and well-informed analyses and conclusions. Improved coordination with external agencies, such as retailers and state and federal organizations, will result in improved knowledge of customer needs and increased awareness of District activities.

A detailed analysis of these areas and of all groundwater programs as they relate to the Ends Policies and the groundwater management goal is recommended. District staff have already begun to address some of these issues, which will be fully discussed in the first update to the Groundwater Management Plan. The update, which is scheduled for 2002, will fully address the issues above and the overall management of the basin by presenting a formal groundwater management strategy. The update will evaluate each groundwater program's contribution and effectiveness in terms of the groundwater management goal and outcomes directed by the Ends Policies. If there is no direct connection between the Ends Policies and a specific program, that program's contribution to other linked programs will be analyzed. The update will include recommendations for changes to existing programs or for the development of new programs, standards, or ordinances. The update will also develop an integrated approach for the management of groundwater programs, and for the management of the groundwater basin in general.

Groundwater is critical to the water supply needs of Santa Clara County. Therefore, it is of the utmost importance that the District continues the progress begun with this Groundwater Management Plan. Increased demands and the possibility of reduced imported water in the future make effective and efficient management of the groundwater basin essential. The Groundwater Management Plan and future updates will identify how the management of the groundwater basin can be improved, thereby ensuring that groundwater resources will continue to be sustained and protected.

Chapter 1
INTRODUCTION

The Santa Clara Valley Water District (District) has managed the groundwater basin in Santa Clara County (County) since the early 1930s and is nationally recognized as a leader in groundwater management. Effective management of the groundwater basin is essential, as the groundwater basin provides nearly half of the County's overall water supply. Since its creation, the District has implemented numerous groundwater management programs and activities to manage the basin and to ensure a safe and healthy supply of groundwater.

Purpose

The purpose of this Groundwater Management Plan is to describe existing groundwater management programs and to formally document the District's groundwater management goal of ensuring that groundwater resources are sustained and protected. The following groundwater management programs are documented in this plan:

- Groundwater supply management programs that replenish the groundwater basin, sustain the basin's water supplies, help to mitigate groundwater overdraft, and sustain storage reserves for use during dry periods.

- Groundwater monitoring programs that provide data to assist the District in evaluating and managing the groundwater basin.

- Groundwater quality management programs that identify and evaluate threats to groundwater quality and prevent or mitigate contamination associated with those threats.

Background

The District is the groundwater management agency in Santa Clara County as authorized by the California legislature under the Santa Clara Valley Water District Act (District Act), California Water Code Appendix, Chapter 60. Since its creation, the District has worked to minimize subsidence and protect the groundwater resources of the County under the direction of the District Act. As stated in the District Act, the District's objectives related to groundwater management are to recharge the groundwater basin, conserve water, increase water supply, and to prevent waste or diminution of the District's water supply. The District Act also provides the District with the authority to levy groundwater user fees and to use those revenues to manage the County's groundwater resources.

The mission of the District is a healthy, safe, and enhanced quality of living in Santa Clara County through the comprehensive management of water resources in a practical, cost-effective, and environmentally-sensitive manner. As part of the District's Global Governance Commitment adopted by the Board of Directors, "the District will provide a healthy, clean, reliable, and affordable water supply that meets or exceeds all applicable water quality regulatory standards in a cost-effective manner. Utilizing a variety of water supply sources and strategies, the District will pursue a comprehensive water

management program both within the county and statewide that reflects its commitment to public health and environmental stewardship." The policy also states that the conjunctive management of the groundwater basins to be an integral part of the District's comprehensive water supply management program.

The District has always effectively managed the groundwater basin to fulfill the objectives of the District Act and its mission. The goal of these efforts has been, and continues to be, to sustain and protect groundwater resources.

This Groundwater Management Plan is the District's first step toward a more formal and integrated approach to groundwater management. This Groundwater Management Plan describes existing groundwater management programs and formally documents the District's groundwater management goal, which is ***to ensure that groundwater resources are sustained and protected***.

Report Contents

The structure of the Groundwater Management Plan is outlined below. Chapters 3 through 5, which pertain to specific groundwater management programs, are organized to provide program objectives, related background information, the current status of the program, and information on the future direction of each program.

- Chapter 1 (this Introduction)

- Chapter 2 describes the geography and geology of the County as well as the history of local groundwater use. The chapter also describes the development of District facilities, and explains the various components of the existing water conservation and distribution system. A brief discussion on current groundwater conditions is also presented.

- Chapter 3 describes District groundwater supply management programs that replenish the groundwater basin, sustain the basin's supplies, and/or help in mitigating groundwater overdraft. In addition, the chapter summarizes the role of groundwater in the District's overall water supply outlook, and describes water use efficiency programs for groundwater users.

- Chapter 4 describes groundwater monitoring programs that provide data to assist the District in evaluating groundwater basin management.

- Chapter 5 describes groundwater quality management programs that evaluate groundwater quality and protect the groundwater from contamination and the threat of contamination.

- Chapter 6 summarizes existing groundwater management programs and activities designed to sustain and protect groundwater resources and provides recommendations for future work.

Chapter 2
BACKGROUND

This chapter describes the study area as well as the history of local groundwater use and the development of District facilities. Various components of the District's existing water conservation and distribution system are also described. A brief discussion on current groundwater conditions is also presented.

Geography

Santa Clara County is located at the southern tip of the San Francisco Bay. It encompasses approximately 1,300 square miles, making it the largest of the nine Bay Area counties. The County contributes about one fourth of the Bay Area's total population and more than a quarter of all Bay Area jobs.

Figure 2-1
Location of Santa Clara County

The County boasts a combination of physical attractiveness, economic diversity, and numerous natural amenities. Major topographical features include the Santa Clara Valley, the Diablo Range to the east, and Santa Cruz Mountains to the west. The Baylands lie in the northwestern part of the County, adjacent to the waters of the southern San Francisco Bay.

History of the County's Groundwater

Water has played an important part in the development of Santa Clara County since the arrival of the Spaniards in 1776. Unlike the indigenous peoples, who for thousands of years depended upon the availability of wild food, the Spaniards cultivated food crops and irrigated with surface water. Population growth and the United States' conquest of the area in 1846 increased the demand for these crops, which forced the use of the groundwater basin. Groundwater was drawn to the surface by windmill pumps or flowed up under artesian conditions. The first well was drilled in the early 1850s in San Jose.

By 1865, there were close to 500 artesian wells in the valley and already signs of potential misuse of groundwater supplies. In the valley's newspapers a series of editorials and letters appeared which complained of farmers and others who left their wells uncapped, and blamed them for a water shortage and erosion damage to the lowlands.

As a result of several dry years in the late 1890s, more and more wells were sunk. Dry winters in the early 1900s were accompanied by a growing demand for the County's fruits and vegetables, which were irrigated with groundwater. This trend of increased irrigation and well drilling continued until 1915. During this period, less water replenished the groundwater basin than was taken out, causing groundwater levels to drop rapidly.

In 1913 a group of farmers asked the federal government for relief from the increased cost of pumping that resulted from a lower groundwater table. The farmers formed an irrigation district to investigate possible reservoir sites; however, the following year was wet and no action was taken. It was not until 1919 that the Farm Owners and Operators Association presented a resolution to the County Board of Supervisors expressing their strong opposition to the waste resulting from the use of artesian wells, and again raised the issue of building dams to supplement existing water supplies. By that year subsidence of 0.4 ft had occurred in San Jose. Between 1912 and 1932 subsidence ranged from 0.35 ft in Palo Alto to 3.66 ft in San Jose.

In 1921, a report was presented to the Santa Clara Valley Water Conservation Committee showing that far more water was being pumped from the ground than nature could replace. The committee planned to form a water district that differed from others in the state by having a provision for groundwater recharge. Their effort to form the water district failed, but they were able to implement several water recharge and conservation programs. It was not until 1929 that the County's voters approved the Santa Clara Valley Water Conservation District (SCVWCD), with the initial mission of stopping groundwater overdraft and ground surface subsidence.

District History

The SCVWCD was the forerunner of today's District, which was formed through the consolidation and annexation of other flood control and water districts within Santa Clara County. By 1935, the District had completed the construction of Almaden, Calero, Guadalupe, Stevens Creek, and Vasona dams to impound winter waters for recharge into percolation facilities during the summer. Later dams completed include Coyote in 1936, Anderson in 1950 and Lexington in 1952. The Gavilan Water District in the southern

portion of the County constructed Chesbro Dam in 1955 and Uvas Dam in 1957. These dams enabled the District to capture surface water runoff and release it for groundwater recharge.

The late 1930s to 1947 marked a period of recovery in groundwater levels that reduced subsidence. In 1947 conditions became dry, groundwater levels declined rapidly and subsidence resumed. In 1950 almost all of the County's water requirements were met by water extracted from the groundwater basin. This resulted in an all-time low water level in the northern subbasin.

In 1952, the first imported water was delivered by the water retailers in northern Santa Clara County through the Hetch-Hetchy southern aqueduct. By 1960, the population of the County had doubled from that of 1950. To supply this growth, groundwater pumping increased and groundwater levels continued to decline. By the early 1960s, it was evident that the combination of Hetch-Hetchy and local water supplies could not meet the area's water demands, so the District contracted with the state to receive an entitlement of 100,000 acre-feet (af) per year through the South Bay Aqueduct (SBA).

The SBA supply could not be fully utilized for recharge in the groundwater basin. Hence, to supplement the basin, the District constructed its first water treatment plant (WTP), Rinconada. In 1967, the District started delivering treated surface water to North County residents (North County refers to the Santa Clara Valley Subbasin), thus reducing the need for pumping. This led to a recovery of groundwater levels and reduced the rate of subsidence as well.

From 1960 to 1970 the County's population nearly doubled yet again. The semiconductor and computer manufacturing industries contributed to almost 34 percent of the job growth between 1960 and 1970. Population growth and economic diversity seemed especially important to Santa Clara County, which had been predominantly agricultural. This transformation was not without its problems. In the early 1980s a major underground tank storing a solvent for a manufacturing process in south San Jose was discovered to be leaking and the District's attention focused on water quality of the groundwater basin.

The growth and prosperity of the County continued, and jobs grew 39 percent between 1970 and 1980. In 1974, Penitencia (the District's second WTP) started delivering treated water. Groundwater pumping accounted for about half of the total water use by the mid-1980s. The rate of subsidence was reduced to about 0.01 ft/year compared to 1 ft/year in 1961. To provide a reliable source of supply the District contracted with the federal government for the delivery of an entitlement of 152,500 af per year of imported water from the Central Valley Project (CVP) through the San Felipe Project. The first delivery of San Felipe water took place in 1987, but it was not until 1989 that the District's Santa Teresa WTP was began operating to fully utilize this additional source of imported supply. Since the 1980s, the population of Santa Clara County has continued to increase, and the change in land use toward urbanization has continued.

District Board of Directors

The District is governed by a seven-member Board of Directors. Five of the members are elected, one from each of the five County supervisorial districts, and the remaining two directors are appointed by the Santa Clara County Board of Supervisors to represent the County at large. The directors serve overlapping four-year terms.

The Board establishes policy on the District's mission, goals, and operations and represents the general public in deciding issues related to water supply and flood control. The Board also has the authority to adopt ordinances that have the force of law within the District. The Board reviews staff recommendations and decides which policies should be implemented in light of the District's mission and goals. The Board also monitors the implementation of its policies, and supervises management to see that work is accomplished on time and efficiently.

The Board of Directors holds biweekly public meetings, at which the public is given the opportunity to express opinions or voice concerns. In addition, the public can participate in the annual process of groundwater rate setting through public hearings.

The Board of Directors identifies the conjunctive management of the groundwater basins to maximize water supply reliability as an integral part of the District's commitment to a comprehensive water management program.

District System

As a water resource management agency for the entire County, the District provides a reliable supply of high-quality water to 13 private and public water retailers serving more than 1.7 million residents, and to private well owners who rely on groundwater.

The District operates and maintains a Countywide conservation and distribution system to convey raw water for groundwater recharge and treated water for wholesale to private and public retailers. The components of this distribution system are described in detail below.

Reservoirs

Local runoff is captured in reservoirs within the County with a combined capacity of about 169,000 af. The stored water is released for beneficial use at a later time. The District's reservoirs are described in Table 2-1 and are shown in Figure 2-2.

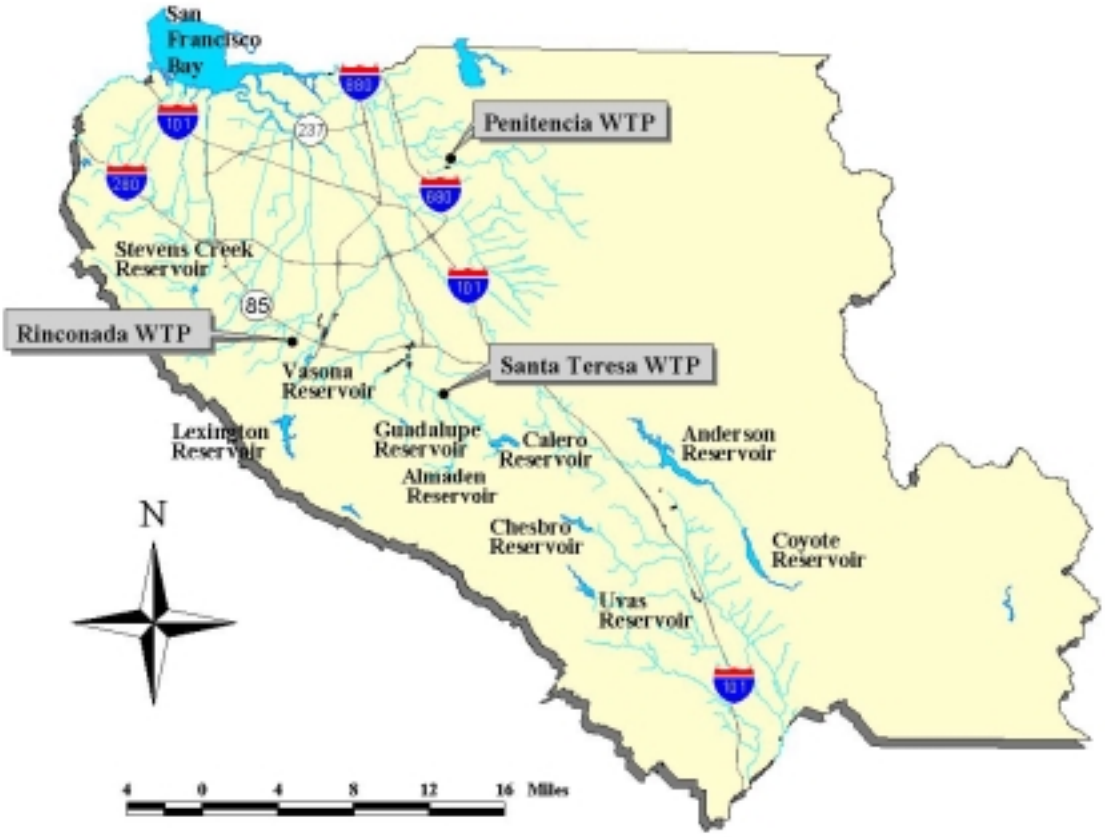
Treatment Plants

The District also operates three water treatment plants (WTPs): Rinconada, Penitencia, and Santa Teresa. These facilities are all connected by five major raw water conduits, which also connect the two imported raw water sources from the State Water Project (SWP) and the CVP. Two pumping plants (Coyote and Vasona) provide the lifts required for conveyance during peak usage.

Table 2-1
District Reservoirs

Reservoir	*Capacity(af)*	*Year Completed*	*Surface Area (ac)*	*Dam Height (ft)*
Almaden	*1,586*	*1935*	*59*	*108*
Anderson	*89,073*	*1950*	*1,245*	*240*
Calero	*10,050*	*1935*	*347*	*98*
Chesbro	*8,952*	*1955*	*265*	*95*
Coyote	*22,925*	*1936*	*648*	*138*
Guadalupe	*3,228*	*1935*	*79*	*129*
Lexington	*19,834*	*1952*	*475*	*195*
Stevens Creek	*3,465*	*1935*	*91*	*129*
Uvas	*9,935*	*1957*	*286*	*105*
Vasona	*400*	*1935*	*57*	*30*

Figure 2-2
District Reservoir Locations



Recharge Facilities
The Districts operates and maintains 18 major recharge systems, which consist of a combination of off-stream and in-stream facilities. These systems have a combined pond surface recharge area of more than 390 acres, and contain over 30 local creeks for artificial in-stream recharge to replenish the groundwater basin. The total annual average recharge capacity of these systems is 157,200 af.

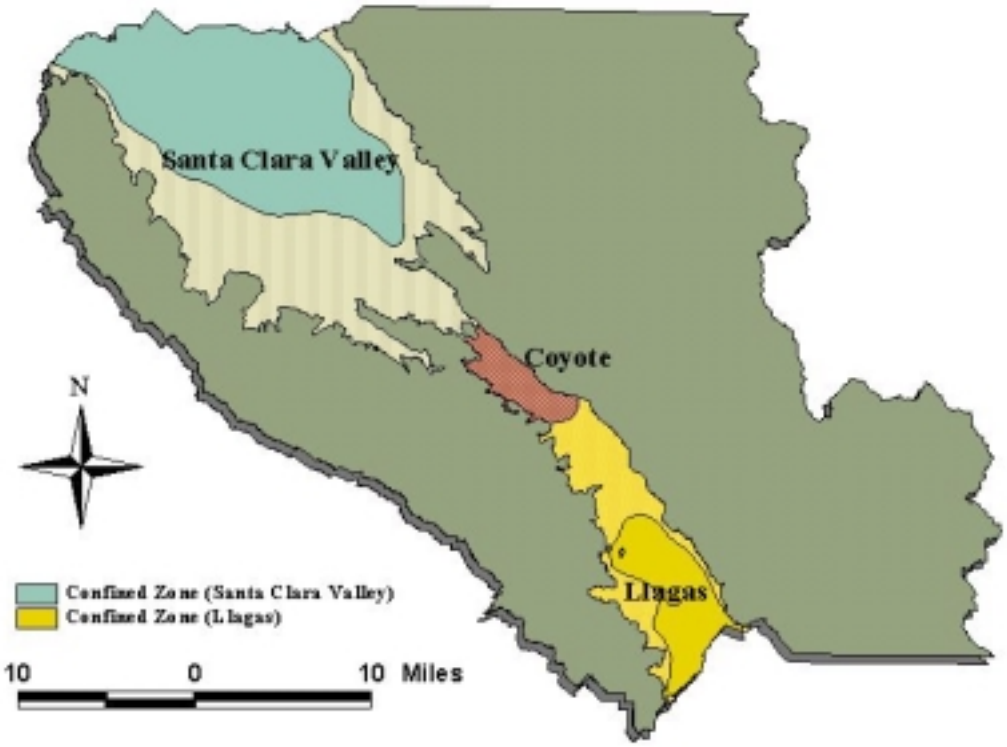
Groundwater Basins
The groundwater basin is divided into three interconnected subbasins that transmit, filter, and store water. These subbasins are portrayed in Figure 2-3. The Santa Clara Valley Subbasin in the northern part of the County extends from Coyote Narrows at Metcalf road to the County's northern boundary. The Diablo Range bounds it on the east and the Santa Cruz Mountains on the west. These two ranges converge at the Coyote Narrows to form the southern limits of the subbasin. The Santa Clara Valley Subbasin is approximately 22 miles long and 15 miles wide, with a surface area of 225 square miles. A confined zone within the northern areas of the subbasin is overlaid with a series of clay layers resulting in a low permeability zone. The southern area is the unconfined zone, or forebay, where the clay layer does not restrict recharge.

The Coyote Subbasin extends from Metcalf Road south to Cochran Road, where it joins the Llagas Subbasin at a groundwater divide. The Coyote Subbasin is approximately 7 miles long and 2 miles wide and has a surface area of approximately 15 square miles. The subbasin is generally unconfined and has no thick clay layers. This subbasin generally drains into the Santa Clara Valley Subbasin.

The Llagas Subbasin extends from Cochran Road, near Morgan Hill, south to the County's southern boundary. It is connected to the Bolsa Subbasin of the Hollister Basin and bounded on the south by the Pajaro River (the Santa Clara - San Benito County line). The Llagas Subbasin is approximately 15 miles long, 3 miles wide along its northern boundary, and 6 miles wide along the Pajaro River. A series of interbedded clay layers, which extends north from the Pajaro River, divides this subbasin into confined and forebay zones.

The three subbasins serve multiple functions. They transmit water through the gravelly alluvial fans of streams into the deeper confined aquifer of the central part of the valley. They filter water, making it suitable for drinking and for municipal, industrial, and agricultural uses. They also have vast storage capacity, together supplying as much as half of the annual water needs of the County. In 2000, the groundwater basin supplied 165,000 acre-feet of the total water use of 390,000 acre-feet.

Figure 2-3
Santa Clara County Groundwater Subbasins



Current Groundwater Conditions

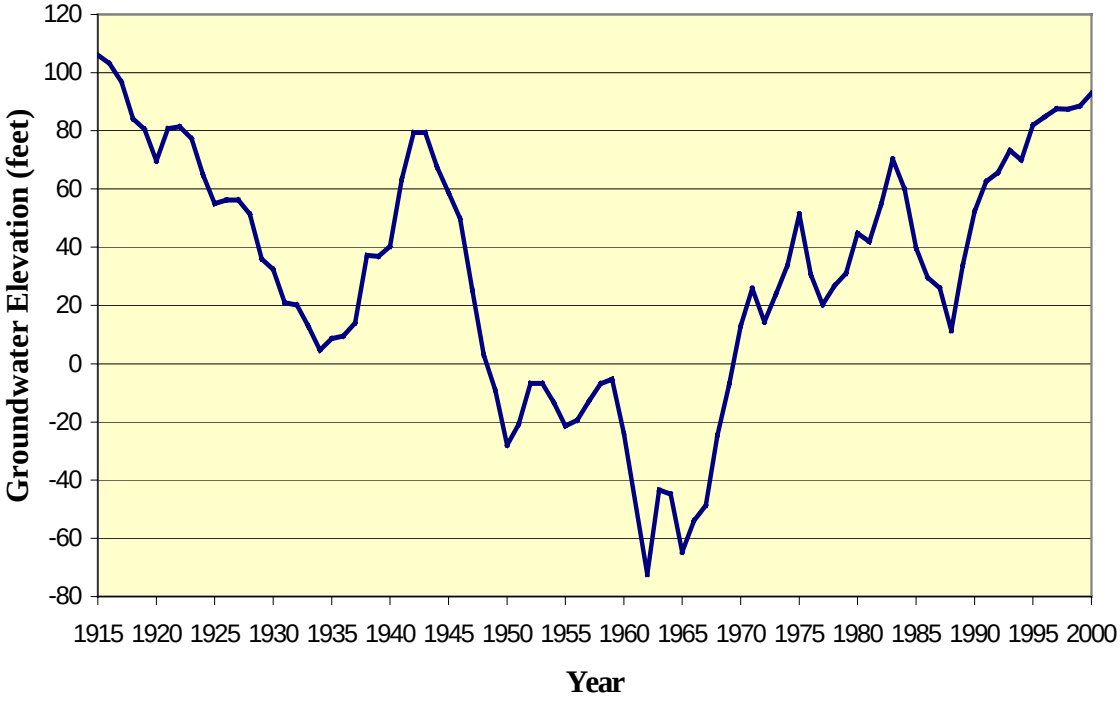
Groundwater conditions throughout the County are generally very good, as District efforts to prevent groundwater basin overdraft, curb land subsidence, and protect water quality have been largely successful. Groundwater elevations are generally recovered from overdraft conditions throughout the basin, inelastic land subsidence has been curtailed, and groundwater quality supports beneficial uses. The District evaluates current groundwater conditions based on the results of its groundwater monitoring programs, which are described in Chapter 4 of this plan.

Groundwater Elevations

Groundwater elevations are affected by natural and artificial recharge and groundwater extraction, and are an indicator of how much groundwater is in storage at a particular time. Both low and high elevations can cause severe, adverse conditions. Low groundwater levels can lead to land subsidence and high water levels can lead to nuisance conditions for below ground structures.

Figure 2-4 shows groundwater elevations in the San Jose Index Well in the Santa Clara Valley Subbasin. While groundwater elevations in the well are not indicative of actual groundwater elevations throughout the County, they demonstrate relative changes in groundwater levels.

Figure 2-4
Groundwater Elevations in San Jose Index Well



Land Subsidence

Land subsidence occurs in the Santa Clara Valley when the fluid pressure in the pores of aquifer systems is reduced significantly by overpumping, resulting in the compression of clay materials and the sinking of the land surface. Historically, the Santa Clara Valley Subbasin has experienced as much as 13 feet of inelastic, or nonrecoverable, land subsidence that necessitated the construction of additional dikes, levees, and flood control facilities to protect properties from flooding. The costs associated with inelastic land subsidence are high, as it can lead to saltwater intrusion that degrades groundwater quality and flooding that damages buildings and infrastructure. However, imported water from the State Water Project and Central Valley Project has increased District water supplies, reducing the demand on the groundwater basin, and providing water for the recharge of the basin. As a result, the rate of inelastic land subsidence has been curtailed to less than 0.01 feet per year.

Groundwater Quality

Natural interactions between water, the atmosphere, rock minerals, and surface water control groundwater quality. Anthropogenic (man-made) compounds released into the environment, such as nitrogen-based fertilizer, solvents, and fuel products, can also affect groundwater quality. Groundwater quality in the Santa Clara Valley Subbasin is generally high. Drinking water standards are met at public water supply wells without the use of treatment methods.

A few water quality problems have been detected. High mineral salt concentrations have been identified in the upper aquifer zone along San Francisco Bay, the lower aquifer zone underlying Palo Alto, and the southeastern portion of the forebay area of the Santa Clara Valley Subbasin. Nitrate concentrations in the South County (Coyote and Llagas Subbasins) are elevated and high nitrate concentrations are sporadically observed in the Santa Clara Valley Subbasin. Lastly, even though Santa Clara County is home to a large number of Superfund sites, there are few groundwater supply impacts from the chemicals from these sites; volatile organic compounds VOCs) are intermittently detected at trace concentrations in public water supply wells. In four wells, such contamination has been severe enough to cause the wells to be destroyed. Overall, the District's groundwater protection programs, including its well permitting, well destruction, and leaking underground storage tank programs, have been effective in protecting the groundwater basin from contamination.

Water quality data for common inorganic compounds during the period from 1997 through 2000 are summarized in Table 2-2. The typical concentration ranges were computed using standard statistical methods. Organic compounds were nondetectable in almost all wells and below drinking water standards in all wells. Data for organic compounds, including MTBE, solvents, and pesticides is not shown in Table 2-2 due to the large number of compounds.

Table 2-2
Summary of Santa Clara County Groundwater Data (1997-2000) and Water Quality Objectives[a]

Constituents	Santa Clara Valley Subbasin		Coyote Subbasin	Llagas Subbasin	Drinking Water Standard	Ag. Objective[f]
	Principal Aquifer Zone[d]	Upper Aquifer Zone[d]				
Chloride (mg/l)	40 – 45	92 – 117	16 – 27	24 -52	500[c,e]	355
Sulfate (mg/l)	37 – 41	106 – 237	32 - 65	32 -65	500[c,e]	-
Nitrate (mg/l)	15 – 18	0.002 – 4	12 -38	44 -47	45[b]	30
Total Dissolved Solids (mg/l)	366 – 396	733 – 1210	250 - 490	320 -540	1000[c,e]	10,000
Sodium Adsorption Ratio	0.89 - 1.26	1.23 - 3.84	NA	NA	-	9
Electrical Conductance (uS/cm at 25 C)	596 - 650	1090 – 1590	375 - 391	500 - 715	1600[c,e]	3000
Aluminum (ug/l)	6 - 18	23 – 97	<5 - 86	5 -51	1000[b]	20,000
Arsenic (ug/l)	0.7- 1.2	1.2 – 3.7	<2	<2	50[b]	500
Barium (ug/l)	141 - 161	60 – 220	71 - 130	99 - 180	1000[b]	-
Boron (ug/l)	115 - 150	200 – 523	81 - 119	82 -159	-	500
Cadmium (ug/l)	<1	<0.5	< 0.5	<0.5	5[b]	500
Chromium (ug/l)	6 – 8	0.5 – 1.8	0.5 - 10	2 - 10	50[b]	1000
Copper (ug/l)	1.9 – 4.4	0.3 – 1	<1 - 50	0.75 – 3.90	1000[c]	-
Fluoride (mg/l)	0.13 – 0.16	0.15 – 0.3	0.12 – 0.21	0.12 – 0.17	1.8[b]	15
Iron (ug/l)	10 – 38	40 – 160	19 - 100	14 - 170	300[c]	20,000
Lead (ug/l)	0.2 – 1.1	<0.5	<2	<2	50[b]	10,000
Manganese (ug/l)	.15 – 1.5	120 – 769	<0.5 - 29	0.86 - 21	50[c]	10,000
Mercury (ug/l)	<1	<0.2	<0.2	<0.2	2[b]	-
Nickel (ug/l)	1.8 – 3.4	4 – 10	<2- 10	<2 - 10	100[b]	2000
Selenium (ug/l)	2.5 – 3.8	0.4 – 2	<2	<2	50[b]	20
Silver (ug/l)	<5	<0.5	<0.5	<0.5	100[b]	-
Zinc (ug/l)	3 – 8	3 - 13	<50	10 - 32	500[c]	10,000

[a] For common inorganic water quality constituents
[b] Maximum Contaminant Level as specified in Table 64431-A of Section 64431, Title 22 of the California Code of Regulations
[c] Secondary Maximum Contaminant Level as specified in Table 64449-B of Section 64449, Title 22 of the California Code of Regulations
[d] Typical range = approximate 95% Confidence Interval estimate of the true population median
[e] Upper limit of secondary drinking water standard
[f] Taken from the Water Quality Control Plan for the San Francisco Bay Basin, 1995 Regional Water Quality Control Boards

Chapter 3
GROUNDWATER SUPPLY MANAGEMENT

This chapter covers the District programs that relate to groundwater supply management. It describes the District's groundwater recharge, treated groundwater recharge/reinjection, and water use efficiency programs. It also summarizes the role of the groundwater basin in terms of the District's overall water supply plan, the Integrated Water Resources Plan (IWRP). Groundwater supply management programs support the District's groundwater management goal by sustaining the basin's groundwater supplies, mitigating groundwater overdraft, minimizing land subsidence, protecting recharge and pumping capabilities, and sustaining storage reserves for use during dry periods.

Future efforts in groundwater supply management will include strengthening the District's groundwater recharge program so that the District makes the most effective use of its resources with regard to the amount, location, and timing of groundwater recharge.

GROUNDWATER RECHARGE

Program Objective
The objective of the Groundwater Recharge Program is to sustain groundwater supplies through the effective operation and maintenance of District recharge facilities.

Background
Groundwater recharge is categorized as either natural recharge or facility recharge. The District defines "natural" groundwater recharge to be any type of recharge not controlled by the District. Sources may include rainfall, net leakage from pipelines, seepage from surrounding hills, seepage into and out of the groundwater basin, and net irrigation return flows to the basin. Facility recharge consists of controlled and uncontrolled recharge through District facilities, which include about 90 miles of stream channel and 71 off-stream recharge ponds. Controlled recharge refers to the active and intentional recharge of the basin by releases from reservoirs or the distribution system. Uncontrolled recharge occurs through District facilities, such as creeks, but refers to recharge that would occur without any action on the part of the District. This includes natural recharge through streams as a result of rainfall and runoff. This section focuses exclusively on controlled and uncontrolled facility recharge.

Current Status
The District's current recharge program is accomplished by releasing locally conserved water and imported water to District in-stream and off-stream recharge facilities.

In-stream Recharge

The controlled in-stream recharge accounts for approximately 45 percent of groundwater recharge through District facilities. In-stream recharge occurs along stream channels in the alluvial plain, upstream of the confined zone that eventually reaches the drinking water aquifer. The District can release flow for

recharge into 80 of the 90 miles of streams. Uncontrolled in-stream recharge accounts for approximately 20 percent of groundwater recharge.

Spreader dams have been a key component of the in-stream recharge program. These temporary or permanent dams are constructed within streambeds to impound water in the channels and increase recharge rates via percolation through stream banks. The use of spreader dams increases in-stream recharge capacity by about 15,000 af, or approximately ten percent. Spreader dams have been constructed at 60 or more sites since they were first employed in the 1920s.

Off-stream Recharge

The off-stream recharge accounts for approximately 35 percent of groundwater recharge through District facilities. The off-stream facilities include abandoned gravel pits and areas excavated specifically as recharge ponds. Ponds range in size from less than 1 acre to more than 20 acres. The District operates 71 off-stream ponds in 18 major recharge systems with a cumulative area of about 393 acres. Locally conserved and imported water is delivered to these ponds by the raw water distribution system.

Off-stream recharge facilities are generally operated in one of two modes: constant head mode or wet/dry cycle mode. The District most often uses the constant head mode, which involves filling the pond and maintaining inflow at a rate equal to the recharge rate of the pond. This operation is continued until the recharge rate of the pond has decreased to an unacceptable rate. In order to maintain high recharge rates, ponds are cleaned periodically. Pond cleaning is generally considered when the recharge rate has decreased by about 75 percent. The pond is then emptied and any sediment cleaned out. In some cases, the pond is emptied and allowed to dry out and the recharge operation is restarted without cleaning. However, this typically results in a slightly reduced recharge rate. The recharge rates of the District's ponds generally range from 1 af/acre/day to about 2 af/acre/day, although some ponds have rates up to 5 af/acre/day.

In the constant head mode, algae and weed growth generally occurs. The algae growth varies according to sunlight, water temperature, nutrients and other factors. As the algae dies, it falls to the pond bottom, also contributing to a reduced recharge rate. The algae are generally controlled using chemical additives. Using deeper ponds can also reduce algae growth, as ponds in the range of 13 to 15 feet deep do not support algae growth as rapidly as shallower ponds.

Water Quality

High turbidity of incoming water results in a rapid decrease of recharge rates. In order to increase recharge pond efficiency, the District works to reduce turbidity levels with coagulants, simple mixing procedures, settling basins and skimming weirs. At most facilities, water with turbidity levels up to about 100 Nephelometric Turbidity Unit (NTU) can be treated effectively. Water with turbidity levels of less than 10 NTU is usually not treated. Each NTU represents

several pounds of fine-grained material per acre-foot of water. Allowable influent turbidity levels may depend on the availability of water.

Monitoring
Recharge facilities are monitored around the clock by operations center personnel using a computerized control system, and in the field by technicians. The raw water control system provides for remote operation of water distribution facilities and real-time system performance data. Operations technicians perform daily inspection of recharge facilities and record flows and water levels.

A periodic water balance is performed to reconcile all measured imported water, inflows, releases and changes in surface water storage. The results of this balance become the final accounting for distribution and facility processing. The data is used for water rights reporting, accounting for usage of federal water, for facility performance measurement purposes, and for the groundwater basin water budget.

Future Direction
Although spreader dams have traditionally been a key component of the in-stream recharge program, their use has been limited significantly because of more stringent permitting due to fish and wildlife concerns.

The District has completed the feasibility testing of a direct injection facility to increase recharge and has completed construction of a full-scale well. The injection well has a capacity of 750 af/year and will be supplied with water treated at the Rinconada WTP. The potential for additional direct injection facilities may be evaluated in the future.

TREATED GROUNDWATER RECHARGE/REINJECTION PROGRAM

Program Objective
The objective of the Treated Groundwater Recharge/Reinjection Program is to encourage the reuse or recharge of treated groundwater from contamination cleanup sites in order to enhance cleanup activities and protect the County's groundwater resources.

Background
District Resolution 94-84 encourages the reuse or recharge of treated groundwater from groundwater contamination cleanup projects and provides a financial incentive program to qualifying cleanup project sponsors. Sponsors must document that all non-potable demands are satisfied to the maximum extent possible prior to injecting any water into the aquifer. All injected water must be recovered by the pump-and-treat cleanup activities at the site.

Each application is processed within 45 working days. Once an applicant has met the qualifying conditions and is accepted, a legal contract is prepared and signed by the District and the clean-up project sponsor. This contract details how the sponsor will

receive a financial incentive from the District. The sponsor is responsible for providing periodic updates on the amount and quality of water reinjected/recharged.

Current Status
The amount of this financial incentive is equivalent to the basic groundwater user rate. IBM (San Jose) is currently recharging between 900 and 1,000 af per year, and is the only approved sponsor currently injecting/recharging groundwater and receiving this financial incentive.

Future Direction
Any future applications will be evaluated rigorously with respect to overall groundwater basin management to ensure that the groundwater basin will not be adversely impacted.

WATER USE EFFICIENCY PROGRAMS

The District's Water Use Efficiency Programs are designed to promote more effective use of the County's water supplies. The District's demand management measures are described in the Water Conservation and Agricultural Water Efficiency sections that follow the discussion of Recycled Water. The District's commitment to increasing the use of recycled water within the County will also help the District to more effectively use the County's water.

Recycled Water

Program Objective
The objective of the Recycled Water Program is to increase the use of recycled water, thereby promoting more effective use of the County's water supplies. To meet this objective, the District is forming partnerships with the four sewage treatment plant operators in the County and is taking every opportunity to expand the distribution and use of tertiary treated recycled water for non-potable uses. Present efforts focus on planning for future uses in agriculture, industry, commercial irrigation, and indirect potable reuse. To meet the objective of increasing the use of recycled water, the District is:

- Partnering with and providing rebates to the South Bay Water Recycling Program (SBWRP) which includes the cities of San Jose, Santa Clara and Milpitas.

- Operating and expanding the South County Recycled Water System as the recycled water wholesaler in the area. Formal agreements with the recycled water producer, the South County Regional Wastewater Authority (SCRWA), and the recycled water retailer, the City of Gilroy, are in place.

- Providing the City of Sunnyvale a rebate on the recycled water delivered each year.

- Meeting with the City of Palo Alto and their stakeholder group to help plan for expanded future use of recycled water in the North County.

- Contracting a consultant to perform a feasibility study on Advanced Treated Recycled Water.

Background

The District has been involved in water recycling since the 1970s when it supported research in Palo Alto and partnered in the establishment of the South County distribution system in Gilroy. Since the early 1990s, the District has become involved in an ever-increasing role. Recycled water use in the County has grown from about 1,000 af in 1990 to over 6,000 af in the year 2000. To encourage the use of recycled water, in 1993 the District started providing rebates to agencies delivering recycled water.

The largest system for recycled water distribution is the South Bay Water Recycling Program, which has over 60 miles of distribution pipelines and serves over 300 customers. The District continues a partnership with the SBWRP in its planning effort for expansion. In 1999, the District formalized its partnership with the South County Regional Wastewater Authority and the cities of Gilroy and Morgan Hill to plan and operate the recycled water distribution system in South County. Since then, the District has begun construction on major pumping and reservoir facilities to modernize the system.

Current Status

The District is expanding its planning efforts and is continuing discussions with the SBWRP for expanding the use of recycled water. This will involve transporting recycled water south from the existing pipeline in south San Jose in order to supply agricultural and industrial customers that now use groundwater or untreated surface water. The City of San Jose, who administers the SBWRP, has installed several groundwater monitoring wells at the District's request in order to monitor potential changes in groundwater quality as a result of the application of recycled water for irrigation.

The District continues to modernize and expand the South County Recycled Water System. Besides serving golf courses and parks, expansion of this system will involve delivering water to industrial and agricultural users. District staff has inventoried the volume of use and location of the largest groundwater and surface water users in the area and is beginning a marketing study for expansion of the system. The District is also working with the City of Gilroy to plan for the connection of new large water use developments to the system.

A project has been initiated to study the feasibility of installing a pilot plant for the advanced treatment of recycled water for use in agriculture, commercial irrigation, industry, and possibly for future streamflow augmentation and groundwater replenishment.

Future Direction

The future direction of the recycled water program is driven by District Board policy, which directs staff to increase recycled water use to 5% of total water use in the County by the year 2010 and to 10% of total use by the year 2020. To meet this goal, it is assumed that a countywide network of recycled water distribution systems will be

developed. The initial stage will provide for a major transmission main from the area of south San Jose in the SBWRP service area to the major commercial and agricultural customers in South County. Developing advanced treatment methods and facilities to provide recycled water of a higher quality standard than the present tertiary treatment will be required in order to meet the needs of some potential customers. Methods and facilities to blend recycled water with untreated surface water and with groundwater will also need to be developed in order to provide for peaking factors and the quality requirements of some customers. Additional research on the most effective method of advanced treatment and ways to develop more industrial use and onsite treatment of recycled water will be performed.

District efforts to expand recycled water use within Santa Clara County will be coordinated with the District's Integrated Water Resources Plan which will evaluate the various options for obtaining the additional water the County will require in future years. This effort will evaluate the comparative costs and benefits of recycled water, water conservation, water banking, and water transfers. District staff will work with partnering agencies to ensure that any potential uses of recycled water will not adversely impact the groundwater basin or recharge and extraction capabilities.

Water Conservation Programs

Program Objective

The objective of the Water Conservation Program is to promote more efficient use of the County's water resources and to reduce the demands placed on the District's water supplies. To meet this objective, the District has implemented a variety of programs designed to increase water use efficiency in the residential, commercial, industrial, and agricultural sectors, which all rely, in part, on extraction from the groundwater basin.

Background

The District's Water Conservation Program has been developed in large part to comply with the Best Management Practices (BMPs) commitments, defined in the 1991 Memorandum of Understanding (MOU) Regarding Urban Water Conservation in California. The program targets residential, commercial/industrial/institutional, and agricultural water use.

The District has promoted conservation of the County's water supplies since its creation. However, a series of drought years between 1987 and 1992 prompted the District and local water retailers to significantly increase conservation efforts. The District enjoys a special cooperative partnership with the water retailers in regional implementation of the BMPs; several program elements were developed in partnership with the local water retailers. Water retailers have partnered with the District in marketing efforts for cooperative programs and in the distribution of water-saving devices such as showerheads and aerators.

Current Status

The Water Conservation Program has designed programs aimed specifically at residential, commercial, and agricultural users. Residential programs include:

- Water-Wise House Call Program designed to measure residential water use and provide recommendations for improved efficiency.
- Showerhead/Aerator Retrofit Distribution Program, which provides free showerheads and aerators to replace less efficient devices.
- Clothes Washer Rebate Program for the installation of high-efficiency washing machines.
- Landscape workshops focused on water efficient landscape and irrigation design.
- Ultra-Low-Flush Toilet (ULFT) Program (free or low-cost).
- Multi-Family Submeter Pilot Program aimed at reducing water use in multi-family dwellings.
- Education programs in English and Spanish, including the distribution of literature, promotion of water conservation at organized events, and the survey program.

District programs targeting water conservation in the commercial sector include:

- Irrigation Technical Assistance Program (ITAP) designed to help large landscape managers improve irrigation efficiency through free site evaluations.
- Commercial Clothes Washer Rebate Program, in conjunction with PG&E, San Jose/Santa Clara Water Pollution Control Plant, and the City of Santa Clara.
- Project WET (Water Efficient Technologies), which offers rebates to commercial and industrial customers for the reduction of water use and wastewater discharges (in conjunction with the City of San Jose).
- Ultra-Low-Flush Toilet Retrofit Program in conjunction with the San Jose/Santa Clara Water Pollution Control Plant.
- Irrigation Submeter Program to encourage better water management at large commercial sites.

The District has also implemented several programs to promote water use efficiency in the agricultural sector, which relies mainly on the groundwater basin for its water needs. These programs are discussed in the following section of this report.

In fiscal year 1999/2000, the District's water conservation programs achieved an estimated water savings of over 24,000 af, which includes 10,000 af through water retailer participation.

Future Direction

Water conservation efforts are anticipated to reduce County water demands by approximately 30,000 af in 2001, and by almost 32,000 af in 2002. Future programs and projects being developed include:

- Water Use Efficiency Baseline Survey to provide specific information needed to tailor the District's water use efficiency program to result in effective long-term water use efficiency, to evaluate the impacts of water efficiency measures, and further promote and implement Best Management Practices (BMPs).

- Expansion of the Water Efficient Technologies (WET) Program to the entire county.

- Landscape and Agricultural Area Measurement and Water Use Budgets.

Agricultural Water Efficiency

Program Objective

The objective of the Agricultural Water Efficiency Program is to promote, demonstrate and achieve water use efficiency in the agricultural sector, which relies on groundwater supplies for most of its water needs. To meet this objective the District has implemented the following program elements:

- Mobile Lab Program

- California Irrigation Management Information System (CIMIS) Program

- Outreach Program

Background

As required by the Central Valley Project Improvement Act, in 1994 the District adopted a Water Conservation Plan to comply with U.S. Bureau of Reclamation criteria. This plan commits the District to support various agricultural water management activities and to implement the urban BMPs discussed in the Water Conservation Programs section.

Among the agricultural water management activities outlined in the plan is a Mobile Irrigation Lab program. This program provides local farmers with on-site irrigation system evaluations and recommendations for efficiency improvement. The mobile lab is designed to help increase water distribution uniformity and on-farm irrigation and energy efficiencies for all types of irrigation systems. Proper distribution uniformity can result in lower water and energy bills and decreased fertilizer application. Managing nitrogen and irrigation input to more closely match actual crop needs can also reduce water and

energy bills; this approach reduces the potential for nitrate to leach into groundwater while maintaining or improving agricultural productivity.

California Irrigation Management Information System (CIMIS) is a related program that helps large-scale water users to develop water budgets for determining when to irrigate and how much water to apply. Created in 1982 through a joint effort of UC Davis and the Department of Water Resources (DWR), CIMIS is a network of more than 100 computerized weather stations across the state that collects, measures and analyzes all the climatological factors that influence irrigation. This information provides major irrigators daily data on the amount of water that evaporates from the soil and the amount used by grasses.

The District owns and supervises two CIMIS weather stations, one at the UC field station in downtown San Jose, and the other at Live Oak High School in Morgan Hill. Both of these stations, as well as others around the state, are connected to a central computer run by the DWR in Sacramento. The updated information from the District's two stations is automatically downloaded and then provided to the public via a telephone hotline recording or the Internet.

An Outreach Program is an essential component of the agricultural efficiency programs. Outreach to the agricultural community includes public information dissemination, seminars or workshops, public presentations, newsletter articles and specific program materials.

Current Status

The District continues to implement the Mobile Lab Program, which provides on-farm irrigation evaluations, pump efficiency tests, nitrate field test demonstrations, and recommendations for efficient irrigation improvements. Approximately 30 sites participate in the program each year.

The District is currently assessing the potential need for an additional CIMIS station in the North County.

As part of the Outreach Program, significant work has been channeled into developing educational materials on the use of CIMIS in efficient irrigation scheduling. Presentations on the various program elements have been made to the District's Agriculture Advisory Committee, Farm Bureau and grower associations. Articles and brochures have been developed for CIMIS and the mobile lab program. In addition, the staff from the District's Water Use Efficiency and Groundwater Management Units have worked together to hold various workshops and seminars in the South County on irrigation and nutrient and pesticide management. All seminars have been well attended.

Future Direction

The future direction of the agricultural water efficiency programs includes the continuation and further development of the Mobile Lab Program. District staff will recommend continuation of the program as long as it demonstrates its cost-effectiveness.

The District is currently evaluating the feasibility of implementing a financial incentives program to complement the mobile lab.

A Monitoring and Evaluation Program is necessary to determine and assess the effectiveness of the various programs. The focus of the current monitoring effort has been the tracking of activity levels and program costs. To ensure that future water saving goals are achieved and urban and agricultural programs are successful, the District will need to enhance its existing monitoring program to more rigorously quantify actual water savings.

INTEGRATED WATER RESOURCES PLAN

Program Objective

The objective of the Integrated Water Resources Plan (IWRP) is to develop a long-term, flexible, comprehensive water supply plan for the County through year 2040 that incorporates community input and can respond to changing water supply and demand conditions.

Background

The District's 1975 water supply master plan identified the Federal San Felipe Project as the best solution to meet future water demands. However, recent severe droughts, changing state and federal environmental and water quality regulations, and the variability and reliability of both local and imported supplies underscored the need for an updated, more flexible water supply planning process. In the early 1990s, District staff developed a water supply overview study and began to outline a process to update the 1975 master plan.

The overview study described the District's water system and identified drinking water quality issues, the County's water needs, existing water supplies, projected water supplies, potential water shortages, and other components for managing water supplies. The overview study also evaluated water supply alternatives and recommended a stakeholder process to help the District select the preferred alternative.

As a result of the recommendations from the water supply overview process and several workshops involving the Board and overview study project team, the District Board of Directors authorized staff to undertake the IWRP.

In March of 1996, the project team introduced the Board's planning objectives for the IWRP evaluation of water supply strategies. These objectives were refined by stakeholders, including: the general public, representatives of business, community, environmental and agricultural groups, District technical staff, and officials of local municipalities and other water agencies. Stakeholders used these objectives to evaluate various water supply strategies and agree upon an IWRP Preferred Strategy.

The IWRP Preferred Strategy aims to maximize the District's flexibility to meet actual water demands, whether they exceed or fall short of projections. It relies on water

banking, recycled water, demand management, and water transfers, plus "core elements" designed to ensure the validity of baseline planning assumptions, monitor or evaluate resource options, and help meet planning objectives. The Board approved the preferred strategy in December of 1996**.**

The groundwater basin is a critical component in the management of the County's water supply. The basin treats, transmits, and stores water for the County. The management objective of the 1996 IWRP is to maintain the highest storage possible in the three interconnected subbasins (or to bank groundwater) without creating high groundwater problems. During dry periods when local and imported water supplies do not meet the County's water needs, stored groundwater is used to make up the difference. However, the use of this storage has to be balanced with the potential occurrence of land subsidence.

Land subsidence has been a great concern in the valley. As much as thirteen feet of subsidence occurred in parts of the basin before subsidence was minimized through recharge activities and imported water deliveries. If subsidence were to recommence, the damage to infrastructure would be significant, as many levees, pipelines, and wells would need to be rebuilt. Therefore, the IWRP must balance the use of the groundwater basin with the avoidance of adverse impacts.

Current Status

The preferred strategy from the 1996 IWRP is being implemented. Action on several elements of the plan that has already taken place includes the following:

Water Banking

The District reached an agreement with Semitropic Storage District to bank up to 350,000 af in their storage facilities. The District currently has stored about 140,000 af in the water banking program.

Recycled Water

The District is working closely with the city of San Jose and Sunnyvale to develop and market recycled water in lieu of groundwater pumping for irrigation. Planning with South County Regional Wastewater Agency is also occurring (see section on Water Use Efficiency).

Demand Management

The Water Use Efficiency Unit has developed an aggressive program to minimize water use and provide assistance to irrigators to improve the efficiencies in their irrigation systems (see section on Water Use Efficiency).

Water Transfers

In 1999, the District entered into a multi-party water transfer agreement for an agricultural supply from a Central Valley Project (CVP) contractor. This transfer will make a small amount of dry year water available to the District during the next 20 years.

Core Elements

- In 1997, the District entered into a Reallocation Agreement that provides a reliability "floor" of 75 percent of contract quantity for the District's Municipal and Industrial CVP supply, except for extreme years when CVP allocations are made on the basis of public health and safety.

- A study was recently conducted to determine the frequency of critical dry periods using a statistical approach that showed the preferred strategies are very robust although not perfect.

- The Operational Storage Capacity of the Santa Clara Valley Subbasin was evaluated and refined in 1999 (SCVWD, 1999) – see section on operational storage capacity.

Future Direction

An ongoing process of monitoring the baseline conditions and contingency action levels is being developed. Updates to the IWRP are scheduled for every 3 to 5 years. The District is currently developing the 2002 IWRP Update.

As the District's water supply planning document through year 2040, the IWRP has identified the operation of the groundwater basin as a critical component to help the District respond to changing water supply and demand conditions. Planning and analysis efforts for future updates of the Groundwater Management Plan and the IWRP need to be integrated in order to provide a coordinated and comprehensive water supply plan for Santa Clara County.

Additional Groundwater Supply Management Activities

Groundwater Modeling

The District uses a three-dimensional groundwater flow model to estimate the short-and long-term yield of the Santa Clara Valley Subbasin and to evaluate groundwater management alternatives. Six layers are used to represent the subbasin, and changes in rainfall, recharge, and pumping are simulated. The model is used to simulate and predict groundwater levels under various scenarios, such as drought conditions, reduced imported water availability, or increased demand. The groundwater model also allows the District to evaluate the operational storage capacity (discussed below) in the Santa Clara Valley Subbasin.

In the future, a three-dimensional flow model similar to the one used in the Santa Clara Valley Subbasin will be developed for the Coyote and Llagas Subbasins, enabling the District to simulate groundwater conditions throughout the County.

Operational Storage Capacity Analysis

The operational storage capacity is an estimate of the storage capacity of the groundwater basin as a result of District operation. Operational storage capacity is generally less than the total storage capacity of the basin, as it accounts for operational constraints such as

available pumping capacity and the avoidance of land subsidence or high groundwater levels. Identifying a reasonable range for the amount of groundwater that can be safely stored in wet years and withdrawn in drier years is critical to proper management of the groundwater basin.

The operational storage capacity of the Santa Clara Valley Subbasin was evaluated (SCVWD, 1999) using the groundwater flow model and historical hydrology, which included two periods of severe drought. The key findings of the analysis were that:

- The operational storage capacity of the Santa Clara Valley Subbasin is estimated to be 350,000 af.

- The rate of withdrawal from the basin is a controlling function and pumping should not exceed 200,000 af in any one year.

- The western portion of the subbasin is operationally sensitive which requires the Rinconada Water Treatment Plant to receive the highest priority when supplies become limited.

In 2001, an analysis of the operational storage capacity for the Coyote and Llagas Subbasins was conducted (SCVWD, 2001). As the District does not currently have a groundwater model for these two subbasins, a static analysis was used. Unlike a groundwater model, a static analysis cannot simulate changes in recharge, pumping, or demand. Instead, the operational storage capacity was estimated as the volume between high and low groundwater surfaces, chosen to maximize storage while accounting for operational constraints such as high groundwater conditions. The draft estimate for the combined operational storage capacity of the Coyote and Llagas Subbasins ranges from 175,000 to 198,000 af. The District is working to narrow the range of estimates for operational storage capacity through further analysis.

Having an estimate of the amount of water that can be stored within the basin during wet years and withdrawn during drier times will continue to be critical in terms of long-term water supply planning. As hydrology, water demands, recharge, and pumping patterns change, the estimate of operational storage capacity will need to be updated.

Subsidence Modeling

Due to substantial land subsidence that has occurred within the Santa Clara Valley Subbasin, the District uses numerical modeling to simulate current conditions and predict future subsidence under various groundwater conditions. PRESS (Predictions Relating Effective Stress and Subsidence) is a two-dimensional model that relates the stress associated with groundwater extraction to the resulting strain in fine-grained materials such as clays. The District has calibrated the model at ten index wells within the subbasin, and has established subsidence thresholds equal to the current acceptable rate of 0.01 feet per year.

Chapter 4
GROUNDWATER MONITORING PROGRAMS

This chapter describes District programs that monitor the water quality, water levels and extraction from the groundwater basin. It also describes the District's land subsidence monitoring program. These programs provide data to assist the District in evaluating and managing the groundwater basin. Specifically, the groundwater and subsidence monitoring programs provide the data necessary for evaluating whether the program outcomes result in achievement of the groundwater management goal.

Future efforts in groundwater monitoring will include the annual development of a groundwater conditions report, which will contain information regarding groundwater quality, groundwater elevation, and land subsidence.

GROUNDWATER QUALITY MONITORING

Program Objective

The objective of the General Groundwater Quality Monitoring Program is to determine the water quality conditions of the County's groundwater resources. By monitoring the quality of the groundwater basin, the District can discover adverse water quality trends before conditions become severe and intractable, so that timely remedial action to prevent or correct costly damage can be implemented. In general, the District monitors groundwater quality to ensure that it meets water quality objectives for all designated beneficial uses, including municipal and domestic, agricultural, industrial service, and industrial process water supply uses.

Background

Groundwater quality samples have been collected in the County since the 1940s by the District and by others. In 1980, District staff reviewed the existing general groundwater quality monitoring program and recommended changes and enhancements. The recommended changes and enhancements included revising the monitoring well network, revising the list of water quality parameters to be measured, and collecting groundwater samples biennially (every other year). Groundwater samples were analyzed for general mineral and physical water quality parameters.

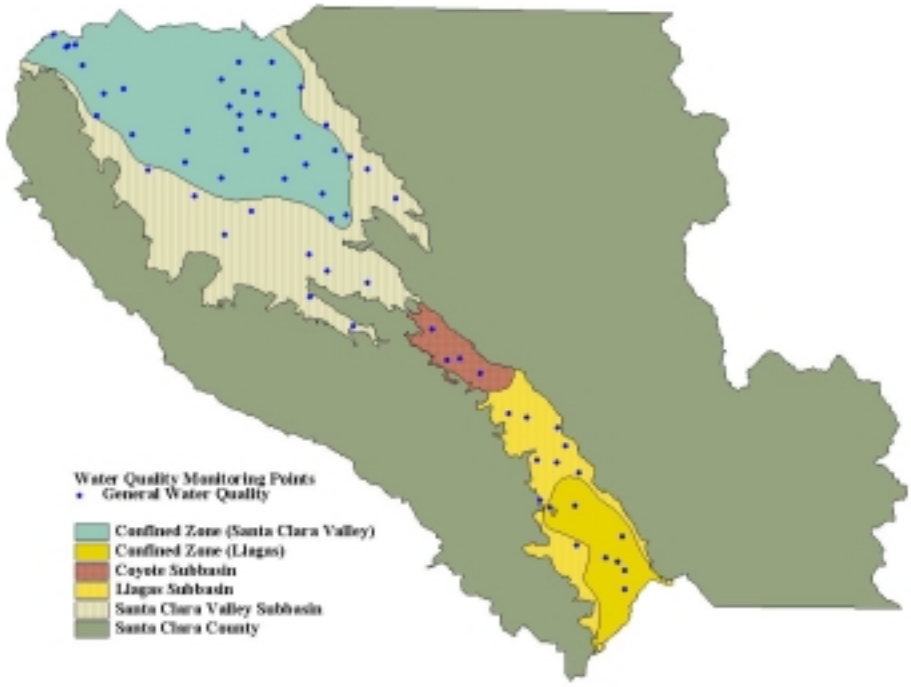
Current Status

The general groundwater quality monitoring program is designed to provide specific water quality data for each of the three subbasins (Figure 2-3). The monitoring well network includes one or more wells in each hydrographic unit yielding significant amounts of water. Groundwater samples collected from the monitoring network are intended to reflect the general areal and vertical groundwater quality conditions. Currently, the following program activities occur biennially:

- Water quality samples are collected from a monitoring network of approximately 60 wells (Figure 4-1).

- Samples are analyzed for general minerals, trace metals, and physical characteristics.
- Analytical results are evaluated, the database is updated, and routine water quality computations are performed.
- A summary report describing the water quality of the groundwater resources in the County is prepared.

Figure 4-1
Water Quality Monitoring Wells



In addition to the 60 wells monitored by the District for general groundwater quality analysis, the District monitors additional wells for special studies. There are currently approximately 100 wells monitored for MTBE, 60 wells monitored for nitrate, and 30 wells monitored for saltwater intrusion. The District also receives groundwater quality data for approximately 300 water retailer wells from the California Department of Health Services.

Monitoring results suggest that water quality is excellent to good for all major zones of the groundwater basin. This is based on comparing groundwater quality monitoring results to water quality objectives. Regional Water Quality Control Boards designed water quality objectives based on beneficial uses. Water quality objectives for municipal and domestic, industrial service, and industrial process water supply beneficial uses are equivalent to the drinking water standards established by the California Department of

Health Services. Water quality objectives for agricultural beneficial uses are defined specifically in the Regional Water Quality Control Boards' Water Quality Control Plans. Drinking water standards, agricultural water quality objectives, and monitoring results for common groundwater constituents are summarized in Table 2-2.

The more common trace constituents, which are considered unwanted impurities when present in high concentrations, are generally not observed in concentrations that adversely affect beneficial uses. Areas with somewhat degraded waters in terms of total mineral salt content have been identified in the Santa Clara Valley Subbasin and elevated nitrate concentrations have been observed in the Coyote and Llagas Subbasins. In addition, volatile organic compounds and other anthropogenic compounds have affected shallow aquifers in localized areas. Special groundwater monitoring programs have been developed to define the extent and severity of these problems and are discussed in Chapter 5.

Radon analysis was performed as a one-time special survey of current conditions and provided data for analyzing the potential impacts of upcoming drinking water standards for radon. The results of the 1999 sampling are presented in the 2000 General Groundwater Quality Monitoring report.

Future Direction

The General Groundwater Quality Monitoring Program utilizes relatively few, widely spaced monitoring points to assess large areas. Certain hydrographic units of the basin are only sparsely monitored at present. Staff is continuing to review the monitoring network to ensure that groundwater samples collected from the monitoring well network reflect areal and vertical groundwater quality conditions within each hydrographic unit. If it is determined that additional monitoring points are needed in some areas where there are no existing wells, District staff will recommend the installation of additional monitoring wells.

The District is also planning to increase the frequency of monitoring and the number of water quality parameters that are measured. Historically, the most frequent sampling frequency has been biennially. However, in order to parallel District efforts to better monitor performance in achieving desired results, the sampling frequency for the General Groundwater Quality Monitoring Program will be increased to annually. The number of water quality parameters that are measured will also be increased, so that samples are analyzed for volatile organic compounds, a significant concern in Santa Clara County. Samples will continue to be analyzed for general minerals, trace constituents, and physical characteristics.

The District will continue to assess and provide recommendations to address any adverse water quality trends that are observed through the General Groundwater Quality Monitoring Program. In addition, the District will continue to conduct special studies for specific contaminants as the need arises. As part of groundwater management planning, action levels and triggers will be developed for the constituents monitored.

The District will also begin developing annual groundwater conditions reports, which will summarize information regarding groundwater quality, groundwater elevation, and land subsidence.

GROUNDWATER ELEVATION MONITORING

Program Objective
The objective of the Groundwater Elevation Monitoring Program is to provide accurate and dependable depth-to-water field measurements for the County's major groundwater subbasins. By monitoring the groundwater elevations, the District can evaluate the groundwater supply conditions and formulate strategies to ensure adequate water supplies, prioritize recharge activities, and minimize any adverse impacts.

Background
Collecting depth-to-water information has been one of the District's functions since it was first formed as a water conservation district in 1929. Depth-to-water information is used to create groundwater elevation contour maps, which depict the conditions of the groundwater basin in the fall and spring of each year. Depth-to-water data are also used for subsidence modeling, to generate hydrographs needed to analyze groundwater model simulations, and to provide information to District customers on current and historical groundwater elevations.

Current Status
The District continues to collect depth-to-water field measurements, obtain depth-to-water measurements from other agencies and record that information for approximately 275 wells. Most wells in the current program are privately owned and their locations are fairly evenly distributed among the three subbasins (Figure 4-2). Current groundwater elevation monitoring includes the following:

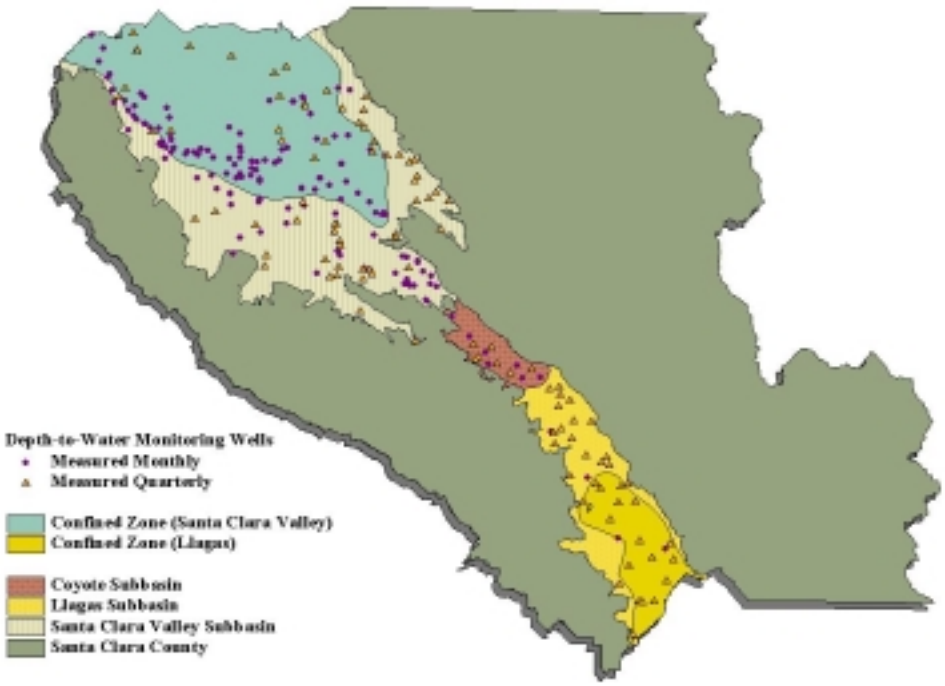
- Collection of monthly depth-to-water field measurements from approximately 168 wells, including approximately 150 wells owned by other agencies (Figure 4-2).
- Collection of quarterly depth-to-water field measurements from approximately 108 wells (Figure 4-2).
- Maintenance of a groundwater elevation database.
- Preparation of semi-annual groundwater level elevation contour maps.

The information in the District depth-to-water database is used regularly by District staff. Each year the District answers several hundred requests for depth-to-water information from other public agencies, consultants, and the public.

Future Direction
Although the District collects depth-to-water data from many wells throughout the County, most wells were designed as production wells, with perforations at multiple

intervals to increase groundwater extraction. There are relatively few wells that measure groundwater elevations in a single depth zone. The existing Groundwater Elevation Monitoring Program is currently being updated to target monitoring wells where discrete, depth-specific groundwater elevations can be obtained, which will enable better characterization of the three-dimensional groundwater system. A new groundwater elevation monitoring network has already been designed for the Santa Clara Valley Subbasin, and another project will be undertaken to develop a monitoring network for the Coyote and Llagas Subbasins by 2003.

Figure 4-2
Groundwater Elevation Monitoring Wells



The proposed network for the Santa Clara Valley Subbasin will include monitoring the individual piezometric pressures at the following 79 wells, which are geographically distributed among the hydrographic units in the subbasin. Specific recommendations include the:

- Continued monitoring of 31 depth-specific wells monitored in the existing depth-to-water program.
- Acquisition of 16 aquifer-specific wells from other organizations.
- Addition of 25 wells that are not part of the existing depth-to-water program.
- Installation of 7 new multiple-well monitoring sites to be constructed by 2003.

Monitoring these 79 wells will provide invaluable information to aid in characterizing depth-specific groundwater conditions. However, in addition to these 79 wells, monitoring of the wells in the current groundwater elevation network will continue indefinitely, as the water level data can be useful even though it cannot be attributed to specific depth zones. Monitoring is recommended on a quarterly basis during the months of January, April, July, and October, although some wells will be monitored monthly. A quarterly monitoring frequency is consistent with the historical groundwater level data in the basin, and is currently adequate in terms of current groundwater elevation monitoring needs. A change in monitoring frequency will be assessed if necessary.

The proposed monitoring network for the Santa Clara Valley Subbasin will be re-evaluated in 2003 to ensure that monitoring needs can be met with the wells proposed. A monitoring network for the Coyote and Llagas Subbasins will be developed by 2003.

Since groundwater information is continually utilized both within and outside the District, an online database that is easily accessible through the District's web site is being evaluated as it would significantly reduce District staff time spent in database maintenance and fulfilling depth- to-water data requests.

GROUNDWATER EXTRACTION MONITORING

Program Objective

The amount of groundwater extracted from the groundwater basin is recorded through the Water Revenue Program. Data produced by this program are used primarily to: 1) determine the amount of water used by each water-producing facility and collect the revenue for this usage, and 2) fulfill the provisions of Section 26.5 of the District Act which requires the District to annually investigate and report on groundwater conditions.

Background

The Water Revenue Program tracks groundwater, surface water, treated water and recycled water production within the District. The first collection of groundwater extraction data began shortly after the State Legislature authorized amendments to the Santa Clara County Flood Control and Water District Act in June 1965. As part of implementation of the District Act, wells within the District were registered. The District has been collecting groundwater extraction data from wells in the Santa Clara Valley Subbasin (also known as the North Zone or Zone W-2) since the early 1960s. After the merger with Gavilan Water Conservation District in 1987, this program expanded to the Coyote and Llagas Subbasins (the South Zone, or Zone W-5).

Current Status

To determine the amount of all water produced in the District, including groundwater, the Water Revenue Program:

- Develops and distributes water extraction statements to well owners within the two water extraction zones on a monthly, semi-annual, and annual basis.

- Audits incoming water extraction statements and completes field surveillance to ensure that water extraction information is accurate.
- Audits and invoices surface, treated and recycled water accounts.
- Assists the public in completing and filing water extraction statements.
- Maintains files for surface, ground, treated and recycled water accounts.
- Administers and maintains a database containing all water extraction information.
- Initiates and approves the installation of water measurement devices (meters) on water-producing wells.
- Registers (assigns state well numbers) and maps all water extraction wells.

Water extraction data is stored in an electronic database (Water Revenue Information System) and on paper. Program staff maintain accounts and records for more than 6,000 water extraction wells and approximately 27,000 monitoring wells. Staff provide information on these accounts to other District programs and outside customers, and provide other customer support as necessary.

Although approximately half of the wells within the County are not metered, metered wells extract the vast majority of groundwater used within the County. Where meters are not feasible, crop factors are used to determine agricultural water usage and average values adjusted for residences. Water meter testing and maintenance are performed on a regular basis. Maintenance is done to ensure meters are performing properly and accurately. When problems are discovered, meters are repaired or replaced. Meters are also replaced on a regular basis for testing and rebuilding.

The following table shows type of usage for wells in Zone W-2 (Santa Clara Valley Subbasin) and Zone W-5 (Coyote and Llagas Subbasins) and the number of meters recording usage.

Table 4-1
1998 Statistics on Extraction Wells

	North Zone (W-2)	**South Zone (W-5)**
Agricultural Wells	81	570
Municipal & Industrial Wells	1,875	350
Domestic Wells	567	2,569
Ag & M&I Wells	77	511
Total Number of Wells	2,600	4,000
Number of Metered Wells	1,017	395
Percentage of Metered Wells	40%	10%

In accordance with Section 26.5 of the District Act, the District prepares an annual Water Utility Enterprise Report, which contains the following information: present and future water requirements of the County; available water supply; future capital improvement, maintenance and operating requirements; financing methods; and the water charges by zone for agricultural and nonagricultural water. Recommended water rates are based on multi-year projections of capital and operating costs. Water charges can be used as a groundwater supply management tool, as the surcharge for treated water can be adjusted to encourage or discourage extraction from the groundwater basin.

Future Direction

Groundwater extraction monitoring data will continue to be important as a basis of groundwater management decisions and for groundwater revenue receipts. Program staff are currently evaluating the existing database and hope to convert the database into a relational database and link it to the newly developed Geographic Information System (GIS) based well mapping system. This will enable staff to evaluate groundwater use data geographically and to provide this data to groundwater management decision-makers in a meaningful and easy to use format.

LAND SUBSIDENCE MONITORING

Program Objective

The objective of the Land Subsidence Monitoring Program is to maintain a comprehensive system to measure existing land subsidence and to predict the potential for further subsidence.

Background

Land subsidence was first noticed in 1919 after an initial level survey conducted in 1912 by the National Geodetic Survey. At that time, 0.4 feet of subsidence was measured in downtown San Jose. Between 1912 and 1932, over 3 feet of subsidence were measured at the same location. As a result of this drastic increase in subsidence, an intensive leveling network was installed for periodic re-leveling to evaluate the magnitude and geographical extent of subsidence. From 1912 to 1970, cumulative subsidence measured at the same San Jose location totaled approximately 13 feet.

A cross-valley differential leveling survey circuit was run in the 1960s and continues to be conducted. The level circuit was conducted almost annually from 1960 through 1976, once in 1983, and annually from 1988 to the present.

In 1960, the United States Geologic Survey (USGS) installed extensometers, or compaction recorders, in the two 1,000-foot boreholes drilled in the centers of recorded subsidence sites in Sunnyvale and San Jose. The purpose for installing these wells was to measure the rate and magnitude of compaction that occurs between the land surface and the bottom of the well.

In the mid-1960s, imported water from San Francisco's Hetch-Hetchy reservoir and the State Water Project's South Bay Aqueduct played a major role in restoring groundwater

levels and curbing land subsidence. A combination of factors including imported water, natural recharge, decreased pumping and increased artificial recharge has reduced land subsidence to an average 0.01 feet per year.

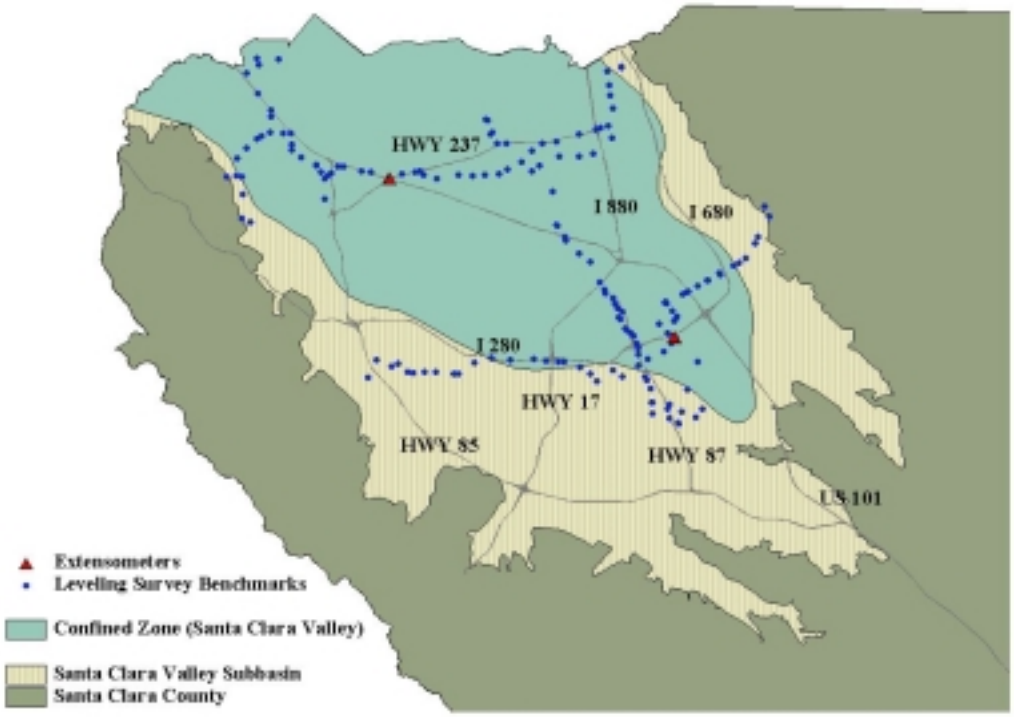
The District developed subsidence thresholds that relate the expected rate of land subsidence from various groundwater elevations. The Predictions Relating Effective Stress and Subsidence (PRESS) computer code was utilized for this model, and 10 index wells located throughout the Santa Clara Valley Subbasin were used as control points for the subsidence calibration and prediction.

Current Status

The existing land subsidence monitoring program includes the following:

- Monitoring land subsidence at two extensometer sites in San Jose and Sunnyvale (Figure 4-3).
- Conducting an annual leveling survey across three different directions in the valley to measure any land subsidence that may be occurring away from the extensometers (Figure 4-3).
- Analyzing data to evaluate the potential of re-initiating land subsidence.

Figure 4-3
Location of Extensometers and Leveling Survey Benchmarks



The extensometer in the San Jose site has recently been upgraded and equipped with monitoring and storage instrumentation to execute the data acquisition process electronically. Data collected from this site continues to be analyzed to determine any changes in the rate of land subsidence.

In 1998, the District entered into a cooperative agreement with the USGS to use Interferometric Synthetic Aperture Radar (InSAR) technology to measure any subsidence that may have not been captured in the existing monitoring program. This new technology compares satellite images taken at different times and reveals any changes in ground surface elevations with an accuracy of a few millimeters. INSAR covers the entire County, unlike traditional monitoring which is site-specific. Under the cooperative agreement, InSAR images were analyzed both seasonally and over a five-year period. Data from this study reasonably replicated and supported the data obtained from the District's extensometers.

The leveling survey continues to be conducted annually. A new leveling line was added to the leveling survey in 1998 as InSAR images indicated that additional information was needed along the Silver Creek Fault in San Jose.

Future Direction

Monitoring and data storage equipment have been installed at the San Jose extensometer site. Plans to enhance the land subsidence monitoring network program include the installation of new equipment to facilitate the monitoring and storage of data from the extensometer site in Sunnyvale, and the evaluation of datum stability at this site.

Through the 1998 study with the USGS, InSAR technology was proven able to reasonably replicate historical subsidence data from extensometers and the cross-valley leveling surveys. District staff will investigate the benefits of incorporating InSAR technology into the current land subsidence monitoring program.

The District will continue to utilize groundwater flow and subsidence models to simulate land subsidence as a result of different groundwater scenarios and groundwater management alternatives.

Chapter 5
GROUNDWATER QUALITY MANAGEMENT PROGRAMS

This chapter describes District programs that address nitrate management, saltwater intrusion, well construction and destruction, wellhead protection, leaking underground storage tanks, toxic cleanup, land use and land development review, and other groundwater protection issues. These programs help protect groundwater quality by identifying existing and potential groundwater quality problems, assessing the extent and severity of such problems, and preventing and mitigating groundwater contamination.

NITRATE MANAGEMENT

Program Objective

The objective of the Nitrate Management Program is to delineate, track and manage nitrate contamination in the groundwater basin in order to ensure the basin's viability as a long-term potable water supply. More specifically, the objectives are as follows:

- Reduce the public's exposure to high nitrate concentrations.
- Reduce further loading of nitrate.
- Monitor the occurrence of nitrate.

Background

The conversion of nitrogen to nitrate is a natural progression in the nitrogen cycle. In the form of nitrate, nitrogen is highly soluble and mobile. Due to its solubility and mobility, nitrate is one of the most widespread contaminants in groundwater. Unlike other compounds, nitrate is not filtered out by soil particles. It travels readily with rain and irrigation water into surface and groundwater supplies.

The amount of nitrate reaching the groundwater depends on the amount of water infiltrating the soil, the concentration of nitrate in the infiltrating water and soil, the soil type, the depth to groundwater, plant uptake rates, and other processes. Nitrate concentrations now observed in the groundwater basin might be a result of land use practices from several decades ago.

High concentrations of nitrate in drinking water supplies are a particular concern for infants. Nitrate concentrations above the federal and state maximum contaminant level (MCL) of 45 milligrams per liter (45 mg/L NO_3) have been linked to cases of methemoglobinemia ("Blue Baby Syndrome") in infants less than 6 months of age. In addition, public health agencies, including the California Department of Health Services, are conducting research to determine whether excess nitrate in food and drinking water might also have long term carcinogenic (tendency to cause cancer) or teratogenic (tendency to cause fetal malformations) effects on exposed populations.

Communities in the South County rely solely on groundwater for their drinking water supply. The District created the Nitrate Management Program in October 1991 to manage increasing nitrate concentrations in the Llagas Subbasin.

In June of 1992, an extensive study was initiated to review historical nitrate concentrations, identify potential sources, collect and analyze groundwater samples for nitrate, and develop a set of recommendations for the prevention and control of nitrate loading in South County. The results of the study, completed in February 1996, indicated that nitrate concentrations in the Llagas Subbasin are generally increasing over time and that elevated concentrations still exist throughout the subbasin.

In addition, the study found that there are many sources of nitrate loading in Llagas Subbasin. The major sources of nitrate are fertilizer applications, and animal and human waste generation. The southern portion of Santa Clara County has historically been an agricultural area. Only in recent years has agricultural acreage declined due to residential growth. However, due to the slow movement of surface water to the water table, residual nitrate concentrations in the soil from past practices may continue to contribute to increasing nitrate concentrations in the groundwater for several years or decades to come.

The specific recommendations of the study were the following: increase public education to reduce loading and exposure; blend water to reduce exposure; review and possibly revise the well standards; increase the level of regional wastewater treatment in order to reduce reliance on septic systems; increase point source regulation; conduct recharge feasibility studies; increase monitoring of the groundwater basin; and to consider alternative water supplies, treated surface water, water recycling and enhanced sewage treatment technologies for on-site systems.

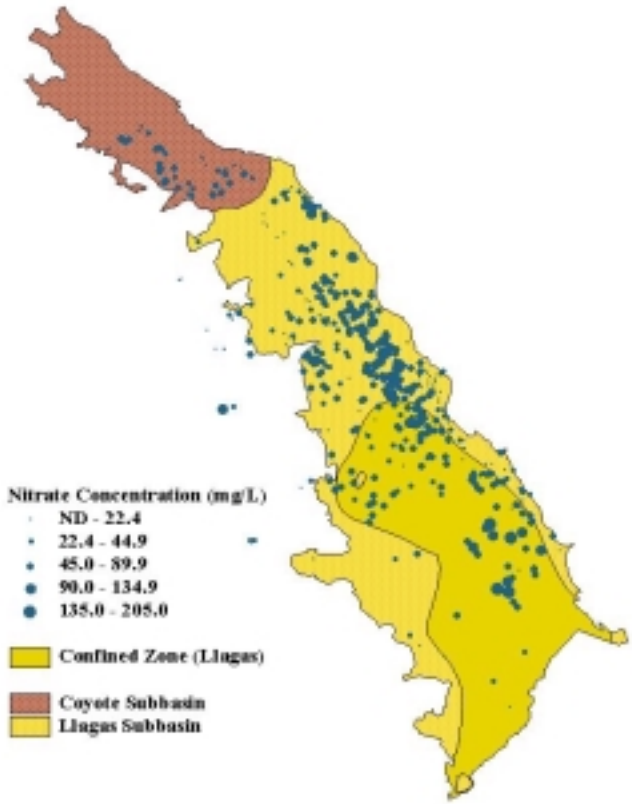
In 1997, the District began implementing the public education portion of the study recommendations. A large agricultural outreach effort was initiated. As part of that outreach, the District entered into a contract with a Mobile Irrigation Lab to offer free irrigation evaluations to farmers in order to improve the efficiency of their irrigation systems and scheduling. By improving the irrigation efficiency and distribution uniformity, the irrigators can reduce the amount of water and nitrate leached beyond the active root zone of the crop and into the groundwater. Over 250 people have attended seminars to increase their awareness of the mobile lab and to learn nitrate-sampling and nitrogen management techniques. Approximately 150 free soil nitrate test kits have been prepared and distributed. A series of 5 fact sheets on Nitrogen and Water Management in Agriculture was produced in cooperation with Monterey County Water Resources Agency and the Pajaro Valley Water Management Agency. English and Spanish versions have been distributed to the agricultural community through a series of seminars, mobile lab operators, other agricultural agencies and the on the District's new Agricultural web page.

To reduce exposure, reduce loading and monitor occurrence, a large-scale public outreach effort was launched offering a free nitrate analysis to all well water users in the Llagas and Coyote Subbasins. Approximately 2,500 residents were notified through

direct mailings about the program and the issues surrounding nitrate in drinking water. An unknown number were notified through newspaper, radio and television coverage. More than 600 private wells shown in Figure 5-1 have been tested for nitrate. Along with the results of the testing, residents were mailed a fact sheet describing what nitrate is, where it comes from, what the health effects are, how to prevent further loading and where to find more information.

Of the 600 private wells tested, more than half exceed the federal safe drinking water standard for nitrate. Of those that exceed the standard, half of the residents use an alternate water source or point-of-use treatment for their drinking water. The data also indicated that nitrate concentrations in the Llagas Subbasin continue to increase, that nitrate concentrations in the Coyote Subbasin have remained steady, and that high concentrations of nitrate are sporadically located throughout both subbasins. A report on the findings was produced in December 1998 and was distributed to several local and state agencies. These elevated nitrate levels were detected only in private wells; it should be noted again that public water supply wells within the County meet drinking water standards.

Figure 5-1
South County Nitrate Concentration

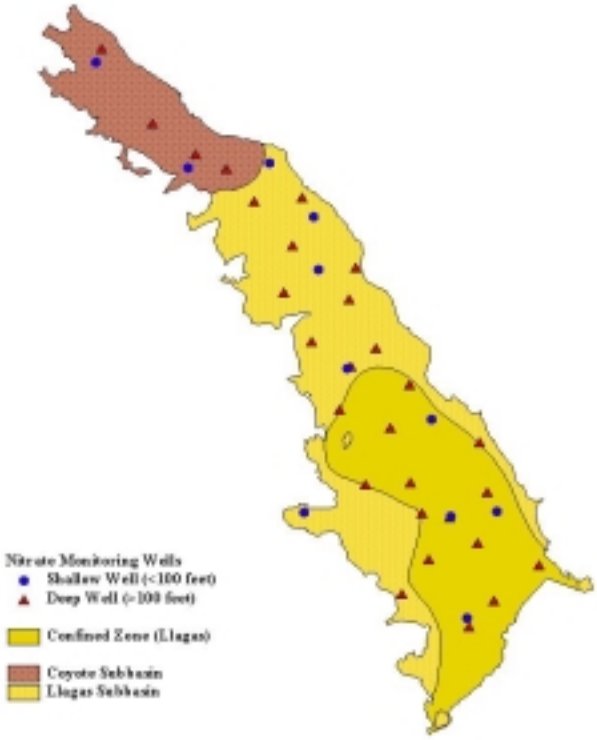


Current Status

To reduce nitrate loading, the District continues to schedule mobile lab evaluations and agricultural seminars. These seminars focus on how to apply irrigation water more efficiently and how to conduct soil testing for nitrate. In addition, the District is a cooperator on a grant with a soil scientist to establish field trials demonstrating and evaluating the effectiveness of in-field nitrate testing in drip and sprinkler irrigated vegetables.

To monitor nitrate occurrence, the District is conducting a comprehensive monitoring effort to track seasonal, areal, vertical and long-term trends in nitrate concentrations. The current monitoring program shown in Figure 5-2 consists of 42 deep groundwater wells (greater than 100 feet deep) and 15 shallow monitoring wells (less than 100 feet deep).The shallow monitoring wells will allow us to track what we might expect to see in the deeper wells in the future. Network wells are being monitored on a quarterly basis to track seasonal variations.

Figure 5-2
Current South County Nitrate Monitoring Network



To reduce nitrate exposure, the District is working with the Santa Clara County Department of Environmental Health to produce a well owner's guide. Among other things, the guide will contain information on recommended sampling, testing and disinfecting practices, as well as measures to protect against contamination.

Future Direction

Continued public education and outreach will remain the focus of the nitrate management program to reduce further loading and prevent possible exposure. If nitrate concentrations continue to increase at all depths, more extensive action may be required. The District may need to investigate alternate water supplies for the many private well water users in the area. Alternate water supplies could include a water treatment plant to remove the nitrate from the existing groundwater supply or the treatment of water from the San Felipe pipeline.

More research is needed to determine how much nitrate is contributed through the various manure management practices currently used. Best Management Practices (BMPs) for manure management need to be determined, and they need to be communicated to the public in a manner that will encourage adoption. More research is also needed regarding reduction of nitrate loading from septic systems; specifically, regarding whether the benefit of removing or reducing septic system loading justifies the economic and political cost of increasing sewer line connections.

To achieve the objective of monitoring nitrate occurrence, the District will continue to sample the existing monitoring network in the Llagas and Coyote Subbasins on a quarterly basis. Two years of quarterly data has been collected so far and staff are in the process of analyzing the data for seasonal, areal, and long-term trends. Staff is beginning a thorough evaluation of the extent and severity of nitrate contamination in the Santa Clara Subbasin, based on water quality data from the District's groundwater monitoring program and the water retailers.

The District may also investigate the feasibility of remediating nitrate contamination. There is some indication that nitrate concentrations around recharge facilities are lower than elsewhere. This finding would need to be confirmed as part of an investigation into reducing nitrate concentrations by additional recharge. Similarly, the District may be able to remediate nitrate contamination by setting up several pump and treat operations. High nitrate water would be pumped out of the basin, treated and injected back into the basin. Phytoremediation, which uses deep-rooted plants to draw the nitrate out of the vadose zone before it can reach groundwater, may be employed in some areas. A fourth possibility is reactive zone remediation where a reagent is injected into the system to intercept and immobilize or degrade the nitrate into a harmless end product. A thorough investigation of any remediation technology would need to occur before prior to its adoption.

SALTWATER INTRUSION PREVENTION

Program Objective

The objective of the Saltwater Intrusion Prevention Program is to monitor and to protect the groundwater basin from seawater intrusion.

Background

The movement of saline water into a freshwater aquifer constitutes saltwater intrusion. This potential exists in groundwater basins adjacent to the sea or other bodies of saline water. Intrusion of saltwater into a freshwater aquifer degrades the water for most beneficial uses and, when severe, can render it virtually unusable. Salty water can corrode holes in well casings and travel vertically to other aquifers not previously impacted. Once freshwater aquifers are rendered useless by a severe case of saltwater contamination or intrusion, it is extremely difficult and costly to reclaim them.

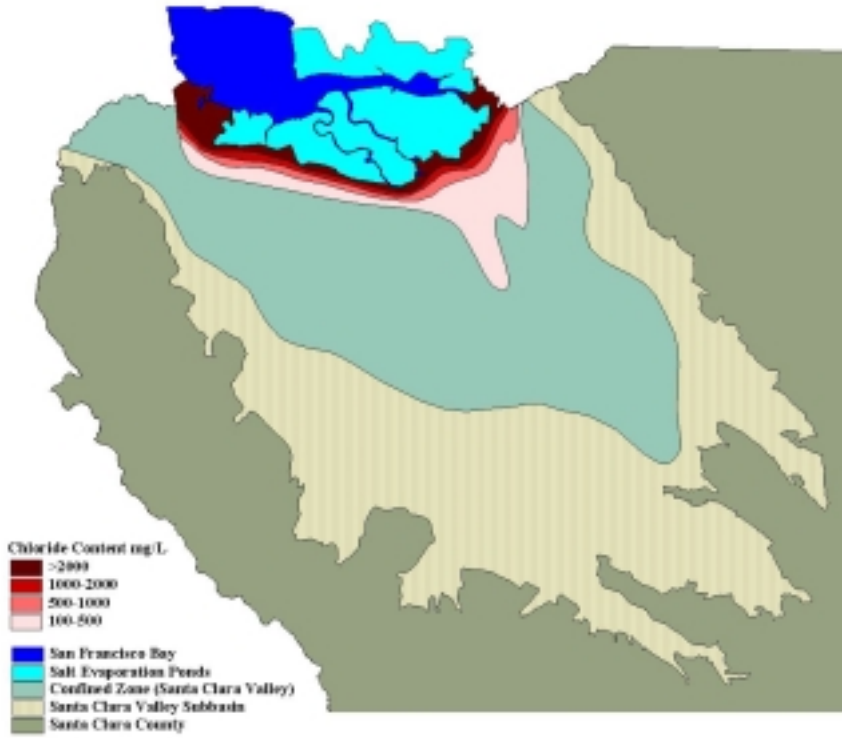
Comparison of older mineral analyses of groundwater from wells in the San Francisco bayfront area in Santa Clara and Alameda counties, some dating back to 1907, with more recent data shows that saltwater intrusion has occurred in the upper aquifer. With much higher water demands after World War II and the occurrence of land subsidence, saltwater intrusion conditions became aggravated and encompassed a portion of the baylands (the area adjacent to the southern San Francisco Bay). Bayshore Freeway (U.S. Route 101) and the Nimitz Freeway (Interstate 880) delineate the southern limits of this area.

The alluvial fill deposits of the Santa Clara Valley Subbasin in the flat baylands area consist of thin aquifers amongst abundant clays. The aquifers are broadly grouped into two water-bearing zones referred to as the “upper aquifer zone,” which usually occurs at depths less than 100 feet, and the “lower aquifer zone,” which usually occurs at depths greater than 150 to 250 feet, and which constitutes the potable aquifer system. Previous studies indicate the upper aquifer zone fringing San Francisco Bay is widely intruded by saltwater. The lower aquifer zone has pockets of small areas of elevated salinity associated with migration through abandoned wells.

Within the upper aquifer zone, the “classical case” of intrusion which occurs by displacement of freshwater by seawater and is indicated by total dissolved salt content over 5,000 mg/L, has progressed only a short distance inland from the bayfront, estuaries or salt evaporator ponds as shown in Figure 5-3. This intrusion had been induced when pumping of the upper aquifer and land subsidence reversed the hydraulic gradients, which had originally been toward the Bay. A large mixed transition zone precedes this intruding front with its outer limit arbitrarily defined by the 100 mg/L chloride line.

The greatest inland intrusion of the mixed transition water occurs along Guadalupe River and Coyote Creek. The large mixed transition zone is caused by saltwater moving upstream during the high tides and leaking through the clay cap into the upper aquifer zone when this zone is pumped. Land surface subsidence has aggravated the condition of intrusion by allowing farther inland incursion of saltwater up the stream channels from the Bay and by changing the gradient directions.

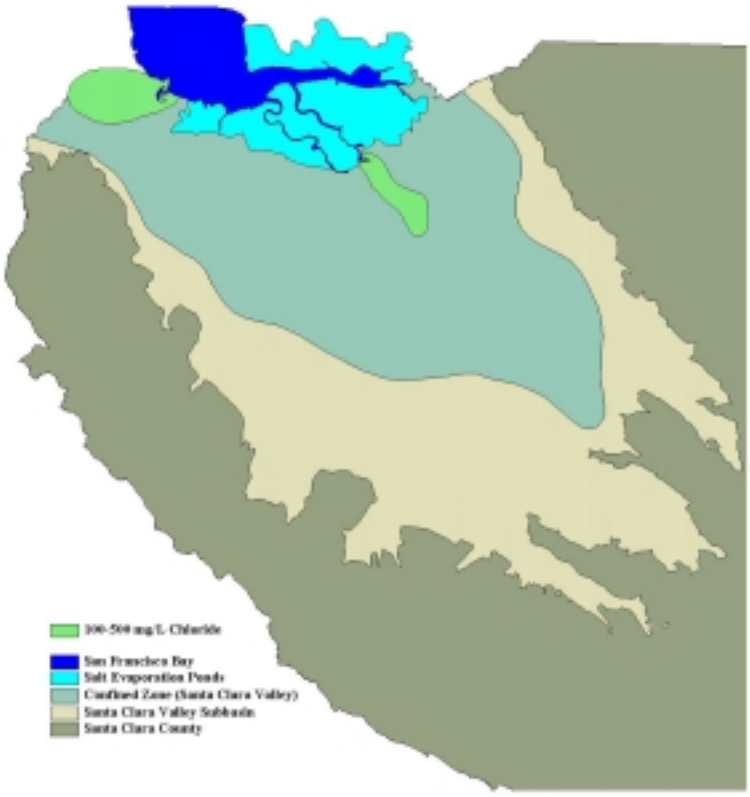
Figure 5-3
Upper Zone Saltwater Intrusion



Data has revealed a local area of high salt concentration in the upper aquifer zone in the Palo Alto bayfront area. This locally concentrated groundwater has moved inland historically and has the potential to continue farther inland. It is in this area that the District constructed a 2-mile-long hydraulic barrier in order to prevent further intrusion and to reclaim portions of the intruded aquifers.

The lower aquifer zone is only mildly affected; the area of elevated salinity encompasses a much smaller area than that of the upper aquifer zone (Figure 5-4). The contaminated lower aquifers lie beneath the intruded portion of the upper aquifer zone. The areal distribution and the variable concentration of the saltwater contamination with time imply that the intrusion into the lower aquifer occurred as seasonal slugs of contaminated water were induced from either the surface or the upper aquifer. As the clay aquitard between the upper and lower aquifer zones is essentially impermeable, the salinity in the lower aquifer zone is thought to have occurred through improperly constructed, maintained or abandoned wells. As a result of this finding, the operation of the hydraulic barrier was discontinued.

Figure 5-4
Lower Zone Saltwater Intrusion



The resumption of land surface subsidence is the greatest potential threat to aggravating the intrusion condition, as it would further depress the land surface fronting South San Francisco Bay. This would increase the inland hydraulic gradient relative to the classical intrusion front and expose a larger area of the upper aquifer zone to intrusion as a consequence of the greater inland incursion of tidal waters. A lowering of the piezometric level in the lower aquifers, which is related to the cause of subsidence, will also increase the potential for intrusion into the lower zone.

Current Status

As part of the Saltwater Intrusion Prevention Program, the defective wells in the northern Santa Clara Valley Subbasin along San Francisco Bay were to be located and destroyed. The District conducted an extensive program of locating and properly destroying these contaminant conduit wells. After these defective wells were located, the owners were required to properly destroy them under District ordinance, or by litigation if necessary. From District records, a list of 45 defective wells to be destroyed was generated.

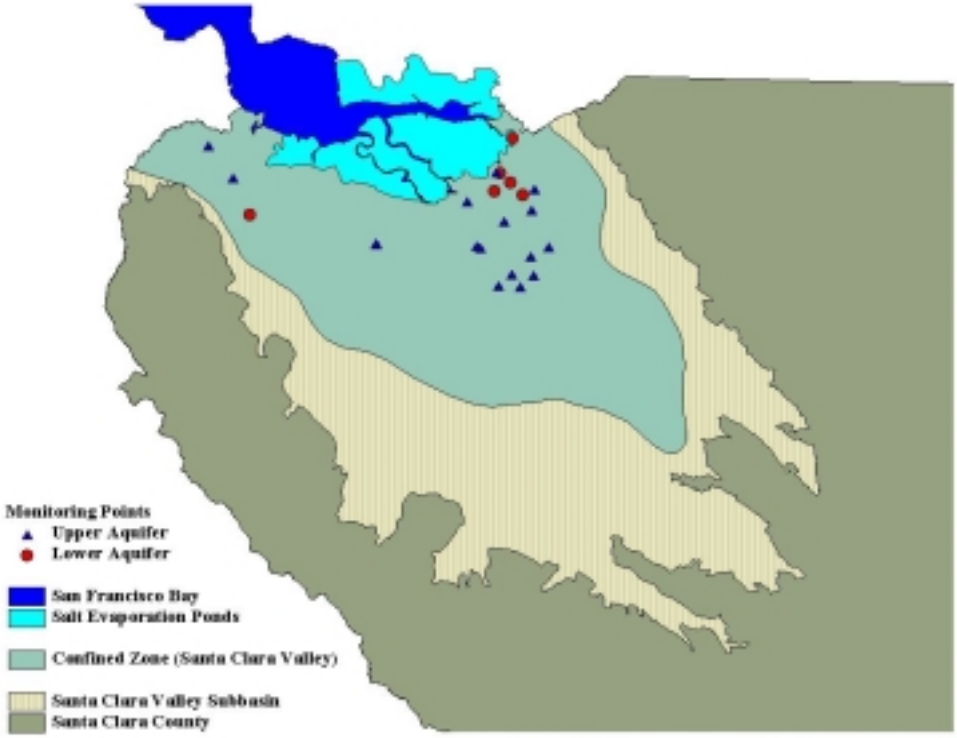
Since the inception of this program, the Board has authorized a more comprehensive well destruction program, through which abandoned wells near areas of known chemical contamination can be destroyed with District funds. This program began in October 1984, and was in part a result of general concerns about contamination of useable aquifers by saltwater as well as by industrial chemicals throughout the County. Several

wells in the area were included in this parallel program, many of which were not identified as defective or potential conduit wells.

Of the 45 potential conduit wells, six were removed from the list as they do not appear to be acting as conduits. In 1985, the District's Groundwater Protection Section pursued destroying the remaining 39 wells through District Ordinance No. 85-1. This ordinance gives the District authority to require owners of wells determined to be "public nuisances" to destroy the wells or to upgrade them to active or inactive status. Of the 39 potential conduit wells identified, 10 were not located and were presumed destroyed without a permit. The remaining wells were all properly destroyed.

The District continues to monitor the extent and severity of saltwater intrusion. The current Saltwater Intrusion Monitoring Program consists of 21 monitoring wells that are sampled quarterly as shown in Figure 5-5. Five of these wells monitor the status of saltwater intrusion in the lower aquifer zone, while the remaining 16 wells monitor the upper aquifer zone. Originally, the program consisted of 25 wells. Eight of these wells could not be located during recent field investigations and presumably were destroyed by the owners. However, work is commencing to replace the lost wells with District-owned wells and restore the monitoring program to its original form.

Figure 5-5
Saltwater Intrusion Monitoring Locations



Future Direction

The present status of the Saltwater Intrusion Prevention Program is subject to change, depending upon the future basin operation and groundwater demand in the area. The two economically practical ways to prevent or minimize any further intrusion are through management of the groundwater basin and strict enforcement of ordinances on well construction and destruction standards. These approaches have been adopted by the District and should continue to be implemented.

Saltwater intrusion continues to be monitored. Monitoring data are stored by electronic and conventional means. Electronic storage consists of a geographically referenced database of monitoring wells and a related database of water quality information. Conventional storage consists of filing hard copies of laboratory analytical reports in the appropriate well folders and providing data to DWR. Biennial evaluations of the data are documented in the General Groundwater Quality Monitoring Program reports. The monitoring program, including well location and sampling frequency, will be evaluated with respect to long-term groundwater quality protection strategies and overall basin management.

WELL CONSTRUCTION/DESTRUCTION PROGRAMS

Well Ordinance

Program Objective

The objective of the Well Ordinance Program is to protect the County's groundwater resources by ensuring that wells and other deep excavations are constructed, maintained and destroyed such that they will not cause groundwater contamination. To meet this goal, the Well Ordinance Program:

- Develops standards for the proper construction, maintenance, and destruction of wells and other deep excavations.
- Educates the public, including contractors, consultants and other government agencies about the Well Ordinance and the Well Standards.
- Verifies that wells are properly constructed, maintained and destroyed using a permitting and inspection mechanism.
- Takes enforcement action against violators of the well ordinance.
- Maintains a database and well mapping system to document information about well construction and destruction details, a well's location, and well permit and well violation status.

The scope of the Well Ordinance Program includes all activities relating to the construction, modification, maintenance, or destruction of wells and other deep excavations in the County.

Background

In the late 1960s, following post-war industrialization and development of Santa Clara County, it became apparent that abandoned or improperly constructed wells and other deep excavations (e.g. elevator shaft pits) are potential conduits through which contaminants can travel from shallow, potentially contaminated aquifers, to deeper drinking water aquifers. Recognizing this, in 1971, a District advisory committee consisting of representatives from local agencies, the District, and the Association of Drilling Contractors, was established.

The committee was charged with the development of well construction standards and standards for the proper destruction of abandoned wells. The Board adopted standards for well destruction and construction in October 1972 and January 1975, respectively. In 1975, the District Board of Directors passed the first District Well Ordinance.

Both the Standards and the Well Ordinance have undergone numerous revisions. The most recent version of the well standards, the *Standards for the Construction and Destruction of Wells and Other Deep Excavations in Santa Clara County*, was adopted by the Board in July 1989. The Board passed district Well Ordinance 90-1 in April 1990. These documents address the permitting and proper construction and destruction of wells and other deep excavations, including water supply wells, monitoring wells, remedial extraction wells, vadose wells, cathodic protection wells, injection wells, storm water infiltration wells and elevator shaft pits.

Beginning in 1975, well construction and destruction permits were required by the District and the District began inspecting every well that was constructed. Well destruction activities were first inspected by the District in 1984.

Since the inception of well permitting, the annual number of permits issued has greatly increased. The District issued approximately 400 well permits in 1976, the first full year of permitting, to a maximum of approximately 2,544 permits in 1994.

The District is in compliance with Sections 13803 and 13804 of the State Water Code and thereby has the authority to assume the lead role in the enforcement of the State Well Standards, the assignment of State Well Numbers, and the collection of State Drillers Reports for all wells constructed or destroyed in Santa Clara County.

Current Status

To date, the District has permitted and inspected the construction of approximately 3,000 water supply wells, 22,000 monitoring wells, 4,000 exploratory borings, and the destruction of 9,500 wells under the Well Ordinance Program.

The District has recently completed converting the paper-based well maps to a GIS based well mapping system.

Future Direction
In order to continue protecting the District's groundwater resource, the District will continue implementation of the program and will continue to regulate the construction and destruction of wells in the County. District staff will re-write District's well standards and ordinance to address recent changes in well construction and destruction techniques. District staff is also currently evaluating District's existing well information database and would like to convert the database into a relational database format and link it to the newly developed GIS based Well Mapping System.

Dry Well Program

Program Objective
The objective of the Dry Well Program is to minimize the impacts of dry wells on groundwater quality. The main objectives of this program are to:

- Control installation of new dry wells.
- Destroy existing dry wells that have contaminated or may contaminate groundwater.
- Educate planning agencies and the public about the threat that dry wells pose to groundwater quality.

Background
Dry wells, also known as storm water infiltration devices, are designed to direct storm water runoff into the ground. Storm water runoff can carry pollution from surface activities. Because dry wells introduce runoff directly into the ground, they circumvent the natural processes of pollution breakdown and thereby increase the chance of groundwater contamination. Additionally, dry wells have been sites of illegal dumping of pollutants.

In Santa Clara County, at least 8 serious contamination sites were caused or aggravated by the presence of dry wells introducing contamination into the groundwater. One dry well site has a solvent plume more than 2,000 feet long and more than 200 feet deep in a recharge area of South County where the only source of drinking water is groundwater.

In 1974, the Environmental Protection Agency (EPA) developed the Underground Injection Control Program under the Safe Drinking Water Act. The program requires the owners and operators of all shallow drainage wells to submit information regarding the status of each well to the EPA. The Regional Board adopted the "Shallow Drainage Wells" amendment to the Basin Plan in 1992. The Basin Plan amendment requires the local agency to develop a shallow drainage well control program that would locate existing shallow wells and establish a permitting program for existing and new wells.

In 1991, the District and municipal agencies began development of a Storm Water Infiltration Policy to satisfy Regional Board requirements. In August 1993, the District adopted Resolution 93-59 regarding Storm Water Infiltration Devices.

Current Status
Since 1993, owners of dry wells deeper than 10 feet have been required to register their wells by filing a "Notice to Continue Use" with the District. Dry well owners can continue using their wells as long as the well is not an immediate threat to groundwater quality. Local cities, businesses, contractors and private citizens regularly call for District guidance on dry wells.

The District continues to issue permits for dry wells greater than 10 feet deep and for the destruction of dry wells. District staff advise the public and planning agencies about the appropriate use of dry wells to mediate storm water problems generally and on a case-by-case basis. District staff continue to work with local programs to clarify the District dry well policy. Local inspecting agencies continue to work with the District to locate and register dry wells.

Future Direction
The Dry Well Program is being incorporated into the Well Ordinance Program. Specific standards for dry wells will be incorporated into the next revision to the Well Standards. These standards include prohibiting the construction of dry wells greater than 10 feet deep and defining dry wells to include all shallow drainage wells, not just shallow drainage wells receiving storm water. The purpose of revising the program to incorporate it into the Well Ordinance Program is to clarify permitting and construction standards for dry wells, to expand the definition of devices covered by the Well Standards so that all wells that bypass natural protection processes are subject to standards for protecting groundwater, and to simplify the process by which dry wells are permitted.

Abandoned Water Well Destruction Assistance

Program Objective
The objective of the Abandoned Well Destruction Assistance Program is to protect the County's groundwater resources by helping property owners properly destroy old, abandoned water supply wells that they have discovered.

To meet the program's objective, the District:

- Passed a Board Resolution (94-87) allowing District assistance to property owners who discover abandoned wells.

- Enters into annual contracts with well drillers to complete work associated with the project.

- Destroys abandoned wells for property owners.

Background
Due to the agricultural history of the County and to subsequent post-World War II development, many former water supply wells were abandoned and buried and remain

potential vertical conduits that may transport contaminants into the District's deep, water supply aquifers.

Some estimates indicate that there may be as many as 10,000 abandoned water supply wells within the boundaries of the Santa Clara Subbasin. Since there are no official records for these wells, the District has no knowledge of their existence or their locations.

In the mid-1980s, the District took a proactive stance on active and abandoned water supply wells found within known contamination plumes. At that time, with assistance from the Regional Board, the District actively searched for and destroyed known active wells and abandoned wells.

However, when abandoned water wells were discovered in areas not threatened by known groundwater contamination, they were not included in the District's well destruction efforts, but instead were treated as well violations under the Well Ordinance Program. As well violations, the District proceeded with enforcement action to force the property owner to properly destroy the well.

Unfortunately, this enforcement action often took months to complete. Property owners often didn't have the $3,000 to $15,000 dollars needed to destroy the well and had to secure loans to complete the destruction. Many property owners had negative feelings about the District after the enforcement action, especially considering that most property owners had no previous knowledge of the well and when they had discovered the well, they had been the first to inform the District of its existence.

District staff believed that while a well was found on an owner's property (and according to the Well Ordinance, that the property owner is responsible for destroying it), the owner wasn't actually responsible for the well's current status (abandoned and buried) and because the destruction of the well was in the best interest of the District, that the District should destroy it.

Therefore, in 1994, the District initiated the Abandoned Well Destruction Assistance Program to aid property owners who happen to discover an abandoned water supply well on their property. Under the Abandoned Well Destruction Program, the District destroys abandoned water wells if: 1) the property owner had no previous knowledge of the well, 2) the well was not registered with the District, 3) the well has no surface features that would have obviously indicated its presence, and, 4) the property owner enters into a Right of Entry Agreement with the District.

Current Status

Since the program's inception in 1994, the District has destroyed 108 abandoned wells under the Abandoned Well Destruction Program. Most of these wells were first discovered and reported to the District because they were flowing under artesian pressure.

Future Direction
Staff will continue to implement the program. Annually, staff receives reports of approximately 20 wells that meet program criteria and staff expect that this trend to continue.

WELLHEAD PROTECTION

Program Objective
The Wellhead Protection Program (WHP) represents the groundwater portion of the District's Source Water Assessment Program. The objective of the Wellhead Protection Program is to identify areas of the groundwater basin that are particularly vulnerable to contamination. The District uses this knowledge to focus groundwater protection, monitoring, and cleanup efforts.

Background
Groundwater vulnerability is based on groundwater sensitivity to contamination and the presence of potentially contaminating activities. Groundwater sensitivity is evaluated based on hydrogeology and groundwater use patterns. Areas with shallow groundwater, high recharge, high conductivity aquifers, permeable soils and subsurface materials, mild slopes, and high groundwater pumping rates are most sensitive to contamination. The District compiles data on hydrogeologic conditions, pumping patterns, and contamination sources, and uses GIS technology to identify areas of the groundwater basin that are particularly vulnerable to contamination.

The District first began compiling groundwater protection data in the late 1980's. In 1989, the District, in collaboration with the U.S. Environmental Protection Agency (EPA), conducted a pilot project in the Campbell area to evaluate the usefulness of GIS for groundwater protection. Data on roads, city boundaries, hazardous material storage sites, groundwater recharge facilities, wells and hydrogeology were collected and used to create GIS coverages for the Campbell study area. The project team used GIS to evaluate groundwater sensitivity and draw areas to be protected around production wells. The study concluded that GIS is a feasible tool to use for WHP programs.

After the Campbell pilot study, the District expanded its groundwater protection data collection effort to encompass the entire County. Staff developed Countywide GIS coverages of active wells, abandoned and destroyed wells, geology, soil types, depth to groundwater, leaking underground storage tank sites, and petroleum storage facilities. This data, along with water quality data, is used to identify and evaluate threats to groundwater quality.

Current Status
The District created a groundwater sensitivity map to evaluate land use development proposals and make recommendations for appropriate groundwater protection strategies. In 1996, the District built upon the pilot GIS project to assess groundwater sensitivity throughout the groundwater basin using EPA's DRASTIC method. DRASTIC stands for

depth to water table, net recharge, aquifer media, soil media, topography, impact of the vadose zone, and hydraulic conductivity of the aquifer. The DRASTIC method is a quantitative evaluation of these hydrogeologic factors to assess relative groundwater sensitivity. The results of this effort were several GIS coverages and a groundwater sensitivity map (Figure 5-6), which the District uses to review land development proposals. In sensitive groundwater areas, the District requests that planning agencies require, and that property owners implement, best management practices and other protection activities beyond those required by minimum standards.

Figure 5-6
Groundwater Sensitivity Map

Staff uses information on land use and the location of contaminated sites to help identify and evaluate the sources of contamination that are detected in wells. Although groundwater quality is generally good throughout the basin, contamination is occasionally detected in individual wells. By quickly locating contamination sources, we can work with the regulatory agencies to ensure prompt and adequate cleanup.

The District also uses information on well construction, well location, well pumping, leaking Underground Storage Tank (UST) site locations and conditions, land use, and hydrogeology to prioritize leaking UST sites and identify vulnerable water supply wells. Sites that pose the greatest threat to groundwater supplies are the first to receive detailed regulatory oversight. Staff also uses this information to select wells for groundwater monitoring and special studies.

District staff is working with local water retailers on the state's Drinking Water Source Assessment and Protection (DWSAP) Program. The state's DWSAP Program is required by the 1996 reauthorization of the federal Safe Drinking Water Act. California has until May 2003 to assess all of its drinking water sources for vulnerability to contamination. The District developed a GIS-based wellhead assessment and protection area delineation tool, which delineates protection areas according to state guidelines. Once the vulnerability assessments are completed in Santa Clara County, the District will work with the water retailers to ensure that the greatest threats to their drinking water supply wells are being addressed.

Future Direction

District staff continues to create GIS coverages that help assess groundwater vulnerability. Some coverages that are in development include solvent contamination sites and plumes, dry cleaners, hazardous materials storage facilities, septic system locations, and sewer lines. The District has found great utility in these GIS coverages, and is beginning to work with other agencies and organizations to determine how we can share GIS information and increase its use for groundwater protection. We will continue to use this information to identify areas vulnerable to groundwater contamination, and focus our monitoring, protection, and cleanup efforts.

LEAKING UNDERGROUND STORAGE TANK OVERSIGHT

Program Objective

The objective of the Leaking Underground Storage Tank Oversight Program (LUSTOP) is to protect the groundwater basin from water quality degradation as a result of releases of contaminants from underground storage tanks. The District provides regulatory oversight of the investigation and cleanup of fuel releases from USTs for most of Santa Clara County.

Background

In 1983, the State Legislature enacted the UST Law [Chapter 6.7 of the Health and Safety Code] authorizing local agencies to regulate the design, construction, monitoring, repair, leak reporting and response, and closure of USTs. In the early 1980s, several drinking water wells in the County were shut down as a result of contamination by chlorinated solvents. In 1986, the Board decided to implement a leaking UST oversight program for petroleum fuels in coordination with the San Francisco Bay Regional Water Quality Control Board (RWQCB). The District Board recognized that releases from USTs affect groundwater quality and that effective protection of the County's groundwater basin demanded a proactive approach. They committed financial and technical resources in-house to quickly initiate the program.

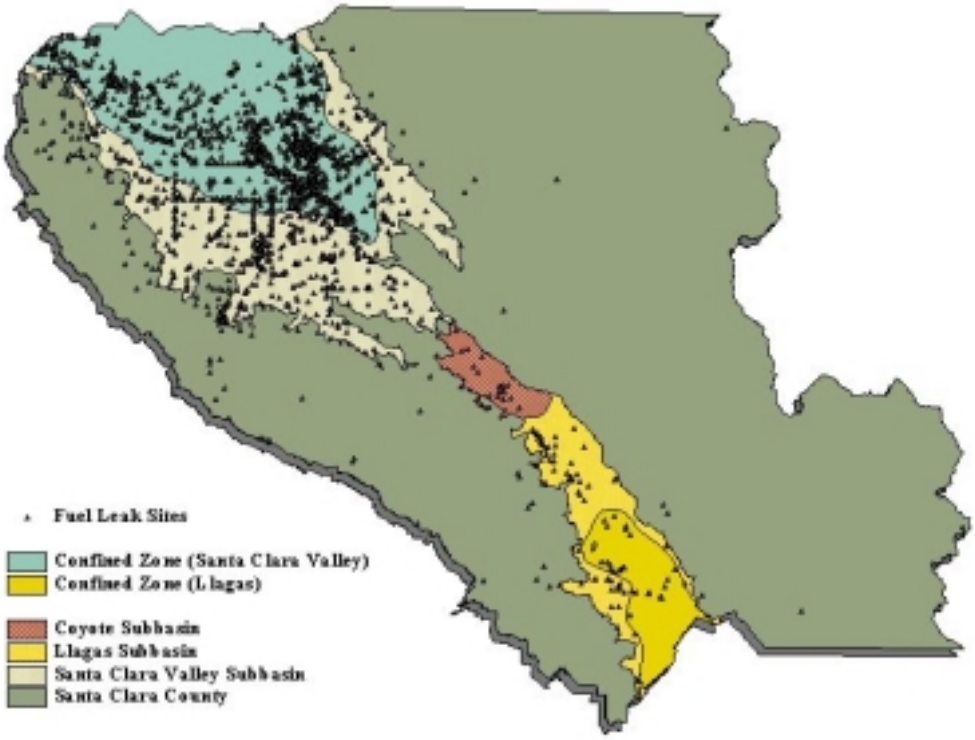
In 1987, the District entered into an informal agreement with the San Francisco RWQCB to create a pilot oversight program. At that time more than 1,000 fuel leaks had been reported within the County. The District developed an in-house technical group of employees capable of providing regulatory oversight of the investigation and cleanup of

releases from USTs. In 1988, the District and the County of Santa Clara entered into a contract with the State Water Resources Control Board to implement one of the State's first Local Oversight Programs. This allowed the District to get reimbursed by state and federal funds for costs associated with operation of the program.

The State Water Resources Control Board (SWRCB) amends its Local Oversight Program contract with the District and the County annually. Over the years, many changes have occurred in the UST regulatory process as new laws were passed, scientific knowledge improved, and new investigation and cleanup strategies became available. The District's program actively participates in ensuring that new laws and regulations continue to protect groundwater quality into the future. The District has been at the forefront of several initiatives for improving the effectiveness and efficiency of our regulatory oversight efforts and the cost-effectiveness of corrective action while protecting human health, safety, the environment and water resources.

Every leaking petroleum UST case is currently assigned to a District caseworker who provides technical and regulatory guidance to responsible parties and their consultants (Figure 5-7).

Figure 5-7
Fuel Leak Cases in Santa Clara County



The District only provides regulatory oversight on investigation and cleanup at UST sites where a release has occurred. Tank removals, leak prevention, and UST release detection activities are overseen by one of 10 other agencies, usually the local fire department. Each agency has jurisdiction over a designated geographical area in the County. If there is evidence of a leak or if contamination is detected, an agency inspector or UST owner/operator notifies the District and/or the Regional Board. The District reviews the data to confirm the release, lists the site on the Leaking Underground Storage Tank Oversight Program database, and notifies the responsible party and the SWRCB. The District then determines if the unauthorized release poses a threat to human health and safety, the environment, or water resources and, if necessary, a caseworker requests additional investigation and cleanup.

To get case closure for the release, the responsible party must provide evidence that the release does not pose a significant threat to human health and safety, the environment or water resources; or, that the release has been adequately investigated and cleaned up. Fuel leak investigation and cleanup is closely monitored by a caseworker, and the case is promptly closed when the unauthorized release no longer poses a threat to human health, safety, the environment or water resources.

Current Status

As of January 2000, a total of 2,315 fuel leak cases have been reported in the County, the majority of which have affected groundwater. Approximately 1,650 (71 percent) of reported leak cases have been closed. About 575 cases are currently within the District's UST program, while about 75 cases receive Regional Board oversight. As a local oversight program, the District has made significant progress in closing low-risk sites and sites that have performed appropriate corrective action to reduce contamination to below levels of regulatory concern.

The presence of Methyl tert-Butyl Ether (MTBE) in gasoline has precipitated additional changes in the UST regulatory process and the manner in which sites are investigated and cleaned up. Since 1995, MTBE and other oxygenates have emerged as significant contaminants at fuel leak sites within the County, causing increased concern for the protection of groundwater resources. MTBE has been blended into gasoline in high percentages (up to 15 percent by volume) beginning in the winter of 1992 with the intent to significantly improve air quality. However, MTBE is a recalcitrant chemical in groundwater, as it does not undergo significant breakdown (bio-degradation) in groundwater. As a result, MTBE contamination can migrate considerable distances in groundwater and may impact wells miles downgradient. MTBE has been detected at more than 375 current fuel leak cases in the County, with concentrations at these sites ranging from 5 parts per billion to more than 1 million parts per billion. The District has taken a progressive and vigilant approach to protecting groundwater resources from MTBE contamination through the use of GIS to manage and analyze both UST site and regional information and in demanding a more intense and detailed level of work be performed at MTBE release sites.

The District is also very concerned regarding the increasing occurrence of MTBE at operating gasoline stations, which poses a significant threat to municipal drinking water wells within the County. In response to this threat, the District completed two studies of operating gasoline stations that were in compliance with the 1998 UST upgrade requirements. The first study, completed by Levine-Fricke in 1999, involved soil and groundwater sampling at 28 facilities to determine if releases were occurring from upgraded UST systems. MTBE was detected in groundwater at 13 of the 27 sites where groundwater was encountered. The second study, completed in 2000 (SCVWD, 2000), was a case study of 16 sites with operating USTs and high levels of MTBE in groundwater to evaluate whether undetected releases are occurring and to assess weaknesses in fuel storage, management, and delivery operation. Of the 16 sites studied, undetected releases were suspected at 13 sites.

Despite the fact that gasoline stations have been upgraded to meet stringent requirements, it is clear that faulty installations, poor maintenance and poor facility operation practices are resulting in leaks, and that improvements in the management of USTs are needed to prevent widespread contamination of groundwater.

Future Direction

The District continues to provide technical guidance and regulatory oversight to cases using improved scientific knowledge and latest investigation and cleanup strategies. The District will continue to work closely with local universities, research organizations, the water community, major oil companies, local, state and federal agencies, and the state and federal legislature to ensure that problems in the UST program are identified and that prompt effective solutions are implemented to protect groundwater quality.

An effective UST leak prevention and monitoring program is essential. There are several studies underway regarding the effectiveness of leak prevention and monitoring systems at sites. The District will continue to monitor all developments in this area and propose ongoing studies and/or regulatory changes. To ensure water resources are protected, the District actively participates in the legislative process to ensure that recalcitrant chemicals like MTBE that can cause significant groundwater degradation are not used in fuels.

One of the biggest concerns for the District regarding MTBE is the significance of both short-term and long-term threats to groundwater quality. The District is committing additional resources to gain a more extensive understanding of the groundwater basin, groundwater flow patterns, and groundwater pumping trends. This improved understanding allows for better decisions regarding: the level of oversight necessary at sites; how much investigation is required to properly understand the nature and extent of contamination at sites; the level of cleanup necessary to protect groundwater resources; and the effectiveness of the program in preventing significant short-term and long-term water quality degradation.

The District will continue responding to the public regarding USTs and groundwater contamination and will ensure that files and information are available for public review.

District staff plan to have all fuel leak files scanned and electronically accessible over the Internet in the near future. Program guidance, site information, and news of the latest developments in the program are available on the District's web site.

TOXICS CLEANUP

Program Objective

The objective of the Toxics Cleanup Program is to ensure the protection of the groundwater basins from water quality degradation as a result of toxics and solvent contamination and spills of other non-fuel chemicals. The District performs peer review of these cases and makes water use and geologic information available to the public and environmental consultants. District staff also provide expert technical assistance to the regulatory agencies (County of Santa Clara, San Francisco and Central Coast Regional Boards, Department of Toxics Substances Control, and the Federal Environmental Protection Agency) responsible for the oversight of investigation and cleanup at non-fuel contaminated sites within Santa Clara County.

Background

Since the late 1970s, the District has provided expert technical and hydrogeologic assistance to agencies having the legal responsibility for the protection of the water resources serving the needs of Santa Clara County. The discovery of groundwater contamination at Fairchild Semiconductor in 1981 resulted in heightening the awareness for the protection of groundwater quality and the need for the District to be actively involved in ensuring that appropriate investigation and cleanup of sites was undertaken in a timely manner. District staff were actively involved with the review and analysis of early laws governing the regulation of underground storage tanks and hazardous materials and in laws, regulations, and policies to ensure groundwater resource protection. District staff have documented the migration of contamination down abandoned wells and conduits and fashioned a well installation and destruction ordinance to ensure that wells were properly installed and potential conduits properly destroyed.

Current Status

The District has records of over 700 releases of non-fuel related cases involving the release of solvents, metals, pesticides, Polychlorinated Biphenyls (PCBs), and a variety of other chemicals in Santa Clara County. The San Francisco Bay RWQCB provides regulatory oversight on over 600 cases in the Santa Clara Valley and Coyote Subbasins. The Central Coast RWQCB provides oversight on an estimated 35 cases in the Llagas Subbasin. The California Department of Toxics Substances Control provides oversight of 17 cases and the Federal EPA provides oversight of 11 sites.

The District maintains an elaborate filing system for these cases that is heavily used by the environmental consultants and the public researching contaminated sites. District staff actively track and peer review the most serious of these cases (primarily the Superfund sites). Staff provide review and comment on Site Cleanup Requirements and Cleanup and Abatement Orders prepared by the Regional Boards and investigation and cleanup reports prepared for these sites. The District provides geologic and technical

expertise to responsible parties (site owners and operators) and their consultants and staff, and regularly participate in various committees and public meetings to ensure groundwater protection issues are properly addressed.

Future Direction
The District plans to continue these efforts in addition to conducting a review of all the recorded cases to ensure that all have been properly addressed by the various regulatory agencies. Many cases have remained "inactive" and may not have performed appropriate investigation and cleanup. The District plans to inform the regional boards and other agencies of these reviews and assist them to ensure appropriate work is performed. The District also plans to make more information available regarding geologic conditions and the status of solvent and toxics cases in GIS and over the Internet.

LAND USE AND DEVELOPMENT REVIEW

Program Objective
The objective of the Land Use and Development Review Program is to evaluate the land use and developments occurring within the County for adverse impacts to watercourses under District jurisdiction and to other District facilities, including the pollution of groundwater.

Background
Land development decisions made by the cities and the County influence a variety of issues related to water quality and quantity. The District reviews land development proposals, identifies any potential adverse impacts to District facilities and provides comments to the lead agency charged with making the final decision for the proposals. The District also reviews Draft Environmental Impact Reports (DEIRs) and/or EIRs and provides comments to the lead agency.

Current Status
The District reviews and comments on proposed land development, environmental documents and city and County General plans. Review of land development proposals includes a determination of direct and indirect impacts to District facilities. Indirect impacts could result from increased runoff and flooding due to new impervious surface or introduction of pollutants to a watercourse from construction activities or urban runoff. Direct impacts to watercourses under District jurisdiction are addressed through the District's permitting program as defined by Ordinance 83-2.

This ordinance allows the District to investigate whether a proposed project or activity will:

a. Impede, restrict, retard, pollute or change the direction of the flow of water.

b. Catch or collect debris carried by such water.

c. Be located where natural flow of the storm and flood waters will damage or carry any structure or any part thereof downstream.

d. Damage, weaken, erode, or reduce the effectiveness of the banks to withhold storm and flood waters.

e. Resist erosion and siltation and prevent entry of pollutants and contaminants into water supply.

f. Interfere with maintenance responsibility or with structures placed or erected for flood protection, water conservation, or distribution.

If a project appears likely to do any of the above, the District may deny or conditionally approve the permit application for the proposed project.

Future Direction

The California Environmental Quality Act (CEQA) provides the District an opportunity to comment in areas relevant to the issues listed above; however, cities need to make certain these issues are adequately addressed and treated. The use of Ordinance 83-2 and CEQA have generally not effected adequate attention to these issues.

In years past the District has relied on local agencies to place conditions on development projects and to include provisions that address District water supply and flood protection measures. The recent increase in development and land use coupled with more stringent environmental concerns and requirements imposed by other regulatory agencies has made it necessary for the District to shift to a more proactive approach and to undertake greater participation in development planning activities. District land use and development review staff plan to participate on interagency project teams, conduct general plan review and revision, and development of relevant policies (such as riparian corridor and building setback policies). The program will also seek revisions to Ordinance 83-2, and greater education of land development planning staff and officials.

Additional Groundwater Quality Management Activities

Groundwater Guardian Affiliate

The District was designated as Groundwater Guardian Affiliate for the year 2000. Groundwater Guardian is an annually earned designation for communities and affiliates that take voluntary, proactive steps toward groundwater protection. The district earned the designation in 2000 based on activities such as conducting irrigation, nutrient, and pesticides management seminars, sponsoring a mobile irrigation management laboratory, and creating a prototype zone of contribution delineation tool for delineating wellhead protection areas. The Groundwater Guardian Program is sponsored by The Groundwater Foundation, a private, international, not-for-profit education organization that educates and motivates people to care about and for groundwater. The District will continue to participate in the program by submitting annual work plans and reports documenting our groundwater protection efforts.

Comprehensive Reservoir Watershed Management

The District has initiated a Comprehensive Reservoir Watershed Management Project to protect the water quality and supply reliability of the District's reservoirs. The District seeks to balance watershed uses, such as the rights of private property owners and public recreational activities, with the protection and management of natural resources. The District recognizes that preserving beneficial watershed uses can benefit reservoir water quality, which in turn benefits drinking water quality delivered to the District treatment plants and recharged into the groundwater basins.

Watershed Management Initiative

The District is an active participant in the San Francisco Bay Regional Water Quality Control Board's Santa Clara Basin Watershed Management Initiative (WMI). The purpose of the WMI is to develop and implement a comprehensive watershed management program. The goals of the WMI include balancing the objectives of water supply management, habitat protection, flood management, and land use to protect and enhance water quality, including the quality of water used for groundwater recharge and water in the groundwater basins. The WMI will develop a watershed management plan that will set out agreed upon actions to meet stakeholder goals, including water quality protection and enhancement.

Non-Point Source Pollution Control

The District along with other agencies is the co-permittee for National Pollution Discharge Elimination System (NPDES) permit number CAS029718. The co-permittees formed the Santa Clara Valley Urban Runoff Management Program in 1990 to develop and implement efficient and uniform approaches to control non-point source pollution in storm water runoff that flows to the South San Francisco Bay, in compliance with NPDES permit responsibilities.

Chapter 6
SUMMARY

The many groundwater management programs and activities described in this document demonstrate that the District is proactive and effective in terms of ensuring that groundwater resources are sustained and protected. A summary of existing District groundwater programs is presented here, organized by report section.

Groundwater Supply Management

The objective of the District's groundwater supply management programs is to sustain groundwater resources by replenishing the groundwater basin, increasing basin supplies, and mitigating groundwater overdraft. This is currently achieved through:

- In-stream recharge, including controlled and uncontrolled recharge through District facilities.
- Off-stream recharge through District percolation ponds and abandoned gravel pits, including activities to reduce turbidity of incoming water.
- Periodic water balance to reconcile water imports, inflows, releases, and changes in surface water storage.
- Direct injection recharge facilities.
- Water use efficiency programs.
- Estimation of operational storage capacity.
- Subsidence and groundwater flow modeling to evaluate potential impacts to the groundwater basin.
- Public outreach and education for water use efficiency programs.

Groundwater Monitoring

The District's groundwater monitoring programs provide basic data to assist in the evaluation of groundwater conditions. Programs include:

- Groundwater quality monitoring, including sampling for general minerals, trace metals, and physical characteristics.
- Groundwater elevation monitoring, including depth-to-water measurements and the development of groundwater contour maps.
- Groundwater extraction monitoring, which tracks groundwater use throughout the County.

- Land subsidence monitoring, which measures existing subsidence.

Groundwater Quality Management
Existing programs designed to protect the groundwater from contamination and the threat of contamination include the following:

- Nitrate management program designed to delineate, track, and manage nitrate contamination by monitoring nitrate occurrence, and by reducing further loading and the public's exposure to nitrate.

- Saltwater intrusion prevention program to prevent freshwater aquifers from degradation through monitoring and the sealing of contaminant conduit wells.

- Well construction and destruction programs to protect groundwater resources by ensuring that wells will not allow the vertical transport of contaminants.

- Wellhead protection program to identify areas of the basin that are particularly vulnerable to contamination to focus groundwater protection, monitoring, and cleanup efforts.

- Leaking underground storage tank oversight program to protect the groundwater from water quality degradation and provide regulatory oversight of investigation and cleanup of fuel releases from underground tanks.

- Toxics cleanup program to protect the basin from contamination by non-fuel chemicals.

- Land use and development review to evaluate land use proposals in terms of potential adverse impacts to District facilities.

- Public outreach and education for groundwater quality management programs.

Recommendations
In 1999, the District Board of Directors established Ends Policies that direct the Chief Executive Officer/General Manager to achieve specific results or benefits. The following Ends Policies are related to groundwater:

E.1.1.2. The water supply is reliable to meet current demands.
E.1.1.3. The water supply is reliable to meet future demands as identified in the District's Integrated Water Resource Plan (IWRP) process.
E.1.1.4. There are a variety of water supply sources.
E.1.1.5. The groundwater basins are aggressively protected from contamination and the threat of contamination.
E.1.1.6. Water recycling is expanded consistent with the District's Integrated Water Resource Plan (IWRP) within Santa Clara County.
E.1.2.2.3. Groundwater supplies are sustained.

Two of the Ends Policies directly relate to the management of groundwater resources: 1.1.5 - The groundwater basins are aggressively protected from contamination and the threat of contamination, and 1.2.2.3 - Groundwater supplies are sustained. As the District is now formally guided by these policies, we need to ensure that program outcomes match these ends.

Although the District manages the basin effectively, there is room for improvement of the groundwater programs in terms of meeting the Ends Policies and in the coordination and integration of the programs. Specific areas where further analysis is recommended include:

1. **Coordination between the Groundwater Management Plan and the Integrated Water Resources Plan (IWRP) –** As the District's water supply planning document through 2040, the IWRP has identified the operation of the groundwater basin as a critical component to help the District respond to changing water supply and demand conditions. Planning and analysis efforts for future updates of the Groundwater Management Plan and the IWRP need to be integrated in order to provide a coordinated and comprehensive water supply plan for Santa Clara County.

2. **Integration of groundwater management programs and activities** – Individual groundwater management programs tend to be implemented almost independently of other programs. A more integrated approach to the management of these programs, and to the management of the basin overall needs to be developed. Integration of these programs and improved conjunctive use strategies will result in more effective basin management.

3. **Optimization of recharge operations** – As artificial recharge is critical to sustaining groundwater resources, an analysis of the most effective amount, location, and timing of recharge should be conducted.

4. **Improved understanding of the groundwater basin** – In general, the existing groundwater management programs seem to focus on managing the basin to meet demands and protecting the basin from contamination and the threat of contamination. However, improving the District's understanding of the complexity of the groundwater basin is critical to improved groundwater management. The more we know about the basin, the better we can analyze the impact of different groundwater scenarios and management alternatives.

5. **Effective coordination and communication with internal and external agencies** – Improved communication and coordination will lead to improved groundwater management programs. Increased sharing of ideas, knowledge, and technical expertise among people involved with groundwater at the District will result in increased knowledge, well-coordinated and efficient work, and well-informed analyses and conclusions. Improved coordination with external agencies, such as retailers and state and federal organizations, will result in improved knowledge of customer needs and increased awareness of District activities.

A detailed analysis of the areas above and of all groundwater programs as they relate to Ends Policies and the groundwater management goal is recommended.

The next update of the Groundwater Management Plan, scheduled for 2002, will address the issues above and the overall management of the basin by presenting a formal groundwater management strategy for achieving the groundwater management goal in a practical, cost-effective, and environmentally-sensitive manner. The update will evaluate each groundwater program's contribution and effectiveness in terms of the groundwater management goal and Ends Policies. Measurement criteria will be developed, and if there is no direct connection between the Ends Policies and a specific program, that program's contribution to other linked programs will be analyzed. The update will include recommendations for changes to existing programs or for the development of new programs, standards, or ordinances. The update will also develop an integrated approach for the management of groundwater programs, and for the management of the groundwater basin in general.

Groundwater is critical to the water supply needs of Santa Clara County. Therefore, it is of the utmost importance that the District continues the progress begun with this Groundwater Management Plan. Increased demands and the possibility of reduced imported water in the future make effective and efficient management of the groundwater basin essential. The Groundwater Management Plan and future updates will identify how the management of the groundwater basin can be improved, thereby ensuring that groundwater resources will continue to be sustained and protected.

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Attachment I

Recycled Water Ordinance

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ARTICLE V. RECYCLED WATER FOR IRRIGATION

SEC. 35.100.1. Findings.

Potable water is one of our most precious natural resources and is becoming increasingly scarce in the semiarid State of California. The use of treated, nonpotable water for construction and irrigation will increase the amount of potable water available for other uses in the city. The City of Mountain View is dedicated to conserving the potable water supply. Recycled water is a sustainable water source that reduces potable water consumption and is not subject to rationing during drought. After careful stuffy, the city council has determined that recycled water shall be used within the boundaries of the Shoreline Regional Park Community for irrigation purposes whenever it is available and beneficial to the customer.

This article will implement an important program that will assist the Shoreline Regional Park Community in preserving this precious commodity. In adopting this program, the council has balanced the needs of all water users and through this implementation strategy will allow water users sufficient flexibility to meet their potable and nonpotable water needs.

(Ord. No. 14.04, 12/26/04.)

SEC. 35.100.2. Converting existing potable water users to recycled water.

Within the boundaries of the Shoreline Regional Park Community, retail, commercial and industrial customers to be served by recycled water in the initial conversion have been identified in the "Regional Water Recycling Facilities Planning Study" dated January 2004. This study may be amended from time to time to add additional customers. These customers will be notified by mail that a conversion to recycled water for irrigation purposes is required, along with the conditions of use, pricing and construction schedule. Recycled water customers may file a request for an exemption or adjustment from these requirements with the director of public works.

(Ord. No. 14.04, 12/26/04.)

SEC. 35.100.3. Use of recycled water in new construction.

All applications for land use permits, building permits and other discretionary actions within the boundaries of the Shoreline Regional Park Community, filed after the adoption of this ordinance, shall include the following:

a. Incorporation of recycled water usage into the design of landscape and irrigation systems.

b. Consideration of plants suitable for irrigation with recycled water.

c. The installation of the infrastructure necessary to connect the irrigation system to the city's recycled water supply.

d. The use of recycled water in lieu of potable water during construction activity.

The city maintains the right to require recycled water use for additional purposes as appropriate.

(Ord. No. 14.04, 12/26/04.)

SEC. 35.100.4. Exemptions and adjustments.

An application for an exemption or an adjustment to the requirement to use recycled water shall be made to the director of public works. Requests for an exemption or adjustment may be made consistent with state law and shall be based on the finding by the director that the use of recycled water demonstrates an adverse effect to the applicant's landscaping installed prior to the effective date of the ordinance codified herein. The director of public works may also consider any additional factors, including any special costs or hardships which may be created by the use of recycled water. A written determination will be made on all requests for exemptions or adjustments within ten (10) business days and mailed to the applicant.

(Ord. No. 14.04, 12/26/04.)

SEC. 35.100.5 Administrative provisions.

The director of public works shall establish written application and appeals procedures and may promulgate guidelines for the implementation of this program.

(Ord. No. 14.04, 12/26/04.)

SEC. 35.100.6. Appeals.

Denial of any application for an exemption and/or adjustment to the provisions of recycled water use may be appealed to the city manager, whose decision shall be final. An application for appeal shall be filed with the city clerk in writing within ten (10) business days after the director of public works' decision and shall state the specific grounds for the appeal. The city manger shall hear the appeal within sixty (60) calendar days after the appeal has been filed with the city clerk and shall issue a written decision within thirty (30) days.

(Ord. No. 14.04, 12/26/04.)

SEC. 35.100.7. Failure to comply with this article.

In addition to existing penalties in state and local law for violation of the provisions of this article, the director of public works may assess the following penalties, subject to the appeal provisions set forth above:

a. A water service surcharge of fifty percent (50%) of the general water service rate as set forth in Mountain View City Code Section 35.27 to use potable water for irrigation.

b. Continued use of potable water for irrigation, after written warning or warnings by the director, may result in the discontinuation of water service supplied for irrigation by the City of Mountain View following a noticed hearing as set forth in Sec. 35.100.6. A charge as set forth in the city's master fee schedule shall be paid prior to the reactivation or restoration of water service.

(Ord. No. 14.04, 12/26/04.)

Attachment J

SFPUC Water Supply Reliability Letter

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SFPUC
WATER
WASTEWATER
POWER

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

1145 Market St., 4th Floor, San Francisco, CA 94103 • Tel. (415) 554-3271 • Fax (415) 554-3161 • TTY (415) 934-5770

EDWIN M. LEE
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VICE PRESIDENT

ANN MOLLER CAEN
COMMISSIONER

ART TORRES
COMMISSIONER

VINCE COURTNEY
COMMISSIONER

ED HARRINGTON
GENERAL MANAGER

March 31, 2011

Nicole Sandkulla
Senior Water Resources Engineer
Bay Area Water Supply and Conservation Agency
155 Bovet Road, Suite 302
San Mateo, CA 94402

Dear Nicole,

Attached please find additional information through 2035 on the Regional Water System's supply reliability for use in the Wholesale Customer's 2010 Urban Water Management Plan updates. The SFPUC has assessed the water supply reliability under the following planning scenarios:

- Projected Single dry-year supply for 2010
- Projected Multiple dry-year supply beginning 2010; and
- Projected supply reliability for years 2010-2035.

Table 1 summarizes deliveries to the Wholesale Customers for projected single dry-year supply for 2010 and projected multiple dry-year supply beginning 2010.

With regards to future demands, the SFPUC proposes to expand their water supply portfolio by increasing the types of water supply resources. Table 2 summarizes the water supply resources assumed to be available by 2035.

Concerning allocation of supply during dry years, the Water Shortage Allocation Plan ("Plan") was utilized to allocate shortages between the SFPUC and the Wholesale Customers collectively. The Plan implements a method for allocating water among the individual Wholesale Customers which has been adopted by the Wholesale Customers. The Plan was adopted pursuant to Section 7.03(a) of the 1984 Settlement Agreement and Master Water Sales Contract and has been updated to correspond to the terminology used in the June 2009 Water Supply Agreement between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County.

Finally, the SFPUC estimated the frequency and severity of anticipated shortages for the period 2010 though 2035. For this analysis, we assumed that the historical hydrologic period is indicative of future events and evaluated the supply reliability assuming a repeat of the actual historic hydrologic period 1920 through 2002. The results of this analysis are summarized in Table 3.

It is our understanding that you will pass this information on to the Wholesale Customers. If you have any questions or need additional information, please do not hesitate to contact me at (415) 554-0792.

Sincerely,

Paula Kehoe

Paula Kehoe
Director of Water Resources

Table 1
Projected Deliveries for Three Multiple Dry Years

	2010	One Critical Dry Year	Deliveries during Multiple Dry Years in mgd		
			Year 1	Year 2	Year 3
System-Wide Shortage in Percent	0%	10%	10%	20%	20%
Wholesale Allocation (mgd)	184.0	152.6	152.6	132.5	132.5

Table 2

UWMP Studies: Water Supply Reliability **Water Supply Options for Years 2010 through 2030**						
	2010	2015	2020	2025	2030	2035
Crystal Springs Reservoir (20.28bg)		x	x	x	x	x
Westside Basin Groundwater afa		8,100	8,100	8,100	8,100	8,100
Calaveras Reservoir Recovery (31.5 bg)		x	x	x	x	x
Districts' Transfer afa		2240	2240	2240	2240	2240

Table 3: Projected System Supply Reliability Based on Historical Hydrologic Period

Allocation by Year	Wholesale Demand in mgd					
	184.0	184.0	184.0	184.0	184.0	184.0
	Projected Wholesale Allocation in mgd					
Delivery for Fiscal Year	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
1920	184.0	184.0	184.0	184.0	184.0	184.0
1921	184.0	184.0	184.0	184.0	184.0	184.0
1922	184.0	184.0	184.0	184.0	184.0	184.0
1923	184.0	184.0	184.0	184.0	184.0	184.0
1924	184.0	184.0	184.0	184.0	184.0	184.0
1925	154.6	184.0	184.0	184.0	184.0	184.0
1926	184.0	184.0	184.0	184.0	184.0	184.0
1927	184.0	184.0	184.0	184.0	184.0	184.0
1928	184.0	184.0	184.0	184.0	184.0	184.0
1929	184.0	184.0	184.0	184.0	184.0	184.0
1930	184.0	184.0	184.0	184.0	184.0	184.0
1931	184.0	184.0	184.0	184.0	184.0	184.0
1932	132.5	152.6	152.6	152.6	152.6	152.6
1933	184.0	184.0	184.0	184.0	184.0	184.0
1934	184.0	184.0	184.0	184.0	184.0	184.0
1935	154.6	184.0	184.0	184.0	184.0	184.0
1936	184.0	184.0	184.0	184.0	184.0	184.0
1937	184.0	184.0	184.0	184.0	184.0	184.0
1938	184.0	184.0	184.0	184.0	184.0	184.0
1939	184.0	184.0	184.0	184.0	184.0	184.0
1940	184.0	184.0	184.0	184.0	184.0	184.0
1941	184.0	184.0	184.0	184.0	184.0	184.0
1942	184.0	184.0	184.0	184.0	184.0	184.0
1943	184.0	184.0	184.0	184.0	184.0	184.0
1944	184.0	184.0	184.0	184.0	184.0	184.0
1945	184.0	184.0	184.0	184.0	184.0	184.0
1946	184.0	184.0	184.0	184.0	184.0	184.0
1947	184.0	184.0	184.0	184.0	184.0	184.0
1948	184.0	184.0	184.0	184.0	184.0	184.0
1949	184.0	184.0	184.0	184.0	184.0	184.0
1950	184.0	184.0	184.0	184.0	184.0	184.0
1951	184.0	184.0	184.0	184.0	184.0	184.0
1952	184.0	184.0	184.0	184.0	184.0	184.0
1953	184.0	184.0	184.0	184.0	184.0	184.0
1954	184.0	184.0	184.0	184.0	184.0	184.0
1955	184.0	184.0	184.0	184.0	184.0	184.0
1956	184.0	184.0	184.0	184.0	184.0	184.0
1957	184.0	184.0	184.0	184.0	184.0	184.0
1958	184.0	184.0	184.0	184.0	184.0	184.0
1959	184.0	184.0	184.0	184.0	184.0	184.0

Delivery for Fiscal Year	2010	2015	2020	2025	2030	2035
1960	184.0	184.0	184.0	184.0	184.0	184.0
1961	152.6	184.0	184.0	184.0	184.0	184.0
1962	132.5	152.6	152.6	152.6	152.6	152.6
1963	184.0	184.0	184.0	184.0	184.0	184.0
1964	184.0	184.0	184.0	184.0	184.0	184.0
1965	184.0	184.0	184.0	184.0	184.0	184.0
1966	184.0	184.0	184.0	184.0	184.0	184.0
1967	184.0	184.0	184.0	184.0	184.0	184.0
1968	184.0	184.0	184.0	184.0	184.0	184.0
1969	184.0	184.0	184.0	184.0	184.0	184.0
1970	184.0	184.0	184.0	184.0	184.0	184.0
1971	184.0	184.0	184.0	184.0	184.0	184.0
1972	184.0	184.0	184.0	184.0	184.0	184.0
1973	184.0	184.0	184.0	184.0	184.0	184.0
1974	184.0	184.0	184.0	184.0	184.0	184.0
1975	184.0	184.0	184.0	184.0	184.0	184.0
1976	184.0	184.0	184.0	184.0	184.0	184.0
1977	152.6	184.0	184.0	184.0	184.0	184.0
1978	136.2	152.6	152.6	152.6	152.6	152.6
1979	184.0	184.0	184.0	184.0	184.0	184.0
1980	184.0	184.0	184.0	184.0	184.0	184.0
1981	184.0	184.0	184.0	184.0	184.0	184.0
1982	184.0	184.0	184.0	184.0	184.0	184.0
1983	184.0	184.0	184.0	184.0	184.0	184.0
1984	184.0	184.0	184.0	184.0	184.0	184.0
1985	184.0	184.0	184.0	184.0	184.0	184.0
1986	184.0	184.0	184.0	184.0	184.0	184.0
1987	184.0	184.0	184.0	184.0	184.0	184.0
1988	152.6	184.0	184.0	184.0	184.0	184.0
1989	132.5	152.6	152.6	152.6	152.6	152.6
1990	132.5	152.6	152.6	152.6	152.6	152.6
1991	132.5	132.5	132.5	132.5	132.5	132.5
1992	132.5	152.6	152.6	152.6	152.6	152.6
1993	136.2	132.5	132.5	132.5	132.5	132.5
1994	184.0	184.0	184.0	184.0	184.0	184.0
1995	154.6	184.0	184.0	184.0	184.0	184.0
1996	184.0	184.0	184.0	184.0	184.0	184.0
1997	184.0	184.0	184.0	184.0	184.0	184.0
1998	184.0	184.0	184.0	184.0	184.0	184.0
1999	184.0	184.0	184.0	184.0	184.0	184.0
2000	184.0	184.0	184.0	184.0	184.0	184.0
2001	184.0	184.0	184.0	184.0	184.0	184.0
2002	184.0	184.0	184.0	184.0	184.0	184.0

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Attachment K

Draft Water Shortage Ordinance

ORDINANCE NO.

AN ORDINANCE OF THE CITY OF MOUNTAIN VIEW AMENDING SETION 35.28.1, SECTION 35.28.3, AND SECTION 35.28.4 OF THE MOUNTAIN VIEW CITY CODE, REGARDING WATER CONSERVATION

NOW, THEREFORE, the City Council of the City of Mountain View does hereby ordain as follows:

Section 1. Sections 35.28.1, 35.28.3, and 35.28.4 of Chapter 35 of the Mountain View City Code are hereby amended to read as follows:

§ 35.28.1 Findings and Determinations.
The city council of the City of Mountain View hereby finds and determines that:
Permanent water conservation efforts are necessary to meet the continually changing demands made on Mountain View's finite water resources and to prepare for future drought;

The City of Mountain View's primary water suppliers, the Santa Clara Valley Water District and the San Francisco Water Department, continue to urge a reduction in urban water usage through efficient water-use practices;

The following water use restrictions are needed to continue to minimize water waste and to conserve the water supply of the City of Mountain View for the greatest public benefit, with particular regard to domestic use, sanitation and fire protection;

The restrictions on, and requirements pertaining to, water usage, as contained in this division, as well as the specific uses of water prohibited by this division as nonessential, are needed to prevent waste of the City of Mountain View's water, and are imposed pursuant to the city's power under Sections 5 and 7 of Article 11 of the California Constitution and Sections 350 through 359 of the Water Code of the state;

The actions taken pursuant to this division are exempt from the provisions of Sections 21000 et seq. of the Public Resources Code (the California Environmental Quality Act) because it can be seen with certainty that these amendments to the city's Water Conservation Ordinance will not have a significant adverse effect on the environment.

§ 35.28.2 Definitions.
[No change in text]

§ 35.28.3 Prohibition of nonessential water use.

35.28.3.1
Any of the nonessential water uses as defined in Section 35.28.4.1 through Section 35.28.4.5 are prohibited at all times.

35.28.3.2 Stage 1 Water Shortage

(a) The City Manager may recommend and, upon resolution of the City Council, declare a Stage 1 Water Shortage when there is a reasonable probability that there will be a supply shortage and that a demand reduction of up to 10 percent is required in order to ensure that sufficient supplies will be available to meet anticipated demands. Upon declaration of a Stage 1 Water Shortage, the City Manager shall take action to implement the Stage 1 prohibitions identified in this Division.

(b) During a Stage 1 Water Shortage condition, City of Mountain View will increase its public education and outreach efforts to increase public awareness of the prohibited nonessential water uses as defined in Sections 35.28.4.1 through 35.28.4.5.

35.28.3.3 Stage 2 Water Shortage

(a) The City Manager may recommend and, upon resolution of the City Council, declare a Stage 2 Water Shortage when there is a reasonable probability that there will be a supply shortage and a demand reduction of up to 25 percent is required in order to ensure that sufficient supplies will be available to meet anticipated demands. Upon declaration of a Stage 2 Water Shortage, the City Manager shall take action to enforce the mandatory Stage 2 prohibitions identified in this Division.

(b) Any of the non essential water uses as defined in Section 35.28.4.1 through Section 35.28.4.14 are prohibited.

35.28.3.4 Stage 3 Water Shortage

(a) The City Manager may recommend and, upon resolution of the City Council, declare a Stage 3 Water Shortage when there is a reasonable probability that there will be a supply shortage and that a demand reduction of up to 40 percent is required in order to ensure that sufficient supplies will be available to meet anticipated demands. Upon declaration of a Stage 3 Water Shortage, the City Manager shall take action to enforce the mandatory Stage 3 prohibitions identified in this Division.

(b) Any of the non essential water uses as defined in Section 35.28.4.1 through Section 35.28.4.17 are prohibited.

35.28.3.5 Stage 4 Water Shortage

(a) The City Manager may recommend and, upon resolution of the City Council, declare Stage 4 Water Shortage when there is a reasonable probability that there will be a supply shortage and that a demand reduction of more than 40 percent is required in order to ensure that sufficient supplies will be available to meet anticipated demands. Upon declaration of a Stage 4 Water Shortage, the City Manager shall take action to enforce the mandatory Stage 4 prohibitions identified in this Division.

(b) Any of the non essential water uses as defined in Section 35.28.4.1 through Section 35.28.4.18 are prohibited.

§ 35.28.4 Nonessential water uses defined.

The following uses of potable water are hereby determined to be nonessential, except as further provided herein. It is the intent of this ordinance that recycled water shall be made available and used in place of potable water for non-potable purposes during water shortage conditions.

35.28.4.1
(a) Use of potable water through any meter when the customer has been given written notice by the director to repair broken or defective plumbing, sprinkler, watering, or irrigation systems and has failed to effect such repairs within the time period specified for each water shortage condition as listed below. The failure of any customer to effect said repairs after said written notification by director shall constitute grounds for immediate discontinuance of water service.

(b) The time period within which customers must repair broken or defective plumbing and irrigation equipment after receiving written notice is determined by declared water shortage conditions as follows:

(1) A maximum of ten (10) days under non-shortage conditions
(2) A maximum of ten (10) days during a Stage 1 Shortage
(3) A maximum of five (5) days during a Stage 2 Shortage
(4) A maximum of three (3) days during a Stage 3 Shortage
(5) A maximum of 24 hours during a Stage 4 Shortage.

35.28.4.2 [No change in text]
35.28.4.3 [No change in text]
35.28.4.4 [No change in text]
35.28.4.5 [No change in text]

35.28.4.6 **Limits on watering**

(a) Watering or irrigating of lawn, landscape or other vegetated area with potable water between the hours of 9:00 a.m. and 5:00 p.m. on any day, except by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off nozzle or device, or for very short periods of time for the express purpose of adjusting or repairing an irrigation system.

(b) Watering or irrigating of lawn, landscape, or other vegetated area with potable water for more than two days per week during the months of April through October, and watering more than one day per week during the months of November through March.

(c) Watering or irrigating of lawn, landscape, or other vegetated area with potable water for more than 15 minutes per day.

(d) Watering or irrigating of lawn, landscape, or other vegetated area during a rain event.

35.28.4.7 **Washing down of surfaces**

Use of potable water for washing down of hard or paved surfaces, except when necessary to alleviate safety or sanitary hazards. Hard and paved surfaces include, but are not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios and alleys.

35.28.4.8 **Vehicle washing**

Washing cars, buses, boats, trailers, or other vehicles with potable water except at a commercial vehicle washing facility.

35.28.4.9 **New car wash systems**

Construction or installation of new commercial conveyor car wash systems that do not utilize water-recirculation technologies.

35.28.4.10 **New laundry systems**

Installation of non-recirculating commercial laundry systems.

35.28.4.11 **Pre-rinse spray valves**

Use of water through a non-low-flow pre-rinse spray valve for restaurant dishwashing.

35.28.4.12 **Hotel linens**

Failure to provide hotel guests with the option to reuse towels and bed linens.

35.28.4.13 **Decorative water features**

Use of potable water in single-pass water fountains and decorative water features.

35.28.4.14 **Construction**

Use of potable water for construction purposes including, but not limited to, dust control.

35.28.4.15 **Commercial car washes**

Operating a commercial car wash without a water-recirculating system.

35.28.4.16 **Filling pools**

Filling pools or spas more than one (1) foot with potable water.

35.28.4.17 **Filling water features**

Filling ornamental ponds and water features with potable water except to maintain aquatic life.

35.28.4.18 **Landscape irrigation**

Watering or irrigating of lawn, landscape, or other vegetated area with potable water, except for the following uses:

(a) Maintenance of existing landscape necessary for fire protection;
(b) Maintenance of existing landscape for soil erosion control;
(c) Maintenance of plant materials identified to be rare or essential to the well-being of protected species;
(d) Maintenance of landscape within active public parks and playing fields, day care centers, golf course greens, and school grounds, provided that such irrigation does not exceed one (1) day per week and does not occur between 9:00 a.m. and 5:00 p.m.;
(e) Actively irrigated environmental mitigation projects.

Section 2. The provisions of this ordinance shall be effective thirty (30) days from and after the date of its adoption.

Section 3. If any section, subsection, sentence, clause or phrase of this ordinance is for any reason held to be unconstitutional, such decision shall not affect the validity of the other remaining portions of this ordinance. The City Council hereby declares that it would have passed this ordinance and each section, subsection, sentence, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be declared unconstitutional.

Section 4. Pursuant to Section 522 of the Mountain View City Charter, it is ordered that copies of the foregoing proposed ordinance be posted at least two (2) days prior to its adoption in three (3) prominent places in the City and that a single publication be made to the official newspaper of the City of a notices setting forth the title of the ordinance, the date of its introduction, and a list of the places where copies of the proposed ordinance are posted.

Section 5. The City of Mountain View may declare an end to a Stage 1, 2, 3 or 4 Water Shortage upon recommendation of the City Manager and resolution by the City Council at any regular or special meeting of the City Council.

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