Appendix A

Resolution No. 11- to Adopt the SCVWD 2010 UWMP

(Not included in final draft)

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Appendix B

District Act

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§ 1. Short title

This act shall be known and may be cited as the Santa Clara Valley Water District Act.

§ 2. Creation; name of district; boundaries; district

A flood control and water district is hereby created to be called the Santa Clara Valley Water District. Said district shall consist of all the territory of the County of Santa Clara lying within the exterior boundaries of said county. As used in this act "district" means the Santa Clara Valley Water District.

§ 3. Zones; establishment; change of boundaries

The board of the district created by this act, by resolutions thereof adopted from time to time, may establish zones within said district without reference to the boundaries of other zones, setting forth in such resolutions descriptions thereof by metes and bounds and entitling each of such zones by a zone number, and institute zone projects for the specific benefit of such zones. The board may, by resolution, amend the boundaries by annexing property to or by withdrawing property from said zones or may divide existing zones into two or more zones or may superimpose a new or amended zone on zones already in existence, setting forth in such resolutions descriptions of the amended, divided or superimposed zones by metes and bounds and entitling each of such zones by a zone number.

Proceedings for the establishment of such zones may be conducted concurrently with and as a part of proceedings for the instituting of projects relating to such zones, which proceedings shall be instituted in the manner prescribed in Section 12 of this act.

§ 4. Objects and purposes

(a) The purposes of this act are to authorize the district to provide comprehensive water management for all beneficial uses and protection from flooding within Santa Clara County.

(b) It is the intent of the Legislature that the district work collaboratively with other appropriate entities in Santa Clara County in carrying out the purposes of this act.

(c) The district may take action to do all of the following:

(1) Protect Santa Clara County from floodwater and stormwater of the district, including tidal floodwater and the floodwater and stormwater of streams that have their sources outside the district, but flow into the district.

(2) Protect from that floodwater or stormwater the public highways, life and property in the district, and the watercourses and watersheds of streams flowing within the district.

(3) Provide for the conservation and management of floodwater, stormwater, or recycled water, or other water from any sources within or outside the watershed in which the district is located for beneficial and useful purposes, including spreading, storing, retaining, and causing the water to percolate into the soil within the district.

(4) Protect, save, store, recycle, distribute, transfer, exchange, manage, and conserve in any manner any of the waters.

(5) Increase and prevent the waste or diminution of the water supply in the district.

(6) Obtain, retain, protect, and recycle drainage, stormwater, floodwater, or treated wastewater, or other water from any sources, within or outside the watershed in which the district is located for any beneficial uses within the district.

(7) Enhance, protect, and restore streams, riparian corridors, and natural resources in connection with carrying out the purposes set forth in this section.

(8) Preserve open space in Santa Clara County and support the county park system in a manner that is consistent with carrying out the powers granted by this section.

§ 5. Nature of district; powers

The district is hereby declared to be a body corporate and politic and, in addition to other powers granted by this act, may take action to carry out all of the following purposes:

1. To have perpetual succession.

2. To sue and be sued in the name of the district in all actions and proceedings in all courts and tribunals of competent jurisdiction.

3. To adopt a seal and alter it at pleasure.

4. To acquire by grant, purchase, lease, gift, devise, contract, construction, or otherwise, and to hold, use, enjoy, sell, let, and dispose of real and personal property of every kind, including lands, structures, buildings, rights-of-way, easements, and privileges, and to construct, maintain, alter, and operate any and all works or improvements, within or outside the district, necessary or proper to carry out any of the objects or purposes of this act and convenient to the full exercise of its powers, and to complete, extend, add to, alter, remove, repair, or otherwise improve any works, or improvements, or property acquired by it as authorized by this act.

5. To store water in surface or underground reservoirs within or outside of the district for the common benefit of the district or of any zone or zones affected; to conserve, reclaim, recycle, distribute, store, and manage water for present and future use within the district; to appropriate and acquire water and water rights, and import water into the district and to conserve within or outside the district, water for any purpose useful to the district; and to do any and every lawful act necessary to be done that sufficient water may be available for any present or future beneficial use or uses of the lands or inhabitants within the district, including, but not limited to, the acquisition, storage, and distribution of water for irrigation, domestic, fire protection, municipal, commercial, industrial, environmental, and all other beneficial uses; to distribute, sell, or otherwise dispose of, outside the district, any waters not needed for beneficial uses within the district; to commence, maintain, intervene in, defend, or compromise, in the name of the district on behalf of the landowners therein, or otherwise, and to assume the costs and expenses of any action or proceeding involving or affecting the ownership or use of waters or water rights within or outside the district, used or useful for any purpose of the district or of common benefit to any land situated therein, or involving the wasteful use of water therein; to commence, maintain, intervene in, defend, and compromise and to assume the cost and expenses of any and all actions and proceedings now or hereafter begun; to prevent interference with or diminution of, or to declare rights in the natural flow of any stream or surface or subterranean supply of water used or useful for any purpose of the district or of common benefit to the lands within the district or to its inhabitants; to prevent unlawful exportation of water from the district; to prevent contamination, pollution, or otherwise rendering unfit for beneficial use the surface or subsurface water used or useful in the district, and to commence, maintain, and defend actions and proceedings to prevent any such interference with the described waters as may endanger or damage the inhabitants, lands, or use of water in, or flowing into, the district; provided, however, that the district shall not have power to intervene or take part in, or to pay the costs or expenses of, actions or controversies between the owners of lands or water rights that do not affect the interests of the district.

6. To control the flood and storm waters of the district and the flood and storm waters of streams that have their sources outside of the district, but which streams and the floodwaters thereof, flow into said district, and to conserve such waters for beneficial and useful purposes of the district by spreading, storing, retaining, and causing to percolate into the soil within or without the district, or to save or conserve in any manner all or any of those waters and protect from damage from those flood or storm waters the watercourses, watersheds, public

highways, life, and property in the district, and the watercourses outside of the district of streams flowing into the district.

7. To enter upon any land, to make surveys and locate the necessary works of improvement and the lines for channels, conduits, canals, pipelines, roadways, and other rights-of-way; to acquire by purchase, lease, contract, gift, devise, or other legal means all lands and water and water rights and other property necessary or convenient for the construction, use, supply, maintenance, repair, and improvement of the works, including works constructed and being constructed by private owners, lands for reservoirs for storage of necessary water, and all necessary appurtenances, and also where necessary or convenient to that end, and for those purposes and uses, to acquire and to hold in the name of the state, the capital stock of any mutual water company or corporation, domestic or foreign, owning water or water rights, canals, waterworks, franchises, concessions, or rights, when the ownership of such stock is necessary to secure a water supply required by the district or any part thereof, upon the condition that when holding such stock, the district shall be entitled to all the rights, powers, and privileges, and shall be subject to all the obligations and liabilities conferred or imposed by law upon other holders of such stock in the same company; to cooperate with, act in conjunction with, enter into and to do any acts necessary for the proper performance of any agreement with the State of California, or any of its engineers, officers, boards, commissions, departments, or agencies, or with the government of the United States, or any of its engineers, officers, boards, commissions, departments, or agencies or with any state, city and county, city, county, district of any kind, public or private corporation, association, firm, or individual, or any number of them, for the ownership, joint acquisition, leasing, disposition, use, management, construction, installation, extension, maintenance, repair, or operation of any rights, works, or other property of a kind which might lawfully be acquired or owned by the district or for the lawful performance of any power or purpose of the district provided for in this act, including, but not limited to, the granting of the right to the use of any water or the right to store that water in any reservoir of the district or to carrying that water through any tunnel, canal, ditch, or conduit of the district or for the delivery, sale, or exchange of any water right, water supply, or water pumped, stored, appropriated, or otherwise acquired or secured for the use of the district, or for controlling drainage waters, or flood or storm waters of streams in or running into the district, or for the protection of life or property therein, or for the purpose of conserving any waters for the beneficial use within the district, or in any other works, uses, or purposes provided for in this act; and to adopt and carry out any definite plan or system for accomplishing, facilitating, or financing all work which may lawfully be accomplished by the district and to enforce that plan or system by resolution or ordinance.

8. To carry on technical and other necessary investigations, make measurements, collect data, make analyses, studies, and inspections pertaining to water supply, water rights, control of flood and storm waters, and use of water both within and outside the district relating to watercourses or streams flowing in or into the district. For these purposes, the district shall have the right of access through its authorized representatives to all properties within the district and elsewhere relating to watercourses and streams flowing in or into said district. The district, through its authorized representatives, may enter upon such lands and make examinations, surveys, and maps thereof.

9. To prescribe, revise, and collect fees and charges for facilities furnished or to be furnished to any new building, improvement, or structure by the use of any flood control or storm drainage system constructed or to be constructed in a zone of the district, and whenever a drainage or flood control problem is referred to the district by the County of Santa Clara, or any incorporated city therein, to require the installation of drainage or flood control improvements necessary and/or convenient for needs of the zone, including, but not limited to, residential, subdivision, commercial, and industrial drainage and flood control needs, that county and those cities being hereby authorized to refer all drainage and flood control problems, arising under the Subdivision Map Act (Division 2 (commencing with *Section 66410) of Title 7 of the Government Code*) or otherwise, to the district for solution. Revenues derived under this section shall be used for the acquisition, construction, reconstruction, maintenance, and operation of the flood control or storm drainage facilities of the zone, to reduce the principal or interest of any bonded indebtedness thereof, or to replace funds expended on behalf of that zone derived from the fund created pursuant to subdivision 1 of Section 13.

10. To incur indebtedness, and to issue bonds in accordance with this act.

11. To cause taxes or assessments to be levied and collected for the purpose of paying any obligation of the district, and to carry out any of the purposes of this act, in the manner hereinafter provided.

12. To make contracts, and to employ labor, and to do all acts necessary for the full exercise of all powers vested in the district or any of the officers thereof, by this act.

13. To have the power and right to disseminate information concerning the rights, properties, activities, plans, and proposals of the district; provided, however, that expenditures during any fiscal year for those purposes shall not exceed one-half cent ($0.005) for each one hundred dollars ($100) of assessed valuation of the district.

14. To pay to any city, public agency, district, or educational institution recognized under Chapter 3 (commencing with *Section 94301) of Part 59 of the Education Code*, a portion of the cost of water imported by that city, public agency, district, or educational institution into, for use within, and of benefit to the Santa Clara Valley Water District.

15. To establish designated floodways in accordance with the Cobey-Alquist Flood Plain Management Act (Chapter 4 (commencing with *Section 8400) of Part 2 of Division 5 of the Water Code*).

16. To acquire, construct, maintain, operate, and install landscaping or recreational facilities in connection with any dam, reservoir, or other works owned or controlled by the district.

17. To acquire, construct, maintain, operate and install, lease, and control facilities for the generation, transmission, distribution, sale, exchange, and lease of electric power.

18. To require the sealing of abandoned or unused wells according to standards adopted by the board by ordinance and designed to protect the groundwater resources of the district from contamination. Upon and following the effective date of the ordinance, the County of Santa Clara or any incorporated city therein shall require all persons applying for any land development permit or approval to show the existence and location of any water well upon a map of the property the subject of the application. When a well is shown, the map shall be referred to the district immediately upon receipt for review and investigation. If upon review and investigation the district determines that the well or wells are to be sealed by the applicant pursuant to the ordinance, the determination shall be transmitted promptly to the applicant by the district as a requirement in writing.

§ 6. Eminent domain

The district may exercise the right of eminent domain, either within or without said district, to take any property necessary to carry out any of the objects or purposes of this act. The district in exercising such power shall in addition to the damage for the taking, injury, or destruction of property, also pay the cost of removal or relocation of any structure, railways, mains, pipes, conduits, wires, cable, poles, of any public utility which is required to be moved to a new location. Nothing in this act contained shall be deemed to authorize said district, or any person or persons to divert the waters of any river, creek, stream, irrigation system, canal or ditch, from its channel, to the detriment of any person, or persons having any interest in such river, creek, stream, irrigation system, canal or ditch, or the waters thereof or therein, unless compensation therefor be first provided in the manner provided by law.

Nothing in this act shall authorize the district to condemn any of the properties, structures or works, now owned or hereafter to be constructed or acquired, by any water conservation district within the County of Santa Clara.

§ 6.1. Water contamination hazard; public nuisance; standards; notice to property owner to abate; hearing; clearance letter or recordation; order to abate; abatement by district; payment of costs by owner; notice of lien; recordation; effect

Any abandoned or unused water well endangering the public health and safety by creating a water contamination hazard is a public nuisance. The board shall, by ordinance, establish standards for what constitutes a water contamination hazard.

Whenever the district determines that a public nuisance, as so defined, exists, it shall, by certified mail, notify the then current record owner of the property to abate the public nuisance and that it is the intention of the district to record a notice of violation of the ordinance. The notice to the owner shall describe the violation and

specify a time, date, and place for a hearing, at which the owner may present evidence to the board that a public nuisance does not actually exist and that the notice should not be recorded. The notice to the owner shall state that, unless the public nuisance is abated within the time specified by the board following the hearing, the district may abate the public nuisance and the costs of the abatement will be assessed against the property. The meeting shall take place no sooner than 30 days and no later than 60 days from date of mailing. If, within 15 days of receipt of the notice, the owner of the real property fails to inform the district of his or her objection to recording the notice of violation, the board shall record the notice of violation with the county recorder. If, after the owner has presented evidence, it is determined that there has been no violation, the district shall mail a clearance letter to the then current owner of record. If, however, after the owner has presented evidence, the board determines that a violation has in fact occurred, the board shall record the notice of violation with the county recorder. The notic e of violation, when recorded, shall be deemed to be constructive notice of the violation to all successors in interest in the property. The county recorder shall index the names of the fee owners in the general index.

If the board determines, at the conclusion of the hearing, that a public nuisance actually exists, the board shall order the property owner to abate the public nuisance within a specified time.

If the public nuisance is not abated within the time specified in the order of the board following a hearing, the district may abate the public nuisance. Any entry upon private property by the district for this purpose shall be preceded by written notice to the owner by certified mail stating the date and place of entry, the purpose thereof, and the number of persons entering. If the mailed notice is returned undelivered, the district may post a copy thereof at the proposed entry point five days prior to entry.

Any costs incurred by the district in abating a public nuisance pursuant to this section are a lien upon the property upon which the public nuisance existed when notice of the lien is filed and recorded.

Notice of the lien, particularly identifying the property on which the nuisance was abated and the amount of the lien, and naming the owner of record of the property, shall be recorded by the district in the office of the Santa Clara County Recorder within one year after the first item of expenditures by the district or within 90 days after the completion of the work, whichever first occurs. Upon recordation of the notice of lien, the lien shall have the same force, effect, and priority as a judgment lien, except that it shall attach only to the property described in the notice, and shall continue for 10 years from the time of recording of the notice unless sooner released or otherwise discharged.

§ 7. Board of directors; continuance of service

Except as otherwise provided in this act, the individuals who serve on the board of the Santa Clara Valley Water District on December 31, 2008, in accordance with the Santa Clara Valley Water District Act (Chapter 1405 of the Statutes of 1951, as amended) shall continue to serve on the board of the district established by this act.

§ 7.1. Directors; composition until noon on December 3, 2010

Until noon on December 3, 2010, the board shall consist of the following directors:

(a) Two appointed directors who serve on the board of the Santa Clara Valley Water District on December 31, 2008, pursuant to Section 7.2 of the Santa Clara Valley Water District Act (Chapter 1405 of the Statutes of 1951), as amended by Section 4 of Chapter 279 of the Statutes of 2006).

(b) Five directors who are elected pursuant to Section 7.1 of the Santa Clara Valley Water District Act (Chapter 1405 of the Statutes of 1951, as amended by Chapter 906 of the Statutes of 1993).

§ 7.2. Appointed directors; qualifications; terms

[Section repealed 2010.]

§ 7.3. Service of directors from the first and fourth supervisorial districts until noon on December 3, 2010

Directors described in subdivision (b) of Section 7.1 from the first and fourth supervisorial districts who are elected in 2006 shall serve until noon on December 3, 2010.

§ 7.4. Service of directors from the second, third, and fifth supervisorial districts until noon on December 7, 2012.

Directors described in subdivision (b) of Section 7.1 from the second, third, and fifth supervisorial districts who are elected in 2008 shall serve until noon on December 7, 2012.

§ 7.5. Service of specified directors until noon on December 3, 2010

Directors described in subdivision (a) of Section 7.1 shall serve until noon on December 3, 2010.

§ 7.6. Director composition as of December 3, 2010

Notwithstanding any other provision of law, commencing at noon on December 3, 2010, the number of elected directors on the board shall be increased from five to seven and the number of appointed directors shall be reduced from two to zero.

§ 7.7. Electoral districts

(a) On or before June 30, 2010, the board shall adopt a resolution that divides the district into seven electoral districts and that assigns a number to each district.

(b) Using the most recent census data as a basis, the electoral districts shall be as nearly equal in population as possible.

(c) In establishing the boundaries of the electoral districts, the board may give consideration to the topography, geography, cohesiveness, contiguity, integrity, compactness of territory, and the community of interests of the electoral districts.

§ 7.8. First elections for first through seventh electoral districts; term of office; eligibility

(a) The first elections for the first, fourth, sixth, and seventh electoral districts established pursuant to Section 7.7 shall be conducted at the November 2, 2010, statewide general election. The first elections for the second, third, and fifth electoral districts established pursuant to Section 7.7 shall be conducted at the November 6, 2012, statewide general election.

(b) Except as otherwise provided by this act, the term of office for each director elected pursuant to subdivision (a) shall be four years beginning at noon on the first Friday in December following his or her election and the director shall hold office until his or her successor qualifies and takes office.

(c) Elections for the electoral districts established pursuant to Section 7.7 shall be conducted in accordance with the Uniform District Election Law (Part 4 (commencing with *Section 10500) of Division 10 of the Elections Code*).

(d)

(1) One director shall be elected in accordance with this section by the voters of each electoral district.

(2) A candidate for the board of directors shall be a resident in the electoral district for which he or she is a candidate.

(3) A director shall continue to reside within the electoral district during his or her term of office, except that no change in boundaries of an electoral district shall affect the term of office of any incumbent director.

(e) The directors elected pursuant to this section are to exercise their independent judgment on behalf of the interests of the entire district, including the residents, property owners, and the public as a whole in furthering the purposes and intent of this act.

§ 7.9. Vacancies in office

A vacancy in the office of any director shall be filled pursuant to *Section 1780 of the Government Code*. Any director appointed to fill a vacancy in either of the offices described in subdivision (a) of Section 7.1 shall represent the district at large and shall be a qualified elector residing in the County of Santa Clara.

§ 7.10. Recall

Any elected director may be recalled by the voters pursuant to Chapter 1 (commencing with *Section 11000) of Division 11 of the Elections Code.*

§ 7.11. Review and adjustment of electoral district boundaries

The board shall review the boundaries of the seven electoral districts established pursuant to Section 7.7 before November 1 of the year following the year in which each decennial census is taken. The boundaries shall be adjusted if needed in accordance with *Section 22000 of the Elections Code* so that each electoral district is as nearly equal in population to the others as possible. In making the adjustments, the board may give consideration to the factors described in subdivision (c) of Section 7.7.

§ 8. Compensated employment; regulations governing lobbyists; prohibited contact; severance pay; public reporting; expense reimbursements

(a) While serving as a member of the board of directors, and for one year immediately following the end of the director's term of office, no director shall seek or accept compensated employment with the district.

(b) The board, by ordinance, shall adopt regulations governing the activities of persons who lobby the district. Those regulations shall include provisions requiring registration of lobbyists, reporting requirements governing the activities of lobbyists and communications with board members, and disclosure by directors of contact with lobbyists prior to voting on matters related to the contact. This ordinance shall be adopted no later than July 1, 2010.

(c)

(1) No director shall contact staff on behalf of a party who is bidding or intends to bid on a district contract or who has or intends to submit a response to a request for proposals or request for qualifications, nor shall a director inquire about the identity of bidders or proposers prior to the time that staff has made a recommendation for selection of a contractor, vendor, or consultant.

(2) Paragraph (1) does not prohibit a director from making general inquiries about the status of a particular procurement, or from providing a member of the public with information about the appropriate staff contact concerning procurement of goods and services by the district.

(d) The board may not authorize severance pay for a board-appointed employee of the district when the employee voluntarily separates from district employment. "Severance pay" does not include any otherwise lawful payment required to be paid by the district under a preexisting employment agreement or under a separation and release agreement resolving a claim or claims made or threatened to be made against the district. The board shall not agree to amend an employment contract after the employee announces or requests a voluntary separation, except upon a board determination, in open session, that an adjustment in compensation is required to retain the employee and is in the best interest of the district.

(e) A public report made pursuant to *Section 54957.1 of the Government Code* of actions taken in closed session shall be reflected in the minutes of the board meeting at which the report was made.

(f)

(1) Except as provided in paragraph (2), reports prepared by district staff for the board that recommend action on any item to be considered at a regular public meeting of the board, or at a public hearing conducted by the board, shall be made available to the public no later than six days prior to the date of that meeting or hearing.

(2) Notwithstanding paragraph (1), the following reports shall be made available to the public within the time period required by the Ralph M. Brown Act (Chapter 9 (commencing with *Section 54950) of Part 1 of Division 2 of Title 5 of the Government Code*):

(A) Reports relating to a contract award, if the contract has been considered at a prior board meeting.

(B) Reports recommending board action necessary to meet a legal deadline, including a deadline for a grant funding application.

(C) Reports conveying a recommendation from a board committee.

(D) Reports recommending immediate board action to address urgent health, safety, or financial matters identified in the report.

(E) Supplemental reports conveying additional information received after the initial report was released.

(3) If a recommendation in a staff report is revised based upon direction from a member of the board, the revision shall be disclosed in the applicable report.

(4) This subdivision does not require the public release of any document that is exempt from disclosure pursuant to the California Public Records Act (Chapter 3.5 (commencing with *Section 6250) of Division 7 of Title 1 of the Government Code*) or any other provision of law.

(g) On a quarterly basis, a report of the expense reimbursements to each director shall be placed on an open session board meeting agenda for review and a determination by the board whether the expense reimbursements comply with the board's reimbursement policies adopted pursuant to *Section 53232.3 of the Government Code*. Only expenses in compliance with those policies may be reimbursed by the district.

§ 9. Ordinances and resolutions; rules and regulations; officers and employees

The board shall have power to adopt resolutions for the district which shall be adopted, certified to, recorded, and published, in the same manner except as herein otherwise provided for, as are resolutions for the County of Santa Clara.

The board shall have the power to adopt ordinances for the district. All ordinances shall be enacted only by rollcall vote entered into the proceedings of the board. An ordinance shall be in full force and effect 30 days after adoption, and shall be published once in full in a newspaper of general circulation, printed, published, and circulated in the district within 10 days after adoption. It is a misdemeanor for any person to violate any district ordinance adopted pursuant to this section from and after the effective date of the ordinance. The violation

shall be punishable by a fine not exceeding five hundred dollars ($500), or imprisonment in the county jail not to exceed 30 days, or both that fine and that imprisonment. Any violation or threatened violation may also be enjoined by civil action. The board shall have power to make and enforce all needful rules, regulations, standards, and procedures for the administration and government of the district, and to appoint and employ all needful agents, superintendents, engineers, attorneys, and employees to properly look after the performance of any work provided for in this act and to operate and maintain those works, and to perform all other acts necessary or proper to accomplish the purposes of this act.

In addition to the officers and employees herein otherwise prescribed, the board may in its discretion appoint a chairman, a clerk and such other officers and employees for the board or district as in its judgment may be deemed necessary, prescribe their duties and fix their compensation. Those officers and employees shall be employed, suspended, or their employment terminated in accordance with an ordinance setting forth rules, regulations, standards and procedures for appointment, suspension and termination of employment.

§ 10. Engineers; plans for projects; reports; cost estimates; removal

The board shall have jurisdiction and power to employ competent registered civil engineers to investigate and carefully devise a plan or plans for a project, and to obtain such information in regard thereto, as may be deemed necessary or useful for carrying out the purposes of this act; and the board may direct such engineer or engineers to make and file reports from time to time

1. A general description of the project, together with general plans, profiles, cross-sections, and general specifications relating thereto, on each project.

2. A general description of the lands, rights of way, easements and property proposed to be taken, acquired or injured in carrying out said project.

3. A map or maps which shall show the location and zones, as may be required, of each of said projects, and lands, rights of way, easements and property to be taken, acquired or injured in carrying out said project, and any other information in regard to the same that may be deemed necessary or useful.

4. An estimate of the cost of each project, including a statement of the portion, if any, of such cost theretofore advanced by the district for said project for which the district proposes to reimburse itself from the proceeds of sale of any bonds to be issued to pay for said project and an estimate of the cost of lands, rights-of-way, easements and property proposed to be taken, acquired or injured in carrying out said project, and also of all incidental expenses likely to be incurred in connection therewith, including legal, clerical, engineering, superintendence, inspection, printing and advertising, and, if deemed advisable, a sum sufficient to pay interest on any bonds proposed to be issued during all or any part of the period of construction of said project and for not to exceed 12 months thereafter; and the total amount of bonds, if any, necessary to be issued to pay for said project.

Such engineer or engineers shall from time to time and as directed by the board file with the board supplementary, amendatory and additional reports and recommendations, as necessity and convenience may require.

Such engineer or engineers, employed by the board, shall have power and authority, subject to the control and direction of the board, to employ such engineers, surveyors, and others, as may be required for making all surveys or doing any other work necessary for the making of any such report.

The board may at any time remove any or all of the engineers or employees appointed or employed under this act, and may fill any vacancies occurring among them from any cause.

§ 11. Selection of projects; determination of benefits

The board shall determine which projects or works of improvement shall be carried out and shall determine, as to each project or work of improvement, that it is either:

1. For the common benefit of the district as a whole; or

2. For the common benefit of two or more zones hereinafter referred to as participating zones; or

3. For the benefit of a single zone.

§ 12. Institution of zone or joint zone projects; hearing; determination; majority protest

The board may institute projects for single zones and joint projects for two or more zones, for the financing, constructing, maintaining, operating, extending, repairing or otherwise improving any work or improvement of comment benefit to such zone or participating zones. For the purpose of acquiring authority to proceed with any such project, the board shall adopt a resolution specifying its intention to undertake such project, together with the engineering estimates of the cost of same to be borne by the particular zones or participating zones and fixing a time and place for public hearing of said resolution and which shall refer to a map or maps showing the general location and general construction of said project. Notice of such hearing shall be given by publication once a week for two consecutive weeks prior to said hearing, the last publication of which notice must be at least seven (7) days before said hearing, in a newspaper of general circulation designated by the board, circulated in such zone or each of said participating zones, if there be such newspaper, and if there be no such newspaper then by posting notice for two consecutive weeks prior to said hearing in five public places designated by the board, in such zone or in each of said participating zones. Said notice must designate a public place in such zone or in each of said participating zones where a copy or copies of the map or maps of said joint project may be seen by any interested person; such map must be posted in each of said public places so designated in said notice at least two weeks prior to said hearing.

At the time and place fixed for the hearing, or at any time to which said hearing may be continued, the board shall consider all written and oral objections to the proposed project. Upon the conclusion of the hearing the board may abandon the proposed project or proceed with the same, unless prior to the conclusion of said hearing written protests against the proposed project signed by a majority in number of the registered voters residing within such zone or participating zones be filed with the board, in which event further proceedings relating to such project must be suspended for not less than six months following the date of the conclusion of said hearing, or said proceeding may be abandoned in the discretion of the board.

§ 12.5. Advisory boards, committees or commissions

The board may create by resolution such advisory boards, committees, or commissions for the district or any zone therein as in its judgment are required to serve the best interests of said district or zones, and may grant to them such duties as are consistent with the provisions of this act. The number of members of any such board, committee, or commission shall be not less than three (3) and shall be specified in the resolution. Members thereof shall serve at the pleasure of the board. The board shall create an advisory committee consisting of farmers to represent users of agricultural water.

§ 13. Taxation

The board shall have the power, in any year:

1. To levy ad valorem taxes or assessments in the district, to pay the general administrative costs and expenses, including maintenance and operation of established works, of the district, to carry out any of the objects or purposes of this act of common benefit to the district, and to provide a fund which may be used by the district to pay the costs and expenses of constructing or extending any or all works established within or on behalf of a zone or participating zones within the district; provided, that funds so used are replaced from funds derived from either of the following sources:

(a) Taxes or assessments levied pursuant to subdivision 2 or 3 within the zone or participating zones benefited by such construction in the year or years immediately following the use of those funds.

(b) Fees or charges collected under authority of Section 5, subdivision 9, or Section 26.

Taxes or assessments under paragraph (a) of subdivision 1 may be levied for purposes of this subdivision of this section by either of the following methods:

(a) By a levy or assessment upon all property within the district, including land, improvements thereon, and personal property.

(b) By a levy or assessment upon all real property within the district, including both land and improvements thereon.

2. To levy taxes or assessments in each or any of the zones and participating zones, to pay the cost of carrying out any of the objects or purposes of this act performed or to be performed on behalf of the respective zones, including the constructing, maintaining, operating, extending, repairing or otherwise improving any or all works or improvements established or to be established within or on behalf of the respective zones, according to the benefits derived or to be derived by the respective zones, by any of the following methods:

(a) By a levy or assessment upon all property within a zone or participating zone, including land, improvements thereon, and personal property.

(b) By a levy or assessment upon all real property within a zone or participating zones, including both land and improvements thereon.

(c) By a levy or assessment upon land only within a zone or participating zones.

It is declared that for the purposes of any tax or assessment levied under this subdivision, the property so taxed or assessed within a given zone is equally benefited.

3. To levy assessments upon any property in each or any of said zones, according to the provisions and procedures of the Improvment Act of 1911, the Improvement Bond Act of 1915, the Municipal Improvement Act of 1913, or the Refunding Assessment Bond Act of 1935.

In the event of project cooperation with any of the governmental bodies as authorized in subdivision 7 of Section 5 of this act, and the making of a contract with any such governmental body for the purposes set forth in the subdivision 7 of Section 5, by the terms of which work is agreed to be performed by any such governmental body in any specified zone or participating zones, for the particular benefit thereof, and by the contract it is agreed that the district is to pay to the governmental body, a sum of money in consideration or subvention for the performance of the work by the governmental body, the board may levy and collect a special tax or assessment upon the property in the zone or participating zones, whereby to raise funds to enable the district to make the payment, in addition to other taxes or assessments herein otherwise provided for.

The taxes or assessments shall be levied and collected together with, and not separately from taxes for county purposes, and the revenues derived from the district taxes or assessments, together with penalties thereon, shall be paid into the county treasury to the credit of the district, or the respective zones thereof, and the board may control and order the expenditure thereof for those purposes; provided, however, that no revenues, or portions thereof, derived in any of the several zones from the taxes or assessments levied under the provisions of subdivision 2 of this section shall be expended for constructing, maintaining, operating, extending, repairing or otherwise improving any works or improvements located in any other zone, except in the case of joint projects, or for projects authorized or established outside such zone, or zones, but for the benefit thereof. In cases of projects joint to two or more zones, the zones will become, and shall be referred to as, participating zones.

§ 13.2. Special taxes at minimum uniform rates according to land use category and size; exemption

For the purposes of levying special taxes pursuant to paragraph (2) of Section 13, the district may impose special taxes in accordance with Article 3.5 (commencing with *Section 50075) of Chapter 1 of Part 1 of Division 1 of Title 5 of the Government Code* at minimum uniform rates according to land use category and size. The district may provide an exemption from these taxes for residential parcels owned and occupied by one or more taxpayers who are at least 65 years of age, or who qualify as totally disabled under the federal Social Security Act, if the total household income is less than an amount that is approved by the voters of the district.

§ 14. Bonded indebtedness; procedure

(1) Whenever the board determines that a bonded indebtedness should be incurred to pay the cost of any project in any zone or zones, the board may by resolution, determine and declare the respective amounts of bonds to be issued to raise the amount of money necessary for each project and the denomination and the maximum rate of interest of said bonds. In determining each amount of bonds and the amount of money necessary for each project, the board may include therein the portion, if any, of the cost of such project theretofore advanced by the district for which the district proposes to reimburse itself from the proceeds of sale of any bonds to be issued to pay for said project and the cost of lands, rights-of-way, easements and property proposed to be taken, acquired or injured in carrying out said project and also of all incidental expenses likely to be incurred in connection therewith, including legal, clerical, engineering, superintendence, inspection, printing and advertising, and, if deemed advisable, a sum sufficient to pay interest on any bonds proposed to be issued during all or any part of the period of construction of said project and for not to exceed 12 months thereafter. The board shall cause a copy of the resolution, duly certified by the clerk, to be filed for record in the Office of the Recorder of Santa Clara County within five (5) days after its issuance. From and after said filing of said copy of said resolution the board shall be deemed vested with the a uthority to proceed with the bond election.

(2) After the filing for record of the resolution specified in subdivision (1) of this section, the board may call a special bond election in said zone or participating zones at which shall be submitted to the qualified electors of said zone or participating zones the question whether or not bonds shall be issued in the amount or amounts determined in said resolution and for the purpose or purposes therein stated. Said bonds and the interest thereon shall be paid from revenue derived from annual taxes or assessments levied as provided in this act.

(3) Said board shall call such special bond election by ordinance and not otherwise and submit to the qualified electors of said zone or participating zones, the proposition of incurring a bonded debt in said zone or participating zones in the amount and for the purposes stated in said resolution and shall recite therein the objects and purposes for which the indebtedness is proposed to be incurred; provided, that it shall be sufficient to give a brief, general description of such objects and purposes, and refer to the recorded copy of such resolution adopted by said board, and on file for particulars; and said ordinances shall also state the estimated cost of the proposed project, the amount of the principal of the indebtedness to be incurred therefor, and the maximum rate of interest to be paid on said indebtedness, and shall fix the date on which such special election shall be held, and the form and contents of the ballot to be used. The rate of interest to be paid on such indebtedness shall not exceed eight percent (8%) per annum. For the purposes of said election, said board shall in said ordinance establish special bond election precincts within the boundaries of each zone and participating zone and may form election precincts by consolidating the precincts established for general elections in said district to a number not exceeding six general precincts for each such special bond election precinct, and shall designate a polling place and appoint one inspector, one ju dge, and one clerk for each such special bond election precincts.

In all particulars not recited in said ordinance, such special bond election shall be held as nearly as practicable in conformity with the general election laws of the state, except as provided herein.

Said board shall cause a map or maps to be prepared covering a general description of the project, which said map shall show the location of the proposed projects, and shall cause the said map to be posted in a

prominent place in the county courthouse for public inspection for at least thirty (30) days before the date fixed for such election.

Said ordinance calling for such special bond election shall, prior to the date set for such election, be published pursuant to *Section 6062 of the Government Code* in a newspaper of general circulation circulated in each zone and participating zone affected. The last publication of such ordinance must be at least fourteen (14) days before said election, and if there be no such newspaper, then such ordinance shall be posted in five public places designated by the board, in each zone and participaing zone for at least thirty (30) days before the date fixed for such election. No other notice of such election need be given nor need polling place cards be issued.

Any defect or irregularity in the proceedings prior to the calling of such special bond election shall not affect the validity of the bonds authorized by said election. If at such election two-thirds (2/3) of the votes cast are in favor of incurring such bonded indebtedness, then bonds for such zone or participating zones for the amount stated in such proceedings shall be issued and sold as in this act provided.

§ 15. Bonds; forms; terms; maturity; denominations; signatures

The board shall, subject to the provisions of this act, prescribe by resolution the form of said bonds, which must include a designation of the zone or participating zones affected, and of the interest coupons attached thereto. Said bonds shall be payable annually or semiannually at the discretion of the board each and every year on a day and date, and at a place to be fixed by said board, and designated in such bonds, together with the interest on all sums unpaid on such date until the whole of said indebtedness shall have been paid.

The board may divide the principal amount of any issue into two or more series and fix different dates for the bonds of each series. The bonds of one series may be made payable at different times from those of any other series. The maturity of each series shall comply with this section. The board may fix a date, not more than two years from the date of issuance, for the earliest maturity of each issue or series of bonds. The final maturity date shall not exceed 40 years from the time of incurring the indebtedness evidenced by each issue or series. The board may provide for call and redemption of all or any part of any issue or series of bonds before maturity at prices determined by the board. No bond shall be subject to call or redemption prior to maturity unless it contains a recital to that effect.

The bonds shall be issued in such denominations as the board may determine, except that bonds shall be issued in denominations of one thousand dollars ($1,000) or more, and shall be payable on the days and at the place fixed in said bonds, and with interest at the rate specified in such bonds, which rate shall not be in excess of eight percent (8%) per annum, and shall be made payable annually or semiannually, and said bonds shall be numbered consecutively and shall be signed by the chairman of the board, and countersigned by the auditor of said district, and the seal of said district shall be affixed thereto by the clerk of the board. Either or both such signatures may be printed, engraved or lithographed. The interest coupons of said bonds shall be numbered consecutively and signed by the said auditor by his printed, engraved or lithographed signature. In case any such officer whose signatures or countersignatures appear on the bonds or coupons shall cease to be such officer before the delivery of such bonds to the purchaser, such bonds and coupons and signatures or countersignatures shall nevertheless be valid and sufficient for all purposes the same as if such officer had remained in office until the delivery of the bonds.

§ 16. Bonds; issuance and sale; proceeds; payments

The board may issue and sell the bonds of such zones authorized as hereinbefore provided at not less than par value, and the proceeds of the sale of such bonds shall be placed in the treasury of the County of Santa Clara to the credit of said district and the respective participating zones thereof, for the uses and purposes of the zone, or zones voting said bonds; and the proper record of such transactions shall be placed upon the books of said county treasurer, and said respective zone funds shall be applied exclusively to the purposes and objects mentioned in the ordinance calling such special bond election as aforesaid, subject to the provi-

sions in this act contained. Payments from said zone funds shall be made upon demands prepared, presented, allowed and audited in the same manner as demands upon the funds of the County of Santa Clara.

§ 17. Bonds; payment from tax or assessment revenue

Any bonds issued under the provisions of this act and the interest thereon shall be paid by revenue derived from an annual tax or assessment, levied as provided in clause (a) or (b) of subdivision 2 of Section 13 of this act. No zone nor the property therein shall be liable for the share of bonded indebtedness of any other zone, nor shall any moneys derived from taxation or assessment in any of the several zones be used in payment of principal or interest or otherwise of the share of bonded indebtedness chargeable to any other zone, except in the case of joint projects by participating zones.

§ 18. Bond tax

The board shall levy a tax or assessment each year sufficient to pay the interest and such portion of the principal of said bonds as is due or to become due before the time for making the next general tax levy. Such taxes or assessments shall be levied and collected in the respective zones of issuance together with and not separately from taxes for county purposes, and when collected shall be paid into the county treasury of said Santa Clara County to the credit of the zone of payment, and be used for the payment of the principal and interest on said bonds, and for no other purpose. The principal and interest on said bonds shall be paid by the county treasurer of said Santa Clara County in the manner provided by law for the payment of principal and interest on bonds of said county.

§ 19. Taxation; law applicable

The provisions of law of this State, prescribing the time and manner of levying, assessing, equalizing and collecting county property taxes, including the sale of property for delinquency, and the redemption from such sale, and the duties of the several county officers with respect thereto, are, so far as they are applicable, and not in conflict with the specific provisions of this act, hereby adopted and made a part hereof.

§ 20. Adoption of budget

(a) On or before June 15 of each year, the board shall meet, at the time and place designated by published notice, at which meeting any member of the general public may appear and be heard regarding any item in the proposed budget or for the inclusion of additional items.

(b) At the same time and place designated in the public notice, the board shall review its financial reserves, including the justification therefor, and its reserve management policy.

(c) After the conclusion of the meeting, and not later than June 30 of each year, and after making any revisions of, deductions from, or increases or additions to, the proposed budget that the board determines advisable during or after the meeting, the board, by resolution, shall adopt the budget as finally determined.

§ 21. Bonds; legal investments

The bonds of the district issued for any zone or zones thereof pursuant to this act, shall be legal investments for all trust funds, and for the funds of all insurance companies, banks, both commercial and savings, and trust companies, and for the state school funds, and whenever any money or funds may by law now or hereafter enacted be invested in bonds of cities, cities and counties, counties, school districts or municipalities

in the State of California, such money or funds may be invested in the said bonds of said district issued in accordance with the provisions of this act, and whenever bonds of cities, cities and counties, counties, school districts or municipalities, may by any law now or hereafter enacted be used as security for the performance of any act, such bonds of said district may be so used.

This section of this act is intended to be and shall be considered the latest enactment with respect to the matters herein contained, and any and all acts or parts of acts in conflict with the provisions hereof are hereby repealed.

§ 22. Bonds; tax exemption; nature of district

All bonds issued by said district under the provisions of this act shall be free and exempt from all taxation within the State of California. It is hereby declared that the district organized by this act is a reclamation district and an irrigation district within the meaning of Section 1 3/4of Article XIII and Section 13 of Article XI of the Constitution of this State.

§ 23. [Section repealed 1985.]

§ 24. Bonded improvements; conformity to report, plans, specifications, etc.

Any improvement for which bonds are voted under the provisions of this act, shall be made in conformity with the report, plans, specifications and map theretofore adopted, as above specified, unless the doing of any of such work described in said report, shall be prohibited by law, or be rendered contrary to the best interests of the district by some change of conditions in relation thereto, in which event the board may order necessary changes made in such proposed work or improvements and may cause any plans and specifications to be made and adopted therefor.

§ 25. Additional bonds

Whenever bonds have been authorized by any zone or participating zone of said district and the proceeds of the sale thereof have been expended as in this act authorized, and the board shall by resolution determine that additional bonds should be issued for carrying out the work of flood control, or for any of the purposes of this act, the board may again proceed as in this act provided, and submit to the qualified voters of said zone or participating zone, the question of issuing additional bonds in the same manner and with like procedure as hereinbefore provided, and all the above provisions of this act for the issuing and sale of such bonds, and for the expenditure of the proceeds thereof, shall be deemed to apply to such issue of additional bonds.

§ 25.1. Revenue bonds; issuance; law governing

In addition to proceedings authorized under Sections 13, 14, 15, 16, 17, 18 and 24 of this act, whenever the board determines that it is in the public interest, it may borrow money to provide funds to pay the cost of any work or improvement in the district or in any zone or zones thereof by the issuance of revenue bonds pursuant to the Revenue Bond Law of 1941 (Chapter 6 (commencing with *Section 54300) of Part 1, Division 2, Title 5 of the Government Code*). If the work or improvement is determined by the board to be for a zone or zones comprising less than all the district, the election at which the proposition to issue such revenue bonds is submitted shall be held only in such zone or zones. Proceeds from the sale of any such revenue bonds shall be expended only in the zone or zones in which the proposition to issue such revenue bonds is approved. In the case of any conflict between the provisions of this act and the provisions of the Revenue Bond Law of 1941, the provisions of the Revenue Bond Law of 1941 shall control.

§ 25.2. Revenue bonds; water and electric power facilities; special election

(a) Notwithstanding any other provision of this act, the district may from time to time, subject to the provisions of this section, issue bonds in accordance with the Revenue Bond Law of 1941, (Chapter 6 (commencing with *Section 54300) of Part 1 of Division 2 of Title 5 of the Government Code*) for the purpose of financing the construction, reconstruction, replacement, acquisition or improvement of any facility or facilities necessary or convenient for the storage, treatment, including reclamation, transmission, or distribution of water for beneficial use within the district and for the purpose of generation or transmission of electric power; provided, that this section shall not apply to the acquisition of any facility or facilities already employed in any such public utility use, except where the acquisition of the facility or facilities is by mutual agreement between the district and the owner of the property.

(b) The provisions of *Sections 54380 to 54387, inclusive, of the Government Code* shall not apply to the issuance and sale of bonds pursuant to this section.

(c) The board shall not proceed under this section until it has submitted to the qualified voters of the district at a special election called by a resolution of the board a proposition as to whether the district may authorize and sell revenue bonds under this section. If a majority of the voters of the district voting on the proposition at the election vote in favor of the proposition, the board may proceed to issue and sell revenue bonds as provided by this section. If the proposition fails to carry at the election, the proposition shall not again be voted upon until at least six months have elapsed since the date of the last election at which the proposition was submitted.

(d) The resolution calling the election shall fix the date on which the election is to be held, the proposition to be submitted thereat, the manner of holding the election and of voting for or against the proposition, and shall state that in all other particulars the election shall be held and the votes canvassed as provided by law for the holding of elections within the district. The election may be held separately or may be consolidated with any other election authorized by law at which the voters of the district may vote. The resolution calling the election shall be published and no other notice of the election need be given.

§ 25.5. Defeated bond proposal; waiting period before new election

Should a proposition for issuing bonds for any zone or participating zones submitted at any election under this act fail to receive the requisite number of votes of the qualified electors voting at such election to incur the indebtedness for the purpose specified, the board shall not for six months after such election call or order another election in such zone or participating zone for incurring indebtedness and issuing bonds under the terms of this act for the same objects and purposes.

§ 25.6. Indebtedness; limitation; purpose; short-term notes

(a) The district may borrow money and incur indebtedness, not to exceed the amount of eight million dollars ($8,000,000) as provided in this section by action of the board of directors and without the necessity of calling and holding an election in the district.

(b) Indebtness may be incurred pursuant to this section for any purpose for which the district is authorized to expend funds.

(c) Indebtedness incurred under this section shall be evidenced by short-term notes payable at stated times fixed by the board. The maturity of short-term notes shall be not later than five years from the date of issuance. Short-term notes shall bear interest at a rate not exceeding 10 percent per annum payable annually or semiannually. Short-term notes shall be general obligations of the district payable from revenues, charges, taxes, and assessments levied for purposes of the district.

(d) Short-term notes shall not be issued pursuant to this section which are payable in any fiscal year in an amount which, when added to the interest thereon, exceeds 85 percent of the estimated amount of the revenues, charges, taxes, and assessments of or allocable to the district which will be available in that fiscal year for payment of short-term notes and the interest thereon.

§ 26. Ground water charge; power to levy and collect

The board shall have the power, in addition to the powers enumerated elsewhere in this act, to levy and collect a ground water charge for the production of water from the ground water supplies within a zone or zones of the district which will benefit from the recharge of underground water supplies or the distribution of imported water in such zone or zones.

§ 26.1. Definitions relative to ground water charge

As used in connection with the groundwater charge, the following words shall mean:

"Person," "owner," or "operator" means public agencies, federal, state, and local, private corporations, firms, partnerships, limited liability companies, individuals or groups of individuals, whether legally organized or not; "owner" or "operator" also means the person to whom a water-producing facility is assessed by the county assessor, or, if not separately assessed, the person who owns the land upon which a water-producing facility is located.

"Groundwater" means nonsaline water beneath the natural surface of the ground, whether or not flowing through known and definite channels; "nonsaline water" means water which has less than 1,000 parts of chlorides to 1,000,000 parts of water, both quantities measured by weight.

"Production" or "producing" means the extraction or extracting of groundwater, by pumping or any other method, from shafts, tunnels, wells (including, but not limited to, abandoned oil wells), excavations or other sources of groundwater, for domestic, municipal, irrigation, industrial, or other beneficial use, except that the terms do not mean or include the extraction of groundwater produced in the construction or reconstruction of a well, or water incidentally produced with oil or gas in the production thereof, or water incidentally produced in a bona fide mining or excavating operation or water incidentally produced in the bona fide construction of a tunnel, unless the groundwater so extracted shall be used or sold by the producer for domestic, municipal, irrigation, industrial, or other beneficial purpose.

"Water-producing facility" means any device or method, mechanical or otherwise, for the production of water from the groundwater supplies within the district or a zone thereof.

"Water production statement" means the certified statement filed by the owner or operator of a water-producing facility with the district of the production of groundwater of the facility in a specified period.

"Water year" means July 1st of one calendar year to June 30th of the following calendar year.

"Agricultural water" means water primarily used in the commercial production of agricultural crops or livestock.

§ 26.2. Ground water charge zones; establishment; amendment

Prior to the establishment of any ground water charge, the board shall establish a zone or zones within the district within which the ground water charge will be effective. Said zone or zones shall be established and may be amended to the extent and in the manner prescribed in Section 3 of this act.

§ 26.3. Purpose of ground water charges; use of revenues

Ground water charges levied pursuant to this act are declared to be in furtherance of district activities in the protection and augmentation of the water supplies for users within a zone or zones of the district which are necessary for the public health, welfare and safety of the people of this State. The ground water charges are authorized to be levied upon the production of ground water from all water-producing facilities, whether public or private, within said zone or zones of the district for the benefit of all who rely directly or indirectly upon the ground water supplies of such zone or zones and water imported into such zone or zones.

The proceeds of ground water charges levied and collected upon the production of water from ground water supplies within such zone or zones of the district are authorized and shall be used exclusively by the board for the following purposes:

1. To pay the costs of constructing, maintaining and operating facilities which will import water into the district which will benefit such zone or zones, including payments made under any contract between the district and the State of California, the United States of America, or any public, private or municipal utility.

2. To pay the costs of purchasing water for importation into such zone or zones, including payments made under contract to the State of California, the United States of America, or any public, private or municipal utility.

3. To pay the costs of constructing, maintaining and operating facilities which will conserve or distribute water within such zone or zones, including facilities for ground water recharge, surface distribution, and the purification and treatment of such water.

4. To pay the principal or interest of any bonded indebtedness or other obligations incurred by the district on behalf of such zone or zones for any of the purposes set forth in paragraphs 1, 2 and 3 of this section.

The district may apply to any one or more of the purposes set forth in paragraphs 1, 2, 3 and 4 of this section any or all revenues received by the district from water sale contracts executed by the district pursuant to this act.

§ 26.4. Registration of water-producing facilities; violation; penalty

Within six months after the date of establishing any such zone or zones, all water-producing facilities located within the boundaries of such zone or zones shall be registered with the district and, if required by the board, measured with a water-measuring device satisfactory to the district installed by the district or at the district's option by the operator thereof. Any new water-producing facility, constructed or reestablished, or any abandoned water-producing facility which is reactivated, after such date, shall be registered with the district and, if required by the board, measured with a water-measuring device satisfactory to the district within 30 days after the completion or reestablishment, or reactivation thereof.

Failure to register any water-producing facility, as required by this act, is a misdemeanor punishable by a fine of not to exceed five hundred dollars ($500), or imprisonment in the county jail for not to exceed six months, or by both such fine and imprisonment.

In addition to other information which the district may determine is necessary and may require in the registration form provided, there shall also be given information as to the owner or owners of the land upon which each water-producing facility is located, a general description and location of each water-producing facility, the name and address of the person charged with the operation of each water-producing facility, and the name or names and addresses of all persons owning or claiming to own an interest in the water-producing facility.

§ 26.5. Annual report on district's activities; contents

(a) The district shall annually prepare a written report upon the district's activities in the protection and augmentation of the water supplies of the district. The report shall include, among other information the board may order, a financial analysis of the district's water utility system; information as to the present and future water requirements of the district, the water supply available to the district, and future capital improvement and maintenance and operating requirements; a method of financing those requirements; a recommendation as to whether or not a groundwater charge should be levied in any zone or zones of the district during the ensuing water year and, if any groundwater charge is recommended, a proposal of a rate or rates per acre-foot for agricultural water and a rate or rates per acre-foot for all water other than agricultural water for the zone or zones, which rate or rates, as applied to operators who produce groundwater above a specified annual amount, may be subject to prescribed, fixed, and uniform increases in proportion to increases by that operator in groundwater production over the production of that operator for a prior base period to be specified by the board.

(b) The report shall not contain a recommendation of any increases in proportion to increased production in a zone unless based upon an analysis showing the cause of the reduction in the groundwater levels of the zone requiring the increases, with attention given to the effect of extractions of pumpers outside of, as well as within the zone, and with an evaluation of alternative measures which may feasibly be taken within the entire affected groundwater basin and of any alternative supplies of water available for that zone, including the availability of treated water supplied by the district or treated groundwaters or groundwaters extracted in a cleanup operation and available to the district for reuse. The report shall be consistent with any conservation and reuse plan approved by the State Water Resources Control Board. The report shall also include all of the following:

(1) The amount of groundwater produced in the proposed zone and alternative water sources.

(2) The estimated costs of recharging each zone or zones.

(3) The estimated costs of mitigating any effects of pumping.

(4) Information specifying the benefits that have been received and will be received within the zone or zones where a groundwater charge has been levied and collected, or is recommended to be levied and collected.

§ 26.6. Hearing on report; notice

On or before the first Tuesday in April of each year the report shall be delivered to the clerk of the district board in writing. The clerk shall publish, pursuant to *Section 6061 of the Government Code*, a notice of the receipt of the report and of the public hearing to be held on or before the fourth Tuesday in April in a newspaper of general circulation printed and published within the district, at least 10 days prior to the date at which the public hearing regarding the report shall be held. The notice, among other information which the district may provide, shall contain an invitation to all operators of water-producing facilities within the district and to any person interested in the district's activities in the protection and augmentation of the water supplies of the district to call at the offices of the district to examine the report. There shall be held on or before the fourth Tuesday of April of each year, in the chambers of the board, a public hearing at which time any operator of a water-producing facility within the district, or any person interested in the district's activities in the protection and augmentation of the water supplies of the district, may in person, or by representative, appear and submit evidence concerning the subject of the written report.

§ 26.7. Levy and collection of ground water charges; rates; new or adjusted charges; reports; notice; hearing; errors

(a)

(1) Prior to the end of the water year in which the hearing is held, and based upon the findings and determinations from the hearing, the board shall determine whether or not a groundwater charge should be levied in any zone or zones.

(2) If the board determines that a groundwater charge should be levied, it shall levy, assess, and affix the charge or charges against all persons operating groundwater-producing facilities within the zone or zones during the ensuing water year.

(3)

(A) The charge shall be computed at a fixed and uniform rate or rates per acre-foot for agricultural water, and at a fixed and uniform rate or rates per acre-foot for all water other than agricultural water.

(B) Different rates may be established in different zones, except that in each zone the rate or rates for agricultural water shall be fixed and uniform.

(C) The rate or rates, as applied to operators who produce groundwater above a specified annual amount, may, except in the case of any person extracting groundwater in compliance with a government-ordered program of cleanup of hazardous waste contamination, be subject to prescribed, fixed, and uniform increases in proportion to increases by that operator in groundwater production over the production of that operator for a prior base period to be specified by the board, upon a finding by the board that conditions of drought and water shortage require the increases. The increases shall be related directly to the reduction in the affected zone groundwater levels in the same base period.

(D) The rates shall be established each year in accordance with a budget for that year approved by the board pursuant to this act, or amendments or adjustments to that budget, and shall be fixed and uniform rates for agricultural water and for all water other than agricultural water, respectively, except that each rate for agricultural water shall not exceed one-fourth of the rate for all water other than agricultural water.

(b)

(1) The board may also impose or adjust any groundwater charge, and the rate of any charge, on or before January 1 of each water year whenever the board determines that the imposition or adjustment of the charge is necessary.

(2) The board shall prepare a supplemental report to the annual report prepared pursuant to Section 26.5, explaining the reasons for the imposition or adjustment of the charge. The board shall file the supplemental report with the clerk of the board at least 45 days before the date the new or adjusted charge is proposed to take effect.

(3)

(A) The clerk shall publish in a newspaper of general circulation published within the district, pursuant to *Section 6061 of the Government Code*, a notice of the receipt of the supplemental report and a hearing to be held on the proposed imposition or adjustment of the groundwater charge at least 31 days before the date on which the new or adjusted charge is proposed to take effect and at least 10 days before the date of the hearing.

(B) The notice shall invite any operator of a water-producing facility within the district and other interested parties to examine the supplemental report prepared pursuant to paragraph (2) at the district office.

(4)

(A) A public hearing shall be held at least 21 days before the date on which the new or adjusted groundwater charge is proposed to take effect in the chambers of the board.

(B) Any operator of a water-producing facility within the district may, in person or by means of a representative, present evidence at the hearing concerning the imposition or adjustment of the groundwater charge.

(c) Any groundwater charge levied pursuant to this section shall be in addition to any general tax or assessment levied within the district or any zone or zones thereof.

(d) Clerical errors occurring or appearing in the name of any person or in the description of the water-producing facility from which the production of water is otherwise properly charged, or in the making or extension of any charge upon the records that do not affect the substantial rights of the assessee or assessees, shall not invalidate the groundwater charge.

§ 26.8. Notice to owners or operators

The district, after the levying of the ground water charge, shall give notice thereof to each owner or operator of each water-producing facility in the zone or zones as disclosed by the records of said district, which notice shall state the rate for each class of water of the ground water charge for each acre-foot of water to be produced during the ensuing water year. Said notice may be sent by postal card or by other first-class mail and with postage prepaid by the district.

§ 26.9. Water production statement; computation of charges; interest; penalties, and administrative charges

(a) After the establishment of a zone in which a groundwater charge may be levied, each owner or operator of a water-producing facility within the zone, until the time that the water-producing facility has been permanently abandoned, shall file with the district, on or before the 30th day following the end of collection periods established by the board, a water production statement setting forth the total production in acre-feet of water for the preceding collection period, a general description or number locating each water-producing facility, the method or basis of the computation of the water production, and the amount of the groundwater charge based on the computation. The collection periods may be established at intervals of not more than one year or less than one month. If no water has been produced from the water-producing facility during a preceding collection period, this statement shall be filed as provided for in this section, setting forth that no water has been produced during the applicable period. The statement shall be verified by a written declaration under penalty of perjury.

(b) The groundwater charge is payable to the district on or before the last date upon which the water production statements shall be filed, and is computed by multiplying the production in acre-feet of water for each classification as disclosed in the statement by the groundwater charge for each classification of water. The owner or operator of a water-producing facility that is being permanently abandoned shall give written notice of the abandonment to the district. If any owner or operator of a water-producing facility fails to pay the groundwater charge when due, the district shall charge interest at the rate of 1 percent each month on the delinquent amount of the groundwater charge.

(c) If any owner or operator of a water-producing facility fails to register each water-producing facility, or fails to file the water production statements as required by this act, the district shall, in addition to charging interest, assess a penalty charge against the owner or operator in an amount of 10 percent of the amount found by the district to be due. The board may adopt regulations to provide that in excusable or justifiable circumstances the penalty may be reduced or waived.

(d) If any owner or operator of a water-producing facility fails to file a water production statement as required by this act, the district shall, in addition to charging interest and assessing a penalty charge, assess an administrative charge to recover the costs of collection. The board may adopt regulations to provide that in excusable or justifiable circumstances the administrative charge may be reduced or waived.

(e) If a water-measuring device is permanently attached to a water-producing facility, the record of production as disclosed by the water-measuring device shall be presumed to be accurate and shall be used as the basis for computing the water production of the water-producing facility in completing the water production statement, unless it can be shown that the water-measuring device is not measuring accurately.

(f) If a water-measuring device is not permanently attached to a water-producing facility, the board may establish a method or methods to be used in computing the amount of water produced from the water-producing facilities. The methods may be based upon any or all of the following criteria: the minimum charge sufficient to cover administrative costs of collection, size of water-producing facility discharge opening, area served by the water-producing facility, number of persons served by the water-producing facility, use of land served by the water-producing facility, crops grown on land served by the water-producing facility, or any other criteria that may be used to determine with reasonable accuracy the amount of water produced from that water-producing facility. The district may levy an annual charge upon a water-producing facility for which no production has been recorded but that has not been permanently abandoned if that charge does not exceed the annual cost to the district of maintaining and administering the registration of that facility.

§ 26.10. Amendment of statement; correction of records

Upon good cause shown, an amended statement of water production may be filed or a correction of the records may be made at any time within six months of filing the water production statement; provided that if pursuant to Section 26.13, the owner or operator has been notified of a determination by the district that the production of water from the water-producing facility is in excess of that disclosed by the sworn statement covering such water-producing facility, and such owner or operator fails to protest such determination in the manner and in the time set forth in Section 26.13, the owner or operator shall be precluded from later filing an amended water production statement for that period for such water-producing facility.

§ 26.11. Record of water production and ground water charges

The district shall prepare each year a record called "The Record of Water Production and Ground Water Charges" in which shall be entered a general description of the property upon which each water-producing facility is located, an identifying number or code which is assigned to such facility, the annual water production for each class of water produced from each water-producing facility, and the ground water charge for each class of water.

§ 26.12. Injunctive relief; grounds; process; procedure

The superior court of the county in which the district lies may issue a temporary restraining order upon the filing by the district with said court of a petition or complaint setting forth that the person named therein as defendant is the operator of a water-producing facility which has not been registered with the district, or that such defendant is delinquent in the payment of a ground water charge. Such temporary restraining order shall be returnable to said court on or before ten days after its issuance.

The court may issue and grant an injunction restraining and prohibiting the named defendant from the operation of any water-producing facility when it is established at the hearing that the defendant has failed to register such water-producing facility with the district, or that the defendant is delinquent in payment of ground water charges thereon. Such court may provide that the injunction so made and issued shall be stayed for a period not to exceed ten days to permit the defendant to register the water-producing facility or to pay the delinquent ground water charge.

Service of process is completed by posting a copy of the summons and complaint upon the water-producing facility or the parcel of land upon which it is located and by personal service upon the named defendant.

The right to proceed for injunctive relief granted herein is an additional right to those which may be provided elsewhere in this act or otherwise allowed by law. The procedure provided in Chapter 3 (commencing with *Section 525), Title 7, Part 2, of the Code of Civil Procedure*, regarding injunctions shall be followed except

insofar as it may herein be otherwise provided. The district shall not be required to provide an undertaking or bond as a condition to granting injunctive relief.

§ 26.13. Excess water production; investigation and report; fixing amount of production; protest

If the district has probable cause to believe that the production of water from any water-producing facility is in excess of that disclosed by the sworn statements covering such water-producing facility, or if no statements are filed covering any water-producing facility, the district may cause an investigation and report to be made concerning the production of water from each such water-producing facility. The district may fix the amount of water production from any such water-producing facility at an amount not to exceed the maximum production capacity of such water-producing facility; provided, however, where a water-measuring device is permanently attached thereto, the record of production, as disclosed by such water-measuring device, shall be presumed to be accurate.

After such determination has been made by the district, a written notice thereof shall be mailed to the person operating such water-producing facilities at the address shown by the district's records. Any such determination made by the district shall be conclusive on all persons having an interest in such water-producing facility, and the groundwater charge, interest and penalties thereon, shall be paid forthwith, unless such person files with the board within 15 days after the mailing of such notice, a written protest setting forth the ground or grounds for protesting the amount of production so fixed. Upon the filing of such protest, the board thereafter shall hold a hearing at which time the total amount of the water production and the groundwater charge thereon shall be determined, which shall be conclusive if based upon substantial evidence. If the water production statement was filed and the amount disclosed thereon was paid within the time required by this act, and the board finds that the failure to report the amount of water actually produced resulted from excusable or justifiable circumstances, the board may waive the charge of interest on the amount found to be due. A notice of such hearing shall be mailed to the protestant at least 10 days before the date fixed for the hearing. Notice of the determination by the board shall be mailed to each protestant, who shall have 20 days from the date of mailing to pay the groundwater charge, interest or penalties provided by the provisions of this act.

Notice as required in this section shall be given by deposit thereof in any postal facility regularly maintained by the government of the United States in a sealed envelope with postage paid, addressed to the person on whom it is served at the name and address disclosed by the records of the district. The service is complete at the time of deposit.

§ 26.14. Collection of delinquent charges; interest and penalties; attachment

The district may bring a suit in the court having jurisdiction against any operator of a water-producing facility within the district for the collection of any delinquent ground water charge. The court having jurisdiction of said suit, may, in addition to allowing recovery of costs to said district as allowed by law, fix and allow as part of the judgment interest and penalties as provided in Section 26.9. Should the district, as a provisional remedy in bringing such suit, seek an attachment against the property of any named defendant therein, the district shall not be required to provide a bond or undertaking as is otherwise provided for in the Code of Civil Procedure of the State of California in Chapter 4 (commencing with Section 537), Title 7, Part 2, thereof.

§ 26.15. Production from unregistered facilities; violations; penalties

It shall be unlawful to produce water from any water-producing facility required to be registered pursuant to the terms of this act unless such water-producing facility has been registered with the district within the time required by the provisions of this act and, if required by the board, has a water-measuring device affixed thereto capable of registering the accumulated amount of water produced therefrom.

Violation of this provision shall be punishable by a fine not to exceed five hundred dollars ($500), or imprisonment in the county jail for not to exceed six months, or by both such fine and imprisonment. Each day of operation in violation hereof shall constitute a separate offense.

§ 26.16. Interfering or tampering with measuring device; filing fraudulent statements

Any person who injures, alters, removes, resets, adjusts, manipulates, obstructs or in any manner interferes or tampers with or procures or causes or directs any person to injure, alter, remove, reset, adjust, manipulate, obstruct or in any manner interfere or tamper with any water-measuring device affixed to any water-producing facility as required by this act, so as to cause said water-measuring device to improperly or inaccurately measure and record said water production, or any person who willfully does not file with the district a water production statement as prescribed and within the time required by this act, or any person who willfully removes or breaks a seal attached to an abandoned water-producing facility, or any person who with intent to evade any provision or requirement of this act files with the district any false or fraudulent water production statement is guilty of a misdemeanor and is punishable by a fine not to exceed five hundred dollars ($500), or imprisonment in the county jail not to exceed six months, or by both such fine and imprisonment.

§ 26.17. Enforcement powers

In implementing the enforcement of the provisions of this act relating to ground water charges, the district shall have the power, in addition to the powers enumerated elsewhere in this act:

1. To install and maintain water-measuring devices, and other devices which will aid in determining accurate water production, on water-producing facilities not owned by the district.

2. To affix seals to water-producing facilities which the owner or operator thereof has declared to be abandoned, or are in fact permanently abandoned.

3. To enter on to any land for the purposes enumerated in this section and for the purpose of making investigations relating to water production.

§ 27. Repeal or amendments; effect upon obligations

The repeal or amendment of this act or the change in boundaries of any zone of the district shall not in any way affect or release any of the property in said district or any zone thereof from the obligations of any outstanding bonds or indebtedness until all such bonds and outstanding indebtedness have been fully paid and discharged.

§ 28. Right of way over public lands

There is hereby granted to the district the right-of-way for the location, construction and maintenance of flood control channels, ditches, waterways, conduits, canals, storm dikes, embankments, and protective works in, over and across public land of the State of California, not otherwise disposed of or in use, not in any case exceeding in length or width that which is necessary for the construction of such works and adjuncts or for the protection thereof. Whenever any selection of a right-of-way for such works or adjuncts thereto is made by the district the board thereof must transmit to the State Lands Commission, the Controller of the State and the recorder of the county in which the selected lands are situated, a plat of the lands so selected, giving the extent thereof and the uses for which the same is claimed or desired, duly verified to be correct. If the State Lands Commission shall approve the selections so made it shall endorse its approval upon the plat and issue to the district a permit to use such right-of-way and lands.

§ 29. [Section repealed 1976.]

§ 30. Claims for money or damages; law governing; other claims; procedure

Claims for money or damages against the district are governed by Part 3 (commencing with Section 900) and Part 4 (commencing with *Section 940) of Division 3.6 of Title 1 of the Government Code*, except as provided therein. Claims not governed thereby or by other statutes or by ordinances or regulations authorized by law and expressly applicable to such claims shall be prepared and presented to the governing body and all claims shall be audited and paid, in the same manner and with the same effect as are similar claims against the county.

§ 31. Property

The legal title to all property, except shares of stock in mutual water companies or corporations, as provided in *Section 17 of Article XVI of the California Constitution*, acquired under this act shall immediately and by operation of law vest in the district, and shall be held by the district, in trust for, and is hereby dedicated and set apart to, the uses and purposes set forth in this act. The board may hold, use, acquire, manage, occupy, and possess the property, as herein provided; and the board may determine, by resolution duly entered in their minutes that any real property, or interest therein, held by the district is no longer necessary to be retained for the uses and purposes thereof, and may thereafter sell, lease, or otherwise dispose of the property pursuant to this section.

Real property that, in the unanimous judgment of the board, has no access to a public road, or that consists of an easement for ingress and egress to property that, by the terms of the easement, will terminate when ingress and egress is supplied to the property by a public road, may be sold, leased, or conveyed by the board on terms prescribed by it.

The board may reconvey real property to the former owner by whom the property was conveyed, or from whom the property was condemned by the district, or the owner's successor in interest for fair market value. Fair market value shall be determined by a qualified real estate appraiser. However, the district may reconvey real property to the former owner or his or her successor in interest for less than fair market value if the district finds that a public purpose exists justifying that reconveyance for less than fair market value.

The board may by a majority vote exchange real property of equal value with any person, firm, or corporation for the purpose of removing defects in the title to real property owned by the district or where the real property to be exchanged is not required for district use and the property to be acquired is required for district use.

In all other cases, the board shall be governed in the sale, lease, or other disposition of real property by the requirements of law governing that action by counties; provided, however, that notice of the board's intended action shall be as prescribed in *Section 25363 of the Government Code*.

The board may by resolution prescribe a procedure for the leasing of real property owned by the district alternative to the requirements of law governing counties.

The board may by a majority vote sell, lease, or otherwise transfer to the state, the County of Santa Clara, or to any city, school district, or other special district within the Santa Clara Valley Water District, or exchange with the public entities, any real or personal property or interest therein belonging to the district upon the terms and conditions that are agreed upon.

The board shall establish regulations for the trade in, survey, sale, or other disposition of personal property held by the district and no longer necessary to be retained for the uses and purposes thereof; provided, however, that any sale of personal property having a sale value in excess of that value stated from time to time by Section 1041.6 of Article 2 of Subchapter 3 of Chapter 2 of Division 2 of the California Code of Regulations as a definition of "fixed assets," or any lower value as may be determined by the board, shall be made upon

public bid preceded by notice of the board's intended action given as prescribed in *Section 25363 of the Government Code*.

§ 32. Action to test validity of district

The district formed under this act in order to determine the legality of its existence, or any contract entered into by the district, may institute a proceeding therefor in the superior court of this State, in and for the County of Santa Clara, by filing with the clerk of said county a complaint setting forth the name of the district, its exterior boundaries, the date of its organization and a prayer that it be adjudged a legal flood control and water conservation and development district formed under the provisions of this act, or setting forth the name of the district, the parties to and nature of the contract, a copy of the contract, and a prayer that it be adjudged a legal contract. The summons in such proceeding shall be served by publishing a copy thereof once a week for four weeks in a newspaper of general circulation published in said county. The State of California shall be a defendant in such action, and consent therefor is given. Service of summons therein shall be made on the Attorney General. The Attorney General shall appear in such action on behalf of the State in the same manner as with appearances in civil actions. Within thirty (30) days after proof of publication of said summons shall have been filed in said proceeding, the State, any property owner or resident in said district, or any person interested may appear as a defendant in said action by serving and filing an answer to said complaint, in which case said answer shall set forth the facts relied upon to show the invalidity of the district, or the contract, and shall be served upon the attorney for said district before being filed in such proceeding. Such proceeding is hereby declared to be a proceeding in rem and the final judgment rendered therein shall be conclusive against all persons whomsoever, including the district and the State of California.

§ 33. Qualification of officers and employees; oath; compensation of directors

Each person elected or appointed to the office of director shall, within 10 days after receiving his or her certificate of election, or notice of appointment, qualify as such by taking and subscribing to an official oath. The director shall file his or her official oath with the clerk of the board.

The board may authorize each director to receive compensation not exceeding one hundred dollars ($100) per day for each day's attendance at meetings of the board, or committees thereof, or for each day's service rendered as a director by request of the board. No director may receive total compensation, other than for actual and necessary expenses, in excess of six hundred dollars ($600) per month.

Employees appointed by the board under this act, when required by the board of the district, shall execute bonds conditioned, executed, approved, filed, and recorded in the general manner and form provided by law for officers, other than supervisors, of the county, before entering upon the duties of their respective employments.

§ 34. Liberal construction

This act, and every part thereof, shall be liberally construed to promote the objects thereof, and to carry out its intents and purposes.

§ 34.5. Exemption from special assessment investigation, limitation and majority protest act

The provisions and procedures of law available under this act are not subject to "The Special Assessment Investigation, Limitation and Majority Protest Act of 1931."

§ 35. Partial invalidity

If any provision of this act, or the application thereof to any person or circumstance, is held invalid, the remainder of the act, or the application of such provision to other persons or circumstances, shall not be affected thereby.

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Appendix C

Urban Water Management Planning Act

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CALIFORNIA WATER CODE DIVISION 6
PART 2.6. URBAN WATER MANAGEMENT PLANNING

All California Codes have been updated to include the 2010 Statutes.

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

WATER CODE
SECTION 10610-10610.4

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.

WATER CODE
SECTION 10611-10617

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.

WATER CODE
SECTION 10620-10621

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).

WATER CODE
SECTION 10630-10634

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

(1) 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 that are applicable to each stage.

(2) 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.
(3) 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.
(4) 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.
(5) 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.
(6) Penalties or charges for excessive use, where applicable.
(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.
(8) A draft water shortage contingency resolution or ordinance.
(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.
(b) Commencing with the urban water management plan update due December 31, 2015, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

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.

WATER CODE SECTION 10635

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.

WATER CODE
SECTION 10640-10645

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.

WATER CODE
SECTION 10650-10656

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.

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Appendix D

UWMP Checklist and Additional Tables

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Table I-1 Urban Water Management Plan checklist, organized by legislation number

No. UW	MP 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) S	ystem Demands	Not	applicable Discussed in Ch. 4, page 4-8
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	Ch. 4, page 4-8 Ch. 5
3	Report progress in meeting urban water use targets using the standardized form.	10608.40	Not applicable	Standardized form not yet available	Not applicable
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		Ch. 1, pages 1-5 thru 1-7
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) W	ater Supply Reliability . . .	Ch.	3
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		Ch. 1, page 1-6
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		Ch. 1, page 1-8 Appendix A

No. UW	MP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
8	Describe the service area of the supplier	10631(a)	System Description		Ch. 2, pages 2-8 thru 2-14
9	(Describe the service area) climate	10631(a)	System Description		Ch. 2, pages 2-5 thru 2-7
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) S	ystem Description	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Ch. 2, 2-1 thru 2-3
11	. . . (population projections) shall be in five-year increments to 20 years or as far as data is available.	10631(a) S	ystem Description	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Ch. 2, 2-1 thru 2-3
12	Describe . . . other demographic factors affecting the supplier's water management planning	10631(a) S	ystem Description		Ch. 2, 2-1 thru 2-5
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.	Ch. 3 & Ch. 10
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.	Ch. 3, pages 3-7 thru 3-14

No. UW	MP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
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		Appendix D
16	(Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater.	10631(b)(2)	System Supplies		Ch. 3, pages 3-7 thru 3-14
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		Not applicable
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		Not applicable
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		Ch. 3, page 3-10
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		Ch. 3, page 3-14
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.	Chapter 10.

No. UW	MP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
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) W	ater Supply Reliability . . .	Ch.	10
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) W	ater Supply Reliability . . .	Ch.	9
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)	System Supplies		Ch. 3, pages 3-21 thru 3-22
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) S	ystem 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.	Ch. 2, page 2-14, Ch. 3, pages 3-13, 3-14, 3-16, 3-17, 4-1, 4-3, 4-4 4-7, and 4-9

No. UW	MP 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.	Ch. 5 Appendix E, F, G, H, I, J
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			Ch. 5
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			Ch. 5

No. UW	MP 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.	Ch. 5
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		Ch. 3. Table 3-9.
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		Ch 3, pages 3-25 thru 3-28

No. UW	MP 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.	Ch. 5 Appendix E.
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) S	ystem Demands	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Ch. 4 and Ch. 10.
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) S	ystem Demands	No	applicable Discussion in Ch. 4, page 4-6 thru 4-7
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) W	ater Supply Reliability . . .		Ch. 6, pages 6-3 thru 6-6
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) W	ater Supply Reliability . . .		Ch. 6, pages 6-6 thru 6-7
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) W	ater Supply Reliability . . .		Ch. 6, 6-9 thru 6-10

No. UW	MP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
38 (Identif	y) 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) W	ater Supply Reliability . . .		Ch. 5, pages5-3 and 5-4. Ch. 6, page 6-8
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) W	ater Supply Reliability . . .		Ch. 6, pages 6-3 thru 6-6.
40	(Indicated) penalties or charges for excessive use, where applicable.	10632(f) W	ater Supply Reliability . . .		Ch. 6, page 6-8
41	An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	10632(g) W	ater Supply Reliability . . .		Ch. 6, page 6-8
42	(Provide) a draft water shortage contingency resolution or ordinance.	10632(h) W	ater Supply Reliability . . .	Appe	ndix K
43	(Indicate) a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i) W	ater Supply Reliability . . .		Ch. 6, page 6-8
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		Ch. 7
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		Ch. 7, pages 7-6 thru 7-10
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		Ch. 7, page 7-6

No. UW	MP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
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		Ch. 7, page 7-5, 7-11
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		Ch. 7
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		Ch. 7, page 7-14
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		Ch. 7, page 7-13 thru 7-14
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		Ch. 7, pages 7-11 thru 7-12
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 W	ater Supply Reliability . . .	For years 2010, 2015, 2020, 2025, and 2030	Ch. 8

No. UW	MP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
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 . . .	Ch.	10
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		To be completed
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		Ch. 1, pages 1-6, 1-8
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		Ch. 1, page 1-8
57	After the hearing, the plan shall be adopted as prepared or as modified after the hearing.	10642	Plan Preparation		To be completed
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		Ch. 1?? To be completed

No. UW	MP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
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		To be completed
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		To be completed

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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Appendix E

District Groundwater Management Plan 2001

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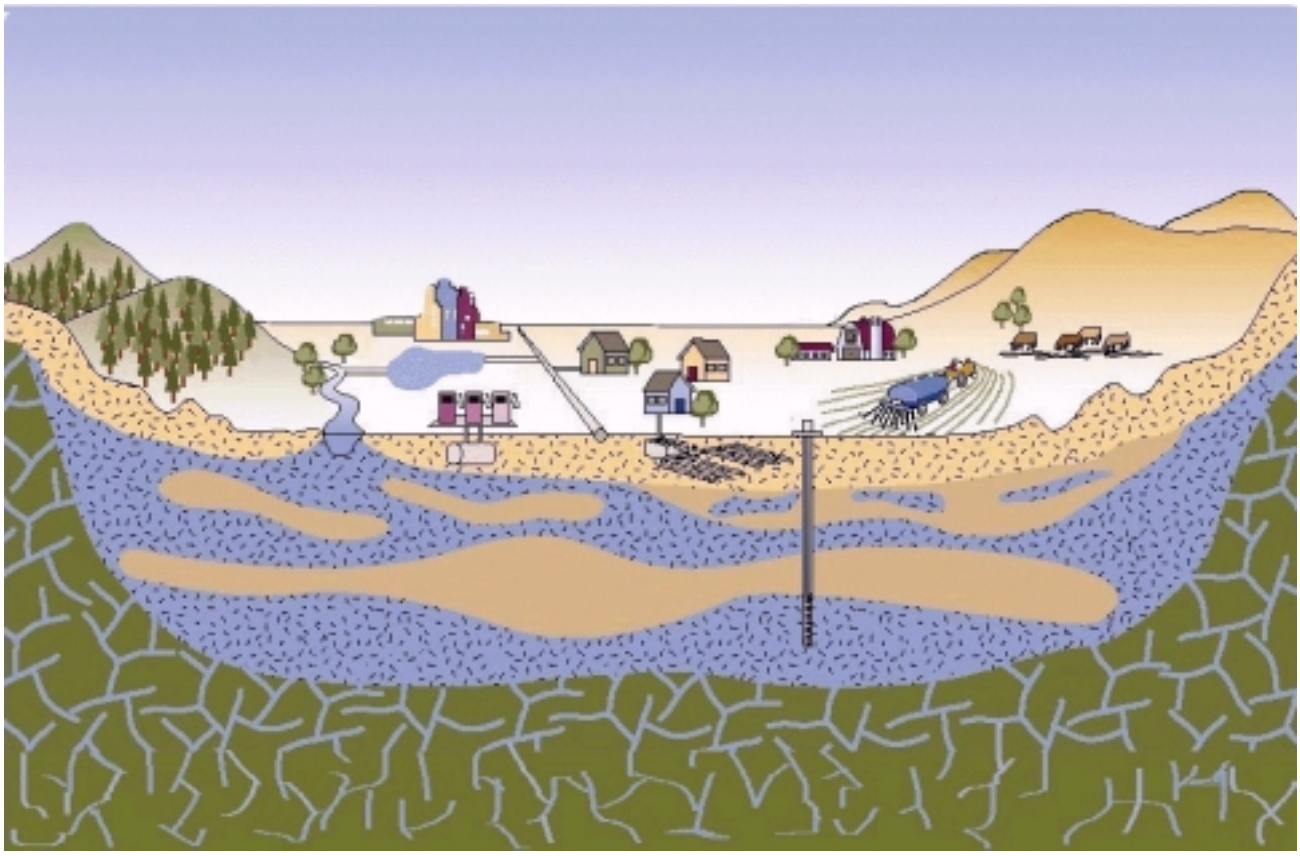
Santa Clara Valley Water District
Groundwater Management Plan



July 2001

Santa Clara Valley Water District

SANTA CLARA VALLEY WATER DISTRICT

Santa Clara Valley Water District Groundwater Management Plan

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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.

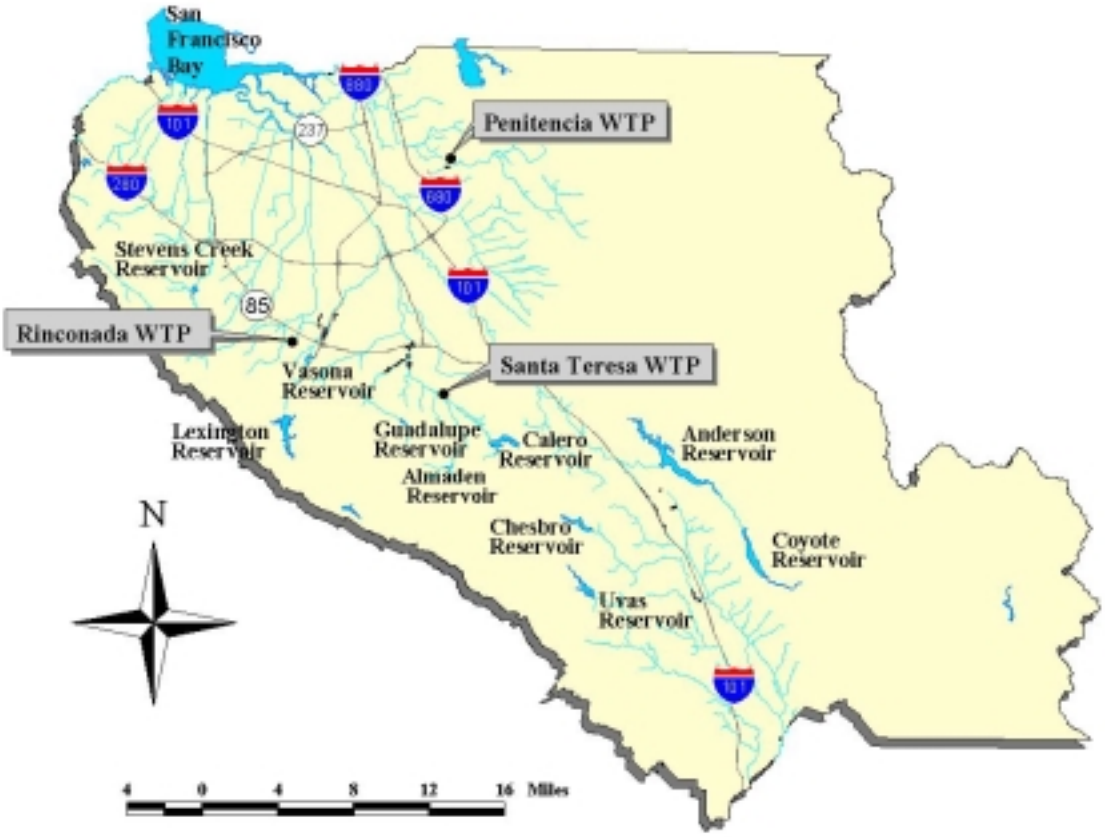
Treatment Plants

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.

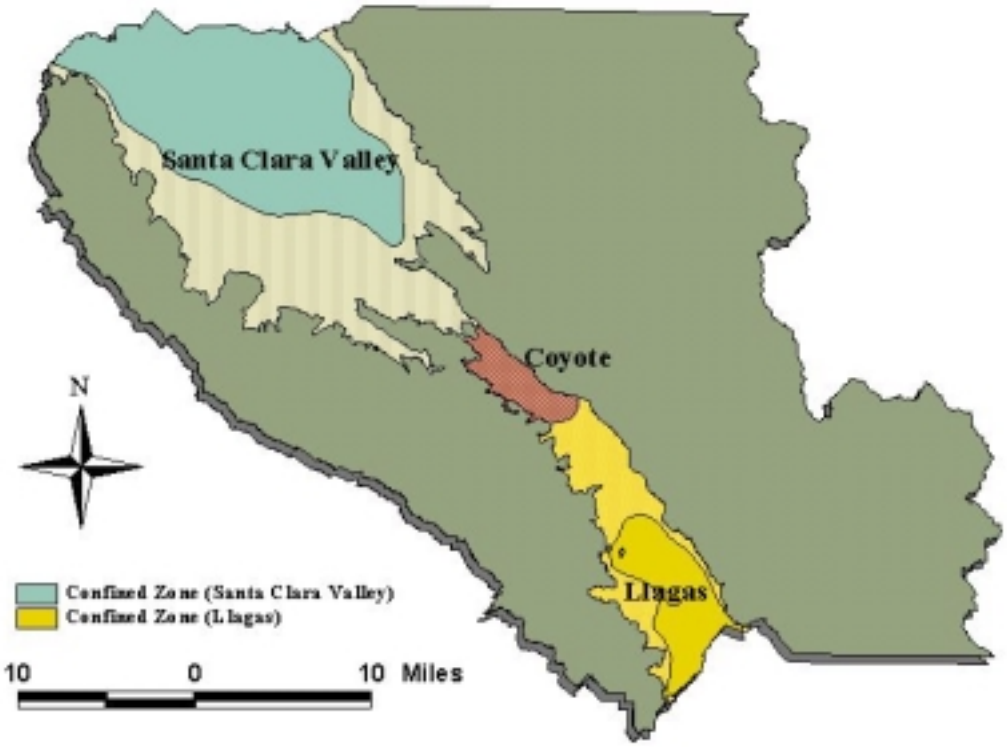
Groundwater Basins
The groundwater basin is divided into three interconnected subbasins that transmit, filter, and store water. These subbasins are portrayed in Figure 2-3. The Santa Clara Valley Subbasin in the northern part of the County extends from Coyote Narrows at Metcalf road to the County's northern 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

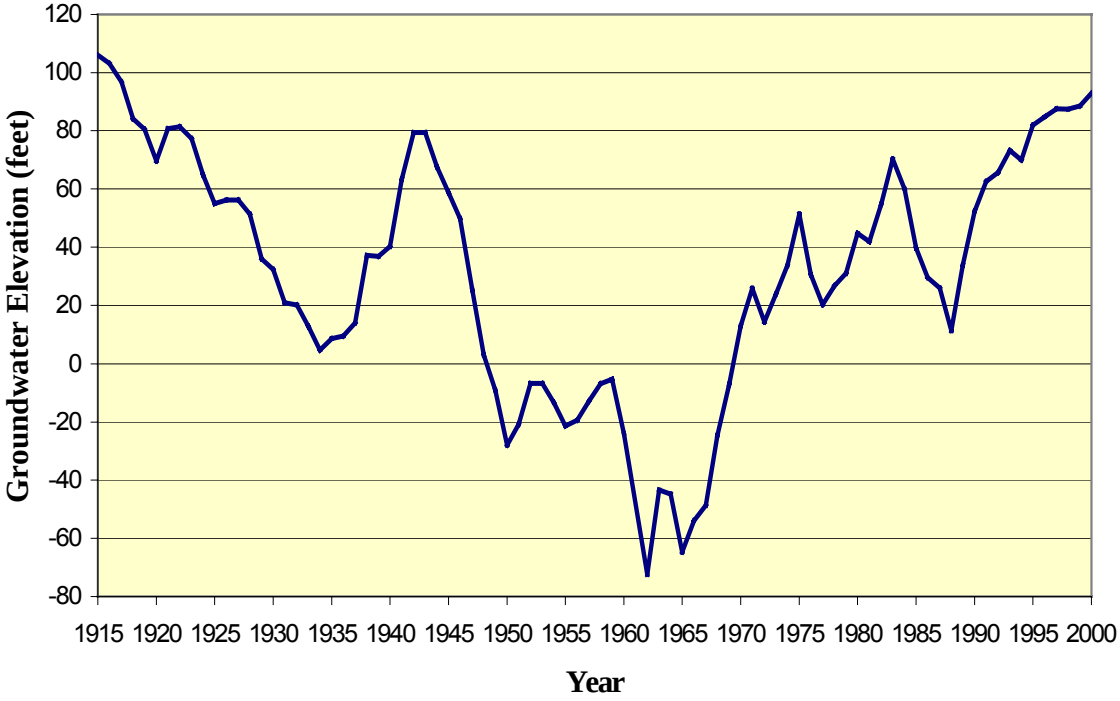
Groundwater conditions throughout the County are generally very good, as District efforts to prevent groundwater basin overdraft, curb land subsidence, and protect water quality have been largely successful. Groundwater elevations are generally recovered from overdraft conditions throughout the basin, 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.

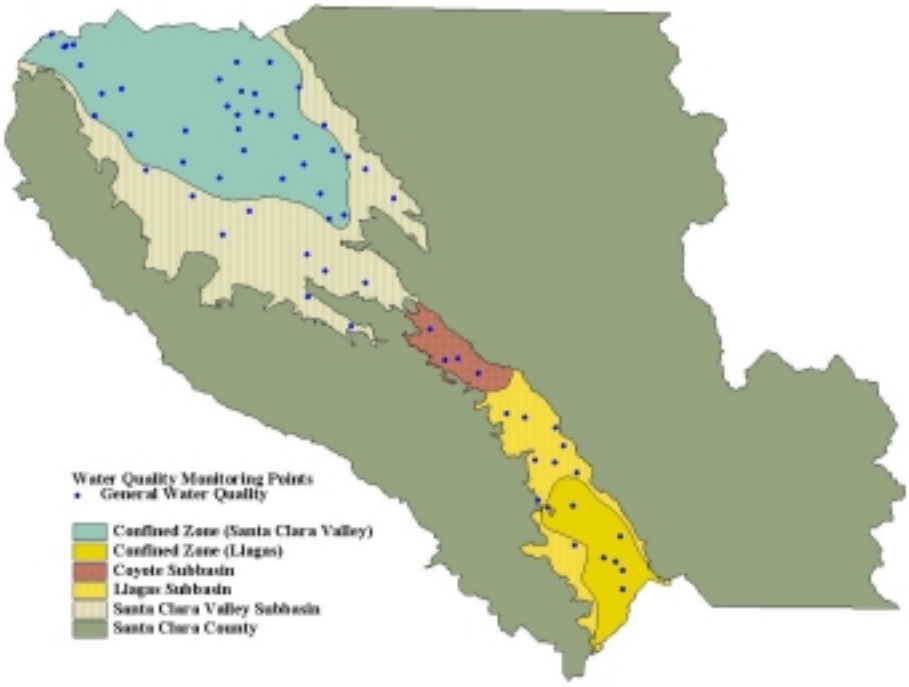
Current Status

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:

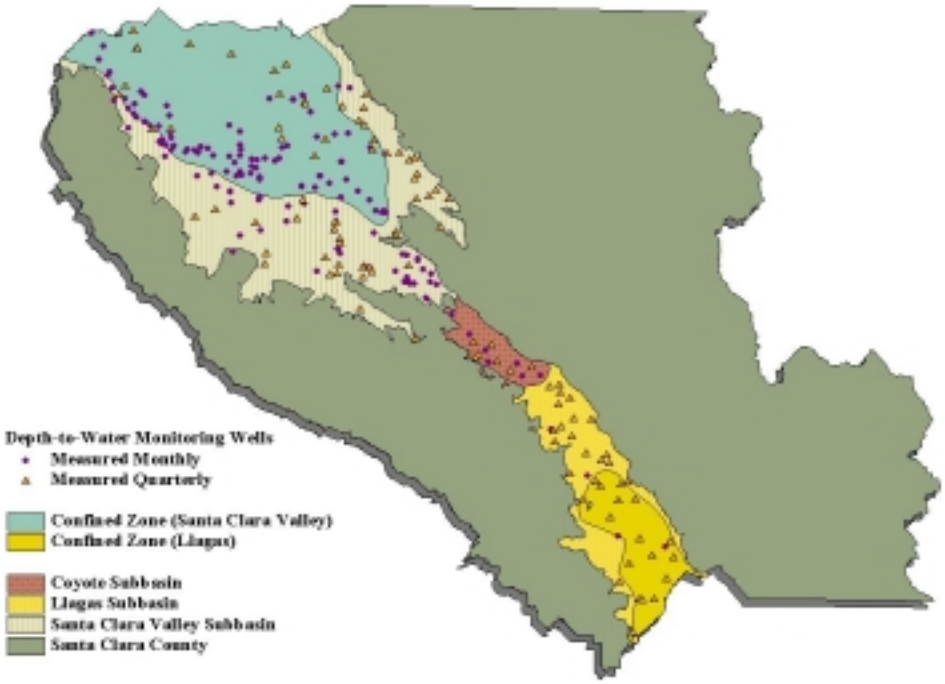
- Collection of monthly depth-to-water field measurements from approximately 168 wells, including approximately 150 wells owned by other agencies (Figure 4-2).
- Collection of quarterly depth-to-water field measurements from approximately 108 wells (Figure 4-2).
- Maintenance of a groundwater elevation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

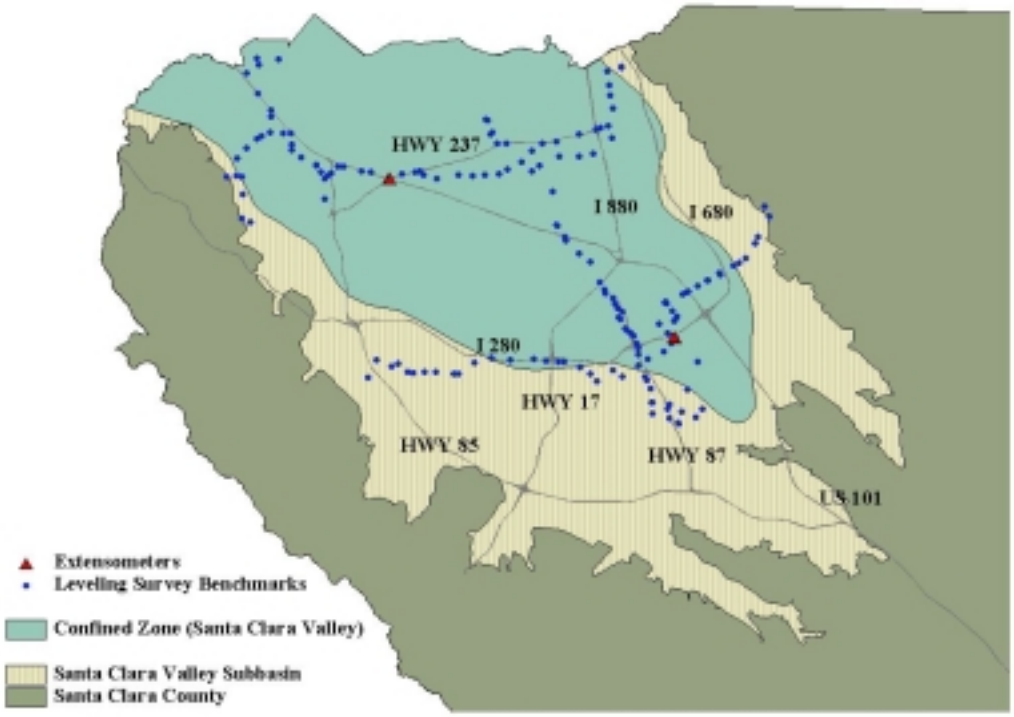
The District developed subsidence thresholds that relate the expected rate of land subsidence from various groundwater elevations. The Predictions Relating Effective Stress and Subsidence (PRESS) computer code was utilized for this model, and 10 index wells located throughout the Santa Clara Valley Subbasin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

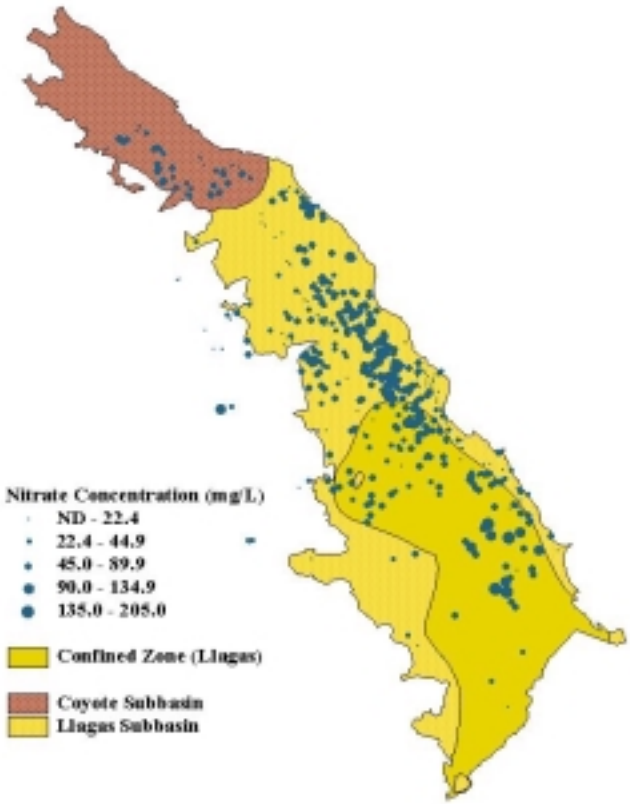
In 1997, the District began implementing the public education portion of the study recommendations. A large agricultural outreach effort was initiated. As part of that outreach, the District entered into a contract with a Mobile Irrigation Lab to offer free irrigation evaluations to farmers in order 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

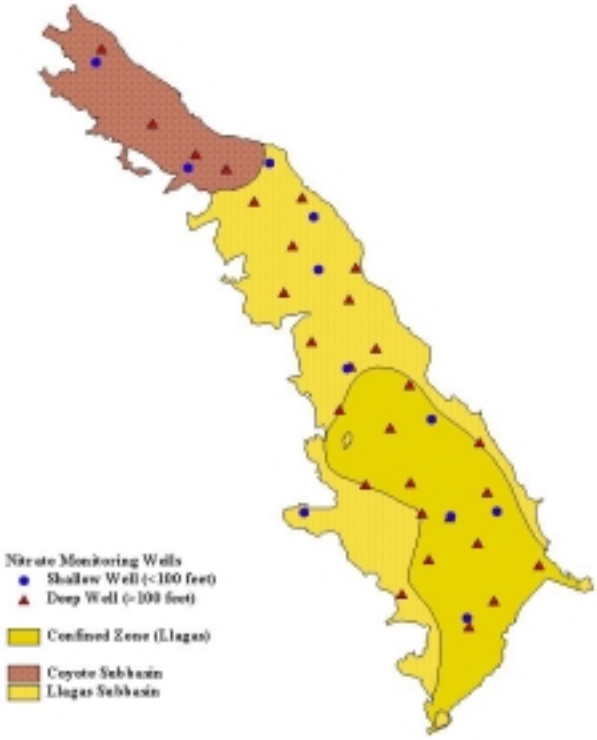


Current Status

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.

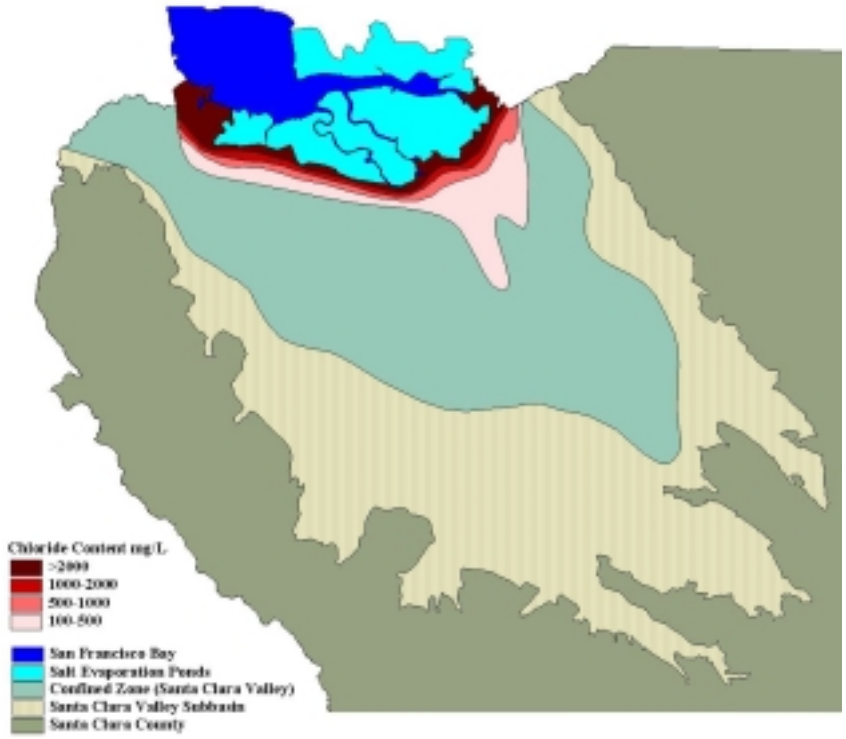
Comparison of older mineral analyses of groundwater from wells in the San Francisco bayfront area in Santa Clara and Alameda counties, some dating back to 1907, with more recent data shows that saltwater intrusion has occurred in the upper aquifer. With much higher water demands after World War II and 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.

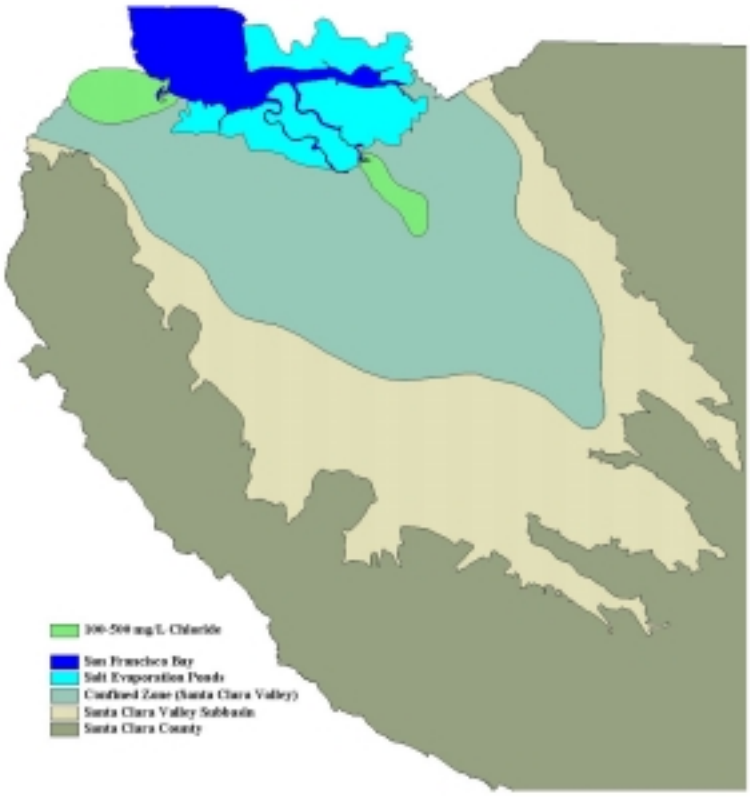
Figure 5-3
Upper Zone Saltwater Intrusion



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.

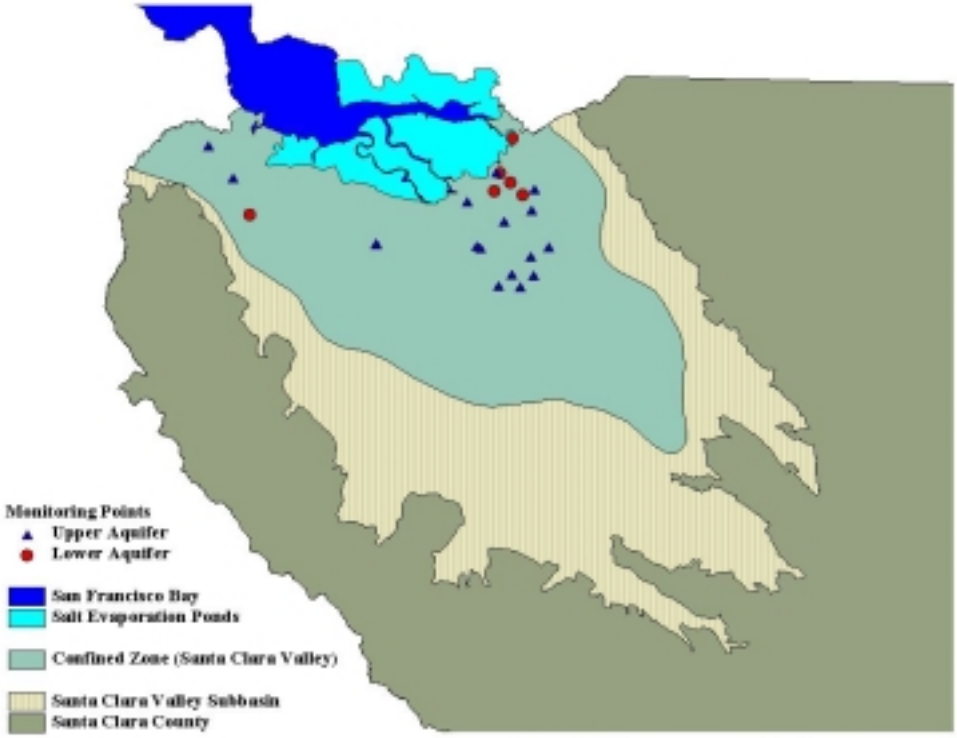
Since the inception of this program, the Board has authorized a more comprehensive well destruction program, through which abandoned wells near areas of known chemical contamination can be destroyed with District funds. This program began in October 1984, and was in part a result of general concerns 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.

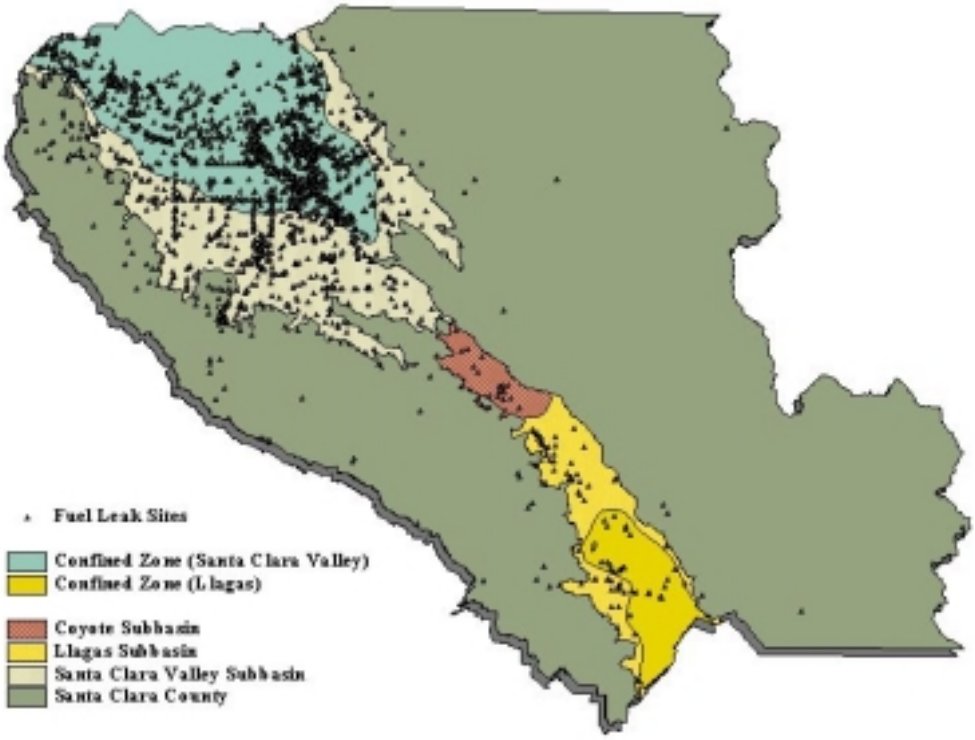
In 1987, the District entered into an informal agreement with the San Francisco RWQCB to create a pilot oversight program. At that time more than 1,000 fuel leaks had been reported within the County. The District developed an in-house technical group of employees capable of providing regulatory oversight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

Best Management Practices Compliance Reports

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BMP 3 Coverage Requirement Status

Reporting Unit ID 201

Rep Unit Name: Santa Clara Valley Water District

Date MOU Signed: 8/20/1991

Reporting Period: 05-06

Rep Unit Category: Wholesale Only

RU indicated "At least as effective as" implementation during report period: No

RU filed an exemption for this BMP during report period: No exemption request filed

If exemption filed, type:

Exhibit 1 Coverage Requirement

An agency must meet one of two conditions to be in compliance with BMP 3:

Condition 1: Perform a prescreening audit. If the result is equal to or greater than 0.9 nothing more needs be done.

Condition 2: Perform a prescreening audit. If the result is less than 0.9, perform a full audit in accordance with AWWA's Manual of Water Supply Practices, Water Audits, and Leak Detection.

RU operates a water distribution system: Yes

Tests For Conditions 1 and 2

Report Year	Report Period	Pre Screen Completed	Pre Screen Result	Full Audit Indicated	Full Audit Completed
1999	99-00	Yes	99.5%	No	Yes
2000	99-00	Yes	101.2%	No	Yes
2001	01-02	Yes	98.3%	No	Yes
2002	01-02	Yes	99.1%	No	Yes
2003	03-04	Yes	102.3%	No	Yes
2004	03-04	Yes	97.9%	No	Yes
2005	05-06	Yes	100.0%	No	Yes
2006	05-06	Yes	100.0%	No	Yes
2007	07-08	Yes	99.9%	No	Yes
2008	07-08	Yes	101.3%	No	Yes

BMP 3 Coverage Status Summary

Water supplier has met the coverage requirements for this BMP.

BMP 7 Coverage Requirement Status

Reporting Unit ID 201

Rep Unit Name: Santa Clara Valley Water District

Date MOU Signed: 8/20/1991

Reporting Period: 05-06

Rep Unit Category: Wholesale Only

RU indicated "At least as effective as" implementation during report period: No

RU filed an exemption for this BMP during report period: No exemption request filed

If exemption filed, type:

Exhibit 1 Coverage Requirement

An agency must meet one condition to comply with BMP 7.

Condition 1: Implement and maintain a public information program consistent with BMP 7's definition.

Test For Condition 1:05-06

Report Year	Report Period	BMP 7 Implementation Year	RU Has Public Information Program
1999	99-00	1	Yes
2000	99-00	2	Yes
2001	01-02	3	Yes
2002	01-02	4	Yes
2003	03-04	5	Yes
2004	03-04	6	Yes
2005	05-06	7	Yes
2006	05-06	8	Yes
2007	07-08	9	Yes
2008	07-08	10	Yes

BMP 7 Coverage Status Summary

Water supplier has met the coverage requirements for this BMP.

BMP 8 Coverage Requirement Status

Reporting Unit ID 201

Rep Unit Name: Santa Clara Valley Water District

Date MOU Signed: 8/20/1991

Reporting Period: 05-06

Rep Unit Category: Wholesale Only

RU indicated "At least as effective as" implementation during report period: No

RU filed an exemption for this BMP during report period: No exemption request filed

If exemption filed, type:

Exhibit 1 Coverage Requirement

An agency must meet one condition to comply with BMP 8.

Condition 1: Implement and maintain a school education program consistent with BMP 8's definition.

Test For Condition 1

Report Year	Report Period	BMP 8 Implementation Year	RU Has School Education Program
1999	99-00	1	Yes
2000	99-00	2	Yes
2001	01-02	3	Yes
2002	01-02	4	Yes
2003	03-04	5	Yes
2004	03-04	6	Yes
2005	05-06	7	Yes
2006	05-06	8	Yes
2007	07-08	9	Yes
2008	07-08	10	Yes

BMP 8 Coverage Status Summary

Water supplier has met the coverage requirements for this BMP.

BMP 12 Coverage Requirement Status

Reporting Unit ID 201

Rep Unit Name: Santa Clara Valley Water District

Date MOU Signed: 8/20/1991

Reporting Period: 05-06

Rep Unit Category: Wholesale Only

RU indicated "At least as effective as" implementation during report period: No

RU filed an exemption for this BMP during report period: No exemption request filed

If exemption filed, type:

Exhibit 1 Coverage Requirement

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

Test For Compliance

Report Year	Report Period	Conservation Coordinator Position Staffed?	Total Staff on Team (incl. CC)
1999	99-00	yes	5
2000	99-00	yes	5
2001	01-02	yes	5
2002	01-02	yes	5
2003	03-04	yes	5
2004	03-04	yes	6
2005	05-06	yes	6
2006	05-06	yes	6
2007	07-08	yes	5
2008	07-08	yes	5

BMP 12 Coverage Status Summary

Water supplier has met the coverage requirements for this BMP.

BMP 3 Coverage Requirement Status

Reporting Unit ID 201

Rep Unit Name: Santa Clara Valley Water District

Date MOU Signed: 8/20/1991

Reporting Period: 07-08

Rep Unit Category: Wholesale Only

RU indicated "At least as effective as" implementation during report period: No

RU filed an exemption for this BMP during report period: No exemption request filed

If exemption filed, type:

Exhibit 1 Coverage Requirement

An agency must meet one of two conditions to be in compliance with BMP 3:

Condition 1: Perform a prescreening audit. If the result is equal to or greater than 0.9 nothing more needs be done.

Condition 2: Perform a prescreening audit. If the result is less than 0.9, perform a full audit in accordance with AWWA's Manual of Water Supply Practices, Water Audits, and Leak Detection.

RU operates a water distribution system: Yes

Tests For Conditions 1 and 2

Report Year	Report Period	Pre Screen Completed	Pre Screen Result	Full Audit Indicated	Full Audit Completed
1999	99-00	Yes	99.5%	No	Yes
2000	99-00	Yes	101.2%	No	Yes
2001	01-02	Yes	98.3%	No	Yes
2002	01-02	Yes	99.1%	No	Yes
2003	03-04	Yes	102.3%	No	Yes
2004	03-04	Yes	97.9%	No	Yes
2005	05-06	Yes	100.0%	No	Yes
2006	05-06	Yes	100.0%	No	Yes
2007	07-08	Yes	99.9%	No	Yes
2008	07-08	Yes	101.3%	No	Yes

BMP 3 Coverage Status Summary

Water supplier has met the coverage requirements for this BMP.

BMP 7 Coverage Requirement Status

Reporting Unit ID 201

Rep Unit Name: Santa Clara Valley Water District

Date MOU Signed: 8/20/1991

Reporting Period: 07-08

Rep Unit Category: Wholesale Only

RU indicated "At least as effective as" implementation during report period: No

RU filed an exemption for this BMP during report period: No exemption request filed

If exemption filed, type:

Exhibit 1 Coverage Requirement

An agency must meet one condition to comply with BMP 7.

Condition 1: Implement and maintain a public information program consistent with BMP 7's definition.

Test For Condition 1:07-08

Report Year	Report Period	BMP 7 Implementation Year	RU Has Public Information Program
1999	99-00	1	Yes
2000	99-00	2	Yes
2001	01-02	3	Yes
2002	01-02	4	Yes
2003	03-04	5	Yes
2004	03-04	6	Yes
2005	05-06	7	Yes
2006	05-06	8	Yes
2007	07-08	9	Yes
2008	07-08	10	Yes

BMP 7 Coverage Status Summary

Water supplier has met the coverage requirements for this BMP.

BMP 8 Coverage Requirement Status

Reporting Unit ID 201

Rep Unit Name: Santa Clara Valley Water District

Date MOU Signed: 8/20/1991

Reporting Period: 07-08

Rep Unit Category: Wholesale Only

RU indicated "At least as effective as" implementation during report period: No

RU filed an exemption for this BMP during report period: No exemption request filed

If exemption filed, type:

Exhibit 1 Coverage Requirement

An agency must meet one condition to comply with BMP 8.

Condition 1: Implement and maintain a school education program consistent with BMP 8's definition.

Test For Condition 1

Report Year	Report Period	BMP 8 Implementation Year	RU Has School Education Program
1999	99-00	1	Yes
2000	99-00	2	Yes
2001	01-02	3	Yes
2002	01-02	4	Yes
2003	03-04	5	Yes
2004	03-04	6	Yes
2005	05-06	7	Yes
2006	05-06	8	Yes
2007	07-08	9	Yes
2008	07-08	10	Yes

BMP 8 Coverage Status Summary

Water supplier has met the coverage requirements for this BMP.

BMP 12 Coverage Requirement Status

Reporting Unit ID 201

Rep Unit Name: Santa Clara Valley Water District

Date MOU Signed: 8/20/1991

Reporting Period: 07-08

Rep Unit Category: Wholesale Only

RU indicated "At least as effective as" implementation during report period: No

RU filed an exemption for this BMP during report period: No exemption request filed

If exemption filed, type:

Exhibit 1 Coverage Requirement

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

Test For Compliance

Report Year	Report Period	Conservation Coordinator Position Staffed?	Total Staff on Team (incl. CC)
1999	99-00	yes	5
2000	99-00	yes	5
2001	01-02	yes	5
2002	01-02	yes	5
2003	03-04	yes	5
2004	03-04	yes	6
2005	05-06	yes	6
2006	05-06	yes	6
2007	07-08	yes	5
2008	07-08	yes	5

BMP 12 Coverage Status Summary

Water supplier has met the coverage requirements for this BMP.

Appendix G

AB 1420 compliance letter and table

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Santa Clara Valley Water District SM

5750 ALMADEN EXPWY
SAN JOSE, CA 95118-3686
TELEPHONE (408) 265-2600
FACSIMILE (408) 266-0271
www.valleywater.org
AN EQUAL OPPORTUNITY EMPLOYER

December 29, 2010

Mr. Trevor Joseph
California Department of Water Resources
Division of Integrated Regional Water Management
Financial Assistance Branch
1416 9th Street, Room 338
Sacramento, CA 95814

Dear Mr. Joseph:

Subject: Santa Clara Valley Water District Compliance with AB 1420 and Water Metering Requirements

Funding Program Name: Proposition 84 Integrated Regional Water Management Proposition 84 Round 1 Implementation

Applicant: Bay Area Clean Water Agencies

Project Title: San Francisco Bay Area Regional Priority Projects and Programs

The purpose of this letter is to document the Santa Clara Valley Water District's (District's) compliance with AB 1420 and Water Metering Requirements. The District is one of the urban water suppliers that may receive grant funding through the subject funding program as part of the Bay Area Clean Water Agencies' project. The District previously submitted the two self-certification documents as part of San Benito County Water District's September 2010 application for Integrated Regional Water Management Planning grant funding. A copy of the Certification for Compliance with Water Metering Requirements dated September 23, 2010 is attached, as well as the Department's letter dated November 9, 2010 certifying the District's compliance with AB 1420.

If you have any questions regarding this letter, please contact Ms. Tracy Hemmeter at 408-265-2607, extension 2647, or themmeter@valleywater.org.

Sincerely,

Beau Goldie
Chief Executive Officer

Attachments
cc: T. Hemmeter, J. De La Piedra, S. Zhu

California State Water Resources Control Board
California Department of Water Resources
California Department of Public Health

CERTIFICATION FOR
COMPLIANCE WITH WATER METERING REQUIREMENTS
FOR FUNDING APPLICATIONS

Funding Agency name: California Department of Water Resources

Funding Program name: Proposition 84 IRWM Planning Grants

Applicant (Agency name): Santa Clara Valley Water District

Project Title (as shown on application form): Pajaro River Watershed Integrated Regional Water Management Plan Update

---

Please check one of the boxes below and sign and date this form.

☐ As the authorized representative for the applicant agency, I certify under penalty of perjury under the laws of the State of California, that the agency is not an urban water supplier, as that term is understood pursuant to the provisions of section 529.5 of the Water Code.

☒ As the authorized representative for the applicant agency, I certify under penalty of perjury under the laws of the State of California, that the applicant agency has fully complied with the provisions of Division 1, Chapter 8, Article 3.5 of the California Water Code (sections 525 through 529.7 inclusive) and that ordinances, rules, or regulations have been duly adopted and are in effect as of this date.

I understand that the Funding Agency will rely on this signed certification in order to approve funding and that false and/or inaccurate representations in this Certification Statement may result in loss of all funds awarded to the applicant for its project. Additionally, for the aforementioned reasons, the Funding Agency may withhold disbursement of project funds, and/or pursue any other applicable legal remedy.

Beau Goldie
Name of Authorized Representative
(Please print)

Signature

Chief Executive Officer
Title

9-23-10
Date

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

November 9, 2010

Mr. Beau Goldie, Chief Executive Officer
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, California 92236

Dear Mr. Goldie:

The Department of Water Resources (DWR) has reviewed the Santa Clara Valley Water District's (SCVWD) Self-Certification Statement – Table 1 dated October 29, 2010, regarding implementation of the Urban Best Management Practices (BMPs).

The purpose of DWR's review is to determine eligibility of SCVWD to receive water management grant or loan funds. DWR has followed the *Draft AB 1420 Compliance Requirements* dated June 1, 2009. For detailed information, please visit http://www.water.ca.gov/wateruseefficiency/finance/.

Based on DWR's review of the information in Table 1, SCVWD has and is currently implementing the BMPs consistent with AB 1420 and, therefore, is eligible to receive water management grant or loan funds.

DWR reserves the right to request additional information and documentation, including reports from SCVWD to substantiate the accuracy of the information provided in Table 1. DWR may reverse or modify its eligibility determination and notify you and the funding agency if inaccuracies are found in the supporting documentation or in Table 1.

If you have any questions, please contact me at (916) 651-7025 or Jodi Evans at (916) 651-7026.

Sincerely,

Fethi BenJemaa
Ag Water Use Efficiency Section Chief

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Appendix H

2009 Model Drought Response and Waste Water Ordinance

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Santa Clara County

Model Water Conservation Ordinance

4/30/09

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Model Water Waste Ordinance

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Appendix

Water Conservation Summary Table 16

Introduction

Managing water resources through drought years is an enormous challenge both here in Santa Clara County (County) and across the state. Recently, Governor Arnold Schwarzenegger issued a state of emergency proclamation due to the state-wide drought. He is asking all urban water users reduce their individual use by 20 percent. As the wholesale water provider for the County, the Santa Clara Valley Water District (District) Board of Directors is responsible for making decisions that will enable the District to meet our current and future demand.

Based on local and state water supply conditions as well as the Governor's drought proclamation, on March 24, 2009 the Board adopted a resolution calling for 15 percent mandatory conservation for calendar year 2009 of District managed supplies throughout the County. The District is urging all cities and water providers to increase their water conservation efforts and activities to achieve this goal.

To assist in this effort, the District, in collaboration with staff from the water providers and cities throughout the County, has developed a Model Water Conservation Ordinance (Ordinance) based on research compiled of other water agency ordinances throughout the state, most notably Metropolitan Water District of Southern California's model ordinance. The District's Ordinance includes both permanent water conservation features and the temporary measures triggered by drought or shortage as careful water management at all times is critical to ensure reliable minimal supply to meet current and future water needs. Many of these measures focus on outdoor water use since, on average, over 50 percent of a site's water use is for outdoor use.

The Ordinance is written for the benefit of cities, counties, and water providers and contains italicized comments throughout the Ordinance that identify the provisions that may be specific to these different types of entities. As a result, it can be readily adapted to apply to different types of entities, including a city or county with a municipality owned water service, a city or county that is not a water provider, or a public water district. The Ordinance purposely does not contain specific triggers for determining water supply levels, such as certain percentages of required water reduction or certain amount of reduction in supply. However, through the upcoming updates of the Urban Water Management Plans, the District will collaborate with staff from the water providers in the county to achieve consistency in this area.

Adopting entities will need the input and guidance of their governing bodies and legal counsel when considering how to adopt or revise the Ordinance to address their particular conditions.

ORDINANCE NO. ___

AN ORDINANCE OF [*GOVERNING BODY OF JURISDICTIONAL ENTITY]* ESTABLISHING A WATER CONSERVATION AND WATER SUPPLY SHORTAGE PROGRAM AND REGULATIONS

Section I: Title.

This chapter will be known as the [*INSERT ENTITY*] Water Conservation and Water Supply Shortage Program.

Section II. Findings.

a. A reliable minimum supply of potable water is essential to the public health, safety and welfare of the people and economy of the Santa Clara County.

b. Santa Clara County is a semi-arid region and is dependent upon local surface water, groundwater, and imported water supplies. A growing population, climate change, environmental concerns, and other factors in other parts of the State and western United States, make the region highly susceptible to water supply reliability issues.

c. Careful water management that includes active water conservation measures not only in times of drought, but at all times, is essential to ensure a reliable minimum supply of water to meet current and future water supply needs.

d. Article X, Section 2 of the California Constitution declares that the general welfare requires that water resources be put to beneficial use, waste or unreasonable use or unreasonable method of use of water be prevented, and conservation of water be fully exercised with a view to the reasonable and beneficial use thereof.

e. Article XI, Section 7 of the California Constitution declares that a city or county may make and enforce within its limits all local, police, sanitary, and other ordinances and regulations not in conflict with general laws. [*Not applicable to water districts*]

f. California Water Code section 375 authorizes water suppliers to adopt and enforce a comprehensive water conservation program to reduce water consumption and conserve supplies. [*Not applicable to city / county that is not a water provider*]

g. The adoption and enforcement of a water conservation and supply shortage program is necessary to manage the [*ENTITY*]'s potable water supply in the short and long-term and to avoid or minimize the effects of drought and shortage within the [*ENTITY*]. Such program is essential to ensure a reliable and sustainable minimum supply of water for the public health, safety and welfare.

Section III. Declaration of Purpose and Intent.

a. The purpose of this chapter is to establish a water conservation and supply shortage program that will reduce water consumption within the [*ENTITY*] through conservation, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, and

maximize the efficient use of water within the [*ENTITY*] to avoid and minimize the effect and hardship of water shortage to the greatest extent possible.

b. This chapter establishes permanent water conservation standards intended to alter behavior related to water use efficiency at all times and further establishes three levels of water supply shortage response actions to be implemented during times of declared water shortage or declared water shortage emergency, with increasing restrictions on water use in response to worsening drought or emergency conditions and decreasing supplies.

Section IV. Definitions.

a. The following words and phrases whenever used in this chapter have the meaning defined in this section:

1. **"Person"** means any natural person or persons, corporation, public or private entity, governmental agency or institution, including all agencies and departments of [*ENTITY*], or any other user of water provided by the [*ENTITY*].

2. **"Landscape irrigation system"** means an irrigation system with pipes, hoses, spray heads, or sprinkling devices that are operated by hand or through an automated system.

3. **"Large landscape areas"** means a lawn, landscape, or other vegetated area, or combination thereof, equal to more than one (1) acre of irrigable land.

4. **"Single pass cooling systems"** means equipment where water is circulated only once to cool equipment before being disposed.

5. **"Potable water"** means water which is suitable for drinking.

6. **"Recycled water"** means the reclamation and reuse of non-potable water for beneficial use as defined in Title 22 of the California Code of Regulations.

7. **"Billing unit"** means the unit of water used to apply water rates for purposes of calculating water charges for a persons water usage and equals ___ [*To be determined by ENTITY*]. [*Not applicable to city / county that is not water provider*]

Section V. Application

a. The provisions of this chapter apply to any person in the use of any potable water provided by the [*ENTITY*].

b. The provisions of this chapter do not apply to uses of water necessary to protect public health and safety or for essential government services, such as police, fire and other similar emergency services.

c. The provisions of this chapter do not apply to the use of recycled water, with the exception of Section VI(a).

d. The provisions of this chapter do not apply to the use of water by commercial nurseries and commercial growers to sustain plants, trees, shrubs, crops or other vegetation intended for commercial sale.

e. This chapter is intended solely to further the conservation of water. It is not intended to implement any provision of federal, State, or local statutes, ordinances, or regulations relating to protection of water quality or control of drainage or runoff. Refer to the local jurisdiction or Regional Water Quality Control Board for information on any stormwater ordinances and stormwater management plans.

Section VI: Permanent Water Conservation Requirements – Prohibition Against Waste

The following water conservation requirements are effective at all times and are permanent. Violations of this section will be considered waste and an unreasonable use of water.

a. **Limits on Watering Hours**: Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited between the hours of 9:00 a.m. and 5:00 p.m. [*Times to be determined by ENTITY*] Pacific Standard Time 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. **No Excessive Water Flow or Runoff:** Watering or irrigating of any lawn, landscape or other vegetated area in a manner that causes or allows excessive water flow or runoff onto an adjoining sidewalk, driveway, street, alley, gutter or ditch is prohibited.

c. **Limits on Washing Down Hard or Paved Surfaces:** Washing down hard or paved surfaces must only be done by use of a hand-held hose equipped with a positive self-closing water shut-off device, a low-volume, high-pressure cleaning machine equipped to recycle any water used, a low-volume high-pressure water broom or a hand-held bucket or similar container. Washing down hard of paved surfaces by other means is prohibited. Hard and paved surfaces include, but are not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys.

d. **Obligation to Fix Leaks, Breaks or Malfunctions:** Excessive use, loss or escape of water through breaks, leaks or other malfunctions in the water user's plumbing or distribution system for any period of time after such escape of water should have reasonably been discovered and corrected and in no event more than seven (7) days [*Time to be determined by ENTITY*] of receiving notice from the [ENTITY], is prohibited.

e. **Re-circulating Water Required for Water Fountains and Decorative Water Features**: Operating a water fountain or other decorative water feature that does not use re-circulated water is prohibited.

f. **Limits on Washing Vehicles:** Using water to wash or clean a vehicle, including but not limited to any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a positive self-closing water shut-off nozzle or device. This subsection does not apply to any commercial car washing facility.

g. **Drinking Water Served Upon Request Only:** Eating or drinking establishments, including but not limited to a restaurant, hotel, cafe, cafeteria, bar, or other public place where food or drinks are sold, served, or offered for sale, are prohibited from providing drinking water to any person unless expressly requested.

h. **Commercial Lodging Establishments Must Provide Guests Option to Decline Daily Linen Services**: Hotels, motels and other commercial lodging establishments must provide customers the option of not having towels and linen laundered daily. Commercial lodging establishments must prominently display notice of this option in each bathroom using clear and easily understood language.

i. **No Installation of Single Pass Cooling Systems**: Installation of single pass cooling systems is prohibited in buildings requesting new water service.

j. **No Installation of Non-re-circulating in Commercial Car Wash and Laundry Systems:** Installation of non-re-circulating water systems is prohibited in new commercial conveyor car wash and new commercial laundry systems.

k. **Restaurants Required to Use Water Conserving Dish Wash Spray Valves**: Food preparation establishments, such as restaurants or cafes, are prohibited from using non-water conserving dish wash spray valves.

l. **Commercial Car Wash Systems**: Within one year of passage of this ordinance, all commercial conveyor car wash systems must have installed operational re-circulating water systems, or must have secured a waiver of this requirement from the [*ENTITY*].

Section VII: Level 1 Water Supply Shortage

a. A Level 1 Water Supply Shortage exists when the [*ENTITY*] determines, in its sole discretion, that due to drought or other water supply conditions, a water supply shortage or threatened shortage exists and a consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions. Upon the declaration by the [ENTITY] of a Level 1 Water Supply Shortage condition, the [ENTITY] will implement the mandatory Level 1 conservation measures identified in this section.

b. **Level 1 Conservation Measures:** In addition to the prohibited uses of water identified in Section VI, the following water conservation requirements apply during a declared Level 1 Water Supply Shortage:

1. **Limits on Watering Days:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to two days per week on a schedule established and posted by the [ENTITY]. During the months of November through March, watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to no more than one day per week on a schedule established and posted by the [ENTITY]. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating 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.

2. **Limit on Watering Duration**: Watering or irrigating of lawn, landscape or other vegetated area with potable water using a landscape irrigation system or a watering device that is not continuously attended is limited to no more than fifteen (15) minutes watering per day per station. This subsection does not apply to landscape irrigation systems that exclusively use very low-flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour and weather based controllers or stream rotor sprinklers that meet a 70% efficiency standard.

3. **Obligation to Fix Leaks, Breaks or Malfunctions**: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within seventy-two (72) hours of notification by the [ENTITY] unless other arrangements are made with the [ENTITY].

4. **No Washing Down Hard or Paved Surfaces:** Washing down hard or paved surfaces is prohibited except when necessary to alleviate safety or sanitary hazards, and then only by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off device, a low-volume, high-pressure cleaning machine equipped to recycle any water used, or a low-volume high-pressure water broom. Hard and paved surfaces include, but are not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys.

Section VIII. Level 2 Water Supply Shortage

a. A Level 2 Water Supply Shortage exists when the [ENTITY] determines, in its sole discretion, that due to drought or other water supply conditions, a water supply shortage or threatened shortage exists and a consumer demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions. Upon the declaration by the [ENTITY] of a Level 2 Water Supply Shortage condition, the [ENTITY] will implement the mandatory Level 2 conservation measures identified in this section.

b. **Level 2 Conservation Measures:** In addition to the prohibited uses of water identified in Section VI and VII, the following additional water conservation requirements apply during a declared Level 2 Water Supply Shortage:

1. **Watering Days:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to one day per week on a schedule established and posted by the [*ENTITY*]. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating 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.

2. **Obligation to Fix Leaks, Breaks or Malfunctions**: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within forty-eight (48) hours of notification by the [ENTITY] unless other arrangements are made with the [ENTITY].

3. **Limits on Filling Ornamental Lakes or Ponds**: Filling or re-filling ornamental lakes or ponds with potable water is prohibited, except to the extent needed to sustain aquatic life, provided that such animals are of significant value and have been actively managed

within the water feature prior to declaration of a supply shortage level under this ordinance.

4. **Limits on Washing Vehicles:** Using water to wash or clean a vehicle, including but not limited to, any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not, is prohibited except at a commercial car washing facility that utilizes a re-circulating water system to capture or reuse water.

5. **Limits on Filling Residential Swimming Pools & Spas:** Re-filling of more than one foot and initial filling of residential swimming pools or outdoor spas with potable water is prohibited.

Section IX. Level 3 Water Supply Shortage – Emergency Condition

a. A Level 3 Water Supply Shortage condition is also referred to as an "Emergency" condition. A Level 3 condition exists when the [*ENTITY*] declares a water shortage emergency and notifies its residents and businesses that a significant reduction in consumer demand is necessary to maintain sufficient water supplies for public health and safety. Upon the declaration of a Level 3 Water Supply Shortage condition, the [*ENTITY*] will implement the mandatory Level 3 conservation measures identified in this section.

b. **Level 3 Conservation Measures:** In addition to the prohibited uses of water identified in Section VI, VII, and VIII, the following water conservation requirements apply during a declared Level 3 Water Supply Shortage Emergency:

1. **No Watering or Irrigating:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited. This restriction does not apply to the following categories of use, unless the [*ENTITY*] has determined that recycled water is available and may be applied to the use:

   i. Maintenance of vegetation, including trees and shrubs, that are watered using a hand-held bucket or similar container, hand-held hose equipped with a positive self–closing water shut-off nozzle or device;

   ii. Maintenance of existing landscape necessary for fire protection;

   iii. Maintenance of existing landscape for soil erosion control;

   iv. Maintenance of plant materials identified to be rare or essential to the well-being of protected species;

   v. 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 according to the schedule established in Section VIII(b)(1) and time restrictions in Section VI(a) and VII(b)(2);

   vi. Actively irrigated environmental mitigation projects.

2. **Obligation to Fix Leaks, Breaks or Malfunctions**: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within

twenty four (24) hours of notification by the [*ENTITY*] unless other arrangements are made with the [*ENTITY*].

3. a. **Limits on New Potable Water Service**: Upon declaration of a Level 3 Water Supply Shortage Emergency condition, the *[ENTITY]* may limit or not issue new potable water services, temporary meters and/or statements of immediate ability to serve or provide potable water service (such as, will-serve letters, certificates, or letters of availability), except under the following circumstances:

   1. A valid, unexpired building permit has been issued for the project; or
   2. The project is necessary to protect the public health, safety, and welfare; or
   3. The applicant provides substantial evidence of an enforceable commitment that water demands for the project will be offset prior to the provision of a new water meter(s) to the satisfaction of the [*ENTITY*].

   This provision does not preclude the resetting or turn-on of meters to provide continuation of water service or the restoration of service that has been interrupted for a period of one year or less. [*Not applicable to city / county that is not a water provider*]

   or

   b. **Limits on Building Permits**: The [*ENTITY*] may limit or withhold the issuance of building permits which require new or expanded water service, except to protect the public health, safety and welfare, or in cases which meet the [*ENTITY*]'s adopted conservation offset requirements. [*Not applicable to water districts]*

4. **Discontinue Service**: The [*ENTITY*], in its sole discretion, may discontinue service to consumers who willfully violate provisions of this section. [*Not applicable to city / county that is not a water provider*]

5. **No New Annexations:** Upon the declaration of a Level 3 Water Supply Shortage condition, the [*ENTITY*] may suspend consideration of annexations to its service area. This subsection does not apply to boundary corrections and annexations that will not result in any immediate increased use of water.

Section X. Procedures for Determination / Notification of Water Supply Shortage

a. **Declaration and Notification of Water Supply Shortage:** The existence of Level 1, Level 2 or Level 3 Water Supply Shortage conditions may be declared by resolution of the [*ENTITY*] adopted at a regular or special public meeting held in accordance with State law. The mandatory conservation requirements applicable to Level 1, Level 2 or Level 3 conditions will take effect on the tenth day after the date the shortage level is declared. Within five (5) days following the declaration of the shortage level, the [*ENTITY*] must publish a copy of the resolution in a newspaper used for publication of official notices. If the [*ENTITY*] activates a water allocation process, it must provide notice of the activation by including it in the regular billing statement or by any other mailing to the address to which the [*ENTITY*] customarily mails the billing statement for fees or charges for on-going water service. A water allocation will be effective on the fifth day following the date of mailing or at such later date as specified in the notice.

Section XI. Hardship Waiver

a. **Undue and Disproportionate Hardship:** If, due to unique circumstances, a specific requirement of this chapter would result in undue hardship to a person using water or to property upon which water is used, that is disproportionate to the impacts to water users generally or to similar property or classes of water users, then the person may apply for a waiver to the requirements as provided in this section.

b. **Written Finding:** The waiver may be granted or conditionally granted only upon a written finding of the existence of facts demonstrating an undue hardship to a person using water or to property upon which water is used, that is disproportionate to the impacts to water users generally or to similar property or classes of water use due to specific and unique circumstances of the user or the user's property.

1. **Application**: Application for a waiver must be on a form prescribed by the [*ENTITY*] and accompanied by a non-refundable processing fee in an amount set by [*GOVERNING BODY OF ENTITY*] resolution.

2. **Supporting Documentation**: The application must be accompanied by photographs, maps, drawings, and other information, including a written statement of the applicant.

3. **Required Findings for Waiver:** An application for a waiver will be denied unless the [*Title of approving authority*] finds, based on the information provided in the application, supporting documents, or such additional information as may be requested, and on water use information for the property as shown by the records of the [*ENTITY*] or its Agent, all of the following:

   i. That the waiver does not constitute a grant of special privilege inconsistent with the limitations upon other residents and businesses;

   ii. That because of special circumstances applicable to the property or its use, the strict application of this chapter would have a disproportionate impact on the property or use that exceeds the impacts to residents and businesses generally;

   iii. That the authorizing of such waiver will not be of substantial detriment to adjacent properties, and will not materially affect the ability of the [*ENTITY*] to effectuate the purpose of this chapter and will not be detrimental to the public interest; and

   iv. That the condition or situation of the subject property or the intended use of the property for which the waiver is sought is not common, recurrent or general in nature.

4. **Approval Authority**: The [APPROPRIATE ENTITY MANAGER] must act upon any completed application no later than ten (10) days after submittal and may approve, conditionally approve, or deny the waiver. The applicant requesting the waiver must be promptly notified in writing of any action taken. Unless specified otherwise at the time a waiver is approved, the waiver will apply too the subject property during the period of the mandatory water supply shortage condition. The decision of the [APPROPRIATE ENTITY MANAGER] will be final.

Section XII. Penalties and Violations

a. **Violation:** The violation of any provision of this chapter shall not be considered a misdemeanor, but rather an infraction, punishable by fines and penalties pursuant to Section XII. Each day such violation continues shall be regarded as a new and separate offense.

b. **Penalties:** Penalties for failure to comply with any provisions of the ordinance are as follows:

1. **First Violation:** The [*ENTITY*] will issue a written warning and deliver a copy of this ordinance by mail.

2. **Second Violation:** A second violation within the preceding twelve (12) calendar months is punishable by a fine not to exceed one hundred dollars ($100).

3. **Third Violation:** A third violation within the preceding twelve (12) calendar months is punishable by a fine not to exceed two hundred and fifty ($250).

4. **Fourth Violation:** A fourth violation is punishable by a fine not to exceed five hundred ($500) and subject to installation of a water flow restrictor device of approximately one gallon per minute capacity for services up to one and one-half inch size and comparatively sized restrictors for larger services after written notice of intent to install a flow restrictor for up to forty eight (48) hours. [*Not applicable to city / county that is not a water provider*]

5. **Subsequent Violations:** Any subsequent violations are punishable by a fine not to exceed five hundred ($500) subject to installation of a water flow restrictor device of approximately one gallon per minute capacity for services up to one and one-half inch size and comparatively sized restrictors for larger services after written notice of intent to install a flow restrictor for a minimum of forty eight (48) hours. [*Not applicable to city / county that is not a water provider*]

c. **Cost of Flow Restrictor and Disconnecting Service:** A person or entity that violates this ordinance is responsible for payment of the [*ENTITY*]'s charges for installing and/or removing any flow restricting device and for disconnecting and/or reconnecting service per the [*ENTITY*]'s schedule of charges then in effect. The charge for installing and/or removing any flow restricting device must be paid to the [*ENTITY*] before the device is removed. Nonpayment will be subject to the same remedies as nonpayment of basic water rates. [*Not applicable to city / county that is not a water provider*]

d. **Separate Offenses**: Each day that a violation of this ordinance occurs is a separate offense.

e. **Notice and Hearing**:

1. The [*ENTITY*] will issue a Notice of Violation by mail or personal delivery at least ten (10) days before taking enforcement action. Such notice must describe the violation and the date by which corrective action must be taken. A customer may appeal the Notice of Violation by filing a written notice of appeal with the [*ENTITY*] no later than the close of business on the day before the date scheduled for enforcement action. Any Notice of

Violation not timely appealed will be final. Upon receipt of a timely appeal, a hearing on the appeal will be scheduled, and the [*ENTITY*] will mail written notice of the hearing date to the customer at least ten (10) days before the date of the hearing.

2. Pending receipt of a written appeal or pending a hearing pursuant to an appeal, the [*ENTITY*] may take appropriate steps to prevent the unauthorized use of water as appropriate to the nature and extent of the violations and the current declared water Level condition.

Section XIII. Severability

If any section, subsection, sentence, clause or phrase in this chapter is for any reason held invalid, the validity of the remainder of the chapter will not be affected. The [*GOVERNING BODY OF ENTITY*] hereby declares it would have passed this chapter and each section, subsection, sentence, clause or phrase thereof, irrespective of the fact that one or more sections, subsections, sentences, clauses, or phrases or is declared invalid.

Other Measures Available for Consideration

a. **Water Allocations and Mandatory Reductions**

1. **Water Allocations / Water Budget**: The [ENTITY] will activate a water allocation process using a method that does not in effect penalize persons for prior implementation of conservation methods or installation of water-saving devices. The [ENTITY] must provide notice of activation of the allocation process by including it in the regular billing statement for the fee or charge or by any other mailing to the address to which the [*ENTITY*] customarily mails the billing statement for fees or charges for on-going water service.

   Following the effective date of the water allocation, any person using water in excess of the allocation will be subject to a penalty in the amount of $__ for each billing unit of water in excess of the allocation. The penalty for excess water usage will be cumulative to any other remedy or penalty that may be imposed for violation of this ordinance. [*Not applicable to city / county that is not a water provider*]. [*Appropriate in Level 1, 2 or 3*]

or

2. M**andatory Percentage Use Reductions**: During a Level __ [*To be determined by ENTITY*] Water Supply Shortage condition, all customers will be required to reduce water consumption by a percentage determined by the [*ENTITY*]. [*Not applicable to city / county that is not a water provider*]. [*Appropriate in Level 1, 2 or 3*]

b. **Large Landscape Areas – Rain Sensors**: Large landscape areas, such as parks, cemeteries, golf courses, school grounds, and playing fields, that use landscape irrigation systems to water or irrigate, must use landscape irrigation systems with rain sensors that automatically shut off such systems during periods of rain or irrigation timers which automatically use information such as evapotranspiration sensors to set an efficient water use schedule.

c. **Construction Purposes**: Recycled or non-potable water must be used for construction purposes when available.

d. **Water Recycling – New Service:** Prior to the connection of any new water service, an evaluation must be done by the [*ENTITY*] to determine whether recycled water exists to supply all or some of the water needed and recycled water must be utilized to the extent feasible. [*Not applicable to city / county that is not a water provider*]

e. **Water Recycling Required if Available**: The use of potable water, other than recycled water, is prohibited for specified uses after the [*ENTITY*] has provided to the user an analysis showing that recycled water is available, a cost-effective alternative to potable water for such uses and the user has had a reasonable time, as determined by the [*ENTITY*], to make the conversion to recycled water. [*Not applicable to city / county that is not a water provider*]

f. **City / County Water Recycling Plan:** The [*ENTITY*] must prepare a water recycling master plan that contains recommendations to increase the amount of recycled water used and must report to the [*ENTITY GOVERNING BODY*] annually on the progress towards implementing such recommendations. [*Not applicable to water districts*]

g. **Customer Water Conservation Reports:** The [*ENTITY*] may, by written request, require all commercial, residential and industrial customers using _____ [*To be determined by ENTITY*] or more billing units per year to submit a water conservation plan and to submit quarterly progress reports on such plan. The conservation plan must include recommendations for increased water savings, including increased water recycling based on feasibility, and the reports must include progress to date on implementation of such recommendations.

h. **Water Conserving Plumbing Standards**

1. **Retrofits Upon Sale or Transfer:** On or after January 1, 2010, no structure may be sold or transferred unless all existing plumbing fixtures in the structure are retrofitted exclusively with water-conserving plumbing fixtures. [*Not applicable to water districts]*

2. **Change in Service**: On or after January 1, 2010, upon the establishment of new water service or a change in water service from one person to another non-family member, all existing plumbing fixtures must be retrofitted exclusively with water-conserving plumbing fixtures. [*Not applicable to city / county that is not a water provider*]

i. **Reporting Mechanism - Hotline**: The [*ENTITY*] will establish a water waste hotline for residents to report violations of this chapter.

j. **State Model Landscape Ordinance:** The Department of Water Resources State Model Landscaping Ordinance is adopted by reference and incorporated as part of this Chapter. The full text of the Model Landscaping Ordinance is available on the [*ENTITY*] website at _____ and a copy is maintained with the [*ENTITY*]. [*Alternatively, the ENTITY may adopt a local ordinance at least as effective as the state model]*.

APPENDIX

WATER CONSERVATION ORDINANCE SUMMARY TABLE (Placeholder)

Permanent	Level 1	Level 2	Level 3 – Emergency	Other Provisions for Consideration
Restrictions: 1. No Watering: 9am – 5pm, except by hand 2. No excessive water flow or runoff 3. Limited washing down hard or paved surfaces 4. Obligation to fix leaks in reasonable time (within 7 days of notice) 5. Fountains only with re-circulating water 6. Wash vehicles only with bucket or shut-off nozzle 7. Restaurants only serve water on request 8. Hotels must provide guests option to not launder daily linen 9. No installation of single-pass cooling	**Same as Permanent, plus:** 1. Watering limited to 2 days a week 2. Irrigation system limit of 15 minutes 3. Fix leaks within 72 hours 4. No washing down hard or paved surfaces	**Same as Permanent and Level 1, plus:** 1. Watering limited to 1 day a week 2. Fix leaks within 48 hours 3. No filling or re-filling ornamental lakes or ponds 4. Wash vehicles only at car wash with re-circulating system 5. No filling residential pools or outdoor spas	**Same as Permanent, Level 1and Level 2, plus:** 1. No watering or irrigating with certain exceptions 2. Fix leaks within 24 hours 3. Limits on new potable water service or building permits 4. Discontinue service 5. No new annexations	1. Water allocation requirements and penalties for exceeding allotment 2. Mandatory % reduction and penalties for overage 3. Large landscape areas must have rain sensors 4. Recycled or non-potable water must be used for construction 5. Must use recycled water if entity shows cost effective alternative 6. Recycled water must be used for new water connection if feasible 7. City/County prepares water recycling plan and reports progress

systems 10. No installation of non re-circulating car wash systems 11. Restaurants must use conserving nozzles 12. Commercial Car Wash Systems use Re-Circulating systems within one year				8. Customers that use more than ____ billing units required to submit water conservation report 9. Plumbing retrofits upon sale, transfer or change in service 10. Establish water waste hotline 11. Adopt State Model Landscape Ordinance by reference

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Appendix I

2010 Drought Contingency Plan

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Contingency Planning Thresholds and Actions for 2010 Santa Clara County Retailer Urban Water Management Plans

Since many of the water retailers in Santa Clara County share many water sources, conservation programs, and media outlets, having a common shortage contingency plan for future water shortages may lead to increased effectiveness and efficiency. Given this opportunity, several retailers have developed this document for all retailers to consider when developing their 2010 Urban Water Management Plan.

To the extent that the contingency plans from all retailers align strategically, it will be easier for both the media and water customers to understand and cooperate with the actions being taken. It is anticipated that not all retailers will adopt all of the measures listed below verbatim. What is desirable, however, is for all retailers to adopt as many of these measures as possible that align with the retailer's plans and operating capabilities.

Model Water Shortage Contingency Plan for Santa Clara County Retailers

The following activities will be implemented for water shortages up to a 10% threshold:

- Additional informational outreach and public education campaigns will be implemented (Attachment A) notifying customers of the water shortage and the need to voluntarily conserve.

The following activities will be implemented for water shortages between 11% and 24%:

- All of the measures listed in the previous action step
- Adoption of a basic water waste ordinance (for retailers that are cities) or water waste rules (for retailers that are not cities) (Attachment B) if there is not already an ordinance permanently in place. Retailers that are cities would enact an ordinance while water utilities would enact water waste rules that have similar components and/or would encourage the cities within their service area to implement their own water waste and/or drought ordinances.
- Conduct monitoring and reporting on monthly or bimonthly water production or water sales to measure compliance with necessary reductions
- Adoption of additional restrictions that do the following:
    - Limits the number of days that irrigation can occur
    - Limits the duration of irrigation
    - Restricts the washing down of hard surfaces
    - Shortens the time allowed for fixing water leaks

    (See Attachment C for detailed description of measures)

The following activities will be implemented for water shortages between 25% and 39%:

- All of the measures listed in the previous action step
- Establish water use reduction program that includes one of the following elements:
    - Water allocation on a per-customer basis with surcharges, incentives, or other mechanisms in place to encourage compliance without penalizing customers for past conservation efforts
    - Rate increase or establishment of a tiered rate structure
- Adoption of additional restrictions that do the following:
    - Further limits the number of days that irrigation can occur
    - Further shortens the time allowed for fixing water leaks
    - Limits the filling of lakes, ponds, and pools
    - Limits vehicle washing

    (See Attachment D for detailed description of measures)

    Retailers that are cities would enact these restrictions via an ordinance while water utilities would enact water waste rules that have similar components and/or would encourage the cities within their service area to implement their own water waste and/or drought ordinances.

The following activities will be implemented for water shortages 40% and greater:

- All of the measures listed in the previous action step
- Adoption of additional restrictions that do the following:
    - Eliminates irrigation (except for shrubbery, trees, and bushes in areas declared to be "high fire risk" by designated fire department officials. Landscapes being irrigated by recycled water are exempted from this provision).
    - Further shortens the time allowed for fixing water leaks
    - Limits new water services unless governing body makes special finding of water supply adequacy
    - Provides for service disconnections for willful and repeated violations of restrictions

  (See Attachment E for detailed description of measures)

  Retailers that are cities would enact these restrictions via an ordinance while water utilities would enact water waste rules that have similar components and/or would encourage the cities within their service area to implement their own water waste and/or drought ordinances.

Attachment A: Menu of Informational Outreach and Public Education Campaigns to Implement

- Coordinate water conservation programs with local agencies
- Initiate public information program
- Offer water conservation kits to public
- Prepare and distribute water conservation literature through local retail water suppliers and other agencies
- Initiate a media campaign including news releases and or an advertising campaign

Attachment B: Model Basic Water Waste Ordinance Provisions

- **Limits on Watering Hours**: Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited between the hours of 9:00 a.m. and 5:00 p.m. Pacific Time 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.

- **No Excessive Water Flow or Runoff:** Watering or irrigating of any lawn, landscape or other vegetated area in a manner that causes or allows excessive water flow or runoff onto an adjoining sidewalk, driveway, street, alley, gutter or ditch is prohibited.

- **Limits on Washing Down Hard or Paved Surfaces:** Washing down hard or paved surfaces must only be done by use of a hand-held hose equipped with a positive self-closing water shut-off device, a low-volume, high-pressure cleaning machine equipped to recycle any water used, a low-volume high-pressure water broom or a hand-held bucket or similar container. Washing down hard of paved surfaces by other means is prohibited. Hard and paved surfaces include, but are not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys.

- **Obligation to Fix Leaks, Breaks or Malfunctions:** Excessive use, loss or escape of water through breaks, leaks or other malfunctions in the water user's plumbing or distribution system for any period of time after such escape of water should have reasonably been discovered and corrected and in no event more than seven (7) days of receiving notice from the [ENTITY], is prohibited.

- **Recirculating Water Required for Water Fountains and Decorative Water Features**: Operating a water fountain or other decorative water feature that does not use recirculated water is prohibited.

- **Limits on Washing Vehicles:** Using water to wash or clean a vehicle, including but not limited to any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not is prohibited, except by use of a hand-held bucket or similar container or a hand-held hose equipped with a positive self-closing water shut-off nozzle or device. This subsection does not apply to any commercial car washing facility.

- **Drinking Water Served Upon Request Only:** Eating or drinking establishments, including but not limited to a restaurant, hotel, cafe, cafeteria, bar, or other public place where food or drinks are sold, served, or offered for sale, are prohibited from providing drinking water to any person unless expressly requested.

- **Commercial Lodging Establishments Must Provide Guests Option to Decline Daily Linen Services**: Hotels, motels and other commercial lodging establishments must provide customers the option of not having towels and linen laundered daily. Commercial lodging establishments must prominently display notice of this option in each bathroom using clear and easily understood language.

- **No Installation of Single Pass Cooling Systems**: Installation of single pass cooling systems is prohibited in buildings requesting new water service.

- **No Installation of Nonrecirculating in Commercial Car Wash and Laundry Systems:** Installation of nonrecirculating water systems is prohibited in new commercial conveyor car wash and new commercial laundry systems.

- **Restaurants Required to Use Water Conserving Dish Wash Spray Valves**: Food preparation establishments, such as restaurants or cafes, are prohibited from using non-water conserving dish wash spray valves.

- **Commercial Car Wash Systems**: Within one year of passage of this ordinance, all commercial conveyor car wash systems must have installed operational re-circulating water systems, or must have secured a waiver of this requirement from the [*ENTITY*].

Attachment C: Detailed Description of 15 – 24% Provisions

1. **Limits on Watering Days:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to every other day based on property address. Properties with odd -numbered addresses can only irrigate on odd-numbered days of the month. Properties with even-numbered addresses can only irrigate on even-numbered days of the month. During the months of November through March, watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to no more than one day per week on a schedule established and posted by the [ENTITY]. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating 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. This provision does not apply to landscapes being irrigated with recycled water.

2. **Limit on Watering Duration**: Watering or irrigating of lawn, landscape or other vegetated area with potable water using a landscape irrigation system or a watering device that is not continuously attended is limited to no more than fifteen (15) minutes watering per day per station. This subsection does not apply to landscape irrigation systems that exclusively use very low-flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour and weather based controllers or stream rotor sprinklers that meet a 70% efficiency standard. This provision does not apply to landscapes being irrigated with recycled water.

3. **Obligation to Fix Leaks, Breaks or Malfunctions**: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system exceeding five gallons per hour must be repaired within five (5) days of notification by the [ENTITY] unless other arrangements are made with the [ENTITY].

4. **No Washing Down Hard or Paved Surfaces:** Washing down hard or paved surfaces is prohibited except when necessary to alleviate safety or sanitary hazards, and then only by use of a hand-held bucket or similar container, a hand-held hose equipped with a positive self-closing water shut-off device, a low-volume, high-pressure cleaning machine equipped to recycle any water used, or a low-volume high-pressure water broom. Hard and paved surfaces include, but are not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys.

Attachment D: Detailed Description of 25 – 39% Provisions

1. **Watering Days:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is limited to two days per week. Properties with odd-numbered addresses can only irrigate on Mondays and Thursdays. Properties with even-numbered addresses can only irrigate on Tuesdays and Fridays. This provision does not apply to landscape irrigation zones that exclusively use very low flow drip type irrigation systems when no emitter produces more than two (2) gallons of water per hour. This provision also does not apply to watering or irrigating 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. This provision does not apply to landscapes being irrigated with recycled water.

2. **Obligation to Fix Leaks, Breaks or Malfunctions**: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within three (3) days of notification by the [ENTITY] unless other arrangements are made with the [ENTITY].

3. **Limits on Filling Ornamental Lakes or Ponds**: Filling or refilling ornamental lakes or ponds with potable water is prohibited except to the extent needed to sustain aquatic life.

4. **Limits on Washing Vehicles:** Using water to wash or clean a vehicle, including but not limited to, any automobile, truck, van, bus, motorcycle, boat or trailer, whether motorized or not, is prohibited except at a commercial car washing facility that utilizes a recirculating water system to capture or reuse water.

5. **Limits on Filling Residential Swimming Pools & Spas:** Refilling of more than one foot and initial filling of residential swimming pools or outdoor spas with potable water is prohibited.

Attachment E: Detailed Description of Greater Than 40% Provisions

1. **No Watering or Irrigating:** Watering or irrigating of lawn, landscape or other vegetated area with potable water is prohibited. This restriction does not apply to the following categories of use, unless the [*ENTITY*] has determined that recycled water is available and may be applied to the use:
    a. Maintenance of vegetation, including trees and shrubs, that are watered using a hand-held bucket or similar container, hand-held hose equipped with a positive self–closing water shut-off nozzle or device;
    b. Maintenance of existing landscape necessary for fire protection;
    c. Maintenance of existing landscape for soil erosion control;
    d. Maintenance of plant materials identified to be rare or essential to the well-being of protected species;
    e. 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 am and 5 pm;
    f. Actively irrigated environmental mitigation projects.

2. **Obligation to Fix Leaks, Breaks or Malfunctions**: All leaks, breaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within twenty four (24) hours of notification by the [*ENTITY*] unless other arrangements are made with the [*ENTITY*].

2. **Limits on New Potable Water Service**: The *[ENTITY]* may limit or not issue new potable water services, temporary meters and/or statements of immediate ability to serve or provide potable water service (such as, will-serve letters, certificates, or letters of availability), except under the following circumstances:
    a. A valid, unexpired building permit has been issued for the project; or
    b. The project is necessary to protect the public health, safety, and welfare; or
    c. The applicant provides substantial evidence of an enforceable commitment that water demands for the project will be offset prior to the provision of a new water meter(s) to the satisfaction of the [*ENTITY*].

    This provision does not preclude the resetting or turn-on of meters to provide continuation of water service or the restoration of service that has been interrupted for a period of one year or less. [*Not applicable to city / county that is not a water provider*]

3. **Discontinue Service**: The [*ENTITY*], in its sole discretion, may discontinue service to consumers who willfully violate provisions of this section. [*Not applicable to city / county that is not a water provider*]

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Appendix J

Water Loss Control

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AWWA WLCC Free Water Audit Software: Reporting Worksheet

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WAS v4.0

Back to Instructions

? Click to access definition

Water Audit Report for: Santa Clara Valley Water District (East treated system)
Reporting Year: 2009-10 | 7/2009 - 6/2010

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

WATER SUPPLIED

<< Enter grading in column 'E'

Volume from own sources:	?	7	64,704.000	acre-ft/yr
Master meter error adjustment (enter positive value):	?	3	0.000	under-registered acre-ft/yr
Water imported:	?	8	61.000	acre-ft/yr
Water exported:	?	7	967.000	acre-ft/yr
WATER SUPPLIED:			63,798.000	acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

					Pcnt:	Value:
Billed metered:	?	8	61,127.000	acre-ft/yr		
Billed unmetered:	?	7	0.000	acre-ft/yr		
Unbilled metered:	?	4	0.000	acre-ft/yr		
Unbilled unmetered:	?	2	1.000	acre-ft/yr	○ ◉	1.000
AUTHORIZED CONSUMPTION:	?		61,128.000	acre-ft/yr		

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption)

2,670.000 acre-ft/yr

Apparent Losses

					Pcnt:	Value:
Unauthorized consumption:	?	6	1.000	acre-ft/yr	○ ◉	1.000
Customer metering inaccuracies:	?	7	2,667.000	acre-ft/yr	○ ◉	2,667.000
Systematic data handling errors:	?	6	1.000	acre-ft/yr		
Apparent Losses:	?		2,669.000			

? Choose this option to enter a percentage of billed metered consumption. This is NOT a default value

Real Losses

Real Losses = Water Losses - Apparent Losses:	?		1.000	acre-ft/yr
WATER LOSSES:			2,670.000	acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER:	?		2,671.000	acre-ft/yr

= Total Water Loss + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	?	7	25.2	miles	
Number of active AND inactive service connections:	?	7	14		
Connection density:			1	conn./mile main	
Average length of customer service line:	?	7	0.0	ft	(pipe length between curbstop and customer meter or property boundary)
Average operating pressure:	?	7	103.8	psi	

COST DATA

Total annual cost of operating water system:	?	7	$13,274,289	$/Year
Customer retail unit cost (applied to Apparent Losses):	?	7	$1.90	$/1000 gallons (US)
Variable production cost (applied to Real Losses):	?	7	$36.24	$/acre-ft/yr

PERFORMANCE INDICATORS

Financial Indicators

Non-revenue water as percent by volume of Water Supplied:	4.2%
Non-revenue water as percent by cost of operating system:	12.4%
Annual cost of Apparent Losses:	$1,652,425
Annual cost of Real Losses:	$36

Operational Efficiency Indicators

Apparent Losses per service connection per day:	170194.97	gallons/connection/day
Real Losses per service connection per day*:	N/A	gallons/connection/day
Real Losses per length of main per day*:	35.43	gallons/mile/day
Real Losses per service connection per day per psi pressure:		gallons/connection/day/psi
? Unavoidable Annual Real Losses (UARL):	Not Valid	

*** UARL cannot be calculated as either average pressure, number of connecions or length of mains is too small: SEE UARL DEFINITION ***

? Infrastructure Leakage Index (ILI) [Real Losses/UARL]:

* only the most applicable of these two indicators will be calculated

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 70 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Water exported
3: Customer metering inaccuracies

For more information, click here to see the Grading Matrix worksheet

AWWA WLCC Free Water Audit Software: Water Balance

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Water Audit Report For:	Report Yr:
District (East treated system)	2009-10

Own Sources (Adjusted for known errors) 64,704.000	Water Exported 967.000	Billed Water Exported			
	Water Supplied 63,798.000	Authorized Consumption 61,128.000	Billed Authorized Consumption 61,127.000	Billed Metered Consumption (inc. water exported) 61,127.000	Revenue Water 61,127.000
				Billed Unmetered Consumption 0.000	
			Unbilled Authorized Consumption 1.000	Unbilled Metered Consumption 0.000	Non-Revenue Water (NRW) 2,671.000
				Unbilled Unmetered Consumption 1.000	
		Water Losses 2,670.000	Apparent Losses 2,669.000	Unauthorized Consumption 1.000	
				Customer Metering Inaccuracies 2,667.000	
				Systematic Data Handling Errors 1.000	
Water Imported 61.000			Real Losses 1.000	Leakage on Transmission and/or Distribution Mains Not broken down	
				Leakage and Overflows at Utility's Storage Tanks Not broken down	
				Leakage on Service Connections Not broken down	

AWWA WLCC Free Water Audit Software: Reporting Worksheet

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Back to Instructions

? Click to access definition

Water Audit Report for: Santa Clara Valley Water District (West treated system)
Reporting Year: 2009-10 7/2009 - 6/2010

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

WATER SUPPLIED

<< Enter grading in column 'E'

Volume from own sources:	7	43,361.000	acre-ft/yr	
Master meter error adjustment (enter positive value):	3	0.000	under-registered	acre-ft/yr
Water imported:	8	0.000	acre-ft/yr	
Water exported:	7	0.000	acre-ft/yr	
WATER SUPPLIED:		43,361.000	acre-ft/yr	

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:
Billed metered:	8	42,177.000	acre-ft/yr		
Billed unmetered:	7	0.000	acre-ft/yr		
Unbilled metered:	4	0.000	acre-ft/yr		
Unbilled unmetered:	2	1.000	acre-ft/yr	○ ◉	1.000
AUTHORIZED CONSUMPTION:		42,178.000	acre-ft/yr		

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption)

1,183.000 acre-ft/yr

Apparent Losses

				Pcnt:	Value:
Unauthorized consumption:	6	1.000	acre-ft/yr	○ ◉	1.000
Customer metering inaccuracies:	7	1,180.000	acre-ft/yr	○ ◉	1,180.000
Systematic data handling errors:	6	1.000	acre-ft/yr		
Apparent Losses:		1,182.000			

Choose this option to enter a percentage of billed metered consumption. This is NOT a default value

Real Losses

Real Losses = Water Losses - Apparent Losses:		1.000	acre-ft/yr
WATER LOSSES:		1,183.000	acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 1,184.000 acre-ft/yr

= Total Water Loss + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	7	14.7	miles	
Number of active AND inactive service connections:	7	14		
Connection density:		1	conn./mile main	
Average length of customer service line:	7	0.0	ft	(pipe length between curbstop and customer meter or property boundary)
Average operating pressure:	7	67.0	psi	

COST DATA

Total annual cost of operating water system:	7	$10,293,958	$/Year	
Customer retail unit cost (applied to Apparent Losses):	7	$1.90	$/1000 gallons (US)	
Variable production cost (applied to Real Losses):	7	$58.07	$/acre-ft/yr	

PERFORMANCE INDICATORS

Financial Indicators

Non-revenue water as percent by volume of Water Supplied:	2.7%
Non-revenue water as percent by cost of operating system:	7.1%
Annual cost of Apparent Losses:	$731,797
Annual cost of Real Losses:	$58

Operational Efficiency Indicators

Apparent Losses per service connection per day:	75372.97	gallons/connection/day
Real Losses per service connection per day*:	N/A	gallons/connection/day
Real Losses per length of main per day*:	60.73	gallons/mile/day
Real Losses per service connection per day per psi pressure:		gallons/connection/day/psi
? Unavoidable Annual Real Losses (UARL):	Not Valid	

*** UARL cannot be calculated as either average pressure, number of connecions or length of mains is too small: SEE UARL DEFINITION ***

? Infrastructure Leakage Index (ILI) [Real Losses/UARL]:

* only the most applicable of these two indicators will be calculated

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 69 out of 100 *****

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources
2: Customer metering inaccuracies
3: Total annual cost of operating water system

For more information, click here to see the Grading Matrix worksheet

AWWA WLCC Free Water Audit Software: Water Balance

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Water Audit Report For:	Report Yr:
District (West treated system)	2009-10

Own Sources (Adjusted for known errors) 43,361.000	Water Exported 0.000	Billed Water Exported			
	Water Supplied 43,361.000	Authorized Consumption 42,178.000	Billed Authorized Consumption 42,177.000	Billed Metered Consumption (inc. water exported) 42,177.000	Revenue Water 42,177.000
				Billed Unmetered Consumption 0.000	
			Unbilled Authorized Consumption 1.000	Unbilled Metered Consumption 0.000	Non-Revenue Water (NRW) 1,184.000
				Unbilled Unmetered Consumption 1.000	
		Water Losses 1,183.000	Apparent Losses 1,182.000	Unauthorized Consumption 1.000	
				Customer Metering Inaccuracies 1,180.000	
				Systematic Data Handling Errors 1.000	
Water Imported 0.000			Real Losses 1.000	Leakage on Transmission and/or Distribution Mains Not broken down	
				Leakage and Overflows at Utility's Storage Tanks Not broken down	
				Leakage on Service Connections Not broken down	

Appendix K

Water Conservation Report FY 2009-10

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Santa Clara Valley Water District

FY 2009-10

Water Conservation Report

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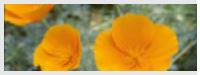
Santa Clara Valley
Water District

5750 Almaden Expressway
San Jose, CA 95118
(408) 265-2600
www.valleywater.org

OUR MISSION

The mission of the district is a healthy, safe, and enhanced quality of living in Santa Clara County through watershed stewardship and comprehensive management of water resources in a practical, cost-effective, and environmentally sensitive manner for current and future generations.

About the
SANTA CLARA VALLEY WATER DISTRICT



The Santa Clara Valley Water District is the primary water resources agency for Santa Clara County, California. It acts not only as the county's water wholesaler, but also as its flood protection agency and is the steward for its streams and creeks, underground aquifers and district-built reservoirs.

As the county's water wholesaler, the water district makes sure there is enough clean, safe water for homes and businesses. As the agency responsible for local flood protection, the water district works diligently to protect Santa Clara Valley residents and businesses from the devastating effects of flooding. Our stream stewardship responsibilities include creek restoration and wildlife habitat projects, pollution prevention efforts and a commitment to natural flood protection.

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Santa Clara Valley Water District water conservation vehicle

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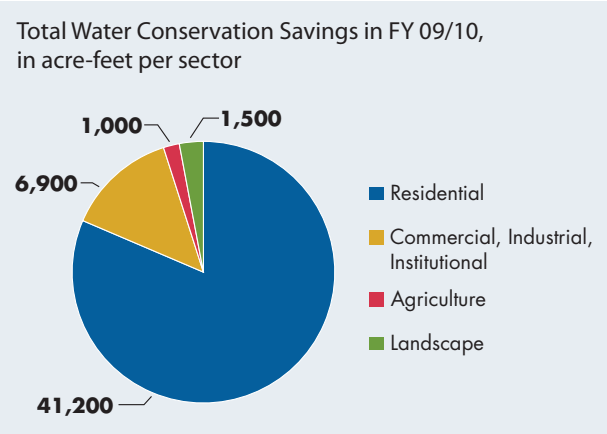
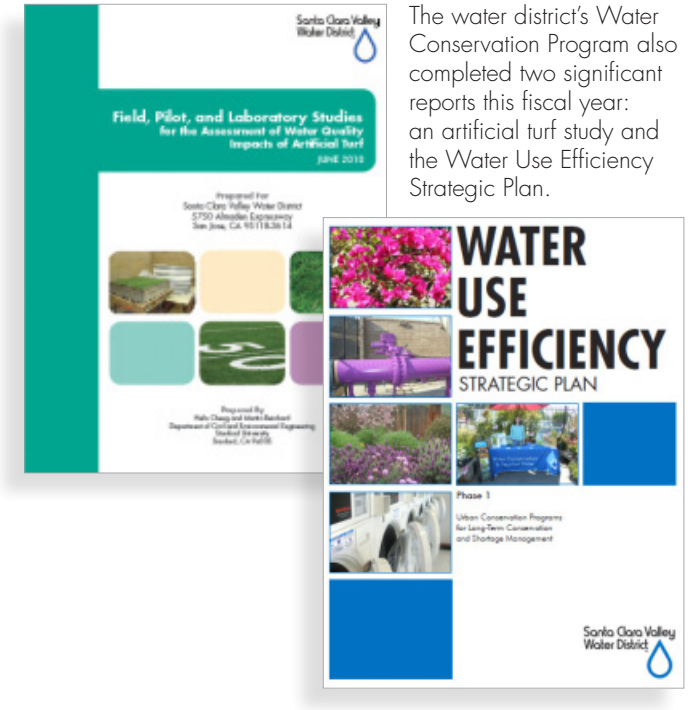
Executive Summary





The water district's Water Conservation Program also completed two significant reports this fiscal year: an artificial turf study and the Water Use Efficiency Strategic Plan.

This ninth annual Water Conservation Report documents the actions taken by the Santa Clara Valley Water District in achieving water conservation goals for FY 09/10.

Santa Clara Valley was fortunate to enjoy a year of normal rainfall in FY 09/10. However, after three consecutive dry years, even with this normal rainfall we still had many water supply challenges, including the continued decrease in the water district's Sacramento-San Joaquin Bay Delta water supply allocation.

Fortunately, careful planning and investments in a diverse portfolio of water supply resources helped us meet our water supply reliability goals. The water district's water conservation program is a key part of this portfolio, with nearly 50,600 acre-feet of water savings in FY 09/10. Water conservation, which relies on a thorough cost-benefit analysis to develop program details and rebate levels, is widely considered the most cost-effective option in any water supply portfolio. Water conservation programs reduce demand on existing water and energy supplies, helping to lessen the costs and environmental impacts of developing additional supplies. In addition to helping to meet long-term water reliability goals, the water district's programs also help meet short-term demands placed on supply during critical dry periods as well as during a water shortage, such as a drought. These programs will also protect the south bay salt-marsh habitat and the endangered species that live there by reducing freshwater effluent released from wastewater treatment facilities.

Further driving the water district's water conservation efforts, in November 2009, Governor Arnold Schwarzenegger signed the historic water conservation bill, S.B. x 7- 7, at the water district campus, which mandates the long-term goals of reducing per-capita urban water use by 20 percent by the year 2020.

The water district also enjoyed a successful partnership with its water retailers in coordinating efforts to promote water conservation. The water retailers helped promote this year's "Save 20 gallons" campaign, which won the California Association of Public Information Official's Excellence in Marketing and Communications Award in 2009. The campaign, developed in partnership with water retailers and cities, included a variety of media advertising and was available in many different languages to reach our diverse community.

Water Conservation Programs

Program Name	Program Participation for FY 09/10	Total Program Participation to Date
RESIDENTIAL PROGRAMS		
Water Wise House Calls	2,071	29,670
Residential High Efficiency Toilet Program	3,637	8,326
Residential High-Efficiency Clothes Washer Rebate Program	16,559	109,025
Showerhead/Aerator Distribution Program	22,372	296,659
Residential Water Softener Rebate Program	198	1,667
LANDSCAPE PROGRAMS		
Landscape Survey Program	94	1,294
Landscape Rebate Program		
• Weather-Based Irrigation Controller Rebates	142	1,053
• Landscape Conversion Rebates	255	606
• Irrigation Hardware Rebates for Residents	179	228
• Irrigation Hardware Rebates for CII	31	46
COMMERCIAL, INDUSTRIAL, INSTITUTIONAL (CII) PROGRAMS		
Commercial Clothes Washer Rebate Program	367	3,451
CII & Multi-Family Dwelling High Efficiency Toilet Installation Program	3,413	16,427
CII Water Survey Program	136	445
Water Efficient Technologies Program	4	84
Pre-Rinse Spray Valve Program	25	4,346
Mobile Home Submeter Rebate Program	1,740	4,674
Pilot Commercial Water Softener Rebate Program	2	5
Aerator Distribution (0.5 gpm)	2,908	2,908
CII High-Efficiency Urinal Rebate Program	171	171
CII High-Efficiency Toilet Rebate Program	62	62
CII High-Efficiency Urinal Valve Retrofit Program	157	235

Water Conservation

The water conservation program experienced another successful year, both in terms of water saved and in terms of programs, research and partnerships. The water district saved 50,600 acre-feet of water in FY 09/10 and remains on pace to meet its long-term goal of saving nearly 100,000 acre-feet of water per year by 2030. In addition,water conservation was a key component of the water district's short-term goal to reduce demands during the recent drought.

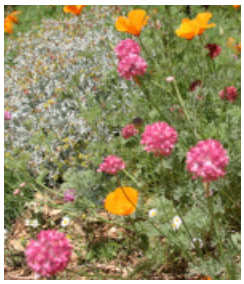
One of the water conservation campaign's ads

"The water conservation program experienced another successful year."

In the Home

The water district continues to expand programs in the residential sector, which remains one of the key areas for water conservation. The water district employs a strategy of incentives and rebates, one-on-one home visits with free installations of water-saving devices, workshops, and outreach at community events to promote residential water savings.

In FY 09/10, the total annual water savings attributable to all residential conservation programs reached 41,200 acre-feet.



A water-wise house call surveyor checking an irrigation system

The water district provides low-flow faucet aerators to residents

Water-Wise House Call Program

The water district has been providing the free Water-Wise House Call Program to county residents since 1998. The program is available to residents of single family homes and to owners/managers of apartments, condominiums and mobile home complexes. During the survey, technicians check for toilet flapper leaks, measure fixture flow rates, offer conservation information, and install free toilet flappers, showerheads and aerators.

Surveyors also test the customer's irrigation system for distribution uniformity, calculate and program a personalized irrigation schedule, and provide landscaping tips.

The water district performed 2,071residential home surveys during FY 09/10. More than 29,000 home surveys have been completed since the program began.

Low-flow showerhead and residential aerator distribution program

In FY 09/10, the water district distributed 15,722 residential aerators and 6,650 low-flow showerheads. Showerheads and aerators are provided free of charge to the public and to local water retailers; they are also installed in residences during Water-Wise House Calls. More than 296,000 showerheads and aerators have been distributed since the program started.

Residential High-Efficiency Clothes Washer Rebate Program

The water district began offering rebates for new, qualifying water-efficient clothes washers in 1995. This effort continued through FY 09/10.

- In FY 09/10, 16,559 rebates were issued, more than any other fiscal year.
- Since the program began, more than 109,000 rebates have been issued.
- The rebate is a combined water and energy rebate in conjunction with PG&E. This partnership with PG&E, which began in January of 2008, allows customers to apply for the rebate using one application form for both the water and energy rebate. This program continues to transform the market by offering rebates for the most efficient machines, while making it easier for customers to apply for the combined rebate.

High-efficiency clothes washer

The Consortium for Energy Efficiency rates the efficiency of individual machines and categorizes them according to tiers with the most efficient machines being placed in the highest tier. Tier 2 machines were rebated at $75 until January 1. Despite increasing program requirements for more efficient machines, participation levels increased this fiscal year.

High-efficiency toilet

Residential High-Efficiency Toilet Rebate Program

The water district's High-Efficiency Toilet (HET) Rebate Program began in FY 03/04 and continues to provide a $125 rebate per toilet to residents when they replace their old inefficient (3.5 gallons per flush or more) toilets with new HETs. HETs use at least 20 percent less water than the federally regulated 1.6 gpf toilets and include three types of technologies: pressure assisted flush, which utilizes a flush valve similar to commercial grade toilets; dual-flush toilets which have full and half-flush options; and gravity flush toilets.

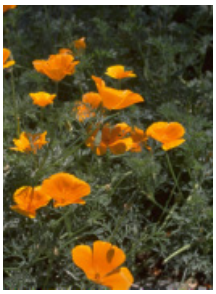
The water district has issued more than 7,800 high-efficiency toilet rebates since the program began in FY 03/04. In FY 09/10, a total of 3,287 rebates were issued, more than any other fiscal year.

Residential high-efficiency toilet installation program for low-income residents

In FY 09/10, the water district partnered with PG&E to provide low-income residents in PG&E's service area (within Santa Clara County) with free high-efficiency toilets. Toilets replaced needed to flush at 3.5 gallons per flush or more. The program installed a total of 474 HETs in low income resident's homes in FY 09/10.

In Landscape

On average, about half of the water used by residents in the county goes to irrigating outdoor landscape. Having focused attention for many years on indoor water use, the district has now turned its attention to landscape irrigation which offers, the greatest potential for water savings in the residential and commercial sectors. The water district offers a variety of programs, from landscape evaluations and rebates for water-efficient irrigation equipment to classes and workshops, all of which help businesses and homeowners become more water efficient. The water savings attributed to these programs for FY 09/10 is approximately 1,500 acre-feet per year.



Water district weather station

The Rosicrucian Museum in San Jose has received both landscape conservation and irrigation hardware upgrade rebates

In an effort to maximize efficiency, in FY 09/10 the water district updated its landscape programs. The new programs – the Landscape Survey Program and the Landscape Rebate Program – experienced remarkable growth in participation during the fiscal year.

Landscape Survey Program

Since 1994, the Santa Clara Valley Water District has been helping landscape managers improve their irrigation efficiency. Through the innovative Landscape Survey Program, surveyors perform complimentary evaluations to assist Commercial, Institutional and Industrial (CII) property owners to understand and better manage their water use. Landscape surveys have shown a potential savings of up to $1,000 per acre of landscape.

The Landscape Survey Program is available to any Santa Clara County business owner or property manager who would like to improve the efficiency of their irrigation system and have 5,000 square feet or more of irrigated landscape. The survey also pre-qualifies CII sites for the Landscape Rebate Program.

The components of a Landscape Survey include: a system check and irrigation budget, site-specific recommendations and scheduling, as well as a site report. Participants may then be eligible to participate in the Landscape Rebate Program.

In FY 09/10, the Landscape Survey Program evaluated 94 sites. Since the program began, nearly 1,300 sites have been surveyed.

In Landscape

Staff programming an irrigation controller

Landscape Rebate Program

The Landscape Rebate Program is designed to assist homeowners and commercial, industrial and institutional property owners to increase their outdoor water-use efficiency by replacing qualifying high water using landscape and/or upgrading to qualifying irrigation equipment. Simple changes in plant type and irrigation methods can greatly reduce the water required for an attractive landscape. There are many qualifying low water using plants in Santa Clara County that require little to no water once established. There are also several irrigation equipment upgrades that can be made to increase a site's irrigation efficiency, all of which can result in saving water and saving money.

The water district's Landscape Rebate Program provides two types of rebates that can be combined or issued separately: landscape conversion rebate and irrigation hardware rebate.

In order to qualify, sites must participate in a pre-inspection survey prior to applying for the program.

Landscape conversion rebate

Santa Clara County single family, multi-family and business properties with qualifying high water using landscape can receive rebates for converting to qualifying low water using landscape with plants from the water district's qualifying plant list as well as permeable hardscape.

Irrigation hardware rebate

Santa Clara County single family, multi-family, and business properties can receive rebates for the installation of qualifying high efficiency irrigation equipment, such as:

- Weather-based irrigation controllers
- Rotating nozzles for pop-up spray heads
- Dedicated Landscape Meters
- Rain sensors
- Rotary sprinklers with pressure regulation and/or check valves

In FY 09/10, the district also rebated customers for converting from overhead spray to drip, upgrading to pressure regulating valves, sprayheads with pressure regulation and/or check valves, and high-efficiency nozzles for large rotary sprinklers.

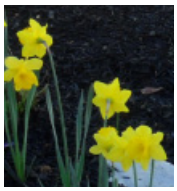
In FY 09/10, there were 142 rebates for weather-based irrigation controllers; 255 sites that received a landscape conversion rebate; and 210 sites that received a rebate for irrigation hardware upgrades.

Landscape conversion site

In Business

The water district combines education, technical assistance, and financial incentives to encourage reduced water consumption among commercial, industrial and institutional water users.

Annual water savings attributable to business conservation programs reached 6,900 acre-feet in FY 09/10.



Two examples of the water conservation ads

Water efficient technologies program

The Water Efficient Technologies (WET) program provides rebates for process, technology, and equipment retrofits that save water. The rebate rate is $4.00 per hundred cubic feet (ccf) of water saved annually with a minimum annual water savings requirement of 100 ccf.

Since 1997, the water district and the City of San José have maintained a cost-sharing agreement to help fund this program. To date, the water district has funded (either entirely or through cost-sharing with the City of San Jose) 84 projects saving approximately 613,590 CCF/year.

Ozone laundry system with commercial clothes washers

Water surveyors at HP Pavilion

Staff checking high-efficiency washer

Commercial, Industrial, Institutional (CII) water use survey program

This program for commercial, industrial and institutional (CII) establishments in Santa Clara County began in FY 03/04 and continued into FY 09/10. It provides: a thorough survey of the indoor water use of CII establishments, suggestions for ways to become more water efficient, and recommendations for water district programs that can help fund water efficiency improvements. Because most of the water savings potential exists in the industrial and institutional sectors, those sectors were targeted.

For FY 09/10, 136 surveys were completed. Since the program began, 445 surveys have been conducted.

Commercial clothes washer rebate program

The Commercial Clothes Washer Rebate Program provides laundromats and apartment complexes in Santa Clara County a rebate of $400 for each purchased or leased commercial high-efficiency clothes washer.

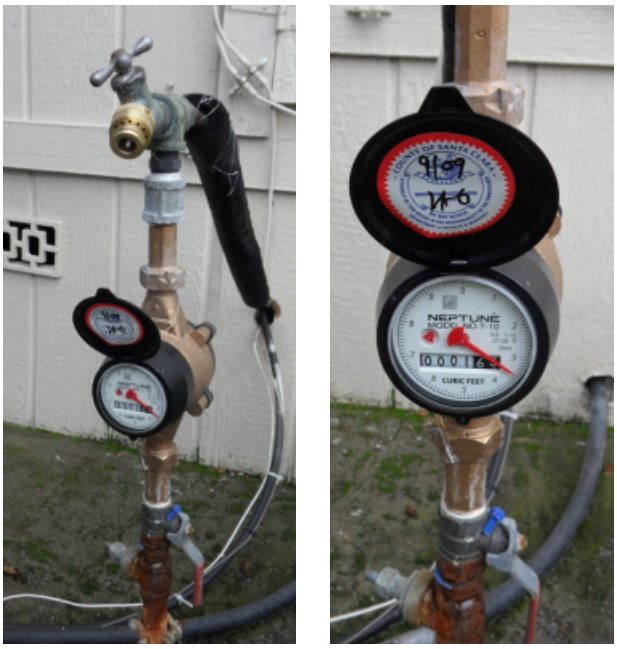
The water district rebates only the most water efficient machines. By doing this, the water district hopes to influence buyers to make the most water-efficient choice and maximize water savings. The Commercial Clothes Washer Rebate Program provided 367 rebates in FY 09/10. Since the start of the program, 3,451 rebates have been issued.

Commercial and apartment high-efficiency toilet installation program

This program installs high-efficiency toilets (HETs) and urinals (HEUs) in the commercial, industrial and institutional sectors, as well as in the multi-family sector. There were 1,617 HETs installed in the commercial sector and 1,796 HETs installed in the multi-family dwelling sector, for a total of 3,413 installations for FY 09/10. There were also 157 urinals installed in FY 09/10. Since the program began, more than 16,400 HETs and HEUs have been installed.

Urinals at HP Pavilion

In Business



Submeter at a mobile home park

Mobile home park submeter rebate program

This program, which began as a pilot program in FY 00/01, gives a rebate for every water submeter installed at mobile home parks. During the pilot program, 1,187 rebates were installed. Water use records from participating mobile home parks showed an average water savings of 23 percent per mobile home. The program was extended and, in FY 09/10, 1,740 more water submeters were installed, bringing the total for number rebated to 4,674.

High-efficiency toilet

High-efficiency pre-rinse sprayer

Pre-rinse spray valve program

The water district provides of pre-rinse spray valves, with a flow rate of 1.15 gallons per minute, to commercial sites identified through the district's CII Water Survey Program and through water retailers. A total of 25 of these sprayers were distributed through this program in FY 09/10. Roughly 4,350 sprayers have been distributed since the district began promoting these devices in FY 02/03, through a direct installation program.

Commercial Rebate Program for Toilets and Urinals

In FY 09/10, the water district started offering rebates for commercial facilities replacing old, inefficient toilets and urinals with high-efficiency models. The rebates were up to $400 for toilets and up to $500 for urinals. The new urinals must flush at 0.125 gallons per flush or less; the new toilets must flush at 1.28 gallons per flush or less.

In FY 09/10, 171 urinal rebates and 62 toilet rebates for toilets were issued.

In Agriculture

The water district's water-use efficiency program conducts growers meetings and provides technical assistance to help growers increase irrigation efficiency. These meetings help growers to comply with non-point source discharge regulations.

On-line irrigation scheduling calculators

This online resource consists of two calculators: one for drip irrigation systems; the other for sprinkler systems. Each makes it easy to calculate a crop's irrigation requirements based on local California Irrigation Management Information System (CIMIS) weather station data or on satellite-based spatial CIMIS coupled with the percentage of a field that is shaded by the crop around high noon. These calculators are used to estimate the irrigation water requirement since the last irrigation, or to forecast a crop's irrigation requirements for the coming few days.

California Irrigation Management Information System (CIMIS)

This free service provides daily reference evapotranspiration estimates to growers and landscape irrigators to use for scheduling irrigation. Reference evapotranspiration is the water use of a standardized green grass surface. Estimates of the evapotranspiration of all crops and landscapes can be mathematically related to reference evapotranspiration.

The water district owns and maintains two weather stations at San Martin and one station west of Saratoga. A CIMIS station east of Gilroy, owned by Syngenta, Inc., is maintained by the water district. Growers and landscape irrigators can access current evapotranspiration information around the clock by visiting the water district's web site at www.valleywater.org.

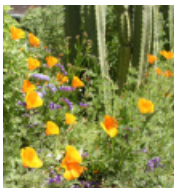
Weather station in Saratoga

Agricultural Irrigation Management Program

The water district funds a program implemented by the Santa Clara County Farm Bureau to provide ten growers with intensive training in irrigation system fitness and irrigation management. Program technicians sample the output of growers' irrigation systems, provide recommendations to improve the uniformity of the irrigation systems, and conduct follow-up sampling and analysis to estimate any improvement in uniformity that has resulted from implementation of the recommendations. Once irrigation system fitness has been quantified, subsequent training takes place in the use of soil moisture content sampling and CIMIS-based crop evapotranspiration estimates that will determine irrigation scheduling. The goal of the program is to create a cadre of efficient irrigators who are able to demonstrate by their farming practices that efficient irrigation is achievable.

Outreach & Education

The water district recognizes that the keys to success for water conservation programs are effective education and outreach components. To that end, the water district has developed informative classes and materials. The water district has also participated in many effective outreach events, a list of which can be found at the end of this section.



Water conservation campaign website, save20gallons.org

Staff at information table at a Yamagami Nursery event

2010 water conservation campaign

In May 2009, the Santa Clara Valley Water District launched a new water conservation campaign urging every individual to save 20 gallons every day by taking small actions that can result in big savings. The campaign followed a 15 percent mandatory water reduction call by the district board of directors because of the statewide drought and a growing concern about water deliveries through the Sacramento-San Joaquin River Delta. Water through the Delta makes up almost half of our supplies.

The campaign, designed around people's daily activities involving water use, included TV, radio, newspaper, billboard and online advertisements. In order to reach our diverse population, ads are in English, Spanish, Vietnamese and Chinese. The goal of the campaign, which will continue into 2011, is to educate and inform Santa Clara Valley residents about how they can reduce their water consumption by 20 gallons a day per person. A website was also developed, and can be viewed at www.save20gallons.org.

Nursery Outreach Program

For the last ten years, the water district has distributed water conservation information through display racks located at county nursery and garden stores. These display racks contain literature with information on water-wise gardening, efficient lawn irrigation, drought resistant plants, drip irrigation, and water district programs. In FY 09/10, 20 nurseries participated in the program throughout the county.

Water-efficient landscaping workshops for homeowners

The water district held its 17th annual water efficient landscaping workshop series in March 2010 over four weekends. The topics included:

- selecting plants for water-wise garden
- water efficient irrigation design
- water-wise garden design
- gardening with natives

Each spring, the workshops are presented by landscape and irrigation experts that provide practical advice on water-efficient landscaping. A total of 185 people attended the series of workshops in March, 2010.

Outreach & Education

Water conservation booth at the Punjabi Mela Festival

Home and Garden Show

Community events

The water district promoted water-use efficiency at numerous community events in FY 09/10, including: environmental fairs, Earth Day events, and many others. These events give the water district an opportunity to talk to the public directly, and to educate residents and businesses about water-use efficiency with hands-on displays, educational handouts and complimentary water-efficient device distribution.

Going native garden tour

The water district co-sponsored the 8th Annual Going Native Garden Tour in April, 2010. The tour was a great success, showcasing 53 native plant gardens throughout Santa Clara and San Mateo counties, with a record 12,824 visitors. The water district has sponsored this event since its inaugural year in 2002.

Seminars for agriculture professionals

The water district has presented at growers meetings annually since 1998 on topics related to water- and fertilizer-use efficiency, water district programs, farm safety, and compliance with farm water quality regulations. All meetings have been presented with simultaneous Spanish translation. This year, the following seminars were offered:

- CIMIS for summer vegetables at Morgan Hill Grange Hall
- CIMIS for vineyards at Clos LaChance Winery
- CIMIS for cool season crops at the San Benito County Farm Bureau

Calendar of Events

The water district's staff worked at educational booths or made presentations at the following events during FY 09/10:

Date	Event	Location
7/1/2009	Willow Ranch Mobile Home HOA Meeting	Willow Ranch Mobile Home Community, Sunnyvale
7/11/2009	San Miguel Neighborhood Association	San Miguel Elementary School, Sunnyvale
7/21/2009	Water Conservation Presentation at Yahoo!	Yahoo!, Sunnyvale
7/23/2009	Ladies Night Out at Summerwinds Nursery	Summerwinds Nursery, San Jose
8/12/2009	Education for Youth & Summer of Service Program (SOS)	Children's Discovery Museum, San Jose
8/14/2009	Guadalupe Park and Gardens - Ribbon Cutting Ceremony for Recycled Water	Guadalupe Park and Gardens, San Jose
9/3/2009	Cape Cod Mobile Home Park HOA Meeting	Cape Cod Mobile Home Park, Sunnyvale
9/5/2009	SummerWinds Event	SummerWinds Nursery, Campbell
9/9/2009	Lane Irrigation Equipment	Lane Irrigation, San Jose
9/9/2009	Turf Talk	Los Altos Hills Town Hall, Los Altos
9/19 - 20, 2009	Yamagami's Fall Festival	Yamagami's Nursery, Cupertino
9/23/2009	Rinconada Open House	Rinconada Water Treatment Plant
9/26/2009	Spirit of Japantown Festival	Japantown, San Jose
10/1/2009	Green Fair for Maxim-IC Corp	Maxim-IC Corp, Sunnyvale
10/1/2009	Northern California Hotel and Lodging Conference	Doubletree Hotel, San Jose
10/6/2009	Colonial Manor Mobile Home Park HOA Meeting	Colonial Mobile Manor, San Jose
10/8/2009	NASA Ames Safety Fair Week	NASA Ames Research Center M/S 218-1 Moffett Field, CA 94035
10/10/2009	SummerWinds Nursery Landscape Saturday	SummerWinds Nursery, Mountain View
10/16 - 18, 2009	San Jose Fall Home Show	San Jose McEnery Convention Center, San Jose
10/21/2009	American Business Women's Association - Loma Prieta Chapter Business Meeting	Denny's Restaurant, San Jose
10/21/2009	SCC Planning Office Climate Challenge	Santa Clara County Department of Planning and Development Office, San Jose
10/24/2009	SummerWinds	SummerWinds Nursery, Cupertino
12/7/2009	Sustainable Silicon Valley Water Summit at NASA Ames Research Center Conference Center	NASA Ames Research Center Conference Center
12/8/2009	CLCA Water Management Certification Training & Test	SCVWD, San Jose
1/25 - 27, 2010	ARCSA Bay Area Rainwater Harvesting Workshops	SCVWD, San Jose
2/16/2010	Meeting at the Villages	The Villages, San Jose

Calendar of Events

Date	Event	Location
2/17/2010	Sustainability Matters Workshop "A Way Forward for Water: Understanding Water Supply, Use, and Reuse"	San Jose State University, San Jose
3/4/2010	Green Business University	Chamber of Commerce, Mountain View
3/6/2010	March Water Efficient Landscape Workshop	SCVWD, San Jose
3/10/2010	Water Efficiency Ordinance Community Meeting	City of Cupertino City Hall
3/11/2010	Informational open house for well owners	Morgan Hill
3/13/2010	Water Efficient Landscape Workshop	SCVWD, San Jose
3/15/2010	Informational open house for well owners	North County - Cupertino
3/17/2010	Building Owners & Managers Association Resource Conservation Committee	San Jose
3/20/2010	Water Efficient Landscape Workshop	SCVWD, San Jose
3/20/2010	Spring Garden Fair	Yamagami's Nursery, Cupertino
3/21/2010	Spring Garden Fair	Yamagami's Nursery, Cupertino
3/22/2010	2010 Silicon Valley Water Conservation Awards	Applied Materials, Santa Clara
3/27/2010	Water Efficient Landscape Workshop	SCVWD, San Jose
4/10/2010	Sixteenth Annual Spring Garden Market	History Museum Kelley Park, San Jose
4/14/2010	Earth Day Fair	Verisign, Mountain View
4/17/2010	2nd Annual Earth Day Festival	Cupertino City Hall Plaza
4/20/2010	Earth Day Fair	HP, Cupertino
4/22/2010	Earth Day Fair	JDSU Corporation, Milpitas
4/22/2010	Nvidia's Earth Day	Nvidia , San Jose
4/24/2010	Slow the Flow	Foothill College Horticulture Dept. Los Altos Hills
5/1/2010	4th Annual Bay Area Schools Environmental Conference	Hayes Conference Center, San Jose
5/5/2010	Stewardship for Small Acreages	Gilroy
5/8/2010	South Bay BBQ Cookoff-Morgan Hill	Morgan Hill Community Center
5/20/2010	Lynhaven Neighborhood Association	International Christian Center
5/22/2010	CHEER	Jason Stephens Winery, Gilroy
6/1/2010	How to Green Your Medical Practice	Stanford University Medical Center
6/5/2010	Gilroy Community Garden Opening	Gilroy
6/19/2010	CA Executive Council of Homeowners Conference	Santa Clara Convention Center
6/19/2010	San Jose Punjabi Mela	Evergreen Valley College, San Jose
6/23/2010	Applied Materials Environmental Faire	Applied Materials, Santa Clara
6/26 - 27, 2010	Generation Green Expo	McEnery San Jose Convention Center, San Jose
6/27/2010	2010 Barron Park Green Tour	Barron Park Neighborhood, Palo Alto

Cost - Sharing Agreement & Partnerships

Water conservation is a community wide effort, and it takes the cooperation of many agencies, cities, organizations and water retailers to meet current and future water supply goals. The water district maintains cost-sharing agreements with many cities and utilities to provide water conservation programs for residential and commercial customers.

In Fiscal Year 09/10, the water district administered more than $720,000 in cost-sharing agreements.

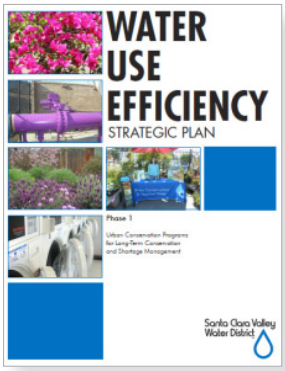
Cost-Sharing Agreements that were active in FY 09/10 included:

Cost Sharing Partner	Amount	Water Conservation Program
City of San Jose	$406,977	Residential and Commercial Water Conservation Programs (indoor only)
City of Palo Alto	$160,905	Residential and Commercial Water Conservation Program (indoor and outdoor)
City of Santa Clara	$12,500	Commercial Clothes Washer Rebate Program
City of Milpitas	$5,000	Landscape Rebate Program
City of Morgan Hill	$50,000	Landscape Rebate Program and Residential HET Rebate Program
Stanford University	$35,000	Residential HET Rebate Program
California Water Service Co.	$50,000	Residential and Commercial Water Conservation Programs (indoor and outdoor)
Total	**$720,382**	

Studies & Research

The water district conducts research, on its own and in collaboration with other agencies, to increase water savings and cost-effectiveness of its water conservation programs. Data from these studies and research can be vital in creating an effective, long-range water conservation strategy for Santa Clara County.

Water Conversation Strategic Plan

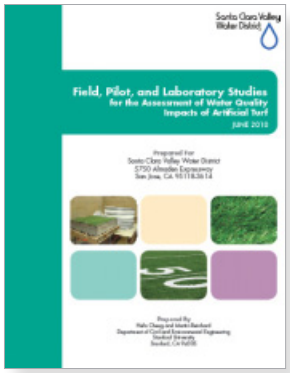


The water district's Water Use Efficiency Strategic Plan is intended to provide a blueprint for meeting the water district's water conservation policy objectives and targets reflected in the Board's Ends Policies for water supply reliability, water conservation and water recycling. These policies, in conjunction with the water district's 2003 Integrated Water Resources Planning Study (IWRP 2003) and the 2005 Urban Water Management Plan (UWMP 2005), have established the following numeric targets for recycled water and conservation:

- Water recycling is to reach 5 percent of total water use or 19,100 acre-feet by 2010 and 10 percent or 40,500 acre-feet by 2020.
- Water conservation is to achieve 98,500 acre-feet per year of water savings by 2030.

Phase I of the Water Use Efficiency Strategic Plan is intended to provide a blueprint for meeting the policy objectives and targets related to water conservation.

Artificial turf study



Artificial turf has the potential to save substantial quantities of water, and as such, has received considerable attention from the water conservation community. Before considering offering financial incentives for the installation of artificial turf, the water district conducted a study to determine whether there are any adverse water quality impacts to groundwater or to surface water due to leachate from artificial turf. A preliminary study by the water district suggested that heavy metal contamination may be a concern. Toward this end, the water district partnered with Stanford University to conduct a water quality study at field sites throughout the county where artificial turf has been installed. The water district and Stanford University also conducted laboratory studies of artificial turf concurrently with the field study to better understand water quality impacts. In June, 2010, a final report was released and is available on the water district's website.

Acknowledgements

From left: Jerry De La Piedra, Paula Walters, Karen Morvay and Virginia O'Rourke

Back row: Cody Houston, Andrew Lee and Nick Florimonte
Front row: Billy Roderick, Ashley Carter and Rosalie Sears

Board of Directors

Rosemary Kamei, District 1
Joe Judge, District 2
Richard P. Santos, District 3
Larry Wilson, District 4
Patrick Kwok, District 5
Tony Estremera, At Large
Cy Mann, At Large

Executive leadership

Beau Goldie, Chief Executive Officer
Jim Fiedler, Chief Operating Officer

Water Conservation Unit staff

Jerry De La Piedra
Program Administrator

Virginia O'Rourke
Water Conservation Specialist

Karen Morvay
Water Conservation Specialist II

Paula Walters
Management Analyst

Water Conservation Unit interns for FY 09/10

Alexis Shields (not pictured)
Andrew Lee
Cody Houston
David Nguyen (not pictured)
Erica Silva (not pictured)
John Fosnaugh (not pictured)
Kevin Carley (not pictured)
Michael Gonzales (not pictured)
Nick Florimonte
Rebecca Olsen (not pictured)
Rosalie Sears

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Santa Clara Valley
Water District

5750 Almaden Expressway
San Jose, CA 95118
(408) 265-2600
www.valleywater.org

Santa Clara Valley Water District

FY 2009-10

Water Conservation Report

5750 Almaden Expressway
San Jose, CA 95118
(408) 265-2600
www.valleywater.org

Appendix L

Water Shortage Resolution

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RESOLUTION NO. 09-25

CALLING FOR 15 PERCENT MANDATORY WATER CONSERVATION
FOR THE REMAINDER OF CALENDAR YEAR 2009

WHEREAS, Santa Clara County is experiencing the third consecutive year of drought and water shortage; and

WHEREAS, in the first year of drought and supply interruption after the imposition of Delta pumping restrictions, on June 12, 2007, the District Board of Directors established a voluntary water conservation goal of 10 percent; and

WHEREAS, beginning the second year of drought and water shortage, on December 18, 2007, the District Board continued its call for 10 percent voluntary conservation; and

WHEREAS, a biological opinion issued by the United States Fish and Wildlife Service on December 15, 2008, included operating restrictions which may result in a nearly 30 percent restriction on water deliveries from the State Water Project and federal Central Valley Project to protect Delta Smelt; and

WHEREAS, in 2009, State Water Project water allocations have been reduced to 20 percent of requested deliveries, and Central Valley Project water allocations for municipal and industrial uses have been reduced to 50 percent; and

WHEREAS, for the third consecutive year the District and water retailers are withdrawing supplies from surface and groundwater storage depleting local reserve supplies; and

WHEREAS, in the exercise of prudent management the District has already, over the last three years of drought and water shortage, reduced the delivery of water for groundwater recharge operations and replenishment; and

WHEREAS, the District is retrieving water from the Semitropic Water Bank to make up for shortfalls in available supplies, and

WHEREAS, the District must maintain sufficient local surface and groundwater reserve supplies to cope with supply interruptions from natural disasters and catastrophic events such as earthquake; and

WHEREAS, on February 27, 2009, Governor Schwarzenegger proclaimed a State of Emergency in California because of conditions of drought and water shortage; and

WHEREAS, the District has reduced storage in local reservoirs because of California Department of Water Resources Division of Dam Safety requirements; and

WHEREAS, the District's 2005 Urban Water Management Plan, Water Shortage Contingency Plan guides the District's water supply management actions for supply augmentation, increased water conservation measures, and use of local reserve supplies; and

WHEREAS, the District has increased public outreach and education to create increased awareness of the county's water supply challenge; and

CALLING FOR 15 PERCENT MANDATORY WATER CONSERVATION FOR THE REMAINDER OF CALENDAR YEAR 2009

WHEREAS, the District must rely on the actions of the water retailers, cities, and county to enact and implement local ordinances, and conservation measures.

NOW THEREFORE BE IT RESOLVED that the Board of Directors declares a water shortage alert and calls for 15 percent mandatory water conservation for the remainder of 2009.

BE IT FURTHER RESOLVED that the District urges all cities, the county, and water retailers to immediately activate and enforce existing drought ordinances, mandatory water use restrictions and prohibitions, and/or mandatory allocations and conservation pricing.

PASSED AND ADOPTED by the Board of Directors of Santa Clara Valley Water District by the following vote on March 24, 2009.

AYES:	Directors	R. Kamei, J. Judge, T. Estremera, P. Kwok, R. Santos, L. Wilson, S. Sanchez
NOES:	Directors	None
ABSENT:	Directors	None
ABSTAIN:	Directors	None

SANTA CLARA VALLEY WATER DISTRICT

By: Sig Sanchez
SIG SANCHEZ
Chair/Board of Directors

ATTEST: LAUREN L. KNOFF

Lauren L. Knoff
Clerk/Board of Directors

RL12579.docx

RESOLUTION NO. 10- 60

CALLING FOR TEN PERCENT MANDATORY WATER CONSERVATION
THROUGH SEPTEMBER 30, 2010

WHEREAS, in California, water is a precious and limited resource that must be used wisely; and

WHEREAS, in 2010, State Water Project water allocations have been reduced to 50 percent of contract quantity, and Central Valley Project water allocations for municipal and industrial uses have been reduced to 75 percent, and 45 percent for agricultural uses, creating water shortages across the State; and

WHEREAS, the District has reduced operational storage capacity in local reservoirs because of California Department of Water Resources Division of Dam Safety requirements; and

WHEREAS, biological opinions issued by the federal government to protect Delta Smelt and Chinook salmon, included operating restrictions which has resulted in a 700,000 acre-feet total reduction on water deliveries in 2010 through mid-April 2010 from the State Water Project and federal Central Valley Project to protect Delta Smelt; and

WHEREAS, the operating restrictions in the biological opinions will continue to impact deliveries from the State Water Project and the federal Central Valley Project next year; and

WHEREAS, the District must maintain sufficient local surface and groundwater reserve supplies to cope with supply interruptions from natural disasters and catastrophic events such as earthquake; and

WHEREAS, the District's Urban Water Management Plan, Water Shortage Contingency Plan guides the District's water supply management actions for supply augmentation, increased water conservation measures, and the use of local reserve supplies; and

WHEREAS, the District through coordination with the water retailers, cities in Santa Clara County, and the County of Santa Clara, has increased public outreach and education to create increased awareness of the countywide water supply challenges; and

WHEREAS, the District must rely on the actions of the water retailers, cities in Santa Clara County, and the County of Santa Clara to enact and implement local ordinances, and conservation measures; and

WHEREAS, the citizens of Santa Clara County have responded favorably to the District's call for short-term drought response conservation since 2007, helping to preserve water supply reserves.

NOW, THEREFORE BE IT RESOLVED by the Board of Directors of the Santa Clara Valley Water District that mandatory water conservation of ten percent reduction from 2004 level of use is called for through September 30, 2010.

Resolution Calling for Ten Percent Mandatory Water Conservation Through September 30, 2010

PASSED AND ADOPTED by the Board of Directors of Santa Clara Valley Water District by the following vote on July 13, 2010.

AYES: Directors P. Kwok, R. Kamei, T. Estremera, S. Mann, R. Santos

NOES: Directors J. Judge, L. Wilson

ABSENT: Directors None

ABSTAIN: Directors None

SANTA CLARA VALLEY WATER DISTRICT

By: _____
RICHARD P. SANTOS
Chair/Board of Directors

ATTEST: MICHELE L. KING

_____
Clerk/Board of Directors

RESOLUTION NO. 10- 76

CALLING FOR TEN PERCENT VOLUNTARY WATER CONSERVATION
THROUGH JUNE 30, 2011

WHEREAS, in California, water is a precious and limited resource that must be used wisely; and

WHEREAS, in 2010, State Water Project water allocations have been reduced to 50 percent of contract quantity, and Central Valley Project water allocations for municipal and industrial uses have been reduced to 75 percent, and 45 percent for agricultural uses, creating water shortages across the State; and

WHEREAS, the District has reduced operational storage capacity in local reservoirs because of California Department of Water Resources Division of Dam Safety requirements; and

WHEREAS, biological opinions issued by the federal government to protect Delta Smelt and Chinook salmon, included operating restrictions which has resulted in reductions in water deliveries from the State Water Project and federal Central Valley Project to protect Delta Smelt; and

WHEREAS, the operating restrictions in the biological opinions will continue to impact deliveries from the State Water Project and the federal Central Valley Project next year; and

WHEREAS, the District must maintain sufficient local surface and groundwater reserve supplies to cope with supply interruptions from natural disasters and catastrophic events such as earthquake; and

WHEREAS, the District's Urban Water Management Plan, Water Shortage Contingency Plan guides the District's water supply management actions for supply augmentation, increased water conservation measures, and the use of local reserve supplies; and

WHEREAS, the District through coordination with the water retailers, cities and county has increased public outreach and education to create increased awareness of the county's water supply challenges; and

WHEREAS, the District must rely on the actions of the water retailers, cities, and county to enact and implement local ordinances, and conservation measures; and

WHEREAS, the citizens of Santa Clara County have responded favorably to the District's call for short-term drought response conservation since 2007, helping to preserve water supply reserves.

NOW, THEREFORE BE IT RESOLVED by the Board of Directors of the Santa Clara Valley Water District that voluntary water conservation of ten percent reduction from 2004 level of use is called for through June 30, 2011.

Resolution 10-76

Resolution Calling for Ten Percent Voluntary Water Conservation Through June 30, 2011

PASSED AND ADOPTED by the Board of Directors of Santa Clara Valley Water District by the following vote on September 28, 2010.

AYES:	Directors	T. Estremera, P. Kwok, J. Judge, R. Kamei, S. Mann, L. Wilson, R. Santos
NOES:	Directors	None
ABSENT:	Directors	None
ABSTAIN:	Directors	None

SANTA CLARA VALLEY WATER DISTRICT

By: _____
RICHARD P. SANTOS
Chair/Board of Directors

ATTEST: MICHELE L. KING

_____
Clerk/Board of Directors

Appendix M

South County Recycled Water Master Plan

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Santa Clara Valley Water District/
South County Regional Wastewater Authority

SOUTH COUNTY RECYCLED WATER MASTER PLAN

FINAL
October 2004

2700 YGNACIO VALLEY ROAD, SUITE 300 • WALNUT CREEK, CALIFORNIA 94598 • (925) 932-1710 • FAX (925) 930-0208

Santa Clara Valley Water District/
South County Regional Wastewater Authority

SOUTH COUNTY RECYCLED WATER MASTER PLAN

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South County Regional Wastewater Authority

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SOUTH COUNTY RECYCLED WATER MASTER PLAN

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South County Regional Wastewater Authority

SOUTH COUNTY RECYCLED WATER MASTER PLAN

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EXECUTIVE SUMMARY

INTRODUCTION AND BACKGROUND

The Santa Clara Valley Water District (the District) and the South County Regional Wastewater Authority (SCRWA) intend to expand the use of recycled water to meet long-term water supply and wastewater needs in south Santa Clara County, specifically in and near the Cities of Gilroy and Morgan Hill. In order to facilitate the expansion of recycled water use in south Santa Clara County, the District and SCRWA have partnered to develop this Master Plan. SCRWA operates the South County Regional Wastewater Treatment Plant (WWTP) in the City of Gilroy. In 1999, the District, the City of Gilroy, the City of Morgan Hill, and SCRWA entered partnership agreements with SCRWA as the supplier, the District as wholesaler, and the Cities of Gilroy and Morgan Hill as retailers to develop a recycled water project.

The purpose of this study was to develop a Recycled Water Master Plan for the District and SCRWA to expand the use of tertiary treated recycled water within the study area. The projects identified in this Master Plan will increase the reliability of the County's long-term water supplies. Increased recycled water usage will also lessen the demand on groundwater and provide SCRWA with additional discharge alternatives.

Existing SCRWA recycled water treatment facilities can produce 3 million gallons per day (mgd) of tertiary treated recycled water, and expansion to 6 mgd capacity is expected to be completed by the end of 2005. The existing recycled water distribution pipeline provides five existing customers with tertiary treated recycled water. Recycled water is used for landscape irrigation at Christmas Hill Park Ranch Addition, Christmas Hill Park, and the Eagle Ridge Development and Golf Course. Recycled water is used for agricultural irrigation on local farmland, including Obata Farms. The Calpine-Gilroy Energy Center Peaker Plant began utilization of recycled water for cooling in May 2004. Total existing annual average recycled water usage is approximately 711 acre-feet per year (afy).

The Master Plan defines immediate-term, short-term, and long-term capital improvement programs. The immediate-term plan defines projects that the District and SCRWA can implement within the next year to increase current recycled water use and reliability. The short-term plan includes projects that can be implemented in approximately the next five years. The long-term plan considers ultimate system build-out.

MARKET ASSESSMENT

The objective of this Master Plan is to maximize use of recycled water in South County to limit the use of potable water for uses in which recycled water is a reasonable alternative.

Overall, 70 potential recycled water customers were identified and quantified in both Gilroy and Morgan Hill, including commercial and industrial uses, landscape irrigation uses, and agricultural uses. In addition, the potential discharge pipeline to the Pajaro River was assessed as a long-term alternative to serve recycled water to additional agricultural customers south of the WWTP.

Current water usage data was available for most proposed recycled water sites. Historical irrigation water usage data was used to conservatively estimate expected annual average recycled water use for irrigation. Calculated irrigation requirements, based on local evapotranspiration and rainfall, were used to estimate irrigation use at sites for which data was not available. Calculated irrigation requirements were also used to estimate peak month demand, peak day demand, and peak hour demand for distribution system considerations. The calculated annual irrigation requirement in the South County area is approximately 3.8 feet/year.

If all quantified customers were supplied recycled water, peak monthly usage would exceed 9 mgd, which currently exceeds the WWTP's available influent flow and recycled water supply. Approximately 1 mgd of recycled water would be used during the period from November through March, assuming minimal wet season irrigation usage.

PROJECT ALTERNATIVES

Potential customers were grouped into 12 preliminary project alternatives. The groupings were developed based on customer location, information gathered in the market assessment, and in conjunction with planning level hydraulic modeling. The composition of each customer group also considered possible distribution system alignment, proximity to the existing distribution system, and other implementation factors. These groupings were used to develop peak flow demands, preliminarily route pipelines, perform a planning-level hydraulic analysis, and assess initial environmental constraints.

Preliminary pipeline alignments to serve new recycled water customers were developed and modified based on coordination with District staff, City staff, and logistical and environmental considerations. Pipeline routings were planned primarily within City roadways. Based on preliminary modeling results, expansion of the distribution pipeline network was shown to be necessary to serve additional customers. A parallel pipeline or development of an additional pipeline alignment will be necessary to serve as the backbone distribution system for the planned expansion. Three alternatives to provide recycled water in the Morgan Hill area were assessed, including a transmission pipeline from the WWTP and a membrane bioreactor scalping plant.

A Constraints Analysis was developed to identify and evaluate environmental constraints or "fatal flaws" that could affect implementation of each proposed pipeline route. Specific analysis topics included land use and land use policy, traffic and circulation, visual/aesthetic

resources, biological resources, cultural resources, hazardous materials, hydrologic resources, and geology and soils. The conclusions of the Constraints Analysis were positive overall as to the environmental feasibility of the proposed pipeline routings. Overall, implementation of standard construction measures has the ability to reduce potential impacts associated with the proposed pipeline routes to “less than significant impacts”.

SELECTED PROJECTS

The 12 preliminary project alternatives were evaluated and screened based on peak flow demands, preliminary pipeline routes, cost effectiveness (i.e. cost/benefit ratio), initial hydraulic analysis, and initial environmental constraints. The goal of the evaluation was to optimize the projects for maximum recycled water usage at minimum cost. The evaluation further prioritized the projects, allowing development of immediate-term, short-term, and long-term capital improvement programs for the Master Plan. Projects were selected during a progress meeting with representatives of SCRWA, the District, and the City of Gilroy. The selection process emphasized cost effectiveness and recycled water demand, while minimizing necessary distribution system expansion.

Nineteen potential customers were selected as the basis for the capital improvement program (CIP) and have an estimated annual recycled water usage of 3,149 afy, more than quadruple the existing customers’ recycled water use of 711 afy. All information for analyzed projects not selected for implementation remains in the Master Plan for potential future use should conditions change.

CAPITAL IMPROVEMENT PROGRAM

The CIP for the South County Recycled Water Master Plan is planned to develop in three phases. Each customer grouping was added as a phased connection at a feasible future date. The estimated date of connection for each customer grouping is preliminary and may be changed due to implementation factors, environmental requirements, or other reasons.

The immediate-term CIP includes agricultural use that can be connected within the next year, along with a pipeline retrofit, storage reservoir, and pump station. The short-term plan includes landscape irrigation and industrial customers located near the existing pipeline that can be connected in the next five years, along with a new transmission pipeline, storage, and pump station upgrade. The long-term CIP includes additional landscape irrigation customers in the Gavilan College area and Hecker Pass area, as well as a booster pump station.

Table ES.1 summarizes the phases of the CIP, including flow demands and distribution system improvements.

Table ES.1 Capital Improvement Program - Recycled Water Demand and Distribution System Improvements South County Recycled Water Master Plan Santa Clara Valley Water District/ South County Regional Wastewater Authority			
Capital Improvement Program Phase	**Maximum Month Demand (mgd)**	**Maximum Day Demand (mgd)**	**Distribution System Improvements**
Existing	1.8	2.3	-
Immediate-Term (One year)	3.7	4.8	3,000 feet of 12-inch diameter pipeline, retrofit existing Hecker Pass pipeline, 3-MG storage reservoir, 3-mgd on-site WWTP pump station
Short-Term (Next five years)	5.6	7.4	16,000 feet of 16-inch diameter pipeline, 24,000 feet of 30-inch diameter pipeline, 3-MG storage reservoir, 6-mgd on-site WWTP pump station
Long-Term (Beyond five years)	7.1	9.3	14,000 feet of 16-inch diameter pipeline, 2-mgd booster pump station expansion

COST ESTIMATES

Planning level project costs were developed and include estimated costs of construction, engineering design, construction management and inspection, and contingencies for estimating and construction, where applicable. An annual cost of delivered recycled water was estimated based on project costs and O&M costs.

The annual costs are summarized in Table ES.2. Each phase of the CIP includes incremental project costs and incremental O&M costs that allow the calculation of the cost per additional acre-foot of recycled water use in each phase. The cost to serve all selected customers in the entire CIP is the sum of the incremental costs for each phase. The implementation of all projects selected for the CIP will result in a maximum month recycled water demand of 7.1 mgd at an estimated project cost of $28,000,000 and annual O&M costs of $162,000. At an estimated ultimate annual recycled water usage of 3,149 afy, the cost of recycled water distribution for the selected CIP is $580 per acre-foot delivered.

Table ES.2 Annual Capital Improvement Program Cost Summary South County Recycled Water Master Plan Santa Clara Valley Water District/ South County Regional Wastewater Authority				
ENRCCI (SF) May 2004 = 8107	**Capital Improvement Program Phase**			
Description	**Existing System**	**Immediate-Term**	**Short-Term(1)**	**Long-Term(1)**
Project Costs (Present Worth)	-	$4,700,000	$17,400,000	$5,900,000
Convert to Annual Basis	5.5% interest over 50 years = 0.0591			
Annual Project Costs	-	$278,000	$1,028,000	$349,000
Incremental O&M Costs	$46,000	$12,000	$74,000	$30,000
Incremental Annual Cost	$46,000	$290,000	$1,102,000	$379,000
Total Annual Flow (AFY)	711	1,566	2,501	3,149
Incremental Flow (AFY)	-	855	935	648
Cost per additional Acre-foot, Annually	**-**	**$340**	**$1,180**	**$580**
Cost per Annual Acre-foot, Entire Proposed CIP	**$580**			

Notes:
(1) Cost estimates are incremental, i.e. long-term plan costs do not include the short-term or immediate-term costs.
(2) For the purposes of this cost estimate, inflation and discount rate for annualized costs are assumed equal, offsetting cost impacts over the phased construction schedule.

CONCLUSIONS

When considering the implementation of any recycled water project, other factors beyond economics must be reviewed. Other implementation factors for this Master Plan include possible City recycled water ordinances, coordination with customers regarding timing of construction, retrofit requirements, determination of “who pays” for customer improvements, development of specific customer agreements, land acquisition, and coordination with the residential project developers regarding recycled water usage and pipeline alignments.

The implementation of this Master Plan will include design of proposed distribution facilities, additional environmental services for CEQA documentation, and construction of the proposed facilities. Potential identification and implementation of other feasible projects may deviate from the projects, phasing, and schedule identified in this Master Plan.

Chapter 1

INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

The Santa Clara Valley Water District (SCVWD, the District) and the South County Regional Wastewater Authority (SCRWA) intend to expand the use of recycled water in South Santa Clara County, specifically in and near the Cities of Gilroy and Morgan Hill. The District Board has adopted the following water recycling Ends Policies:

2.1.6 Water recycling is expanded in Santa Clara County in partnership with the community, consistent with the District's Integrated Water Resources Plan (IWRP), reflecting its comparative cost assessments and other Board Policies.

2.1.6.1 Target 2010, water recycling accounts for five percent of the total water use in Santa Clara County.

2.1.6.2 Target 2020, water recycling accounts for ten percent of the total water use in Santa Clara County.

Additionally, the District's intent to increase recycled water use throughout Santa Clara County is discussed in District policy documents, including the Urban Water Management Plan, Integrated Water Resources Plan, and Groundwater Management Plan.

In order to facilitate the expansion of recycled water use in South Santa Clara County, the District and SCRWA have partnered. SCRWA operates the South County Regional Wastewater Treatment Plant (WWTP) in the City of Gilroy. In 1999, the District, the City of Gilroy, the City of Morgan Hill, and SCRWA entered partnership agreements with SCRWA as the supplier, the District as wholesaler, and the Cities of Gilroy and Morgan Hill as retailers to develop a recycled water project. One of the elements of the agreements is the preparation of a Master Plan for additional recycled water projects. This report represents the agreed upon Master Plan.

1.1.1 Study Area

The study area for the South County Recycled Water Master Plan is the City of Gilroy, as well as several identified projects in the City of Morgan Hill. The study area is depicted in Figure 1.1. The area is bounded by agricultural fields to the North, East, and South and by hillsides to the West.

1.2 PURPOSE OF STUDY

The purpose of this study is to develop a Recycled Water Master Plan for the District and SCRWA to expand the use of tertiary treated recycled water within the study area.

Figure 1.1
Study Area
Santa Clara Valley Water District / South County Regional Wastewater Authority

The projects identified in the Master Plan will increase the reliability of the County's long-term water supplies. Increased recycled water usage will also lessen the demand on groundwater.

The Master Plan identifies, quantifies, and evaluates potential recycled water customers. For the immediate-term (within the next year), the Master Plan evaluates customers and alternatives with immediate increase in recycled water demand. For the short-term (within 5 years), the Master Plan evaluates projects that can be feasibly implemented within that timeline to increase recycled water demand. For the long-term (greater than 5 years), the Master Plan identifies market demands, performs planning studies, and recommends long-term improvement projects in conjunction with SCRWA build-out plans and the County's General Plan.

The Master Plan identifies capital improvement projects needed to improve the recycled water distribution system's reliability and capacity to accommodate future expansion. The ultimate goal is to recycle as much of the discharge from the SCRWA WWTP as possible. It is not within the limits of this study to include needed upgrades at the WWTP to provide for full tertiary treatment.

The Master Plan presents a strategy for expanding use of recycled water in South Santa Clara County over a 20-year planning horizon. A Programmatic Environmental Impact Report (EIR) will identify and evaluate alternatives and will address implementation of the plan. The California Environmental Quality Act (CEQA) compliance process will involve collecting and analyzing relevant environmental data, inviting public participation in the development and evaluation of project alternatives, developing alternatives that will avoid and minimize environmental impacts to the greatest extent practicable, and mitigating impacts that cannot be minimized or avoided, but which are supported by legally supportable overriding considerations.

1.3 BACKGROUND

1.3.1 Background Reports

Several existing reports and studies were reviewed to provide general background information for development of this report. These reports are used throughout the Master Plan as reference materials and to insure consistency with other District and SCRWA reports and documents.

The reports reviewed and referenced in this Master Plan are summarized in Table 1.1, including title, date, and author.

The Gilroy General Plan, SCRWA Water Reclamation Planning Study, SCVWD Water Usage Data, and City of Gilroy Water Usage Data supplied information on potential

Table 1.1 Summary of Existing Reports and References South County Recycled Water Master Plan Santa Clara Valley Water District/ South County Regional Wastewater Authority		
Title/Description	**Date**	**Author**
Gilroy 2002-2020 General Plan	June 2002	City of Gilroy
SCRWA 2000 Annual Recycled Water Report	January 2001	OMI
SCRWA 2001 Annual Recycled Water Report	January 2002	OMI
SCRWA 2002 Annual Recycled Water Report	January 2003	OMI
Waste Discharge Requirements for SCRWA	May 1999	RWQCB
Water Reclamation Requirements for SCRWA (Recycled Water Permit)	May 1998	RWQCB
SCVWD Groundwater Management Plan	July 2001	SCVWD
SCRWA 2001 Annual Treatment Plant Report	January 2002	OMI
SCRWA 2002 Annual Treatment Plant Report	January 2003	OMI
SCRWA Water Reclamation Planning Study	February 1995	Montgomery Watson
SCVWD Urban Water Management Plan	April 2001	SCVWD
Advanced Recycled Water Treatment Feasibility Study (Draft)	Currently being revised	SCVWD, Black & Veatch
SCVWD Water Usage Data and Information	2000-2002	SCVWD
City of Gilroy Water Usage Data	2003	City of Gilroy
Recycled Water Monitoring Data	2000-2003	SCVWD
SCRWA Recycled Water Booster Pump Station and Reservoir - Initial Study/Draft Mitigated Negative Declaration	May 2000	ESA
SCVWD Water Use Efficiency Program Annual Report	2001-2002	SCVWD
SCRWA WWTP Effluent Disposal Capacity Analysis - Annual Update 2001	2001	Montgomery Watson Harza

customers of recycled water and other background information. The SCRWA Annual Reports, Waste Discharge Requirements, Water Reclamation Requirements, Recycled Water Monitoring Data, SCRWA Recycled Water Booster Pump Station and Reservoir - Initial Study/Draft Mitigated Negative Declaration, and SCRWA WWTP Effluent Disposal Capacity Analysis supplied information on the existing recycled water customers, existing recycled water facilities, and other background information. The SCVWD Groundwater Management Plan, SCVWD Urban Water Management Plan, Advanced Recycled Water Treatment Feasibility Study, and SCVWD Water Use Efficiency Program Annual Report supplied information on District policies and plans and other background information.

1.3.2 Existing Water Purveyors

SCVWD acts as the water wholesaler and manages the groundwater basin in South County. The Cities of Gilroy and Morgan Hill serve as the water retailers, providing water directly to customers. Gilroy derives its municipal supply from eight groundwater production wells and Morgan Hill derives its municipal supply from 13 groundwater production wells. The municipal supply is treated with chlorine disinfection, and meets all current regulations. Private groundwater wells are also in use for water supply in the South County area.

Recycled water partnership agreements were signed in 1999, designating SCRWA as the producer, the District as the wholesaler, and the Cities of Gilroy and Morgan Hill as the retailers of recycled water. Currently in South County, recycled water is only delivered in the Gilroy area.

1.3.3 Existing Wastewater Treatment

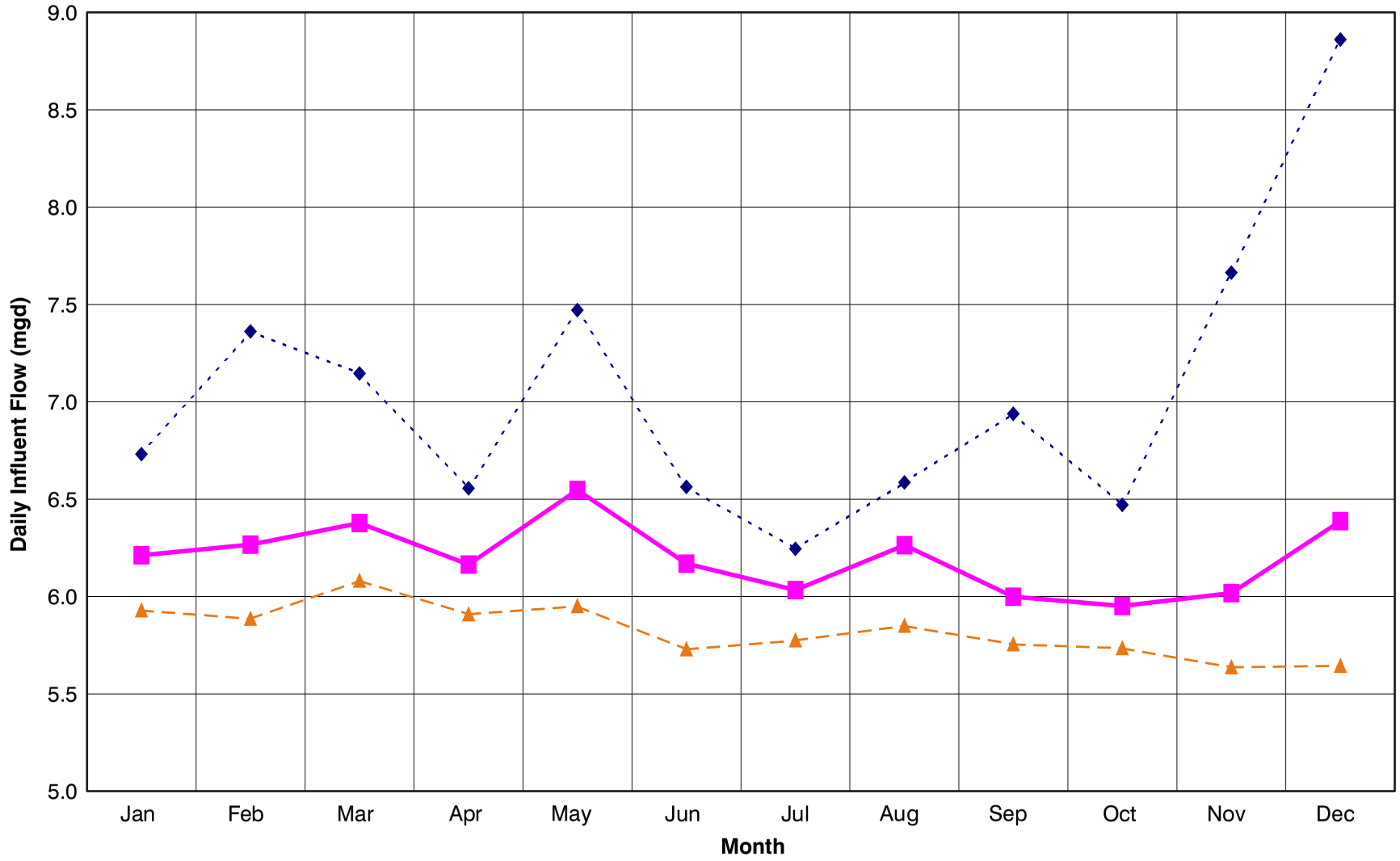
SCRWA treats wastewater from Gilroy and Morgan Hill. SCRWA owns and operates the existing WWTP, located along Southside Drive approximately 2 miles southeast of Gilroy. The WWTP can treat an average dry weather flow (ADWF) of up to 7.5 million gallons per day (mgd) to secondary treatment standards. The treatment process consists of influent screening, aerated grit removal, nitrification, denitrification, oxidation ditches, and secondary clarification. The current ADWF is approximately 6 mgd. Figure 1.2 depicts the average monthly influent flows for 2001-2002.

In July 2003, average diurnal flow range at the WWTP ranged from a low of approximately 2.8 mgd in early morning to a peak of 8 mgd in early afternoon. Average daily flow during this period was 6 mgd. Figure 1.3 depicts the average diurnal flow variation, based on data from SCRWA during the month of July 2003.

The WWTP can divert up to 3 mgd of secondary effluent to a tertiary treatment process that meets the recycled water criteria of California's Title 22 unrestricted use classification. The tertiary treatment process consists of coagulation, filtration with sand filters, chlorination, and dechlorination. By the end of 2005, SCRWA will expand recycled water tertiary treatment system capacity to produce 6 mgd. SCRWA intends to continue expanding tertiary treatment facilities as demand for recycled water increases.

1.3.4 Existing Recycled Water Use

In 1977, the District, the City of Gilroy, and the Gavilan Water Conservation District, which merged with SCVWD in 1989, began a partnership to construct and operate a recycled water system extending from the SCRWA WWTP to several customers along Hecker Pass Highway. Initially, this system delivered primary treated recycled water. Due to the low quality of the water and several recurring operational problems, the system operated sporadically over the next 20 years.



Legend

- Max Daily Flow
- Average Daily Flow
- Min Daily Flow

Figure 1.2
AVERAGE ANNUAL SCRWA INFLUENT FLOWS, 2001-2002
SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

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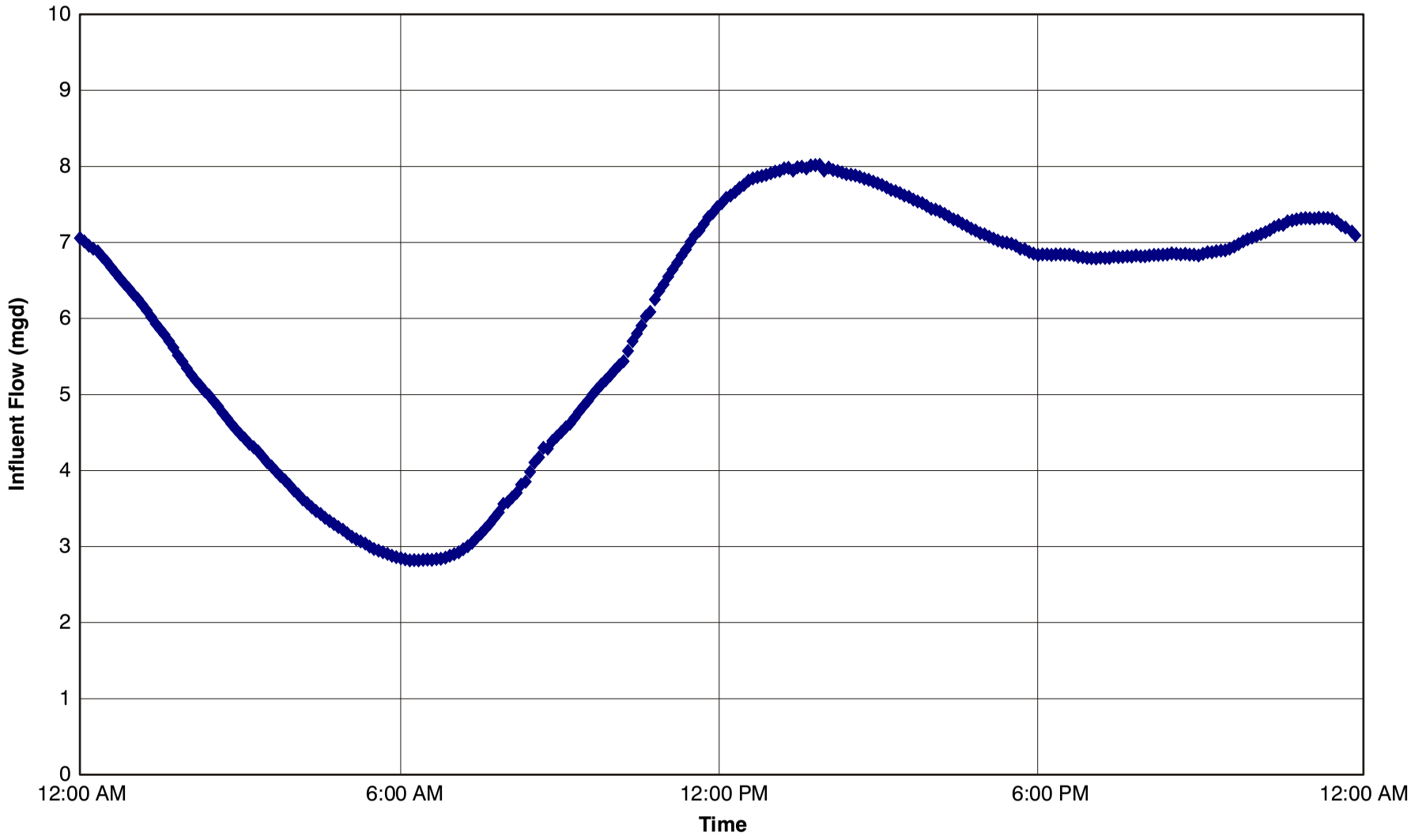

Figure 1.3
SCRWA DIURNAL FLOW VARIATION, JULY 2003
SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

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In 1999, the District, the City of Gilroy, the City of Morgan Hill, and SCRWA entered partnership agreements with SCRWA as the supplier, the District as wholesaler, and the Cities of Gilroy and of Morgan Hill as retailers to develop a recycled water project. The project included rehabilitation of the existing pipeline, additional pipeline construction, pump stations, and a closed tank reservoir. Future expansions of the treatment plant and distribution system are planned and will be the focus of this Master Plan.

The existing recycled water distribution pipeline provides five existing customers with tertiary treated recycled water. Recycled water is used for landscape irrigation at Christmas Hill Park Ranch Addition, Christmas Hill Park (expanded use beginning in 2003), and the Eagle Ridge Development and Golf Course. Recycled water is used for agricultural irrigation on local farmland, including Obata Farms. The Calpine-Gilroy Energy Center Peaker Plant began utilization of recycled water for cooling in May 2004.

Figure 1.4 depicts the locations of the existing recycled water customers.

The Christmas Hill Park Ranch Addition and Eagle Ridge Development and Golf Course have annual average recycled water usages of 17 acre-feet per year (afy) and 561 afy, respectively. Expanded recycled water use at Christmas Hill Park began in 2003, with an expected annual average demand of 30 afy. Existing agricultural usage at nearby Obata Farms has an annual average recycled water usage of 58 afy, with the potential to increase usage. Expected average demand at the Calpine-Gilroy Energy Center Peaker Plant is 45 afy. Total existing annual average recycled water usage for all five customers is approximately 711 afy.

Table 1.2 summarizes information for these existing customers, including location, type of use, average annual recycled water demand, and estimated maximum month recycled water demand.

Seasonal variation in existing recycled water flows during the period from 2000-2003 is summarized in Figure 1.5. As shown in the figure, recycled water use has been very consistent over the past four years. Historical recycled water usage peaks in the month of July at a flowrate of approximately 1.2 mgd. These values do not include additional existing demand from the recent expansion of recycled water usage at Christmas Hill Park and the Calpine-Gilroy Energy Center Peaker Plant. Estimated maximum month recycled water demand including all five existing customers is approximately 1.8 mgd.

1.3.5 Recycled Water Regulations

The use of recycled water is regulated by several state agencies in California, primarily the Department of Health Services (DHS), the State Water Resources Control Board (SWRCB), and Regional Water Quality Control Boards (RWQCB).

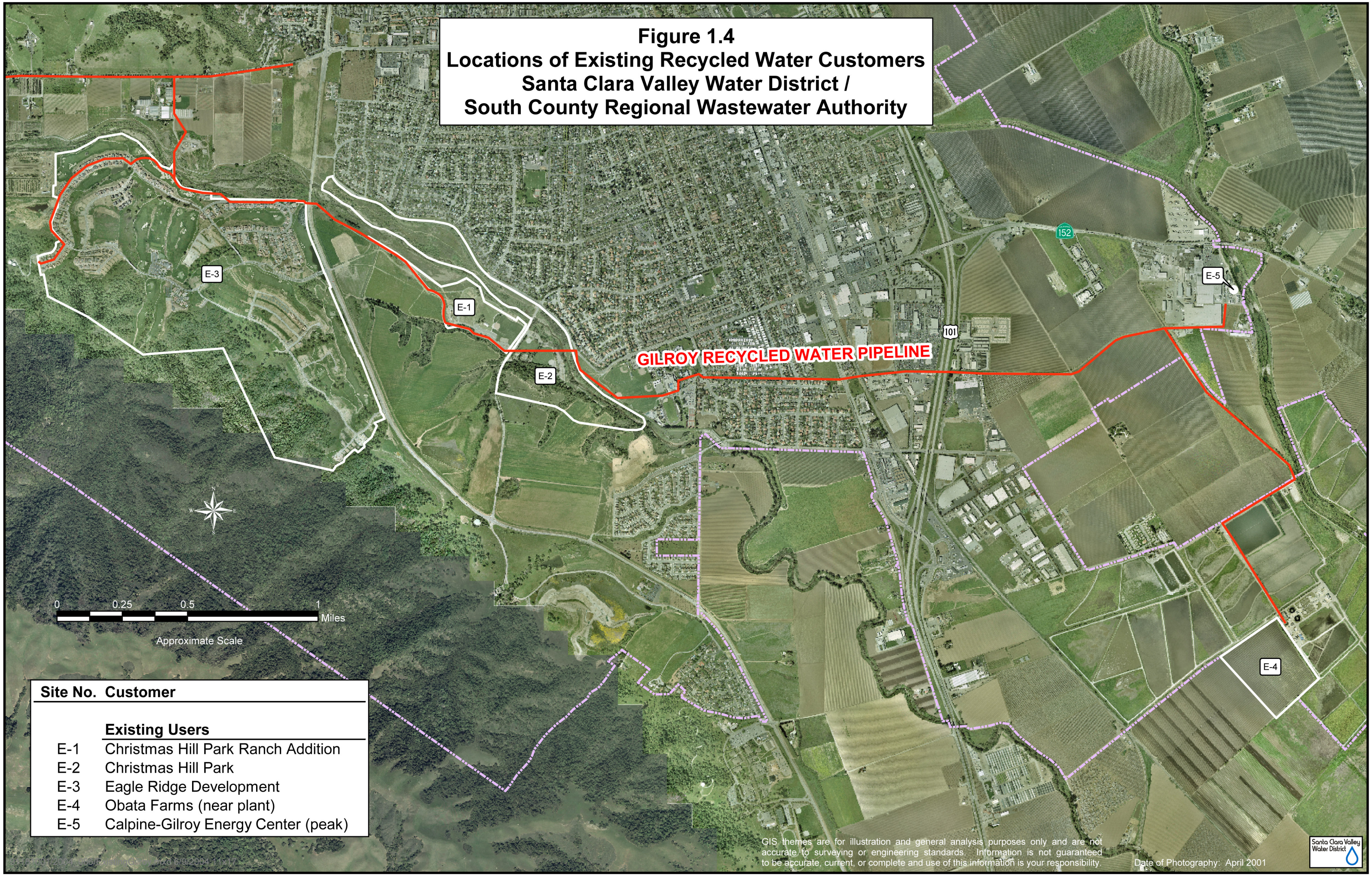

Figure 1.4
Locations of Existing Recycled Water Customers
Santa Clara Valley Water District /
South County Regional Wastewater Authority

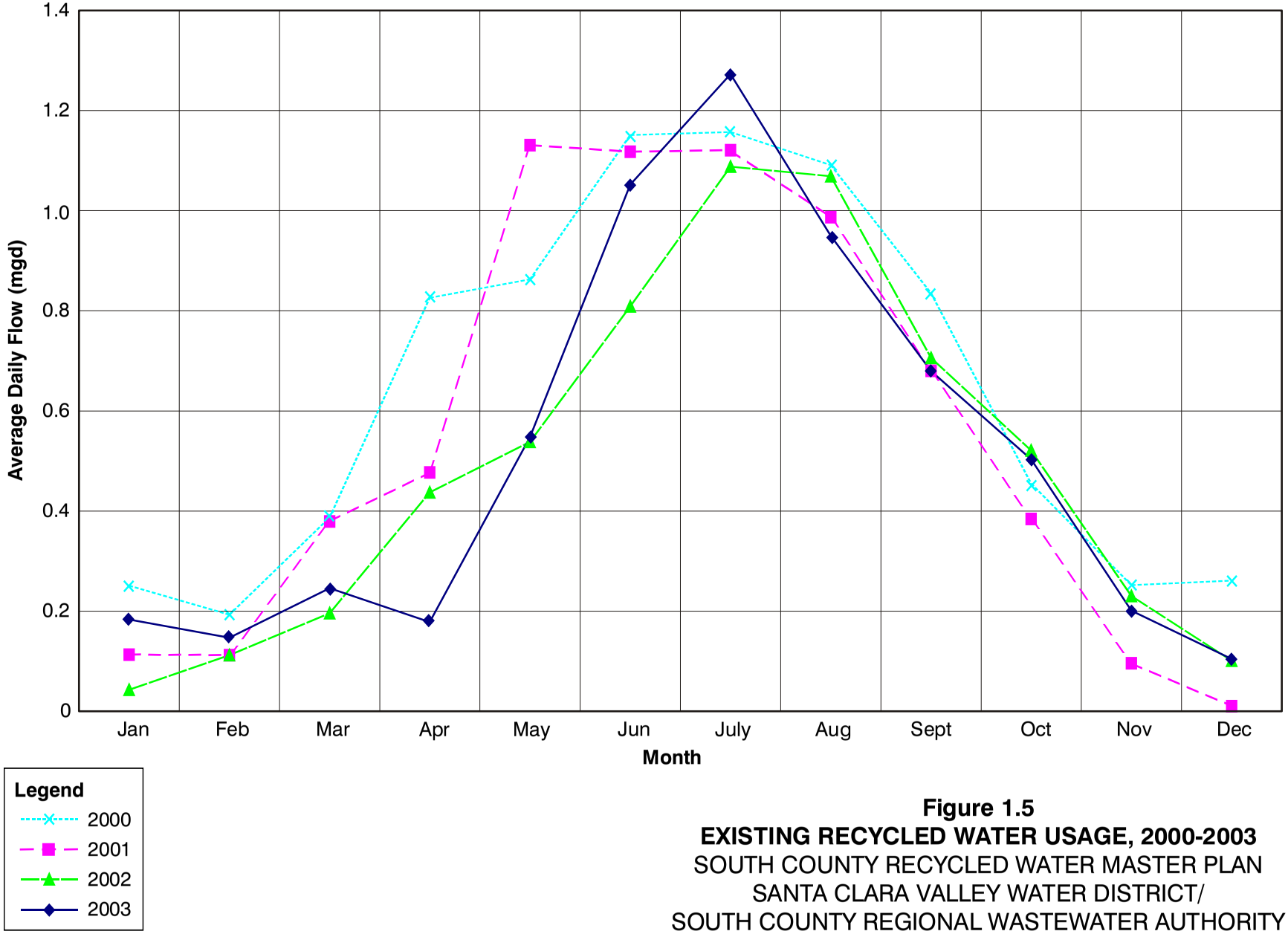

Figure 1.5
EXISTING RECYCLED WATER USAGE, 2000-2003
SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

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Table 1.2 Existing Recycled Water Customers
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Site No.	Customer	Location	Type of Use	Area (acres)	Average Demand (afy)[1]	Max Month Demand (mgd)[2]
E-1	Christmas Hill Park	Ranch Addition	Irrigation	[6]	17	0.04
E-2	Christmas Hill Park	Main Park	Irrigation (new 2003)	8	30[3]	0.07
E-3	Eagle Ridge Development	Santa Teresa	Golf course, irrigation	[6]	561	1.22
E-4	Obata Farms	Near WWTP	Agricultural irrigation	30[4]	58	0.13
E-5	Calpine-Gilroy Energy Center (Peaker Plant)	Pacheco Pass	Cooling water	N/A	45[5]	0.36[5]
Total					**711**	**1.8**

Notes:
(1) Annual average recycled water demand, acre-feet per year (afy).
(2) Maximum month demand, million gallons per day (mgd).
(3) Estimated demand based on 3.8 feet per year of expected irrigation.
(4) Currently irrigated acres. Potential exists to increase recycled water usage.
(5) Calpine maximum month, peak day, and peak hour factors based on water usage calculations by Calpine provided by SCVWD.
(6) Christmas Hill Park Ranch Addition and Eagle Ridge Development recycled water demands based on historic demands, not irrigable area.

The Central Coast Region RWQCB has issued Master Water Reclamation Requirements Order No. 98-052 to regulate recycled water production at the SCRWA WWTP and specific use requirements. Order No. 98-052 requires SCRWA to submit annual self-monitoring reports to the RWQCB, including water quality monitoring, user inspections, and any violations and corrective actions taken.

The general DHS recycled water regulations, which designate wastewater treatment processes, effluent quality, and uses of recycled water, are contained in the California Code of Regulations, Title 22, Division 4, Chapter 3, Sections 60301 through 60355. Additional California regulations for recycled water are contained in the Health and Safety Code, the Water Code, and Title 17 of the California Code of Regulations. The most recent revision to California recycled water regulations came into effect in 2001. The recent revisions “update the regulations to reflect expansion in the use of recycled water, studies on its technical and health effects and advances in treatment technology. This action expands the range of

allowable uses of recycled water by repealing obsolete regulations and adopting regulations establishing criteria for new allowable uses and requirements for specific uses, such as irrigation, impoundments and cooling. In addition, this action adopts requirements governing dual-plumbed recycled water systems and updates provisions governing back-flow prevention devices for consistency with these requirements. Finally, this action updates the sampling and analysis standards for clarity."

A compilation of California regulations regarding recycled water, known as "The Purple Book," is attached in Appendix A, or can be found online at http://www.dhs.ca.gov/ps/ddwem/ under Water Recycling.

1.3.6 Potential Future Regulatory Issues

Recently, some concerns have arisen regarding the use of recycled water containing endocrine disrupting compounds (EDCs), pharmaceutically active compounds, and other constituents of concern. No current regulations are in effect regarding EDCs in recycled water. However, the DHS issued Draft Groundwater Recharge Reuse Regulations in July 2003, which contain monitoring requirements for a list of EDCs, including hormones, industrial compounds, and pharmaceuticals. The Draft Groundwater Recharge Reuse Regulations do not apply to this Master Plan, which focuses solely on non-potable applications. It appears prudent to evaluate the potential for, and if necessary, manage groundwater threats associated with increases in the use of recycled water. In the long-term, it will be important to track research and regulations related to the use of recycled water, particularly as related to these concerns.

MARKET ASSESSMENT

2.1 OBJECTIVES AND SCREENING CRITERIA

2.1.1 Project Objectives

The objective of preparing this Master Plan is to maximize use of recycled water in South County and limit use of potable water for uses in which recycled water is a reasonable alternative. California Water Code, Division 7, Chapter 7, Article 7, Section 13550 states "that the use of potable domestic water for nonpotable uses, including, but not limited to, cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses is a waste or an unreasonable use of the water…if recycled water is available." SCRWA's wastewater disposal issues and limited potable water supply reinforce this objective.

The Master Plan defines immediate-term, short-term, and long-term plans for recycled water system expansion. The immediate-term plan defines immediate projects that the District and SCRWA can implement to increase current recycled water use. The short-term plan includes projects that can be implemented in approximately the next five years. The long-term plan considers ultimate system build-out, given the potential for interconnection of future recycled water distribution throughout Santa Clara County.

A further objective is diversified recycled water usage, potentially including commercial, industrial, irrigation, and agricultural customers. In order to maximize the use of recycled water throughout the year, year-round uses were given higher priority than seasonal irrigation uses.

2.1.2 Screening Criteria

The purpose of screening criteria is to aid in determining the most viable recycled water alternative to implement. The development of screening criteria for this project was a collaborative process between Carollo Engineers (Carollo), SCRWA, and District staff. At the initial project progress meeting in August 2003, it was decided to utilize a two-stage screening process to evaluate alternatives. The first stage allowed an initial "big picture" view while the second stage focused on the details of implementation feasibility.

Numerous screening criteria were considered and discussed. The collaborative process determined the applicable screening criteria for the Stage I Screening, including:

- Year-round versus seasonal use,
- Proximity to existing system,
- Use quantity,
- Implementation factors, and
- Preliminary environmental factors.

Definitions and explanations of these screening criteria are as follows:

- Year-round versus seasonal use: Year-round recycled water use is favored over seasonal use, as most irrigation occurs only during dry summer periods. Winter use helps the WWTP reduce effluent discharge during peak flow months.
- Proximity to existing system: Increased distance from the existing recycled water pipeline is directly correlated to cost and also increases the total length of the distribution system, leading to increased maintenance requirements.
- Use quantity: Potential customers with a greater quantity of recycled water usage are favored because of the economies of scale.
- Implementation factors: Implementation factors could include issues such as the following: presence of separate on-site irrigation and potable systems, need for extensive or minimal retrofits, constructability, accessibility, required storage capacity, or other relevant factors.
- Preliminary environmental factors: Environmental factors preliminarily assessed in this screening include the following: potential pipeline routing (i.e., through an undeveloped area vs. previously disturbed right-of-way), the potential for impact to endangered species, and other potential long-term environmental impacts. Environmental factors may have substantial influence over project costs.

The Stage I screening process carried forward currently viable recycled water alternatives. It should be noted that although some alternatives were not carried forward after Stage I screening, they were not eliminated from consideration. At some future date, these alternatives may be recognized as more viable based upon future conditions.

Stage II screening further identified the most viable alternatives based on distribution system alignment, flow demands, cost effectiveness, and specific environmental issues.

2.1 MARKET IDENTIFICATION

Over 70 potential recycled water customers within the study area were identified during the Stage I screening process. Categories established for potential recycled water customers include commercial and industrial users, landscape irrigation users, and agricultural users. The District is investigating the potential for groundwater recharge and stream-flow augmentation uses of recycled water in separate studies, which are not part of this Master Plan.

Summary tables for each category of customers are included in Section 2.3, Market Quantification. Numerous potential recycled water customers were contacted and interviewed regarding their estimated demand for recycled water. Customers were questioned as to their irrigable acreage (if applicable), current and potential water use, potential implementation factors, and concerns regarding the quality and usage of recycled water.

Customers contacted at this stage included the Gavilan College complex, Gilroy Golf Course, Caltrans, Inland Paperboard and Packaging, Cintas Corporation, Gavilan Hills Memorial Park and Saint Mary's Cemetery, Obata Farms, the City of Gilroy Parks and Recreation Department, and the City of Gilroy Planning Department. The District contacted Bonfante Gardens and Goldsmith Seeds separately. A summary of contact information relayed by potential customers is contained in Appendix B.

2.2.1 Potential Commercial and Industrial Customers

Potential commercial and industrial customers were identified based on water usage data from the City of Gilroy. Inland Paperboard and Packaging, Cintas Corporation, and Calpine Gilroy Power Plant are the only large commercial or industrial users with consistent monthly flowrates above 200,000 gallons per month. Inland Paperboard and Packaging manufactures paper products such as corrugated cardboard. Russ Asp, plant manager for Inland, indicated potential interest in using recycled water at the plant. Cintas Corporation operates a large commercial laundry for cleaning uniforms and linens. Franz Lubick, plant manager for Cintas, indicated that they are very interested in using recycled water in the laundry operation, given the potential economic savings.

Calpine-Gilroy Energy Center Peaker Plant is an existing recycled water customer. A second, adjacent power plant is the Calpine Gilroy Power Plant, a cogeneration facility. Some of the Calpine Gilroy Power Plant's cooling water is utilized to produce steam for the adjacent Gilroy Foods processing center. However, cooling tower blowdown water is not suitable for producing steam, and Calpine has approached SCRWA about the potential to use up to 1 million gallons per day (mgd) of recycled water for cooling tower blowdown. Supplying some recycled water for cooling tower blowdown appears feasible. Testing conducted in the summer of 2004 showed that Calpine Gilroy Power Plant is a viable customer.

Additional commercial uses of recycled water include car washes, construction, vehicle washdown, and toilet/urinal flushing, among many others. No potential customers with these potential uses were identified. As the use of recycled water gains acceptance in the community, these uses could potentially be added as future recycled water customers.

2.2.2 Potential Irrigation Customers

Eight potential large landscape irrigation customers were identified through water use records, land use maps, and consultation with District staff. Large landscape irrigation users are defined as having a total irrigable area greater than 30 acres, or potential for future expansion. These include Gavilan College, Gavilan Sports Park, Gavilan Golf Course, Bonfante Gardens, Gilroy Golf Course, the Gilroy Sports Park, Goldsmith Seeds, and Gilroy High School. The Gilroy Sports Park is a staged project that is not yet constructed, which is designed to irrigate with recycled water from a future distribution pipeline.

Numerous small (less than 30 acres) landscape irrigation customers in the Gilroy area were also identified through water use records, the Gilroy General Plan, road and land use maps, and site visits. Small landscape irrigation users include new residential developments, parks, cemeteries, medians and interchanges, and school yards. Several future planned sites were also identified based on the Gilroy General Plan and the City of Gilroy Parks & Recreation System Master Plan. Sites with an irrigable area less than one acre were not identified but can easily be included if they are on the preferred pipeline alignment.

2.2.3 Potential Agricultural Customers

Based on the direction of the District, the only agricultural customer considered was a farmland adjacent to the SCRWA facility, currently leased to Obata Farms. Obata Farms currently uses recycled water and has requested substantially more. Other agricultural users could be later considered as potential recycled water customers if they are along the preferred pipeline alignment. Local farmland surrounding the SCRWA WWTP includes a total of approximately 225 irrigated acres, in addition to the 35 acres currently irrigated with recycled water.

SCRWA is planning the future installation of a wet weather discharge pipeline south from the WWTP to the Pajaro River. This future pipeline could serve a dual use, and also provide recycled water for irrigation to several agricultural customers in the area south of the WWTP. Some agricultural users require higher quality recycled water along with irrigation management practices to protect salt sensitive crops. The District has undertaken studies to evaluate appropriate water quality and practices to protect such crops. SCRWA and the District have contacted other potential agricultural customers, but at this time no other customers are included in the Master Plan.

2.2.4 Potential Morgan Hill Customers

Numerous potential recycled water customers in the Morgan Hill area were identified in the previous 1995 Master Plan. Twenty identified central downtown Morgan Hill customers include landscape irrigation at five parks, three government facilities including the Civic Center, Police Department, and a museum, street medians, and seven Morgan Hill School District schools. These customers could be served through an extension of the distribution system north along Monterey Road. For clarity, downtown Morgan Hill customers are referred to collectively on occasion in this Master Plan.

A separate potential project in Morgan Hill involves irrigation of the American Institute of Mathematics Golf Course. This private golf course, located near the intersection of Maple Avenue and Foothill Avenue, could be irrigated with recycled water provided by a small scalping plant located nearby. To serve other Morgan Hill customers, a pipeline could be routed north from Gilroy parallel to the existing wastewater collection pipelines.

The locations of all potential customers in Gilroy are shown in Figure 2.1A. The locations of all potential customers in Morgan Hill are shown in Figure 2.1B. Each potential customer was assigned a random number for identification purposes.

2.2.5 Other Potential Recycled Water Uses

The District is investigating the potential for groundwater recharge and stream-flow augmentation uses of recycled water in separate studies, which are not part of this Master Plan. Future recycled water uses could also include residential irrigation, street cleaning, and other allowable nonpotable uses. Proposed residential developments and planned future parks are among other future uses of recycled water in the South County area.

2.3 MARKET QUANTIFICATION

Each potential customer identified was then quantified as to potential recycled water use. Current water usage data were available for most proposed recycled water sites. The District provided groundwater usage data for large customers relying on private wells for water supply. The City provided data on large municipal water customers.

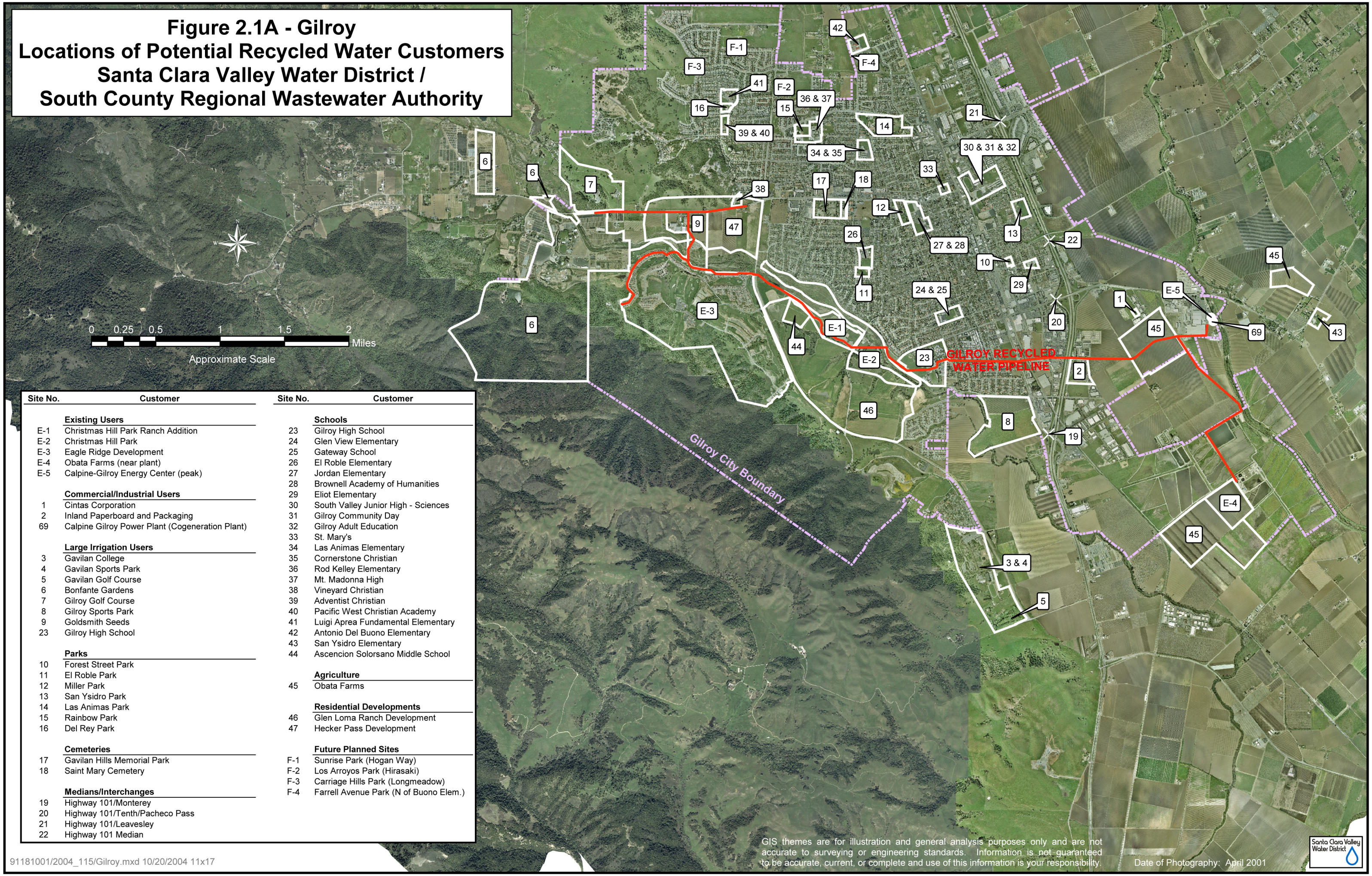
In many cases, landscape irrigation customers use less water than necessary as a result of conservation practices and cost considerations. Therefore, expected landscape irrigation requirements for the Gilroy area were calculated based on evapotranspiration and rainfall data. Based on direction from the District and SCRWA at the second project progress meeting in September 2003, actual historical irrigation water usage data was used to conservatively estimate expected annual average recycled water use for irrigation. Calculated irrigation requirements, as defined in Section 2.3.1, were used to estimate irrigation use at sites for which existing use data was not available. Calculated irrigation requirements were also used to estimate peak month demand, peak day demand, and peak hour demand for distribution considerations. Peak sizing requirements and distribution system impacts are discussed in Chapter 3.

Agricultural irrigation requirements are subject to numerous variables, including crop selection, field rotation, planting season, planting date, and other farmer-specific factors. Due to the numerous variables affecting agricultural irrigation demand, agricultural irrigation requirements were estimated based on communication with local farmer Tom Obata of Obata Farms. Coordination and direct contact with farmers receiving recycled water on an annual basis is recommended. SCRWA currently works with local farmers regularly to insure sufficient recycled water supply is available.

2.3.1 Commercial and Industrial Customers

Three potential commercial and industrial recycled water customers were identified and quantified. Cintas Corporation operates a commercial laundry facility that cleans commercial towels and uniforms five days per week, Monday through Friday. Commercial laundries are regulated allowable users of recycled water. The daily water usage is

Figure 2.1A - Gilroy
Locations of Potential Recycled Water Customers
Santa Clara Valley Water District / South County Regional Wastewater Authority



Site No.	Customer
	Existing Users
E-1	Christmas Hill Park Ranch Addition
E-2	Christmas Hill Park
E-3	Eagle Ridge Development
E-4	Obata Farms (near plant)
E-5	Calpine-Gilroy Energy Center (peak)
	Commercial/Industrial Users
1	Cintas Corporation
2	Inland Paperboard and Packaging
69	Calpine Gilroy Power Plant (Cogeneration Plant)
	Large Irrigation Users
3	Gavilan College
4	Gavilan Sports Park
5	Gavilan Golf Course
6	Bonfante Gardens
7	Gilroy Golf Course
8	Gilroy Sports Park
9	Goldsmith Seeds
23	Gilroy High School
	Parks
10	Forest Street Park
11	El Roble Park
12	Miller Park
13	San Ysidro Park
14	Las Animas Park
15	Rainbow Park
16	Del Rey Park
	Cemeteries
17	Gavilan Hills Memorial Park
18	Saint Mary Cemetery
	Medians/Interchanges
19	Highway 101/Monterey
20	Highway 101/Tenth/Pacheco Pass
21	Highway 101/Leavesley
22	Highway 101 Median

Site No.	Customer
	Schools
23	Gilroy High School
24	Glen View Elementary
25	Gateway School
26	El Roble Elementary
27	Jordan Elementary
28	Brownell Academy of Humanities
29	Eliot Elementary
30	South Valley Junior High - Sciences
31	Gilroy Community Day
32	Gilroy Adult Education
33	St. Mary's
34	Las Animas Elementary
35	Cornerstone Christian
36	Rod Kelley Elementary
37	Mt. Madonna High
38	Vineyard Christian
39	Adventist Christian
40	Pacific West Christian Academy
41	Luigi Aprea Fundamental Elementary
42	Antonio Del Buono Elementary
43	San Ysidro Elementary
44	Ascencion Solorsano Middle School
	Agriculture
45	Obata Farms
	Residential Developments
46	Glen Loma Ranch Development
47	Hecker Pass Development
	Future Planned Sites
F-1	Sunrise Park (Hogan Way)
F-2	Los Arroyos Park (Hirasaki)
F-3	Carriage Hills Park (Longmeadow)
F-4	Farrell Avenue Park (N of Buono Elem.)

GIS themes are for illustration and general analysis purposes only and are not accurate to surveying or engineering standards. Information is not guaranteed to be accurate, current, or complete and use of this information is your responsibility.

Date of Photography: April 2001

Santa Clara Valley Water District

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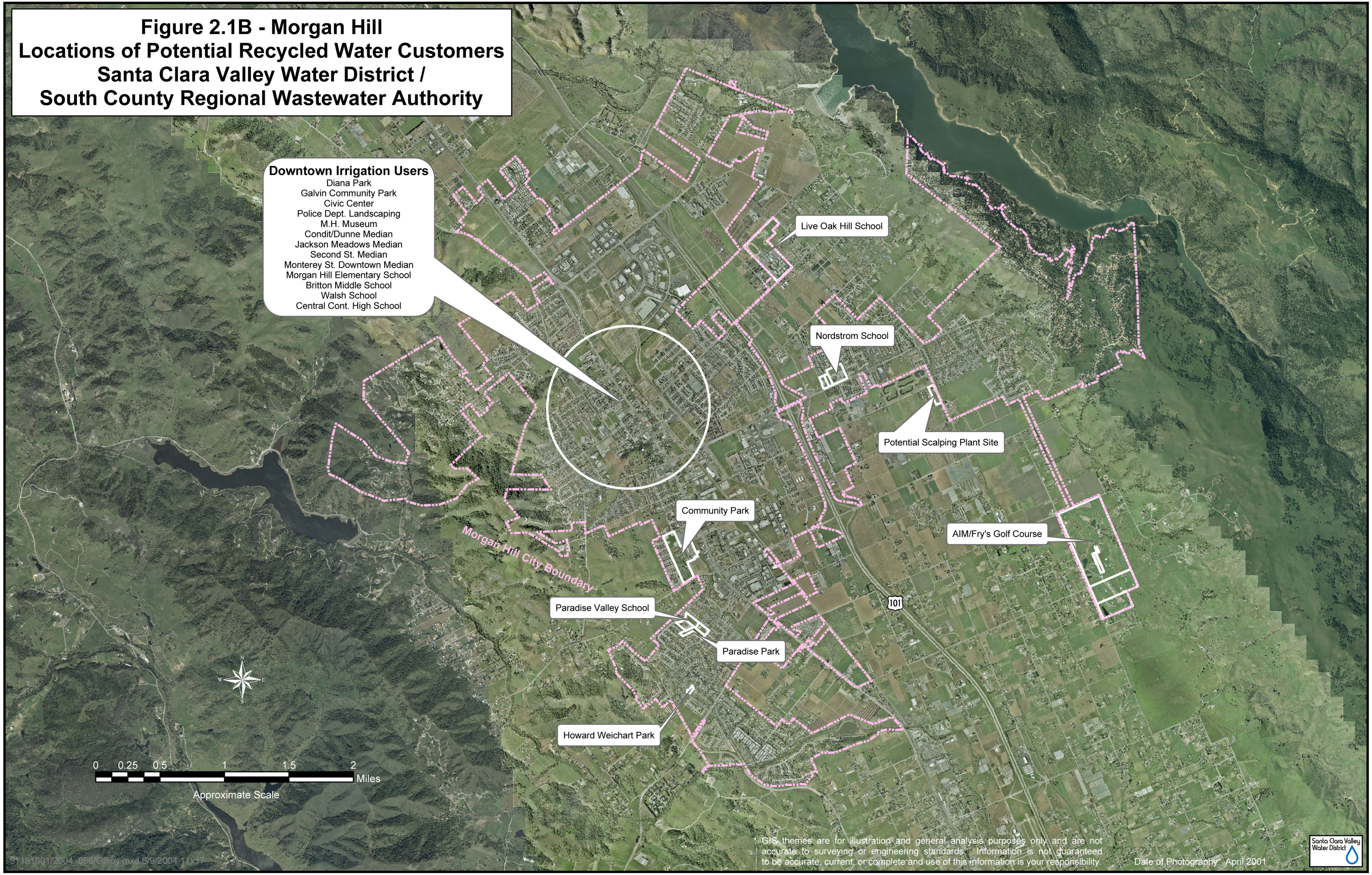
Figure 2.1B - Morgan Hill
Locations of Potential Recycled Water Customers
Santa Clara Valley Water District / South County Regional Wastewater Authority



approximately 50,000 gallons per day (gpd), with an annual average usage of approximately 45 acre-feet per year (afy). Cintas may be able to replace most of its potable water use with recycled water.

Inland Paperboard and Packaging operates a manufacturing facility with an average daily use of 30,000 gpd, with an annual average usage of approximately 34 afy. Inland may not be able to replace all of its potable process water with recycled water. A conservative assumption of 75% of process water replaced with recycled water was based on customer contact and best professional judgment. This results in an expected annual recycled water usage of 26 afy, or 22,500 gpd.

Calpine Gilroy Power Plant has requested to use recycled water for cooling towers. The plant is expected to use approximately 100 million gallons (MG) of recycled water annually, or 307 afy. Expected average flowrate on operational days is 0.65 mgd. Peak day flow rate is 0.99 mgd.

The total estimated demand for commercial and industrial customers is approximately 378 afy. Table 2.1 summarizes information for each identified commercial and industrial customer, including location, use, and estimated demand for recycled water. Maximum month demands for commercial and industrial customers are estimated at 10% of annual demand for Cintas and Inland, and at 23 acre-feet (0.65 mgd) for Calpine. Total maximum month demands for commercial and industrial use is 67 acre-feet (0.73 mgd).

Table 2.1 Potential Commercial and Industrial Customers
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Site No.	Customer	Location	Use	Average Demand (afy)(1)
1	Cintas Corporation	934 Holloway	Laundry	45(2)
2	Inland Paperboard and Packaging	6400 Jamieson	Industrial Process	26(3)
69	Calpine Gilroy Power Plant	Pacheco Pass	Cooling	307(4)
			TOTAL	**378**

Notes:
(1) Annual average recycled water demand, acre-feet per year (afy).
(2) Laundry operates five days per week, Monday-Friday, with an average daily flow of 50,000 gallons per day (gpd).
(3) Average 2003 flow is 30,000 gpd, with conservative assumption of 75% of process water replaced with recycled water.
(4) Based on an average annual recycled water demand of 100 million gallons.

2.3.2 Landscape Irrigation Requirements

The amount of water required for potential landscape irrigation customers is directly dependent on precipitation and evapotranspiration. The amount of precipitation, evapotranspiration, and irrigation required for potential irrigation customers are listed in Table 2.2.

Table 2.2 Average Annual Landscape Irrigation Requirements South County Recycled Water Master Plan Santa Clara Valley Water District/ South County Regional Wastewater Authority

Month	Evapo-transpiration(1) (inches)	Rainfall(2) (inches)	Net Irrigation Requirement(3) (inches)	Percent of Annual(4) (%)
January	1.12	4.47	0	--
February	1.51	3.85	0	--
March	3.13	3.29	0	--
April	4.42	1.44	4.0	9%
May	5.69	0.35	7.2	16%
June	6.26	0.11	8.3	18%
July	6.80	0.05	9.1	20%
August	5.91	0.05	7.9	17%
September	4.64	0.39	5.8	13%
October	3.13	0.82	3.1	7%
November	1.62	2.60	0	--
December	0.90	3.31	0	--
Total	**45.1**	**20.7**	**45.5 (3.8 feet)**	**100%**

Notes:
(1) Source: California Irrigation Management Information System, Average Yearly ET_0 Report, Morgan Hill Station. Adjusted for landscape irrigation coefficient, k_L.
(2) Source: Western Regional Climate Center, Station No. 043417, Gilroy, CA. 1957-2003.
(3) [Evapotranspiration - Rainfall] * 1.15 / 0.85. Where 0.85 = 85% Irrigation Efficiency Factor (Average value from Carlos and Guitjens, University of Nevada) and 1.15 = 15% Leaching Fraction (Average value from Ayers and Westcot, "Water Quality for Agriculture", Food and Agriculture Organization of the United Nations).
(4) Current month net irrigation requirement divided by total net irrigation requirement.

The following formula was used to calculate the amount of evapotranspiration from landscaped areas in Gilroy:

$ET_L = K_L * ET_0$, where:

ET_L = Evapotranspiration of landscaped areas (in inches)

K_L = Landscaped area crop coefficient

ET_0 = Reference evapotranspiration (in inches)

The reference evapotranspiration was obtained from the California Irrigation Management Information System Average Yearly ET_0 Report for the nearest station, No. 132 in Morgan Hill. The landscaped area crop coefficient is the product of factors for species (k_S), density (k_d), and microclimate (k_{mc}). Landscaped areas were assumed to consist of approximately 90 percent grassed areas and 10 percent trees. Rainfall data for Gilroy was obtained from the Western Regional Climate Center, Gilroy Station No. 043417. Average monthly rainfall data from 1957-2003 was available.

As seen in Table 2.2, the net annual average landscape irrigation requirement in the Gilroy area is approximately 45.5 inches/year, or 3.8 feet/year. The irrigation season is roughly April through October, a period of seven months. Average landscape irrigation demand peaks in the month of July at 9.1 inches, 20 percent of the annual total. These values were used to estimate peak irrigation demand for recycled water and distribution system sizing requirements.

2.3.3 Landscape Irrigation Customers

Eight potential large landscape irrigation customers were identified in the Gilroy area, including Gavilan College, Gavilan Sports Park, Gavilan Golf Course, Bonfante Gardens, Gilroy Golf Course, Gilroy Sports Park, Goldsmith Seeds, and Gilroy High School. The total estimated seasonal demand for all eight large landscape irrigation customers is approximately 1014 afy during the seven-month irrigation season, based on current and expected water usage.

The Gavilan Complex, including Gavilan College, Gavilan Sports Park, and Gavilan Golf Course has a total seasonal estimated recycled water usage of 228 acre-feet, based on current water usage. An implementation concern at the Gavilan Complex is that the current potable supply and irrigation systems are a combined system, requiring potentially costly retrofits to separate. Gavilan's sports fields and golf course would be easier to convert to recycled water than the college campus. The 11-hole Gilroy Golf Course is a previous user of recycled water, and should be relatively easy to reconnect. The Gilroy Golf Course has tentative future plans to expand to 18 holes, possibly increasing seasonal demand for recycled water from the current water usage of 144 acre-feet per year. The Gilroy Sports Park is a planned site that will be constructed in phases, eventually reaching a total irrigable area of 60 acres at buildout. Construction of the Gilroy Sports Park will include the construction of a 12-inch diameter recycled water distribution pipeline.

The District met with Bonfante Gardens to discuss the use of recycled water at the theme park for irrigation and other uses. At this time, annual recycled water usage was initially estimated at 340 acre-feet, approximately half of Bonfante Gardens' current water usage. Bonfante Gardens is the largest potential customer of recycled water, and continued interaction between the District and Bonfante Gardens is planned. An initial estimate of annual recycled water usage at Goldsmith Seeds is 15 acre-feet, approximately half of current groundwater usage.

Table 2.3 summarizes information for each identified potential large landscape irrigation customer, including location, irrigable area, and estimated demand for recycled water. The total maximum month demand of 205 acre-feet (2.2 mgd) is based on irrigation requirements defined in Table 2.2.

Additional smaller landscape irrigation customers in the Gilroy area were also identified, including parks, cemeteries, new residential developments, highway medians, highway interchanges, and schools. Although each individual potential customer does not have a large quantity of expected recycled water demand, when taken as a whole small customers could contribute a significant volume of recycled water use. The total estimated seasonal demand for smaller landscape irrigation customers is approximately 673 afy during the seven-month irrigation season, based on current water usage.

Seven parks throughout the City of Gilroy were identified as potential recycled water irrigation customers, with a total estimated irrigable area of 42 acres and estimated seasonal recycled water demand of 138 afy based on current water usage. The main potential implementation concern at parks is cross-connection of potable supply for drinking fountains and restrooms. Two small parks in Gilroy, Renz Park and Butcher Park, were reviewed but not considered as they had minimal irrigable area.

Table 2.4 summarizes information for each identified park, including location, irrigable area, and estimated demand for recycled water. The total maximum month demands of 32 acre-feet (0.4 mgd) are based on irrigation requirements defined in Table 2.2.

Two cemeteries were identified as potential recycled water irrigation customers, Gavilan Hills Memorial Park and Saint Mary Cemetery. Based on customer contact, the cemeteries would be willing to use recycled water for irrigation, with no obvious concerns. The cemeteries have a total estimated irrigable area of 11 acres and estimated seasonal recycled water demand of 18 afy based on current usage. Customer contact with the cemeteries indicated a desire to use more water than current usage, which is low due to conservation efforts and economic limitations.

Irrigation of highway medians and interchanges is considered an excellent use of recycled water. Based on contact with Caltrans, the median of Highway 101 through Gilroy and three highway interchanges are potential sites for irrigation with recycled water. These sites are not currently irrigated. A potential implementation factor is the maintenance requirements of

Table 2.3 Potential Large Landscape Irrigation Customers
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Site No.	Customer	Location	Irrigable Area (acres)(1)	Seasonal Demand (afy)(2)	Max Month Demand (ac-ft)(3)	Max Month Demand (mgd)(3,4)
3	Gavilan College	Santa Teresa / Mesa	20	72	15	0.17
4	Gavilan Sports Park	Santa Teresa	7.2	26	5	0.06
5	Gavilan Golf Course	Santa Teresa / Castro Valley	36	130	27	0.30
6	Bonfante Gardens	Hecker Pass / Burchell	90	340	68	0.74
7	Gilroy Golf Course	Hecker Pass Highway	40	144	30	0.33
8	Gilroy Sports Park	Monterey / W Luchessa	60	226	45	0.49
9	Goldsmith Seeds	Hecker Pass Highway	N/A	15	3	0.03
23	Gilroy High School	Tenth / Princevale	16	61	12	0.13
			TOTAL	**1014**	**205**	**2.2**

Notes:
(1) Estimated irrigable acreage, based on percent of total site acreage that is irrigable. Values obtained from customer contact, City of Gilroy records, and planning maps.
(2) Average seasonal recycled water demand, acre-feet per year (afy).
(3) Approximately 20% of seasonal irrigation demand occurs in maximum month, based on irrigation requirements defined in Table 2.2.
(4) Maximum month demand in million gallons per day (mgd).

Table 2.4 Potential Small Landscape Irrigation Customers - Parks
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Site No.	Customer	Location	Irrigable Area (acres)(1)	Seasonal Demand (afy)(2)	Max Month Demand (ac-ft)(3)	Max Month Demand (mgd)(4)
10	Forest Street Park	Forest / Seventh	1.0	4	0.8	0.01
11	El Roble Park	Wren / Perrelli	3.2	11	2	0.02
12	Miller Park	Second / Princevalle	4.3	15	3	0.04
13	San Ysidro Park	Murray / Lewis / 101	6.8	21	6	0.07
14	Las Animas Park	Mantelli / Wren	24	77	18	0.20
15	Rainbow Park	Mantelli / Hirasaki	1.0	4	0.7	0.01
16	Del Rey Park	Calle del Rey / Partridge	1.7	6	1.3	0.01
			TOTAL	**138**	**32**	**0.4**

Notes:
(1) Estimated irrigable acreage, based on percent of total site acreage that is irrigable. Values obtained from customer contact, City of Gilroy records, and planning maps.
(2) Average seasonal recycled water demand, acre-feet per year (afy).
(3) Approximately 20% of seasonal irrigation demand occurs in maximum month, based on irrigation requirements defined in Table 2.2.
(4) Maximum month demand in million gallons per day (mgd).

the irrigated areas, a fiscal responsibility that Caltrans cannot afford. The highway medians and interchanges in the Gilroy area have a total estimated irrigable area of 38 acres and estimated seasonal recycled water demand of 144 acre-feet based on irrigation requirements in Table 2.2. In the long-term, irrigation of highway medians and interchanges all the way north through Morgan Hill is a potential use of recycled water.

Table 2.5 summarizes information for each identified cemetery, highway median, and highway interchange, including location, irrigable area, and estimated demand for recycled water. The total maximum month demand of 39 acre-feet (0.4 mgd) is based on irrigation requirements defined in Table 2.2.

Twenty-one school yards throughout the City of Gilroy, not including previously discussed Gilroy High or Gavilan College, were identified as potential recycled water irrigation customers. These schools have a total estimated irrigable area of 58 acres and estimated seasonal recycled water demand of 195 afy based on current water usage. A potential implementation concern at schools is cross-connection of potable supply for drinking fountains and restrooms.

Table 2.6 summarizes information for each identified school, including location, irrigable area, and estimated demand for recycled water. The total maximum month demand of 45 acre-feet (0.5 mgd) is based on irrigation requirements defined in Table 2.2.

Two new residential developments in the City of Gilroy were identified as potential recycled water irrigation customers, Glen Loma Ranch Development and Hecker Pass Development. These developments have a total estimated irrigable area of 47 acres and estimated seasonal recycled water demand of 179 afy based on estimated water usage. As these developments are not yet constructed, estimated recycled water demand is based on Specific Plan documentation that identifies the planned use of recycled water for landscape irrigation of parks and public area features such as ponds. Estimated irrigable acreage for the Glen Loma Ranch Development is based on two parks with 90% of the total acreage (19.3 acres) assumed irrigable (17 acres), one new elementary school with 3 estimated irrigable acres, and 18 community focal points with approximately 0.5 irrigable acres each. Estimated irrigable acreage for the Hecker Pass Development is based on two parks with 90% of the total acreage (19 acres) assumed irrigable (17 acres). Use of recycled water for landscape irrigation of individual homes is not planned at this time. The District and SCRWA should coordinate with developers of these planned residential developments as early as possible to ensure the use of recycled water.

Table 2.7 summarizes information for each planned residential development, including location, irrigable area, and estimated demand for recycled water. The total maximum month demand of 36 acre-feet (0.39 mgd) is based on irrigation requirements defined in Table 2.2.

Table 2.5 Potential Small Landscape Irrigation Customers - Cemeteries, Medians, Interchanges
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Site No.	Customer	Location	Irrigable Area (acres)(1)	Seasonal Demand (afy)(2)	Max Month Demand (ac-ft)(3)	Max Month Demand (mgd)(4)
17	Gavilan Hills Memorial Park Cemetery	First / Kern	10	16	8	0.08
18	Saint Mary Cemetery	First / Wren	1	2	0.8	0.01
19	Monterey Interchange	101 / Monterey	3.5	13	3	0.03
20	101/Tenth Interchange	101 / Pacheco Pass	10	38	8	0.08
21	Leavesley Interchange	101 / Leavesley	6.4	24	5	0.05
22	Caltrans - 101 Median	Highway 101 Median	18	68	14	0.15
			TOTAL	**162**	**39**	**0.4**

Notes:
(1) Estimated irrigable acreage, based on percent of total site acreage that is irrigable. Values obtained from customer contact, City of Gilroy records, and planning maps.
(2) Average seasonal recycled water demand, acre-feet per year (afy).
(3) Approximately 20% of seasonal irrigation demand occurs in maximum month, based on irrigation requirements defined in Table 2.2.
(4) Maximum month demand in million gallons per day (mgd).

Table 2.6 Potential Small Landscape Irrigation Customers - Schools
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Site No.	Customer	Location	Irrigable Area (acres)(1)	Seasonal Demand (afy)(2)	Max Month Demand (ac-ft)(3)	Max Month Demand (mgd)(4)
24	Glen View Elementary	Eighth / Princevale	5	4	4	0.04
25	Gateway School	Hanna / Ninth	N/A(5)	N/A(5)	N/A(5)	N/A(5)
26	El Roble Elementary	Third / Wren	5	19	4	0.04
27	Jordan Elementary	Third / Hanna	3.5	13	3	0.03
28	Brownell Academy	Second / Carmel	3.5	13	3	0.03
29	Eliot Elementary	7th / Old Gilroy	1.3	5	1	0.01
30	South Valley Junior	I.O.O.F. / Murray	12	36	9	0.10
31	Gilroy Community Day	I.O.O.F. / Forest	N/A(5)	N/A(5)	N/A(5)	N/A(5)
32	Gilroy Adult Education	I.O.O.F. / Forest	N/A(5)	N/A(5)	N/A(5)	N/A(5)
33	St. Mary's	First / Church	2	8	2	0.02
34	Las Animas Elementary	Wren / Welburn	4	15	3	0.03
35	Cornerstone Christian	Wren / Welburn	N/A(5)	N/A(5)	N/A(5)	N/A(5)
36	Rod Kelley Elementary	Mantelli / Kern	6.5	25	5	0.05
37	Mt. Madonna High	Mantelli / Hirasaki	N/A(5)	N/A(5)	N/A(5)	N/A(5)
38	Vineyard Christian	First / Santa Teresa	N/A	N/A	N/A	N/A
39	Adventist Christian	Mantelli / Welburn	3	11	2	0.02
40	Pacific West Christian	Mantelli / Welburn	N/A(5)	N/A(5)	N/A(5)	N/A(5)
41	Luigi Aprea Elementary	Calle Del Rey / Lerma	4	15	3	0.03
42	Del Buono Elementary	Wren / Farrell	3	11	2	0.02
43	San Ysidro Elementary	Pacheco Pass / Frazier	2.1	8	2	0.02
44	Ascencion Solorsano	Grenache / Club	3	11	2	0.02
			TOTAL	**195**	**45**	**0.5**

Notes:
(1) Estimated irrigable acreage, based on percent of total site acreage that is irrigable. Values obtained from customer contact, City of Gilroy records, and planning maps.
(2) Average seasonal recycled water demand, acre-feet per year (afy).
(3) Approximately 20% of seasonal irrigation demand occurs in maximum month, based on irrigation requirements defined in Table 2.2.
(4) Maximum month demand in million gallons per day (mgd).
(5) Not applicable as this site shares fields with the prior school listed.

Table 2.7 Potential Small Landscape Irrigation Customers - New Residential Developments
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Site No.	Customer	Location	Irrigable Area (acres)(1)	Seasonal Demand (afy)(2)	Max Month Demand (ac-ft)(3)	Max Month Demand (mgd)(4)
46	Glen Loma Ranch Development	Along Santa Teresa	30	114	23	0.25
47	Hecker Pass Development	Hecker Pass Highway	17	65	13	0.14
			TOTAL	**179**	**36**	**0.39**

Notes:
(1) Estimated irrigable acreage, based on percent of total site acreage that is irrigable. Values based on Specific Plan documentation for each development.
(2) Average seasonal recycled water demand, acre-feet per year (afy).
(3) Approximately 20% of seasonal irrigation demand occurs in maximum month, based on irrigation requirements defined in Table 2.2.
(4) Maximum month demand in million gallons per day (mgd).

2.3.4 Agricultural Irrigation Customers

The only agricultural customer considered was local farmlands, in the area near the WWTP. Obata Farms is an existing recycled water customer of approximately 60 afy, irrigating approximately 35 acres. The potential exists to expand recycled water usage to irrigate an additional 225 acres of cropland west and north of the WWTP. Direct contact with agricultural customers on a regular basis is necessary to estimate irrigation demands, consider crop rotation, field usage, weather, and timing of planting. An additional 855 afy of agricultural use was estimated for planning purposes based on 3.8 ft/yr of irrigation over 225 additional acres.

SCRWA is planning the future installation of a wet weather discharge pipeline south from the WWTP to the Pajaro River. Additional agricultural customers could be served along this alignment, but the quantity of use for these customers is not estimated at this time. If additional agricultural customers are along the preferred recycled water distribution pipeline routing, they could be considered based on the direction and input of the District.

2.3.5 Morgan Hill Customers

Twenty-one potential recycled water customers were identified in downtown Morgan Hill by the previous 1995 Master Plan. These customers include parks, government facilities, street medians, and schools. The total estimated recycled water demand for downtown Morgan Hill customers is 389 afy annually. Maximum month demands are estimated to be 78 acre-feet (0.85 mgd), based on projected usage estimated from the previous Master Plan.

A separate potential project in Morgan Hill involves irrigation of the American Institute of Mathematics (AIM) Golf Course. This 100 acre golf course would require approximately 380 afy based on 3.8 ft/yr of irrigation, with a maximum month demand of 76 acre-feet (0.83 mgd).

Table 2.8 summarizes potential recycled water demand identified for Morgan Hill customers.

2.3.6 Future Potential Customers

Future potential recycled water customers could include additional expansion in the Gilroy and Morgan Hill area and eventual connection to a District-wide recycled water distribution system. Additional future customers could potentially include four future parks identified by the City of Gilroy Planning and Parks and Recreation Departments, extended highway median and interchange irrigation, agricultural customers on the planned southern pipeline extension to the Pajaro River, and the Calpine Gilroy Power Plant. Other potential future uses mentioned previously include residential irrigation, street cleaning, groundwater recharge, and stream-flow augmentation.

Table 2.8 Potential Morgan Hill Customers
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Site No.	Customer	Irrigable Area (acres)	Seasonal Demand (afy)(2)	Max Month Demand (ac-ft)(3)	Max Month Demand (mgd)(4)
48	Paradise Park	8(1)	22	4.5	0.05
49	Diana Park	4(1)	12	2.3	0.03
50	Galvin Community Park	7.3(1)	11	2.2	0.02
51	Howard Weichart Park	1(1)	3	0.6	0.01
52	Community Park	23(1)	67	13.4	0.15
53	Civic Center	8(1)	23	4.7	0.05
54	Police Dept. Landscaping	0.1(1)	0.3	0.1	0.001
55	M.H. Museum	0.2(1)	1	0.1	0.001
56	Condit/Dunne Median	0.1(1)	0.3	0.1	0.001
57	Jackson Meadows Median	0.1(1)	0.3	0.1	0.001
58	Second St. Median	0.5(1)	1.5	0.3	0.003
59	Cochrane Median	2(1)	5.8	1.2	0.01
60	Monterey St. Downtown Median	2.3(1)	7	1.3	0.01
61-67	Morgan Hill School District	N/A(1)	235	47.0	0.51
68	AIM/Fry's Golf Course	100	380	76.0	0.83
		TOTAL	**769**	**154**	**1.7**

Notes:
(1) Estimated irrigable acreage from 1995 Master Plan.
(2) Average seasonal recycled water demand, acre-feet per year (afy).
(3) Approximately 20% of seasonal irrigation demand occurs in maximum month, based on irrigation requirements defined in Table 2.2.
(4) Maximum month demand in million gallons per day (mgd).

As with all future sites, it is important to note that their development may not happen or come to fruition. Inclusion of future potential customers is useful for long-term planning purposes. It is not advisable to quantify potential demands and distribution system requirements until the sites come to fruition. An important goal for this Master Plan is to ensure that future construction and remodeling of parks, schools, and other applicable facilities in the City is designed for the use of recycled water.

Table 2.9 summarizes information for future planned parks in the Gilroy area that are located but not currently sized.

Table 2.9 Future Planned Parks in the Gilroy Area South County Recycled Water Master Plan Santa Clara Valley Water District/ South County Regional Wastewater Authority	
Park Name	**Location**
Sunrise Park	Hogan Way / Saddler
Los Arroyos Park	Hirasaki / Morrow
Carriage Hills Park	Longmeadow / Rancho Hills
Farrell Avenue Park	Wren / Farrell

2.3.7 Market Quantification Summary

The discussion in this chapter is a quantification of potential recycled water demands at identified sites in the Gilroy and Morgan Hill areas. Although the SCRWA WWTP currently produces up to 3 mgd of tertiary treated recycled water, upgrades and expansion to 6 mgd tertiary treatment capacity are planned. Chapter 3 includes distribution alternatives and requirements, including detailed discussion of SCRWA WWTP expansion and timing.

Existing recycled water users have an annual average usage of approximately 711 afy, with an historic maximum month demand of approximately 145 acre-feet (1.8 mgd). The identified commercial and industrial customers have an annual average usage of approximately 378 afy, with an estimated maximum month demand of 67 acre-feet (0.73 mgd). The identified large irrigation customers have an annual average usage of approximately 1,014 afy based on existing water usage and usage assumptions for Bonfante Gardens and Goldsmith Seeds, with an estimated maximum month demand of 205 acre-feet (2.2 mgd). The identified small irrigation customers have an annual average usage of 673 afy based on existing water usage, with an estimated maximum month demand of 150 acre-feet (1.6 mgd). The additional usage at local farmlands was estimated at 855 afy, with a maximum month demand of 171 acre-feet (1.9 mgd). Morgan Hill customers have an annual average usage of 389 afy, plus additional potential use of 380 afy at the AIM/Fry's Golf Course. Morgan Hill customers have a total maximum month demand of 154 acre-feet (1.67 mgd).

If all customers discussed above were supplied recycled water, peak monthly usage would exceed 9 mgd. Approximately 1 mgd of recycled water would be used during the period from November through March, assuming minimal irrigation usage.

Figure 2.2 summarizes the potential monthly recycled water usage, including existing customers, estimated values for potential commercial and industrial customers, estimated values for potential irrigation customers, and total average monthly recycled water demand.

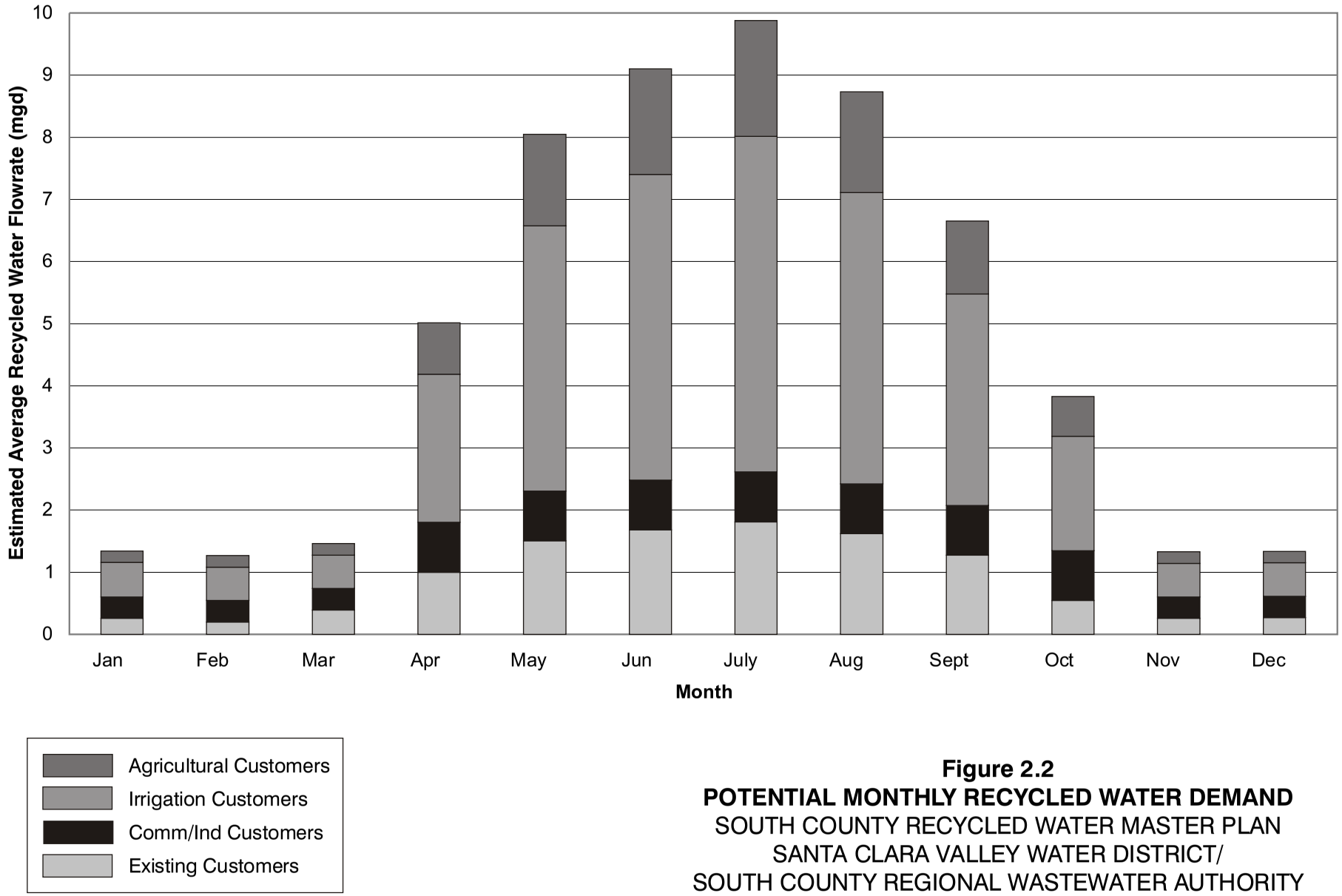


Figure 2.2
POTENTIAL MONTHLY RECYCLED WATER DEMAND
SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

scv604f5a-6775.cdr

2.4 DATABASE CATEGORIES AND DEFINITIONS

A complete database of potential recycled water customers was created, and is included in Appendix B. The database was also delivered to the District as a Microsoft Excel file to allow future entries and editing. Database categories include existing customers, commercial and industrial customers, large irrigation customers, parks, cemeteries, medians and interchanges, schools, and agriculture. These were the main categories identified in order to pursue these customers and convert them to recycled water use.

2.5 WATER QUALITY SUMMARY

The disinfected tertiary recycled water produced at the SCRWA WWTP meets all Title 22 water quality criteria requirements, as reported in annual monitoring reports. Existing users of recycled water from the SCRWA WWTP have not reported any concerns regarding water quality. Due to the success of the existing recycled water customers, it is expected that the recycled water quality will be sufficient for new customers. Nevertheless, current recycled water quality was assessed to verify its quality and acceptability.

SCRWA effluent monitoring results were reviewed for key irrigation water quality parameters. A comparison of the effluent water quality to water quality guidelines for irrigation was developed and is presented in Table 2.10. Effluent concentrations represent average values from 2001-2002 based on annual SCRWA monitoring reports. For constituents not monitored and reported by SCRWA, average data for SCRWA recycled water from District monitoring for the Advanced Recycled Water Treatment Feasibility Study was used. The water quality guidelines for irrigation are from the District's Advanced Recycled Water Treatment Feasibility Study.

Highlighted values within Table 2.10 indicate the range in which the SCRWA effluent falls. As can be seen from Table 2.10, the degree of use restriction for irrigation parameters ranges from none to slight-to-moderate.

Table 2.11 summarizes the potential irrigation reuse restrictions of recycled water from SCRWA, based on the results of the comparison made in Table 2.10. None of the water quality parameters should place severe restrictions on the use of recycled water for irrigation. Existing recycled water use at all sites in Gilroy has been successful, highlighting the potential for increased irrigation use with minimal water quality concerns.

Extensive water quality analysis for other uses, including industrial process uses, is available in the District's Advanced Recycled Water Treatment Feasibility Study.

Table 2.10 Water Quality Guidelines for Irrigation[1]
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Irrigation Water Key Quality Parameter	Units	Established Criteria Degree of Use Restriction[2,3,4] None	Slight to Moderate	Severe	SCRWA Effluent[5]
Salinity EC_w	dS/m	<0.7	**0.7-3.0**	>3.0	1.1
TDS	mg/L	<450	**450-2000**	>2000	634
Permeability[6]			EC_w = 1.1		
SAR = 0-3 and EC_w =		>0.7	0.7-0.2	<0.2	
SAR[7,8] = 3-6 and EC_w =		>1.2	**1.2-0.3**	<0.3	1.1
SAR = 6-12 and EC_w =		>1.9	1.9-0.5	<0.5	
SAR = 12-20 and EC_w =		>2.9	2.9-1.3	<1.3	
SAR = 20-40 and EC_w =		>5.0	5.0-2.9	<2.9	
Sodium (Na)					
Surface	SAR	<3	**3-9**	>9	4.1[7,8]
Sprinkler	mg/L	<70	**>70**		113
Chloride (Cl)					
Surface	mg/L	<140	**140-355**	>355	155
Sprinkler	mg/L	<100	**>100**		155
Boron (B)	mg/L	**<0.7**	0.7-3.0	>3.0	0.67
Bicarbonate	mg/L	<90	**90-500**	>500	237[8]
pH	---	**6.5-8.4** (normal range)			7.6
Ammonia (NH_4)	mg/L	(see combined N values below)			0.07
Nitrate (NO_3)	mg/L	(see combined N values below)			2.2
Combined Nitrogen (N)	mg/L	**<5**	5-30	>30	3.7

Notes:

(1) Adapted from University of California Committee of Consultants (1974), and Ayers and Westcot (1994).

(2) Method and Timing of Irrigation: Assumes normal surface and sprinkler irrigation methods are used. Water is applied as needed, and the plants utilize a considerable portion of the available stored soil water (50% or more) before the next irrigation. At least 15 percent of the applied water percolates below the root zone (leaching fraction [LF] > 15%).

(3) Site Conditions: Assumes soil texture ranges from sandy loam to clay with good internal drainage with no uncontrolled shallow water table present.

(4) Definitions of "The Degree of Use Restriction" terms:
None = Recycled water can be used similar to the best available irrigation water.
Slight = Some additional management will be required above that with the best available irrigation water in terms of leaching salts from the root zone and/or choice of plants.
Moderate = Increased level of management required and choice of plants limited to those which are tolerant of the specific parameters.
Severe = Typically cannot be used due to limitations imposed by the specific parameters.

(5) Average SCRWA effluent value, 2001-2002. Source: 2001-2002 Annual SCRWA Reports.

(6) Permeability is evaluated based on the combination of adjusted sodium adsorption ratio (SAR) and Electrical Conductivity (EC) values.

(7) Adjusted SAR (adj. R_{Na}) includes the effect of bicarbonate/calcium ratio (Ca_x).

(8) Average SCRWA recycled water value. Source: SCVWD monitoring of recycled water for Advanced Recycled Water Treatment Feasibility Study.

Table 2.11 Recycled Water Use Restrictions South County Recycled Water Master Plan Santa Clara Valley Water District/ South County Regional Wastewater Authority	
Water Quality Parameter	**Degree of Use Restriction**
Salinity	Slight
Permeability	Slight
Sodium	Slight
Chloride	Slight
Boron	None
Bicarbonate	Slight to Moderate
Combined Nitrogen	None

2.5.1 General Irrigation Use Guidelines

It is important to understand that the successful long-term use of irrigation water depends on numerous factors, including rainfall, leaching, soil drainage, irrigation water management, salt tolerance of plants, and soil management practices, in addition to water quality. It may be necessary for the District and SCRWA to coordinate with individual customers to apply the best long-term irrigation practices for utilization of recycled water.

DISTRIBUTION SYSTEM ALTERNATIVES EVALUATION

3.1 EXISTING RECYCLED WATER SYSTEM DESCRIPTION AND OPERATION

The previous chapters provide background, identify potential recycled water customers, and quantify demand for recycled water. This chapter reviews the existing recycled water system, provides details of and evaluates preliminary project alternatives. Chapter 4 develops the selected project alternatives for immediate-term (within one year), short-term (less than five years), and long-term (greater than five years) capital improvement programs.

The existing recycled water system in the City consists of a tertiary treatment facility at the SCRWA WWTP, a main transmission pipeline, distribution piping to the five existing recycled water customers, a storage reservoir, and pumping facilities. These facilities are described further below.

3.1.1 Existing Treatment Facilities

The SCRWA WWTP has a total secondary treatment capacity of 7.5 million gallons per day (mgd) ADWF and can currently divert up to 3 mgd of secondary effluent to tertiary facilities. The tertiary treatment process produces recycled water that meets the recycled water criteria of California's Title 22 unrestricted use classification. The tertiary treatment process consists of coagulation, filtration with sand filters, chlorination, and dechlorination. There is no existing on-site storage of treated recycled water at the WWTP. The flow of filtered water is matched to the recycled water pumping rate, or stored in an off-site reservoir described later in this chapter.

An expansion of tertiary recycled water treatment capacity to 6 mgd will be complete by the end of 2005. As part of this expansion, tertiary filtration capacity will be increased from 3 mgd to 9 mgd. However, due to diurnal flow fluctuations and limitations in storage capacity, in-plant pumping capacity, and chlorination capacity, the total tertiary treatment system capacity will be 6 mgd after the filtration expansion. The expansion will include on-site treated recycled water storage capacity of 3 million gallons (MG), with future plans of an additional 3 MG for a total of 6 MG of on-site storage. This Master Plan will define additional capacity requirements for tertiary treatment.

Upgrades or expansion of the recycled water treatment facilities located at the SCRWA WWTP are not included in this Master Plan, but are being conducted as a separate effort.

3.1.2 Existing Distribution System and Facilities

The existing recycled water distribution system consists of eight miles of 12-inch diameter pipeline, two booster pump stations, and a 1.5 million gallon storage tank. The main transmission pipeline heads generally north from the WWTP to the Princevalle Drain, where the pipeline turns west through Christmas Hill Park and the Eagle Ridge Development and Golf Course. In the Eagle Ridge Development, the existing pipeline splits to reach the storage tank and serve the distribution pipeline along Hecker Pass Highway. Obata Farms receives recycled water in the area directly to the west of the treatment plant, in addition to several other existing connections to the main transmission pipeline along Princevalle Drain, which are not currently utilized. The Calpine-Gilroy Energy Center receives recycled water via a spur that heads east from the main pipeline. A planned 12-inch diameter pipeline will serve the Gilroy Sports Park complex, and will be routed from the existing main pipeline south along Monterey Road.

One existing booster pump station is located at the SCWRA WWTP, at an elevation of 154 feet. This pump station has three pumps with a total pump capacity of 3,475 gallons per minute (gpm). A second booster pump station is located just to the west of Christmas Hill Park, at an elevation of 222 feet. This pump station has three pumps with a total pump capacity of 3,100 gpm. The existing storage tank is located in the hills above Eagle Ridge Golf Course, with a tank bottom elevation of 385 feet and an overflow elevation of 408 feet. The storage tank has a capacity of 1.5 million gallons.

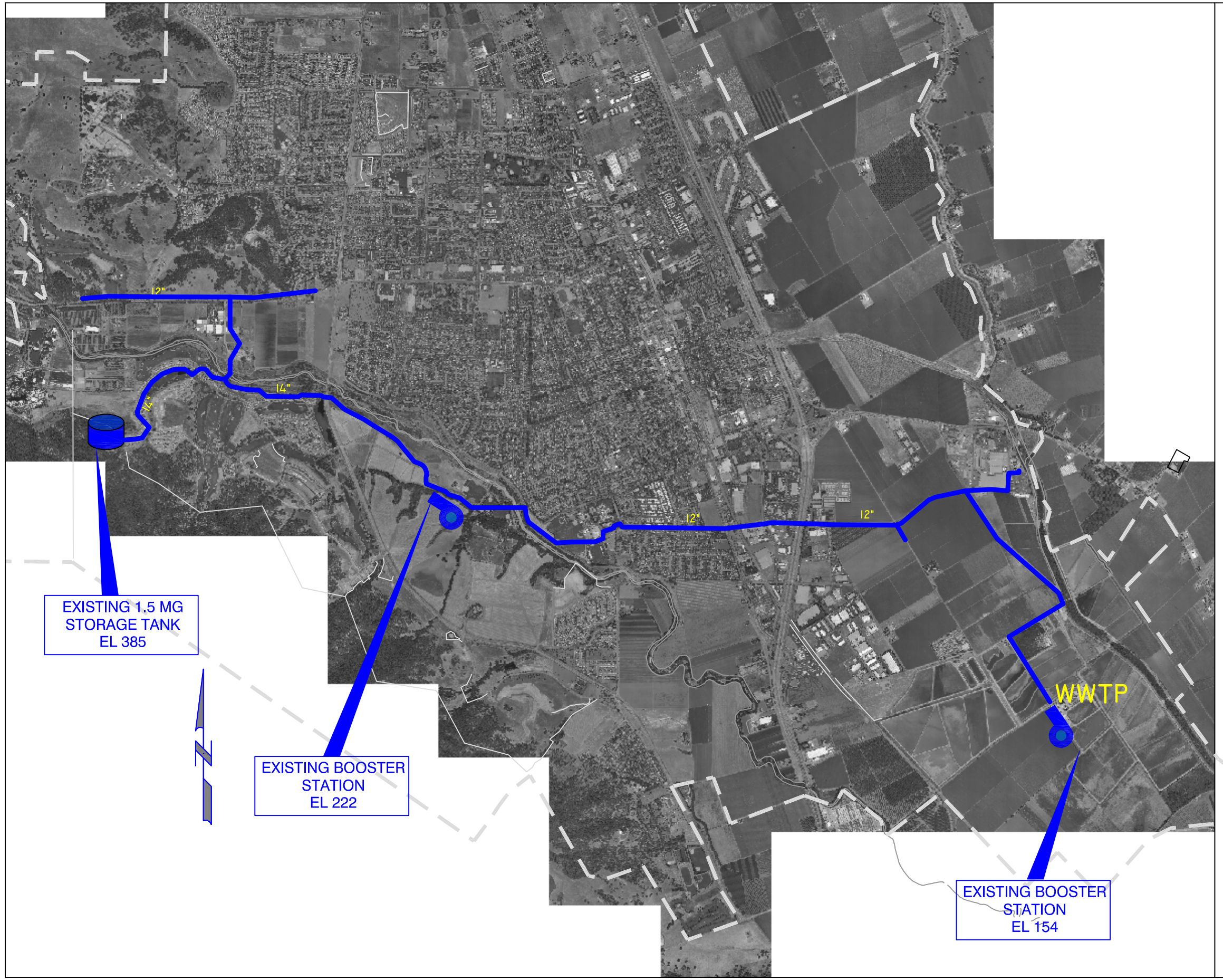
Modeling results indicate that the existing distribution system does not have capacity for additional flow, preventing additional customers from being connected prior to capital improvements. This is discussed further in Section 3.4 - Hydraulic Modeling Analysis.

The existing recycled water distribution system and existing customers are summarized in Figure 3.1.

3.2 PRELIMINARY PROJECT ALTERNATIVES DEVELOPMENT

Potential customers were grouped into 12 preliminary project alternatives. The groupings were developed based on customer location, information gathered in the market assessment, and in conjunction with planning level hydraulic modeling. Customer groupings are planned to be added to the existing distribution system via a phased implementation plan. Developing preliminary alternatives served as the initial screening process, and included revisions based on working meetings with the District, SCRWA, and Carollo.

The immediate-term capital improvement program will connect the most feasible recycled water customers to the existing distribution system. Additional customers will connect as the distribution system is expanded as part of the short-term and long-term capital improvement programs.



LEGEND

12" EXISTING PIPE AND SIZE

EXISTING STORAGE TANK

EXISTING PUMP

FIGURE 3.1
EXISTING RECYCLED WATER DISTRIBUTION SYSTEM

SOUTH COUNTY
RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL
WASTEWATER AUTHORITY

carollo engineers

3.2.1 Project Grouping

Initial customer groupings were developed mainly based on location within the study area, and also considered type of use. The groupings are summarized in Table 3.1. The groups are listed in order of priority, from highest to lowest. Some groups are dependent on implementation of previous groups, while others can be implemented independently. A description outlining each group follows.

Table 3.1 Initial Customer Grouping
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Customer Group Number and Name		Site Number	Group Customers
A1	Minimal Capital Cost	23,44, 7,8,46	Gilroy High, Ascencion Solorsano Middle School, Gilroy Golf Course, Gilroy Sports Park, Glen Loma Ranch Development
A2	Industrial Customers	1,2,69	Cintas Laundry, Inland Packaging, Calpine Gilroy Power Plant
A3	Hecker Pass Customers	9,6,47	Goldsmith Seeds, Bonfante Gardens, Hecker Pass Development
Agr.	Expanded Agriculture	45	Local Farmlands - Obata Farms
B	Gavilan College Area	3,4,5	Gavilan College, Gavilan Sports Park, Gavilan Golf Course
C	First Street Loop	24,25,26, 11,27,28, 12,17,18, 38	Glen View Elem., Gateway School, El Roble Elem., El Roble Park, Jordan Elem., Brownell Academy, Miller Park, Gavilan Hills Memorial Park, Saint Mary Cemetery, Vineyard Christian
D	I.O.O.F. Avenue Spur	30,31,32, 33,13	South Valley Jr. High, Gilroy Community Day, Gilroy Adult Education, St. Mary's School, San Ysidro Park
E	Wren Avenue Spur	34,35,14, 36,37,15	Las Animas Elem., Cornerstone Christian, Las Animas Park, Rod Kelley Elem., Mt. Madonna High, Rainbow Park
F	Highway 101	19,20,21, 22	Monterey St., Tenth St., and Leavesley Rd. Interchanges; Highway 101 Median
G	Mantelli Spur (Future)	39,40,41, 16	Adventist Christian, Pacific West Christian, Luigi Aprea Elem., Del Rey Park
H	Other Future Spurs	10,29,42, 43	Forest Street Park, Eliot Elem., del Buono Elem., San Ysidro Elem.
I	Morgan Hill	48,49	Downtown Morgan Hill Sites, AIM Golf Course

Group A1, Minimal Capital Cost, includes Gilroy High School, Ascencion Solorsano Middle School, Gilroy Golf Course, Gilroy Sports Park, and Glen Loma Ranch Development. Group A1 includes those potential recycled water customers who, with minimal necessary capital costs, can connect to the existing distribution system. It is intended to connect these customers as soon as possible. The Glen Loma Ranch Development is a proposed subdivision with Specific Plan documentation already submitted to City of Gilroy Planning Department.

Group A2, Industrial Customers, includes Cintas Laundry, Inland Packaging, and Calpine Gilroy Power Plant. This group includes the identified commercial and industrial customers with year-round demand. Cintas Laundry and Inland Packaging are located in close proximity to each other. Calpine Gilroy Power Plant is adjacent to the Calpine Peaker Plant, an existing recycled water customer.

Group A3, Hecker Pass Customers, includes Goldsmith Seeds, Bonfante Gardens, and Hecker Pass Development. Group A3 maximizes increased recycled water usage with minimal additional distribution costs. The District has begun working directly with Bonfante Gardens to identify the benefits of recycled water, respond to perceived quality concerns, and minimize the time necessary to implement usage at the site. The Hecker Pass Development is a proposed subdivision with Specific Plan documentation already submitted to City of Gilroy Planning Department.

Group Agr., Expanded Agriculture, includes expanded recycled water usage at local farmlands leased by Obata Farms. Other agricultural customers could be added if feasible, based on future distribution system alignment. Although agricultural use of recycled water is a secondary objective, it may be advisable to coordinate with Obata Farms to expand usage mainly due to their close proximity to the WWTP. Tom Obata, President of Obata Farms, has offered to negotiate a recycled water user agreement that does not guarantee a specific quantity of water, as he would rather expand his usage when water is available. Obata Farms could utilize excess recycled water in the short-term while the distribution system is being expanded and other customers are brought on-line. Increased agricultural usage could utilize a larger proportion of SCRWA recycled water production capacity prior to completion and connection of new commercial, industrial, and landscape irrigation customers. This additional usage would provide SCRWA with operational flexibility such as drying the percolation ponds and additional security for the disposal of wastewater to meet discharge permit requirements, while providing the District with some revenue.

Group B, Gavilan College Area, includes Gavilan College, Gavilan Sports Park, and Gavilan Golf Course. Implementation concerns have been identified with Group B as the current potable and irrigation systems are integrated. Further evaluation of the existing interconnections and required retrofits at Gavilan will be necessary before this group is implemented as a viable alternative.

Group C, First Street Loop, includes Glen View Elementary School, Gateway School, El Roble Elementary School, El Roble Park, Jordan Elementary School, Brownell Academy, Miller Park, Gavilan Hills Memorial Park, Saint Mary Cemetery, and Vineyard Christian School. These sites are located in central Gilroy, north of the existing distribution system. While each individual school or park has a relatively low demand, as a whole these customers provide sufficient demand to be feasible.

Group D, I.O.O.F. Avenue Spur, includes South Valley Junior High School, Gilroy Community Day School, Gilroy Adult Education, St. Mary's School, and San Ysidro Park. These sites are located north and east of central Gilroy.

Group E, Wren Avenue Spur, includes Las Animas Elementary School, Cornerstone Christian School, Las Animas Park, Rod Kelley Elementary School, Mt. Madonna High School, and Rainbow Park. These sites are located north of central Gilroy.

Group F, Highway 101, includes the Monterey Street, Tenth Street, and Leavesley Road Interchanges, and the Highway 101 Median. Coordination with CalTrans and a maintenance contract will be necessary before implementation of this grouping. Maintenance concerns are the main reason for the prioritization of highway medians and interchanges as Group F.

Group G, Mantelli Spur (Future), includes Adventist Christian School, Pacific West Christian School, Luigi Aprea Elementary School, and Del Rey Park. These sites are located northwest of central Gilroy.

Group H, Other Future Spurs, includes Forest Street Park, Eliot Elementary School, del Buono Elementary School, and San Ysidro Elementary School. Future planned parks in these areas could also be served via connections near those of Group G and H customers.

Group I, Morgan Hill, includes downtown Morgan Hill customers consisting of parks, government facilities, street medians, and schools as identified in Chapter 2, as well as the American Institute of Mathematics private golf course, located on the far southeast side of Morgan Hill.

The composition of each customer group also considered possible distribution system alignment, proximity to the existing distribution system, and other implementation factors. These groupings were used to develop peak flow demands, develop initial pipeline alignments, perform a planning-level hydraulic analysis, and assess initial environmental constraints. These factors were utilized to determine preferred projects for implementation.

The locations of customer groupings are summarized in Figure 3.2.

3.2.2 Peak Flow Demands

Peak flow demands for each potential customer were determined. Maximum month, peak day, and peak hour flow demands were calculated based on available information and

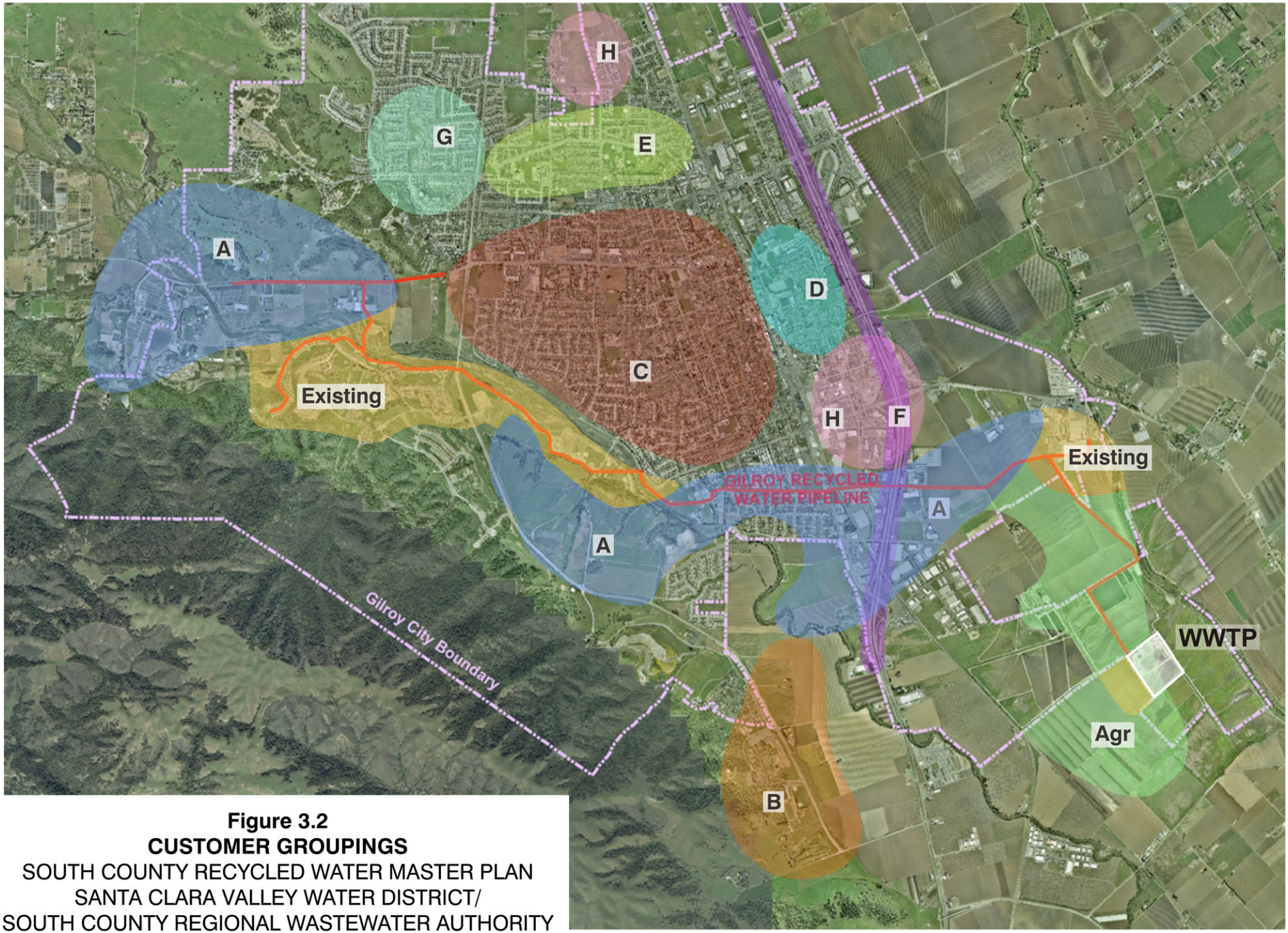


Figure 3.2
CUSTOMER GROUPINGS
SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

scv604f6-6775.cdr

conservative assumptions. Maximum month flow demands for irrigation sites were calculated as 20 percent of annual recycled water demand, based on evapotranspiration and rainfall data detailed in Section 2.3.2 of this report. Maximum month demands for the Cintas Laundry and Inland Packaging were estimated at 10 percent of annual recycled water demand, given the relatively constant flow demand for these industries. Maximum month demand for the Calpine Peaker Plant was based on Calpine's maximum recycled water flowrate calculation of 33 ac-ft per month. Maximum month demand for the Calpine Gilroy Power Plant was based on Calpine's estimated recycled water demand of 0.65 mgd, or 60 acre-feet per month.

Total annual recycled water demand and maximum month recycled water flow demands for each customer grouping are summarized in Table 3.2. In general, the higher priority customer groupings have a higher demand for recycled water and are located closer to the supply source (i.e. the WWTP and existing pipeline). Total estimated maximum month flow demand for all existing and potential customers is 9.9 mgd. Detailed peak flow calculations for each customer are included in Appendix B.

Table 3.2 Maximum Month Flow Demands
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Customer Group Number and Name		Total Annual Recycled Water Flow (afy)(1)	Maximum Month Demand (ac-ft/month)(2)	Maximum Month Demand (mgd)(2)
	Existing Users	711	166	1.81
A1	Minimal Capital Cost	556	113	1.23
A2	Industrial Customers	378	67	0.73
A3	Hecker Pass Customers	420	84	0.91
Agr.	Expanded Agriculture	855	171	1.86
B	Gavilan College Area	228	48	0.52
C	First Street Loop	93	27	0.29
D	I.O.O.F. Avenue Spur	65	17	0.18
E	Wren Avenue Spur	121	27	0.29
F	Highway 101	144	29	0.31
G	Mantelli Spur (Future)	33	6.6	0.07
H	Other Future Spurs	28	5.6	0.06
I	Morgan Hill	769	154	1.67
	TOTAL	**4,401**	**914**	**9.9**

Notes:
(1) Total estimated annual recycled water flow in units of acre-feet per year (afy).
(2) Maximum month demand in units of acre-feet per month (ac-ft/month) and million gallons per day (mgd).

Peak day demands were calculated using a peaking factor of 1.3 times the average daily demand of the maximum month for all customers. Peak hour demand is based on the peak day demand averaged over the defined daily use distribution, as defined by modeling assumptions in Section 3.4 - Hydraulic Modeling Analysis.

Peak hour demand will be used to size the future distribution system, including pipelines, pumping requirements, and storage requirements. Peak day and peak hour recycled water flow demands for each customer grouping are summarized in Table 3.3. Total estimated peak day demand for all existing and potential customers is 13.1 mgd, although peak flow demand may not necessarily occur simultaneously. Detailed peak flow calculations for each customer are included in Appendix B.

Table 3.3 Peak Day and Peak Hour Flow Demands
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Customer Group Number and Name		Peak Day Demand (ac-ft/day)(1)	Peak Day Demand (mgd)(1)	Peak Hour Demand (ac-ft/hour)(2)	Peak Hour Demand (mgd)(2)
	Existing Users	7.20	2.35	0.41	3.22
A1	Minimal Capital Cost	4.89	1.59	0.51	3.99
A2	Industrial Customers	3.35	1.09	0.16	1.23
A3	Hecker Pass Customers	3.64	1.19	0.45	3.56
Agr.	Expanded Agriculture	7.41	2.42	0.41	3.22
B	Gavilan College Area	2.08	0.68	0.26	2.04
C	First Street Loop	1.17	0.38	0.15	1.14
D	I.O.O.F. Avenue Spur	0.73	0.24	0.09	0.71
E	Wren Avenue Spur	1.16	0.38	0.15	1.14
F	Highway 101	1.25	0.41	0.16	1.22
G	Mantelli Spur (Future)	0.28	0.09	0.04	0.28
H	Other Future Spurs	0.24	0.08	0.03	0.24
I	Morgan Hill	6.66	2.17	0.83	6.52
	TOTAL	**40.1**	**13.1**	**3.7**	**29.3**

Notes:
(1) Peak day demand includes a peaking factor of 1.3 over maximum month demand, and is shown in units of acre-feet per day (ac-ft/day) and million gallons per day (mgd).
(2) Peak hour demand is based on the peak day demand averaged over the defined daily use distribution, as defined in by modeling assumptions in Section 3.4. Peak flow demands will not necessarily occur simultaneously for all users.

3.2.3 Seasonality and Daily Use Distribution

Recycled water customers often have varying seasonal demand. Irrigation customers have seasonal demand peaking in the warm, dry summer months. Industrial and commercial process customers have a consistent year-round demand. Additionally, daily use distribution can be customer-specific due to timing of water use, regulated irrigation-timing requirements, available storage, and other site constraints. Publicly accessible irrigation sites generally irrigate at night, when site use is minimal to nonexistent.

The daily use distribution for Eagle Ridge Development is a total of 20 hours, with pumping from 4:00 AM until midnight. The daily use distribution for Obata Farms is a total of 16 hours, with pumping from 5:00 AM until 2:00 PM and from 5:00 PM until 2:00 AM. The daily use distribution for the Calpine Peaker Plant is a constant 16-hour use period from 6:00 AM until 10:00 PM, based on calculations by Calpine for continuous maximum recycled water demand. The daily use distribution for Industrial Customers in Group A2 is a total of 10 hours, from 8:00 AM until 6:00 PM. All other customers were assumed to have a nighttime irrigation use distribution with 8 hours of use between 8:00 PM and 4:00 AM.

Figure 3.3 summarizes the daily use distribution patterns for all existing and potential customers.

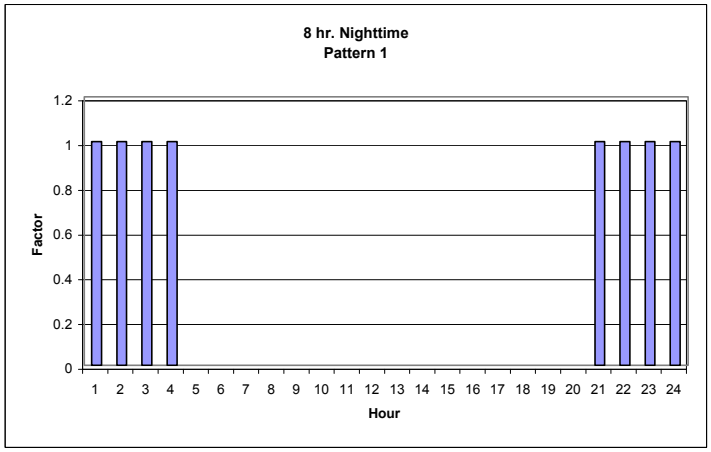
Each customer's seasonality and daily use distribution of recycled water demand was characterized and is defined further in H2ONet modeling results in Section 3.4 - Hydraulic Modeling Analysis.

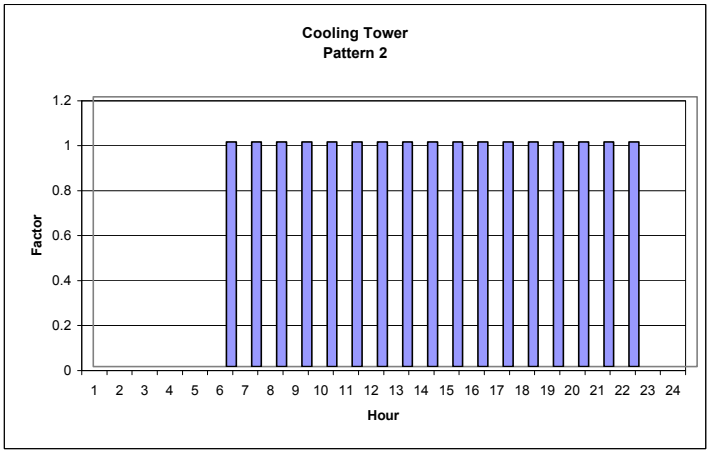
3.2.4 Preliminary Pipeline Alignments

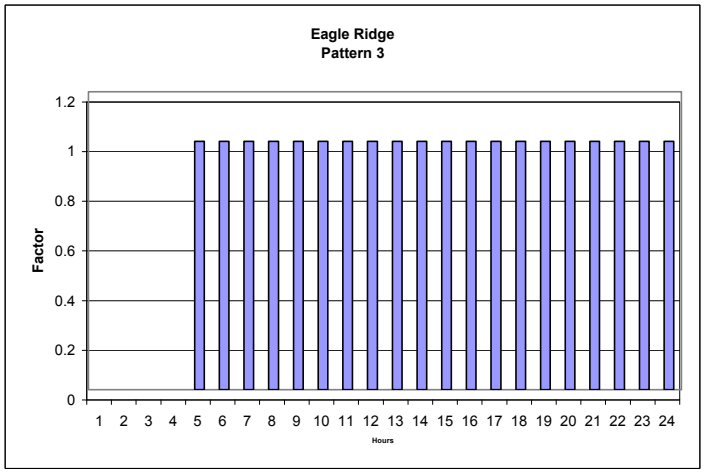
Preliminary pipeline alignments to serve new recycled water customers were developed and modified based on coordination with District staff, City staff, and logistical and environmental considerations. One potential alignment was considered at the suggestion of City of Gilroy staff, namely routing the pipeline in existing flood control channel levees and service roads. Based on a staff-level policy in the District's Engineers Policy and Procedure Manual, pipeline routings within the right-of-way of wide District-owned flood control channels are not considered feasible at this time. These flood control channels are subject to modification and enlargement, and relocation of longitudinal piping could be cost prohibitive. Therefore, pipeline routings were planned primarily within City roadways.

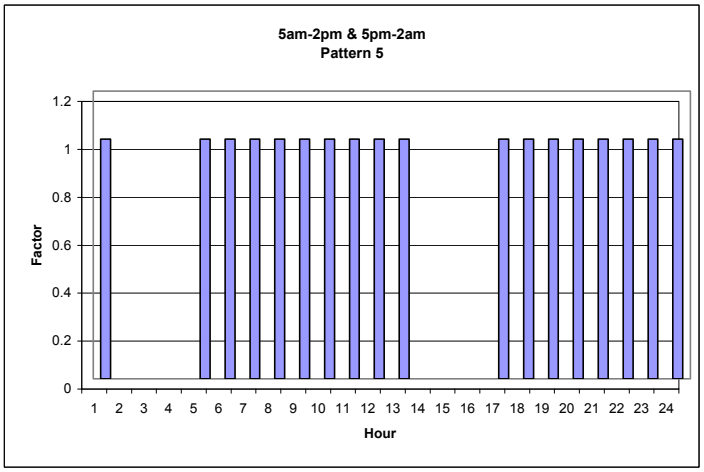
3.2.4.1 Main Transmission Pipeline Alignment

Based on preliminary modeling results, expansion of the main transmission pipeline is necessary to serve additional customers receiving water off this line. Therefore, it will be necessary to add a parallel pipeline to the existing one or develop an additional pipeline alignment to serve as the backbone transmission system for the planned expansion. For project evaluation purposes, an initial pipeline alignment was developed to serve the identified planned customer groupings. The alignment was selected to minimize pipeline construction costs and allow phased connection of customer groupings.









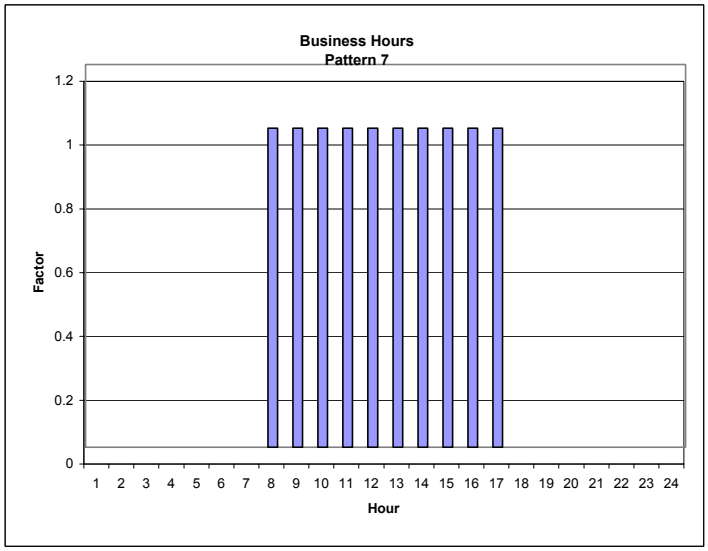


FIGURE 3.3
DAILY USE DISTRIBUTION PATTERNS
SOUTH COUNTY RECYCLED WATER
MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL
WASTEWATER AUTHORITY

Two alternatives were considered to expand the existing pipeline: 1) a parallel alignment within the same right-of-way as the existing pipe or 2) a new alignment constructed through City streets and the Glen Loma Ranch Development, to minimize construction in City streets. In either case, the existing pipeline would remain in use. The District and SCRWA jointly agreed that the parallel alignment within the existing right-of-way is infeasible, and selected the alignment constructed in City streets and through the Glen Loma Ranch Development.

Expansion of the existing pipeline west through the Eagle Ridge Golf Course, north along an easement through Goldsmith Seeds' property, and west along Hecker Pass Highway is also necessary based on modeling results. The current alignment through Eagle Ridge Golf Course and Goldsmith Seeds passes through private property, through the golf course, and under Uvas Creek. Therefore, expansion of the distribution system in this area will utilize a separate alignment, either north along Santa Teresa Boulevard and west along Hecker Pass Highway, or along surface streets in the Eagle Ridge Development and Hecker Pass Development. Potential constraints include acquisition of easements, the Uvas Creek crossing, timing of Hecker Pass Development construction, and construction within the right-of-way of Hecker Pass Highway. Final pipeline alignment will be determined during the design phase of the project. This alignment will serve expanded recycled water use of customers at the far west end of the recycled water distribution system, including Bonfante Gardens, the Gilroy Golf Course, Goldsmith Seeds, and Glen Loma Ranch Development.

3.2.4.2 Distribution Pipeline Alignments

Group A1, A2, and A3 customers are located close to the existing main transmission pipeline. Connections to the existing or expanded main pipeline will be made to serve Group A1, A2, and A3 customers. A planned pipeline routed south from the existing pipeline will serve Gilroy Sports Park. This Gilroy Sports Park pipeline is planned to be placed in the right-of-way of Monterey Street and Highway 101 Frontage Road, and is currently being planned and designed by the City of Gilroy.

Group Agr., Expanded Agriculture, is planned to be served through construction of a new pipeline directly to the west of the WWTP. This new pipeline will have a separate connection from the WWTP, not associated with the existing 12-inch diameter main pipeline serving the other customers, therefore allowing increased total recycled water use during the period before the main system is expanded. Obata Farms also has several turnouts for service along the main pipeline, which provide recycled water to additional areas of agricultural fields. These turnouts are not currently utilized due to flow capacity limitations, but could be used in the future.

Group B, Gavilan College, is planned to be served by extension of the planned pipeline to Gilroy Sports Park. The Gilroy Sports Park pipeline will be routed through the park along a proposed bicycle trail bridge across Carnadero Creek, as identified by City of Gilroy Facilities and Parks Staff. The pipeline will then follow the right-of-way of the proposed

bicycle trail south to Mesa Road, where it will turn west to Santa Teresa Boulevard and then south. It is expected that the joint use and need of the potential bicycle trail right-of-way will accelerate the purchase and development of the trail and pipeline.

Group C could be served by a pipeline routed east along First Street from the existing pipeline in the right-of-way of Hecker Pass Highway. El Roble Park and El Roble Elementary School could be served by a spur routed south from First Street along Wren Avenue. A spur from the existing pipeline north along Princevalle Street could serve the Glenview Elementary and Gateway Schools.

Group D could be served by extension of the new pipeline to the east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park. An alternate route could bypass in-street construction along Monterey Street by continuing east through a commercial parking lot and turning south in an existing District flood control channel until reaching I.O.O.F. Avenue.

Group E could be served by an extension of the new pipeline north along Wren Avenue and east and west along Mantelli Drive.

Group F, Highway 101 medians and interchanges, could be served by a pipeline within the median and connected to the distribution system either at the existing pipeline or at the highway crossing for any necessary expansion of the existing pipeline.

Group G could be served by an extension west along Mantelli Drive and north along Calle del Rey.

Group H could be served by separate direct extensions, one north along Wren Avenue, and a second south along Forest Street and east along Seventh Street.

Group I, Morgan Hill customers, could be served with a pipeline extension north along Monterey Street a distance of approximately 13 miles to reach the downtown area. The AIM Golf Course could be served by a pipeline from the proposed scalping plant location at the southwest corner of the intersection of Hill Road and San Pedro Avenue, a distance of approximately 1.8 miles.

3.2.4.3 Future Pipeline Alignments

An additional pipeline routed south from the WWTP to the Pajaro River is considered pending future use for agricultural recycled water supply. The purpose of the Pajaro River pipeline would be to discharge excess winter storm flows to the Pajaro River as well as distribute recycled water in summer. Recycled water use for agriculture along the Pajaro River pipeline would offset existing groundwater use. The proposed alignment for the Pajaro River discharge pipeline is south from the WWTP to Bloomfield Avenue, southwest along Bloomfield Avenue to Davidson Avenue, and southeast along Davidson Avenue to the Pajaro River, a distance of approximately 15,000 feet (3 miles). Bloomfield Avenue is the southern boundary of the SCRWA property, and the pipeline routing is entirely through

SCRWA land and public roadway right-of-way. The area south of Bloomfield Avenue is predominantly agricultural.

For distribution system reliability and to maintain a minimum water pressure, a looped system is preferable. Expansion of the main transmission pipeline would provide the benefits of a looped system. Two other potential loop connections are feasible. One feasible loop connection could be to extend the existing pipeline along Princevalle Street to meet the new pipeline along First Street. This alternative could provide service to Glenview Elementary School, Gateway School, and allow a spur along Fourth Street to serve El Roble Elementary School and El Roble Park. Another feasible loop connection could be along Chestnut Street between the existing pipeline and the spur that would serve Forest Street Park and Eliot Elementary School. These proposed pipeline loops would each require approximately a one-mile pipeline extension.

Figure 3.4 summarizes the potential pipeline alignments.

3.2.5 Initial Environmental Analysis

Environmental Science Associates (ESA) developed a Constraints Analysis to identify and evaluate any environmental constraints or fatal flaws that could constrain implementation of each new pipeline route. The Constraints Analysis was based on a review of pertinent background documentation, computer database searches, and reconnaissance of the pipeline routes, consisting of windshield and ground surveys using available access. Specific analysis topics included land use and land use policy, traffic and circulation, visual/aesthetic resources, biological resources, cultural resources, hazardous materials, hydrologic resources, and geology and soils.

The conclusions of the Constraints Analysis are generally positive as to the environmental feasibility of the proposed pipeline routings. The cumulative potential for environmental constraints is low to moderate for most pipeline segments. The pipeline routes with the highest identified constraints have alternate routes identified in the Master Plan that could be implemented to reduce impacts. Overall, implementation of standard construction measures has the ability to reduce potential impacts associated with the proposed pipeline routings to less than significant.

The Constraints Analysis, CEQA Checklist, and CEQA Justification Memorandum prepared by ESA are included in Appendix C.

Environmental documentation for the western farmlands pipeline will be included as part of a separate CEQA document for the SCRWA WWTP expansion. Environmental documentation for the Pajaro River pipeline will also be a separate CEQA process.

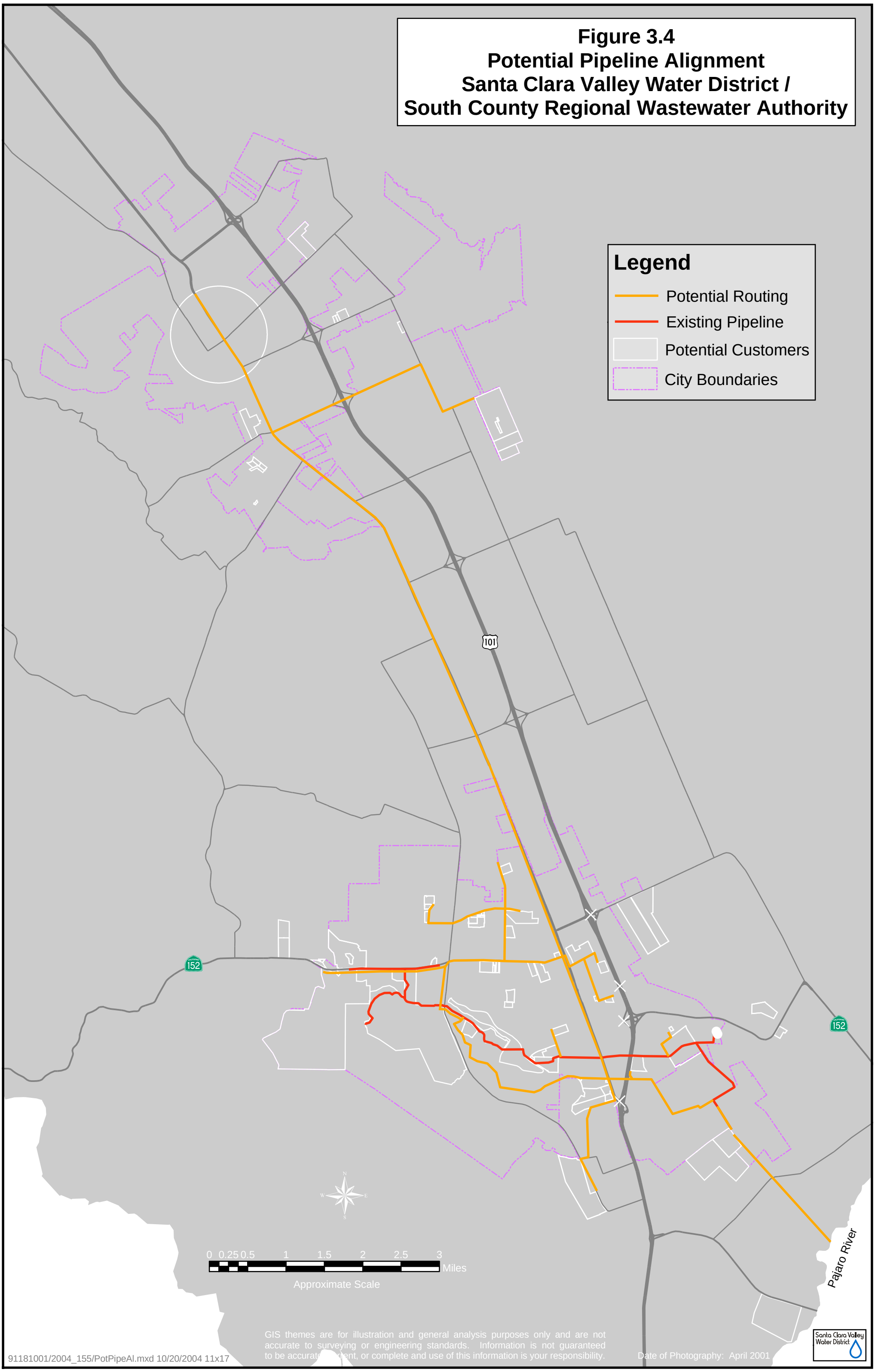


Figure 3.4
Potential Pipeline Alignment
Santa Clara Valley Water District /
South County Regional Wastewater Authority
Legend
Potential Routing
Existing Pipeline
Potential Customers
City Boundaries
101
152
152
Pajaro River
0 0.25 0.5 1 1.5 2 2.5 3
Miles
Approximate Scale
GIS themes are for illustration and general analysis purposes only and are not accurate to surveying or engineering standards. Information is not guaranteed to be accurate, current, or complete and use of this information is your responsibility.
Date of Photography: April 2001
Santa Clara Valley Water District
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3.3 PRELIMINARY ALTERNATIVES EVALUATION

The preliminary project alternatives were evaluated through the Stage II screening process based on screening criteria including peak flow demands, initial pipeline alignment, cost effectiveness, preliminary hydraulic analysis, and initial environmental constraints. The goal of the evaluation was to optimize the projects for maximum recycled water usage at a minimum cost. The evaluation further prioritized the projects, allowing development of immediate-term, short-term, and long-term capital improvement programs.

3.3.1 Customer Grouping Summary

A table has been prepared summarizing the advantages and disadvantages of each customer grouping. This summary information is presented in Table 3.4.

Table 3.4 Customer Grouping Analysis – Stage II Screening
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Potential Customer Group		Advantages	Disadvantages
A1	Minimal Capital Cost	• Close to existing pipeline • Can connect quickly	• Potential retrofit costs at Gilroy High School
A2	Industrial Customers	• Achieves variety of uses • Year-round demand	• 2 of 3 customers have small demand
A3	Hecker Pass Customers	• Large demand • High-profile customers	• Perceived quality concerns
Agr.	Expanded Agriculture	• Very large demand; can vary to meet supply • Can connect quickly • Use could allow SCRWA pond drying flexibility • Lowest cost to connect	• Uncertainty of implementation • Rate charged for agricultural use of recycled water is lower
B	Gavilan College Area	• Large demand • Dual-use right-of-way with bike path	• Potential extensive on-campus retrofits
C	First Street Loop	• Numerous small city users • Distribution loop	• High cost/return ratio
D	I.O.O.F. Avenue Spur	• Numerous small city users	• High cost/return ratio
E	Wren Avenue Spur	• Numerous small city users • Las Animas Park use	• High cost/return ratio
F	Highway 101	• Relatively large demand	• Need CalTrans maintenance support
G	Mantelli Spur	• Potential for expansion to future customers in area	• High cost/return ratio
H	Other Future Spurs	• Potential distribution loop	• High cost/return ratio
I	Morgan Hill	• Involves Morgan Hill with recycled water project	• High cost/return ratio

3.3.2 Projects Selected for Implementation

The evaluation of preliminary alternatives (Stage II screening) resulted in the selection of several customer groupings for implementation in the Master Plan. Projects were discussed and selected during a progress meeting with representatives of SCRWA, the District, and the City of Gilroy. The Stage II screening and selection process emphasized cost effectiveness and recycled water demand, while minimizing necessary distribution system expansion. The projects selected for implementation at this time include customer groupings A1, A2, A3, Agr., and B. These projects are discussed in more detail in Chapter 4. The selected projects have an estimated annual recycled water usage of 3,149 afy, more than quadruple the existing customers' recycled water use of 711 afy. Customer groupings C through I will be retained for potential future implementation as circumstances warrant.

3.3.3 Projects Not Selected for Implementation

The evaluation of all analyzed projects determined that customer groupings C through I were not selected for implementation in the Master Plan. Further explanation for excluding these projects is presented below.

3.3.3.1 Gilroy Projects not Selected

Customer groups C, D, E, G, and H consist of numerous small landscape irrigation customers spread throughout the established City of Gilroy downtown area. These customers would require an extensive distribution network constructed within the right-of-way of existing city streets, causing disruption and delays to city residents. Based on preliminary hydraulic modeling analysis, a minimum of 40,000 linear feet (LF) of 12-inch diameter pipeline would be necessary to distribute recycled water to these customers. At an estimated cost of $200/LF, the project cost for transmission pipeline alone is estimated to exceed $8,000,000. With a total annual recycled water demand of 339 afy, there is not sufficient recycled water demand to offset the costs of distribution. Therefore, customer groups C, D, E, G, and H were not selected for further study or implementation at this time.

Customer group F consists of landscape irrigation of Highway 101 medians and interchanges. As the medians are not currently irrigated, minimal CalTrans maintenance is required. Irrigation with recycled water would require maintenance by either CalTrans or the City of Gilroy, neither of which are prepared to do so at this time. In addition, recycled water use in this manner would not offset existing potable water use. Based on preliminary hydraulic modeling analysis, a minimum of 22,000 LF of 4-inch diameter pipeline would be necessary to distribute recycled water to this customer. At an estimated cost of $150/LF, the project cost for the transmission pipeline alone is estimated to exceed $3,300,000. With a total annual recycled water demand of 144 afy, there is not sufficient recycled water demand to offset the costs of distribution. Therefore, customer group F was not selected for further study or implementation at this time.

3.3.3.2 Morgan Hill Projects not Selected

Customer group I consists of two separate project alternatives. The first alternative is recycled water use at 20 identified sites in downtown Morgan Hill, supplied via a transmission pipeline from Gilroy. Approximately 70,000 feet of 12-inch diameter transmission pipeline would be necessary. At an estimated cost of $200/LF, the project cost for the transmission pipeline alone is estimated to exceed $14,000,000. With a total annual recycled water demand of 389 afy, there is not sufficient recycled water demand to offset the costs of distribution. Alternatively, a transmission pipeline from Gilroy could serve both downtown Morgan Hill customers and the AIM/Fry's Golf Course. This option would require approximately 70,000 feet of 24-inch diameter transmission pipeline and approximately 15,000 feet of 12-inch diameter distribution pipeline. A cost estimate was prepared in a preliminary manner for this alternative, similar to those prepared for the implemented projects in the Master Plan and is included in Appendix D. The recycled water delivery costs would be approximately $2,500 per acre-foot, an extremely high value compared to those of the selected projects. Therefore, a lengthy pipeline to serve downtown Morgan Hill customers is not selected for further study or implementation at this time.

The second Morgan Hill alternative is recycled water use solely at the AIM/Fry's Golf Course. Based on direction of the District, City of Gilroy, and City of Morgan Hill, this alternative was based on development of a scalping plant near the golf course. Membrane bioreactor (MBR) treatment would be the preferred treatment technology for the scalping facility due to effective water quality treatment, proven use, and small footprint. MBR is an emerging and promising technology for producing tertiary quality recycled water at a satellite scalping facility. The MBR process combines biological treatment with membrane separation to ensure compliance with unrestricted tertiary recycled water regulations. MBR treatment includes influent screening and grit removal, influent pumping, biological treatment, membrane filtration, and disinfection. All treatment processes are incorporated into a package facility located on a small footprint. Residual solids would be returned to the collection system for treatment at the SCRWA WWTP.

The location of the golf course at the fringe of developed Morgan Hill limits the potential locations for a scalping plant, which requires scalping a significant influent wastewater flow from the collection system. A scalping plant location at the southwest corner of the intersection of Hill Road and San Pedro Avenue was assessed. A wastewater flow of 300,000 gallons per day (gpd) was assumed available at this location, per Jim Ashcraft of the City of Morgan Hill. More detailed analysis of diurnal collection system flow was not conducted at this time, however in addition to meeting diurnal flow demands of the customer, sufficient flow must remain in the system to carry residual solids.

As the golf course has an estimated maximum month demand of 76 ac-ft, or 830,000 gpd, insufficient flow is available to meet the entire demand. This project would require approximately 9,500 feet of minimum 6-inch diameter pipeline, an MBR scalping plant to meet recycled water quality requirements, and treated water storage to meet diurnal

fluctuations in flow demand. Implementation of this alternative would result in reduced flows and increased loadings at the SCRWA WWTP equivalent to that treated by the scalping plant. At this time, this alternative is not selected for further study or implementation due to the fatal flaw of insufficient recycled water supply. However future conditions, such as increased feasibility of MBR treatment or customer demand for water supply, may warrant renewed evaluation and implementation.

Additional recycled water use from a potential southern Pajaro River pipeline is not incorporated in this Master Plan. Upon commencement of planning and design of this pipeline, which may not occur for several years, recycled water use along the proposed alignment should be considered.

All information for these analyzed projects not selected for implementation remains in the Master Plan for potential future use should conditions change. Hydraulic modeling analysis of these alternatives is included in the H2ONET model files.

RECOMMENDED CAPITAL IMPROVEMENT PROGRAM

The projects selected for implementation at this time include customer groupings A1, A2, A3, Agr., and B. The specific customers are defined in Table 4.3. The selected projects have an estimated annual recycled water usage of 3,149 afy, more than quadruple the existing customers' recycled water use of 711 afy. The remaining sections of the Master Plan focus on the phased implementation of the selected projects.

4.1 DESIGN APPROACH

The design approach for the capital improvement program includes design criteria for the sizing of main lines and laterals, storage tank capacity, pump station sizing, and system pressure requirements. Design criteria utilized for this project are based on requirements of the projects selected for implementation, and are summarized in Table 4.1. These design criteria form the basis of the hydraulic modeling analysis, which is discussed in Section 4.2.

Table 4.1 Design Criteria for Recycled Water Distribution System South County Recycled Water Master Plan Santa Clara Valley Water District/ South County Regional Wastewater Authority

Design Parameter	Value	Units
Total Customers	20	-
Flow - Average Annual Demand	2.8 / 3,149	mgd / acre-feet per year
Flow - Maximum Month Demand	7.1 / 649	mgd / acre-feet per month
Flow - Peak Day Demand	9.3 / 29	mgd / acre-feet per day
Flow - Peak Hour Demand	12,536	gallons per minute (gpm)
Minimum Distribution System Pressure	40	pounds per square inch (psi)
Maximum Distribution System Velocity	10	feet per second (fps)
Maximum Head Loss per 1000 feet of Pipeline	10	feet per 1000 feet
Approximate Total Pipeline Length	19	miles
SCRWA WWTP Onsite Storage Required	6	million gallons

4.2 HYDRAULIC MODELING ANALYSIS

Hydraulic network analysis is a powerful tool used in all aspects of water distribution planning, design, operation, management, emergency response, system reliability analysis, fire flow capacity evaluation, as well as water quality simulations. The recycled water hydraulic model was developed to evaluate the adequacy of the existing distribution system

and in planning future recycled water facilities. The model analyzes the overall hydraulic capacity of the recycled water distribution system, based on a general layout of distribution piping and customer diversions. Minor modifications or changes to the pipeline alignment will not significantly affect the model results.

The analysis initially included all quantified potential customers, but only includes projects identified for implementation for final analysis and determination of required distribution facilities. Based on ongoing development of potential recycled water customers, the Calpine Gilroy Power Plant was added after completion of the hydraulic modeling analysis. The Calpine Gilroy Power Plant is an important and feasible potential customer, and serving this customer recycled water will affect the hydraulic capacity of the existing and proposed distribution system. As with any plan, changes are to be expected. However, prior to design of the main transmission pipeline, it is advisable to expand the hydraulic model to include this customer and any other new customers identified in the intervening period. Documentation of model analysis for distribution to all analyzed projects is included in the H2ONET model. This section briefly discusses the analysis, assumptions, and results.

4.2.1 Elements of the Hydraulic Model

The recycled water hydraulic model combines information on the physical and operational characteristics of the water system, and performs calculations to solve a series of mathematical equations to simulate flows in pipes and pressures at nodes. Elements comprising the computer modeling process are: digitizing the water system, defining pipes and nodes, and allocating water demands.

In order to clarify discussion of the modeling results, the existing and proposed system was divided into Segments numbered 1 through 13. The alignment of the main transmission pipeline expansion will be via City streets and through the Glen Loma Ranch Development. The pipeline segments utilized for modeling purposes are summarized on Figure 4.1 and defined below:

- Segment 1 (Existing): East on Southside Drive then north to Calpine diversion, then west to Monterey Road
- Segment 2 (Existing): From Monterey Road to booster pump station
- Segment 3 (Existing): From booster pump station to Eagle Ridge diversion
- Segment 4 (Existing): From Eagle Ridge diversion to Hoylake Storage Tank
- Segment 5 (Existing): Eagle Ridge diversion, north to Hecker Pass Highway then west to Gilroy Golf Course
- Segment 6 (Proposed): Monterey Road south to Gilroy Sports Park
- Segment 7 (Proposed): From Gilroy Sports Park, then parallel bike trail right-of-way to Gavilan College.
- Segment 8 (Proposed): From WWTP southwest, then south to Obata Farms diversion

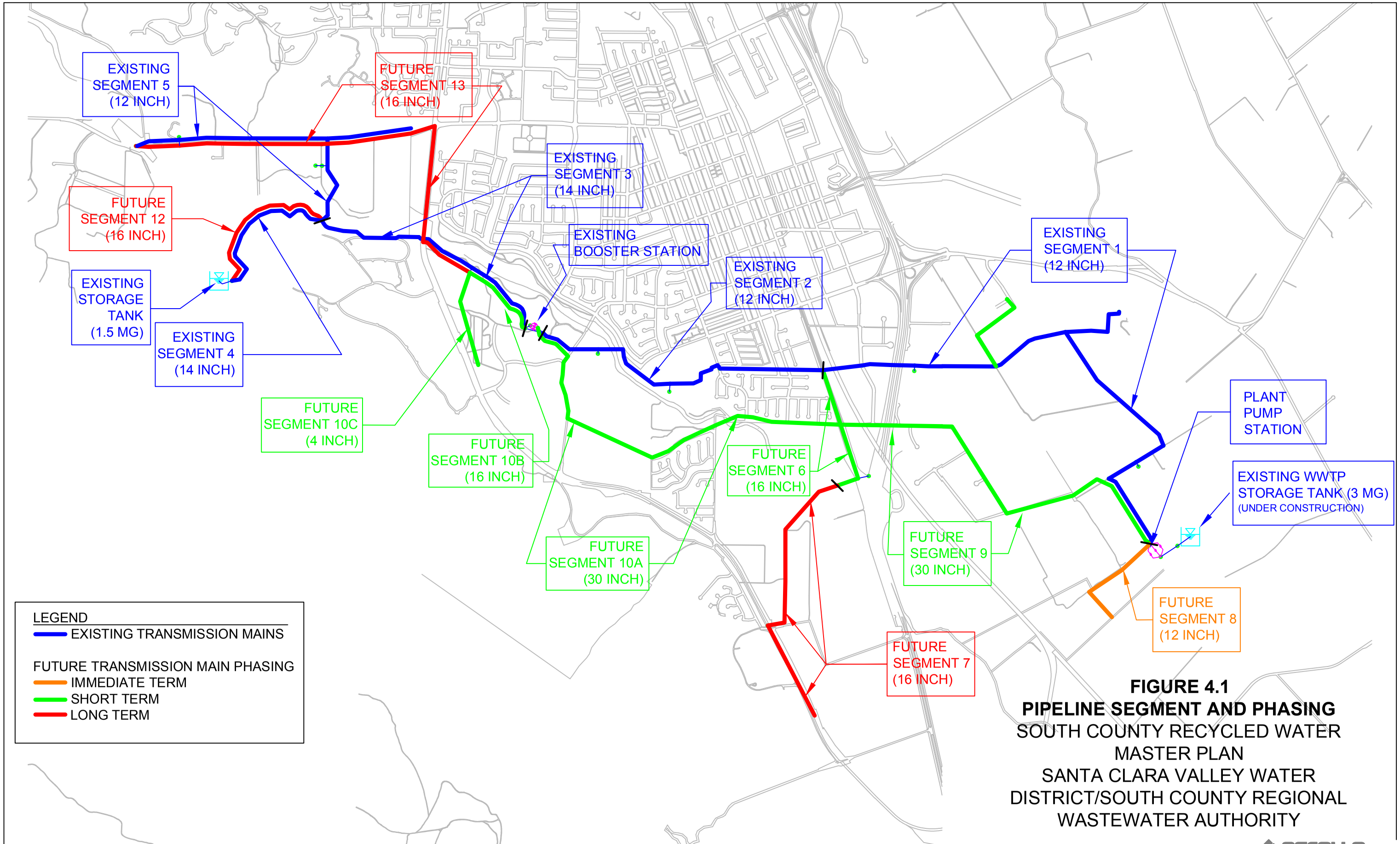

FIGURE 4.1
PIPELINE SEGMENT AND PHASING
SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

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- Segment 9 (Proposed): From WWTP west along Southside Drive
- Segment 10 (Proposed): Along Luchessa through Glen Loma Ranch
- Segment 11 (Proposed): Through Glen Loma Ranch
- Segment 12 (Proposed): Parallel Segment 4
- Segment 13 (Proposed): Parallel Segment 5

4.2.2 Analysis Criteria and Assumptions

The recycled water system was evaluated using a 72-hour extended period simulation (EPS) analysis and the results were based on the analysis and design criteria listed in this section and discussed by the American Water Works Association's Distribution Network Analysis for Water Utilities Manual, AWWA M32. The criteria included service pressures, transmission main velocities, and headloss. In general, service pressures were maintained greater than 40 pounds per square inch (psi), maximum transmission main velocities were kept below 10 feet per second (fps) and head loss per 1000 feet of transmission main was kept below 10 feet.

Model demands were based on peak hour demands for selected projects from Table 3.3. Five diurnal patterns were applied to the demands, which identify daily use distribution for each customer. The daily use distributions are summarized in Figure 3.3.

The assumptions made during the analysis of the recycled water distribution system are briefly discussed below. Six million gallons per day (4,166 gallons per minute [gpm]) can be diverted from the WWTP to the recycled water distribution system. The modeled flow from the WWTP was regulated not to exceed 4,166 gpm during all simulations. All future scenarios included the addition of 3.0 million gallons (MG) of storage currently under construction at the WWTP, and an additional 3.0 MG (for a total of 6.0 MG) was added to the storage capacity at the WWTP for the full build out scenario.

4.2.3 Analysis Scenarios

Multiple scenarios were established in order to evaluate the recycled water system from the current system to build out. Five scenarios were identified; the first is for the existing system and the other four include various additional phases of system development. The future scenarios are based on the phased addition of customer groupings. Scenarios 1 and 2 depict the immediate-term CIP, Scenarios 3 and 4 depict the short-term CIP, and Scenario 5 depicts the long-term CIP.

Baseline Scenario/Scenario 1

In this scenarios, the existing system includes Segments 1 through 5 and has a current demand of 2,237 gpm. The existing users include Christmas Hill Park, the Eagle Ridge Development, the Calpine Peaker Plant, and Obata Farms near the WWTP. The Baseline Scenario models the existing system without any improvements. Scenario 1 models the

existing system demands, with facility improvements made in order to satisfy the analysis criteria presented above.

Scenario 2

Scenario 2 consists of the existing system plus the addition of local farmland irrigation at Obata Farms for the expanded area to the southwest of the WWTP. The Obata farms demand adds 2,237 gallons per minute (gpm) to the base demand. This scenario utilizes a new distribution pipeline (Segment 8), which runs west from the WWTP approximately 3,000 feet to the Obata Farms diversion.

Scenario 3

Scenario 3 adds to the Scenario 2 demands by including demand group A1. Group A1 increases the existing system demand by a total of 5,559 gpm. Group A1 includes the Gilroy Sports Park, Gilroy High School, Ascencion Solorsano Middle School, the Gilroy Golf Course, and the Glen Loma Ranch Development. These additions resulted in the need to add Segment 6. Segment 6 runs south on Monterey Rd. to the Gilroy Sports Park.

Scenario 4

Scenario 4 adds Demand Group A2 and A3, not including the Calpine Gilroy Power Plant. These 2 groups add an additional 8,198 gpm to the existing system demands. 2,471 gpm of this is located at Bonfante Gardens, Goldsmith Seeds facilities, and the Hecker Pass Development located on the western portion of the system near Hecker Pass Highway (Segment 5). The remaining demand is attributed to the Cintas Laundry and the Inland Packaging facility in the eastern portion of the system off Segment 1.

Scenario 5

The fifth scenario includes a new transmission main running south from Segment 6. This new segment, Segment 7, connects the demands from Group B, an additional 1,414 gpm and includes Gavilan College, Gavilan Sports Park and Gavilan Golf Course.

4.2.4 Analysis Results

The results of the modeling analysis for this project are presented in Table 4.2, which is divided into five sections. The first section, Modeling Scenarios, defines each analysis scenario used in the model. The second section, Supply, indicates the available flow from the WWTP that can be diverted to the recycled water distribution system. The third section, Demands, indicates the demand groups that are allocated to each scenario and the additional and total demands allocated in each scenario. The fourth section, Facility Improvements, details the proposed improvements needed in order to meet the established modeling criteria discussed above. The proposed improvements include pumping capacity, storage capacity, and pipeline sizing. The last section, Model Results, gives the analysis results and indicates the maximum and minimum pressures, maximum velocities, and

TABLE 4.2 **Hydraulic Modeling Results**
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Modeling Scenarios	Supply		Demands			Facility Improvements																		Model Results		
						Pump and Storage Improvements				Transmission Main Improvements[3]																
	Recycled Water Flow		Demand Group	Maximum Day Demand	Peak Hour Demand	Plant Pump Station Capacity[1]	Booster Station Capacity[2]	Storage Volume		Segment 1 15,100 ft	Segment 2 8,550 ft	Segment 3 6,820 ft	Segment 4 4,370 ft	Segment 5 7,240 ft	Segment 6 1,525 ft	Segment 7 7,041 ft	Segment 8 3,000 ft	Segment 9 15,100 ft	Segment 10 8,550 ft	Segment 11 6,820 ft	Segment 12 4,370 ft	Segment 13 7,240 ft	Pressures	Maximum Velocities	Maximum Headloss
								Hoylake	WWTP																	
	(gpm)	(mgd)		(gpm)	(gpm)	(gpm)	(gpm)	(MG)	(MG)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(in)	(psi)	(fps)	(HL/1000ft)
Baseline Scenario																										
Existing System	4,166	6.0	Existing	1,631	2,237	3,100	3,475	1.5	0	12	12	14	14	12	None	None	None	None	None	None	None	None	-29 to 136	6.8	24.1
Scenario 1 (Immediate Term)																										
Baseline Scenario	4,166	6.0	Existing	0	0	0	0	0	3.0									16	16							
Proposed System				1,631	2,237	3,100	3,475	1.5	3.0									16	16				54 - 101	6.7	6.3
Scenario 2 (Immediate Term)																										
Baseline Scenario + Agricultural Demands.	4,166	6.0	Existing + Agr	1,678	2,237	1,200	0	0	3.0								12	18	18							
Proposed System				3,309	4,474	4,300	3,475	1.5	3.0								12	18	18				41 - 85	7.5	9.3
Scenario 3 (Short Term)																										
Baseline Scenario + Agricultural, and Group A1 Demands.	4,166	6.0	Existing + Agr, A1	2,785	5,559	4,100	0	0.0	3.0						16		12	20	20	12	12					
Proposed System				4,416	7,796	7,200	3,475	1.5	3.0						16		12	20	20	12	12		41 - 95	6.4	9.3
Scenario 4 (Short Term)																										
Baseline Scenario + Agricultural, and Group A1, A2, A3 Demands.	7,638	11.0	Existing + Agr, A1, A2, A3	3,679	8,198	5,300	0	0.0	3.0						16		12	24	24	16	16	16				
Proposed System				5,310	10,435	8,400	3,475	1.5	6.0						16		12	24	24	16	16	16	44 - 94	6.4	9.3
Scenario 5 (Long Term)																										
Baseline Scenario + Agricultural, and Group A1, A2, A3, B Demands.	7,638	11.0	Existing + Agr, A1, A2, A3, B	4,150	9,612	6,500	1,300	0.0	3.0						16	16	12	30	30	16	16	16				
Proposed System				5,781	11,849	9,600	4,775	1.5	6.0						16	16	12	30	30	16	16	16	41 - 86	7.6	9.8

Notes:
1. Includes one 1,200 gpm standby pump.
2. Includes one 875 gpm standby pump
3. Segment Descriptions
   - Segment 1: East on Southside Drive then north to Calpine diversion, then west to Monterey Road.
   - Segment 2: From Monterey Road to Booster Station
   - Segment 3: From Booster Station to Eagle Ridge diversion
   - Segment 4: From Eagle Ridge diversion to Hoylake Storage Tank
   - Segment 5: Eagle Ridge diversion, north to Hwy 152 then west to Gilroy Golf
   - Segment 6: Monterey Road south to Gilroy Sports Park
   - Segment 7: From Gilroy Sports Park, then parallel bike trail right-of-way to Gavilan College.
   - Segment 8: From WWTP southwest, then south to Obata Farms diversion.
   - Segment 9: Parallel Segment 1
   - Segment 10: Parallel Segment 2
   - Segment 11: Parallel Segment 3
   - Segment 12: Parallel Segment 4
   - Segment 13: Parallel Segment 5

maximum headloss for each scenario. The proposed recycled water distribution system improvements are summarized in Figure 4.2.

As can be seen in Table 4.2, the existing system has insufficient capacity for existing peak hour demands, as shown by the negative pressure developed in the baseline scenario. Customer experience with low pressure in the distribution system upstream of the booster pump station shows that this model result is correct. Modeling the addition of all selected customer groups shows that the existing distribution system is insufficient to meet peak demands, requiring increases in WWTP pumping capacity, booster pump station capacity, reservoir storage, and pipe sizing. Many of the largest proposed customers are located at the far western end of the distribution system, resulting in the necessary system expansion.

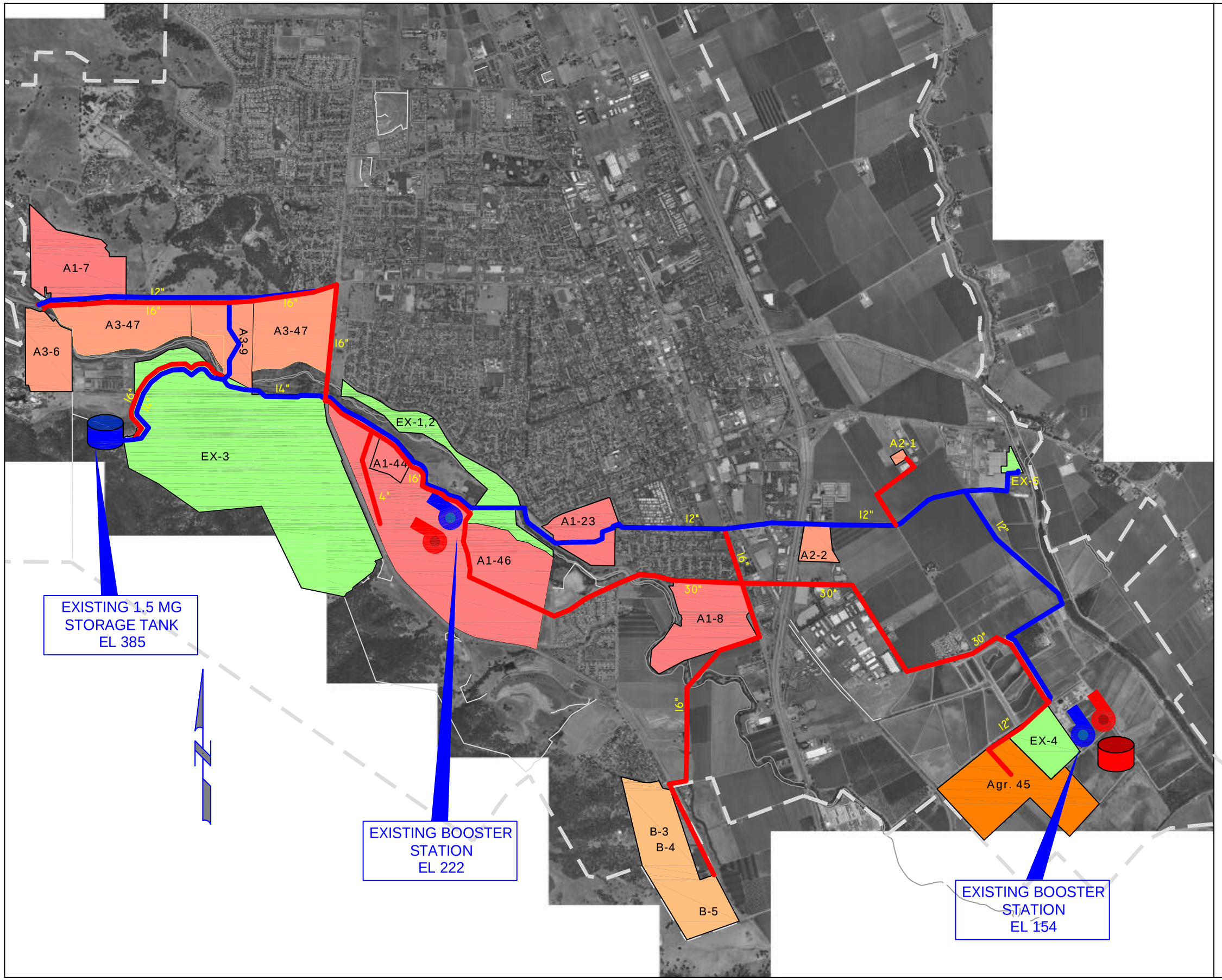
4.3 CAPITAL IMPROVEMENT PROGRAM

The capital improvement program (CIP) for the South County Recycled Water Master Plan is planned in three phases. The phasing of individual projects and development of the immediate-term, short-term, and long-term CIP is discussed below.

4.3.1 Project Phasing

A preliminary comparison of recycled water production and potential customer connection phasing was developed (i.e.: recycled water supply versus demand). For this assessment, the planned expansion of tertiary filtration at SCRWA to increase recycled water production capacity to 6 mgd was assumed to be complete and operational by the end of 2005. Recycled water usage was based on the estimated maximum month usage to ensure sufficient recycled water production to meet demand, given limited existing storage. Existing customer maximum month demand of 1.8 mgd was used as a baseline recycled water usage, with each additional customer grouping adding cumulatively.

Each customer grouping was added as a phased connection at a feasible future date. The estimated date of connection for each customer grouping is preliminary and may be changed due to implementation factors, environmental requirements, or due to other circumstances. Design of SCRWA WWTP tertiary facilities expansion to 6 mgd tertiary recycled water capacity, including pump stations, reservoir storage, and the agricultural fields' pipeline is ongoing and construction is expected to be complete by the end of 2005. Construction of the pipeline to agricultural fields to the west of the plant will allow increased recycled water use by local farmland by 2006. At this time, it is estimated that Group A1 and Calpine Gilroy Power Plant usage will be added in 2007. Recycled water use at the Gilroy Sports Park and Glen Loma Ranch Development will not begin until construction of the projects. It is estimated that connections will occur for Group A2 excluding Calpine Gilroy Power Plant in 2009. Groups A3 and B are planned to be connected in 2010 or beyond. Increased agricultural usage at local farmlands, including Obata Farms, could supplement recycled water usage that is less than production capacity.



LEGEND

- GROUP EX (EXISTING)
- GROUP A1 (TURNOUT)
- GROUP A2 (TURNOUT)
- AGRICULTURAL
- GROUP B (COLLEGE)
- 12" EXISTING PIPE AND SIZE
- 12" PROPOSED PIPE AND SIZE
- EXISTING STORAGE TANK
- PROPOSED STORAGE TANK
- EXISTING PUMP/STATION
- PROPOSED PUMP/STATION

FIGURE 4.2
PROPOSED RECYCLED WATER DISTRIBUTION SYSTEM
SOUTH COUNTY
RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL
WASTEWATER AUTHORITY

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Groups A1, A2, A3, and increased agricultural use are independent of other project groups. Group B relies on the planned expansion of the recycled water distribution pipeline through Gilroy Sports Park, part of Group A1.

Table 4.3 summarizes the customers planned to be connected to the distribution system in each phase of the Capital Improvement Program.

Table 4.3 Capital Improvement Program Summary
South County Recycled Water Master Plan
Santa Clara Valley Water District/
South County Regional Wastewater Authority

Capital Improvement Program Phase	Time Period	Customers Included	Total Number of Customers	Average Annual Demand (afy)
Existing Customers	--	Existing	5	711
Immediate-Term	One Year	Agr.: Local Farmlands	6	1,566
Short-Term	Five Years	A1, A2: Gilroy High, Ascencion Solorsano Middle, Gilroy Golf Course, Gilroy Sports Park, Glen Loma Ranch Development, Cintas Laundry, Inland Packaging, Calpine Gilroy Power Plant	14	2,501
Long-Term(1)	More than Five Years	A3, B: Goldsmith Seeds, Bonfante Gardens, Hecker Pass Development, Gavilan College, Gavilan Sports Park, Gavilan Golf Course	20	3,149

Notes:
(1) The Capital Improvement Program includes projects selected for implementation. Additional identified customers, expanded agricultural use to the south of the WWTP, and recycled water use in the Morgan Hill area could be added to the Master Plan as future conditions dictate.

Figure 4.3 summarizes the pipeline alignment selected for implementation. Final selection of the alignment for the main transmission pipeline expansion will be conducted during predesign. Alignments to serve selected customers are as defined in Section 3.2.4 of this report.

Figure 4.4 summarizes the conceptual project connection phasing, in relation to recycled water supply and demand. As shown on Figure 4.4, implementation of Groups A3 and B

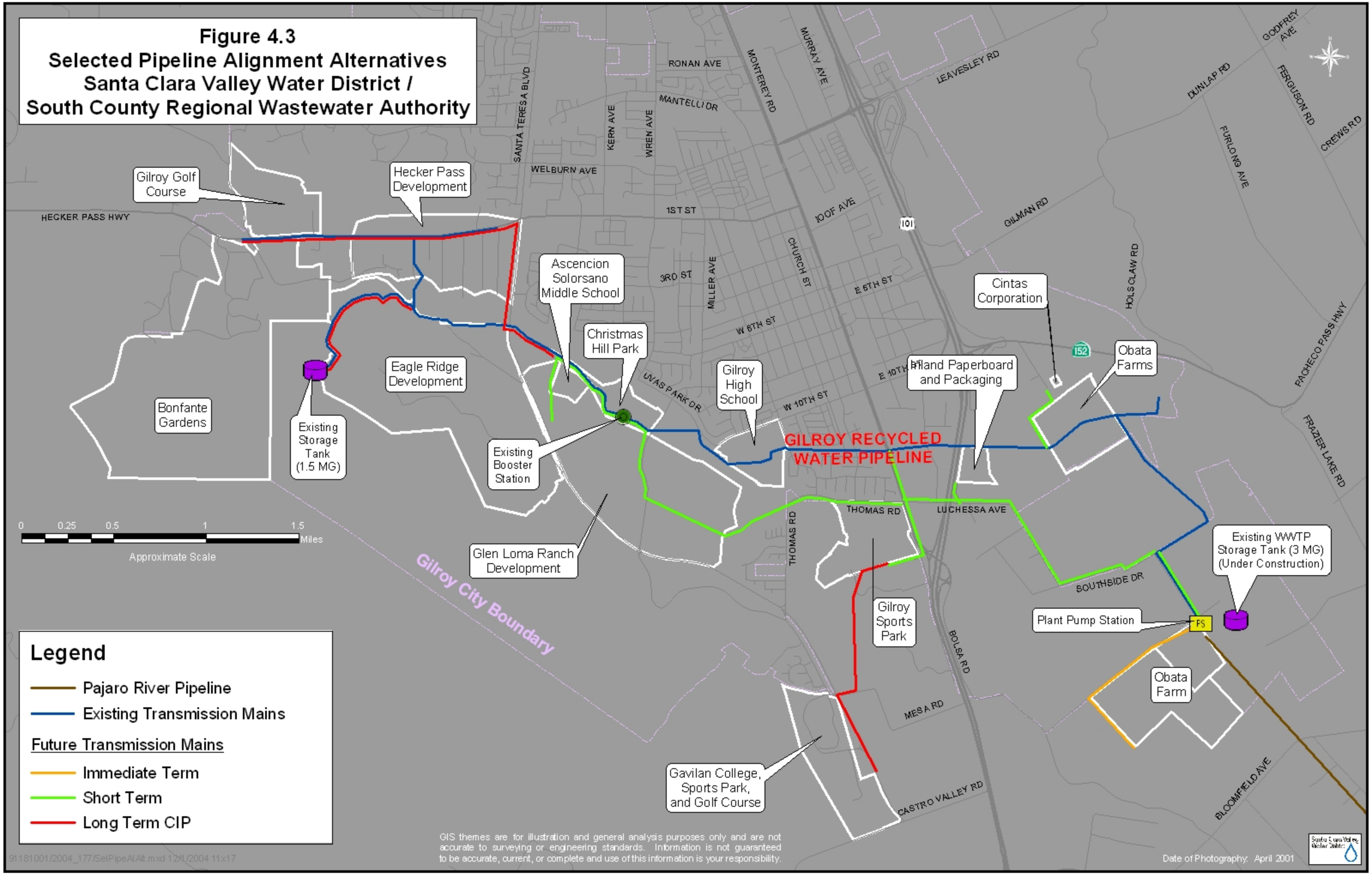
Figure 4.3
Selected Pipeline Alignment Alternatives
Santa Clara Valley Water District /
South County Regional Wastewater Authority
Gilroy Golf Course
Hecker Pass Development
HECKER PASS HWY
SANTA TERESA BLVD
KERN AVE
WREN AVE
RONAN AVE
MANTELLI DR
MONTEREY RD
MURRAY AVE
LEAVESLEY RD
DUNLAP RD
GODFREY AVE
FERGUSON RD
CREWS RD
FURLONG AVE
WELBURN AVE
1ST ST
IOOF AVE
101
GILMAN RD
HOLSCLAW RD
Ascencion Solorsano Middle School
3RD ST
MILLER AVE
CHURCH ST
E 6TH ST
W 6TH ST
Cintas Corporation
Christmas Hill Park
152
Obata Farms
PACHECO PASS HWY
Eagle Ridge Development
Bonfante Gardens
Existing Storage Tank (1.5 MG)
LIVAS PARK DR
Gilroy High School
E 10TH ST
Pland Paperboard and Packaging
W 10TH ST
GILROY RECYCLED WATER PIPELINE
Existing Booster Station
FRAZIER LAKE RD
THOMAS RD
LUCHESSA AVE
0 0.25 0.5 1 1.5 Miles
Approximate Scale
Glen Loma Ranch Development
Gilroy City Boundary
Existing WWTP Storage Tank (3 MG) (Under Construction)
SOUTHSIDE DR
Gilroy Sports Park
Plant Pump Station
PS
BOLSA RD
Obata Farm
MESA RD
Gavilan College, Sports Park, and Golf Course
CASTRO VALLEY RD
BLOOMFIELD AVE
Legend
Pajaro River Pipeline
Existing Transmission Mains
Future Transmission Mains
Immediate Term
Short Term
Long Term CIP
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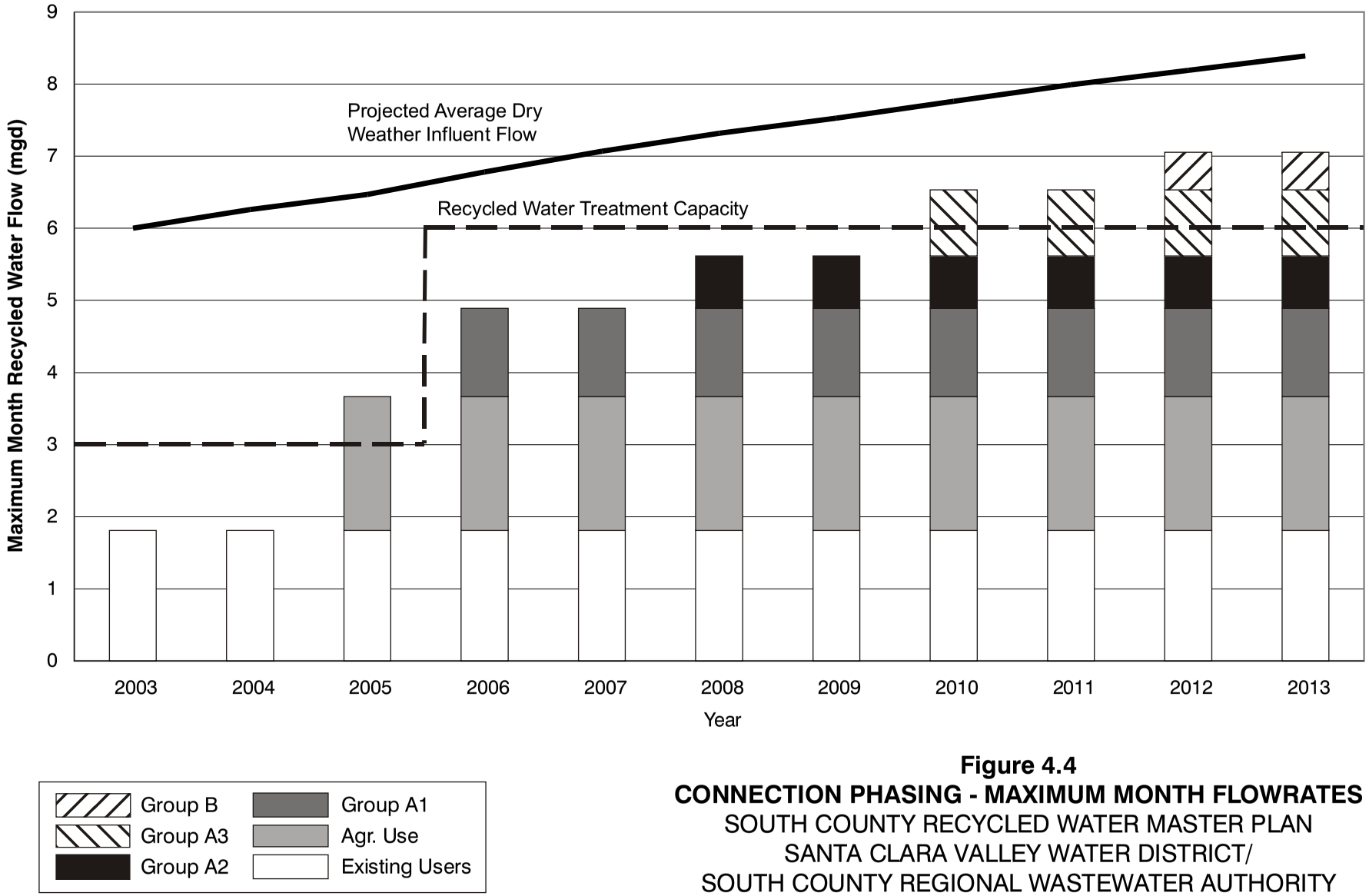

Figure 4.4
CONNECTION PHASING - MAXIMUM MONTH FLOWRATES
SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

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exceeds the treatment capacity of 6 mgd. During planning for implementation of this additional use, recycled water use in the interim should be reviewed and tracked to assess recycled water supply capacity. Treatment capacity could be expanded as necessary, or customer agreements signed with agricultural users could grant priority to other customers that rely solely on recycled water.

4.3.2 Immediate-Term Capital Improvement Program

Based on the results of the Stage II screening, Group Agr. was identified to be included as the recommended immediate-term CIP. Increasing recycled water use for local farmlands near the SCRWA WWTP is the most feasible project and implementation can begin within the next year. One of the main reasons this customer can be added immediately is because a separate distribution pipeline will serve the area. In other words, this user is not dependent on upsizing the existing distribution system.

The immediate term CIP includes construction of a separate distribution pipeline to serve agricultural fields to the west of the WWTP to increase capacity to serve recycled water to Obata Farms. The pipeline will be routed west and then south through agricultural fields adjacent to the WWTP. Based on modeling results, the pipeline will be sized at 12-inch diameter and have a total length of 3,000 feet.

Also included as part of the immediate-term CIP will be retrofitting and rehabilitation of the existing Hecker Pass pipeline. The pipeline segment north through Goldsmith Seeds property and west along Hecker Pass Highway was not retrofitted as part of the previous retrofit project to rehabilitate the main transmission pipeline. Retrofit during the immediate-term CIP will allow recycled water to be delivered to the Gilroy Golf Course and other Hecker Pass area customers pending expansion of the main pipeline in the short-term CIP.

The immediate-term CIP also requires the completion of a 3 million gallon storage reservoir and an additional 3 mgd of distribution pumping capacity at the SCRWA WWTP. Onsite storage and distribution pumping at the WWTP are being designed and constructed under a separate project, with the CEQA, design, and construction the responsibility of SCRWA.

4.3.3 Short-Term Capital Improvement Program

Based on the results of the Stage II screening, Groups A1 and A2 (i.e., Minimal Capital Cost and Industrial Customers groups) were identified to be included as the recommended short-term CIP. These projects can feasibly be implemented within the next five years based on the projected supply and distribution system. Implementation of recycled water use at Gilroy Sports Park and Glen Loma Ranch Development is contingent upon construction of the park facility, development, and planned pipelines. Until these facilities reach buildout capacity, it may be possible to utilize additional recycled water at existing local farmlands with turnouts along the existing main pipeline to maximize total annual usage.

Distribution system improvements for the short-term CIP will include pipelines, storage, and pumping improvements. The main pipeline alignment will either parallel the existing main pipeline or be routed through the Glen Loma Ranch Development. The difference in these alternatives is 2000 feet. The longer alternative of paralleling the existing pipeline is used for cost estimating purposes.

The short-term CIP includes construction of approximately 16,000 feet of 16-inch diameter pipeline, approximately 24,000 feet of 30-inch diameter pipeline, a second 3 million gallons of onsite treated recycled water storage capacity (for a total of 6 million gallons), and an additional 6 mgd of distribution pumping capacity (for a total of 9 mgd of new capacity).

4.3.4 Long-Term Capital Improvement Program

Groups A3 and B (Hecker Pass customers and Gavilan College) are included in the long-term capital improvement program. These projects will be implemented beyond the next five years, pending necessary retrofits and distribution system expansion. The long-term CIP could be updated in the future to include other additional customers in the Gilroy and Morgan Hill area as they develop. Potential projects that could be added to the long-term CIP in the future could include a southern pipeline to the Pajaro River, additional usage at proposed residential developments, and recycled water usage in Morgan Hill. At this time, these other projects are not feasible based on the Stage II screening in section 3.3.

Distribution system improvements for the long-term CIP will include extension of the Gilroy Sports Park pipeline to serve the Gavilan College area and additional distribution piping in the Hecker Pass area. The pipeline alignment will cross Uvas Creek at the proposed hiking/biking trail bridge, continue along the trail right-of-way until Mesa Road, and turn south along Santa Teresa Boulevard. Based on modeling results, the pipelines will be 16-inch diameter and have a total length of 14,000 feet.

The long-term CIP also includes expansion of booster pump station with an additional 2 mgd capacity.

Table 4.4 summarizes the phased CIP increases in recycled water demand and distribution system improvements.

Figure 4.5 summarizes the project phasing into a detailed implementation schedule, which includes planning, design, construction, environmental compliance, and public involvement steps for each project. As seen in the figure, the next steps of the project will include predesign and design for distribution components of the Master Plan.

The implementation of this Master Plan may deviate from the proposed phasing due to changes in project conditions, customer needs, and the identification of other feasible projects.

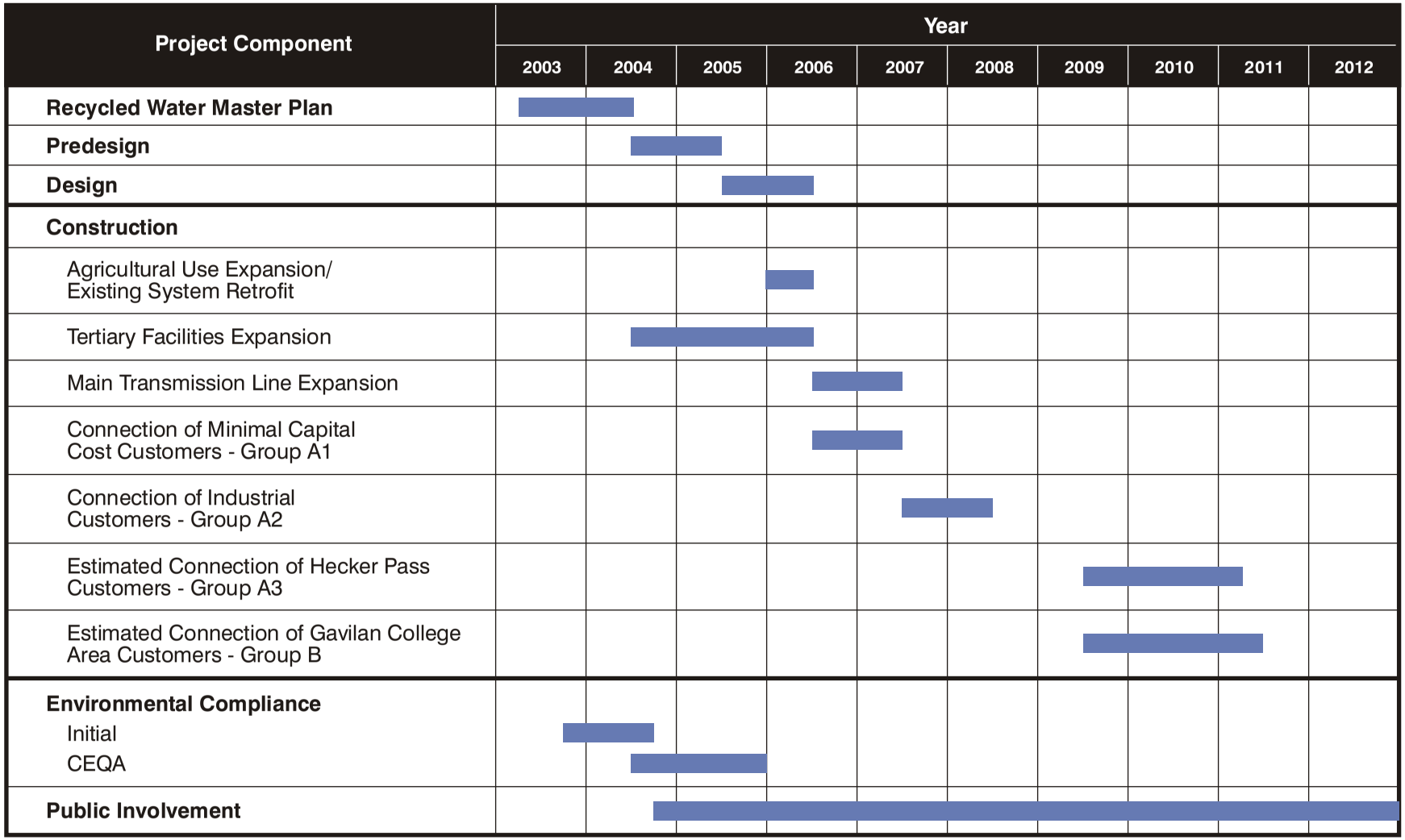

Figure 4.5
IMPLEMENTATION SCHEDULE
SOUTH COUNTY RECYCLED WATER MASTER PLAN
SANTA CLARA VALLEY WATER DISTRICT/
SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

scv604f7-6775.cdr

Table 4.4 Capital Improvement Program - Recycled Water Demand and Distribution System Improvements South County Recycled Water Master Plan Santa Clara Valley Water District/ South County Regional Wastewater Authority			
Capital Improvement Program Phase	**Maximum Month Demand (mgd)**	**Maximum Day Demand (mgd)**	**Distribution System Improvements**
Existing	1.8	2.3	-
Immediate-Term (One year)	3.7	4.8	3,000 feet of 12-inch diameter pipeline, retrofit existing Hecker Pass pipeline, 3-MG storage reservoir, 3-mgd on-site WWTP pump station
Short-Term (Next five years)	5.6	7.4	16,000 feet of 16-inch diameter pipeline, 24,000 feet of 30-inch diameter pipeline, 3-MG storage reservoir, 6-mgd on-site WWTP pump station
Long-Term (Beyond five years)	7.1	9.3	14,000 feet of 16-inch diameter pipeline, 2-mgd booster pump station expansion

4.4 COST ESTIMATES AND OTHER IMPLEMENTATION FACTORS

4.4.1 Capital and Project Costs

Project costs include estimated costs of construction, engineering design, construction management and inspection, and contingencies for estimating and construction, where applicable. Construction costs are based on the Engineering News-Record Construction Cost Index (ENRCCI) for San Francisco, a value of 8107 for May 2004. An estimating contingency of 20 percent of estimated capital costs and construction contingency of an additional 20 percent are assumed. Administration, legal, planning, design, and construction management costs are estimated to be 30 percent of the total construction cost at the basis of the study. Costs to achieve CEQA compliance have not been considered here.

Cost summary tables are presented below. A detailed cost breakdown is included in Appendix D. Planning-level estimates of project and capital costs of the immediate-term, short-term, and long-term CIPs are provided in Table 4.5. The costs for each CIP phase are incremental, meaning for example that the cost for the short-term implementation plan is separate from and does not include the costs associated with the immediate-term implementation plan.

Table 4.5 Estimated Project Costs for the Capital Improvement Program South County Recycled Water Master Plan Santa Clara Valley Water District/ South County Regional Wastewater Authority			
ENRCCI (SF) May 2004 = 8107	**Capital Improvement Program Phase**		
Description	**Immediate-Term**	**Short-Term(1)**	**Long-Term(1)**
Customer Connections	$4,000	$22,000	$22,000
Customer Retrofits	$0	$105,000	$225,000
Distribution System(4)	$754,000	$6,858,000	$2,885,700
Subtotal(3)	$758,000	$6,988,000	$3,133,000
Estimating Contingency (20%)	$152,000	$1,398,000	$627,000
Construction Contingency (20%)	$182,000	$1,677,000	$752,000
Pumping and Storage(3)	$2,510,000	$3,310,000	--
Total Construction Cost at Basis of Study	$3,600,000	$13,400,000	$4,500,000
Admin, Legal, Planning, Design, and Construction Management (30%)	$1,100,000	$4,400,000	$1,350,000
Total Project Cost(2)	**$4,700,000**	**$17,400,000**	**$5,900,000**
Project Cost for the Entire Proposed CIP	**$28,000,000**		

Notes:
(1) Cost estimates are incremental, i.e. long-term plan costs do not include the short-term or immediate-term costs.
(2) Project costs do not include cost of California Environmental Quality Act compliance.
(3) Subtotal of capital costs does not include pumping and storage costs, as these cost estimates already include contingencies and are based on MWH's 50% design cost estimates for the SCRWA tertiary treatment expansion.
(4) Pipeline costs based on unit costs from Harris and Associates' estimates for water pipeline construction in the City of Gilroy.

Capital costs of the facilities are divided into the following elements:

- Customer Connections
- Customer Retrofits
- Distribution System
- Pumping and Storage

Each element is discussed below. Cost estimates were based on previous project experience.

4.4.1.1 Customer Connections

Connections are required for serving recycled water from the distribution pipelines to customer properties. A total of 13 connections are assumed for the complete project. Items included in the connection cost are: tapping the distribution mains and installing service laterals, meters, pressure reducing valves (PRVs), and a backflow prevention device on the potable water system. It is assumed that the average size for laterals, meters, and PRVs will be one and one half inch. Customer connection costs are estimated to be $1,600 each plus $2,000 each for the installation of a backflow prevention device.

4.4.1.2 Customer Retrofits

Retrofit costs are associated with separating the customer's existing water system from a new recycled water system. An example would be a park where restroom and drinking fountain water supply pipes would need to be isolated from an existing irrigation system. Additional costs include posting signs that identify recycled water is being used. Customer retrofits are one time costs and are a function of existing irrigation systems at each individual site. If the site has existing separate systems, then the retrofit cost is assumed to be zero.

Retrofits are not necessary at the local farmlands, Ascencion Solorsano Middle School, Glen Loma Ranch Development, Gilroy Sports Park, and Hecker Pass Development. Retrofits are necessary at Gilroy High, Gilroy Golf Course, Cintas Laundry, Inland Packaging, Bonfante Gardens, Goldsmith Seeds, Gavilan Golf Course, Gavilan Sports Park, and Gavilan College. Retrofits for most customers were estimated at $25,000 based on customer knowledge and system connection requirements. Retrofits for Gilroy Golf Course were estimated at $5,000 based on previous recycled water usage and customer contact. Retrofits for Gavilan College irrigation were estimated at $75,000 based on customer contact and extensive irrigation system separation necessary.

4.4.1.3 Distribution System

Construction costs for the distribution system include pipe material, excavation, installation, bedding material, backfill material, transport, and paving where applicable. Valves and appurtenances are included in the cost estimate. The costs of acquiring easements for pipeline construction are not included in this estimate, although most distribution pipeline routings are within existing City street right-of-way or existing District right-of-way. Cost estimates for pipeline construction were based on unit costs from Harris and Associates for the water pipelines within the City of Gilroy. Pipeline capital costs for 6-inch and smaller pipelines was estimated to be $81 per linear foot (LF), 12-inch pipelines to be $108/LF, 16-inch pipelines to be $130/LF, and 30-inch pipelines to be $191/LF. Retrofitting of the existing Hecker Pass pipeline has an estimated capital cost of $430,000 based on previous pipeline segment retrofit costs.

4.4.1.4 Pumping and Storage Costs

Estimated capital costs for recycled water pump stations and onsite reservoir storage is based on 50 percent Design Construction Cost Estimates from the SCRWA Filter Plant Expansion. Each 3 mgd pump station is estimated to cost $800,000, including a 20 percent contingency. Each 3 million gallon storage reservoir and associated pump station is estimated to cost $1,710,000, including a 20 percent contingency. For the purposes of this cost estimate, these costs are not subject to the additional 20 percent estimating contingency. The immediate-term CIP includes installation of a 3 mgd pump station and a 3-MG storage reservoir. The long-term CIP includes installation of a second 3 mgd pump station and a second 3-MG storage reservoir, doubling pumping capacity to 6 mgd and storage capacity to 6 MG. On site expansion of SCRWA tertiary treatment facilities, distribution pumping, and storage are considered in the cost estimates for the Master Plan, however design is considered under a separate effort.

4.4.2 Operation and Maintenance Costs

Operation and Maintenance (O&M) costs are comprised of the following items:

- Purchased Power for Pumping
- Distribution System Maintenance
- General Administration

No additional labor costs are included as treatment plant facilities and operation are considered under a separate cover.

4.4.2.1 Purchased Power

Average recycled water flowrate was used to determine power consumption. Costs for electricity are based on a unit price of $0.14 per kilowatt-hour provided by the District.

4.4.2.2 Distribution System Maintenance

The average annual maintenance expense for the recycled water distribution system was based on an assumed value of $2,800 per mile, based on average industry data.

4.4.2.3 General Administration

General administration includes costs associated with customer accounting, meter reading, and other miscellaneous costs associated with operating a water system. General administration costs are estimated at $1,500 per mile of distribution pipeline per year.

Estimates of the O&M costs of the immediate-term, short-term, and long-term CIPs are provided in Table 4.6. A detailed cost breakdown is included in Appendix D.

Table 4.6 Estimated Operation and Maintenance Costs[1] South County Recycled Water Master Plan Santa Clara Valley Water District/ South County Regional Wastewater Authority				
ENRCCI (SF) May 2004 = 8107	**Capital Improvement Program Phase**			
Description	**Existing System**	**Immediate-Term**	**Short-Term[2]**	**Long-Term[2]**
Purchased Power	$6,000	$13,000	$41,000	$52,000
Distribution System Maintenance	$21,000	$23,000	$45,000	$54,000
General Administration	$11,000	$12,000	$24,000	$29,000
Subtotal	$38,000	$48,000	$110,000	$135,000
Estimating Contingency (20%)	$8,000	$10,000	$22,000	$27,000
Total O&M Cost[2]	$46,000	$58,000	$132,000	$162,000
Incremental O&M Cost	**-**	**$12,000**	**$74,000**	**$30,000**

Notes:
(1) Operations and maintenance (O&M) costs include costs for distribution only, not treatment. O&M cost estimates include costs for upkeep of the existing distribution system and distribution costs for existing customers.
(2) O&M cost estimates are inclusive of previous phase costs, i.e. long-term plan costs include the existing system, short-term, and immediate-term costs.

4.4.3 Cost Summary

An annual cost of delivered recycled water was estimated based on the above project costs and O&M costs. A 5.5 percent interest rate over 50 years was used to convert the project costs to an annual basis. The annual costs are summarized in Table 4.7.

Each phase of the CIP includes incremental project costs and incremental O&M costs that allow the calculation of the cost per additional acre-foot of recycled water use in each phase. The cost of the entire CIP is the sum of the incremental costs for each phase. The implementation of all projects identified in the entire CIP will result in a maximum month recycled water demand of 7.1 mgd at an estimated project cost of $28,000,000 and annual O&M costs of $162,000. At an estimated ultimate annual recycled water usage of 3,149 afy, the cost of recycled water distribution for the entire CIP is $580 per acre-foot delivered.

4.4.4 Funding Opportunities

While this master plan does not specifically address rates and funding alternatives, this section covers several funding opportunities for the District and SCRWA to be aware of. Water and wastewater utilities rely on several sources of funding to finance their capital improvement programs. These include, but are not limited to the following:

Table 4.7 Annual Capital Improvement Program Cost Summary South County Recycled Water Master Plan Santa Clara Valley Water District/ South County Regional Wastewater Authority				
ENRCCI (SF) May 2004 = 8107	**Capital Improvement Program Phase**			
Description	**Existing System**	**Immediate-Term**	**Short-Term(1)**	**Long-Term(1)**
Project Costs (Present Worth)	-	$4,700,000	$17,400,000	$5,900,000
Convert to Annual Basis	5.5% interest over 50 years = 0.0591			
Annual Project Costs	-	$278,000	$1,028,000	$349,000
Incremental O&M Costs	$46,000	$12,000	$74,000	$30,000
Incremental Annual Cost	$46,000	$290,000	$1,102,000	$379,000
Total Annual Flow (AFY)	711	1,566	2,501	3,149
Incremental Flow (AFY)	-	855	935	648
Cost per additional Acre-foot, Annually	**-**	**$340**	**$1,180**	**$580**
Cost per Annual Acre-foot, Entire Proposed CIP	**$580**			

Notes:
(1) Cost estimates are incremental, i.e. long-term plan costs do not include the short-term or immediate-term costs.
(2) For the purposes of this cost estimate, inflation and discount rate for annualized costs are assumed equal, offsetting cost impacts over the phased construction schedule.

- Rate Revenues
- Connection Fees
- Capital Reserve Balances
- Bonds & Loans
  - Revenue Bonds and Certificates of Participation
  - General Obligation Bonds
  - SRF and other low interest loans
  - Other Bonding Instruments
- Grants
- Developer Constructed Facilities
- Public-Private Partnerships

Below, three funding strategies are identified which might provide the District and SCRWA with alternatives for meeting upcoming capital and O&M expenditures.

- Pay-As-You-Go Versus Debt Financing - As part of each agencies respective capital funding strategies, implementing rate increases in anticipation of the upcoming treatment plant expansion and recycled water distribution system might offer some long-term financial relief. The accumulation of cash reserves will allow each agency to reduce any future debt financing needs, while earning short-term interest. Further, gradual rate increases will attenuate large rate spikes in the future.

  Debt serves several primary functions. Debt financing allows agencies to amortize costs over time, as well as to undertake a larger share of its capital improvements program in the near term and/or mitigate immediate impacts on rates. However, revenue bonds and certificates of participation (COPs) come with certain legal obligations, otherwise avoided by the use of cash financing. Primarily, revenue bonds and COPs require an agency to collect enough revenue, on an annual basis, to meet all ongoing O&M obligations, excluding capital related costs, as well as debt service obligations, plus an additional debt coverage factor. While the coverage factor is delineated in the bond covenants, the three bond rating agencies require that agencies meet a 1.25 coverage ratio. (Revenues must exceed ongoing O&M expenditures plus annual debt service obligation times 1.25.) Coverage requirements might require an agency to increase rates where cash flow needs are otherwise met with existing rate levels.
- Rate Incentives - In order to encourage the use of recycled water, the District needs to provide recycled water rate incentives. Conservation rates, including tiered and seasonal rates, have long been used to create price signals to curb peak water usage. In keeping with a cost of service based rate making approach, the District could implement price signaling techniques to offset the cost of funding its recycled water program. Requiring customers to pay a premium for peak usage could, in turn, provide the District the financial flexibility to offer price incentives for the use of recycled water through reduced rates. Cost of service based rates provide a higher level of defensibility than setting recycled rates at some arbitrary percentage of potable water rates. Further, such a rate incentive program can be implemented in concert with other conservation practices, such as onsite retention facilities and non-peak hour usage.
- Connection Fees - the District might consider recovering some, or all, of the capital costs associated with constructing its recycled water transmission and distribution system from new development through its water connection fees. AB 1600 provides California municipalities with the authority to impose a connection fee on new development in order to require growth to pay for those facilities constructed to provide them with water or sewer availability. Stated differently, connection fees require growth to pay for growth.

APPENDIX A - RECYCLED WATER REGULATIONS

Title 22 Code of Regulations

DIVISION 4. ENVIRONMENTAL HEALTH
CHAPTER 1. INTRODUCTION

ARTICLE 1. DEFINITIONS

60001. Department

Whenever the term "department" is used in this division, it means the State Department of Health Services, unless otherwise specified.

60003. Director

Whenever the term "director" is used in this division, it means the Director, State Department of Health Services, unless otherwise specified.

CHAPTER 2. REGULATIONS FOR THE IMPLEMENTATION OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

ARTICLE 1. GENERAL REQUIREMENTS AND CATEGORICAL EXEMPTIONS

60100. General requirements

The Department of Health Services incorporates by reference the objectives, criteria, and procedures as delineated in Chapters 1, 2, 2.5, 2.6, 3, 4, 5, and 6, Division 13, Public Resources Code, Sections 21000 et seq., and the Guidelines for the Implementation of the California Environmental Quality Act, Title 14, Division 6, Chapter 3, California Administrative Code, Sections 15000 et seq.

60101. Specific activities within categorical exempt classes

The following specific activities are determined by the Department to fall within the classes of categorical exemptions set forth in Sections 15300 et seq. of Title 14 of the California Administrative Code:

(a) Class 1: Existing Facilities.

(1) Any interior or exterior alteration of water treatment units, water supply systems, and pump station buildings where the alteration involves the addition, deletion, or modification of mechanical, electrical, or hydraulic controls.

(2) Maintenance, repair, replacement, or reconstruction to any water treatment process units, including structures, filters, pumps, and chlorinators.

(b) Class 2: Replacement or Reconstruction.

(1) Repair or replacement of any water service connections, meters, and valves for backflow prevention, air release, pressure regulating, shut-off and blow-off or flushing.

(2) Replacement or reconstruction of any existing water supply distribution lines, storage tanks and reservoirs of substantially the same size.

(3) Replacement or reconstruction of any water wells, pump stations and related appurtenances.

(c) Class 3: New Construction of Small Structures.

(1) Construction of any water supply and distribution lines of less than sixteen inches in diameter, and related appurtenances.

(2) Construction of any water storage tanks and reservoirs of less than 100,000 gallon capacity.

(d) Class 4: Minor Alterations to Land.

(1) Minor alterations to land, water, or vegetation on any officially existing designated wildlife management areas or fish production facilities for the purpose of reducing the environmental potential for nuisances or vector production.

(2) Any minor alterations to highway crossings for water supply and distribution lines.

CHAPTER 3 WATER RECYCLING CRITERIA
ARTICLE 1 DEFINITIONS

60301. Definitions

60301.100. Approved laboratory

"Approved laboratory" means a laboratory that has been certified by the Department to perform microbiological analyses pursuant to section 116390, Health and Safety Code.

60301.160. Coagulated wastewater

"Coagulated wastewater" means oxidized wastewater in which colloidal and finely divided suspended matter have been destabilized and agglomerated upstream from a filter by the addition of suitable floc-forming chemicals.

60301.170. Conventional treatment

"Conventional treatment" means a treatment chain that utilizes a sedimentation unit process between the coagulation and filtration processes and produces an effluent that meets the definition for disinfected tertiary recycled water.

60301.200. Direct beneficial use

"Direct beneficial use" means the use of recycled water that has been transported from the point of treatment or production to the point of use without an intervening discharge to waters of the State.

60301.220. Disinfected secondary-2.2 recycled water

"Disinfected secondary-2.2 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period.

60301.225. Disinfected secondary-23 recycled water

"Disinfected secondary-23 recycled water" means recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 23 per 100

milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30 day period.

60301.230. Disinfected tertiary recycled water

"Disinfected tertiary recycled water" means a filtered and subsequently disinfected wastewater that meets the following criteria:

(a) The filtered wastewater has been disinfected by either:

(1) A chlorine disinfection process following filtration that provides a CT (the product of total chlorine residual and modal contact time measured at the same point) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow; or

(2) A disinfection process that, when combined with the filtration process, has been demonstrated to inactivate and/or remove 99.999 percent of the plaque-forming units of F-specific bacteriophage MS2, or polio virus in the wastewater. A virus that is at least as resistant to disinfection as polio virus may be used for purposes of the demonstration.

(b) The median concentration of total coliform bacteria measured in the disinfected effluent does not exceed an MPN of 2.2 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed an MPN of 23 per 100 milliliters in more than one sample in any 30 day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.

60301.240. Drift

"Drift" means the water that escapes to the atmosphere as water droplets from a cooling system.

60301.245. Drift eliminator

"Drift eliminator" means a feature of a cooling system that reduces to a minimum the generation of drift from the system.

60301.250. Dual plumbed system

"Dual plumbed system" or "dual plumbed" means a system that utilizes separate piping systems for recycled water and potable water within a facility and where the recycled water is used for either of the following purposes:

(a) To serve plumbing outlets (excluding fire suppression systems) within a building or

(b) Outdoor landscape irrigation at individual residences.

60301.300. F-Specific bacteriophage MS-2

"F-specific bacteriophage MS-2" means a strain of a specific type of virus that infects coliform bacteria that is traceable to the American Type Culture Collection (ATCC 15597B1) and is grown on lawns of E. coli (ATCC 15597).

60301.310. Facility

"Facility" means any type of building or structure, or a defined area of specific use that receives water for domestic use from a public water system as defined in section 116275 of the Health and Safety Code.

60301.320. Filtered wastewater

"Filtered wastewater" means an oxidized wastewater that meets the criteria in subsection (a) or (b):

(a) Has been coagulated and passed through natural undisturbed soils or a bed of filter media pursuant to the following:

(1) At a rate that does not exceed 5 gallons per minute per square foot of surface area in mono, dual or mixed media gravity, upflow or pressure filtration systems, or does not exceed 2 gallons per minute per square foot of surface area in traveling bridge automatic backwash filters; and

(2) So that the turbidity of the filtered wastewater does not exceed any of the following:

(A) An average of 2 NTU within a 24-hour period;

(B) 5 NTU more than 5 percent of the time within a 24-hour period; and

(C) 10 NTU at any time.

(b) Has been passed through a microfiltration, ultrafiltration, nanofiltration, or reverse osmosis membrane so that the turbidity of the filtered wastewater does not exceed any of the following:

(1) 0.2 NTU more than 5 percent of the time within a 24-hour period; and

(2) 0.5 NTU at any time.

60301.330. Food crops

"Food crops" means any crops intended for human consumption.

60301.400. Hose bibb

"Hose bibb" means a faucet or similar device to which a common garden hose can be readily attached.

60301.550. Landscape impoundment

"Landscape impoundment" means an impoundment in which recycled water is stored or used for aesthetic enjoyment or landscape irrigation, or which otherwise serves a similar function and is not intended to include public contact.

60301.600. Modal contact time

"Modal contact time" means the amount of time elapsed between the time that a tracer, such as salt or dye, is injected into the influent at the entrance to a chamber and the time that the highest concentration of the tracer is observed in the effluent from the chamber.

60301.620. Nonrestricted recreational impoundment

"Nonrestricted recreational impoundment" means an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities.

60301.630. NTU

"NTU" (Nephelometric turbidity unit) means a measurement of turbidity as determined by the ratio of the intensity of light scattered by the sample to the intensity of incident light as measured by method 2130 B. in Standard Methods for the Examination of Water and Wastewater, 20th ed.; Eaton, A. D., Clesceri, L. S., and Greenberg, A. E., Eds; American Public Health Association: Washington, DC, 1995; p. 2-8.

60301.650. Oxidized wastewater.

"Oxidized wastewater" means wastewater in which the organic matter has been stabilized, is nonputrescible, and contains dissolved oxygen.

60301.660. Peak dry weather design flow

"Peak Dry Weather Design Flow" means the arithmetic mean of the maximum peak flow rates sustained over some period of time (for example three hours) during the maximum 24-hour dry weather period. Dry weather period is defined as periods of little or no rainfall.

60301.700. Recycled wateragency.

"Recycled water agency" means the public water system, or a publicly or privately owned or operated recycled water system, that delivers or proposes to deliver recycled water to a facility.

60301.710. Recycling plant

"Recycling plant" means an arrangement of devices, structures, equipment, processes and controls which produce recycled water.

60301.740. Regulatory Agency

"Regulatory agency" means the California Regional Water Quality Control Board(s) that have jurisdiction over the recycling plant and use areas.

60301.750. Restricted access golf course

"Restricted access golf course" means a golf course where public access is controlled so that areas irrigated with recycled water cannot be used as if they were part of a park, playground, or school yard and where irrigation is conducted only in areas and during periods when the golf course is not being used by golfers.

60301.760. Restricted recreational impoundment

"Restricted recreational impoundment" means an impoundment of recycled water in which recreation is limited to fishing, boating, and other non-body-contact water recreational activities.

60301.800. Spray irrigation

"Spray irrigation" means the application of recycled water to crops to maintain vegetation or support growth of vegetation by applying it from sprinklers.

Section 60301.830. Standby Unit Process.

"Standby unit process" means an alternate unit process or an equivalent alternative process which is maintained in operable condition and which is capable of providing comparable treatment of the actual flow through the unit for which it is a substitute.

60301.900. Undisinfected secondary recycled water.

"Undisinfected secondary recycled water" means oxidized wastewater.

60301.920. Use area

"Use area" means an area of recycled water use with defined boundaries. A use area may contain one or more facilities.

ARTICLE 2. SOURCES OF RECYCLED WATER.

60302. Source specifications.

The requirements in this chapter shall only apply to recycled water from sources that contain domestic waste, in whole or in part.

ARTICLE 3. USES OF RECYCLED WATER.

60303. Exceptions

The requirements set forth in this chapter shall not apply to the use of recycled water onsite at a water recycling plant, or wastewater treatment plant, provided access by the public to the area of onsite recycled water use is restricted.

60304. Use of recycled water for irrigation

(a) Recycled water used for the surface irrigation of the following shall be a disinfected tertiary recycled water, except that for filtration pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes:

(1) Food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop,

(2) Parks and playgrounds,

(3) School yards,

(4) Residential landscaping,

(5) Unrestricted access golf courses, and

(6) Any other irrigation use not specified in this section and not prohibited by other sections of the California Code of Regulations.

(b) Recycled water used for the surface irrigation of food crops where the edible portion is produced above ground and not contacted by the recycled water shall be at least disinfected secondary-2.2 recycled water.

(c) Recycled water used for the surface irrigation of the following shall be at least disinfected secondary-23 recycled water:

(1) Cemeteries,

(2) Freeway landscaping,

(3) Restricted access golf courses,

(4) Ornamental nursery stock and sod farms where access by the general public is not restricted,

(5) Pasture for animals producing milk for human consumption, and

(6) Any nonedible vegetation where access is controlled so that the irrigated area cannot be used as if it were part of a park, playground or school yard

(d) Recycled wastewater used for the surface irrigation of the following shall be at least undisinfected secondary recycled water:

(1) Orchards where the recycled water does not come into contact with the edible portion of the crop,

(2) Vineyards where the recycled water does not come into contact with the edible portion of the crop,

(3) Non food-bearing trees (Christmas tree farms are included in this category provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting or allowing access by the general public),

(4) Fodder and fiber crops and pasture for animals not producing milk for human consumption,

(5) Seed crops not eaten by humans,

(6) Food crops that must undergo commercial pathogen-destroying processing before being consumed by humans, and

(7) Ornamental nursery stock and sod farms provided no irrigation with recycled water occurs for a period of 14 days prior to harvesting, retail sale, or allowing access by the general public.

(e) No recycled water used for irrigation, or soil that has been irrigated with recycled water, shall come into contact with the edible portion of food crops eaten raw by humans unless the recycled water complies with subsection (a).

60305. Use of recycled water for impoundments.

(a) Except as provided in subsection (b), recycled water used as a source of water supply for nonrestricted recreational impoundments shall be disinfected tertiary recycled water that has been subjected to conventional treatment.

(b) Disinfected tertiary recycled water that has not received conventional treatment may be used for nonrestricted recreational impoundments provided the recycled water is monitored for the presence of pathogenic organisms in accordance with the following:

> (1) During the first 12 months of operation and use the recycled water shall be sampled and analyzed monthly for *Giardia*, enteric viruses, and *Cryptosporidium*. Following the first 12 months of use, the recycled water shall be sampled and analyzed quarterly for *Giardia*, enteric viruses, and *Cryptosporidium*. The ongoing monitoring may be discontinued after the first two years of operation with the approval of the department. This monitoring shall be in addition to the monitoring set forth in section 60321.
>
> (2) The samples shall be taken at a point following disinfection and prior to the point where the recycled water enters the use impoundment. The samples shall be analyzed by an approved laboratory and the results submitted quarterly to the regulatory agency.

(c) The total coliform bacteria concentrations in recycled water used for nonrestricted recreational impoundments, measured at a point between the disinfection process and the point of entry to the use impoundment, shall comply with the criteria specified in section 60301.230 (b) for disinfected tertiary recycled water.

(d) Recycled water used as a source of supply for restricted recreational impoundments and for any publicly accessible impoundments at fish hatcheries shall be at least disinfected secondary-2.2 recycled water.

(e) Recycled water used as a source of supply for landscape impoundments that do not utilize decorative fountains shall be at least disinfected secondary-23 recycled water.

60306. Use of recycled water for cooling

(a) Recycled water used for industrial or commercial cooling or air conditioning that involves the use of a cooling tower, evaporative condenser, spraying or any mechanism that creates a mist shall be a disinfected tertiary recycled water.

(b) Use of recycled water for industrial or commercial cooling or air conditioning that does not involve the use of a cooling tower, evaporative condenser, spraying, or any mechanism that creates a mist shall be at least disinfected secondary-23 recycled water.

(c) Whenever a cooling system, using recycled water in conjunction with an air conditioning facility, utilizes a cooling tower or otherwise creates a mist that could come into contact with employees or members of the public, the cooling system shall comply with the following:

(1) A drift eliminator shall be used whenever the cooling system is in operation.

(2) A chlorine, or other, biocide shall be used to treat the cooling system recirculating water to minimize the growth of *Legionella* and other micro-organisms.

60307. Use of recycled water for other purposes

(a) Recycled water used for the following shall be disinfected tertiary recycled water, except that for filtration being provided pursuant to Section 60301.320(a) coagulation need not be used as part of the treatment process provided that the filter effluent turbidity does not exceed 2 NTU, the turbidity of the influent to the filters is continuously measured, the influent turbidity does not exceed 5 NTU for more than 15 minutes and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceed 5 NTU for more than 15 minutes:

(1) Flushing toilets and urinals,

(2) Priming drain traps,

(3) Industrial process water that may come into contact with workers,

(4) Structural fire fighting,

(5) Decorative fountains,

(6) Commercial laundries,

(7) Consolidation of backfill around potable water pipelines,

(8) Artificial snow making for commercial outdoor use, and

(9) Commercial car washes, including hand washes if the recycled water is not heated, where the general public is excluded from the washing process.

(b) Recycled water used for the following uses shall be at least disinfected secondary-23 recycled water:

(1) Industrial boiler feed,

(2) Nonstructural fire fighting,

(3) Backfill consolidation around nonpotable piping,

(4) Soil compaction,

(5) Mixing concrete,

(6) Dust control on roads and streets,

(7) Cleaning roads, sidewalks and outdoor work areas and

(8) Industrial process water that will not come into contact with workers.

(c) Recycled water used for flushing sanitary sewers shall be at least undisinfected secondary recycled water.

ARTICLE 4. USE AREA REQUIREMENTS.

60310. Use area requirements

(a) No irrigation with disinfected tertiary recycled water shall take place within 50 feet of any domestic water supply well unless all of the following conditions have been met:

(1) A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.

(2) The well contains an annular seal that extends from the surface into the aquitard.

(3) The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.

(4) The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.

(5) The owner of the well approves of the elimination of the buffer zone requirement.

(b) No impoundment of disinfected tertiary recycled water shall occur within 100 feet of any domestic water supply well.

(c) No irrigation with, or impoundment of, disinfected secondary-2.2 or disinfected secondary-23 recycled water shall take place within 100 feet of any domestic water supply well.

(d) No irrigation with, or impoundment of, undisinfected secondary recycled water shall take place within 150 feet of any domestic water supply well.

(e) Any use of recycled water shall comply with the following:

(1) Any irrigation runoff shall be confined to the recycled water use area, unless the runoff does not pose a public health threat and is authorized by the regulatory agency.

(2) Spray, mist, or runoff shall not enter dwellings, designated outdoor eating areas, or food handling facilities.

(3) Drinking water fountains shall be protected against contact with recycled water spray, mist, or runoff.

(f) No spray irrigation of any recycled water, other than disinfected tertiary recycled water, shall take place within 100 feet of a residence or a place where public exposure could be similar to that of a park, playground, or school yard.

(g) All use areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide, that include the following wording : "RECYCLED WATER - DO NOT DRINK". Each sign shall display an international symbol similar to that shown in figure 60310-A. The Department may accept alternative signage and wording, or an educational program, provided the applicant demonstrates to the Department that the alternative approach will assure an equivalent degree of public notification.

(h) Except as allowed under section 7604 of title 17, California Code of Regulations, no physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water.

(i) The portions of the recycled water piping system that are in areas subject to access by the general public shall not include any hose bibbs. Only quick couplers that differ from those used on the potable water system shall be used on the portions of the recycled water piping system in areas subject to public access.

Water Recycling Criteria

FIGURE 60310-A

ARTICLE 5. DUAL PLUMBED RECYCLED WATER SYSTEMS.

60313. General requirements.

(a) No person other than a recycled water agency shall deliver recycled water to a dual-plumbed facility.

(b) No recycled water agency shall deliver recycled water for any internal use to any individually-owned residential units including free-standing structures, multiplexes, or condominiums.

(c) No recycled water agency shall deliver recycled water for internal use except for fire suppression systems, to any facility that produces or processes food products or beverages. For purposes of this Subsection, cafeterias or snack bars in a facility whose primary function does not involve the production or processing of foods or beverages are not considered facilities that produce or process foods or beverages.

(d) No recycled water agency shall deliver recycled water to a facility using a dual plumbed system unless the report required pursuant to section 13522.5 of the Water Code, and which meets the requirements set forth in section 60314, has been submitted to, and approved by, the regulatory agency.

60314. Report submittal

(a) For dual-plumbed recycled water systems, the report submitted pursuant to section 13522.5 of the Water Code shall contain the following information in addition to the information required by section 60323:

(1) A detailed description of the intended use area identifying the following:

(A) The number, location, and type of facilities within the use area proposing to use dual plumbed systems,

(B) The average number of persons estimated to be served by each facility on a daily basis,

(C) The specific boundaries of the proposed use area including a map showing the location of each facility to be served,

(D) The person or persons responsible for operation of the dual plumbed system at each facility, and

(E) The specific use to be made of the recycled water at each facility.

(2) Plans and specifications describing the following:

(A) Proposed piping system to be used,

(B) Pipe locations of both the recycled and potable systems,

(C) Type and location of the outlets and plumbing fixtures that will be accessible to the public, and

(D) The methods and devices to be used to prevent backflow of recycled water into the public water system.

(3) The methods to be used by the recycled water agency to assure that the installation and operation of the dual plumbed system will not result in cross connections between the recycled water piping system and the potable water piping system. This shall include a description of pressure, dye or other test methods to be used to test the system every four years.

(b) A master plan report that covers more than one facility or use site may be submitted provided the report includes the information required by this section. Plans and specifications for individual facilities covered by the report may be submitted at any time prior to the delivery of recycled water to the facility.

60315. Design requirements

The public water supply shall not be used as a backup or supplemental source of water for a dual-plumbed recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of sections 7602 (a) and 7603 (a) of title 17, California Code of Regulations, and the approval of the public water system has been obtained.

60316. Operation requirements

(a) Prior to the initial operation of the dual-plumbed recycled water system and annually thereafter, the Recycled Water Agency shall ensure that the dual plumbed system within each facility and use area is inspected for possible cross connections with the potable water system. The recycled water system shall also be tested for possible cross connections at least once every four years. The testing shall be conducted in accordance with the method described in the report submitted pursuant to section 60314. The inspections and the testing shall be performed by a cross connection

control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements. A written report documenting the result of the inspection or testing for the prior year shall be submitted to the department within 30 days following completion of the inspection or testing.

(b) The recycled water agency shall notify the department of any incidence of backflow from the dual-plumbed recycled water system into the potable water system within 24 hours of the discovery of the incident.

(c) Any backflow prevention device installed to protect the public water system serving the dual-plumbed recycled water system shall be inspected and maintained in accordance with section 7605 of Title 17, California Code of Regulations.

ARTICLE 5.1. GROUNDWATER RECHARGE

60320. Groundwater recharge

(a) Reclaimed water used for groundwater recharge of domestic water supply aquifers by surface spreading shall be at all times of a quality that fully protects public health. The State Department of Health Services' recommendations to the Regional Water Quality Control Boards for proposed groundwater recharge projects and for expansion of existing projects will be made on an individual case basis where the use of reclaimed water involves a potential risk to public health.

(b) The State Department of Health Services' recommendations will be based on all relevant aspects of each project, including the following factors: treatment provided; effluent quality and quantity; spreading area operations; soil characteristics; hydrogeology; residence time; and distance to withdrawal.

(c) The State Department of Health Services will hold a public hearing prior to making the final determination regarding the public health aspects of each groundwater recharge project. Final recommendations will be submitted to the Regional Water Quality Control Board in an expeditious manner.

ARTICLE 5.5. OTHER METHODS OF TREATMENT

60320.5. Other methods of treatment

Methods of treatment other than those included in this chapter and their reliability features may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the methods of treatment and reliability features will assure an equal degree of treatment and reliability.

ARTICLE 6. SAMPLING AND ANALYSIS

60321. Sampling and analysis

(a) Disinfected secondary-23, disinfected secondary-2.2, and disinfected tertiary recycled water shall be sampled at least once daily for total coliform bacteria. The samples shall be taken from the disinfected effluent and shall be analyzed by an approved laboratory.

(b) Disinfected tertiary recycled water shall be continuously sampled for turbidity using a continuous turbidity meter and recorder following filtration. Compliance with the daily average operating filter effluent turbidity shall be determined by averaging the levels of recorded turbidity taken at four-hour intervals over a 24-hour period. Compliance with turbidity pursuant to section 60301.320 (a)(2)(B) and (b)(1) shall be determined using the levels of recorded turbidity taken at intervals of no more than 1.2-hours over a 24-hour period. Should the continuous turbidity meter and recorder fail, grab sampling at a minimum frequency of 1.2-hours may be substituted for a period of up to 24-hours. The results of the daily average turbidity determinations shall be reported quarterly to the regulatory agency.

(c) The producer or supplier of the recycled water shall conduct the sampling required in subsections (a) and (b).

ARTICLE 7. ENGINEERING REPORT AND OPERATIONAL REQUIREMENTS

60323. Engineering report

(a) No person shall produce or supply reclaimed water for direct reuse from a proposed water reclamation plant unless he files an engineering report.

(b) The report shall be prepared by a properly qualified engineer registered in California and experienced in the field of wastewater treatment, and shall contain a description of the design of the proposed reclamation system. The report shall clearly indicate the means for compliance with these regulations and any other features specified by the regulatory agency.

(c) The report shall contain a contingency plan which will assure that no untreated or inadequately treated wastewater will be delivered to the use area.

60325. Personnel

(a) Each reclamation plant shall be provided with a sufficient number of qualified personnel to operate the facility effectively so as to achieve the required level of treatment at all times.

(b) Qualified personnel shall be those meeting requirements established pursuant to Chapter 9 (commencing with Section 13625) of the Water Code.

60327. Maintenance

A preventive maintenance program shall be provided at each reclamation plant to ensure that all equipment is kept in a reliable operating condition.

60329. Operating records and reports

(a) Operating records shall be maintained at the reclamation plant or a central depository within the operating agency. These shall include: all analyses specified in the reclamation criteria; records of operational problems, plant and equipment breakdowns, and diversions to emergency storage or disposal; all corrective or preventive action taken.

(b) Process or equipment failures triggering an alarm shall be recorded and maintained as a separate record file. The recorded information shall include the time and cause of failure and corrective action taken.

(c) A monthly summary of operating records as specified under (a) of this section shall be filed monthly with the regulatory agency.

(d) Any discharge of untreated or partially treated wastewater to the use area, and the cessation of same, shall be reported immediately by telephone to the regulatory agency, the State Department of Health, and the local health officer.

60331. Bypass

There shall be no bypassing of untreated or partially treated wastewater from the reclamation plant or any intermediate unit processes to the point of use.

ARTICLE 8. GENERAL REQUIREMENTS OF DESIGN

60333. Flexibility of design

The design of process piping, equipment arrangement, and unit structures in the reclamation plant must allow for efficiency and convenience in operation and maintenance and provide flexibility of operation to permit the highest possible degree of treatment to be obtained under varying circumstances.

60335. Alarms

(a) Alarm devices required for various unit processes as specified in other sections of these regulations shall be installed to provide warning of:

(1) Loss of power from the normal power supply.

(2) Failure of a biological treatment process.

(3) Failure of a disinfection process.

(4) Failure of a coagulation process.

(5) Failure of a filtration process.

(6) Any other specific process failure for which warning is required by the regulatory agency.

(b) All required alarm devices shall be independent of the normal power supply of the reclamation plant.

(c) The person to be warned shall be the plant operator, superintendent, or any other responsible person designated by the management of the reclamation plant and capable of taking prompt corrective action.

(d) Individual alarm devices may be connected to a master alarm to sound at a location where it can be conveniently observed by the attendant. In case the reclamation plant is

not attended full time, the alarm(s) shall be connected to sound at a police station, fire station or other full time service unit with which arrangements have been made to alert the person in charge at times that the reclamation plant is unattended.

60337. Power supply

The power supply shall be provided with one of the following reliability features:

(a) Alarm and standby power source.

(b) Alarm and automatically actuated short-term retention or disposal provisions as specified in Section 60341.

(c) Automatically actuated long-term storage or disposal provisions as specified in Section 60341.

ARTICLE 9. RELIABILITY REQUIREMENTS FOR PRIMARY EFFLUENT

60339. Primary treatment

Reclamation plants producing reclaimed water exclusively for uses for which primary effluent is permitted shall be provided with one of the following reliability features:

(a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.

(b) Long-term storage or disposal provisions as specified in Section 60341.

Note: Use of primary effluent for recycled water is no longer allowed. [repeal of Section 60309, effective December 2000]

ARTICLE 10. RELIABILITY REQUIREMENTS FOR FULL TREATMENT

60341. Emergency storage or disposal

(a) Where short-term retention or disposal provisions are used as a reliability feature, these shall consist of facilities reserved for the purpose of storing or disposing of untreated or partially treated wastewater for at least a 24-hour period. The facilities shall include all the necessary diversion devices, provisions for odor control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back

equipment shall be either independent of the normal power supply or provided with a standby power source.

(b) Where long-term storage or disposal provisions are used as a reliability feature, these shall consist of ponds, reservoirs, percolation areas, downstream sewers leading to other treatment or disposal facilities or any other facilities reserved for the purpose of emergency storage or disposal of untreated or partially treated wastewater. These facilities shall be of sufficient capacity to provide disposal or storage of wastewater for at least 20 days, and shall include all the necessary diversion works, provisions for odor and nuisance control, conduits, and pumping and pump back equipment. All of the equipment other than the pump back equipment shall be either independent of the normal power supply or provided with a standby power source.

(c) Diversion to a less demanding reuse is an acceptable alternative to emergency disposal of partially treated wastewater provided that the quality of the partially treated wastewater is suitable for the less demanding reuse.

(d) Subject to prior approval by the regulatory agency, diversion to a discharge point which requires lesser quality of wastewater is an acceptable alternative to emergency disposal of partially treated wastewater.

(e) Automatically actuated short-term retention or disposal provisions and automatically actuated long-term storage or disposal provisions shall include, in addition to provisions of (a), (b), (c), or (d) of this section, all the necessary sensors, instruments, valves and other devices to enable fully automatic diversion of untreated or partially treated wastewater to approved emergency storage or disposal in the event of failure of a treatment process and a manual reset to prevent automatic restart until the failure is corrected.

60343. Primary treatment

All primary treatment unit processes shall be provided with one of the following reliability features:

(a) Multiple primary treatment units capable of producing primary effluent with one unit not in operation.

(b) Standby primary treatment unit process.

(c) Long-term storage or disposal provisions.

60345. Biological treatment

All biological treatment unit processes shall be provided with one of the following reliability features:

(a) Alarm and multiple biological treatment units capable of producing oxidized wastewater with one unit not in operation.

(b) Alarm, short-term retention or disposal provisions, and standby replacement equipment.

(c) Alarm and long-term storage or disposal provisions.

(d) Automatically actuated long-term storage or disposal provisions.

60347. Secondary sedimentation

All secondary sedimentation unit processes shall be provided with one of the following reliability features:

(a) Multiple sedimentation units capable of treating the entire flow with one unit not in operation.

(b) Standby sedimentation unit process.

(c) Long-term storage or disposal provisions.

60349. Coagulation

(a) All coagulation unit processes shall be provided with the following mandatory features for uninterrupted coagulant feed:

(1) Standby feeders,

(2) Adequate chemical stowage and conveyance facilities,

(3) Adequate reserve chemical supply, and

(4) Automatic dosage control.

(b) All coagulation unit processes shall be provided with one of the following reliability features:

(1) Alarm and multiple coagulation units capable of treating the entire flow with one unit not in operation;

(2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;

(3) Alarm and long-term storage or disposal provisions;

(4) Automatically actuated long-term storage or disposal provisions, or

(5) Alarm and standby coagulation process.

60351. Filtration

All filtration unit processes shall be provided with one of the following reliability features:

(a) Alarm and multiple filter units capable of treating the entire flow with one unit not in operation.

(b) Alarm, short-term retention or disposal provisions and standby replacement equipment.

(c) Alarm and long-term storage or disposal provisions.

(d) Automatically actuated long-term storage or disposal provisions.

(e) Alarm and standby filtration unit process.

Section 60353. Disinfection

(a) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with the following features for uninterrupted chlorine feed:

(1) Standby chlorine supply,

(2) Manifold systems to connect chlorine cylinders,

(3) Chlorine scales, and

(4) Automatic devices for switching to full chlorine cylinders.

Automatic residual control of chlorine dosage, automatic measuring and recording of chlorine residual, and hydraulic performance studies may also be required.

(b) All disinfection unit processes where chlorine is used as the disinfectant shall be provided with one of the following reliability features:

(1) Alarm and standby chlorinator;

(2) Alarm, short-term retention or disposal provisions, and standby replacement equipment;

(3) Alarm and long-term storage or disposal provisions;

(4) Automatically actuated long-term storage or disposal provisions; or

(5) Alarm and multiple point chlorination, each with independent power source, separate chlorinator, and separate chlorine supply.

60355. Other alternatives to reliability requirements

Other alternatives to reliability requirements set forth in Articles 8 to 10 may be accepted if the applicant demonstrates to the satisfaction of the State Department of Health that the proposed alternative will assure an equal degree of reliability.

Title 17 Code of Regulations

DIVISION 1. STATE DEPARTMENT OF HEALTH SERVICES
CHAPTER 5. SANITATION (ENVIRONMENTAL)
GROUP 4. DRINKING WATER SUPPLIES
ARTICLE 1. GENERAL

7583. Definitions

In addition to the definitions in Section 4010.1 of the Health and Safety Code, the following terms are defined for the purpose of this Chapter

(a) "Approved Water Supply" is a water supply whose potability is regulated by a State of local health agency.

(b) "Auxiliary Water Supply" is any water supply other than that received from a public water system.

(c) “Air-gap Separation (AG)" is a physical break between the supply line and a receiving vessel.

(d) "AWWA Standard" is an official standard developed and approved by the American Water Works Association (AWWA).

(e) "Cross-Connection" is an unprotected actual or potential connection between a potable water system used to supply water for drinking purposes and any source or system containing unapproved water or a substance that is not or cannot be approved as safe, wholesome, and potable. By-pass arrangements, jumper connections, removable sections, swivel or changeover devices, or other devices through which backflow could occur, shall be considered to be cross-connections.

(f) "Double Check Valve Assembly (DC)" is an assembly of at least two independently acting check valves including tightly closing shut-off valves on each side of the check valve assembly and test cocks available for testing the watertightness of each check valve.

(g) "Health Agency" means the California Department of Health Services, or the local health officer with respect to a small water system.

(h) "Local Health Agency" means the county or city health authority.

(i) "Reclaimed Water" is a wastewater which as a result of treatment is suitable for uses other than potable use.

(j) "Reduced Pressure Principle Backflow Prevention Device (RP)" is a backflow preventer incorporating not less than two check valves, an automatically operated differential relief valve located between the two check valves, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary test cocks for testing.

(k) "User Connection" is the point of connection of a user's piping to the water supplier's facilities.

(l) "Water Supplier" is the person who owns or operates the public water system.

(m) "Water User" is any person obtaining water from a public water supply.

7584. Responsibility and scope of program

The water supplier shall protect the public water supply from contamination by implementation of a cross-connection control program. The program, or any portion thereof, may be implemented directly by the water supplier or by means of a contract with the local health agency, or with another agency approved by the health agency. The water supplier's cross-connection control program shall for the purpose of addressing the requirements of Sections 7585 through 7605 include, but not be limited to, the following elements:

(a) The adoption of operating rules or ordinances to implement the cross-connection program.

(b) The conducting of surveys to identify water user premises where cross-connections are likely to occur,

(c) The provisions of backflow protection by the water user at the user's connection or within the user's premises or both,

(d) The provision of at least one person trained in cross-connection control to carry out the cross-connection program,

(e) The establishment of a procedure or system for testing backflow preventers, and

(f) The maintenance of records of locations, tests, and repairs of backflow preventers.

7585. Evaluation of hazard

The water supplier shall evaluate the degree of potential health hazard to the public water supply which may be created as a result of conditions existing on a user's premises. The water supplier, however, shall not be responsible for abatement of cross-connections which may exist within a user's premises. As a minimum, the evaluation should consider: the existence of cross-connections, the nature of materials handled on the property, the probability of a backflow occurring, the degree of piping system complexity and the potential for piping system modification. Special consideration shall be given to the premises of the following types of water users:

(a) Premises where substances harmful to health are handled under pressure in a manner which could permit their entry into the public water system. This includes chemical or biological process waters and water from public water supplies which have deteriorated in sanitary quality.

(b) Premises having an auxiliary water supply, unless the auxiliary supply is accepted as an additional source by the water supplier and is approved by the health agency.

(c) Premises that have internal cross-connections that are not abated to the satisfaction of the water supplier or the health agency.

(d) Premises where cross-connections are likely to occur and entry is restricted so that cross-connection inspections cannot be made with sufficient frequency or at sufficiently short notice to assure that cross-connections do not exist.

(e) Premises having a repeated history of cross-connections being established or re-established.

7586. User supervisor

The health agency and water supplier may, at their discretion, require an industrial water user to designate a user supervisor when the water user's premises has a multipiping system that convey various types of fluids, some of which may be hazardous and where changes in the piping system are frequently made. The user supervisor shall be responsible for the avoidance of cross-connections during the installation, operation and maintenance of the water user's pipelines and equipment.

ARTICLE 2. PROTECTION OF WATER SYSTEM

7601. Approval of backflow preventers

Backflow preventers required by this Chapter shall have passed laboratory and field evaluation tests performed by a recognized testing organization which has demonstrated their competency to perform such tests to the Department.

7602. Construction of backflow preventers

(a) Air-gap Separation. An Air-gap separation (AG) shall be at least double the diameter of the supply pipe, measured vertically from the flood rim of the receiving vessel to the supply pipe; however, in no case shall this separation be less than one inch.

(b) Double Check Valve Assembly. A required double check valve assembly (DC) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Double Check Valve Type Backflow Preventive Devices which is herein incorporated by reference.

(c) Reduced Pressure Principle Backflow Prevention Device. A required reduced pressure principle backflow prevention device (RP) shall, as a minimum, conform to the AWWA Standard C506-78 (R83) adopted on January 28, 1978 for Reduced Pressure Principle Type Backflow Prevention Devices which is herein incorporated by reference.

7603. Location of backflow preventers

(a) Air-gap Separation. An air-gap separation shall be located as close as practical to the user's connection and all piping between the user's connection and the receiving tank shall be entirely visible unless otherwise approved in writing by the water supplier and the health agency.

(b) Double Check Valve Assembly. A double check valve assembly shall be located as close as practical to the user's connection and shall be installed above grade, if possible, and in a manner where it is readily accessible for testing and maintenance.

(c) Reduced Pressure Principle Backflow Prevention Device. A reduced pressure principle backflow prevention device shall be located as close as practical to the user's connection and shall be installed a minimum of twelve inches (12") above grade and not more than thirty-six inches (36") above grade measured from the bottom of the device and with a minimum of twelve inches (12") side clearance.

7604. Type of protection required.

The type of protection that shall be provided to prevent backflow into the public water supply shall be commensurate with the degree of hazard that exists on the consumer's premises. The type of protective device that may be required (listed in an increasing level of protection) includes: Double check Valve Assembly--(DC), Reduced Pressure Principle Backflow Prevention Device--(RP) and an Air gap Separation--(AG). The water user may choose a higher level of protection than required by the water supplier. The minimum types of backflow protection required to protect the public water supply, at the water user's connection to premises with various degrees of hazard, are given in Table 1. Situations not covered in Table 1 shall be evaluated on a case-by-case basis and the appropriate backflow protection shall be determined by the water supplier or health agency.

TABLE 1
TYPE OF BACKFLOW PROTECTION REQUIRED

Degree of Hazard	Minimum Type of Backflow Prevention
(a) Sewage and Hazardous Substances	
(1) Premises where there are waste water pumping and/or treatment plants and there is no interconnection with the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(2) Premises where hazardous substances are handled in any manner in which the substances may enter the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(3) Premises where there are irrigation systems into which fertilizers, herbicides, or pesticides are, or can be, injected.	RP
(b) Auxiliary Water Supplies	
(1) Premises where there is an unapproved auxiliary water supply which is interconnected with the public water system. A RP or DC may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(2) Premises where there is an unapproved auxiliary RP water supply and there are no interconnections with the public water system. A DC may be provided in lieu of a RP if approved by the health agency and water supplier.	RP

(c) Recycled water

(1) Premises where the public water system is used to supplement the recycled water supply.	AG
(2) Premises where recycled water is used, other than as allowed in paragraph (3), and there is no interconnection with the potable water system.	RP
(3) Residences using recycled water for landscape irrigation as part of an approved dual plumbed use area established pursuant to sections 60313 through 60316 unless the recycled water supplier obtains approval of the local public water supplier, or the Department if the water supplier is also the supplier of the recycled water, to utilize an alternative backflow protection plan that includes an annual inspection and annual shutdown test of the recycled water and potable water systems pursuant to subsection 60316(a).	DC

(d) Fire Protection Systems

(1) Premises where the fire system is directly supplied from the public water system and there is an unapproved auxiliary water supply on or to the premises (not interconnected).	DC
(2) Premises where the fire system is supplied from the public water system and interconnected with an unapproved auxiliary water supply. A RP may be provided in lieu of an AG if approved by the health agency and water supplier.	AG
(3) Premises where the fire system is supplied from the public water system and where either elevated storage tanks or fire pumps which take suction from private reservoirs or tanks are used.	DC
(4) Premises where the fire system is supplied from the public water system and where recycled water is used in a separate piping system within the same building.	DC

(e) Dockside Watering Points and Marine Facilities

(1) Pier hydrants for supplying water to vessels for any purpose. RP

(2) Premises where there are marine facilities. RP

(f) Premises where entry is restricted so that inspections for cross-connections cannot be made with sufficient frequency or at sufficiently short notice to assure that do not exist. RP

(g) Premises where there is a repeated history of cross-connections being established or re-established. RP

Section 7605. Testing and maintenance of backflow preventers

(a) The water supplier shall assure that adequate maintenance and periodic testing are provided by the water user to ensure their proper operation.

(b) Backflow preventers shall be tested by persons who have demonstrated their competency in testing of these devices to the water supplier or health agency.

(c) Backflow preventers shall be tested at least annually or more frequently if determined to be necessary by the health agency or water supplier. When devices are found to be defective, they shall be repaired or replaced in accordance with the provisions of this Chapter.

(d) Backflow preventers shall be tested immediately after they are installed, relocated or repaired and not placed in service unless they are functioning as required.

(e) The water supplier shall notify the water user when testing of backflow preventers is needed. The notice shall contain the date when the test must be completed.

(f) Reports of testing and maintenance shall be maintained by the water supplier for a minimum of three years.

* * * * *

APPENDIX B - RECYCLED WATER CUSTOMER INFORMATION

Potential Recycled Water Customer Information
SCVWD South County Recycled Water Master Plan

1	2	3	4	5	6	7	8	9	10
Site No.	**Customer**	**Use**	**Water Supplier**	**Existing Water Use** (afy)	**Irrigable Area** (acres)	**Rec. Water Demand** (afy)	**Contact**	**Phone**	**Address**
	Existing Users								
E-1	Christmas Hill Park Ranch Addition	Irrigation	SCRWA	17		17			Uvas Park / Miller
E-2	Christmas Hill Park	Irrigation	SCRWA	0	8	30			Uvas Park / Miller
E-3	Eagle Ridge Development	Golf course, Irrigation	SCRWA	561		561	Brian McCray	846-5628	Santa Teresa
E-4	Obata Farms (near plant)	Agricultural Irrigation	SCRWA	58		58			
E-5	Calpine-Gilroy Energy Center (peak)	Cooling water	SCRWA	45		45			Pacheco Pass
	TOTAL EXISTING REUSE		SCRWA	**681**		**711**			
	Commercial/Industrial Users								
1	Cintas Corporation	Commercial Laundry	Gilroy Water	45	N/A	45	Franz Lubick	848-1023	934 Holloway / Silacci
2	Inland Paperboard and Packaging	Paper Products	Gilroy Water	34	N/A	26	Russ Asp	847-6400	6400 Jamieson / E. Luchessa
69	Calpine Gilroy Power Plant	Cooling Water	Private Well	307	N/A	307			Pacheco Pass
	Large Irrigation Users								
3	Gavilan College	Irrigation	Private Well	+	20	72	Art-Manager	848-4705	Santa Teresa / Mesa
4	Gavilan Sports Park	sports fields	Private Well	+	7.2	26	Art-Manager	848-4705	Castro Valley / Santa Teresa
5	Gavilan Golf Course	Golf Course	Private Well	228	36	130		846-4920	Castro Valley / Santa Teresa
6	Bonfante Gardens	ornamental plants, vineyard	Private Well	678	90	340	Barbara Granter-VP	840-7135	Hecker Pass / Burchell
7	Gilroy Golf Course	Irrigation	Gilroy Water	144	40	144	Albert Canedo	848-0492	Hecker Pass Highway
8	Gilroy Sports Park	Irrigation	N/A	0	60	226	Bill Hedley	846-0283	Monterey / W Luchessa
9	Goldsmith Seeds	Nursery irrigation		N/A	N/A	15	Michael Elliott	847-7333	Hecker Pass
23	Gilroy High School	Irrigation	Gilroy Water	64	16	61	Facilities Planning		Tenth / Princevalle
						1014			
	Parks						Karla/Bill Faus	846-0460	
10	Forest Street Park	Irrigation	Gilroy Water	N/A	1.0	4			Forest / Seventh
11	El Roble Park	Irrigation	Gilroy Water	11	3.2	11			Wren / Perrelli
12	Miller Park	Irrigation	Gilroy Water	15	4.3	15			Second / Princevale
13	San Ysidro Park	Irrigation	Gilroy Water	21	6.8	21			Murray / Lewis / 101
14	Las Animas Park	Irrigation	Gilroy Water	77	24	77			Mantelli / Wren
15	Rainbow Park	Irrigation	Gilroy Water	7	1.0	4			Mantelli / Hirasaki
16	Del Rey Park	Irrigation	Gilroy Water	13	1.7	6			Calle Del Rey / Partridge
	Cemeteries								
17	Gavilan Hills Memorial Park	Irrigation	Private Well	16	10	16	Steve	847-4040	First / Kern
18	Saint Mary Cemetery	Irrigation	Private Well	2	1	2	Steve	847-4040	First / Wren
	Medians/Interchanges								
19	Highway 101/Monterey	Irrigation	N/A	0	3.5	13	Dave Nilson, Caltrans	452-7122	Highway 101/Monterey
20	Highway 101/Tenth/Pacheco Pass	Irrigation	N/A	0	10	38	Dave Nilson, Caltrans	452-7122	Highway 101/Tenth/Pacheco Pass
21	Highway 101/Leavesley	Irrigation	N/A	0	6.4	24	Dave Nilson, Caltrans	452-7122	Highway 101/Leavesley
22	Highway 101 Median	Irrigation	N/A	0	18	68	Dave Nilson, Caltrans	452-7122	Highway 101 Median

Potential Recycled Water Customer Information
SCVWD South County Recycled Water Master Plan

1	2	3	4	5	6	7	8	9	10
Site No.	**Customer**	**Use**	**Water Supplier**	**Existing Water Use** (afy)	**Irrigable Area** (acres)	**Rec. Water Demand** (afy)	**Contact**	**Phone**	**Address**
	Schools						Charlie van Meter	847-2700 x6349	
24	Glen View Elementary	Irrigation	Gilroy Water	4	5	4			Eighth / Princevalle
25	Gateway School	Irrigation	Gilroy Water	*	*	*			Hanna / Ninth
26	El Roble Elementary	Irrigation	Gilroy Water	N/A	5	19			Third / Wren
27	Jordan Elementary	Irrigation	Gilroy Water	18	3.5	13			Third / Hanna
28	Brownell Academy of Humanities	Irrigation	Gilroy Water	17	3.5	13			Second / Carmel
29	Eliot Elementary	Irrigation	Gilroy Water	8	1.25	5			Seventh / Old Gilroy
30	South Valley Junior High - Sciences	Irrigation	Gilroy Water	36	12	36			I.O.O.F. / Murray
31	Gilroy Community Day	Irrigation	Gilroy Water	*	*	*			I.O.O.F. / Forest
32	Gilroy Adult Education	Irrigation	Gilroy Water	*	*	*			I.O.O.F. / Forest
33	St. Mary's	Irrigation	Gilroy Water	11	2	8			First / Church
34	Las Animas Elementary	Irrigation	Gilroy Water	20	4	15			Wren / Welburn
35	Cornerstone Christian	Irrigation		*	*	*			Wren / Welburn
36	Rod Kelley Elementary	Irrigation	Gilroy Water	33	6.5	25			Mantelli / Kern
37	Mt. Madonna High	Irrigation	Gilroy Water	*	*	*			Mantelli / Hirasaki
38	Vineyard Christian	Irrigation		N/A	0	0			First / Santa Teresa
39	Adventist Christian	Irrigation		N/A	3	11			Mantelli / Welburn
40	Pacific West Christian Academy	Irrigation		*	*	*			Mantelli / Welburn
41	Luigi Aprea Fundamental Elementary	Irrigation	Gilroy Water	17	4	15			Calle Del Rey / Lerma
42	Antonio Del Buono Elementary	Irrigation	Gilroy Water	17	3	11			Wren / Farrell
43	San Ysidro Elementary	Irrigation		N/A	2.1	8			Pacheco Pass / Frazier Lake
44	Ascension Solorsano Middle	Irrigation		N/A	3	11			Grenache / Club
	Agriculture								
45	Obata Farms	agricultural irrigation	Private Well	420	225	855	Tom Obata	842-9809	Around SCRWA WWTP
	Residential Developments								
46	Glen Loma Ranch	Irrigation	None	0	30	114		0	0 Santa Teresa / Luchessa
47	Hecker Pass Development	Irrigation	None	0	17	65		0	0 Hecker Pass Highway
						674			
	Morgan Hill Projects								
48-67	Morgan Hill Projects	Irrigation	Various	N/A	0	389		0	0 Morgan Hill
68	AIM/Fry's Golf Course	Irrigation	Private Well	N/A	0	380		0	0 Maple / Foothill
						769			

Potential Recycled Water Customer Information
SCVWD South County Recycled Water Master Plan

1	2	3	4	5	6	7	8	9	10
Site No.	**Customer**	**Use**	**Water Supplier**	**Existing Water Use** (afy)	**Irrigable Area** (acres)	**Rec. Water Demand** (afy)	**Contact**	**Phone**	**Address**

Column Footnotes:

1 Site number assigned in order of listing in Market Assessment.
2 Customer Name.
3 Expected type of recycled water use.
4 Current water supplier.
5 Existing water use (acre-feet per year), used where available to estimate expected annual recycled water usage.
6 Estimated irrigable area (acres).
7 Projected water usage (acre-feet per year), based on evapotranspiration and rainfall, used where applicable to estimate peak recycled water flowrates.
8 Contact person for issues related to recycled water use at the site.
9 Phone number of contact person, area code 408.
10 Address or intersection of site in Gilroy.
+ Gavilan College and Gavilan Sports Park usage is included with Gavilan Golf Course.
* A * indicates the existing use is included with that of the site listed above.
N/A Existing water usage data was not available.

	Future Planned Sites								
F-1	Sunrise Park (Hogan Way)								Hogan / Saddler
F-2	Los Arroyos Park (Hirasaki)								Hirasaki / Morro
F-3	Carriage Hills Park (Longmeadow)								Longmeadow / Rancho Hills
F-4	Farrell Avenue Park (N of Buono Elem.)								Wren / Farrell

Sites Deleted	**Notes**		
Butcher Park	No turf grass, minimal area		Eighth / Old Gilroy
Renz Park	too small		Hanna / Oak Circle
Gavilan Hills Academy	Doesn't exist		Pacheco Pass / Frazier Lake
Thousand Trails	out of study area		Uvas / Watsonville
James Blocher	out of study area		Hecker Pass / Watsonville
Eagle Ridge area Middle School	Decided not to use Rec. Water		
ConAgra	Requires potable water	Private Well	Pacheco Pass / Silaci
Masoni, Louis	out of study area	Private Well	Ferguson / Crews
Urshan, David	out of study area	Private Well	Ferguson / Crews

Potential Recycled Water Customer Contact Record
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Customer **Contact Info**

Caltrans Dave Nilson, Area Superintendent, (408) 232-0228

- Doesn't currently have manpower for landscape crews to support maintenance
- Long term plan would be OK
- If city would accept responsibility for support, then interested
- Could continue up through Morgan Hill, Caltrans may be able to assist

Inland Paperboard and Packaging Russ Asp, Plant Manager, (408) 847-6400

- Concerned about bacteria and pH, water quality in general
- Not a huge water user, not all could be replaced with RW
- Requests a contact letter including benefits of using RW and discussion of water quality/comparison with potable supply

Gavilan College Art Kerr, Facilities Services, (408) 848-4705

- Is interested in the potential for recycled water, and believes it would be beneficial.
- Believes it is workable to separate Gavilan Sports Park fields, Gavilan football and softball fields, and the golf course from the existing interconnected system. Golf Course (60 acres) would require more domestic separations and retrofits.
- In late 2004/2005, a bond issue is planned to isolate the campus sprinkler irrigation system. A recommendation in the RW MP would be beneficial in achieving this objective, and allowing design for recycled water conversion.
- Is project financially feasible? Current irrigation and potable systems are completely connected throughout campus. Will the District cover some or all of the retrofit costs?
- Only one water meter, no idea on current irrigation quantity. 120 total acres

Gilroy Golf Course Albert Canedo, Superintendent, (408) 848-0492

- 35-40 irrigated acres, 50 total. Some days they irrigate all day long, need 600 gpm to irrigate only at night
- Main concern - ability to use water during the day
- Irrigation system is separate
- Interested in the potential for storage, such as a lake
- Long term plan to expand to 18 holes

Cintas Corporation Franz Lubick, Plant Manager, (408) 848-1023

- Operate 5 days a week, at 50,000 gpd
- Need good water quality, low TSS and turbidity to protect laundered clothes
- Could WWTP ease discharge requirements for BOD and TSS?
- Uses a turbidity wedge to measure turbidity

Gavilan Hills Memorial Park Steve, Property Manager, (408) 847-4040

- Operates both cemeteries. GHMP has 15 total acres, 10 irrigated. SMC has 5 total acres, 1 irrigated.
- Is interested in potential cost savings and reliable supply without concern for conservation
- Will use about 16 acre-feet this year.

Obata Farms Tom Obata, (408) 842-9809

- Could use much more recycled water than currently using, limited due to distribution system
- Currently has two large plots of land. To the south and west of the SCRWA WWTP, he has 350 acres leased from the city. Currently, about 30 acres of this are irrigated with recycled water. We discussed a potential underground pipe extending about 2000 feet to the southwest from the WWTP through City-owned land that would allow him to irrigate the entire 350 acres with recycled water.
- Obata Farms' other large plot of land covers both sides of the Princevalle Drain and existing recycled water distribution pipeline. He currently has two turnouts/valves on the pipeline which he has not been allowed to use.
- We discussed estimated water usage, and he believes the 3.8 ac-ft per year value is very reasonable. Most demanding crops are broccoli and bell peppers. June through September are peak usage months.
- Has never seen any adverse water quality impacts, even on sensitive lettuce/spinach crops, and is very pleased with overall water quality. Would be interested in seeing a mineral/constituent comparison with groundwater.
- Does not currently have a written or structured Recycled Water User Agreement with SCRWA/SCVWD. Would be very interested in a written agreement, and is willing to take water on an "As Available" basis.

Eagle Ridge Golf Course Brian McCray, (408) 846-5628

- Irrigates from 9 PM until 6 AM generally. On hottest summer days, until 10 AM.
- Draws recycled water at a constant rate during the day to fill onsite storage ponds. Generally filled by 2 PM.
- Will continue to use approximately the same amount of recycled water.

City of Gilroy Planning

- Bill Faus, Planning Director, (408) 846-0253
- Rick Smelser, City Engineer, (408) 846-0450
- Bill Hedley, Parks and Rec, (408) 846-0450

Recycled Water Potential Routing Scenarios: Group Definitions
SCVWD South County Recycled Water Master Plan

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Group	**Site No.**	**Site Name**	**Area** (acres)	**Percent Irrigable** (%)	**Est. Irr. Area** (acres)	**Current Usage** (afy)	**Projected Usage** (afy)	**Rec. Water Usage** (afy)	**Max Month Demand** (ac-ft)	**Max Month Demand** (mgd)	**Peak Day Demand** (ac-ft)	**Peak Day Demand** (gpm)	**Peak Day Demand** (mgd)	**Peak Hour Demand** (ac-ft)	**Peak Hour Demand** (gpm)	**Peak Hour Demand** (mgd)	**Approx. Elevation** (feet)
Exist.	E-1	Xmas Hill - Ranch Addition				17	17	17	3	0.04	0.15	33	0.05	0.02	100	0.14	
Exist.	E-2	Christmas Hill Park	8	100%	8	-	30	30	6	0.07	0.26	60	0.09	0.03	179	0.26	
Exist.	E-3	Eagle Ridge Development				561	561	561	112	1.22	4.86	1101	1.59	0.24	1321	1.90	
Exist.	E-4	Obata Farms (near plant)				58	58	58	12	0.13	0.50	114	0.16	0.03	152	0.22	
Exist.	E-5	Calpine Peaker Plant**				45	45	45	33	0.36	1.43	323	0.47	0.09	485	0.70	
Exist.		**TOTAL EXISTING**			**8**	**681**	**711**	**711**	**166**	**1.81**	**7.20**	**1631**	**2.35**	**0.412**	**2237**	**3.22**	
A1	23	Gilroy High	40	40%	16	64	61	61	12	0.13	0.53	119	0.17	0.07	358	0.52	205
A1	44	Ascension Solorsano Middle	6	50%	3		11	11	2.3	0.02	0.10	22	0.03	0.01	67	0.10	220
A1	7	Gilroy Golf Course	50	80%	40	144	152	144	30	0.33	1.32	298	0.43	0.16	895	1.29	236
A1	8	Gilroy Sports Park	70	85%	60	-	226	226	45	0.49	1.96	444	0.64	0.24	1331	1.92	192
A1	46	Glen Loma Ranch Dev.			30	-	114	114	23	0.25	0.99	224	0.32	0.12	671	0.97	
A1		**TOTAL GROUP A1**			**149**	**208**	**564**	**556**	**113**	**1.23**	**4.89**	**1107**	**1.59**	**0.61**	**3322**	**4.78**	
A2	1	Cintas Laundry	N/A	-	-	52	45	45	4.5	0.05	0.20	44	0.06	0.02	106	0.15	180
A2	2	Inland Packaging	N/A	-	-	62	26	26	2.6	0.03	0.11	26	0.04	0.01	61	0.09	185
A2	69	Calpine Gilroy Power Plant	N/A	-	-	307	307	307	59.8	0.65	3.04	688	0.99	0.13	688	0.99	180
A2		**TOTAL GROUP A2**	**N/A**		**-**	**421**	**378**	**378**	**67**	**0.73**	**3.35**	**758**	**1.09**	**0.16**	**855**	**1.23**	
A3	9	Goldsmith Seeds			-	30	15	15	3.0	0.03	0.13	29	0.04	0.02	88	0.13	240
A3	6	Bonfante Gardens	250	36%	90	678	340	340	68	0.74	2.95	667	0.96	0.37	2001	2.88	245
A3	47	Hecker Pass Development	19	90%	17	-	65	65	13	0.14	0.56	127	0.18	0.07	382	0.55	240
A3		**TOTAL GROUP A3**			**107**	**708**	**420**	**420**	**84**	**0.91**	**3.64**	**824**	**1.19**	**0.45**	**2472**	**3.56**	
B	3	Gavilan College	50	40%	20	72	76	72	15	0.17	0.66	149	0.21	0.08	447	0.64	240
B	4	Gavilan Sports Park	8	90%	7.2	26	27	26	5.5	0.06	0.24	54	0.08	0.03	161	0.23	210
B	5	Gavilan Golf Course	40	90%	36	130	137	130	27	0.30	1.19	268	0.39	0.15	805	1.16	220
B		**TOTAL GROUP B**			**63**	**228**	**240**	**228**	**48**	**0.52**	**2.08**	**471**	**0.68**	**0.26**	**1414**	**2.04**	
C	24	Glen View Elementary	10	50%	5	4	19	4	3.8	0.04	0.16	37	0.054	0.021	112	0.16	205
C	25	Gateway School	included with Glen View			-			-		-		-	-		-	200
C	26	El Roble Elementary	10	50%	5	-	19	19	3.8	0.04	0.16	37	0.054	0.021	112	0.16	215
C	11	El Roble Park	3.5	90%	3.2	11	12	11	2.4	0.03	0.10	23	0.034	0.013	70	0.10	215
C	27	Jordan Elementary	7	50%	3.5	18	13	13	2.7	0.03	0.12	26	0.038	0.014	78	0.11	205
C	28	Brownell Academy	7	50%	3.5	17	13	13	2.7	0.03	0.12	26	0.038	0.014	78	0.11	210
C	12	Miller Park	4.75	90%	4.3	15	16	15	3.2	0.04	0.14	32	0.046	0.018	96	0.14	210
C	17	Gavilan Hills Memorial Park	15	67%	10	16	38	16	7.6	0.08	0.33	75	0.108	0.041	225	0.32	225
C	18	Saint Mary Cemetery	5	20%	1	2	4	2	0.8	0.01	0.03	7	0.011	0.004	22	0.03	220
C	38	Vineyard Christian															250
C		**TOTAL GROUP C**			**35**	**83**	**135**	**93**	**27**	**0.29**	**1**	**264**	**0.38**	**0.15**	**793**	**1.14**	
D	30	South Valley Junior High	30	40%	12	36	46	36	9.1	0.10	0.40	89	0.129	0.049	268	0.39	195
D	31	Gilroy Community Day	included with South Valley Junior High			-		0	-		-		-	-		-	195
D	32	Gilroy Adult Education	included with South Valley Junior High			-		0	-		-		-	-		-	195
D	33	St. Mary's School			2	11	8	8	1.5	0.02	0.07	15	0.021	0.008	45	0.06	195
D	13	San Ysidro Park	9	90%	8.1	21	31	21	6.2	0.07	0.27	60	0.087	0.033	181	0.26	190
D		**TOTAL GROUP D**			**22**	**68**	**84**	**65**	**17**	**0.18**	**0.73**	**165**	**0.237**	**0.091**	**494**	**0.71**	
E	34	Las Animas Elementary	8	50%	4.0	20	15	15	3.0	0.03	0.13	30	0.043	0.016	89	0.13	215
E	35	Cornerstone Christian	included with Las Animas Elem.			-		0	-		-		-	-		-	215
E	14	Las Animas Park	28	85%	24	77	90	77	18	0.20	0.78	177	0.256	0.098	532	0.77	210
E	36	Rod Kelley Elementary	13	50%	6.5	33	25	25	4.9	0.05	0.21	48	0.070	0.027	145	0.21	220
E	37	Mt. Madonna High	included with Rod Kelley Elem.			-		0	-		-		-	-		-	220
E	15	Rainbow Park	1.2	80%	1.0	7	4	4	0.7	0.01	0.03	7	0.010	0.004	21	0.03	220
E		**TOTAL GROUP E**			**35**	**137**	**134**	**121**	**27**	**0.29**	**1.16**	**263**	**0.379**	**0.145**	**789**	**1.14**	

Recycled Water Potential Routing Scenarios: Group Definitions
SCVWD South County Recycled Water Master Plan

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Group	**Site No.**	**Site Name**	**Area** (acres)	**Percent Irrigable** (%)	**Est. Irr. Area** (acres)	**Current Usage** (afy)	**Projected Usage** (afy)	**Rec. Water Usage** (afy)	**Max Month Demand** (ac-ft)	**Max Month Demand** (mgd)	**Peak Day Demand** (ac-ft)	**Peak Day Demand** (gpm)	**Peak Day Demand** (mgd)	**Peak Hour Demand** (ac-ft)	**Peak Hour Demand** (gpm)	**Peak Hour Demand** (mgd)	**Approx. Elevation** (feet)
F	19	Monterey St. Interchange	7	50%	3.5	-	13	13	2.7	0.03	0.12	26	0.038	0.014	78	0.11	185
F	20	Tenth St. Interchange	20	50%	10	-	38	38	7.6	0.08	0.33	75	0.107	0.041	224	0.32	185
F	21	Leavesley Rd. Interchange	16	40%	6.4	-	24	24	4.9	0.05	0.21	48	0.069	0.026	143	0.21	200
F	22	Highway 101 Median	20	90%	18	-	68	68	14	0.15	0.59	134	0.193	0.074	403	0.58	190
F		**TOTAL GROUP F**			**38**	**0**	**144**	**144**	**29**	**0.31**	**1.25**	**283**	**0.407**	**0.156**	**848**	**1.22**	
G	39	Adventist Christian	6	50%	3.0	-	11	11	2.3	0.02	0.10	22	0.032	0.012	67	0.10	230
G	40	Pacific West Christian	Included with Adventist			-		0	-		-		-	-		-	230
G	41	Luigi Aprea Elementary	8	50%	4	17	15	15	3.0	0.03	0.13	30	0.043	0.016	89	0.13	225
G	16	Del Rey Park	2.75	60%	1.7	13	6	6	1.3	0.01	0.05	12	0.018	0.007	37	0.05	225
G		**TOTAL GROUP G**			**9**	**30**	**33**	**33**	**7**	**0.07**	**0.28**	**64**	**0.093**	**0.036**	**193**	**0.28**	
H	10	Forest Street Park	1.1	90%	1.0	-	4	4	0.8	0.01	0.03	7	0.011	0.004	22	0.03	195
H	29	Eliot Elementary	2.5	50%	1.3	8	5	5	1.0	0.01	0.04	9	0.013	0.005	28	0.04	195
H	42	del Buono Elementary	6	50%	3.0	17	11	11	2.3	0.02	0.10	22	0.032	0.012	67	0.10	215
H	43	San Ysidro Elementary	4.2	50%	2.1	-	8	8	1.6	0.02	0.07	16	0.023	0.009	47	0.07	175
H		**TOTAL GROUP H**			**7.3**	**25**	**28**	**28**	**5.6**	**0.06**	**0.24**	**55**	**0.079**	**0.030**	**164**	**0.24**	
I	48-67	Morgan Hill Projects			57	358	400	389	78	0.85	3.37	763	1	0	2289	3	350
I	68	AIM/Fry's Golf Course			100	**-**	380	380	76	0.83	3.29	746	1.074	0.412	2237	3.22	350
I		**TOTAL GROUP I**				**358**	**780**	**769**	**154**	**1.67**	**6.66**	**1509**	**2.17**	**0.83**	**4526**	**6.52**	
Agr.	**45**	**Obata Farms**			**225**	**420**	**855**	**855**	**171**	**1.86**	**7.41**	**1678**	**2.42**	**0.412**	**2237**	**3.22**	165

Column Footnotes:

1 Grouping assigned in priority order, according to water usage and potential capital costs.
2 Site number from market assessment.
3 Site name and group totals.
4 Total site area from market assessment (acres).
5 Percent of site area that is irrigated.
6 Estimated Irrigable Area (acres).
7 Current water usage (acre-feet per year), from either private wells or Gilroy Municipal Water. Current information was not available for all sites.
8 Projected water usage (acre-feet per year), based on evapotranspiration and rainfall.
9 Estimated Annual Recycled Water Usage (acre-feet per year), conservatively based on the lower of current and projected water usage.
10 Maximum Month recycled water demand (acre-feet), calculated as 20% of projected water usage for irrigation users and 10% for industrial users.
11 Maximum Month recycled water demand (million gallons per day), calculated as 20% of projected water usage for irrigation users and 10% for industrial users.
12 Peak Day Recycled Water Demand (acre-feet), calculated as maximum month demand divided by 30 and multiplied by a peaking factor of 1.3.
13 Peak Day Recycled Water Demand (gallons per minute), calculated as maximum month demand divided by 30 and multiplied by a peaking factor of 1.3, adjusted for units change.
14 Peak Day Recycled Water Demand (million gallons per day), calculated as maximum month demand divided by 30 and multiplied by a peaking factor of 1.3, adjusted for units change.
15 Peak Hour Recycled Water Demand (acre-feet), calculated as peak day demand divided by 8 hours of use per day.
16 Peak Hour Recycled Water Demand (gallons per minute), calculated as peak day demand divided by 8 hours of use per day, adjusted for units change.
17 Peak Hour Recycled Water Demand (million gallons per day), calculated as peak day demand divided by 8 hours of use per day, adjusted for units change.
18 Approximate elevation of site (feet), taken from USGS map.
** Calpine maximum month, peak day, and peak hour factors based on water usage calculations by Calpine provided by SCVWD.

Recycled Water Potential Routing Scenarios: Morgan Hill Users
SCVWD South County Recycled Water Master Plan

1	2	3	6	7	8	9	10	11	12	13	14	15	16	17
Group	**Site No.**	**Site Name**	**Est. Irr. Area** (acres)	**Current Usage** (afy)	**Projected Usage** (afy)	**Rec. Water Usage** (afy)	**Max Month Demand** (ac-ft)	**Max Month Demand** (mgd)	**Peak Day Demand** (ac-ft)	**Peak Day Demand** (gpm)	**Peak Day Demand** (mgd)	**Peak Hour Demand** (ac-ft)	**Peak Hour Demand** (gpm)	**Peak Hour Demand** (mgd)
I	48	Paradise Park	8	22	23	22	4.5	0.05	0.19	44	0.063	0.024	132	0.19
I	49	Diana Park	4	0	12	12	2.3	0.03	0.10	23	0.033	0.013	69	0.10
I	50	Galvin Community Park	7.3	11	21	11	2.2	0.02	0.10	22	0.032	0.012	66	0.09
I	51	Howard Weichart Park	1	0	3	3	0.6	0.01	0.03	6	0.008	0.003	17	0.02
I	52	Community Park	23	67	67	67	13.4	0.15	0.58	131	0.189	0.073	394	0.57
I	53	Civic Center	8	0	23	23	4.7	0.05	0.20	46	0.066	0.025	137	0.20
I	54	Police Dept. Landscaping	0.1	0	0.29	0.3	0.1	0.001	0.00	1	0.001	0.000	2	0.00
I	55	M.H. Museum	0.2	11	1	1	0.1	0.001	0.01	1	0.002	0.001	3	0.00
I	56	Condit/Dunne Median	0.1	0	0.29	0.3	0.1	0.001	0.00	1	0.001	0.000	2	0.00
I	57	Jackson Meadows Median	0.1	0	0.29	0.3	0.1	0.001	0.00	1	0.001	0.000	2	0.00
I	58	Second St. Median	0.5	0	1	1.5	0.3	0.003	0.01	3	0.004	0.002	9	0.01
I	59	Cochrane Median	2	0	6	5.8	1.2	0.01	0.05	11	0.016	0.006	34	0.05
I	60	Monterey St. Downtown Median	2.3	11	7	7	1.3	0.01	0.06	13	0.019	0.007	39	0.06
I	61-67	Morgan Hill School District	N/A	235	235	235	47.0	0.51	2.04	461	0.664	0.255	1384	1.99
		TOTAL	**56.6**	**358**	**400**	**389**	**78**	**0.85**	**3.37**	**763**	**1.10**	**0.42**	**2289**	**3.30**

Column Footnotes:

1 Grouping assigned in priority order, according to water usage and potential capital costs.
2 Site number from market assessment.
3 Site name and group totals.
4 Total site area from market assessment (acres).
5 Percent of site area that is irrigated.
6 Estimated Irrigable Area (acres).
7 Current water usage (acre-feet per year), from either private wells or Gilroy Municipal Water. Current information was not available for all sites.
8 Projected water usage (acre-feet per year), based on evapotranspiration and rainfall.
9 Estimated Annual Recycled Water Usage (acre-feet per year), conservatively based on the lower of current and projected water usage.
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Recycled Water Potential Routing Scenarios: Group Totals
SCVWD South County Recycled Water Master Plan

1	2	3	4	5	6	7	8	9	10	11
Group	**Est. Irr. Area** (acres)	**Current Usage** (afy)	**Projected Usage** (afy)	**Rec. Water Usage** (afy)	**Max Month Demand** (ac-ft)	**Max Month Demand** (mgd)	**Peak Day Demand** (ac-ft)	**Peak Day Demand** (mgd)	**Peak Hour Demand** (ac-ft)	**Peak Hour Demand** (mgd)
Exist.	8	681	711	711	166	1.81	7.20	2.35	0.41	3.22
A1	149	208	564	556	113	1.23	4.89	1.59	0.61	4.78
A2		421	378	378	66.9	0.73	3.35	1.09	0.16	1.23
A3	107	708	420	420	84	0.91	3.64	1.19	0.45	3.56
B	63	228	240	228	48	0.52	2.08	0.68	0.26	2.04
C	35	83	135	93	27	0.29	1.17	0.38	0.15	1.14
D	22	68	84	65	17	0.18	0.73	0.24	0.09	0.71
E	35	137	134	121	27	0.29	1.16	0.38	0.15	1.14
F	38	0	144	144	29	0.31	1.25	0.41	0.16	1.22
G	9	30	33	33	6.6	0.07	0.28	0.09	0.04	0.28
H	7	25	28	28	5.6	0.06	0.24	0.08	0.03	0.24
I	157	358	780	769	154	1.67	6.66	2.17	0.83	6.52
Agr.	225	420	855	855	171	1.86	7.41	2.42	0.41	3.22
TOTAL	**855**	**3367**	**4506**	**4401**	**914**	**9.9**	**40.1**	**13.1**	**3.7**	**29.3**
Exist	8	681	711	711	166	1.8	7.2	2.3	0.4	3.2
Imm.	233	1101	1566	1566	337	3.7	14.6	4.8	0.8	6.4
Short	382	1730	2509	2501	517	5.6	22.9	7.4	1.6	12.5
Long	552	2666	3169	3149	649	7.1	28.6	9.3	2.3	18.1
A123	256	1337	1362	1354	264	2.87	11.88	3.87	1.22	9.6
BCDE	156	516	593	506	119	1.29	5.14	1.68	0.64	5.0
FGHI	210	413	985	974	195	2.12	8.44	2.75	1.05	8.3

Column Footnotes:

1 Group totals for each grouping alternative.
2 Estimated Irrigable Area (acres).
3 Current water usage (acre-feet per year), from either private wells or Gilroy Municipal Water. Current information was not available for all sites.
4 Projected water usage (acre-feet per year), based on evapotranspiration and rainfall.
5 Estimated Annual Recycled Water Usage (acre-feet per year), conservatively based on the lower of current and projected water usage.
6 Maximum Month recycled water demand (acre-feet), calculated as 20% of projected water usage for irrigation users and 10% for industrial users.
7 Maximum Month recycled water demand (million gallons per day), calculated as 20% of projected water usage for irrigation users and 10% for industrial users.
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9 Peak Day Recycled Water Demand (million gallons per day), calculated as maximum month demand divided by 30 and multiplied by a peaking factor of 1.3.
10 Peak Hour Recycled Water Demand (acre-feet), calculated as peak day demand divided by 8 hours of use per day.
11 Peak Hour Recycled Water Demand (million gallons per day), calculated as peak day demand divided by 8 hours of use per day, adjusted for units change.

APPENDIX C - INITIAL ENVIRONMENTAL DOCUMENTATION

Administrative Draft

SANTA CLARA VALLEY WATER DISTRICT – SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

SOUTH COUNTY RECYCLED WATER MASTER PLAN CONSTRAINTS ANALYSIS

January 16, 2004

Administrative Draft

SANTA CLARA VALLEY WATER DISTRICT – SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY

SOUTH COUNTY RECYCLED WATER MASTER PLAN CONSTRAINTS ANALYSIS

January 16, 2004

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ESA Environmental Science Associates

203019

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SOUTH COUNTY REGIONAL WASTEWATER AUTHORITY
SOUTH COUNTY RECYCLED WATER MASTER PLAN CONSTRAINTS ANALYSIS

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CHAPTER 1
INTRODUCTION

1.1 INTRODUCTION

Santa Clara Valley Water Department (the District) in partnership with the South County Regional Wastewater Authority (SCRWA), is considering an expansion of the existing tertiary treated recycled water pipeline. The proposed expansion would be done in phases as described by the Draft South County Recycled Water Master Plan for the District developed by Carollo Engineering (Carollo). This study was undertaken to evaluate the environmental constraints or "fatal flaws" that may be associated with the new pipeline routes proposed to deliver tertiary treated recycled water to potential new users within the City of Gilroy service area.

This evaluation is based on review of pertinent background documentation, computer database searches and reconnaissance of the pipeline routes, consisting of windshield and ground survey using available access. Documents and persons consulted are listed in *Chapter 4, References.* *The Draft South County Recycled Water Master Plan (*Carollo 2004) identified proposed recycled water users and pipeline routes analyzed for this report. The proposed pipeline routes, totaling approximately 95,500 feet, are identified in Figure 1. All pipeline routes extend from the SCRWA WWTP and are located in and near the City of Gilroy CA.

The primary purpose of this analysis and the emphasis of this report are to evaluate possible environmental fatal flaws that could constrain implementation of each pipeline route. It is assumed that service to individual users would conform to Title 22 Requirements; therefore, service of recycled water to various land use types was not examined. A comparison of potential environmental impacts and identifying appropriate mitigation strategies for inclusion in project development is discussed in this report. Specific analysis topics include; land use and land use policy, traffic and circulation, visual/aesthetic resources, biological resources, cultural resources, hazardous materials, hydrologic resources, and geology and soils. For each of these issues, pipeline routes were evaluated by staff with respect to specified environmental criteria.

1.2 PROJECT BACKGROUND

The proposed project has been identified by SCRWA and the District as a means of increasing the flexibility and reliability of the existing reclaimed water distribution system in the Gilroy area. Increasing the availability of recycled water would enable SCRWA to continue pursuing new recycled water customers. The proposed project would upgrade the existing distribution system to accommodate up to 6 million gallons per day (mgd). This would equal the future expanded treatment system capacity of the SCRWA WWTP. Depending on the local market for recycled

water in south Santa Clara County, future projects could increase recycled water deliveries from the SCRWA WWTP from current levels of less than 3 mgd to as much as 15 mgd.

SCRWA has provided limited recycled water service since installation of a recycled water distribution system in 1978. This facility, constructed as a joint project with the District in 1978, was designed to provide service to primarily agricultural interests on the west side of Uvas Creek. The distribution system capacity is approximately 3 mgd. Currently, the recycled water distribution system operates on an as-needed basis, supplying approximately 1.2 mgd of tertiary treated recycled water (maximum month demand) to the Eagle Ridge Golf Course, 0.11 mgd to the Christmas Hill Park, 0.13 mgd to the Obata farm in the vicinity of the SCRWA WWTP, and 0.10 mgd to Calpine-Gilroy Energy Center.

In the 1990s both agencies implemented recycled water policies and planning efforts. In 1993, the District's Board of Directors adopted a non-potable recycling policy which provides for the District's financial participation to encourage the development of non-potable recycling projects in the County.

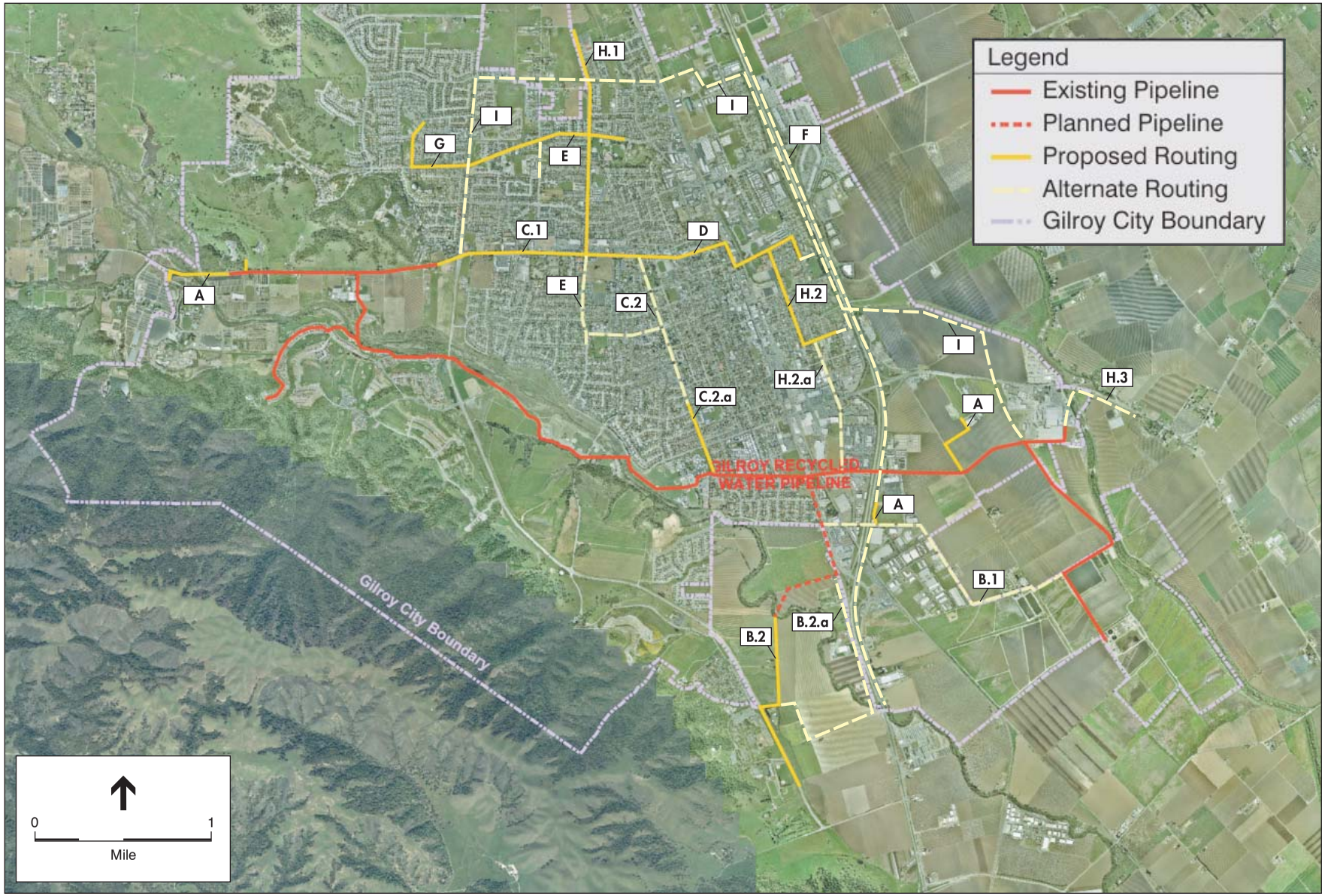
In 1995, SCRWA prepared a *Water Reclamation Planning Study* to further identify future recycled water demand and distribution system requirements. The modification of the existing pipeline and installation of a storage tank were identified as the first "building block" of the preferred scenario or Apparent Best Alternative (ABA). The *Water Reclamation Planning Study* included other components or "building blocks" to be implemented in the future as part of the ABA. These other components included expansion of existing facilities to provide recycled water to the following entities:

- neighboring properties which would not require a distribution system upgrade
- the Gavilan College area for which a dedicated pipeline would be installed
- municipal and industrial uses within the City of Gilroy, and agricultural uses north of the City of Gilroy

In 1997, the District prepared a 20-year planning document outlining potential strategies to meet demand in the Santa Clara Valley to the year 2020. The document, titled *Integrated Water Resources Plan*, included maximizing water recycling within the County as a key component.

1.3 PROJECT OBJECTIVES

The main objective of this project is to identify potential future recycled water users in South Santa Clara County, specifically in and near Gilroy. Water recycling continues to be a major component of water management planning in California and the use of recycled water would help limit demands on potable water use. The California Water Code, Section 13512 encourages development of water reclamation facilities to help meet the growing water demands of the State. The California Code of Regulations, Title 17 and Title 22, Division 4, Chapter 3, Sections 60301 through 60355 contain general Department of Heath Services recycled water regulations. These regulations designate wastewater treatment processes, effluent quality, and uses of recycled



SOURCE: Environmental Science Associates

SCVWD / 203019 ■

Figure 1
Pipeline Alignment

water. Additionally, the City of Gilroy Draft General Plan identifies water reclamation as a priority in Policy 23.02 as follows:

> Policy 23.02. Water Reclamation Facilities. Encourage development of water reclamation facilities, where feasible, in order to make reclaimed water available to help meet the growing water needs of the South County Area.

1.4 PIPELINE ALIGNMENTS

For purposes of discussion, proposed pipeline facilities will be divided into the following nine groups based on potential user priorities as identified by Carollo and the District. A discussion of pipeline routes to serve these customers is provided. Where appropriate, pipelines have been broken down into segments to facilitate discussion. Proposed pipeline routes are shown in Figure 1.

GROUP A – DIRECT CONNECTIONS

This would include service to those customers that are located close to the existing SCRWA recycled water distribution facilities and pipelines.

GROUP B – GAVILAN COLLEGE AREA.

Service to this customer would use a combination of existing and new pipeline to extend from the SCRWA WWTP to the college facility west of U.S. Highway 101.

The following segment alignments would be used:

- **Pipeline B.1** would be installed from the SCRWA WWTP to the existing pipeline at Monterey Street. This would include installation west along Southside Drive, north along Rossi Avenue, and west along East Luchessa to the existing pipeline, which crosses under Highway 101.

- **Pipeline B.2.** This route would extend west from the existing pipeline and across agricultural fields along the proposed multi-use recreational trail identified in the 2002 Gilroy Trails Conceptual Master Plan, as part of the 2002 City of Gilroy Master Plan**.** Under the proposed Master Plan, a bridge would be installed over Uvas Creek, presenting an opportunity for pipeline attachment to cross the creek. Pipeline would then be installed within the trail to Santa Teresa Blvd., with tie-in to campus facilities.

- **Pipeline B.2a.** This alternate route would be installed south along Monterey Frontage Road, west across Uvas Creek and agricultural fields, west along Mesa Road, and south along Santa Teresa Blvd. to Gavilan College.

GROUP C – FIRST STREET LOOP

Service to this group would include new pipeline routes in existing streets.

- **Pipeline C.1.** This pipeline would extend from Wren Street west along First Street to meet the existing pipeline west of Conrotto Winery.
- **Pipeline C.2.** This pipeline would extend from First Street south along Princevalle Street to branch west on Fourth Street and continue south to intersect with existing pipe. This route would create a loop in the system.
- **Pipeline C.2.a.** This alternate route limits the Princevalle Street pipeline from London to Eighth Street and serve Glenview Elementary and Gateway School.

GROUP D – I.O.O.F. AVENUE SPUR

Service to this group would include new pipeline extensions from Princevalle Street as follows: east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park.

GROUP E – WREN AVENUE SPUR

Service to this group would include extension of new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue.

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101, at the location of the new highway crossing for service to Gavilan College, or at the highway crossing for any new pipelines.

GROUP G – MANTELLI SPUR

This group would be served by a connection to the proposed Wren Street pipeline, and would run west along Mantelli Drive and north along Calle del Rey.

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions of new pipeline as follows:

- **Pipeline H.1** would extend north along Wren Avenue.
- **Pipeline H.2** would extend south along Forest Street and east along Seventh Street to Elliot School.

- **Pipeline H.2a** would extend south from Seventh Street along Chestnut Street and provide a loop to the system if the Princevalle route is not used.
- **Pipeline H.3** would extend east along Pacheco Pass Highway to San Ysidro Elementary School.

GROUP I – FLOOD CONTROL CHANNEL ALIGNMENT

This pipeline route would be installed to serve the above groups using existing District flood control easements along Llagas Creek and Miller Slough. These facilities provide gravel access roads at top of embankment, and proposed pipelines would be installed within existing District right of way. However, District policy as stated in their Engineer Policy and Procedure Manual prohibits installation of longitudinal encroachments in their Rights of Ways and pipeline installation with levees. This type of alignment would need to be reviewed and approved by the District. This route would extend north from the SCRWA WWTP along Miller Slough, then west across Highway 101 along the existing flood control channel. On the west side of Highway 101, the pipeline would extend north and west along the channel to link up with proposed pipeline along north Santa Teresa Blvd. This pipeline group, suggested by the City of Gilroy Planning Department, would reduce pipeline installation within City of Gilroy roadways.

TABLE 1-1
SEGMENT PIPELINE ROUTES

Group A	Direct connections to existing line.
Group B	**B.1** Begin from WWTP on Southside Drive, west to Rossi Lane, north to Luchessa Avenue, and west on Luchessa to intersect with existing Monterey St. pipe. **B.2** Alternative route would extend from the existing pipeline across agricultural fields along the proposed multi-use recreational trail identified in the 2002 City of Gilroy Bike Master Plan **B.2a** Begin at end of existing Monterey St. pipe, extend south along Monterey Frontage Road and across field to intersect Mesa Rd., west along Mesa Rd. to Santa Teresa Blvd., continue south to Gavilan College and Gavilan Golf Course.
Group C	**C.1** New pipeline from Wren Street, west along First Street to meet the existing pipeline west of Conrotto Winery. New pipeline south along Princevalle Street to branch west on Fourth Street, and end at London Street. **C.2** This pipeline would extend from First Street south along Princevalle Street to branch west on Fourth Street and continue south to intersect with existing pipe. This route would create a loop in the system. **C.2a** This alternate route limits the Princevalle Street pipeline from London Street to Eighth Street and serve Gilroy High School and Gateway School.
Group D	Begin First Street/ Princevalle, continue east to Monterey Street, south to IOOF, east to Murray Avenue, ending at San Ysidro Park.
Group E	Begin First Street/Wren Avenue, south to El Roble Park and north to Mantelli Drive, branch east to Las Animas Veteran's Park (near Eden Street), branch west to Kern Street, and continue south to Luigi Aprea school.
Group F	Median strips and along HWY 101 connecting to existing pipeline and be installed within the median strip.
Group G	Begin Mantelli and Kern, west on Mantelli to Calle Del Rey, and continue north to Del Ray Park.
Group H	**H.1** Begin Mantelli/Wren and continue north on Wren Drive to Farrell Avenue Park north of Farrell Avenue. **H.2 Begin** IOOF/Forest, south on Forest to7th St., south on 7th to Elliot School. **H.2a** Begin Seventh, extend south on Chestnut to existing pipe. **H.3** Begin at end of existing pipe branch east of Llagas Creek, continue northeast to parallel HWY 152 to San Ysidro School east of Frazier Lake Road.
Group I	Looped route beginning at the WWTP, north along Miller Slough, west to parallel HWY 101, to intersect with existing flood control channel, end at Santa Teresa Blvd.

CHAPTER 2

CONSTRAINTS ANALYSIS

SCRWA is evaluating 48 potential tertiary treated recycled water users who will be served through installation of 95,500 feet of new pipeline connected to the existing recycled water pipeline serving the Gilroy area. A preliminary engineering screening to identify preliminary sites was performed by Carollo utilizing geographic area, minimum available acres, and site topography. The following environmental analysis examines the proposed use areas and preliminary pipeline routes specified by the *draft* Master Plan for potential "fatal flaws". The discussion for each issue area includes methodology, evaluation criteria, and identification of potential constraints to pipeline implementation. A summary table of the level of environmental constraints for each is presented at the end of each issue area discussion.

2.1 LAND USE AND LAND USE POLICY

The following land use discussion highlights key policies likely to be of concern to local land use agencies. It is not a comprehensive policy review, nor a formal public policy interpretation, which would typically include consultation with local planning agency staff. Potential inconsistencies with such policies relate to, but do not necessarily represent, physical environmental constraints to site development. The District, as a regional agency and utility district, is not subject to the land use and zoning designations of local jurisdictions for projects involving public utility uses. However, it is typical for a water supplier to work with the host jurisdiction(s) and the neighboring community during project planning and to conform to local land use plans and policies to the extent possible.

RELEVANT PLANS AND POLICIES

This discussion of major land use policies is based on a preliminary review of the City of Gilroy General Plan (2002). The General Plan denotes four categories of land use; residential, commercial, industrial, and other designations. The Land Use portion of the General Plan, defines the general pattern of future development for the City of Gilroy. The Land Use Plan Map covers the area within the "20-Year Boundary" of the General Plan. This is the area that the City expects to be serviced and developed in urban uses by the year 2020. The expansion pipeline does not interfere with any of the areas designated by the map.

Land use incompatibilities often result from other impacts of a project, such as noise and traffic. Growth inducement can also be characterized as an indirect land use impact. These issues would typically be discussed and evaluated in the Environmental Impact Report to be prepared once one or more apparent best alternatives have been selected. Where these types of impacts could

contribute to a substantial constraint to development of an expanded recycled water distribution system, they are discussed under Land Use.

These policies would generally apply to all of the preliminary sites, and are generally focused on preservation of agricultural resources, open space and scenic resources. In addition to the criteria presented below, location and design of the pipeline should be consistent with these policies to the extent feasible.

AGRICULTURAL LAND DESIGNATIONS

The United States Department of Agriculture, Natural Resource Conservation Service employs a capability classification system to determine the suitability of soils for agriculture and limitations for cultivation. The soils are ranked on a scale from I to VIII, with Class I soils having the fewest limitations that restrict their use as farmland. The numerals indicate progressively greater limitations and narrower choices for practical use. The California Department of Conservation, Office of Land Conservation, maps important farmland throughout California. Important farmlands are divided into the following eight categories based on their suitability for agriculture:

- *Prime Farmland* is land that has the best combination of physical and chemical characteristics for crop production. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed.
- *Farmland of Statewide Importance* is land other than Prime Farmland, which has a good combination of physical and chemical characteristics for crop production.
- *Unique Farmland* is land that does not meet the criteria for Prime Farmland or Farmland of Statewide importance that has been used for the production of specific high economic value crops.
- *Farmland of Local Importance* is either currently producing crops, or has the capability of production, and does not meet the criteria of the categories above.
- *Grazing Land* is land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing.
- The remaining three categories, *Urban and Built-Up Land*, *Other Land*, and *Land Committed to Nonagricultural Use*, do not define important farmlands.

METHODOLOGY AND CRITERIA

Land use issues considered in this evaluation are based on general principles put forth in *CEQA Guidelines Appendix G*. They include the following:

- Disruption of the physical arrangement of an established community
- Conflicts with established recreational, educational, or scientific uses in the area
- Inconsistencies with major land use policies related to protection of the physical environment

- Conversion of prime agricultural land to non-agricultural use or impairment of the land's agricultural productivity

The land use constraint to project implementation would be:

- **High Constraint** if the project would require extensive mitigation (or if mitigation may not be feasible) in order to achieve project compatibility with on-site and adjacent land uses
- **Moderate Constraint** if the project would require limited mitigation in order to achieve project compatibility with on-site and adjacent land uses
- **Low Constraint** if the project would require no or minimal mitigation in order to achieve project compatibility with on-site and adjacent land uses

PIPELINE ROUTE EVALUATION – LAND USE

A discussion of land use constraints for each pipeline route is presented below. **Table 2-1** provides a summary of land uses along the pipeline routes and identified potential constraint levels based upon the above criteria.

TABLE 2-1
PIPELINE LAND USE CONSTRAINTS

Location		Potential Constraints	City/County Designation	Constraint Determination
Group A		Limited residential Commercial/industrial to west Agricultural land to east.	Commercial/industrial, large parcel agricultural	Low
Group B	B.1	Commercial, agriculture	Commercial	Low
	B.2	Residential, agriculture uses, Uvas Creek crossing.	Residential, Agriculture	Moderate
	B2.a	Agriculture uses, Uvas Creek crossing, public lands.	Public lands, agriculture	Moderate
Group C	C.1	Commercial use, heavy traffic road.	Commercial	Moderate
	C.2/ C.2a	Residential mixed use.	Residential	Moderate
Group D		Residential	Residential	Moderate
Group E		Residential, commercial	Residential	Low
Group F		Freeway median	Public Lands	Low
Group G		Residential	Residential	Moderate
Group H		Residential, commercial	Mixed use	Low
Group I		Agricultural fields, HWY 101 Corridor, Wide Flood Control Channel corridor.	Mixed Use	Moderate

GROUP A – DIRECT CONNECTIONS

This would include service to those customers that are closely located to SCRWA's recycled water distribution facilities and pipelines. Land uses include large commercial facilities and large agriculture fields. Land use constraints are considered ***Low.***

GROUP B – GAVILAN COLLEGE AREA

This facility would be served using a combination of the existing SCRWA pipeline and new pipeline installation. A discussion of land uses along each pipeline segment is provided below.

- **Pipeline B.1.** This pipeline segment extends from the SCRWA WWTP to the intersection of Monterey Street. This would include installation west within Southside Drive, west within Rossi Lane, and north within Luchessa Avenue to the existing SCRWA pipeline. Land uses along Southside Drive include agricultural lands to the south and north, with one residential use, the Auturo Ochoa Migrant Center. Land uses along Rossi Avenue include light industrial to the west and agricultural land to the east, with one residential unit. Land uses along Luchessa are commercial. Luchessa crosses under Highway 101 and includes one railroad crossing, which would require encroachment agreement. Due to the limited number of sensitive receptors, land use constraints along this segment are considered ***Low***.

- **Pipeline B.2.** This pipeline segment would be installed across agricultural lands in coordination with the proposed City of Gilroy multi-use recreational trail and Sports Park. Pipeline installation across agricultural land under present conditions would result in temporary loss of row crop production on prime agricultural soils. Row crop production is allowed over District and SCRWA facilities currently; therefore, no long-term loss of agricultural production under current crop patterns would occur. However, future installation orchard crops would be limited over the pipeline route following installation. Pipeline installation in coordination with the multi-use trail would not be considered a conflict with the trail's proposed use, and represents a corridor opportunity both for pipeline installation and crossing of Uvas Creek. Installation of this segment would be dependant upon the timing of the multi-use trail installation by the City of Gilroy for implementation of land use constraints associated with this pipeline route are considered ***Moderate***.

- **Pipeline B.2.a.** Land uses along Monterey Street include light industrial to the north and south. These lands are designated as residential, commercial, and open space in the City of Gilroy General Plan. Land uses along Monterey Frontage Road, include existing residential subdivisions to the north, and agricultural lands to the south. This pipeline segment would extend south from the existing pipeline in Monterey Street using the Monterey Frontage Road parallel to U.S. Highway 101. The frontage road is a low use roadway comprised of two lanes with no shoulders, and dead ends prior to Uvas Creek. Two residential units are located on agricultural land uses to the west. From the frontage road terminus, the pipeline would be installed across Uvas Creek and a small agricultural field to Mesa Road; then to Gavilan College. Due to the limited number of receptors, land use constraints are considered ***Low***.

GROUP C – FIRST STREET LOOP

This group of potential users would be served by the installation of pipelines to intersect with existing pipelines to create a looped system. A discussion of land uses along each pipeline segment is provided below.

- **Pipeline C.1.** This pipeline segment would extend from Wren Street west along First Street to meet the existing pipeline. Pipelines would be installed within existing streets in an established residential neighborhood. Due to the number of residential units along this segment, standard measures such as traffic control, construction hour limits, and dust control would be necessary. Therefore, land use constraints for this portion are considered ***Moderate.***

- **Pipeline C.2.** This pipeline would extend from First Street south along Princevalle Street to branch west on Fourth Street and continue south to intersect with existing pipe. This route would create a loop in the system. Therefore, land use constraints for this portion are considered ***Moderate.***

- **Pipeline C.2a.** This alternate route limits the Princevalle Street pipeline from London to Eighth Street, and serves Glenview Elementary and Gateway School. This would reduce short-term construction effects for that portion of the residential neighborhood and would utilize existing new pipeline installation along First Street. Land use constraints for this alternative are considered ***Low***.

GROUP D – I.O.O.F. AVENUE SPUR

This group of users would be served by a new pipeline along First Street east to serve San Ysidro Park and several schools in the vicinity. This section of pipeline crosses both Miller Slough and Llagas Creek, which may require permitting by state agencies, and includes one railroad crossing, which would require an encroachment agreement. Land use constraints for this segment are considered ***Moderate***.

GROUP E – WREN AVENUE SPUR

Service to this group would include extension of the new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue. This segment of new pipeline would serve parks, schools, commercial buildings, and City owned facilities. Land use constraints are considered ***Low.***

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101. Land uses along this corridor are separated from the median by two lanes of freeway, and would not be affected by installation of low-diameter irrigation systems. Therefore, land use constraints associated with this pipeline group are considered ***Low***.

GROUP G – MANTELLI SPUR

- This group would be served by a connection to the proposed Wren Street pipeline, run west along Mantelli Drive and north along Calle del Rey. This segment of new pipeline would serve primarily park land. This pipeline installation would be in existing roadways through residential areas. Therefore, land use constraints for this portion are considered ***Moderate.***

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions of new pipeline as follows:

- **Pipeline H.1** would extend north along Wren Avenue and is located in commercial land use areas and constraints are considered ***Low.***
- **Pipeline H.2** would extend south along Forest Street and east along Seventh Street to Elliot School. This route is located in commercial land use areas and constraints are considered ***Low***.
- **Pipeline H.2a** would extend south from Seventh Street along Chestnut Street and provide a loop to the system if the Princevalle route is not used. This route is located in commercial land use areas and constraints are considered ***Low***.
- **Pipeline H.3** would go east along HWY 152 to an old school site east of Frazier Road. Hwy 152 is a busy four lane highway. Land uses include large commercial facilities on the south and agriculture fields along both sides. Land use constraints are considered ***Low***.

GROUP I – FLOOD CONTROL CHANNEL ALIGNMENT

This alternate segment to loop the recycled delivery system follows an existing creek and slough which serve as the flood control channel for Gilroy. The beds of both waterways contain water of varying depths and are developed with vegetation. The sides of the waterways are mostly dirt and gravel with some sand bagging observed. An access road above the waterways varies in width from approximately 5’ to 12’ and is level with either gravel or dirt surfaces. The flood control channel crosses under several bridges, Highway 101, and railroad crossings. Miller Slough north, cross HWY 152 and continue to Llagas Creek, west to cross HWY101, north to cross HWY 152 and continue to flood control channel, northwest to cross Wren and intersect with Santa Teresa Blvd. This section of pipe crosses through agricultural land as designated in the 2000 General Plan.

Land uses along this pipeline route vary, with agricultural and open space areas predominant east of U.S. Highway 101, commercial areas along the segment that runs west of and parallel to U.S. Highway 101, and residential areas along the channel that extends east from the highway structure. Residential land uses generally back the flood control channels; therefore, construction activities would likely have short-term effects associated with noise, dust generation, and visual effects. These types of impacts would be temporary in nature, and could be reduced to the degree

feasible through use of standard Best Management Practices (BMPs). Therefore, potential constraints associated with this pipeline group are considered ***Moderate.***

2.2 TRAFFIC AND CIRCULATION

In general, pipeline installation generates four types of traffic impacts; disruption of traffic flow due to roadway construction and traffic control; generation of vehicle trips due to construction worker and materials delivery; loss of parking due to contractor staging or worker parking; and disruption of access, including emergency, residential, and commercial access. These effects are limited to the duration of the construction activity, and are typically short-term in any one location due to the linear nature of pipeline construction. Typically, construction activities generate traffic volumes of 50 to 100 Average Daily Trips (ADT). The recycled water expansion pipeline will be installed along roadways within the City of Gilroy. A summary of roadways affected, lane configurations, and traffic volumes is presented in **Table 2-2,** below.

TABLE 2-2
PIPELINE ROUTE LANE CONFIGUTATION AND AVERAGE DAILY TRIPS

Group	Road	Lane Conf.	ADT	Location	Constraint
A.	HWY 152	4	25,500	e/o U.S. 101	Moderate
	Jamieson Way	2	NA	NA	Low
	Silacci Way	2	NA	NA	Low
B.1	Southside Dr.	2	NA	NA	Low
B.1	Rossi Ln.	2	NA	NA	Low
	Luchessa Av.		5,790	e/o U.S. 101	Low
B.2	Monterey Frontage	2	NA	NA	Low
B.2a	Mesa Rd.	2	2,520	NA	Moderate
	Santa Teresa Bl.	4	NA	NA	Moderate
C.1	First St./ HWY 152		360	Bet. 1st and 10th Sts.	Moderate
C.2	Fourth St.	2	320	w/o Princevalle St.	Moderate
C.2a	Princevalle St.		14,800	e/o Santa Teresa Blvd.	Moderate
			17,500	w/o Monterey St.	
D.	Monterey St.	4 with median	8,010	s/o 1st St.	Moderate
	IOOF Avenue	2	590	e/o Monterey St.	Moderate
	Murray Av,	2	NA	NA	Moderate
	Forest St.	2	NA	NA	Moderate
E.	Wren Av.	2-4	NA	NA	Moderate
	Mantelli Dr. (east)		5,085	e/o Wren Avenue	Moderate
	Kern St.	2	NA	NA	Moderate
F.	HWY 101	4-6	87,000	s/o SR 152 east	Moderate
G.	Mantelli Dr.(west)	2	5,840	w/o Wren Avenue	Moderate
	Calle Del Rey	2	640	n/o Mantelle Drive	Moderate
H, I	HWY 152 (east)	4	25,500	e/o U.S. 101	Low/Moderate

SOURCES: City of Gilroy Community Development Department, Engineering Division, 24-hour counts and extrapolated peak-hour counts; Santa Clara County Roads and Airport Department, 24-hour counts; Caltrans, *2001 Traffic Volumes on California State Highways*, 2003, Annual Average Daily Traffic Volumes

Pipeline Route Evaluation

A discussion of traffic constraints for each pipeline route is presented below. A summary of traffic issues along the pipeline routes and identified potential constraint levels are provided in **Table 2-2.**

GROUP A – DIRECT CONNECTIONS

This would include service to those customers that are closely located to SCRWA's recycled water distribution facilities and pipelines. Service to these connections would be via lateral installation, and would not affect traffic. Therefore, constraints are considered ***Low***.

GROUP B – GAVILAN COLLEGE AREA

This facility would be served using a combination of the existing SCRWA pipeline and new pipeline installation. A discussion of traffic conditions along each pipeline segment is provided below.

- **Pipeline B.1.** This pipeline segment of extends from the SCRWA WWTP to the intersection of Monterey Street. This would include installation west within Southside Drive, north within Rossi Lane, and west within Luchessa Avenue to the existing SCRWA pipeline. Southside Drive is a two lane rural roadway that terminates at the SCRWA WWTP; ADT for this roadway are not available, but are anticipated to be less than 200 ADT. Construction within the roadway would require lane closure and alternating one-way traffic control to maintain access to the SCRWA WWTP and the Auturo Ochoa Migrant Center. Both Rossi Lane and Luchessa Avenue are two lane roadways with center turn-lanes for commercial and industrial uses. ADT data for Rossi Lane are unavailable, but is likely equivalent to Lucesa Avenue, which has an ADT volume of 5,790 trips. Traffic control along this roadway could utilize the center turn lane for a single lane push-over configuration to maintain two-way traffic. Due to the relatively low traffic volumes and available lane configurations, constraints associated with this route are considered ***low***.

- **Pipeline B.2.** This pipeline segment would be installed across agricultural lands in coordination with the proposed City of Gilroy multi-use recreational trail and Sports Park. This alignment would avoid construction within large segments of Mesa Road and Santa Teresa Road, although some disruption of these roadways would likely be required for final connection. Due to the lack of traffic disruption, constraints associated with this pipeline route are considered ***Low***.

- **Pipeline B.2a.** Monterey Street west of U.S. Highway 101 is a two lane arterial with an ADT volume of 2,520 trips. The road is developed on the north with curb, sidewalk and bikelane associated with residential subdivisions, and undeveloped on the south. Construction on this road would likely require alternating one way traffic control. This roadway is a paved two lane rural road with no shoulders. This pipeline segment would extend south from the existing pipeline in Monterey Street using the Monterey Frontage Road parallel to U.S. Highway 101. The frontage road is a low use roadway comprised of two lanes with no shoulders, and dead ends prior to Uvas Creek. Pipeline installation would require lane closure and maintenance of access to the two residential units, but would not substantially affect traffic flow. From the frontage road terminus, the pipeline would be installed across Uvas Creek and a small agricultural field to Mesa Road.

Mesa Road at this location is a hook-ramp 25 mph exit from U.S. Highway 101 to a two-lane rural roadway with no shoulders. ADTs at this location are 2,520 trips. Construction along this roadway would require lane closure and alternating one-way traffic control, and would also likely require exit ramp closure in coordination with Caltrans. Santa Teresa Road is a two lane arterial that provides service to Gavilan College and several new subdivisions. ADTs for this roadway were not available. Construction on this road would likely require alternating one way traffic control. Due to the traffic volumes and lane configurations, constraints associated with this route are considered ***Moderate.***

GROUP C – FIRST STREET LOOP

This group of potential users would be served by the installation of pipelines to intersect with existing pipelines to create a looped system. A discussion of traffic issues per pipeline segment is provided below. The street is two lanes wide with a shoulder and parking lane. Construction along this roadway would require lane closure and alternating one-way traffic control and traffic volumes are minimal.

- **Pipeline C.1.** The second portion of this pipeline segment would be installed west along First Street (HWY 152). This roadway is two to four lanes wide along a busy commercial area east of Santa Teresa Blvd., with residential west of Santa Teresa Blvd and along Princevalle. Construction along this portion would lane closures and traffic control. ADTs along this route are 14,800. Due to traffic volumes and the need for traffic control, constraints are considered ***Moderate***.

- **Pipeline C.2.** This pipeline would extend from First Street south along Princevalle Street to branch west on Fourth Street and continue south to intersect with existing pipe. ADTs along this route are 360. Due to traffic volumes and the need for traffic control, constraints are considered ***Moderate***.

- **Pipeline C.2a.** This alternate route limits the Princevalle Street pipeline from London to Eighth Street and would utilize existing new pipeline installation along First Street. Due to traffic volumes and the need for traffic control, constraints are considered ***Moderate***.

GROUP D – I.O.O.F. AVENUE SPUR

Service to this group would include new pipeline extensions from Princevalle Street as follows: east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park. Portions of this segment are along two busy commercial streets which would require traffic control and lane closures. ADTs along this route range from 590 to 17,500. Due to traffic volumes and the need for traffic control, constraints are considered ***Moderate***.

GROUP E – WREN AVENUE SPUR

Service to this group would include extension of the new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue. Residential land uses are located along the pipeline routes. The installation of this pipeline is primarily through residential and light commercial areas. Traffic control would

be required. ADTs along this route range up to 5,085. Due to traffic volumes and the need for traffic control, constraints are considered ***Moderate***.

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101. ADTs along this route are 87,000. Due to traffic volumes and high visibility of construction activities, constraints are considered ***Moderate***.

GROUP G – MANTELLI SPUR

This group would be served by new pipeline from Wren Street west along Mantelli Drive and north along Calle del Rey. Residential land uses are located along the pipeline routes; therefore, construction activities would likely have short-term effects. ADTs along this route range from 640 to 5,840. Due to traffic volumes and the need for traffic control, constraints are considered ***Moderate.***

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions; one north along Wren Avenue, a second south along Forest Street and east along Seventh Street, a third east along Pacheco Pass Highway. Residential land uses are located along the pipeline routes, and a fourth alternate route south on Chestnut Street from Seventh Street.

ADTs for this area are 25,500 and would require traffic control measures to be implemented. Due to the level of potential danger to construction workers, and high traffic volume, constraints are considered ***Moderate***.

GROUP I – FLOOD CONTROL CHANNEL ALIGNMENT

This pipeline route would use existing District flood control easements for pipeline installation. This would avoid construction related traffic effects associated with roadway installation. Roadway disruption and traffic control would be minimized compared to other pipeline routes. These routes also provide contractor layout and parking areas. However, District policy as stated in their Engineer Policy and Procedure Manual prohibits installation of longitudinal encroachments in their Rights of Ways and pipeline installation with levees. This type of alignment would need to be reviewed and approved by the District. Although these routes would still generate construction traffic associated with workers and materials, traffic constraints associated with use of existing flood control easements are considered **Low**.

2.3 BIOLOGICAL RESOURCES

Vegetation types and wildlife habitats were characterized on the basis of both records and field observations. Environmental Science Associates (ESA) conducted a limited reconnaissance of

proposed pipeline routes on December 4, 2003 to identify the potential for habitat presence and gather information on vegetative communities, wildlife habitats, and potential habitat use. No species specific surveys were conducted (e.g., for California red-legged frog or vernal pool fairy shrimp) as a part of this analysis.

METHODOLOGY AND CRITERIA

Biological resource issues considered in this evaluation are based on general principles put forth in CEQA *Guidelines* Appendix G, and laws, regulations, guidelines and policies employed by the primary agencies charged with natural resources management (U.S. Army Corps of Engineers (USCOE), U.S. Fish and Wildlife Service (USFWS), and California Department of Fish and Game (CDFG). Three categories of potential resources – wetlands, and special status plant or animal species – were analyzed. Further, in-depth surveys would be required as part of any CEQA review or additional permitting.

Biological resources (plants, animals, or sensitive habitats) would be considered:

- **High Constraint** if the project would affect known or highly likely locations of (and suitable habitat for) plant or animal species (individuals or populations) listed or currently proposed for listing by the state or federal government as endangered or threatened, where adequate mitigation would not be feasible or would entail considerable expense or delay. An example would be foraging habitat for the San Joaquin kit fox (endangered at the state and federal levels). In some cases, this constraint may be reached when, in addition to listed species issues, organisms with a "Species of Special Concern" (or other designation of rarity at the state level), are known to be present, or the site possesses vegetative resources that are considered to be (1) significant by the state or federal governments; (2) communities which, if degraded on-site, might result in a dramatic change in plant and wildlife patterns on-site and in the vicinity, or (3) protected by state or federal law or regulation (e.g., Section 404 of the Clean Water Act, Sections 1600-1607 of the California Fish and Game Code).

- **Moderate Constraint** if the project would affect known locations of (and suitable habitat for) plant or animal species (individuals or populations) listed by the state or federal government as endangered or threatened, or with other special status, where adequate mitigation for habitat *would* be feasible. An example would be a burrowing owl potential nesting site (California Species of Special Concern and protected under California Fish and Game Code 3503.5), mitigated by avoiding construction during the nesting season. This category includes vegetative resources as described above, when they are of insignificant size or extent (defined for the purposes of this analysis as <2,000 square feet).

- **Low Constraint** if the project site comprises areas with vegetative communities that are not protected, are generally common and widespread throughout the state, or which are severely degraded and which support animal species that are relatively common, or, if accorded special status, considered unlikely to occur.

PIPELINE ROUTE EVALUATION

The proposed pipeline routes are located within roadways or flood control easements that have been previously disturbed. Habitats along these routes are generally limited, although riparian corridors within the Gilroy area, including Uvas and Llagas Creek, do provide sensitive species habitat. **Table 2-3** provides a list of sensitive species potentially occurring within the Gilroy area, their habitat types, and the general location of potential habitat within the study area.

GROUP A – DIRECT CONNECTIONS

This would include service to those customers that are closely located to SCRWA's recycled water distribution facilities and pipelines. These customers would be served by 2-inch lateral connections within developed areas. Due to the lack of new pipelines or additional facilities in order to serve existing connections, constraints are considered ***Low***.

GROUP B – GAVILAN COLLEGE AREA

This facility would be served using a combination of the existing SCRWA pipeline and new pipeline installation. A discussion of potential biological constraints along each pipeline segment is provided below.

- **Pipeline B.1.** This pipeline segment extends from the SCRWA WWTP to the intersection of Monterey Street within existing paved roadways. Land uses are agricultural production to the east, and commercial/industrial to the west. No undisturbed habitat occurs along this pipeline segment. Disturbed agricultural areas can provide potential nesting habitat for burrowing owl; therefore, construction outside of nesting season and/or implementation of pre-construction surveys would be required if final pipeline alignments or contractor staging areas were outside of paved roadway. No stream crossings were identified. Landscape trees along the alignment provide potential nesting and roosting habitat for raptors, and construction outside of the nesting season and/or implementation of pre-construction surveys to confirm absence of raptor nests would reduce potential effects. Therefore, biological resource constraints are considered ***Moderate***.

  Pipeline B.1 Recommended Measures:

  BIO-1. Avoidance of raptor nesting season or pre-construction raptor nest survey.

  BIO-2. If final pipeline alignment is outside of paved areas, burrowing owl habitat assessment to identify potential habitat, extent of impact, and establishment of appropriate mitigation per most recent CDFG protocol, currently the *Staff Report on Burrowing Owl Mitigation* (CDFG, 1995).

- **Pipeline B.2.** This pipeline would extend from the existing pipeline in Monterey Street to Gavilan College across agricultural lands in coordination with the proposed City of Gilroy multi-use recreational trail. Disturbed agricultural areas can provide potential nesting habitat for burrowing owl; therefore, construction outside of nesting season and/or implementation of pre-construction surveys would be necessary for implementation. The mature riparian corridor at Uvas Creek provides potential habitat for all of the sensitive wildlife species identified in **Table 2-3** above. It is anticipated that the creek would be spanned by attachment to the existing roadway bridge, and that potential effects to this

riparian corridor could be avoided. Alternatively, use of trenchless technologies, such as jack and bore or micro-tunneling, could be used to avoid effects. In the event that a trench crossing of the creek is necessary, the following regulatory permits would be required: USACOE 404 Permit, most likely a Nationwide Permit; CDFG 1601 Stream Bed

TABLE 2-3
SPECIAL STATUS SPECIES WITH THE POTENTIAL TO OCCUR WITHIN THE REGION

***Scientific* and Common Names**	**Listing Status FWS/DFG/ CNPS2**	**Habitat**	**Suitable Habitat Present in Area**
Onchorhynchus mykiss irideus South-Central Coast ESU steelhead	FT/CS/C	Rivers and creeks with permanent water for spawning and rearing. Other habitats may serve as migration routes.	Llagas Creek, Uvas Creek
Ambystoma californiense California tiger salamander	PT/CS/C	Annual grasslands and grassy understory of valley-foothill hardwood habitats on central and northern California. Needs underground refuges, especially ground squirrel burrows and vernal pools or other seasonal water sources for breeding.	Llagas Creek, Uvas Creek, and adjacent upland habitat.
Athene cunicularia Burrowing owl	FSC/C/SC	Grasslands, scrublands, deserts all with short vegetation. Depends on mammal burrows, especially those of California ground squirrel, for burrows. Subterranean nester.	Agricultural areas and foothills adjacent to property.
Clemmys marmorata Western Pond turtle	FSC/CSC	Ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Need basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg laying.	Llagas Creek, Uvas Creek
Rana aurora draytonii California red-legged frog	FT/CS/C	Mostly in lowlands and foothills in/near permanent sources of deep water, but will disperse far during and after rain. Prefers shorelines with extensive vegetation. Requires 11 to 20 weeks of permanent water for larval development.	Llagas Creek, Uvas Creek, and adjacent upland habitat.
Vireo bellii pusilluss Least Bell's viero	FE/SE	Mostly dense, foothill riparian areas and river beds containing willows. Summer resident of Southern California.	Llagas Creek, Uvas Creek and associated riparian areas.
Trifolium amoenum Showy Indian clover	FE/--	Foothill grasslands and serpentine soils, swales and occasionally found in roadside ditches and eroding cliff faces. Development may have eliminated population. Last occurrence 1903.	Agricultural areas and foothills adjacent to project.

Alteration Agreement, and RWQCB 401 Water Quality Certification. Additionally, issuance of the USACOE 404 Permit would require consultation with USFWS regarding impacts to listed species. Native trees within the Uvas Creek corridor and along the roadway alignment provide potential nesting and roosting habitat for raptors, and construction outside of the nesting season and/or implementation of pre-construction surveys to confirm absence of raptor nests would reduce potential effects. Therefore, biological resource constraints are considered ***Moderate.***

Pipeline B.2 Recommended Measures:

BIO-1. Avoidance of raptor nesting season or pre-construction raptor nest survey.

BIO-2. If final pipeline alignment is outside of paved areas, burrowing owl habitat assessment to identify potential habitat, extent of impact, and establishment of appropriate mitigation per most recent CDFG protocol, currently the *Staff Report on Burrowing Owl Mitigation* (CDFG, 1995).

BIO-3. Use of trenchless technology at Uvas Creek crossing, including: bridge attachment, jack and bore, microtunneling, or other trenchless technology to avoid impacts to riparian and wetland area.

BIO-4. In the event trenchless technologies are not feasible, acquire necessary regulatory permits, including: USACOE 404 Permit; CDFG 1601 Stream Bed Alteration Agreement, and RWQCB 401 Water Quality Certification; USFWS Section 7/10 Consultation.

- **Pipeline B.2.a.** This pipeline segment would extend south from the existing pipeline in Monterey Street using the Monterey Frontage Road parallel to U.S. Highway 101. The pipeline would extend from the terminus of the frontage route south, and would require crossing Uvas Creek to Mesa Road. This route then extends west along Mesa Road to Santa Teresa Boulevard with connection to the college system.

  From the frontage road terminus, the pipeline would be installed across Uvas Creek and a small agricultural field to Mesa Road. Disturbed agricultural areas can provide potential nesting habitat for burrowing owl; therefore, construction outside of nesting season and/or implementation of pre-construction surveys would be required if final pipeline alignments or contractor staging areas were outside of paved roadway. The mature riparian corridor associated with the Uvas Creek provides potential habitat for all of the sensitive wildlife species identified in **Table 2-3** above. The creek channel at this location consists of an approximately 30 foot deep incised channel approximately 75-100 feet wide, populated with mature vegetation. Installation of the pipeline at this location using jack and bore methods would be difficult due to the depth of the stream bottom relative to the surrounding areas. Trench crossing of Uvas Creek at this location would require the following permits or agreements: U.S. Army Corps of Engineers (USACOE) 404 Permits (Nationwide Permit 12), California Department of Fish and Game (CDFG) 1601 Streambed Alteration Agreement and Regional Water Quality Control Board (RWQCB) 401 Water Quality Certification/Waiver. Additionally, consultation with the U.S. Fish and Wildlife Service (USFWS) regarding special status species would be required. Due to the depth of the creek channel at this location, the maturity of the vegetative assemblage, and the potential for sensitive species to be present, constraints are considered ***Moderate to High***.

Pipeline B.2a Recommended Measures

BIO-1. Avoidance of raptor nesting season or pre-construction raptor nest survey.

BIO-2. If final pipeline alignment is outside of paved areas, burrowing owl habitat assessment to identify potential habitat, extent of impact, and establishment of appropriate mitigation per most recent CDFG protocol, currently the Staff Report on Burrowing Owl Mitigation (CDFG, 1995).

BIO-3. Use of trenchless technology at Uvas Creek crossing, including: bridge attachment, jack and bore, microtunneling, or other trenchless technology to avoid impacts to riparian and wetland area.

BIO-4. In the event trenchless technologies are not feasible, acquire necessary regulatory permits, including: USACOE 404 Permit; CDFG 1601 Stream Bed Alteration Agreement, and RWQCB 401 Water Quality Certification; USFWS Section 7/10 Consultation.

GROUP C – FIRST STREET LOOP

This group of potential users would be served by the installation of pipelines to intersect with existing pipelines to create a looped system within residential areas of Gilroy. A discussion of potential biological constraints along each pipeline segment is provided below.

- **Pipeline C.1.** The second portion of this pipeline segment would be installed west along First Street (HWY 152). These areas are highly urbanized with residential neighborhoods, and do not provide habitat for sensitive species. No stream crossings occur along this alignment. Therefore, constraints are considered ***Low.***

- **Pipeline C.2.** This pipeline segment would be installed south along Princevalle to Fourth Street. These areas are highly urbanized with residential neighborhoods, and do not provide habitat for sensitive species. No stream crossings occur along this alignment. Therefore, constraints are considered ***Low.***

- **Pipeline C.2a.** This alternative would limit pipeline to between London and Eighth Street. These areas are highly urbanized with residential neighborhoods, and do not provide habitat for sensitive species. No stream crossings occur along this alignment. Therefore, constraints are considered ***Low***.

GROUP D – I.O.O.F. AVENUE SPUR

This group of users would be served by a new pipeline along First Street east to serve San Ysidro Park and branches off to several schools. These areas are highly urbanized with residential neighborhoods, and do not provide habitat for sensitive species.

This section of pipeline crosses both Miller Slough and Llagas Creek which may require permitting by state agencies, and includes one railroad crossing. It is anticipated that the creek would be crossed using trenchless technologies, such as jack and bore or micro-tunneling. In the event that a trench crossing of the creek is necessary, the following regulatory permits would be required: USACOE 404 Permit, most likely a Nationwide Permit; CDFG 1601 Stream Bed Alteration Agreement, and RWQCB 401 Water Quality Certification. Additionally, issuance of

the USACOE 404 Permit would require consultation with USFWS regarding impacts to listed species. Assuming the avoidance of creek disturbance, constraints are considered ***Low.***

Pipeline D Recommended Measures

BIO-1. Avoidance of raptor nesting season or pre-construction raptor nest survey.

BIO-4. In the event trenchless technologies are not feasible, acquire necessary regulatory permits, including: USACOE 404 Permit; CDFG 1601 Stream Bed Alteration Agreement, and RWQCB 401 Water Quality Certification; USFWS Section 7/10 Consultation.

GROUP E – WREN AVENUE SPUR

Service to this group would include extension of the new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue. These areas are highly urbanized with residential neighborhoods, and do not provide habitat for sensitive species. Therefore, constraints are considered ***Low***.

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing or proposed pipeline crossings of Highway 101. Conditions within the U.S. Highway 101 median are highly maintained, and do not provide habitat for sensitive species. Therefore, constraints are considered ***Low.***

GROUP G – MANTELLI SPUR

This group would be served by a new pipeline from Wren Street west along Mantelli Drive and north along Calle del Rey. These areas are highly urbanized with residential neighborhoods, and do not provide habitat for sensitive species. Therefore, constraints are considered ***Low***.

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions; one north along Wren Avenue, a second south along Forest Street and east along Seventh Street, a third east along Pacheco Pass Highway, and a fourth alternate route south on Chestnut Street from Seventh Street. These areas are highly urbanized with residential neighborhoods, and do not provide habitat for sensitive species. Therefore, constraints are considered ***Low***.

GROUP I – FLOOD CONTROL CHANNEL ALIGNMENT

This pipeline route would use existing District flood control easements along the west branch of Llagas Creek through the City of Gilroy for pipeline installation. Biologic conditions along this reach of flood control channel reflect the District's maintenance practices, with vegetation control both in the channel and along the embankments. CNDDB database information does not

differentiate between the main stem and western branch of Llagas Creek in terms of potential sensitive species presence. It is anticipated that proposed pipelines would be installed within the access roads along the flood control embankments. Depending upon the final pipeline disturbance area, and its relationship to the jurisdiction of each agency, proposed facilities could be installed without regulatory permits. However, given the proximity to potential habitat, it is anticipated that protocol-level surveys to determine the presence or absence of the wildlife species identified in **Table 2-3** would be required. Due to the alignments proximity to the west branch of Llagas Creek, the need for protocol-level survey, and the potential for regulatory permits, constraints are considered ***Moderate to High.***

BIO-1. Avoidance of raptor nesting season or pre-construction raptor nest survey.

BIO-5. Based upon final alignments, conduct habitat assessment for CRLF, CTS, and BOWL to identify potential for habitat occurrence.

BIO-6. Confirm final alignments with respect to agency jurisdiction. Acquire necessary regulatory permits, including: USACOE 404 Permit; CDFG 1601 Stream Bed Alteration Agreement, and RWQCB 401 Water Quality Certification; USFWS Section 7/10 Consultation.

2.4 VISUAL CONSTRAINTS

RELEVANT PLANS AND POLICIES

The existing visual quality of the general area is dominated by urban uses associated with the City of Gilroy. Except for three potential bridge crossings, the pipeline will be buried in existing roadways or fields. Due to the below-grade nature, potential impacts to views of the pipeline routes from would be limited to short-term effects during construction. Although this issue would require analysis in any CEQA documentation, it is not considered a significant differentiator between the individual routes.

METHODOLOGY AND CRITERIA

Scenic resource factors considered in this evaluation include the sensitivity of the affected views from public vantage points (views from designated scenic routes and views from (or of) recreation areas, open space, hillsides, and ridgelines designated as having scenic value are considered sensitive); the duration and distance of affected view points; the existing visual character of the site; and the aesthetic aspects of site development. Negative aesthetic attributes of site development can include alteration of land form, view obstruction, and introduction of elements that are incongruous with the surroundings. This approach derives from the CEQA Guidelines, which emphasize the importance of potential adverse impacts on public (as opposed to private) views. Presumed views from private viewpoints are also noted, for informational purposes.

The visual constraint to site development would be:

- **High Constraint** if the project would substantially impair or intrude on sensitive views and mitigation would have limited effectiveness.
- **Moderate Constraint** if the project would affect views but could be screened or otherwise reduced in visual prominence
- **Low Constraint** if the project would be hidden from sensitive view

PIPELINE ROUTE ANALYSIS

Proposed facilities identified under the Master Plan are limited to distribution pipeline installed primarily within roadways. Although visual conditions along the alignment would be altered during pipeline installation due to short-term construction activities, proposed facilities would not have a long-term effect on visual resources or aesthetics.

Pump stations, storage tanks, or other above ground facilities that could affect visual resources have not yet been identified as part of the Master Plan. Pump stations can typically be sighted and designed to be consistent with surrounding land uses, and through design, architectural and landscaping treatments, impacts are usually reduced to a less than significant level. Storage tanks ranging between 1.0 and 3.0 mgd are located within foothill areas to the west of the City of Gilroy, including SCRWA's existing recycled water storage tank. Visual impacts related to storage tanks are dependant upon site location, viewshed, screening/backdrop opportunities, facility design (above or below-ground design) and landscape design. In general, visual effects of storage tanks can be reduced to a less than significant level through proper siting and design measures.

2.5 CULTURAL RESOURCES

METHODOLOGY AND CRITERIA

An archival record search for the preliminary site locations was performed by Historical Resources Information System, Northwest Information Center at Sonoma State University. In addition to archaeological maps and site records on file at the Historical Resources Information Center (Northwest Information Center), major historic property listings were reviewed including the *Historic Properties Directory*, the *California Inventory of Historic Resources*, and the *General Land Office*, plus various historic literature pertinent to this area.

Native American archaeological sites in this portion of South Santa Clara County tend to be situated at the base of hills near sources of water; on the valley floor near sources of water; on stream terraces; and buried beneath a few inches to several feet below alluvial soils on the valley floor. Expected historical resources would include standing ranch and farm structures (more than 50 years old), archaeological sites, and features such as ruins, foundations, debris, trash dumps, wells, and privies. Contemporary Native American resources can include cemetery and burial sites, religious sites and features, and resource gathering areas.

METHODOLOGY AND CRITERIA

The "overall sensitivity" analysis is based on a combination of factors including the presence or absence of identified cultural resource sites, topographical features and landforms often associated with archaeological sites, and whether or not previous cultural resource surveys had been conducted.

- **High constraint** if there is a high likelihood for encountering or affecting a known cultural resource, and if construction activities would likely be interrupted for an extended period to enable onsite investigations and/or recovery programs by an archaeologist. For example, alignments located near creeks with previously identified cultural resources are considered as having "high" sensitivity.

- **Moderate constraint** if there is a possibility for encountering cultural resources based on the archival research and surface reconnaissance, and that limited mitigation, such as more focused archival research as well as a contingency mitigation program, would be necessary. For example, alignments that have been previously surveyed for cultural resources and that are located near creeks but that have few or no identified cultural resources is considered to have "moderate" sensitivity.

- **Low constraint** if there is a low potential for encountering cultural resources, but nevertheless a contingency mitigation program would be necessary in the event that cultural resources should be encountered. For example, alignments with few or no identified cultural resources located away from creeks are considered to have "low" sensitivity.

PIPELINE ROUTE EVALUATION

Review of records and literature on file at the Northwest Information Center, Sonoma State University for each pipeline route is summarized in **Table 2-4**. Alignments within fully developed, paved, and/or landscaped areas may not warrant cultural resources surveys because archaeological sites would not be visible on the surface. Developed areas including areas that are paved, landscaped, or otherwise built, may also have some level of sensitivity for cultural resources, but it is often infeasible to conduct intensive field studies to determine if archaeological sites are present. In those circumstances, provisions may be made to identify and protect cultural resources during construction. It is recommended that final alignments be reviewed with respect to previous surveys, and that standard provisions to protect cultural resources that may be discovered during construction be included in construction bid documents. Built areas may also contain historic buildings and structures, but since these types of resources are typically not impacted by construction or operation of pipelines, they have not been considered in this analysis.

Recommended Measures – All Pipelines

CR-1: Final pipeline alignments shall be confirmed with respect to previous surveys, and standard provisions to protect cultural resources, including stop work requirements, should be included in construction bid documents.

TABLE 2-4
CULTURAL RESOURCE CONSTRAINTS

Group		Previously Surveyed	Known Archaeological Sites Within ¼ Mile	Overall Sensitivity
Group A		100% Previously Surveyed	No site identified on alignment 3 sites within ¼ mile	Low
Group B	B.1	60% Previously Surveyed	None identified on alignment None identified within ¼ mile	Low
	B.2,B2a	100% Previously Surveyed	Two unrecorded sites on alignment Six sites within ¼ mile	High
Group C	C.1	No Previous Surveys	None identified on alignment Two sites within ¼ mile (Uvas Creek)	Low to Moderate
	C.2	30% Previously Surveyed	One unrecorded site on alignment	Moderate
	C.2.a	100% Previously Surveyed	None identified on alignment Two sites within ¼ mile	Moderate
Group D		10% Previously Surveyed	None identified on alignment One site within ¼ mile	Moderate
Group E		40% Previously surveyed.	None identified on alignment No sites within ¼ mile	Low
Group F		50% Previously surveyed.	Three sites identified along alignment Five sites within ¼ mile	Moderate
Group G		50% Previously surveyed.	No cultural resource sites have been identified on the alignment or within ¼ mile.	Low
Group H	H.1	100% Previously surveyed.	None identified on alignment	Moderate
	H.2	No Previous Surveys	One site identified on alignment	Moderate
	H.2a	No Previous Surveys	Two sites within ¼ mile	Moderate
	H.3	50% Previously surveyed	One site identified on alignment Two sites within ¼ mile	High
Group I		60% Previously surveyed	Three sites identified along alignment	High

GROUP A - DIRECT CONNECTIONS

This would include service to those customers that are closely located to SCRWA's recycled water distribution facilities and pipelines. Approximately 100% of this alignment has been previously surveyed. No cultural resource sites have been identified along the preliminary alignment; three cultural resource sites have been identified within ¼ mile of the alignment. Therefore, constraints are considered ***Low.***

GROUP B – GAVILAN COLLEGE AREA

This facility would be served using a combination of the existing SCRWA pipeline and new pipeline installation. A discussion of the potential for cultural resource effects along each pipeline segment is provided below.

- **Pipeline B.1.** Approximately 60% of this alignment has been previously surveyed. No cultural resources have been identified on this alignment or within ¼ mile. Therefore, constraints are considered ***Low***.

- **Pipeline B.2. and B.2a.** Approximately 100% of these two alignments have been previously surveyed for cultural resources. Two unrecorded sites have been identified along the proposed pipeline alignments, and six sites are located within ¼ mile. Due to the presence of two unrecorded sites, potential constraints are considered ***Moderate to High***.

GROUP C – FIRST STREET LOOP

This group of potential users would be served by the installation of pipelines to intersect with existing pipelines to create a looped system. A discussion of the potential for cultural resources to occur along each pipeline segment is provided below.

- **Pipeline C.1.** No previous surveys along this alignment have been completed. Two cultural resource sites have been identified within ¼ mile of the alignment. Therefore constraints are considered ***Moderate.***

- **Pipeline C.2.** Approximately 30% of this alignment has been surveyed, and no cultural resources have been identified along this alignment. Two cultural resource sites have been identified within ¼ mile of the alignment. Therefore constraints are considered ***Moderate.***

- **Pipeline C.2.a.** Approximately 100% of this alignment has been surveyed, and no cultural resources have been identified along this alignment. Therefore constraints are considered ***Moderate.***

GROUP D – I.O.O.F. AVENUE SPUR

Service to this group would include new pipeline extensions from Princevalle Street as follows: east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park. Approximately 10% of this alignment has been surveyed. No cultural resources have been identified along this alignment and one cultural resource has been identified within ¼ mile of the alignment. Therefore constraints are considered ***Moderate.***

GROUP E – WREN AVENUE SPUR

Service to this group would include extension of the new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue. No cultural resource sites have been identified along the alignment or within ¼ mile of this alignment. Therefore constraints are considered ***Low.***

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101. Approximately 50% of this alignment has been surveyed. Three cultural resource sites have been identified within or directly adjacent to this alignment and an additional five cultural resources have been identified within ¼ mile of the alignment. Therefore, constraints are considered ***Moderate.***

GROUP G – MANTELLI SPUR

This group would be served by a connection to the proposed Wren Street pipeline, run west along Mantelli Drive and north along Calle del Rey. No cultural resource sites have been identified on the alignment or within ¼ mile. Therefore constraints are considered ***Low.***

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions of new pipeline as follows:

- **Pipeline H.1.** No cultural resources have been identified on this alignment and one cultural resource has been identified within ¼ mile of the alignment. Therefore constraints are considered ***Low.***

- **Pipeline H.2.** One unrecorded cultural resource site has been identified on or adjacent to this alignment. Two other cultural resource sites have been identified within ¼ mile of this alignment. Therefore constraints are considered ***Moderate.***

- **Pipeline H.2a.** No cultural resources have been identified on this alignment and one cultural resource has been identified within ¼ mile of the alignment. Therefore constraints are considered ***Moderate.***

- **Pipeline H.3.** One cultural resources site has been recorded on or adjacent to the alignment and two other cultural resources have been identified within ¼ mile of the alignment. Therefore, constraints are considered ***High.***

Group I – Flood Control Channel Alignment

This pipeline route would be installed to serve the above groups using existing District flood control facilities along Llagas Creek and Miller Slough. Three cultural resources have been identified within or directly adjacent to this alignment. Therefore constraints are considered ***High.***

2.6 WATER/HYDROLOGIC RESOURCES

INTEGRATED WATER RESOURCES PLAN

In 1993, the District's Board of Directors adopted a non-potable recycling policy which provides for the District's financial participation to encourage the development of non-potable recycling projects in the County. The District will provide financial assistance equivalent to the avoided cost of new water supplies for non-potable recycled water produced.

In 1997, the District prepared a 20-year planning document outlining potential strategies to meet water demand in the Santa Clara Valley to the year 2020. The document, titled *Integrated Water Resources Plan,* included maximizing water recycling within the County as a key component. The preferred strategy for County-wide water recycling called for a minimum of 6,000 acre-feet and up to 31,000 acre-feet of recycled water capacity, contingent upon potential partnerships with wastewater treatment agencies in the County. Non-potable water recycling projects currently in operation within the District service area include the San Jose/Santa Clara Recycling Project, Sunnyvale Recycling Water Project, Gilroy/Morgan Hill Recycling Project, and Palo Alto Recycling Project.

The RWQCB issued a Master Water Reclamation Requirements (MWRR) Order No. 98-052 to SCRWA in 1998 for the distribution of tertiary treated effluent for reclamation uses. The MWRR permits up to 15 mgd of disinfected tertiary recycled water to be distributed through the existing system to current users as well as to future users through new pipelines yet to be constructed. The MWRR states:

a) The proposed recycled water project would be implemented as a measure encouraged by the California Department of Water Resources (California Water Code, Section 13512) to reduce demands on potable water including groundwater. The increased use of recycled water in the Santa Clara Valley would be a beneficial impact to the groundwater basin by providing additional water supplies to the region and contributing to groundwater recharge.

The California Water Code, Section 13521 states that the Department of Health Services (DHS) has the authority to "establish statewide reclamation criteria for each varying type of use of reclaimed water where such use involves the protection of public health." The MWRR requires that the effluent meet DHS water reclamation criteria (Title 22, Division 4, Chapter 3, Sections 60301-60355 of the California Code of Regulations). The MWRR includes monitoring and reporting requirements for SCRWA as well as for the indirect users. Indirect users are required to comply with the prohibitions and limitations outlined in the MWRR.

RECYCLED WATER QUALITY

The disinfected tertiary water produced at the SCRWA WWTP meets all Title 22 water quality requirements. Due to the successful use of recycled water by existing customers, the quality of the tertiary water will be sufficient for the new customers. Additionally, SCRWA conducts a

training course for recycled wastewater users. The course instructs prospective users on the public health hazards and appropriate application methods for different land uses in an effort to maintain compliance with DHS criteria. Prior to receiving contracted recycled wastewater, customers must attend the training course.

The long-term use of recycled water for landscape irrigation poses potential impacts to surface water and groundwater quality. Typical water quality concerns for reclaimed water application sites include the potential of elevating nitrate levels in underlying groundwater and of increasing salt build-up in the root zones. Elevated salt build up over time has been proven harmful to turf grasses and associated park and golf course vegetation, forcing irrigators to stop using reclaimed water. **Table 2-5** summarizes the water quality parameter limits for the recycled water program contained in the MWRR.

TABLE 2-5
MASTER WATER RECLAMATION REQUIREMENTS - DISINFECTED TERTIARY RECYCLED WATER LIMITS

Parameter	Daily Max	30-day Mean
BOD (mg/l)	20	10
Total Suspended Solids (mg/l)	20	10
Nitrate as N (mg/l)	10	5

SOURCE: RWQCB, Master Water Reclamation Requirements, Order No. 98-052

In addition to these parameters, the MWRR requires the following:

Recycled water shall not have turbidity which exceeds the following limits:

- Daily average turbidity must be less than or equal to 2 NTU.
- Turbidity shall not exceed 10 NTU at any time.
- Turbidity must not exceed 5 NTU for more than five percent of the time.

Recycled water shall not contain total coliform concentrations exceeding the following limits:

- The seven day median concentration must not exceed a most probable number (MPN) of 2.2/100 ml.
- Concentrations must not exceed 23/100 ml in more than one sample taken over a 30-day range.
- Concentrations must be less than 240/100 ml at all times

Recycled water shall have a CT value (chlorine concentration times modal contact time) of not less than 450 mg-min/l at all times with a modal contact time of at least 90 minutes based on 9.0 mgd.

Recycled water shall not exceed the Maximum Contaminant Levels established by the U.S. EPA for compounds listed in the MWRR.

The Central Coast RWQCB identifies the aquifer in the Gilroy area as the Gilroy-Hollister Valley Groundwater Basin. Beneficial uses of the Basin include drinking water supply. **Table 2-6** summarizes the drinking water standards and groundwater objectives for total dissolved solids (TDS) and nitrates.

TABLE 2-6
WATER QUALITY OBJECTIVES

	Drinking water standard[a]	Groundwater Quality Objective[b]
	--	
TDS (mg/l)	500	1,200
Nitrate as N (mg/l) ©	10	5

[a] TDS has a recommended secondary drinking water standard from California Code of Regulations (CCR) Title 22 Section 64449, nitrate has a primary drinking water standard from CCR Title 22 Section 64431
[b] Groundwater objectives from Central Coast RWQCB Water Quality Control Plan for Pajaro River Sub-basin at Hollister.
[c] Measured as nitrogen

SOURCE: RWQCB, Central Coast Region, Water Quality Control Plan; Title 22, Section 64449

The nitrogen in reclaimed water is generally beneficial to the surface vegetation, reducing the need for routine fertilizing. However, some nitrogen not used by the vegetation may penetrate beneath the root zone and enter the groundwater. This effect also occurs when inorganic fertilizers are routinely applied to landscaping. The effect is a result of landscape nutrient application irrespective of the use of reclaimed water. Landscape management practices can reduce the potential for excessive amounts of nitrogen permeating the groundwater through measured fertilizing practices. Generally, 50 to 60 percent of the applied nitrogen in reclaimed effluent is utilized by the plant crop or turf, 15 to 25 percent of the nitrogen is lost to volatilization and denitrification, and generally less than 10 percent is leached beyond the root zone.[1] The MWRR issued to SCRWA by the RWQCB restricts nitrogen in the recycled effluent to 5 mg/l as a 30-day mean. This is equivalent to the groundwater quality objectives established by the RWQCB and is less than the primary drinking water standard for nitrogen.

[1] O'Connell Ranch Subsequent Environmental Impact Report, Revised Draft, 1992, Appendix I

The MWRR does not contain a recommended total dissolved solids (TDS) limit. Assuming that the effluent contains 600 to 700 mg/l TDS, landscape management practices can prevent salt build up by providing adequate drainage beneath the root zone.[2]

The *Water Reclamation Planning Study* prepared by SCRWA in 1995 provides recycled water quality criteria for specific applications such as irrigation and industrial processes. **Table 2-7** summarizes the existing SCRWA recycled effluent quality and Department of Water Resources guidelines for irrigation applications.

TABLE 2-7
SUMMARY OF WATER QUALITY CRITERIA FOR LANDSCAPE IRRIGATION

Parameter	Desirable[a]	Acceptable[b]	Unacceptable[c]	SCRWA WWTP[d]
Total Salts				
Total Dissolved Solids (mg/l)	<700	700-2,100	>2,100	620-820
Electrical Conductivity (dS/m)	<0.7	0.7-3.0	>3	1.2-1.3
Permeability				
Sodium (%) (e)	<60	60-75	>75	46-62
Adjusted Sodium Absorption Ratio (SAR)	<6	6-9	>9	4.1
Toxic Ions				
Boron (mg/l)	<0.5	0.5-1.0	>1.0	0.4-1.3
Chloride (mg/l)	<175	175-350	>350	146-167
Copper (mg/l)		≤0.2	>0.2	0.03
Nickel (mg/l)		≤0.5	>0.5	0.08
Zinc (mg/l)		≤5.0	>5.0	0.045
Cadmium (mg/l)		≤0.005	>0.005	<0.05
Bicarbonate (mg/l)		90-520	>520	451

[a] Desirable water quality is that considered to be safe and suitable for turf and most plants under varied conditions of soil or climate
[b] Acceptable water quality is that regarded as possibly harmful for certain plants or crops under certain conditions of soil or climate
[c] Unacceptable water quality is that considered as probably harmful to most plants and crops under certain conditions of soil or climate
[d] Range of values reported for the existing SCRWA WWTP effluent. Given here for comparison to the classifications. Note that reclaimed water quality may improve due to additional treatment.
[e] Percent sodium = 100 Na/(Na+Ca+Mg+K) all ions expressed in milliequivalents per liter.

SOURCE: SCRWA, *Water Reclamation Planning Study,* 1995; Department of Water Resources DWR Bulletin 104-7; and SCRWA Annual Report to RWCQB, 2001-2002.

The quality of SCRWA's effluent is within acceptable ranges for irrigation uses for all parameters except sodium absorption ration. This can be managed using several irrigation practices, including blending, increased irrigation frequency, or increased application to ensure appropriate salt management.

METHODOLOGY AND CRITERIA

Hydrologic resources considered in this evaluation are based on general principles put forth in CEQA *Guidelines* Appendix G, and laws, regulations, guidelines and policies employed by the primary agencies charged with the management of water quality protection (State Water Resources Control Board, U.S. Army Corps of Engineers, California Department of Fish and Game, and U.S. Fish & Wildlife Service).

The following hydrologic resource constraint criteria have been applied to the project locations.

- **High constraint** if there is a high likelihood of degrading water quality or altering flows within surface and ground water resources or creating a potential flood hazard given a mitigation program developed for the protection of water quality with approval of applicable government agencies.
- **Moderate constraint** if there is a possibility of degrading water quality, alteration of flows, or creating a potential flood hazard, and that limited off-site mitigation, such as wetland restoration, as well as a contingency mitigation program, would be necessary.
- **Low constraint** if there is a low potential for the degradation of water quality, alteration of flows or creation of a flood hazard, but a mitigation program would be necessary for the construction phase of the project.

PIPELINE SITE EVALUATION

A discussion of hydrologic constraints for each preliminary site is presented below. **Table 2-8** on the following page provides a summary surface water bodies along each of the pipeline routes and potential constraints.

GROUP A – DIRECT CONNECTIONS

This would include service to those customers that are closely located to SCRWA's recycled water distribution facilities and pipelines. No effects to surface or groundwater resources would be associated with installation of this level of facilities. Therefore, constraints are considered ***Low.***

TABLE 2-8
SUMMARY OF WATER RESOURCE CONSTRAINTS

Location		Surface Water Resources	Constraint Determination
Group A		None	Low
Group B	B.1	None	Low
	B.2	Uvas Creek crossing using multi-use bridge.	Moderate
	B2a.	Uvas Creek crossing, jack and bore.	Moderate
Group C	C.1	None	Low
	C.2	None	Low
	C.2a	None	Low
Group D		Llagas Creek crossing , jack and bore.	Moderate
Group E		None	Low
Group F		None	Low
Group G		None	Low
Group H		Miller Slough crossing using existing bridge.	Low
Group I		Installation along Llagas Creek flood control embankments.	Moderate

GROUP B – GAVILAN COLLEGE AREA

This facility would be served using a combination of the existing SCRWA pipeline and new pipeline installation. A discussion of land uses along each pipeline segment is provided below.

- **Pipeline B.1.** This pipeline segment extends from the SCRWA WWTP to the intersection of Monterey Street. No surface water features are located along this alignment. Therefore, potential constraints are considered ***Low.***

- **Pipeline B.2.** This pipeline segment would be installed across agricultural lands in coordination with the proposed City of Gilroy multi-use recreational trail and Sports Park, including crossing of Uvas Creek, At the crossing location, the pipeline would be located within the 100-year flood plain; however, due to its below grade nature, the pipeline would not be affected by surface flows. The trail represents a corridor opportunity both for pipeline installation and crossing of Uvas Creek. It is anticipated that the creek would be spanned by attachment to the existing roadway bridge, and that potential effects associated with trench installation, including sedimentation effects to Uvas Creek, would be avoided. Alternatively, use of trenchless technologies, such as jack and bore or micro-tunneling, could be used to avoid these effects. Installation below the scour depth of the creek would be required using these technologies. In the event that a trench crossing of the creek is necessary, regulatory permits would be required, as discussed in Section 2-4, and any final design should be reviewed for regulatory permit requirements. Therefore, water resource constraints are considered ***Moderate.***

- **Pipeline B.2.a.** This pipeline segment would extend south from the existing pipeline in Monterey Street using the Monterey Frontage Road parallel to U.S. Highway 101. The pipeline would extend from the terminus of the frontage route south, and would require crossing Uvas Creek to Mesa Road. At the crossing location, the pipeline would be located within the 100-year flood plain; however, due to its below grade nature, the pipeline would not be affected by surface flows. From the frontage road terminus, the pipeline would be installed across Uvas Creek and a small agricultural field to Mesa Road. The creek channel at this location consists of an approximately 30 foot deep incised channel approximately 75-100 feet wide, populated with mature vegetation. Installation of the pipeline at this location using jack and bore methods would be difficult due to the depth of the stream bottom relative to the surrounding areas. Alternatively, use of trenchless technologies, such as jack and bore or micro-tunneling, could be used to avoid these effects. Installation below the scour depth of the creek would be required using these technologies. In the event that a trench crossing of the creek is necessary, regulatory permits would be required, as discussed in Section 2-4, and any final design should be reviewed for regulatory permit requirements. Such activity should be implemented during low flow period and include BMPs to reduce sedimentation effects downstream. Therefore, constraints are considered ***Moderate***.

  Pipeline B.2.a Recommended Measures

  WR-1. Use of trenchless technology at Uvas Creek crossing, including: bridge attachment, jack and bore, microtunneling, or other trenchless technology to avoid impacts to riparian and wetland area. Confirm final design with respect to regulatory permit requirements.

GROUP C – FIRST STREET LOOP

This group of potential users would be served by the installation of pipelines to intersect with existing pipelines to create a looped system. This segment is along existing roadways. No surface waters were observed. Constraints are considered **Low**.

GROUP D – I.O.O.F. AVENUE SPUR

Service to this group would include new pipeline extensions from Princevalle Street as follows: east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park. This segment is along existing roadways and Llagas Creek. No surface waters were observed. Constraints are considered **Moderate.**

GROUP E – WREN AVENUE SPUR

Service to this group would include extension of the new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue. This segment is along existing roadways. No surface waters were observed. Constraints are considered ***Low***.

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101. Although portions of this alignment are located within the 100-year flood plain of Llagas Creek, facilities would not be affected due to their below-grade nature. Therefore, constraints are considered ***Low.***

GROUP G – MANTELLI SPUR

This group would be served by a connection to the proposed Wren Street pipeline, run west along Mantelli Drive and north along Calle del Rey. This segment is along existing roadways. No surface waters were observed. Constraints are considered ***Low.***

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions;

- **Pipeline H.1** would extend north along Wren Avenue
- **Pipeline H.2** would extend south along Forest Street and east along Seventh Street
- **Pipeline H.2.a** would extend south on Chestnut Street from Seventh Street.
- **Pipeline H.3** would extend east along Pacheco Pass Highway.

This location begins east of Miller Slough and continues north across agriculture fields to HWY 152 and heads southeast to Frazier Lake Road. Segment H.2 would cross Miller Slough along an existing bridge. Although portions of this alignment are located within the 100-year flood plain, facilities would not be affected due to their below-grade nature. Therefore, constraints are considered ***Low.***

GROUP I – FLOOD CONTROL CHANNEL ALIGNMENT

This pipeline route would be installed to serve the above groups using existing District flood control facilities along Llagas Creek and Miller Slough. It is anticipated that proposed pipelines would be installed within the access roads along the flood control embankments, providing separation between construction areas and surface waters. It is recommended that construction take place during the low-flow season to minimize the potential for sedimentation to occur, and that standard BMPs be used for erosion control. Pipelines would be located within the 100-year flood plain of Llagas Creek, and would be potentially subject to erosional forces during high flow events. As previously noted, District policy as stated in their Engineer Policy and Procedure Manual prohibits installation of longitudinal encroachments in their Rights of Ways and pipeline installation with levees, due in part to issues related to long-term maintenance and potential exposure of pipelines during high flow events due to erosion. Therefore, constraints are considered ***Moderate.***

2.7 ENVIRONMENTAL CONTAMINATION

Hazardous substances are materials with certain chemical and physical properties that may pose a substantial hazard to human health or the environment when improperly handled, stored, disposed or otherwise managed. They are commonly used in commercial, agricultural, and industrial applications and, to a lesser extent, in residences. If improperly handled, hazardous substances can result in public health hazards through contamination of soils or groundwater, or through airborne releases in vapors, fumes, or dust.

If hazardous substances are present at a development site, they may not pose a threat to human health or the environment if left in place, but could also pose a threat if contaminated materials become airborne or are otherwise released during construction activities. The contaminated material may also require special handling and disposal requirements if removed from the site.

METHODOLOGY AND CRITERIA

To assess the potential presence of hazardous substances at each site, a computer database search was conducted to identify (a) known or suspected sites where contamination of soils or groundwater may exist, (b) sites permitted to handle hazardous wastes under the Resource Conservation and Recovery Act (RCRA), and (c) sites with permitted underground storage tanks (Environmental Data Resources, 1998). The information is not intended to provide detailed site-specific information regarding contaminated sites or remediation efforts throughout the study area. Instead, the information serves as a basis for identifying potential constraints on planned construction due to the presence of hazardous substances within the development sites. No site reconnaissance of the preliminary sites was performed. As such, this analysis does not quality as a Phase I Environmental Site Assessment. However, the records search meets the government requirements of ASTM Standard practice for Environmental Site Assessments, E 1527-97.

If a site has known or potential contamination on site, the impact to site development would be:

- **High Constraint** if hazardous materials contamination is known to exist on site, or there is a high likelihood of encountering hazardous materials contamination during construction. A remediation program would likely be necessary to meet regulatory requirements, and there could be substantial delays to project implementation.

- **Moderate Constraint** if there is some evidence to indicate that hazardous materials contamination may be present and that additional investigations may be warranted. This could include a more detailed site history assessment or on-site soil sampling.

- **Low Constraint** if the there is little or no potential for encountering hazardous materials contamination during construction, based on existing and historical land uses.

The potential for encountering hazardous material contamination still exists even for sites that are ranked as having a low constraint. For these sites, it would still be necessary to include appropriate precautions in contractor specifications, such as site safety plans and emergency response plans, in the event that hazardous materials are encountered.

PIPELINE SITE EVALUATION

A discussion of hazardous materials constraints for each preliminary site is presented below. **Table 2-9** provides a summary of individual site characteristics and various constraints identified for each site.

GROUP A – EXISTING CONNECTIONS

This would include service to those customers that are closely located to SCRWA's recycled water distribution facilities and pipelines. These segments include one California Hazardous Material Incident Report System (CHMIRS) case. Constraints are ***Low.***

GROUP B – GAVILAN COLLEGE AREA

This facility would be served using a combination of the existing SCRWA pipeline and new pipeline installation. A discussion of land uses along each pipeline segment is provided below.

- **Pipeline B.1.** This pipeline segment of extends from the SCRWA WWTP to the intersection of Monterey Street. One CHMIRS case has been reported at the intersection of Luchessa Avenue and Highway 101, and one Cortese site is near the intersection. Constraints are considered ***Low.***

- **Pipeline B.2.** The pipeline segment would be installed across agricultural lands in coordination with the proposed City of Gilroy multi-use recreational trail and Sports Park. No know hazardous sites. Constraints are ***Low.***

- **Pipeline B.2.a.** This segment includes a bridge crossing over Uvas Creek. Land uses along Santa Teresa Blvd, which extends south to Gavilan College, are currently agricultural lands to the east and west. One unclosed Leaking Underground Storage Tank (LUST) at the southern portion of Santa Teresa Boulevard and one Resource Conservation and Recovery Information System site exists within this segment. Constraints are considered ***Low.***

GROUP C – FIRST STREET LOOP

Service to this group would include new pipeline routes in existing streets. This alignment of pipes contains several known hazardous contamination sites including; one RCRIS case, two UST cases, and two CA FID UST cases. Specific hazards to segments are described below.

- **Pipeline C.1.** This pipeline would extend from Wren Street west along First Street to meet the existing pipeline west of Conrotto Winery. This segment includes four LUST site and one Cortese case. Constraints are considered ***Moderate.***

- **Pipeline C.2.** This pipeline would extend from First Street south along Princevalle Street to branch west on Fourth Street and continue south to intersect with existing pipe. This route would create a loop in the system. This segment has one LUST case. Constraints are considered ***Moderate.***

TABLE 2-9
SUMMARY OF KNOWN HAZARDOUS MATERIAL CONTAMINATION SITES

Location	Known Hazardous Material Usage/ Release in the Immediate Area	Constraint Determination
Group A	One CHMIRS case.	Low
Group B	B.1 One Cortese site near intersection of Luchessa and Hwy 101: no information on Cortese case available	Low
	B.2 None	Low
	B.2.a One LUST at southern point on Santa Teresa Blvd: the case has not yet been closed	Low
	Also, 1 RCRIS case;	
Group C	C.1 4 LUST cases toward western end of First Street	Moderate
	1 Cortese case to the NE of the intersection of Princevalle and Fourth	
	C.2 1 LUST case at Princevalle and Sixth	Moderate
	C.2.a None	Low
	Also, 1 RCRIS case; 2 UST cases; and 2 CA FID cases (USTs)	
Group D	open LUST case at Rosanna and First Streets	Moderate
	closed LUST cases at Hwy 101 and First Street	
	1 closed and 1 open LUST case at Hwy 101 and First Street	
	Also, 2 RCRIS cases; 1 UST case; 4 CA FID cases (USTs)	
Group E	1 CA FID (UST) case and 1 CHMIRS case at Willard and Wren	Low
Group F	2 RCRIS; 1 HAZNET; 1 ERNS; 3 CHMRIS; 3 UST; 1 open LUST; 1 open LUST/Cortese	High
Group G	None	Low
Group H	H.1: 2 open LUST cases at Latum Ave and Wren	Moderate
	H.2:1 closed LUST case; 1 RCRIS; 1 FINDS; 1 Calsites; 2 HAZNET; 2 open LUST cases; 1 CA FID (UST); 1 HIST UST	Moderate
	H.2a 4 RCRIS; 1 CHMIRS; 2 Cortese cases; 4 LUST (2 open, 3 closed); 2 USTs; 6 HAZNET	Moderate/High
	8c: 2 CHMIRS cases; 1 LUST case (closed in 1993)	Moderate
Group 9	1 CA FID (UST) and 1 CHMIRS	Low
	1 HAZNET; 4 RCRIS; 1 Cortese; 2 open LUST cases; 1 ERNS	High
	1 closed LUST case/Cortese/HAZNET	Low

TABLE 2-9 (continued)
SUMMARY OF KNOWN HAZARDOUS MATERIAL CONTAMINATION SITES

Table 2-9 Definitions:

CHMIRS: The California Hazardous Material Incident report System (CHMIRS) contains information on reported hazardous material incidents, i.e., accidental releases or spills.
LUST: Leaking Underground Storage Tank (LUST) contains an inventory of reported leaking underground storage tank incidents. The data comes from the State Water Resources Control Board.
RCRIS: Resource Conservation and Recovery Information System (RCRIS) includes selected information on sites that generate, store, treat, or dispose of hazardous waste as defined by the Act.
CA FID: The Facility Inventory Database contains active and inactive underground storage tank locations.
Calsites: Contains both known and potential hazardous substance sites. The source is the California Department of Toxic Substance Abuse.
ERNS: Emergency Response Notification System (ERNS) is a national computer database used to store information on unauthorized releases of oil and hazardous substances. The program is a cooperative effort of the Environmental Protection Agency, the Department of Transportation Research and Special Program Administration's John Volpe National Transportation System Center and the National Response Center.
FINDS: Facility Index System/ Facility Identification Initiative Program Summary Report – Contains both facility information and "pointers" to other sources that contain more detail.
HAZNET: HAZNET is a DTSC database that records annual hazardous waste shipments, as required by RCRA. All businesses that use and dispose of hazardous materials are entered into the HAZNET database, and each occurrence of a disposal and/or transfer of a hazardous waste is entered into the database as a record.
HIST UST: A database of registered historical underground storage tanks

- **Pipeline C.2.a.** This alternate route limits the Princevalle Street pipeline from London to Eighth Street, and serves Glenview Elementary and Gateway School. No known sites. ***Low.***

GROUP D – I.O.O.F. AVENUE SPUR

Service to this group would include new pipeline extensions from Princevalle Street as follows: east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park. This group of pipelines contain; one open LUST case, several closed LUST cases; two RCRIS cases; two UST cases; and two CA FID cases. Constraints are considered ***Moderate.***

GROUP E – WREN AVENUE SPUR

Service to this group would include extension of the new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue This segment contains one CA FID UST case and one CHMIRS case. Constraints are considered ***Low.***

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101, at the location

of the new highway crossing for service to Gavilan College, or at the highway crossing for any new pipe. This location contains several known hazardous contamination sites. They are as follows: two RCRIS; one HAZNET (annual hazardous shipments); one ERNS (unauthorized releases of oil and hazardous substances); three CHMRIS; 3 LUST; and one open LUST/Cortese case. Constraints are considered ***High.***

GROUP G – MANTELLI SPUR

This group would be served by a connection to the proposed Wren Street pipeline, run west along Mantelli Drive and north along Calle del Rey. No known hazardous material contamination sites exist for this segment. Constraints are considered ***Low.***

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions of new pipeline as follows:

- **Pipeline H.1** would extend north along Wren Avenue. This segment has two open LUST cases. Constraints are considered ***Moderate.***
- **Pipeline H.2** would extend south along Forest Street and east along Seventh Street to Elliot School. This segment includes: one closed LUST case; one FINDS (pointer to other source for details); one Calsites (potential or known hazardous site); two HAZNET; two open LUST sites; one CA FID UST; and one Historical Underground Storage Tank (HIST UST). Constraints are considered ***Moderate.***
- **Pipeline H.2a** would extend south from Seventh Street along Chestnut Street and provide a loop to the system if the Princevalle route is not used. This segment includes: four RCRIS; one CHMIRS, two Cortese cases; four LUST (two open and two closed); two USTs; and six HAZNET. Constraints are considered ***Moderate/High.***
- **Pipeline H.3** would extend east along Pacheco Pass Highway to San Ysidro Elementary School. This segment includes two CHMIRS cases, and one closed LUST case. Constraints are considered ***Moderate.***

GROUP I – FLOOD CONTROL CHANNEL ALIGNMENT

This pipeline route would be installed to serve the above groups using existing District flood control easements along Llagas Creek and Miller Slough. These facilities provide gravel access roads at top of embankment, and proposed pipelines would be installed within existing District right of ways. However, District policy as stated in their Engineer Policy and Procedure Manual prohibits installation of longitudinal encroachments in their Rights of Ways and pipeline installation with levees. This type of alignment would need to be reviewed and approved by the District. It is anticipated that proposed pipelines could be installed outside of Corps and CDFG jurisdiction. However, final pipeline design may require regulatory permits. This route would extend north from the SCRWA WWTP along Miller Slough, turn west and cross HWY 101 along the existing flood control channel, continue on the west side of HWY 101 going north along the channel (see Group 6), follow channel west to link up with proposed pipeline along north Santa

Teresa Blvd. This pipeline group, suggested by the City of Gilroy Planning Department, would reduce pipeline installation with City of Gilroy roadways.

This route includes: one CA FID UST case; one CHMIRS; one HAZNET; four RCRIS; one Cortese case; two open LUST cases; one ERNS; and one closed LUST/Cortese/HAZNET case. Constraints range from ***Low to High.***

2.8 GEOLOGY AND SOILS

The proposed project area is located approximately seven miles northeast of the San Andreas fault, three miles northeast of the Sargent fault, and four miles southwest of the Calaveras fault. The San Andreas and Calaveras faults are classified as active, and the Sargent fault is considered potentially active (Jennings, 1994). Because of the earthquake history of the San Francisco and Monterey Bay regions and earthquake recurrence intervals, it is probable that the project area would experience strong ground shaking during the design life of the proposed pipeline alignment. However, it is likely that seismically-induced ground shaking would create an insignificant risk of damage if design features of the pipeline are in compliance with seismic requirements of the current Uniform Building Code (UBC). The proposed project does not lie within the designated Alquist-Priolo "Earthquake Fault Zone" for fault rupture hazard, therefore, the potential for surface rupture is low. The U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) (formerly known as the Soil Conservation Service) has identified soils in the project area and their characteristic engineering properties applicable to this project. Characteristics applicable to this study include shrink-swell potential, corrosivity, whether the soil is considered part of Prime Farmland or Farmland of Statewide Importance, and the potential for the soil to be classified as serpentinitic (serpentine-rich), and thus, a source of naturally-occurring asbestos. A summary of these characteristics is provided in **Table 2-10**.

SHRINK-SWELL POTENTIAL

Shrink-swell potential, or expansivity, is the cyclic change in volume that occurs in fine-grained sediments because of the expansion and contraction of clay caused by wetting and drying. Shrink-swell characteristics identified by the NRCS are for undisturbed soils, generally in the upper five feet of a soil profile. The magnitude of shrink-swell potential (low, moderate, or high) is determined by the linear extensibility of a soil. In general, shrink-swell potential along the proposed pipeline alignment is considered moderate to high (**see Table 2-10**) (USDA NRCS, 1974). A description of these identifiers is below.

The shrink-swell potential is considered:

- **Low** if the soil has a linear extensibility of less than 3 percent
- **Moderate** if the soil has a linear extensibility of 3 to 6 percent
- **High** if the soil has a linear extensibility of 6 to 9 percent
- **Very High** if more than 9 percent

TABLE 2-10
SEGMENT PIPELINE ROUTES AND UNDERLYING SOIL PROPERTIES

Group Number	Underlying Soils and/or General Description of Geology		Shrink-Swell Potential	Corrosivity	Is this soil considered Prime Farmland?	Is this soil considered Farmland of Statewide Importance?	Potential Serpentine-rich Soil?
Group A	Group A (Jamieson) Yolo silty clay loam, 0-2% slopes (YeA)		Moderate	Moderate	Yes	No	No
	Group A (Silacci) Sunnyvale silty clay, drained (Sv)		High	High	Yes	No	No
Group B	Group B.1	Sunnyvale silty clay, drained (Sv)	High	High	Yes	No	No
		Campbell silty clay, muck substratum (Ce)	Moderate-High	High	No	Yes	No
		Campbell silty clay loam (Ca)	Moderate	High	Yes	No	No
		Yolo silty clay loam, 0-2% slopes (YeA)	Moderate	Moderate	Yes	No	No
	Group B.2 mostly Yolo loam, 0-2% slopes (YaA), small portions of PpC, PpA, PoC, ZbA, SdA		Moderate-High	Low-High	YaA (yes), PpC (yes), PpA (yes), PoC (yes), ZbA (yes), SdA (no)	No	No
	Group B.2a mostly Yolo loam, 0-2% slopes (YaA), small portions of PpC, PpA, PoC, ZbA, SdA		Moderate-High	Low-High	YaA (yes), PpC (yes), PpA (yes), PoC (yes), ZbA (yes), SdA (no)	No	No
Group C	Group C. 2/2.a	San Ysidro loam, 0-2% slopes (SdA)	Moderate-High	Moderate-High	No	Yes	No
		San Ysidro, acid variant (SfC)	Moderate-High	Moderate-High	No	Yes	No
		Pleasanton gravelly loam, 0-2% slopes (PpA)	Moderate	Moderate	Yes	No	No
		Pleasanton loam, 2-9% slopes (PoC)	Moderate	Moderate	Yes	No	No
		small portions of LoE, SaE2, Rg, GaA, YaB	Low-High	Low-High	LoE (no), SaE2 (no), Rg (no), GaA (yes), YaB (yes)	LoE (no), SaE2 (no), Rg (no), GaA (no), YaB (no)	No
	Group C.1	Commercial and/or residential development (soil has been disturbed)	n.a.	n.a.	n.a.	n.a.	n.a.
Group D	San Ysidro loam, 0-2% slopes (SdA)		Moderate-High	Moderate-High	No	Yes	No
	Pleasanton loam, 0-2% slopes (PoA)		Moderate	Moderate	Yes	No	No
	Zamora clay loam, 0-2% slopes (ZbA)		Moderate	Moderate	Yes	No	No

TABLE 2-10 (continued)
SEGMENT PIPELINE ROUTES AND UNDERLYING SOIL PROPERTIES

Group Number	Underlying Soils and/or General Description of Geology		Shrink-Swell Potential	Corrosivity	Is this soil considered Prime Farmland?	Is this soil considered Farmland of Statewide Importance?	Potential Serpentine-rich Soil?
Group D	Yolo silty clay loam, 0-2% slopes (YeA)		Moderate	Moderate	Yes	No	No
Group E	Commercial and/or residential development (soil has been disturbed)		n.a.	n.a.	n.a.	n.a.	n.a.
Group F	Yolo silty clay loam, 0-2% slopes (YeA)		Moderate	Moderate	Yes	No	No
	Campbell silty clay loam (Ca)		Moderate	High	Yes	No	No
	Campbell silty clay, muck substratum (Ce)		Moderate-High	High	No	Yes	No
	Zamora clay loam, 0-2% slopes (ZbA)		Moderate	Moderate	Yes	No	No
	Pleasanton gravelly loam, 0-2% slopes (PpA)		Moderate	Moderate	Yes	No	No
	San Ysidro loam, 0-2% slopes (SdA)		Moderate-High	Moderate-High	No	Yes	No
	Pleasanton loam, 0-2% slopes (PoA)		Moderate	Moderate	Yes	No	No
Group G	Commercial and/or residential development (soil has been disturbed)		n.a.	n.a.	n.a.	n.a.	n.a.
Group H	Group H.1 Commercial and/or residential development (soil has been disturbed)		n.a.	n.a.	n.a.	n.a.	n.a.
	Group H.2/H.2a Commercial and/or residential development (soil has been disturbed)		n.a.	n.a.	n.a.	n.a.	n.a.
	Group H.3	Campbell silty clay loam (Ca)	Moderate	High	Yes	No	No
		Yolo loam, 0-2% slopes (YaA)	Moderate	Low	Yes	No	No
		Pacheco clay loam, gravelly substratum (Pe)	Low-Moderate	Low-High	Yes	No	No
Group I	Sunnyvale silty clay, drained (Sv)		High	High	Yes	No	No
	Clear Lake clay, drained (Ch)		High	High	Yes	No	No
	Zamora clay loam, 0-2% slopes (ZbA)		Moderate	Moderate	Yes	No	No
	Commercial and/or residential development (soil has been disturbed)		n.a.	n.a.	n.a.	n.a.	n.a.

If the linear extensibility is more than 3 percent, shrinking and swelling can trigger erosion, cause damage to buildings, roads, structures, and plant roots. Depending on the soil in which a particular pipeline segment is to be installed, proper engineering must take into account the

possibility of shrink-swell behavior. It is also important to note that urban development in many of the areas of the proposed project has reworked or removed most of the upper five feet of soil, reducing or eliminating shrink-swell characteristics.

CORROSIVITY

Corrosivity is the process of a soil reacting chemically with concrete, metal, or alloy (in the case of the NRCS, uncoated steel), resulting in a metal oxide or corrosion product which weakens and/or deteriorates the substance. The rate of this chemical reaction is largely dependent on the physical, chemical, and biological characteristics of the soil, as well as the material in contact with the soil. In general, corrosivity of the soils along the proposed pipeline alignment is considered low to high (see **Table 2-10**) (USDA NRCS, 1974). A description of these identifiers is below.

The corrosivity of a soil is considered:

- **Low** if the soil causes a relatively low rate of corrosion of a buried utility
- **Moderate** if the soil causes a relatively moderate rate of corrosion of a buried utility
- **High** if the soil causes a relatively high rate of corrosion of a buried utility

Depending on the soil in which a particular segment is to be installed, proper site-specific engineering must take into account the corrosivity of the soil in order to reduce and/or eliminate the possibility of long-term corrosion to underground utilities and pipelines. Material used in the pipeline manufacture can also have an effect on rates of corrosion. Plastic or another corrosion-resistant material will slow the process of corrosion, while uncoated steel or metal will hasten the process. It is also important to note that urban development in many of the areas of the proposed project has reworked or removed most of the upper five feet of soil, which can fundamentally change the corrosivity properties of the soil in those areas. Pipeline material and installation must meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies.

PRIME FARMLAND AND FARMLAND OF STATEWIDE IMPORTANCE

Prime Farmland, as defined by the NRCS, is land that has the best combination of physical and chemical characteristics for crop production. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed. Farmland of Statewide Importance is land other than Prime Farmland which has a good combination of physical and chemical characteristics for crop production. **Table 2-10** indicates which soils in the project area are Prime Farmland soils or Farmland of Statewide Importance soils (USDA NRCS, 1995). Depending on the soil in which a particular pipeline segment is to be installed, the project sponsor must consider if loss of either of these types of soils will occur. Conversion of either of these types of soils is considered a potentially significant impact under Appendix G of the California Environmental Quality Act (CEQA). However, the soils in many areas of the proposed project have been subjected to urban development for many years and therefore has

undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland no longer exist under development conditions.

SERPENTINITIC SOILS

Ultramafic rocks, or rocks which contain predominant amounts of the dark minerals olivine, augite, and hypersthene, can be altered to form serpentinite under high temperature conditions. Sometimes these conditions favor the formation of naturally-occurring asbestos, which can be exposed in bodies of ultramafic rocks at Earth's surface. These rocks, in turn, can serve as the source of sediment for serpentinitic soils. All soils in which the proposed pipeline alignment is to be installed are derived from sedimentary sources, not serpentinitic sources. Furthermore, Churchill and Hill (2000) do not locate any of the proposed pipeline alignments in an area of exposed ultramafic rocks, where naturally-occurring asbestos would occur. Therefore, the chance of encountering serpentinitic rock or asbestos is extremely low.

METHODOLOGY AND CRITERIA

A discussion of geology and soils constraints for each pipeline route is presented below. Geology and soils issues considered in this evaluation are based on general principles put forth in *CEQA Guidelines Appendix G*.

The geology and soils constraint to project implementation would be:

- **High Constraint** if the project would require extensive mitigation (or if mitigation may not be feasible) in order to achieve project compatibility with on-site and adjacent geology and soils
- **Moderate Constraint** if the project would require limited mitigation in order to achieve project compatibility with on-site and adjacent geology and soils
- **Low Constraint** if the project would require no or minimal mitigation in order to achieve project compatibility with on-site and adjacent geology and soils

PIPELINE ROUTE EVALUATION – GEOLOGY AND SOILS

GROUP A - DIRECT CONNECTIONS

This would include service to those customers that are closely located to SCRWA's recycled water distribution facilities and pipelines.

- **Pipeline A (Jamieson Road)** This pipeline segment will be installed entirely within the Yolo silty clay loam (0-2 percent slopes) which is defined by the USDA NRCS (1974) to have moderate shrink-swell potential and moderate corrosivity. The soil is also defined by USDA NRCS (1995) as Prime Farmland (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland disturbed will be returned

to its original configuration after pipeline installation. Therefore, constraints are considered ***Low***.

- **Pipeline A (Silacci Way)** This pipeline segment will be installed entirely within the Sunnyvale silty clay (drained) which is defined by the USDA NRCS (1974) to have high shrink-swell potential and high corrosivity. The soil is also defined by the USDA NRCS (1995) as Prime Farmland (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low***.

GROUP B – GAVILAN COLLEGE AREA

This facility would be served using a combination of the existing SCRWA pipeline and new pipeline installation.

- **Pipeline B.1.** Pipeline B.1 will be installed within the Sunnyvale silty clay (drained), the Campbell silty clay (muck substratum), the Campbell silty clay loam, and the Yolo silty clay loam (0-2 percent slopes), which are defined by the USDA NRCS (1974) to have moderate to high shrink-swell potential and moderate to high corrosivity. The Sunnyvale silty clay (drained), the Campbell silty clay loam, and the Yolo silty clay loam (0-2 percent slopes) are also defined by the USDA NRCS (1995) as Prime Farmland, and the Campbell silty clay (muck substratum) is defined as a Farmland of Statewide Importance (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland and/or Farmland of Statewide Importance disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low***.

- **Pipeline B.2.** Pipeline B.2 will be installed within a variety of soils, including dominantly the Yolo loam (0-2 percent slopes) and small portions of the Pleasanton gravelly loam (2-9 percent slopes), the Pleasanton gravelly loam (0-2 percent slopes), the Pleasanton loam (2-9 percent slopes), the Zamora clay loam (0-2 percent slopes), and the San Ysidro loam (0-2 percent slopes), which are all defined by the USDA NRCS (1974) to have moderate to high shrink-swell potential and low to high corrosivity. All of these soils except for the San Ysidro loam (0-2 percent slopes) are defined by the USDA NRCS (1995) as Prime Farmland (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low***.

- **Pipeline B.2a.** Pipeline B.2a will be installed within a variety of soils, including dominantly the Yolo loam (0-2 percent slopes) and small portions of the Pleasanton gravelly loam (2-9 percent slopes), the Pleasanton gravelly loam (0-2 percent slopes), the Pleasanton loam (2-9 percent slopes), the Zamora clay loam (0-2 percent slopes), and the San Ysidro loam (0-2 percent slopes), which are all defined by the USDA NRCS (1974) to have moderate to high shrink-swell potential and low to high corrosivity. All of these soils except for the San Ysidro loam (0-2 percent slopes) are defined by the USDA NRCS (1995) as Prime Farmland (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and

federal agencies. Any Prime Farmland disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low***.

GROUP C – FIRST STREET LOOP

This group of potential users would be served by the installation of pipelines to intersect with existing pipelines to create a looped system.

- **Pipeline C1.** Pipeline C.1 will be installed within a variety of soils, including the San Ysidro loam (0-2 percent slopes), the San Ysidro (acid variant), the Pleasanton gravelly loam (0-2 percent slopes), the Pleasanton loam (2-9 percent slopes), and small portions of the Los Osos clay loam (15-30 percent slopes), the San Andreas fine sandy loam (15-30 percent slopes, eroded), riverwash, the Garretson loam, gravel substratum (0-2 percent slopes), and the Yolo loam (2-5 percent slopes), which are all defined by the USDA NRCS (1974) to have low to high shrink-swell potential and low to high corrosivity. The Pleasanton gravelly loam (0-2 percent slopes), the Pleasanton loam (2-9 percent slopes), the Garretson loam, gravel substratum (0-2 percent slopes), and the Yolo loam (2-5 percent slopes) are defined by the USDA NRCS (1995) as Prime Farmland. Only the San Ysidro loam (0-2 percent slopes) and the San Ysidro (acid variant) are defined by the USDA NRCS (1995) as Farmland of Statewide Importance (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland and/or Farmland of Statewide Importance disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low***.

- **Pipeline C.2.** It is likely that soils in many areas of the proposed project have been subjected to urban development for many years and therefore have undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland most likely no longer exist under development conditions. Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Commercial and residential development along this pipeline route has decreased the possibility that Prime Farmland or Farmland of Statewide Importance will be encountered. Therefore, constraints are considered ***Low***.

GROUP D – I.O.O.F. AVENUE SPUR

Service to this group would include new pipeline extensions from Princevalle Street as follows: east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park. Pipeline 4 will be installed within a variety of soils, including the San Ysidro loam (0-2 percent slopes), the Pleasanton loam (0-2 percent slopes), the Zamora clay loam (0-2 percent slopes), and the Yolo silty clay loam (0-2 percent slopes), which are all defined by the USDA NRCS (1974) to have moderate to high shrink-swell potential and moderate to high corrosivity. The Pleasanton loam (0-2 percent slopes), the Zamora clay loam (0-2 percent slopes), and the Yolo silty clay loam (0-2 percent slopes) are defined by the USDA NRCS (1995) as Prime Farmland. Only the San Ysidro loam (0-2 percent slopes) is defined by the USDA NRCS (1995) as Farmland of Statewide Importance (**Table 2-10**). However, it is likely that soils in many areas of the proposed project have been subjected to urban development

for many years and therefore have undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland most likely no longer exist under development conditions. Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Commercial and residential development along this pipeline route has decreased the possibility that Prime Farmland or Farmland of Statewide Importance will be encountered. Therefore, constraints are considered ***Low***.

GROUP E – WREN AVENUE SPUR

Service of this group would include extension of the new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue. It is likely that soils in many areas of the proposed project have been subjected to urban development for many years and therefore have undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland most likely no longer exist under development conditions. Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Commercial and residential development along this pipeline route has decreased the possibility that Prime Farmland or Farmland of Statewide Importance will be encountered. Therefore, constraints are considered ***Low***.

GROUP F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of a small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101. Pipeline 6 will be installed within a variety of soils, including the Yolo silty clay loam (0-2 percent slopes), the Campbell silty clay loam, the Campbell silty clay (muck substratum), the Zamora clay loam (0-2 percent slopes), the Pleasanton gravelly loam (0-2 percent slopes), the San Ysidro loam (0-2 percent slopes), and the Pleasanton loam (0-2 percent slopes), which are all defined by the USDA NRCS (1974) to have moderate to high shrink-swell potential and moderate to high corrosivity. The Yolo silty clay loam (0-2 percent slopes), the Campbell silty clay loam, the Zamora clay loam (0-2 percent slopes), the Pleasanton gravelly loam (0-2 percent slopes), and the Pleasanton loam (0-2 percent slopes) are defined by the USDA NRCS (1995) as Prime Farmland. Only the San Ysidro loam (0-2 percent slopes) and the Campbell silty clay (muck substratum) are defined by the USDA NRCS (1995) as Farmland of Statewide Importance (**Table 2-10**). However, it is likely that soils in many areas of the proposed project have been subjected to urban development for many years and therefore have undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland most likely no longer exist under development conditions. Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Commercial and residential development along this pipeline route has decreased the possibility that Prime Farmland or Farmland of Statewide Importance will be encountered. Therefore, constraints are considered ***Low.***

GROUP G – MANTELLI SPUR

This group would be served by a connection to the proposed Wren Street pipeline, running west along Mantelli Drive and north along Calle del Rey. It is likely that soils in many areas of the proposed project have been subjected to urban development for many years and therefore have undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland most likely no longer exist under development conditions. Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Commercial and residential development along this pipeline route has decreased the possibility that Prime Farmland or Farmland of Statewide Importance will be encountered. Therefore, constraints are considered ***Low***.

GROUP H – OTHER FUTURE SPURS

This group would be served by three separate extensions;

- **Pipeline H.1** would extend north along Wren Avenue. It is likely that soils in many areas of the proposed project have been subjected to urban development for many years and therefore have undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland most likely no longer exist under development conditions. Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Commercial and residential development along this pipeline route has decreased the possibility that Prime Farmland or Farmland of Statewide Importance will be encountered. Therefore, constraints are considered ***Low***.

- **Pipeline H.2 and H.2.a** would extend south along Forest Street and east along Seventh Street. It is likely that soils in many areas of the proposed project have been subjected to urban development for many years and therefore have undergone considerable soil disturbance. The predevelopment conditions that the NRCS originally mapped as Prime Farmland most likely no longer exist under development conditions. Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Commercial and residential development along this pipeline route has decreased the possibility that Prime Farmland or Farmland of Statewide Importance will be encountered. Therefore, constraints are considered ***Low***.

- **Pipeline H.3** would extend east along Pacheco Pass Highway. Pipeline H.3 will be installed within the Campbell silty clay loam, the Yolo loam (0-2 percent slopes), and the Pacheco clay loam (gravelly substratum), which are all defined by the USDA NRCS (1974) to have low to moderate shrink-swell potential and low to high corrosivity. All three soils are defined by the USDA NRCS (1995) as Prime Farmland (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low***.

GROUP I – FLOOD CONTROL CHANNEL ALIGNMENT

This pipeline route would be installed to serve the above groups using existing District flood control facilities along Llagas Creek and Miller Slough. Pipeline 9 will be installed within the Sunnyvale silty clay (drained), the Clear Lake clay (drained), the Zamora clay loam (0-2 percent slopes), which are all defined by the USDA NRCS (1974) to have moderate to high shrink-swell potential and moderate to high corrosivity. All three soils are defined by the USDA NRCS (1995) as Prime Farmland (**Table 2-10**). Pipeline material and installation will meet applicable permitting regulations, as well as standards set forth by the UBC and state and federal agencies. Any Prime Farmland disturbed will be returned to its original configuration after pipeline installation. Therefore, constraints are considered ***Low.***

CHAPTER 3

SUMMARY AND RECOMMENDATIONS

In order to examine the cumulative constraints associated with each site, a rating system (1 = low constraint, 2 = moderate constraint, 3 = high constraint) was applied to the constraint analysis presented in Chapter 2. **Table 3-1** below presents a summary of constraint levels and the cumulative rating of individual pipeline segments, with the highest point total representing the most highly constrained alignments. Individual issue areas were not weighted, as each issue areas could represent a fatal flaw to project implementation. However, it is recognized that various issue areas may be considered more vital to project implementation from the District's perspective. As demonstrated by **Table 3-1**, the pipeline routes are fairly similar in their cumulative potential for environmental constraint. Based upon analysis to date, the two issue areas with the greatest influence over pipeline routing are biological resources and cultural resources. For pipelines with high constraints identified, the Master Plan includes an alternative route that could be implemented to reduce impacts. Pipeline routes with the highest constraints include: Pipeline Route B.2a, which used the Monterey Frontage Road and Mesa Road to extend to Gavilan College; Pipeline Group D, which is located within central Gilroy; and Pipeline Group I, which includes pipeline routes along existing flood control channels.

Pipeline Route B.2a has substantial biological resource related to the Uvas Creek crossing, cultural resource issues, and traffic concerns related to the Mesa Road/U.S. Highway 101 off ramp. It should be noted that these impacts could be further assessed, and potentially reduced to an acceptable level, through application of design or mitigation measures within the context of CEQA and/or regulatory permitting. However, implementation of Pipeline Route B.2, which would use a future multi-purpose recreational trail, appears to present an implementable alternative that would reduce environmental impact and mitigation requirements.

Pipeline Group D has one of the highest ratings, due largely to its location within central Gilroy. This results in a moderate rating for every category, with the exception of biological resources. Implementation of standard construction measures have the ability to reduce potential impacts associated with this route to less than significant.

Pipeline Group I would include the use of flood control channel embankments for pipeline routing as an alternative to installation within roadways. Although this would reduce traffic impacts associated with roadway installation, use of flood control channels would have a greater potential for impacts to sensitive biological resources, and cultural resources, would likely require regulatory permits, and would conflict with District policy regarding longitudinal pipeline installation within flood control facilities.

TABLE 3-1
SUMMARY OF CONSTRAINTS

Location	Land Use/ Policy	Traffic	Biological Resources	Cultural Resources	Hydrologic Resources	Haz Mat	Cumulative Total
Group A	Low 1	Low 1	Low 1	Low 1	Low 1	Low 1	6
Group B							
B.1	Low 1	Low 1	Moderate 2	Low 1	Low 1	Low 1	7
B.2	Moderate 2	Low 1	Moderate 2	Moderate 2	Moderate 2	Low 1	10
B.2a	Low 1	Moderate 2	**High** **3**	**High** **3**	Moderate 2	Low 1	12
Group C							
C.1	Moderate 2	Moderate 2	Low 1	Moderate 2	Low 1	Moderate 2	10
C.2	Low 1	Moderate 2	Low 1	Moderate 2	Low 1	Moderate 2	9
C.2a	Low 1	Moderate 2	Low 1	Moderate 2	Low 1	Low 1	8
Group D	Moderate 2	Moderate 2	Low 1	Moderate 2	Moderate 2	Moderate 2	11
Group E	Low 1	Moderate 2	Low 1	Low 1	Low 1	Low 1	7
Group F	Low 1	Moderate 2	Low 1	Moderate 2	Low 1	High 3	10
Group G	Moderate 2	Moderate 2	Low 1	Low 1	Low 1	Low 1	8
Group H							
H.1	Low 1	Moderate 2	Low 1	Moderate 2	Low 1	Moderate 2	9
H.2	Low 1	Moderate 2	Low 1	Moderate 2	Low 1	Moderate 2	9
H.2a	Low 1	Moderate 2	Low 1	Moderate 2	Low 1	Moderate 2	9
H.3	Low 1	Moderate 2	Low 1	**High** **3**	Low 1	Moderate 2	10
Group I	Moderate 2	Low 1	**High** **3**	**High** **3**	Moderate 2	Low 1	12

CHAPTER 4

REFERENCES

California Department of Fish and Game, *Natural Diversity Data Base,* 2003

California Regional Water Control Board, Central Coast Region, *Water Quality Control Plan*, 1994

Caltrans, *2001 Traffic Volumes on California State Highways*, 2003, Annual Average Daily Traffic Volumes

Churchill, R. K., and Hill, R. L., 2000, A general location guide for ultramafic rocks in California – areas more likely to contain naturally occurring asbestos, CDMG Open-File Report 2000-019, scale 1:1,100,000, online at: http://ngmsvr.wr.usgs.gov/Prodesc/proddesc_44817.htm.

City of Gilroy Community Development Department, Engineering Division, 24-hour counts and extrapolated peak-hour counts.

City of Gilroy Planning Department, 2002, *City of Gilroy General Plan.*

Carollo Engineers, 2004, SCWRA Draft Recycled Water Master Plan.

Environmental Data Resources, Inc. (EDR), *The EDR Radius Map with GeoCheck®, SCVWD S. City Recycled Water Project, Gilroy, CA 95020*, December 18, 2003.

Environmental Science Associates, 2000, South County Regional Wastewater Authority Recycled Water Booster Pump Station and Reservoir *Draft* Mitigated Negative Declaration.

FEMA Flood Insurance Rate Map # 0603400003D

Historical Resources Information System, Northwest Information Center (December 2003). Database Search – Gilroy CA, Santa Clara County

Jennings, C.W., 1994, Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions, California Division of Mines and Geology Geologic Data Map No. 6, 1:750,000 scale.

Santa Clara County Roads and Airport Department, 24-hour counts.

SCRWA, *Water Reclamation Planning Study,* 1995; and Department of Water Resources DWR Bulletin 104-7.

CEQA ENVIRONMENTAL **CHECKLIST FORM**

1. **Project Title:**	Santa Clara Water District South County Regional Wastewater Authority Constraints Analysis
2. **Lead Agency Name and Address:**	South County Regional Wastewater Authority 9351 Rosanna Street Gilroy, California 95020
3. **Contact Person and Phone Number:**	Jim Gasser, South County Regional Wastewater Authority (408) 848-0450
4. **Project Location:**	In and near the City of Gilroy California, located in southern Santa Clara County on lands owned by the South County Regional Wastewater Authority and private parties. Agricultural lands, residential and commercial areas are within the site. Llagas Creek, Uvas Creek, and Miller Slough are in the project area.
5. **Project Sponsor's Name and Address:**	See No.2, Lead Agency, above
6. **General Plan Designation:**	Residential, Commercial, Public Lands, and Agriculture
7. **Zoning:**	Mixed Use

8. **Description of Project:** Santa Clara Valley Water Department (the District) in partnership with the South County Regional Wastewater Authority (SCRWA), is considering an expansion of the existing tertiary treated recycled water pipeline. The proposed project would upgrade the existing distribution system to accommodate up to 6 million gallons per day (mgd). SCRWA is evaluating 48 potential tertiary treated recycled water users who will be served through installation of 95,500 feet of new pipeline connected to the existing recycled water pipeline serving the Gilroy area.

9. **Surrounding Land Uses and Setting**. The 2002 City of Gilroy General Plan denotes four categories of land use; residential, commercial, industrial, and other designations. The Land Use portion of the General Plan, defines the general pattern of future development for the City of Gilroy. The Land Use Plan Map covers the area within the "20-Year Boundary" of the General Plan. This is the area that the City expects to be serviced and developed in urban uses by the year 2020. The expansion pipeline does not interfere with any of the areas designated by the map.

10. **Other public agencies whose approval is required** (e.g., permits, financing approval, or participation agreement.): In order to construct and implement the pipeline project, the South County Regional Wastewater Authority would partner with the Santa Clara Valley Water District. The proposed project would submit a Programmatic EIR under CEQA. The proposed project would also require the following permits and approvals:

- U.S. Army Corps of Engineers – Section 404 Permit
- U.S. Fish and Wildlife Service and National Marine Fisheries Service – Consultation and coordination under the Endangered Species Act
- California Department of Fish and Game
- Santa Clara County Planning Department
- The City of Gilroy Planning Department

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- ☒ Aesthetics
- ☒ Biological Resources
- ☒ Hazards & Hazardous Materials
- ☐ Mineral Resources
- ☒ Public Services
- ☒ Utilities / Service Systems
- ☒ Agriculture Resources
- ☒ Cultural Resources
- ☒ Hydrology / Water Quality
- ☒ Noise
- ☐ Recreation
- ☐ Mandatory Findings of Significance
- ☒ Air Quality
- ☒ Geology / Soils
- ☒ Land Use / Planning
- ☐ Population / Housing
- ☒ Transportation / Traffic

DETERMINATION: (To be completed by Lead Agency)
On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☒ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
Printed Name	For

Environmental Impacts:

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
I. AESTHETICS -- Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☒	☐	☐	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☒	☐	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Discussion

The existing visual quality of the general area is dominated by urban uses associated with the City of Gilroy. Except for three potential bridge crossings, the pipeline will be buried in existing roadways or fields. Facilities will have short term disturbances and minor above ground appurtences, such as valve boxes and covers. No long term impacts are anticipated due to the below-grade nature of the pipeline routes. However, in the event storage tanks are identified as part of the project, those facilities would warrant further aesthetic analysis. The project does not propose installation of exterior lighting and would not affect scenic resources such as trees, rock outcroppings, or historical buildings. Although this issue would require analysis in any CEQA documentation, it is not considered a significant differentiator between the individual routes. Due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. **Would the project:**				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as				

shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☒	☐	☐	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

Discussion

The proposed pipeline route is not under Williamson Act contract, and thus would not warrant a discussion of this issue. The proposed pipeline route crosses through prime agricultural lands. Final pipeline routes need to be assessed for potential loss of these lands. Therefore, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. **Would the project:**				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☒	☐	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☒	☐	☐

Discussion

Construction activities would significantly affect the pollutant levels for sensitive receptors. Depending on the length of time the project takes to complete will determine the overall affect on the areas of concern. Therefore, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
IV. BIOLOGICAL RESOURCES -- Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☒	☐	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☒	☐	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☒	☐	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community				

Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☒	☐	☐

Discussion

The proposed pipeline routes are located within roadways and agriculture fields that have been previously disturbed. Habitats along these routes are generally limited. Riparian corridors along Uvas and Llagas Creeks do provide sensitive species habitat. It is anticipated that potentially significant impacts to sensitive species or habitat would result from the proposed pipeline routes. Project specifications will ensure that impacts to sensitive species or habitat are avoided or reduced wherever possible. However, due to the potential for impacts to sensitive species, this issue should be examined in an Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
V. CULTURAL RESOURCES -- Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☒	☐	☐	☐
b) Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5?	☒	☐	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐	☐	☐

Discussion

Native American archaeological sites in this portion of South Santa Clara County tend to be situated at the base of hills near sources of water. An archival record search for preliminary site locations was performed by Historical Resources Information Center, Northwest Information Center at Sonoma State University. Final pipeline routes shall be confirmed with respect to previous surveys, and standard provisions to protect cultural resources should be included in any construction bid documents. Three pipeline alignments were found to have “high” sensitivity for cultural resources. However, due to the potential for impacts to cultural resources, this issue should be examined in an Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
VI. GEOLOGY AND SOILS -- Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Discussion

The proposed project area is located approximately seven miles northeast of the San Andreas fault, three miles northeast of the Sargent fault, and four miles southwest of the Calaveras fault. The San Andreas and Calaveras faults are classified as active, and the Sargent fault is considered potentially active (Jennings, 1994). Because of the earthquake history of the San Francisco and Monterey Bay regions and earthquake recurrence intervals, it is probable that the project area would experience strong ground

shaking during the design life of the proposed pipeline alignment. However, it is likely that seismically-induced ground shaking would create an insignificant risk of damage if design features of the pipeline are in compliance with seismic requirements of the current Uniform Building Code (UBC). The proposed project does not lie within the designated Alquist-Priolo "Earthquake Fault Zone" for fault rupture hazard, therefore, the potential for surface rupture is low.

Earthquakes or aftershocks may cause secondary ground failures. Ground failures are caused by soil losing its structural integrity. Examples of seismically-induced ground failures are liquefaction, later spreading, ground lurching, and subsidence. Liquefaction (the rapid transformation of soil to a fluid-like state) affects loose saturated sands. Earthquake ground shaking induces a rapid rise in excess pore pressure and the soil loses its bearing strength. Under these conditions, soils may spread laterally, undergo settlement and form fissures and sand boils (upwelling of sand at the surface). Lateral spreading is the horizontal movement of loose, unconfirmed sedimentary, and fill deposits during seismic activity. Ground-lurching is the horizontal movement of soil, sediments, or fill located on relatively steep embankments or scarps as a result of seismic activity, forming irregular ground surface cracks. The potential for lateral spreading or lurching is highest in areas underlain by soft, saturated materials, especially where bordered by steep banks or adjacent hard ground. Subsidence is vertical downward movement of the ground surface. Impacts associated with seismic-related ground failure at the proposed sites are considered low. However, due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
VII. HAZARDS AND HAZARDOUS MATERIALS -- Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☒	☐	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to				

Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Discussion

The proposed pipeline routes would be within residential, commercial, agricultural fields, and along major roadways including; Highway 101 and Highway 152. An environmental site assessment was done through a computer database search to; identify known or suspected sites where contamination of soils or groundwater may exist; sites permitted to handle hazardous wastes under Resource Conservation and Recovery Act (RCRA); and sites with permitted underground storage tanks. Several sites along the proposed pipeline route were identified in this search. Due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
VIII. HYDROLOGY AND WATER QUALITY -- Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion of siltation on- or off-site?	☐	☒	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☒	☐	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation of seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion

The proposed project would not alter the drainage course of a stream or river such that substantial erosion or sedimentation would occur. The proposed project would not alter the drainage pattern of a stream or

river, or contribute surface flows that would exceed capacity of drainage systems. Project implementation does not include development of housing. Therefore, no impacts associated with placement of housing within the 100-year floodplain would occur.

The proposed project will not utilize or deplete groundwater. However, the project would potentially result in some groundwater infiltration at the proposed user sites, and is consistent with SCRWA's existing percolation operations at their Waste Water Treatment Plant (WWTP). Due to the sensitivity of recycled water use by the general public, and the potential impacts to water quality, this issue area needs to be further studied within a Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
IX. LAND USE AND PLANNING -- Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☒	☐	☐	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☒	☐	☐	☐

Discussion

The proposed project would construct a recycled water pipeline through and near the City of Gilroy in Santa Clara County in developed and undeveloped areas. Therefore, the project would result in a disruption, physical division, or isolation of existing residential areas, and impacts would occur. These potential impacts will be further addressed in an Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
X. MINERAL RESOURCES -- Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Discussion

The California Division of Mines and Geology (CDMG) has classified lands within the San Francisco-Monterey Bay region into Mineral Resource Zones (MRZs) based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act (SMARA) of 1975 (Stinson et al., 1983). The CDMG classified urbanizing lands within the South San Francisco Bay Production-Consumption Region according to the presence or absence of significant sand, gravel, or stone deposits that are suitable as sources of aggregate. Areas classified as MRZ-1 are areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little or no likelihood exists for their presence. MRZ-2 areas are those where adequate information indicates that significant deposits are present. Areas classified as MRZ-3 contain mineral deposits, but their significance cannot be evaluated from available data. Areas are classified as MRZ-4 where available information is inadequate for assignment to any other MRZ category. The majority of the City of Gilroy and surrounding areas, including the wetland site is unclassified, or information is inadequate for classification. Therefore, there are no known mineral resources located in the project vicinity and no impact would result from project construction or operation. However, due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XI. NOISE -- Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☒	☐	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☒	☐	☐	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☒	☐	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion

Significant traffic operational noise would be expected along the majority of the proposed pipeline route due to Highway 101 and Highway 152 which run through Gilroy. Secondary noise impacts would not be significant.

Project construction would result in intermittent, elevated noise levels within the project vicinity. Construction noise would result from operation of equipment and vehicles, including heavy trucks and earth-moving equipment. The effect of construction noise would depend upon how much noise is generated by construction, the distance between construction activities and the nearest noise-sensitive uses, and the existing noise levels at those uses. Potential impacts associated with construction noise will be examined in the upcoming Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XII. POPULATION AND HOUSING -- Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

c) Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

The proposed project would not displace existing housing; therefore, this project would not necessitate the construction of replacement housing elsewhere. However, due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XIII. PUBLIC SERVICES --				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

Discussion

Significant temporary impacts can be anticipated with potential interruption of water supply due to construction. This cumulative impact associated with increase pubic services has been previously considered in the 1990 EIR analysis. Potential secondary effects of growth will be reviewed with respect to any changes in the General Plans that have occurred since the 1990 EIR. This potential would be addressed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XIV. RECREATION --				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

Discussion

The City of Gilroy's 2002 Master Plan describes new recreational facilities that are within the proposed pipeline route. Therefore, due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact could be considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XV. TRANSPORTATION / TRAFFIC -- Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	☒	☐	☐	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☒	☐	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☒	☐	☐	☐

e) Result in inadequate emergency access?	☒	☐	☐	☐
f) Result in inadequate parking capacity?	☒	☐	☐	☐
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☒	☐	☐	☐

Discussion

Construction impacts are evaluated for the various pipeline alignments. Operational impacts would be insignificant. Secondary construction-related traffic impacts would occur and were evaluated for major roadways. In general, pipeline installation generates four types of traffic impacts; disruption of traffic flow due to roadway construction and traffic control; generation of vehicle trips due to construction worker and materials delivery; loss of parking due to contractor staging or worker parking; and disruption of access, including emergency, residential, and commercial access. These effects are limited to the duration of the construction activity, and are typically short-term in any one location due to the linear nature of pipeline construction. Typically, construction activities generate traffic volumes of 50 to 100 Average Daily Trips (ADT). The recycled water expansion pipeline will be installed along roadways within the City of Gilroy. .Due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XVI. UTILITIES AND SERVICE SYSTEMS -- Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☒	☐	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion

The proposed project is limited to construction within existing streets and agriculture fields. Relevant sections of the CWA to the Project include:

- CWA Section 303 / 401 Requirements for projects to meet water quality standards of the adjacent water body, along with certification that such standards are being met.
- CWA Section 402 (NPDES) permit for discharge into creek (or wetland if it is considered a water of the U.S.). Discharge requirements are determined by the RWQCB.
- CWA Section 402 (NPDES) permit for storm water discharge during construction. The contractor will be required to prepare a Storm Water Pollution Prevention Plan.

Due to the significant amount of area the pipeline will effect, and the potential to choose several different routes, this impact is considered potentially significant and should be analyzed in a future Programmatic EIR.

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
XVII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b) Does the project have impacts that are individually limited, but cumulative considerable? ("Cumulative considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

Impacts Requiring No Further Analysis

- The project site is not located near an existing or proposed school, nor is it located in the vicinity of an airport. Therefore, this project would not result in safety hazards for people in the project area.

- The project site is not listed in the Hazardous Waste and Substances Sites List (EPA, 1994). Therefore, development of the project would not create a significant hazard to the public or the environment.

- The project sites are not part of any staging area of any adopted emergency response plans or emergency evacuation plans. Therefore, no impacts would occur.

- The project would not expose people or structures to wildfires. Therefore, no impacts would occur.

- There are several dams and reservoirs in the region, including Anderson Dam, Coyote Dam, and Uvas Reservoir. If these structures failed, water levels in Llagas Creek may rise and impact the

project site. Earthquakes can cause tsunamis ("tidal waves"), seiches (oscillating waves in enclosed water bodies), and landslide splash waves in enclosed water bodies such as lakes, reservoirs, and the San Francisco Bay. Earthquakes can also result in dam failures at reservoirsHowever, the likelihood of such an occurrence would not be affected by the proposed project and is considered remote. Therefore, this impact would be considered less-than-significant.

- The proposed project would not require water entitlements; therefore, no impacts would occur.
- Solid waste generation would be limited to construction activities, and would not affect available solid waste disposal capacity in the region. No long-term solid waste generation would be associated with the proposed project, other than green waste associated with periodic maintenance of vegetation.
- The contractor would be required to comply with all pertinent regulations regarding the disposal of solid waste generated by construction activities.

TO:	Santa Clara Valley Water District/ South County Regional Water Authority	**FROM:**	Environmental Science Associates
SUBJECT:	Rationale for Preparation of a Programmatic EIR (CEQA) for the South County Recycled Water Expansion Plan	**DATE:**	April 4, 2004

A. RECOMMENDATION

This memorandum provides a basis for our recommendation that the Santa Clara Valley Water District-South County Regional Wastewater Authority South County Recycled Water Master Plan qualifies for a ***Programmatic EIR in compliance with Section 15168 of the California Environmental Quality Act (CEQA) Guidelines.***

This recommendation was developed after site reviews conducted by Carollo Engineering and Environmental Science Associates (ESA), and discussions with District staff.

To support the recommendation, this memo describes the project and sets forth an analysis of potential environmental impacts associated with the project. A project area site map is attached.

B. PROJECT DESCRIPTION / BACKGROUND

The proposed project has been identified by SCRWA and the District as a means of increasing the flexibility and reliability of the existing reclaimed water distribution system in the Gilroy area. Increasing the availability of recycled water would enable SCRWA to continue pursuing new recycled water customers. The proposed project would upgrade the existing distribution system to accommodate up to 6 million gallons per day (mgd). This would equal the future expanded tertiary treatment system capacity of the SCRWA WWTP. Depending on the local market for recycled water in south Santa Clara County, future projects could increase recycled water deliveries from the SCRWA WWTP from current levels of less than 3 mgd to as much as 15 mgd.

SCRWA has provided limited recycled water service since installation of a recycled water distribution system in 1978. This system, constructed as a joint project with the District in 1978, was designed to provide service to primarily agricultural interests on the west side of Uvas Creek. The distribution system capacity is approximately 3 mgd. Currently, the recycled water distribution system operates on an as-needed basis, supplying approximately 1.2 mgd of tertiary treated recycled water (maximum month demand) to the Eagle Ridge Golf Course, 0.11 mgd to the Christmas Hill Park, 0.13 mgd to the Obata farm in the vicinity of the SCRWA WWTP, and 0.10 mgd to Calpine-Gilroy Energy Center.

The Carollo Master Plan 2002, identified current and future users; anticipated water demands; and a phased in distribution system to meet these demands. Pipeline facilities identified, and reviewed with respect to potential for environmental impact, are identified below.

Group A – DIRECT CONNECTIONS

This would include service to those customers that are located close to the existing SCRWA recycled water distribution facilities and pipelines.

Group B – GAVILAN COLLEGE AREA

Service to this customer would use a combination of existing and new pipeline to extend from the SCRWA WWTP to the college facility west of U.S. Highway 101.

The following segment alignments would be used:

- **Pipeline B.1** would be installed from the SCRWA WWTP to the existing pipeline at Monterey Street. This would include installation west along Southside Drive, north along Rossi Avenue, and west along East Luchessa to the existing pipeline, which crosses under Highway 101.

- **Pipeline B.2.** This route would extend west from the existing pipeline and across agricultural fields along the proposed multi-use recreational trail identified in the 2002 Gilroy Trails Conceptual Master Plan, as part of the 2002 City of Gilroy Master Plan**.** Under the proposed Master Plan, a bridge would be installed over Uvas Creek, presenting an opportunity for pipeline attachment to cross the creek. Pipeline would then be installed within the trail to Santa Teresa Blvd., with tie-in to campus facilities.

- **Pipeline B.2a.** This alternate route would be installed south along Monterey Frontage Road, west across Uvas Creek and agricultural fields, west along Mesa Road, and south along Santa Teresa Blvd. to Gavilan College.

Group C – FIRST STREET LOOP

Service to this group would include new pipeline routes in existing streets.

- **Pipeline C.1.** This pipeline would extend from Wren Street west along First Street to meet the existing pipeline west of Conrotto Winery.

- **Pipeline C.2.** This pipeline would extend from First Street south along Princevalle Street to branch west on Fourth Street and continue south to intersect with existing pipe. This route would create a loop in the system.

- **Pipeline C.2.a.** This alternate route limits the Princevalle Street pipeline from London to Eighth Street and serve Glenview Elementary and Gateway School.

Group D – I.O.O.F. AVENUE SPUR

Service to this group would include new pipeline extensions from Princevalle Street as follows: east along First Street, south along Monterey Street, east along I.O.O.F. Avenue, and south along Murray Avenue to San Ysidro Park.

Group E – WREN AVENUE SPUR

Service to this group would include extension of new pipeline along Wren Avenue, south to the 4th Avenue/El Roble Park intersection, north to Mantelli Drive, east to Veterans Park, and west to Kern Avenue.

Group F – HIGHWAY 101 MEDIANS AND INTERCHANGES

Service to the Highway 101 median and interchanges will be through installation of small diameter irrigation system pipeline to serve landscaping projects identified by Caltrans. These systems would be routed from the existing pipeline crossing under Highway 101, at the location of the new highway crossing for service to Gavilan College, or at the highway crossing for any new pipelines.

Group G – MANTELLI SPUR

This group would be served by a connection to the proposed Wren Street pipeline, and would run west along Mantelli Drive and north along Calle del Rey.

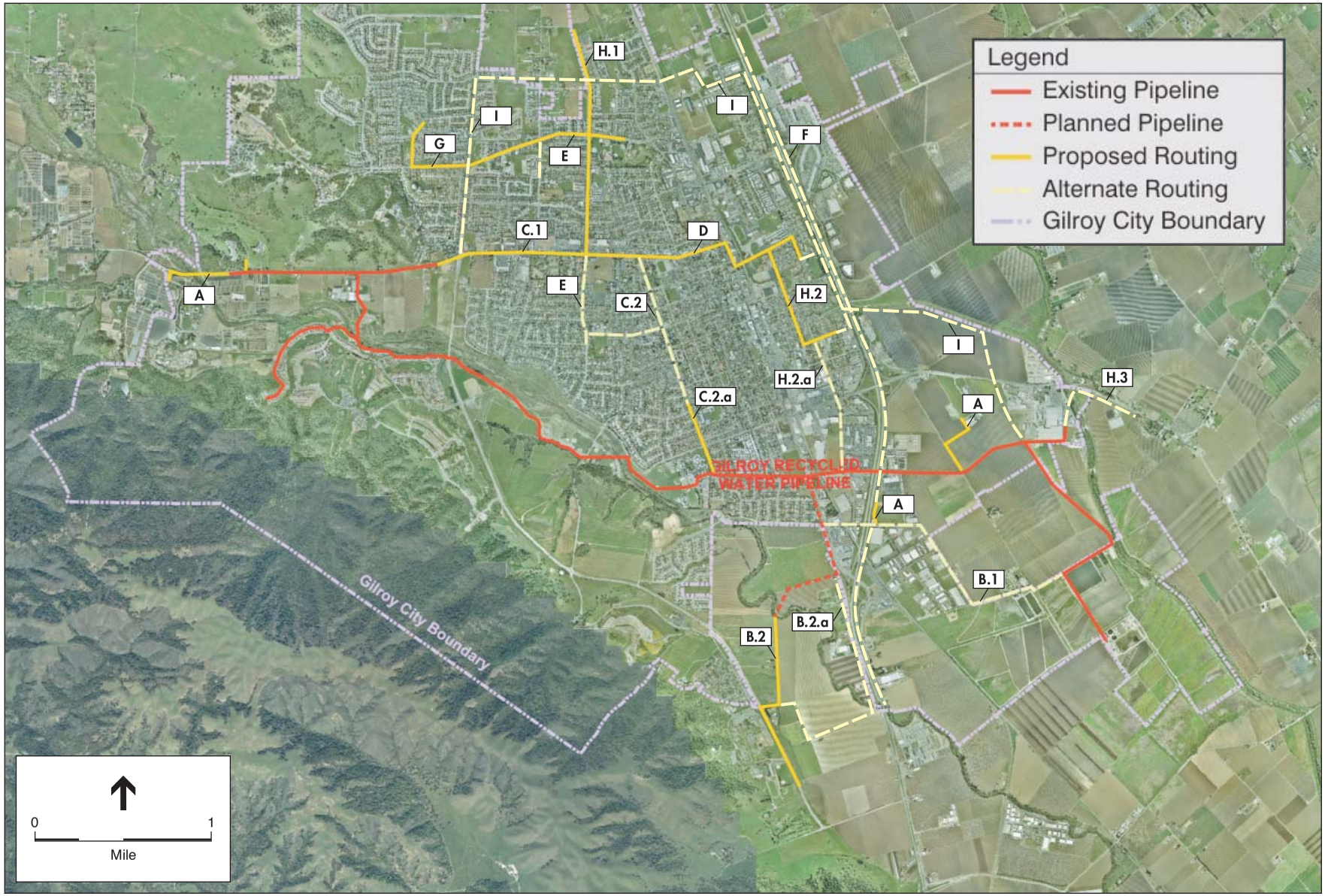
Group H – OTHER FUTURE SPURS

This group would be served by three separate extensions of new pipeline as follows:

- **Pipeline H.1** would extend north along Wren Avenue.
- **Pipeline H.2** would extend south along Forest Street and east along Seventh Street to Elliot School.
- **Pipeline H.2a** would extend south from Seventh Street along Chestnut Street and provide a loop to the system if the Princevalle route is not used.
- **Pipeline H.3** would extend east along Pacheco Pass Highway to San Ysidro Elementary School.

Group I – FLOOD CONTROL ALIGNMENT

This pipeline route would be installed to serve the above groups using existing District flood control easements along Llagas Creek and Miller Slough. These facilities provide gravel access roads at top of embankment, and proposed pipelines would be installed within existing District right of ways. However, District policy as stated in their Engineer Policy and Procedure Manual prohibits installation of longitudinal encroachments in their Rights of Ways and pipeline installation within levees. This type of alignment would need to be reviewed and approved by the District. This route would extend north from the SCRWA WWTP along Miller Slough, then west across Highway 101 along the existing flood control channel. On the west side of Highway 101, the pipeline would extend north and west along the channel to link up with proposed pipeline along north Santa Teresa Blvd. This pipeline group, suggested by the City of Gilroy Planning Department, would reduce pipeline installation within City of Gilroy roadways.



SOURCE: Environmental Science Associates

SCVWD / 203019 ■

Figure 1
Pipeline Alignment

C. ENVIRONMENTAL SETTING

As shown on Figure 1, the South County Recycled Water Expansion Plan is located in Santa Clara County, in the City of Gilroy; encompassing an area divided by U.S. I-101. The project area would extend from the south-eastern edge of the City; to a western point at Bonfante Farms; and a northern point near Wren and Franklin Streets.

The character of the area is of mixed use including; agricultural lands, residential, commercial, and public lands. The project area is limited primarily to existing streets and undeveloped agricultural lands. The proposed pipeline route crosses Ulvas and Llagas creeks and Miller Slough.

D. POTENTIAL IMPACTS

According to CEQA Guidelines Section 15168, a Program EIR is an EIR, which may be prepared on a series of actions that can be characterized as one large project and are, related either:

- Geographically
- Logical parts in the chain of complicated actions
- In connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program
- As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways

The District's proposed Program EIR meets the above characterizations. In addition, there are several advantages to preparing a Program EIR:

- An exhaustive consideration of effects and alternatives
- Consideration of cumulative impacts
- Consideration of program-wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts.

The project has been preliminarily assessed by ESA, through pertinent background documentation, computer database searches, and field reconnaissance consisting of windshield and ground surveys using available access. Site surveys were conducted on December 4, 2003 and December 29, 2003. A preliminary assessment has determined that potentially significant impacts would result from project construction operations. The issue areas with the potentially for significant impacts are summarized below:

<u>Land Use and Land use Policy.</u> The District, as a regional agency and utility district, is not subject to land use and zoning designations of local jurisdictions for projects involving public utility uses. The City of Gilroy General Plan (2002) denotes four categories of land use; residential, commercial, industrial, and other designations. The Land Use Plan Map portion of the General Plan covers the area within the "20-Year Boundary" which is expected to be serviced and developed in urban uses by the year 2020. The expansion pipeline does not interfere with any of the areas designated by the map. However, due to the length of time for project completion and the potential changes made to the pipeline route, land uses would be best addressed within a Programmatic EIR.

Traffic/Transportation: Project construction activities and operations would occur within residential and commercial areas, and within the Highway 101 corridor. Traffic impacts would be considered significant. These effects are limited to the duration of the construction activity, and are typically short-term in any one location due to the linear nature of pipeline construction. Using Best Management Practices (BMPs) to reduce traffic impacts would be required to help lessen any traffic impacts. Due to the traffic volumes of major arteries effect by this project, specific impacts would be best analyzed under a Programmatic EIR.

Biological Resources It is anticipated that potentially significant impacts to sensitive species or habitat would result from the proposed pipeline routes. Mitigation measures including avoidance and preventive practices will be utilized. Best Management Practices (BMPs) proposed as part of the project include Stormwater Pollution Prevention Plan (if the total area of disturbance is greater than one acre) or a Construction Erosion Control Plan. The recommended BMPs included in the project specifications will ensure that impacts to sensitive species or habitat are avoided or reduced wherever possible. Due to the potential impacts to sensitive habitat areas, it is recommended that this issue be analyzed in a Programmatic EIR.

Depending on the final pipeline route chosen, there may be jurisdictional waters requiring coordination with federal and State agencies. Uvas and Llagas watersheds and their tributaries discharge into Guadalupe River and eventually into San Francisco Bay. The tributaries and the creeks are thereby waters of the U.S. by definition, because they are continuous with the downstream waters. It is likely that the project could proceed under a Nationwide Permit from the U.S. Army Corps of Engineers.

Visual Resources: The existing visual quality of the project area is dominated by urban uses associated with the City of Gilroy. Except for potential bridge crossings, the pipeline will be buried within existing roadways or fields. Views from the pipeline route would be limited to the short-term effects during construction. The length of time this project will need for implementation may significantly affect this area of concern for residential and commercial customers. This impact should be analuzed in a Programmatic EIR.

Cultural Resources: An archival records search for preliminary site locations was performed by Historical Resources Information System, Northwest Information Center at Sonoma State University. Developed and built areas are typically not impacted by construction or operation of pipelines. As such, only the undisturbed areas along creeks or in fields were surveyed. Three pipeline alignments were found to have “high” sensitivity for cultural resources. These impacts would be less than significant with BMPs in place to protect any cultural resources. The areas of concern should be further analyzed in a Programmatic EIR.

Water/Hydrology Resources: Recycled water produced at the SCRWA WWTP meets all Title 22 water quality requirements for disinfected tertiary treated water. The long-term use of recycled water poses potential impacts to surface water and ground water quality. With proper landscape practices, and adhering to ground water quality objectives as established by the Regional Water Quality Control Board, any adverse effects on surface and ground water would be mitigated. However, due to the sensitivity of recycled water use by the general public, and the potential impacts to water quality, this issue area needs to be analyzed in a Programmatic EIR.

Construction operations could potentially induce erosion and sedimentation which could violate water quality standards. Potential water quality impacts could be reduced to a less than significant level with the adoption of a Stormwater Pollution Prevention Plan or a Construction Erosion Control Plan as BMPs.

Hazards and Hazardous Materials: A spill during construction operations could potentially result in the release of a hazardous substance. The inclusion of appropriate BMPs in the project could reduce the risk of spill or upset to a less than significant level for construction. There are several areas in the project area that are known hazardous materials sites and any removed soils may require profiling for disposal. The potential for contamination is potentially significant and should be analyzed in a Programmatic EIR.

Geology and Soils: The project area would not introduce elements that would expose persons or property to potential seismic or other geological risks. Soil disturbances from construction operations could potentially expose some areas to erosion. Potential erosion risks could be avoided through the application of appropriate BMPs, including the application of soil protection measures during construction. The project would require some level of disturbance to lands that are identified as Prime Farmland soils or Farmland of Statewide Importance soils (USDA NRCS, 1995). Conversion of either of these soil types is considered a potentially significant impact under Appendix G of the California Environmental Quality Act (CEQA). This area of concern would need to be analyzed in a Programmatic EIR.

F. PROPOSED CEQA DOCUMENT AND RATIONALE

Based upon our review of the project to date, and in consultation with District staff, preliminary analysis has determined the potential environmental impacts of the proposed phased-in project, are considered potentially significant under CEQA. As such, preparation of an EIR appears to be appropriate. Because of the phased and regional nature of this project, use of a Program or Master EIR, as provided in Section 15168 and 15175 respectively, appears to be the most appropriate CEQA approach.

If you approve the use of a Programmatic EIR for this project, please sign below and the appropriate attached documents.

_____

Approval:

_____

_____
Chief Executive Officer

cc:

APPENDIX D - COST ESTIMATES FOR THE PROPOSED CIP

Table 4.5 Estimated Project Costs for the Capital Improvement Program
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

ENRCCI (SF) May 2004 = 8107	Capital Improvement Program Phase		
Description	**Immediate-Term**	**Short-Term[1]**	**Long-Term[1]**
Customer Connections	$4,000	$25,000	$22,000
Customer Retrofits	$0	$105,000	$225,000
Distribution System	$754,000	$6,858,000	$2,885,700
Subtotal (Excluding Pumping and Storage Costs)	$758,000	$6,988,000	$3,133,000
Estimating Contingency (20%)	$152,000	$1,398,000	$627,000
Construction Contingency (20%)	$182,000	$1,677,000	$752,000
Onsite WWTP Pumping and Storage	$2,510,000	$3,310,000	-
Total Construction Cost at Basis of Study	$3,600,000	$13,400,000	$4,500,000
Admin, Legal, Planning, Design, and Construction Management (30%)	$1,100,000	$4,000,000	$1,350,000
Total Project Cost for Each Phase	**$4,700,000**	**$17,400,000**	**$5,900,000**
Project Cost for the Entire Proposed CIP	**$28,000,000**		

Notes:

(1) Capital cost estimates are incremental, i.e. long-term plan costs do not include the short-term or immediate-term costs.

(2) Project costs do not include cost of California Environmental Quality Act compliance.

(3) Subtotal of capital costs does not include pumping and storage costs, as these cost estimates already include contingencies and are based on MWH's 50% design cost estimates for the SCRWA tertiary treatment expansion.

(4) Pipeline costs based on unit costs from Harris and Associates' estimates for water pipeline construction in the City of Gilroy.

Table 4.6 Estimated Operation and Maintenance Costs[1]
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

ENRCCI (SF) May 2004 = 8107	Capital Improvement Program Phase			
Description	**Existing**	**Immediate-Term**	**Short-Term[2]**	**Long-Term[2]**
Purchased Power	$6,000	$13,000	$41,000	$52,000
Distribution System Maintenance	$21,000	$23,000	$45,000	$54,000
General Administration	$11,000	$12,000	$24,000	$29,000
Subtotal	$38,000	$48,000	$110,000	$135,000
Estimating Contingency (20%)	$8,000	$10,000	$22,000	$27,000
Total O&M Cost[2]	$46,000	$58,000	$132,000	$162,000
Incremental O&M Cost	**-**	**$12,000**	**$74,000**	**$30,000**

Notes:

(1) Operations and maintenance (O&M) costs include costs for distribution only, not treatment. O&M cost estimates include costs for upkeep of the existing distribution system and distribution costs for existing customers.

(2) O&M cost estimates inclusive of previous phase costs, i.e. long-term plan costs include the existing system, short-term, and immediate-term costs.

Table 4.7 Annual Cost Summary
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

ENRCCI (SF) May 2004 = 8107	Capital Improvement Program Phase			
Description	**Existing**	**Immediate-Term**	**Short-Term[1]**	**Long-Term[1]**
Incremental Project Costs (Present Worth)	-	$4,700,000	$17,400,000	$5,900,000
Convert to Annual Basis	5.5% interest over 50 years = 0.0591			
Annual Project Costs	-	$278,000	$1,028,000	$349,000
Incremental O&M Costs	$46,000	$12,000	$74,000	$30,000
Incremental Annual Cost	$46,000	$290,000	$1,102,000	$379,000
Total Annual Flow (AFY)	711	1,566	2,500	3,148
Incremental Flow (AFY)	-	855	934	648
Cost per additional Acre-foot, Annually	**-**	$340	$1,180	$580
Cost per Annual Acre-foot, Entire Proposed CIP	**$580**			

Notes:

(1) Cost estimates are incremental, i.e. long-term plan costs do not include the short-term or immediate-term costs.

(2) For the purposes of this cost estimate, inflation and discount rate for annualized costs are assumed equal, offsetting cost impacts over the phased construction schedule.

CAROLLO ENGINEERS
Preliminary Cost Estimate

Existing System - Operations and Maintenance Costs

Project: *South County Recycled Water Master Plan*
Client: *Santa Clara Valley Water District/South County Regional Wastewater Authority*

ENRCCI (SF) AT ESTIMATE for May 2004: 8107

October 20, 2004

Operation and Maintenance Costs

1st Full Year

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Purchased Power (Pumping Costs)	42,000	KWH	$0.14	$6,000
2	Maintenance of Distribution System	7	MILES	$2,800	$21,000
3	General Administration	7	MILES	$1,500	$11,000
	Subtotal				$38,000
	Estimating Contingency			20%	$8,000
	Total				**$46,000**

Notes:
1) No charges for the water source are anticipated.
2) All power costs estimated to be purchased at $0.14 per kilowatt hour.
3) Distribution system maintenance costs range between $100 and $4000 per mile; a cost of $2,800 per mile of total pipeline (existing and new) was used.
4) Distribution system administration costs based on average unit cost of $1,500 per mile.

Dollars per Acre Foot

Project Costs (Present Worth)	$0
Convert to Annual Basis (5.5% at 50 years)	0.0591
Project Costs Annual Basis	$0
O&M Costs	$46,000
Total Annual Costs	$46,000
Average Flow (MGD)	0.64
Average Flow (CFS)	1.0
Total Annual Flow (cubic feet)	31,040,781
Total Annual Flow (afy)	711
Dollars per Acre Foot - Annual Basis	**$60**
Dollars per Million Gallons - Annual Basis	**$180**

Power Costs

Average Flow (MGD)	0.64
Average Flow (GPM)	441
TDH (psi)	43
TDH (Feet)	100
Pump Efficiency	0.65
HorsePower	17
Kilowatts	13
Kilowatt hours	42,000

CAROLLO ENGINEERS
Preliminary Cost Estimate

Immediate-Term Capital Improvement Program - Project Costs

Project: *South County Recycled Water Master Plan*
Client: *Santa Clara Valley Water District/South County Regional Wastewater Authority*

ENRCCI (SF) AT ESTIMATE for May 2004: 8107

October 20, 2004

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	Customer Connections				**$4,000**
1	Service Connections	1	EA	$1,600	$1,600
2	Backflow Preventors	1	EA	$2,000	$2,000
	Customer Retrofits				**$0**
3	Agricultural Use (Obata Farms Near Plant)	1	EA	$0	$0
	Distribution System				**$754,000**
	Pipe Diameter (in)				
4	4	0	LF	$81	$0
5	6	0	LF	$81	$0
6	12	3,000	LF	$108	$324,000
7	16	0	LF	$130	$0
8	30	0	LF	$191	$0
9	Hecker Pass Pipeline Retrofit	-	-	$430,000	$430,000
	Total Pipeline Length	3,000	LF		
	Subtotal (Excluding Pumping and Storage Costs)				**$758,000**
	Estimating Contingency			20%	$152,000
	Construction Contingency			20%	$182,000
	Pump Station Capacity	1	3-MGD	$800,000	$800,000
	Reservoir Storage	1	3-MG	$1,710,000	$1,710,000
10	**Onsite WWTP Pumping and Storage (Construction Cost)**				**$2,510,000**
	Total Construction Cost at Basis of Study				**$3,600,000**
	Administration, Legal, Planning, Design, and Construction Management			30%	$1,100,000
	Total Project Cost, Immediate-Term CIP				**$4,700,000**

Notes:
4-8) Costs for pipeline construction based on Harris and Associates' costs for water pipelines in the City of Gilroy.
9) Hecker Pass Pipeline retrofit costs based on SCVWD costs for previous retrofit of main pipeline.
10) Costs for pumping and storage based on MWH's 50% Design Construction Cost Estimates from the SCRWA Filter Plant Expansion.

CAROLLO ENGINEERS
Preliminary Cost Estimate

Immediate-Term Capital Improvement Program - Operations and Maintenance Costs

Project: *South County Recycled Water Master Plan*
Client: *Santa Clara Valley Water District/South County Regional Wastewater Authority*

1st Full Year

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Purchased Power (Pumping Costs)	92,000	KWH	$0.14	$13,000
2	Maintenance of Distribution System	8	MILES	$2,800	$23,000
3	General Administration	8	MILES	$1,500	$12,000
	Subtotal				$48,000
	Estimating Contingency			20%	$10,000
	Total				**$58,000**

Notes:
1) No charges for the water source are anticipated.
2) All power costs estimated to be purchased at $0.14 per kilowatt hour.
3) Distribution system maintenance costs range between $100 and $4000 per mile; a cost of $2,800 per mile of total pipeline (existing and new) was used.
4) Distribution system administration costs based on average unit cost of $1,500 per mile.

Dollars per Acre Foot

Project Costs (Present Worth)	$4,700,000
Convert to Annual Basis (5.5% at 50 years)	0.0591
Project Costs Annual Basis	$278,000
O&M Costs	$58,000
Total Annual Costs	$336,000
Average Flow (MGD)	1.40
Average Flow (CFS)	2.2
Total Annual Flow (cubic feet)	68,368,303
Total Annual Flow (afy)	1,566
Dollars per Acre Foot - Annual Basis	**$210**
Dollars per Million Gallons - Annual Basis	**$650**

Power Costs

Average Flow (MGD)	1.40
Average Flow (GPM)	971
TDH (psi)	43
TDH (Feet)	100
Pump Efficiency	0.65
HorsePower	38
Kilowatts	28
Kilowatt hours	92,000

CAROLLO ENGINEERS
Preliminary Cost Estimate

Short-Term Capital Improvement Program - Project Costs

Project: *South County Recycled Water Master Plan*
Client: *Santa Clara Valley Water District/South County Regional Wastewater Authority*

ENRCCI (SF) AT ESTIMATE for May 2004: 8107

October 20, 2004

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	Customer Connections				**$25,000**
1	Service Connections	7	EA	$1,600	$11,200
2	Backflow Preventors	7	EA	$2,000	$14,000
3	No Connection Needed (Middle School)	1	EA	$0	$0
	Customer Retrofits				**$105,000**
4	Gilroy High School	1	EA	$25,000	$25,000
5	Gilroy Golf Course	1	EA	$5,000	$5,000
6	Other Retrofits (Industries)	3	EA	$25,000	$75,000
7	Constructed with Project - No Retrofit	3	EA	$0	$0
	Distribution System				**$6,858,000**
	Pipe Diameter (in)				
8	4	2,100	LF	$81	$170,100
9	6	500	LF	$81	$40,500
10	12	0	LF	$108	$0
11	16	16,390	LF	$130	$2,130,700
12	30	23,650	LF	$191	$4,517,150
	Total Pipeline Length	42,640	LF		
	Subtotal (Excluding Pumping and Storage Costs)				$6,988,000
	Estimating Contingency			20%	$1,398,000
	Construction Contingency			20%	$1,677,000
	Pump Station Capacity	2	3-MGD	$800,000	$1,600,000
	Reservoir Storage	1	3-MG	$1,710,000	$1,710,000
13	**Onsite WWTP Pumping and Storage (Construction Cost)**				**$3,310,000**
	Total Construction Cost at Basis of Study				$13,400,000
	Administration, Legal, Planning, Design, and Construction Management			30%	$4,000,000
	Total Project Cost, Short-Term CIP				**$17,400,000**

Notes:
8-12) Costs for pipeline construction based on Harris and Associates' costs for water pipelines in the City of Gilroy.
13) Costs for pumping and storage based on MWH's 50% Design Construction Cost Estimates from the SCRWA Filter Plant Expansion.

CAROLLO ENGINEERS
Preliminary Cost Estimate

Short-Term Capital Improvement Program - Operations and Maintenance Costs

Project: *South County Recycled Water Master Plan*
Client: *Santa Clara Valley Water District/South County Regional Wastewater Authority*

1st Full Year

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Purchased Power (Pumping Costs)	295,000	KWH	$0.14	$41,000
2	Maintenance of Distribution System	16	MILES	$2,800	$45,000
3	General Administration	16	MILES	$1,500	$24,000
	Subtotal				$110,000
	Estimating Contingency			20%	$22,000
	Total				**$132,000**

Notes:
1) No charges for the water source are anticipated.
2) All power costs estimated to be purchased at $0.14 per kilowatt hour.
3) Distribution system maintenance costs range between $100 and $4000 per mile; a cost of $2,800 per mile of total pipeline (existing and new) was used.
4) Distribution system administration costs based on average unit cost of $1,500 per mile.

Dollars per Acre Foot

Project Costs (Present Worth)	$17,400,000
Convert to Annual Basis (5.5% at 50 years)	0.0591
Project Costs Annual Basis	$1,028,000
O&M Costs	$132,000
Total Annual Costs	$1,160,000
Average Flow (MGD)	2.23
Average Flow (CFS)	3.5
Total Annual Flow (cubic feet)	109,144,800
Total Annual Flow (afy)	2,500
Dollars per Acre Foot - Annual Basis	**$460**
Dollars per Million Gallons - Annual Basis	**$1,420**

Power Costs

Average Flow (MGD)	2.2
Average Flow (GPM)	1,551
TDH (psi)	87
TDH (Feet)	200
Pump Efficiency	0.65
HorsePower	120
Kilowatts	90
Kilowatt hours	295,000

CAROLLO ENGINEERS
Preliminary Cost Estimate

Long-Term Capital Improvement Program - Project Costs

Project: *South County Recycled Water Master Plan*
Client: *Santa Clara Valley Water District/South County Regional Wastewater Authority*

ENRCCI (SF) AT ESTIMATE for May 2004: 8107

October 20, 2004

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	Customer Connections				**$22,000**
1	Service Connections	6	EA	$1,600	$9,600
2	Backflow Preventors	6	EA	$2,000	$12,000
	Customer Retrofits				**$225,000**
3	Gavilan Sports Park	1	EA	$25,000	$25,000
4	Gavilan Golf Course	1	EA	$25,000	$25,000
5	Gavilan College	1	EA	$75,000	$75,000
6	Other Retrofits (Bonfante, Goldsmith)	2	EA	$50,000	$100,000
7	Constructed with Project - No Retrofit	1	EA	$0	$0
	Distribution System				**$2,885,700**
8	Booster Pump Station	1	2-MGD	$800,000	$800,000
	Pipe Diameter (in)				
9	4	500	LF	$81	$40,500
10	6	0	LF	$81	$0
11	12	3,000	LF	$108	$324,000
12	16	13,240	LF	$130	$1,721,200
13	30	0	LF	$191	$0
	Total Pipeline Length	16,740	LF		
	Subtotal				$3,133,000
	Estimating Contingency			20%	$627,000
	Construction Contingency			20%	$752,000
	Total Construction Cost at Basis of Study				$4,500,000
	Administration, Legal, Planning, Design, and Construction Management			30%	$1,350,000
	Total Project Cost, Long-Term CIP				**$5,900,000**

Notes:
9-13) Costs for pipeline construction based on Harris and Associates' costs for water pipelines in the City of Gilroy.

CAROLLO ENGINEERS
Preliminary Cost Estimate

Long-Term Capital Improvement Program - Operations and Maintenance Costs

Project: *South County Recycled Water Master Plan*
Client: *Santa Clara Valley Water District/South County Regional Wastewater Authority*

1st Full Year

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Purchased Power (Pumping Costs)	372,000	KWH	$0.14	$52,000
2	Maintenance of Distribution System	19	MILES	$2,800	$54,000
3	General Administration	19	MILES	$1,500	$29,000
	Subtotal				$135,000
	Estimating Contingency			20%	$27,000
	Total				**$162,000**

Notes:
1) No charges for the water source are anticipated.
2) All power costs estimated to be purchased at $0.14 per kilowatt hour.
3) Distribution system maintenance costs range between $100 and $4000 per mile; a cost of $2,800 per mile of total pipeline (existing and new) was used.
4) Distribution system administration costs based on average unit cost of $1,500 per mile.

Dollars per Acre Foot

Project Costs (Present Worth)	$5,900,000
Convert to Annual Basis (5.5% at 50 years)	0.0591
Project Costs Annual Basis	$349,000
O&M Costs	$162,000
Total Annual Costs	$511,000
Average Flow (MGD)	2.81
Average Flow (CFS)	4.4
Total Annual Flow (cubic feet)	137,435,132
Total Annual Flow (afy)	3,148
Dollars per Acre Foot - Annual Basis	**$160**
Dollars per Million Gallons - Annual Basis	**$490**

Power Costs

Average Flow (MGD)	2.8
Average Flow (GPM)	1,953
TDH (psi)	87
TDH (Feet)	200
Pump Efficiency	0.65
HorsePower	152
Kilowatts	113
Kilowatt hours	372,000

CAROLLO ENGINEERS
Preliminary Cost Estimate

Project: **Morgan Hill Transmission Line** - Project Cost
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

ENRCCI (SF) AT ESTIMATE for May 2004: 8107

October 20, 2004

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
	Customer Connections				**$75,600**
1	Service Connections	21	EA	$1,600	$33,600
2	Backflow Preventors	21	EA	$2,000	$42,000
	Customer Retrofits				**$210,000**
3	Twenty-One Sites	21	EA	$10,000	$210,000
	Distribution System				**$13,660,000**
	Pipe Diameter (in)				
4	12	15,000	LF	$108	$1,620,000
5	24	70,000	LF	$172	$12,040,000
	Total Pipeline Length	85,000	LF		
	Pumping and Storage				**$2,500,000**
6	Booster Pump Station	1	2-MGD	$1,000,000	$1,000,000
7	Reservoir Storage	2,000,000	Gallons	$0.75	$1,500,000
			Subtotal		$16,450,000
			Estimating Contingency	20%	$3,290,000
			Construction Contingency	20%	$3,948,000
			Total Construction Cost at Basis of Study		$23,690,000
			Administration, Legal, Planning, Design, and Construction Management	30%	$7,110,000
			Total Project Cost		**$30,800,000**

Notes:
4-5) Costs for pipeline construction based on Harris and Associates' costs for water pipelines in the City of Gilroy.

CAROLLO ENGINEERS
Preliminary Cost Estimate

Project: **Morgan Hill Transmission Line** - Operations and Maintenance Cost
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

1st Full Year

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Purchased Power (Pumping Costs)	159,000	KWH	$0.14	$22,000
2	Maintenance of Distribution System	16	MILES	$2,800	$45,000
3	General Administration	16	MILES	$1,500	$24,000
	Subtotal				$91,000
	Estimating Contingency			20%	$18,000
	Total				**$109,000**

Notes:
1) No charges for the water source are anticipated.
2) All power costs estimated to be purchased at $0.14 per kilowatt hour.
3) Distribution system maintenance costs range between $100 and $4000 per mile; a cost of $2,800 per mile of total pipeline (existing and new) was used.
4) Distribution system administration costs based on average unit cost of $1,500 per mile.

Dollars per Acre Foot

Project Costs (Present Worth)	$30,800,000
Convert to Annual Basis (5.5% at 50 years)	0.0591
Project Costs Annual Basis	$1,820,000
O&M Costs	$109,000
Total Annual Costs	$1,929,000
Average Flow (MGD)	0.69
Average Flow (CFS)	1.1
Total Annual Flow (cubic feet)	33,572,940
Total Annual Flow (afy)	769
Dollars per Acre Foot - Annual Basis	**$2,500**
Dollars per Million Gallons - Annual Basis	**$8,000**

Power Costs

Average Flow (MGD)	0.69
Average Flow (GPM)	477
TDH (psi)	152
TDH (Feet)	350
Pump Efficiency	0.65
HorsePower	65
Kilowatts	48
Kilowatt hours	159,000

Estimated Recycled Water Program Costs and Revenue
South County Recycled Water Master Plan
Santa Clara Valley Water District/South County Regional Wastewater Authority

Year	Capital Costs Immediate-Term ($/year)	Capital Costs Short-Term ($/year)	Capital Costs Long-Term ($/year)	O&M Costs ($/year)	Total Costs ($/year)	Ag Flow (afy)	Total Flow (afy)	Ag Rate ($/AF)	Non-Ag Rate ($/AF)	Revenue ($/year)	Cash Flow ($/year)
2004	-	-	-	$46,000	**$46,000**	58	711	$25	$100	$66,750	$20,750
2005	$278,000	-	-	$58,000	**$336,000**	486	1139	$31	$125	$96,676	-$239,325
2006	$278,000	-	-	$58,000	**$336,000**	913	1566	$39	$156	$137,475	-$198,525
2007	$278,000	$1,028,000	-	$132,000	**$1,438,000**	913	1800	$40	$159	$177,419	-$1,260,581
2008	$278,000	$1,028,000	-	$132,000	**$1,438,000**	913	2034	$41	$162	$218,905	-$1,219,095
2009	$278,000	$1,028,000	-	$132,000	**$1,438,000**	913	2267	$41	$166	$261,980	-$1,176,020
2010	$278,000	$1,028,000	-	$132,000	**$1,438,000**	913	2501	$42	$169	$306,691	-$1,131,309
2011	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	2663	$43	$172	$340,727	-$1,476,273
2012	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	2825	$44	$176	$376,002	-$1,440,998
2013	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	2987	$45	$179	$412,552	-$1,404,448
2014	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$46	$183	$450,413	-$1,366,587
2015	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$47	$186	$459,421	-$1,357,579
2016	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$48	$190	$468,609	-$1,348,391
2017	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$48	$194	$477,982	-$1,339,018
2018	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$49	$198	$487,541	-$1,329,459
2019	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$50	$202	$497,292	-$1,319,708
2020	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$51	$206	$507,238	-$1,309,762
2021	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$52	$210	$517,383	-$1,299,617
2022	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$54	$214	$527,730	-$1,289,270
2023	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$55	$218	$538,285	-$1,278,715
2024	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$56	$223	$549,051	-$1,267,949
2025	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$57	$227	$560,032	-$1,256,968
2026	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$58	$232	$571,232	-$1,245,768
2027	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$59	$236	$582,657	-$1,234,343
2028	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$60	$241	$594,310	-$1,222,690
2029	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$61	$246	$606,196	-$1,210,804
2030	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$63	$251	$618,320	-$1,198,680
2031	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$64	$256	$630,687	-$1,186,313
2032	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$65	$261	$643,300	-$1,173,700
2033	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$67	$266	$656,166	-$1,160,834
2034	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$68	$272	$669,290	-$1,147,710
2035	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$69	$277	$682,676	-$1,134,324
2036	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$71	$283	$696,329	-$1,120,671
2037	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$72	$288	$710,256	-$1,106,744
2038	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$73	$294	$724,461	-$1,092,539
2039	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$75	$300	$738,950	-$1,078,050
2040	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$76	$306	$753,729	-$1,063,271
2041	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$78	$312	$768,804	-$1,048,196
2042	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$80	$318	$784,180	-$1,032,820
2043	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$81	$325	$799,863	-$1,017,137
2044	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$83	$331	$815,860	-$1,001,140
2045	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$84	$338	$832,178	-$984,822
2046	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$86	$344	$848,821	-$968,179
2047	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$88	$351	$865,798	-$951,202
2048	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$90	$358	$883,114	-$933,886
2049	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$91	$366	$900,776	-$916,224
2050	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$93	$373	$918,791	-$898,209
2051	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$95	$380	$937,167	-$879,833
2052	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$97	$388	$955,911	-$861,089
2053	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$99	$396	$975,029	-$841,971
2054	$278,000	$1,028,000	$349,000	$162,000	**$1,817,000**	913	3149	$101	$404	$994,529	-$822,471
2055	-	$1,028,000	$349,000	$162,000	**$1,539,000**	913	3149	$103	$412	$1,014,420	-$524,580
2056	-	$1,028,000	$349,000	$162,000	**$1,539,000**	913	3149	$105	$420	$1,034,708	-$504,292
2057	-	-	$349,000	$162,000	**$511,000**	913	3149	$107	$428	$1,055,403	$544,403
2058	-	-	$349,000	$162,000	**$511,000**	913	3149	$109	$437	$1,076,511	$565,511
2059	-	-	$349,000	$162,000	**$511,000**	913	3149	$111	$446	$1,098,041	$587,041
2060	-	-	$349,000	$162,000	**$511,000**	913	3149	$114	$454	$1,120,002	$609,002
2061	-	-	-	$162,000	**$162,000**	913	3149	$116	$464	$1,142,402	$980,402
2062	-	-	-	$162,000	**$162,000**	913	3149	$118	$473	$1,165,250	$1,003,250

Notes:
1) The cash flow analysis is intended as an example of the benefits of the phased implementation of project costs.
2) Recycled water rates are established for 2004, 2005, and 2006. Increased rates beyond 2006 were estimated at 2% annually for purposes of this example.
3) Each CIP phase was assumed to increase flows linearly until meeting full estimated annual demand at the end of construction.

Appendix N

Water Supply Modeling Assumptions

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UWMP
Modeling Assumptions Summary

		2005 UWMP	2010 UWMP (Draft)
	General		
1	**Model Format**	SYSMOD	WEAP
2	**Historical Hydrology**	1967 – 1994	1922 – 2003
3	**Normal Year**	1985	2002
4	**Single Dry Year**	1977	1977
5	**Multiple Dry Year**	1987 - 1992	1987 - 1992
6	**Demand Years**	2010, 2015, 2020, 2025, 2030	2015, 2020, 2025, 2030, 2035
	Imported Water		
7	**Imported Water Allocations**	2005 DWR reliability study(1) & CVP allocation from Imported Water Unit	2009 DWR reliability study(1) & CVP allocation from Calsim II(2) results w/ Reallocation Agreement(3)
8	**Semitropic Participation**	283 TAF	350 TAF, initial-250TAF
9	**Semitropic "put"**	From SWP only	From SWP and CVP after 40 TAF of carryover
10	**Semitropic "take"**	If TW contract is not met	If TW contract is not met and/or GW storage falls below 300 TAF and increasing as GW storage decreases
11	**San Luis Reservoir**	Not included	Storage from 2009 DWR reliability study Calsim II(2) results
12	**CVP Carryover**	17 TAF (limited to Jan. & Feb.)	Unlimited - lost if SLR storage goes to 2,000TAF
13	**SWP Carryover**	0	Unlimited - lost if SLR storage goes to 2,000TAF
14	**SFPUC Hetch-Hetchy**	2030: 73TAF	SFPUC supplies based on Interim Supply Allocations adopted by SFPUC in December 2010, Procedure for Pro-Rata Reduction of Wholesale Customers' Individual Supply Guarantees under 2010 demand conditions, and Tier 2 Allocations calculation spreadsheet. 2030: 63.85TAF
15	**SFPUC Hetch Hetchy Historical Hydrology supplies**	Paula Kehoe letter dated Jun 1, 2005	Paula Kehoe letter dated Feb 22, 2010
	Recycled Water		
16	**Recycled Water**	Per RW producers. 2030: 31.2TAF	Based on estimates provided by county RW producers and retailers. 2030: 29.18TAF
	Desal		
17	**Desal**	0	0
	Groundwater		
18	**GW Model used**	None	North County, Coyote, Llagas
19	**NGWY (avg.)**	58.4TAF, 1985: 47.8TAF	67.3TAF, 1985: 52.7TAF, 2002: 62.8TAF
20	**NGWY ('67-'94)**	58.4TAF	66.2TAF
21	**Net GW losses (avg.)**	0	0
22	**Initial GW Storage**	NC-175TAF, Llagas-90TAF, Coyote-12.5TAF	NC-268.6TAF, Llagas-75TAF, Coyote-18TAF
23	**Max GW Pumping capacity**	NC - 200TAF	NC - 200TAF
24	**GW storage capacity**	NC – 350TAF, Llagas-180TAF , Coyote-25TAF	NC-350TAF, Llagas-155TAF, Coyote-25TAF
	Reservoirs		
25	**Flood Rule Curves**	Yes	Yes
26	**Emergency Storage**	Anderson 20 TAF	Anderson 20 TAF
27	**Anderson & Calero to WTP's**	None	Anderson: up to 6 TAF/mo as storage approaches DSOD restriction level or Fld RC
28	**Reservoir siltation**	Included	Not included
29	**FAHCE**	Not included	Included in Anderson Res Ops

DRAFT

UWMP
Modeling Assumptions Summary

		2005 UWMP	2010 UWMP (Draft)
30	**DSOD restrictions included**	No	Yes-Almaden (1.267 TAF), Anderson (51.2 TAF and 90 TAF by demand year 2025), Calero (5.67 TAF), Guadalupe (2.888 TAF).
31	**Almaden-Calero Canal**	Calero below Fld RC - max 6 TAF per year	Calero below Fld RC - max 6 TAF per year
	Recharge		
32	**Recharge Rates**	NC- 97.5TAF, Llagas – 40.9TAF, Coyote – 13.4TAF	NC-92.8TAF, Llagas-36.8TAF, Coyote-16.9TAF
	Demands		
33	**Demand Projections**	ABAG 2005, Retailers	Retailers, ABAG 2009
34	**Weather Factors**	None	None
35	**Conservation ('92 Baseline) including Ag**	2030: 98.5TAF	2030: 98.5TAF
36	**Coyote Valley**	Coyote Valley Specific Plan	Envision 2040 Preferred Alt.
37	**Water Shortage Contingency Plan Actions**	Not included	Evaluated with and without
38	**Total Countywide Demands**	2030: 448.2TAF	2030: 409.4 TAF - based on retailer provided data
	Risks		
39	**Climate Change**	None	Imported per Reliability Study[1]
40	**Assumes infrastructure will be reliable**	Yes	Yes
41	**CVP Reallocation Agreement[3] (1997 - 25 year agreement)**	Assumed to continue throughout planning horizon	Assumed to continue throughout planning horizon
42	**San Luis Reservoir low point**	Not included	Not included
43	**Demand greater that projections**	Not included	Not included
	Treated Water		
44	**New TW/ Demand**	Maintain GW/TW proportion for incremental increase in demand	Per retailers, otherwise maintain GW/TW proportion for incremental increase in demand
45	**Priority**	Highest priority up to contract for imported and Semitropic	Highest priority up to contract for imported and Semitropic
46	**WTP Capacity**	RWTP-75 MGD (76/9 TAF/YR), PWTP- 39 MGD (38.7 TAF/YR), STWTP- 100 MGD (93.1 TAF/YR).	RWTP-80 MGD (90TAF/YR), PWTP- 39 MGD (38.7 TAF/YR), STWTP- 100 MGD (93.1 TAF/YR).
47	**Treated Water (contract)**	2030: 147.5TAF (includes non contract)	2030: 127.8 TAF
48	**Treated Water (non contract)**	0	20TAF - 0 if SWP allocation is less than 52%

Notes:

[1] *State Water Project Delivery Reliability Report 2009 provides* current and future State Water Project delivery allocations and incorporates the restrictions on SWP and CVP operations in accordance with the biological opinions of the U.S. Fish and Wildlife Service and National Marine Fishery Service issued on Dec. 15, 2008 and June 4, 2009, respectively. The projection for future (2029) conditions also incorporates climate change and an accompanying rise in sea level.

[2] CalSim II is the model used to simulate California State Water Project (SWP)/Central Valley Project (CVP) operations based on historical hydrology. CalSim II modeling performed for the 2009 Reliability Report provides the basis for SWP and CVP allocations.

[3] Reallocation Agreement: The District entered into a 25-year water reallocation agreement in 1997 with U.S Bureau of Reclamation (Reclamation) and parties in the San Luis & Delta Mendota Water Authority to supplement and support the Bureau's draft Municipal and Industrial (M&I) Water Shortage Policy. The draft policy provides M&I allocations of 75% or more in most years, but these can drop to 50% of historic use, or to public health and safety levels, when severe water shortages are imposed on irrigation contracto rs.

Appendix O

Acronyms and Abbreviations

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Acronyms and Abbreviations

ABAG – Association of Bay Area Governments
AF – Acre-feet
AFY – Acre-feet per year
AMWP – Annual Maintenance Work Plan
AWWA – American Water Works Association
BARDP – Bay Area Regional Desalination Project
BAWSCA – Bay Area Water Supply & Conservation Agency
BDCP – Bay Delta Conservation Plan
BMP's – Best Management Practices
CALFED – Collaboration among State and Federal Agencies
CALSIM II – Modeling peer review process
CalWARN – California Water/Wastewater Agency Response Network
CARA – Comprehensive risk and condition database
CCF – One hundred cubic feet
CCWD – Contra Costa Water District
CEQA – California Environmental Quality Act
cfs – cubic feet per second
CII – Commercial, Industrial, and Institutional
CIMIS – California Irrigation Management Information System
CIP – Capital Improvement Program
CUWCC – California Urban Water Conservation Council
CVP – Central Valley Project
CY – Calendar Year
DHCCP – Delta Habitat Conservation Conveyance Program
District Act - Santa Clara Valley Water District Act
DMM's – Demand Management Measures
DPH – Department of Public Health
DRIP – Desalination Research Innovation Partnership Program (Metropolitan Water District)
DSOD – Department of Safety of Dams
DSWAP – Drinking Water Source Assessment and Protection
DWR – California Department of Water Resources
EBMUD – East Bay Municipal Utility District
ECHAM – Global climate model
EIR/EIS – Environmental Impact Report/Study
EOC – Emergency Operations Center
EPA – United States Environmental Protection Agency
ESA – Endangered Species Act
ETo – Evapotranspiration based
FAHCE – Fisheries and Aquatic Habitat Collaborative Effort
FWS - United States Fish and Wildlife Service
FY – Fiscal Year
GIS – Geographic information system
GPCD – Gallons per capita per day
Guidebook - The Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan
HET – High efficiency toilet
ICAM – Infrastructure Capital Asset Management Toolkit
IFMA – International Facility Managers Association

IRP – Water Utility Infrastructure Reliability Project
ISHRP – Irrigation System Hardware Rebate Program
ITAP – Irrigation Technical Assistance Program
IWRMAIN – Institute for Water Resources, Municipal and Industrial Needs
M&I – Municipal & Industrial
MCL – Maximum contaminant level
mg/L – milligrams per liter
MGD – Million gallons per day
MOU – Memorandum of Understanding Regarding Urban Water Conservation Best Management Practices
MPI – Max Planck Institute
NC – North Santa Clara County
NEMS – National Emergency Management System
OES – Office of Emergency Services
PCA – Possible contaminating activity
PGH – Public health goal
RISHRP – Residential Irrigation System Hardware Rebate Program
RWQCB – Regional Water Quality Control Board
SBWR – South Bay Water Recycling
SC – South Santa Clara County
SCADA – Supervising Control and Data Acquisition system
SCRWA – South County Regional Wastewater Authority
SCVWD – Santa Clara Valley Water District
SEMS – California Standardized Emergency Management System
SFPUC – San Francisco Public Utility Commission
SJ/SC WPCP – San Jose/Santa Clara Water Pollution Control Plant
SJWC – San Jose Water Company
SLLPIP – San Luis Low Point Improvement Project
SWP – State Water Project
SWPCP – Sunnyvale Water Pollution Control Plant
TAF – Thousand Acre-feet
THM's – Trihalomethanes
ULFT – Ultra low flush toilet
USBR – United States Bureau of Reclamation
UWMP – Urban Water Management Plan
UWMP Act - California Urban Water Management Planning Act
WBIC – Weather based irrigation controller
WEAP – Water Evaluation and Planning model
WELRP – Water Efficient Landscape Rebate Program
WSCP – Water Shortage Contingency Plan
WTIP – Water Treatment Improvement Project