



Appendix A

Legislative Requirements

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WATER CODE - WAT

DIVISION 6. CONSERVATION, DEVELOPMENT, AND UTILIZATION OF STATE WATER RESOURCES [10000 - 12999] (Heading of Division 6 amended by Stats. 1957, Ch. 1932.)

PART 2.55. SUSTAINABLE WATER USE AND DEMAND REDUCTION [10608 - 10609.42] (Part 2.55 added by Stats.2009, 7th Ex. Sess., Ch. 4, Sec. 1.)

CHAPTER 1. General Declarations and Policy [10608 - 10608.8] (Chapter 1 added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 1.)

10608.

The Legislature finds and declares all of the following:

- (a) Water is a public resource that the California Constitution protects against waste and unreasonable use.
- (b) Growing population, climate change, and the need to protect and grow California's economy while protecting and restoring our fish and wildlife habitats make it essential that the state manage its water resources as efficiently as possible.
- (c) Diverse regional water supply portfolios will increase water supply reliability and reduce dependence on the Delta.
- (d) Reduced water use through conservation provides significant energy and environmental benefits, and can help protect water quality, improve stream flows, and reduce greenhouse gas emissions.
- (e) The success of state and local water conservation programs to increase efficiency of water use is best determined on the basis of measurable outcomes related to water use or efficiency.
- (f) Improvements in technology and management practices offer the potential for increasing water efficiency in California over time, providing an essential water management tool to meet the need for water for urban, agricultural, and environmental uses.
- (g) The Governor has called for a 20 percent per capita reduction in urban water use statewide by 2020.
- (h) The factors used to formulate water use efficiency targets can vary significantly from location to location based on factors including weather, patterns of urban and suburban development, and past efforts to enhance water use efficiency.
- (i) Per capita water use is a valid measure of a water provider's efforts to reduce urban water use within its service area. However, per capita water use is less useful for measuring relative water use efficiency between different water providers. Differences in weather, historical patterns of urban and suburban development, and density of housing in a particular location need to be considered when assessing per capita water use as a measure of efficiency.

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 1. (SB 7 7x) Effective February 3, 2010.)

10608.4

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

- (a) Require all water suppliers to increase the efficiency of use of this essential resource.
- (b) Establish a framework to meet the state targets for urban water conservation identified in this part and called for by the Governor.
- (c) Measure increased efficiency of urban water use on a per capita basis.
- (d) Establish a method or methods for urban retail water suppliers to determine targets for achieving increased water use efficiency by the year 2020, in accordance with the Governor's goal of a 20-percent reduction.
- (e) Establish consistent water use efficiency planning and implementation standards for urban water suppliers and agricultural water suppliers.
- (f) Promote urban water conservation standards that are consistent with the California Urban Water Conservation Council's adopted best management practices and the requirements for demand management in Section 10631.
- (g) Establish standards that recognize and provide credit to water suppliers that made substantial capital investments in urban water conservation since the drought of the early 1990s.
- (h) Recognize and account for the investment of urban retail water suppliers in providing recycled water for beneficial uses.
- (i) Require implementation of specified efficient water management practices for agricultural water suppliers.
- (j) Support the economic productivity of California's agricultural, commercial, and industrial sectors.
- (k) Advance regional water resources management.

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 1. (SB 7 7x) Effective February 3, 2010.)



10608.8

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

(2) Because an urban agency is not required to meet its urban water use target until 2020 pursuant to subdivision

(a) of Section 10608.24, an urban retail water supplier's failure to meet those targets shall not establish a violation of law for purposes of any state administrative or judicial proceeding prior to January 1, 2021.

Nothing in this paragraph limits the use of data reported to the department or the board in litigation or an administrative proceeding. This paragraph shall become inoperative on January 1, 2021.

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

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

(c) This part does not require a reduction in the total water used in the agricultural or urban sectors, because other factors, including, but not limited to, changes in agricultural economics or population growth may have greater effects on water use. This part does not limit the economic productivity of California's agricultural, commercial, or industrial sectors.

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

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 1. (SB 7 7x) Effective February 3, 2010.)



WATER CODE - WAT

DIVISION 6. CONSERVATION, DEVELOPMENT, AND UTILIZATION OF STATE WATER RESOURCES [10000 - 12999] (*Heading of Division 6 amended by Stats. 1957, Ch. 1932.*)

PART 2.55. SUSTAINABLE WATER USE AND DEMAND REDUCTION [10608 - 10609.42] (*Part 2.55 added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 1.*)

CHAPTER 9. Urban Water Use Objectives and Water Use Reporting [10609 - 10609.38] (*Chapter 9 added by Stats. 2018, Ch. 15, Sec. 7.*)

10609. (a) The Legislature finds and declares that this chapter establishes a method to estimate the aggregate amount of water that would have been delivered the previous year by an urban retail water supplier if all that water had been used efficiently. This estimated aggregate water use is the urban retail water supplier's urban water use objective. The method is based on water use efficiency standards and local service area characteristics for that year. By comparing the amount of water actually used in the previous year with the urban water use objective, local urban water suppliers will be in a better position to help eliminate unnecessary use of water; that is, water used in excess of that needed to accomplish the intended beneficial use.

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

(1) This chapter establishes standards and practices for the following water uses:

(A) Indoor residential use.

(B) Outdoor residential use.

(C) CII water use.

(D) Water losses.

(E) Other unique local uses and situations that can have a material effect on an urban water supplier's total water use.

(2) This chapter further does all of the following:

(A) Establishes a method to calculate each urban water use objective.

(B) Considers recycled water quality in establishing efficient irrigation standards.

(C) Requires the department to provide or otherwise identify data regarding the unique local conditions to support the calculation of an urban water use objective.

(D) Provides for the use of alternative sources of data if alternative sources are shown to be as accurate as, or more accurate than, the data provided by the department.

(E) Requires annual reporting of the previous year's water use with the urban water use objective.

(F) Provides a bonus incentive for the amount of potable recycled water used the previous year when comparing the previous year's water use with the urban water use objective, of up to 10 percent of the urban water use objective.

(3) This chapter requires the department and the board to solicit broad public participation from stakeholders and other interested persons in the development of the standards and the adoption of regulations pursuant to this chapter.

(4) This chapter preserves the Legislature's authority over long-term water use efficiency target setting and ensures appropriate legislative oversight of the implementation of this chapter by doing all of the following:

(A) Requiring the Legislative Analyst to conduct a review of the implementation of this chapter, including compliance with the adopted standards and regulations, accuracy of the data, use of alternate data, and other

issues the Legislative Analyst deems appropriate.

(B) Stating legislative intent that the director of the department and the chairperson of the board appear before the appropriate Senate and Assembly policy committees to report on progress in implementing this chapter.

(C) Providing one-time-only authority to the department and board to adopt water use efficiency standards, except as explicitly provided in this chapter. Authorization to update the standards shall require separate legislation.

(c) It is the intent of the Legislature that the following principles apply to the development and implementation of long-term standards and urban water use objectives:

(1) Local urban retail water suppliers should have primary responsibility for meeting standards-based water use targets, and they shall retain the flexibility to develop their water supply portfolios, design and implement water conservation strategies, educate their customers, and enforce their rules.

(2) Long-term standards and urban water use objectives should advance the state's goals to mitigate and adapt to climate change.

(3) Long-term standards and urban water use objectives should acknowledge the shade, air quality, and heat-island reduction benefits provided to communities by trees through the support of water-efficient irrigation practices that keep trees healthy.

(4) The state should identify opportunities for streamlined reporting, eliminate redundant data submissions, and incentivize open access to data collected by urban and agricultural water suppliers.

(Amended by Stats. 2019, Ch. 497, Sec. 287. (AB 991) Effective January 1, 2020.)

10609.2. (a) The board, in coordination with the department, shall adopt long-term standards for the efficient use of water pursuant to this chapter on or before June 30, 2022.

(b) Standards shall be adopted for all of the following:

(1) Outdoor residential water use.

(2) Outdoor irrigation of landscape areas with dedicated irrigation meters in connection with CII water use.

(3) A volume for water loss.

(c) When adopting the standards under this section, the board shall consider the policies of this chapter and the proposed efficiency standards' effects on local wastewater management, developed and natural parklands, and urban tree health. The standards and potential effects shall be identified by May 30, 2022. The board shall allow for public comment on potential effects identified by the board under this subdivision.

(d) The long-term standards shall be set at a level designed so that the water use objectives, together with other demands excluded from the long-term standards such as CII indoor water use and CII outdoor water use not connected to a dedicated landscape meter, would exceed the statewide conservation targets required pursuant to Chapter 3 (commencing with Section 10608.16).

(e) The board, in coordination with the department, shall adopt by regulation variances recommended by the department pursuant to Section 10609.14 and guidelines and methodologies pertaining to the calculation of an urban retail water supplier's urban water use objective recommended by the department pursuant to Section 10609.16.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.4. (a) (1) Until January 1, 2025, the standard for indoor residential water use shall be 55 gallons per capita daily.

(2) Beginning January 1, 2025, and until January 1, 2030, the standard for indoor residential water use shall be the greater of 52.5 gallons per capita daily or a standard recommended pursuant to subdivision (b).

(3) Beginning January 1, 2030, the standard for indoor residential water use shall be the greater of 50 gallons per capita daily or a standard recommended pursuant to subdivision (b).

(b) (1) The department, in coordination with the board, shall conduct necessary studies and investigations and may jointly recommend to the Legislature a standard for indoor residential water use that more appropriately reflects best practices for indoor residential water use than the standard described in subdivision (a). A report on the results of the studies and investigations shall be made to the chairpersons of the relevant policy committees of each house of the Legislature by January 1, 2021, and shall include information necessary to support the recommended standard, if there is one. The studies and investigations shall also include an analysis of the benefits and impacts of how the changing standard for indoor residential water use will impact water and wastewater

management, including potable water usage, wastewater, recycling and reuse systems, infrastructure, operations, and supplies.

(2) The studies, investigations, and report described in paragraph (1) shall include collaboration with, and input from, a broad group of stakeholders, including, but not limited to, environmental groups, experts in indoor plumbing, and water, wastewater, and recycled water agencies.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.6. (a) (1) The department, in coordination with the board, shall conduct necessary studies and investigations and recommend, no later than October 1, 2021, standards for outdoor residential use for adoption by the board in accordance with this chapter.

(2) (A) The standards shall incorporate the principles of the model water efficient landscape ordinance adopted by the department pursuant to the Water Conservation in Landscaping Act (Article 10.8 (commencing with Section 65591) of Chapter 3 of Division 1 of Title 7 of the Government Code).

(B) The standards shall apply to irrigable lands.

(C) The standards shall include provisions for swimming pools, spas, and other water features. Ornamental water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, shall be analyzed separately from swimming pools and spas.

(b) The department shall, by January 1, 2021, provide each urban retail water supplier with data regarding the area of residential irrigable lands in a manner that can reasonably be applied to the standards adopted pursuant to this section.

(c) The department shall not recommend standards pursuant to this section until it has conducted pilot projects or studies, or some combination of the two, to ensure that the data provided to local agencies are reasonably accurate for the data's intended uses, taking into consideration California's diverse landscapes and community characteristics.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.8. (a) The department, in coordination with the board, shall conduct necessary studies and investigations and recommend, no later than October 1, 2021, standards for outdoor irrigation of landscape areas with dedicated irrigation meters or other means of calculating outdoor irrigation use in connection with CII water use for adoption by the board in accordance with this chapter.

(b) The standards shall incorporate the principles of the model water efficient landscape ordinance adopted by the department pursuant to the Water Conservation in Landscaping Act (Article 10.8 (commencing with Section 65591) of Chapter 3 of Division 1 of Title 7 of the Government Code).

(c) The standards shall include an exclusion for water for commercial agricultural use meeting the definition of subdivision (b) of Section 51201 of the Government Code.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.9. For purposes of Sections 10609.6 and 10609.8, "principles of the model water efficient landscape ordinance" means those provisions of the model water efficient landscape ordinance applicable to the establishment or determination of the amount of water necessary to efficiently irrigate both new and existing landscapes. These provisions include, but are not limited to, all of the following:

(a) Evapotranspiration adjustment factors, as applicable.

(b) Landscape area.

(c) Maximum applied water allowance.

(d) Reference evapotranspiration.

(e) Special landscape areas, including provisions governing evapotranspiration adjustment factors for different types of water used for irrigating the landscape.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.10. (a) The department, in coordination with the board, shall conduct necessary studies and investigations and recommend, no later than October 1, 2021, performance measures for CII water use for adoption by the board in accordance with this chapter.

(b) Prior to recommending performance measures for CII water use, the department shall solicit broad public participation from stakeholders and other interested persons relating to all of the following:

- (1) Recommendations for a CII water use classification system for California that address significant uses of water.
- (2) Recommendations for setting minimum size thresholds for converting mixed CII meters to dedicated irrigation meters, and evaluation of, and recommendations for, technologies that could be used in lieu of requiring dedicated irrigation meters.
- (3) Recommendations for CII water use best management practices, which may include, but are not limited to, water audits and water management plans for those CII customers that exceed a recommended size, volume of water use, or other threshold.

(c) Recommendations of appropriate performance measures for CII water use shall be consistent with the October 21, 2013, report to the Legislature by the Commercial, Industrial, and Institutional Task Force entitled "Water Use Best Management Practices," including the technical and financial feasibility recommendations provided in that report, and shall support the economic productivity of California's commercial, industrial, and institutional sectors.

(d) (1) The board, in coordination with the department, shall adopt performance measures for CII water use on or before June 30, 2022.

(2) Each urban retail water supplier shall implement the performance measures adopted by the board pursuant to paragraph (1).

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.12. The standards for water loss for urban retail water suppliers shall be the standards adopted by the board pursuant to subdivision (i) of Section 10608.34.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.14. (a) The department, in coordination with the board, shall conduct necessary studies and investigations and, no later than October 1, 2021, recommend for adoption by the board in accordance with this chapter appropriate variances for unique uses that can have a material effect on an urban retail water supplier's urban water use objective.

(b) Appropriate variances may include, but are not limited to, allowances for the following:

- (1) Significant use of evaporative coolers.
- (2) Significant populations of horses and other livestock.
- (3) Significant fluctuations in seasonal populations.
- (4) Significant landscaped areas irrigated with recycled water having high levels of total dissolved solids.
- (5) Significant use of water for soil compaction and dust control.
- (6) Significant use of water to supplement ponds and lakes to sustain wildlife.
- (7) Significant use of water to irrigate vegetation for fire protection.
- (8) Significant use of water for commercial or noncommercial agricultural use.

(c) The department, in recommending variances for adoption by the board, shall also recommend a threshold of significance for each recommended variance.

(d) Before including any specific variance in calculating an urban retail water supplier's water use objective, the urban retail water supplier shall request and receive approval by the board for the inclusion of that variance.

(e) The board shall post on its Internet Web site all of the following:

- (1) A list of all urban retail water suppliers with approved variances.
- (2) The specific variance or variances approved for each urban retail water supplier.
- (3) The data supporting approval of each variance.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.15. To help streamline water data reporting, the department and the board shall do all of the following:

(a) Identify urban water reporting requirements shared by both agencies, and post on each agency's Internet Web site how the data is used for planning, regulatory, or other purposes.

(b) Analyze opportunities for more efficient publication of urban water reporting requirements within each agency, and analyze how each agency can integrate various data sets in a publicly accessible location, identify priority actions, and implement priority actions identified in the analysis.

(c) Make appropriate data pertaining to the urban water reporting requirements that are collected by either agency available to the public according to the principles and requirements of the Open and Transparent Water Data Act (Part 4.9 (commencing with Section 12400)).

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.16. The department, in coordination with the board, shall conduct necessary studies and investigations and recommend, no later than October 1, 2021, guidelines and methodologies for the board to adopt that identify how an urban retail water supplier calculates its urban water use objective. The guidelines and methodologies shall address, as necessary, all of the following:

(a) Determining the irrigable lands within the urban retail water supplier's service area.

(b) Updating and revising methodologies described pursuant to subparagraph (A) of paragraph (1) of subdivision (h) of Section 10608.20, as appropriate, including methodologies for calculating the population in an urban retail water supplier's service area.

(c) Using landscape area data provided by the department or alternative data.

(d) Incorporating precipitation data and climate data into estimates of a urban retail water supplier's outdoor irrigation budget for its urban water use objective.

(e) Estimating changes in outdoor landscape area and population, and calculating the urban water use objective, for years when updated landscape imagery is not available from the department.

(f) Determining acceptable levels of accuracy for the supporting data, the urban water use objective, and compliance with the urban water use objective.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.18. The department and the board shall solicit broad public participation from stakeholders and other interested persons in the development of the standards and the adoption of regulations pursuant to this chapter. The board shall hold at least one public meeting before taking any action on any standard or variance recommended by the department.

(Added by Stats. 2018, Ch. 15, Sec. 7. (AB 1668) Effective January 1, 2019.)

10609.20. (a) Each urban retail water supplier shall calculate its urban water use objective no later than January 1, 2024, and by January 1 every year thereafter.

(b) The calculation shall be based on the urban retail water supplier's water use conditions for the previous calendar or fiscal year.

(c) Each urban water supplier's urban water use objective shall be composed of the sum of the following:

(1) Aggregate estimated efficient indoor residential water use.

(2) Aggregate estimated efficient outdoor residential water use.

(3) Aggregate estimated efficient outdoor irrigation of landscape areas with dedicated irrigation meters or equivalent technology in connection with CII water use.

(4) Aggregate estimated efficient water losses.

(5) Aggregate estimated water use in accordance with variances, as appropriate.

(d) (1) An urban retail water supplier that delivers water from a groundwater basin, reservoir, or other source that is augmented by potable reuse water may adjust its urban water use objective by a bonus incentive calculated pursuant to this subdivision.

(2) The water use objective bonus incentive shall be the volume of its potable reuse delivered to residential water users and to landscape areas with dedicated irrigation meters in connection with CII water use, on an acre-foot basis.

(3) The bonus incentive pursuant to paragraph (1) shall be limited in accordance with one of the following:

(A) The bonus incentive shall not exceed 15 percent of the urban water supplier's water use objective for any potable reuse water produced at an existing facility.

(B) The bonus incentive shall not exceed 10 percent of the urban water supplier's water use objective for any potable reuse water produced at any facility that is not an existing facility.

(4) For purposes of this subdivision, "existing facility" means a facility that meets all of the following:

(A) The facility has a certified environmental impact report, mitigated negative declaration, or negative declaration on or before January 1, 2019.

(B) The facility begins producing and delivering potable reuse water on or before January 1, 2022.

(C) The facility uses microfiltration and reverse osmosis technologies to produce the potable reuse water.

(e) (1) The calculation of the urban water use objective shall be made using landscape area and other data provided by the department and pursuant to the standards, guidelines, and methodologies adopted by the board. The department shall provide data to the urban water supplier at a level of detail sufficient to allow the urban water supplier to verify its accuracy at the parcel level.

(2) Notwithstanding paragraph (1), an urban retail water supplier may use alternative data in calculating the urban water use objective if the supplier demonstrates to the department that the alternative data are equivalent, or superior, in quality and accuracy to the data provided by the department. The department may provide technical assistance to an urban retail water supplier in evaluating whether the alternative data are appropriate for use in calculating the supplier's urban water use objective.

(Amended by Stats. 2019, Ch. 239, Sec. 2. (AB 1414) Effective January 1, 2020.)

10609.21. (a) For purposes of Section 10609.20, and notwithstanding paragraph (4) of subdivision (d) of Section 10609.20, "existing facility" also includes the North City Project, phase one of the Pure Water San Diego Program, for which an environmental impact report was certified on April 10, 2018.

(b) This section shall become operative on January 1, 2019.

(Added by Stats. 2018, Ch. 453, Sec. 4. (SB 875) Effective September 17, 2018. Section operative January 1, 2019, by its own provisions.)

10609.22. (a) An urban retail water supplier shall calculate its actual urban water use no later than January 1, 2024, and by January 1 every year thereafter.

(b) The calculation shall be based on the urban retail water supplier's water use for the previous calendar or fiscal year.

(c) Each urban water supplier's urban water use shall be composed of the sum of the following:

(1) Aggregate residential water use.

(2) Aggregate outdoor irrigation of landscape areas with dedicated irrigation meters in connection with CII water use.

(3) Aggregate water losses.

(Amended by Stats. 2019, Ch. 239, Sec. 3. (AB 1414) Effective January 1, 2020.)

10609.24. (a) An urban retail water supplier shall submit a report to the department no later than January 1, 2024, and by January 1 every year thereafter. The report shall include all of the following:

(1) The urban water use objective calculated pursuant to Section 10609.20 along with relevant supporting data.

(2) The actual urban water use calculated pursuant to Section 10609.22 along with relevant supporting data.

(3) Documentation of the implementation of the performance measures for CII water use.

(4) A description of the progress made towards meeting the urban water use objective.

(5) The validated water loss audit report conducted pursuant to Section 10608.34.

(b) The department shall post the reports and information on its internet website.

(c) The board may issue an information order or conservation order to, or impose civil liability on, an entity or individual for failure to submit a report required by this section.

(Amended by Stats. 2019, Ch. 239, Sec. 4. (AB 1414) Effective January 1, 2020.)

10609.25. As part of the first report submitted to the department by an urban retail water supplier no later than January 1, 2024, pursuant to subdivision (a) of Section 10609.24, each urban retail water supplier shall provide a

narrative that describes the water demand management measures that the supplier plans to implement to achieve its urban water use objective by January 1, 2027.

(Added by Stats. 2019, Ch. 239, Sec. 5. (AB 1414) Effective January 1, 2020.)

10609.26. (a) (1) On and after January 1, 2024, the board may issue informational orders pertaining to water production, water use, and water conservation to an urban retail water supplier that does not meet its urban water use objective required by this chapter. Informational orders are intended to obtain information on supplier activities, water production, and conservation efforts in order to identify technical assistance needs and assist urban water suppliers in meeting their urban water use objectives.

(2) In determining whether to issue an informational order, the board shall consider the degree to which the urban retail water supplier is not meeting its urban water use objective, information provided in the report required by Section 10609.24, and actions the urban retail water supplier has implemented or will implement in order to help meet the urban water use objective.

(3) The board shall share information received pursuant to this subdivision with the department.

(4) An urban water supplier may request technical assistance from the department. The technical assistance may, to the extent available, include guidance documents, tools, and data.

(b) On and after January 1, 2025, the board may issue a written notice to an urban retail water supplier that does not meet its urban water use objective required by this chapter. The written notice may warn the urban retail water supplier that it is not meeting its urban water use objective described in Section 10609.20 and is not making adequate progress in meeting the urban water use objective, and may request that the urban retail water supplier address areas of concern in its next annual report required by Section 10609.24. In deciding whether to issue a written notice, the board may consider whether the urban retail water supplier has received an informational order, the degree to which the urban retail water supplier is not meeting its urban water use objective, information provided in the report required by Section 10609.24, and actions the urban retail water supplier has implemented or will implement in order to help meet its urban water use objective.

(c) (1) On and after January 1, 2026, the board may issue a conservation order to an urban retail water supplier that does not meet its urban water use objective. A conservation order may consist of, but is not limited to, referral to the department for technical assistance, requirements for education and outreach, requirements for local enforcement, and other efforts to assist urban retail water suppliers in meeting their urban water use objective.

(2) In issuing a conservation order, the board shall identify specific deficiencies in an urban retail water supplier's progress towards meeting its urban water use objective, and identify specific actions to address the deficiencies.

(3) The board may request that the department provide an urban retail water supplier with technical assistance to support the urban retail water supplier's actions to remedy the deficiencies.

(d) A conservation order issued in accordance with this chapter may include requiring actions intended to increase water-use efficiency, but shall not curtail or otherwise limit the exercise of a water right, nor shall it require the imposition of civil liability pursuant to Section 377.

(Amended by Stats. 2019, Ch. 239, Sec. 6. (AB 1414) Effective January 1, 2020.)

10609.27. Notwithstanding Section 10609.26, the board shall not issue an information order, written notice, or conservation order pursuant to Section 10609.26 if both of the following conditions are met:

(a) The board determines that the urban retail water supplier is not meeting its urban water use objective solely because the volume of water loss exceeds the urban retail water supplier's standard for water loss.

(b) Pursuant to Section 10608.34, the board is taking enforcement action against the urban retail water supplier for not meeting the performance standards for the volume of water losses.

(Added by Stats. 2019, Ch. 203, Sec. 1. (SB 134) Effective January 1, 2020.)

10609.28. The board may issue a regulation or informational order requiring a wholesale water supplier, an urban retail water supplier, or a distributor of a public water supply, as that term is used in Section 350, to provide a monthly report relating to water production, water use, or water conservation.

(Added by Stats. 2018, Ch. 14, Sec. 12. (SB 606) Effective January 1, 2019.)

10609.30. On or before January 10, 2024, the Legislative Analyst shall provide to the appropriate policy committees of both houses of the Legislature and the public a report evaluating the implementation of the water use efficiency

standards and water use reporting pursuant to this chapter. The board and the department shall provide the Legislative Analyst with the available data to complete this report.

(a) The report shall describe all of the following:

(1) The rate at which urban retail water users are complying with the standards, and factors that might facilitate or impede their compliance.

(2) The accuracy of the data and estimates being used to calculate urban water use objectives.

(3) Indications of the economic impacts, if any, of the implementation of this chapter on urban water suppliers and urban water users, including CII water users.

(4) The frequency of use of the bonus incentive, the volume of water associated with the bonus incentive, value to urban water suppliers of the bonus incentive, and any implications of the use of the bonus incentive on water use efficiency.

(5) The early indications of how implementing this chapter might impact the efficiency of statewide urban water use.

(6) Recommendations, if any, for improving statewide urban water use efficiency and the standards and practices described in this chapter.

(7) Any other issues the Legislative Analyst deems appropriate.

(Added by Stats. 2018, Ch. 14, Sec. 13. (SB 606) Effective January 1, 2019.)

10609.32. It is the intent of the Legislature that the chairperson of the board and the director of the department appear before the appropriate policy committees of both houses of the Legislature on or around January 1, 2026, and report on the implementation of the water use efficiency standards and water use reporting pursuant to this chapter. It is the intent of the Legislature that the topics to be covered include all of the following:

(a) The rate at which urban retail water suppliers are complying with the standards, and factors that might facilitate or impede their compliance.

(b) What enforcement actions have been taken, if any.

(c) The accuracy of the data and estimates being used to calculate urban water use objectives.

(d) Indications of the economic impacts, if any, of the implementation of this chapter on urban water suppliers and urban water users, including CII water users.

(e) The frequency of use of the bonus incentive, the volume of water associated with the bonus incentive, value to urban water suppliers of the bonus incentive, and any implications of the use of the bonus incentive on water use efficiency.

(f) An assessment of how implementing this chapter is affecting the efficiency of statewide urban water use.

(Added by Stats. 2018, Ch. 14, Sec. 14. (SB 606) Effective January 1, 2019.)

10609.34. Notwithstanding Section 15300.2 of Title 14 of the California Code of Regulations, an action of the board taken under this chapter shall be deemed to be a Class 8 action, within the meaning of Section 15308 of Title 14 of the California Code of Regulations, provided that the action does not involve relaxation of existing water conservation or water use standards.

(Added by Stats. 2018, Ch. 14, Sec. 15. (SB 606) Effective January 1, 2019.)

10609.36. (a) Nothing in this chapter shall be construed to determine or alter water rights. Sections 1010 and 1011 apply to water conserved through implementation of this chapter.

(b) Nothing in this chapter shall be construed to authorize the board to update or revise water use efficiency standards authorized by this chapter except as explicitly provided in this chapter. Authorization to update the standards beyond that explicitly provided in this chapter shall require separate legislation.

(c) Nothing in this chapter shall be construed to limit or otherwise affect the use of recycled water as seawater barriers for groundwater salinity management.

(Added by Stats. 2018, Ch. 14, Sec. 16. (SB 606) Effective January 1, 2019.)

10609.38. The board may waive the requirements of this chapter for a period of up to five years for any urban retail water supplier whose water deliveries are significantly affected by changes in water use as a result of damage from a disaster such as an earthquake or fire. In establishing the period of a waiver, the board shall take into

consideration the breadth of the damage and the time necessary for the damaged areas to recover from the disaster.

(Added by Stats. 2018, Ch. 14, Sec. 17. (SB 606) Effective January 1, 2019.)



DIVISION 6. CONSERVATION, DEVELOPMENT, AND UTILIZATION OF STATE WATER RESOURCES [10000 - 12999]
(*Heading of Division 6 amended by Stats. 1957, Ch. 1932.*)

PART 2.6. URBAN WATER MANAGEMENT PLANNING [10610 - 10657] (*Part 2.6 added by Stats. 1983, Ch. 1009, Sec..*)

CHAPTER 1. General Declaration and Policy [10610 - 10610.4] (*Chapter 1 added by Stats. 1983, Ch. 1009, Alec. 1.*)

[10610](#) This part shall be known and may be cited as the “Urban Water Management Planning Act.”

(*Added by Stats. 1983, Ch. 1009, Sec. 1.*)

[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, and increasing long-term water conservation among Californians, improving water use efficiency within the state's communities and agricultural production, and strengthening local and regional drought planning are critical to California's resilience to drought and climate change.

(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 now and into the foreseeable future, and every urban water supplier should collaborate closely with local land-use authorities to ensure water demand forecasts are consistent with current land-use planning.

(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.

(*Amended by Stats. 201B, Ch. 14, Sec. 18. (SB 606) Effective January 1, 201 9.*)

[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.



CHAPTER 2. Definitions [10611 - 1 0618] (*Chapter 2 added by Stats. 1983, Ch. 1009, iec. 1.*)

[10611.](#) Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

(Added by Stats. 1983, Ch. 1009, Sec. 1.)

[10611.3](#) “Customer” means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

Added by renumbering Section 10612 by Stats. 2018, Ch. 14, Sec. 20. (SB 606) Effective January 1, 2019.)

[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.

(Amended by Stats. 1995, Ch. 854, Sec. 3. Effective January 1, 1996.)

[10612](#) “Drought risk assessment” means a method that examines water shortage risks based on the driest five- year historic sequence for the agency’s water supply, as described in subdivision (b) of Section 10635.

(Added by Stats. 2018, Ch. 14, Sec. 21. (SB 606) Effective January 1, 2019.)

[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.

(Added by Stats. 1983, Ch. 1009, Exec. 1.)

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

(Added by Stats. 1983, Ch. 1009, Sec. 1.)

[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.

(Amended by Stats. 1995, Ch. 854, Sec. 4. Effective January 1, 1996.)

[10616.](#) “Public agency” means any board, commission, county, city and county, city, regional agency, district, or other public entity.

(Added by Stats. 1983, Ch. 1009, Sec. 1.)

[10616.5](#) “Recycled water” means the reclamation and reuse of wastewater for beneficial use.

(Added by Stats. 1995, Ch. 854, Sec. 5. Effective January 1, 1996)

[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.

(Amended by Stats. 1996, Ch. 1023, Sec. 428. Effective January 29, 1996.)

[10617.5](#) “Water shortage contingency plan” means a document that incorporates the provisions detailed in subdivision (a) of Section 10632 and is subsequently adopted by an urban water supplier pursuant to this article.

(Added by Stats. 2018, Ch. 14, Sec. 22. (SB 606) Effective January 1, 2019)

[10618](#) “Water supply and demand assessment” means a method that looks at current year and one or more dry year supplies and demands for determining water shortage risks, as described in Section 10632.1.

(Added by Stats. 2018, Ch. 14, Sec. 23 (SB 606). Effective January 1, 2019)



CHAPTER 3. Urban Water Management Plans [10620 - 10645] (Chapter 3 added by Stabs. 1983, Ch. 1009, Sec. 1.)

ARTICLE 1. General Provisions [10620 - 1 0621] (Article 1 added by Stats. 1 983, Ch. 1009, Sec. 1.)

- [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) (l) 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, efficient water use, and improved local drought resilience.
- (2) Notwithstanding paragraph (1), each urban water supplier shall develop its own water shortage contingency plan, but an urban water supplier may incorporate, collaborate, and otherwise share information with other urban water suppliers or other governing entities participating in an areawide, regional, watershed, or basinwide urban water management plan, an agricultural management plan, or groundwater sustainability plan development.
- (3) 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.
- (Amended by Stats. 2018, Ch. 14, Sec. 24. (SB 606) Effective January 1, 2019.)*

- [10621](#) (a) Each urban water supplier shall update its plan at least once every five years on or before July 1, in years ending in six and one, incorporating updated and new information from the five years preceding each update.
- (b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before 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) An urban water supplier regulated by the Public Utilities Commission shall include its most recent plan and water shortage contingency plan as part of the supplier's general rate case filings.
- (d) 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)
- (e) Each urban water supplier shall update and submit its 2015 plan to the department by July1, 2016



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(f) Each urban water supplier shall update and submit its 2020 plan to the department by July 1,2021

(Amended by Stats. 2019, Ch. 239, Sec. 7. (AB 1414) Effective January 1, 2020.)



CHAPTER 3. Urban Water Management Plans [10620 - 10645] (Chapter 3 added by Stats. 1983, Ch. 1009, Sec. 1.)

ARTICLE 2. Contents of Plans [10630 - 10634] (Article 2 added by Stats. 1983, Ch. 1009, Sec. 1.)

[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, while accounting for impacts from climate change.

(Amended by Stats. 2018, Ch. 14, Sec. 26. (SB 606) Effective January 1, 2019.)

[10630.5](#) Each plan shall include a simple lay description of how much water the agency has on a reliable basis, how much it needs for the foreseeable future, what the agency's strategy is for meeting its water needs, the challenges facing the agency, and any other information necessary to provide a general understanding of the agency's plan.

(Added by Stats. 2018, Ch. 14, Sec. 27. (SB 606) Effective January 1, 2019.)

[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 social, economic, and 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. The description shall include the current and projected land uses within the existing or anticipated service area affecting the supplier's water management planning. Urban water suppliers shall coordinate with local or regional land use authorities to determine the most appropriate land use information, including, where appropriate, land use information obtained from local or regional land use authorities, as developed pursuant to Article 5 (commencing with Section 65300) of Chapter 3 of Division 1 of Title 7 of the Government Code.

(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), providing supporting and related information, including all of the following:

(1) A detailed discussion of anticipated supply availability under a normal water year, single dry year, and droughts lasting at least five years, as well as more frequent and severe periods of drought, as described in the drought risk assessment. For each source of water supply, consider any information pertinent to the reliability analysis conducted pursuant to Section 10635, including changes in supply due to climate change.

(2) When multiple sources of water supply are identified, a description of the management of each supply in correlation with the other identified supplies.

(3) For any planned sources of water supply, a description of the measures that are being undertaken to acquire and develop those water supplies.

(4) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information:

The current version of any groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720), 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 for basins underlying the urban water supplier's service area.



(A) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For basins that 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 a basin that has not been adjudicated, information as to whether the department has identified the basin as a high- or medium-priority basin 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 coordinate with groundwater sustainability agencies or groundwater management agencies listed in subdivision (c) of Section 10723 to maintain or achieve sustainable groundwater conditions in accordance with a groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720).

(B) 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.

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

(d) (I) For an urban retail water supplier, 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, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

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

(I) Agricultural.

(J) Distribution system water loss.

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

(3) (A) The distribution system water loss shall be quantified for each of the five years preceding the plan update, in accordance with rules adopted pursuant to Section 10608.34.

(B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.

(C) In the plan due July 1, 2021, and in each update thereafter, data shall be included to show whether the urban retail water supplier met the distribution loss standards enacted by the board pursuant to Section 10608.34.

(4) (A) Water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use



plans identified by the urban water supplier, as applicable to the service area.

(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:

(i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.

(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.

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

(1) (A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

(B) For the supplement required of urban retail water suppliers by paragraph (2) of subdivision (f) of Section 10621, a narrative that describes the water demand management measures that the supplier plans to implement to achieve its urban water use objective by January 1, 2027, pursuant to Chapter 9 (commencing with Section 10609) of Part 2.55.

(C) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:

(i) Water waste prevention ordinances.

(ii) Metering.

(iii) Conservation pricing.

(iv) Public education and outreach.

(v) Programs to assess and manage distribution system real loss.

(vi) Water conservation program coordination and staffing support.

(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.

(2) For an urban wholesale water supplier, as defined in Section 10608.12, a narrative description of the items in clauses (ii), (iv), (vi), and (vii) of subparagraph (C) of paragraph (1), and a narrative description of its distribution system asset management and wholesale supplier assistance programs.

(f) 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 that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in normal and single-dry water years and for a period of drought lasting five consecutive 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.

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



(h) An urban water supplier that relies 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 (f). 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 (f).

(Amended by Stats. 2018, Ch. 14, Sec. 28. (SB 606) Effective January 1, 2019.)

[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.

(Added by Stats. 2005, Ch. 727, Sec. 2. Effective January 1, 2006.)

[10631.2.](#) (a) In addition to the requirements of Section 10631, an urban water management plan shall include any of the following information that the urban water supplier can readily obtain:

- (1) An estimate of the amount of energy used to extract or divert water supplies.
- (2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.
- (3) An estimate of the amount of energy used to treat water supplies.
- (4) An estimate of the amount of energy used to distribute water supplies through its distribution systems.
- (5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.
- (6) An estimate of the amount of energy used to place water into or withdraw from storage.
- (7) Any other energy-related information the urban water supplier deems appropriate.

(b) The department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems. The department may consider studies and calculations conducted by the Public Utilities Commission in developing the methodology.

(c) The Legislature finds and declares that energy use is only one factor in water supply planning and shall not be considered independently of other factors.

(Amended by Stats. 2018, Ch. 14, Sec. 29. (SB 606a) Effective January 1, 2019.)

[10632](#) (a) Every urban water supplier shall prepare and adopt a water shortage contingency plan as part of its urban water management plan that consists of each of the following elements:

- (1) The analysis of water supply reliability conducted pursuant to Section 10635.
- (2) The procedures used in conducting an annual water supply and demand assessment



that include, at a minimum, both of the following:

(A) The written decision making process that an urban water supplier will use each year to determine its water supply reliability.

(B) The key data inputs and assessment methodology used to evaluate the urban water supplier's water supply reliability for the current year and one dry year, including all of the following:

(i) Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.

(ii) Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.

(iii) Existing infrastructure capabilities and plausible constraints.

(iv) A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.

(v) A description and quantification of each source of water supply.

(3) (A) Six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortage. Urban water suppliers shall define these shortage levels based on the suppliers' water supply conditions, including percentage reductions in water supply, changes in groundwater levels, changes in surface elevation or level of subsidence, or other changes in hydrological or other local conditions indicative of the water supply available for use. Shortage levels shall also apply to catastrophic interruption of water supplies, including, but not limited to, a regional power outage, an earthquake, and other potential emergency events.

(B) An urban water supplier with an existing water shortage contingency plan that uses different water shortage levels may comply with the requirement in subparagraph (A) by developing and including a cross-reference relating its existing categories to the six standard water shortage levels.

(4) Shortage response actions that align with the defined shortage levels and include, at a minimum, all of the following:

(A) Locally appropriate supply augmentation actions. Locally appropriate demand reduction actions to adequately respond to shortages.

(B) Locally appropriate operational changes.

(C) Additional, mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions.

(D) For each action, an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

(5) Communication protocols and procedures to inform customers, the public, interested parties, and local, regional, and state governments, regarding, at a minimum, all of the following:

(A) Any current or predicted shortages as determined by the annual water supply and demand assessment described pursuant to Section 10632.1.

(B) Any shortage response actions triggered or anticipated to be triggered by the annual water supply and demand assessment described pursuant to Section 10632.1.

(C) Any other relevant communications.

(6) For an urban retail water supplier, customer compliance, enforcement, appeal, and exemption



procedures for triggered shortage response actions as determined pursuant to Section 10632.2.

(7) (A) A description of the legal authorities that empower the urban water supplier to implement and enforce its shortage response actions specified in paragraph (4) that may include, but are not limited to, statutory authorities, ordinances, resolutions, and contract provisions.

(B) A statement that an urban water supplier shall declare a water shortage emergency in accordance with Chapter 3 (commencing with Section 350) of Division 1.

(C) A statement that an urban water supplier shall coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

(8) A description of the financial consequences of, and responses for, drought conditions, including, but not limited to, all of the following:

(A) A description of potential revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4).

(B) A description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4).

(C) A description of the cost of compliance with Chapter 3.3 (commencing with Section 365) of Division 1.

(9) For an urban retail water supplier, monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance and to meet state reporting requirements.

(10) Reevaluation and improvement procedures for systematically monitoring and evaluating the functionality of the water shortage contingency plan in order to ensure shortage risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented as needed.

(b) For purposes of developing the water shortage contingency plan pursuant to subdivision (a), an 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.

(c) The urban water supplier shall make available the water shortage contingency plan prepared pursuant to this article to its customers and any city or county within which it provides water supplies no later than 30 days after adoption of the water shortage contingency plan.

(Repealed and added by Stats. 2018, Ch. 14, Sec. 32. (SB 606) Effective January 1, 2019.)

[10632.1](#) An urban water supplier shall conduct an annual water supply and demand assessment pursuant to subdivision (a) of Section 10632 and, on or before June 1 of each year, submit an annual water shortage assessment report to the department with information for anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier's water shortage contingency plan. An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by June 1 of each year, whichever is later.

(Added by Stats. 2018, Ch. 14, Sec. 33. (SB 606) Effective January 1, 2019.)

[10632.2](#) An urban water supplier shall follow, where feasible and appropriate, the prescribed procedures and implement determined shortage response actions in its water shortage contingency plan, as identified in subdivision

(a) of Section 10632, or reasonable alternative actions, provided that descriptions of the alternative actions are submitted with the annual water shortage assessment report pursuant to Section



10632.1. Nothing in this section prohibits an urban water supplier from taking actions not specified in its water shortage contingency plan, if needed, without having to formally amend its urban water management plan or water shortage contingency plan.

(Added by Stats. 2018, Ch. 14, Sec. 34. (SB 606) Effective January 1, 2019.)

[10632.3](#) It is the intent of the Legislature that, upon proclamation by the Governor of a state of emergency under the California Emergency Services Act (Chapter 7 (commencing with Section 8550) of Division 1 of Title 2 of the Government Code) based on drought conditions, the board defer to implementation of locally adopted water shortage contingency plans to the extent practicable.

(Added by Stats. 2018, Ch. 14, Sec. 35. (SB 606) Effective January 1, 2019.)

[10632.5](#) (a) In addition to the requirements of paragraph (3) of subdivision (a) of Section 10632, beginning January 1, 2020, the plan shall include a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various facilities of a water system and mitigate those vulnerabilities.

(b) An urban water supplier shall update the seismic risk assessment and mitigation plan when updating its urban water management plan as required by Section 10621.

(c) An urban water supplier may comply with this section by submitting, pursuant to Section 10644, a copy of the most recent adopted local hazard mitigation plan or multihazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390) if the local hazard mitigation plan or multihazard mitigation plan addresses seismic risk.

(Added by Stats. 2015, Ch. 681, Sec. 1. (SB 664a Effective January 1, 2016.)

[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.



(Amended by Stats. 2009, Ch. 534, Sec. 2. (AB 1465) Effective January 1, 2010.)

[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.

(Added by Stats. 2001, Ch. 644, Sec. 3. Effective January 1, 2002.)



CHAPTER 3. Urban Water Management Plans [10620 - 10645] (Chapter 3 added by Stabs. 1983, Ch. 1009, Sec. 1.)

ARTICLE 2.5. Water Service Reliability [10635- 10635.] (Article 2.5 added by Stats. 1995, Ch. 854, Sec. 11.)

[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 long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive 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) Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following:

- (1) A description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive water years, starting from the year following when the assessment is conducted.
- (2) A determination of the reliability of each source of supply under a variety of water shortage conditions. This may include a determination that a particular source of water supply is fully reliable under most, if not all, conditions.
- (3) A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.
- (4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

(c) 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.

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

(e) 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

(Amended by Stats. 2018, Ch. 14, Sec. 36. (SB 606) Effective January 1, 2019.)



CHAPTER 3. Urban Water Management Plans [10620 - 10645] (Chapter 3 added by Stabs. 1983, Ch. 1009, Sec. 1.)

ARTICLE 3. Adoption and Implementation of Plans [1 0640 - 10645] Article 3 added by Stats. 1983, Ch. 1009, Sec. 1.)

[10640.](#) (a) 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.

(b) Every urban water supplier required to prepare a water shortage contingency plan shall prepare a water shortage contingency plan pursuant to Section 10632. The supplier shall likewise periodically review the water shortage contingency plan as required by paragraph (10) of subdivision (a) of Section 10632 and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

(Amended by Stats. 2018, Ch. 14, Sec. 37. (SB 606a Effective January 1, 20J 9.g

[10641](#) An urban water supplier required to prepare a plan or a water shortage contingency 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.

(Amended by Stats. 2018, Ch. 14, Sec. 38. (SB 606a Effective January 1, 20J 9.g

[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 both the plan and the water shortage contingency plan. Prior to adopting either, the urban water supplier shall make both the plan and the water shortage contingency plan available for public inspection and shall hold a public hearing or hearings thereon. Prior to any of these hearings, notice of the time and place of the 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 a hearing to any city or county within which the supplier provides water supplies. Notices by a local public agency pursuant to this section shall be provided pursuant to Chapter 17.5 (commencing with Section 7290) of Division 7 of Title 1 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing or hearings, the plan or water shortage contingency plan shall be adopted as prepared or as modified after the hearing or hearings.

(Amended by Stats. 2018, Ch. 14, Sec. 39. (SB 606\$ Effective January 1, 70J 9.g

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

(Added by Stats. 1983, Ch. 1009, Sec. 1.)

[10644](#) (a) (1) 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.

(2) The plan, or amendments to the plan, submitted to the department pursuant to paragraph (1)



shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.

(b) If an urban water supplier revises its water shortage contingency plan, the supplier shall submit to the department a copy of its water shortage contingency plan prepared pursuant to subdivision (a) of Section 10632 no later than 30 days after adoption, in accordance with protocols for submission and using electronic reporting tools developed by the department.

(c) (1) (A) Notwithstanding Section 10231.5 of the Government Code, the department shall prepare and submit to the Legislature, on or before July 1, in the years ending in seven and two, a report summarizing the status of the plans and water shortage contingency plans adopted pursuant to this part. The report prepared by the department shall identify the exemplary elements of the individual plans and water shortage contingency plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan and water shortage contingency plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans and water shortage contingency plans submitted pursuant to this part.

(B) The department shall prepare and submit to the board, on or before September 30 of each year, a report summarizing the submitted water supply and demand assessment results along with appropriate reported water shortage conditions and the regional and statewide analysis of water supply conditions developed by the department. As part of the report, the department shall provide a summary and, as appropriate, urban water supplier specific information regarding various shortage response actions implemented as a result of annual supplier-specific water supply and demand assessments performed pursuant to Section 10632.1.

(C) The department shall submit the report to the Legislature for the 2015 plans by July 1, 2017, and the report to the Legislature for the 2020 plans and water shortage contingency plans by July 1, 2022.

(2) A report to be submitted pursuant to subparagraph (A) of paragraph (1) shall be submitted in compliance with Section 9795 of the Government Code.

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

(Amended by Stats. 2018, Ch. 14, Sec. 40. (SB 606) Effective January 1, 2019.)

[10645.](#) (a) 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.

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

(Amended by Stats. 2018, Ch. 14, Sec. 41. (SB 606) Effective January 1, 2019.)



CHAPTER 4. Miscellaneous Provisions [1 0650 - 10657] (Chapter 4 added by :itats. 1 983, Ch. 1009, iec. 1.)

[10650](#) Any actions or proceedings, other than actions by the board, 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 or a water shortage contingency 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 water shortage contingency plan, or action taken pursuant to either, does not comply with this part shall be commenced within 90 days after filing of the plan or water shortage contingency plan or an amendment to either pursuant to Section 10644 or the taking of that action.

(Amended by Stats. 2018, Ch. 14, Sec. 42. (SB 606) Effective January 1, 2019.)

[10651](#) In any action or proceeding to attack, review, set aside, void, or annul a plan or a water shortage contingency plan, or an action taken pursuant to either 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.

(Amended by Stats. 2018, Ch. 14, Sec. 43. (SB 606) Effective January 1, 2019)

[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.

(Amended by Stats. 1995, Ch. 854, Sec. 6. Effective January 1, 1996.)

[10653](#) The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the board and the Public Utilities Commission, for the preparation of water management plans, water shortage contingency plans, or conservation plans; provided, that if the board or the Public Utilities Commission requires additional information concerning water conservation, drought response measures, or financial conditions 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 that complies with analogous 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.

(Amended by Stats. 2018, Ch. 14, Sec. 45. (SB 606) Effective January 1, 2019)

[10654](#) An urban water supplier may recover in its rates the costs incurred in preparing its urban water management plan, its drought risk assessment, its water supply and demand assessment, and its water shortage contingency plan and implementing the reasonable water conservation measures included in either of the plans.

(Amended by Stats. 2018, Ch. 14, Sec. 44. (SB 606) Effective January 1, 2019)

[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.



(Amended by Stats. 1983, Ch. 1009, Sec. 1)

[10656](#) An urban water supplier is not eligible for a water grant or loan awarded or administered by the state unless the urban water supplier complies with this part.

(Amended by Stats. 2018, Ch. 14, Sec. 46. (SB 606) Effective January 1, 2019)

[10657](#) The department may adopt regulations regarding the definitions of water, water use, and reporting periods, and may adopt any other regulations deemed necessary or desirable to implement this part. In developing regulations pursuant to this section, the department shall solicit broad public participation from stakeholders and other interested persons.

(Amended by Stats. 2018, Ch. 14, Sec. 47. (SB 606) Effective January 1, 2019)

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Appendix B

DWR 2020 UWMP Tables

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Submittal Table 2-1 Retail Only: Public Water Systems

Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 *
CA5010010 ^(c)	City of Modesto	68,566	50,903
CA5010005	Salida	4,348	958
CA5010031 ^(d)	Ceres (Walnut Manor)	52	46
CA5010033	Grayson	265	230
CA5010029	Del Rio (Hillcrest)	397	769
CA5010034	North Turlock	48	28
CA5010023	South Turlock	330	169
CA5010035 ^(e)	Central Turlock	34	0
TOTAL		74,040	53,104

** Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

- (a) Represents billed services as of the end of 2020. Does not include "available" services (i.e., installed but not active).
- (b) Represents water production (in AF) except where otherwise noted.
- (c) Includes contiguous unincorporated areas of the County and parts of the City of Ceres.
- (d) Also known as "Payne" for the street where the well is located.
- (e) No SCADA available for production because City of Turlock provides groundwater to this system via an interconnection with Turlock.

Submittal Table 2-2: Plan Identification		
Select Only One	Type of Plan	Name of RUWMP or Regional Alliance <i>if applicable</i> (select from drop down list)
<input checked="" type="checkbox"/>	Individual UWMP	
	<input type="checkbox"/>	Water Supplier is also a member of a RUWMP
	<input type="checkbox"/>	Water Supplier is also a member of a Regional Alliance
<input type="checkbox"/>	Regional Urban Water Management Plan (RUWMP)	
NOTES:		

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
<input checked="" type="checkbox"/>	Supplier is a wholesaler
<input checked="" type="checkbox"/>	Supplier is a retailer
Fiscal or Calendar Year (select one)	
<input checked="" type="checkbox"/>	UWMP Tables are in calendar years
<input type="checkbox"/>	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
Units of measure used in UWMP * (select from drop down)	
Unit	AF
<i>* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>	
NOTES:	

Submittal Table 2-4 Retail: Water Supplier Information Exchange	
The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631.	
Wholesale Water Supplier Name	
Modesto Irrigation District (MID)	
NOTES:	

Submittal Table 2-4 Wholesale: Water Supplier Information Exchange (select one)	
<input type="checkbox"/>	Supplier has informed more than 10 other water suppliers of water supplies available in accordance with Water Code Section 10631. Completion of the table below is optional. If not completed, include a list of the water suppliers that were informed.
	Provide page number for location of the list.
<input checked="" type="checkbox"/>	Supplier has informed 10 or fewer other water suppliers of water supplies available in accordance with Water Code Section 10631. Complete the table below.
Water Supplier Name	
City of Modesto	
NOTES:	

Submittal Table 3-1 Retail: Population - Current and Projected

Population Served	2020	2025	2030	2035	2040	2045(<i>opt</i>)
	270,974	284,959	298,631	312,995	328,072	343,892

NOTES: Projected population (2025-2045) based on CA Department of Finance data for incorporated areas and estimates based on served housing units and housing occupancy from the US Census for other areas.

Submittal Table 3-1 Wholesale: Population - Current and Projected

Population Served	2020	2025	2030	2035	2040	2045(<i>opt</i>)
	0	0	0	0	0	0

NOTES: MID does not directly serve any urban water customers. The population served by MID wholesale water is included in the City's total service area population (see DWR Table 3-1 Retail).

Submittal Table 4-1 Retail: Demands for Potable and Non-Potable Water - Actual			
Use Type	2020 Actual		
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	Level of Treatment When Delivered Drop down list	Volume*
Single Family		Drinking Water	27,081
Multi-Family		Drinking Water	5,420
Commercial		Drinking Water	8,110
Industrial		Drinking Water	2,115
Institutional/Governmental		Drinking Water	1,933
Landscape		Drinking Water	2,520
Other Potable	Unmetered water uses	Drinking Water	615
Losses		Drinking Water	5,310
TOTAL			53,104
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.			
NOTES: Volumes are in AF; volumes do not include demands from Hickman and Waterford.			

Submittal Table 4-1 Wholesale: Demands for Potable and Non-Potable Water - Actual			
Use Type	2020 Actual		
Drop down list May select each use multiple times These are the only use types that will be recognized by the WUE data online submittal tool	Additional Description (as needed)	Level of Treatment When Delivered Drop down list	Volume*
Sales to other agencies	City of Modesto	Drinking Water	26,053
Losses		Drinking Water	52
TOTAL			26,105
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.			
NOTES: Volumes are in AF and from MID's 2020 Water Audit.			

Submittal Table 4-2 Retail: Use for Potable and Non-Potable Water - Projected

Use Type	Additional Description (as needed)	Projected Water Use*				
		Report To the Extent that Records are Available				
<u>Drop down list</u> May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		2025	2030	2035	2040	2045 (opt)
Single Family		33,204	35,614	38,025	40,436	42,846
Multi-Family		6,498	6,970	7,442	7,913	8,385
Commercial		9,723	10,429	11,135	11,841	12,546
Industrial		2,536	2,720	2,904	3,088	3,273
Institutional/Governmental		2,318	2,486	2,654	2,822	2,991
Landscape		3,021	3,241	3,460	3,679	3,899
Losses		6,367	6,829	7,291	7,753	8,216
TOTAL		63,666	68,289	72,911	77,533	82,156

* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES: Volumes are in AF. Demand projections are from the City's 2017 Water Master Plan but have been reduced 15 percent to better align with recent actual demands.

Submittal Table 4-2 Wholesale: Use for Potable and Raw Water - Projected

Use Type	Additional Description (as needed)	Projected Water Use *				
		Report To the Extent that Records are Available				
<u>Drop down list</u> May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool.		2025	2030	2035	2040	2045 (opt)
Sales to other agencies	City of Modesto	39,200	44,800	50,400	56,000	61,600
TOTAL		39,200	44,800	50,400	56,000	61,600

* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES: Volumes are in AF. Assumes supply from MRWTP Phase Two Expansion will increase linearly between 2020 and 2050. Treated surface water supplies shown above are approximations based off of demand. Any and all treated surface water to be provided shall be in accordance with the ARTDA.

Submittal Table 4-3 Retail: Total Water Use (Potable and Non-Potable)						
	2020	2025	2030	2035	2040	2045 (opt)
Potable Water, Raw, Other Non-potable <i>From Tables 4-1R and 4-2 R</i>	53,104	63,666	68,289	72,911	77,533	82,156
Recycled Water Demand ¹ <i>From Table 6-4</i>	0	0	0	0	0	0
Optional Deduction of Recycled Water Put Into Long-Term Storage ²	0	0	0	0	0	0
TOTAL WATER USE	53,104	63,666	68,289	72,911	77,533	82,156
¹ Recycled water demand fields will be blank until Table 6-4 is complete ² Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier <i>may</i> deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3.						
NOTES: Volumes are in AF.						

Submittal Table 4-3 Wholesale: Total Water Use (Potable and Non-Potable)						
	2020	2025	2030	2035	2040	2045 (opt)
Potable and Raw Water <i>From Tables 4-1W and 4-2W</i>	26,105	39,200	44,800	50,400	56,000	61,600
Recycled Water Demand* <i>From Table 6-4W</i>	0	0	0	0	0	0
TOTAL WATER DEMAND	26,105	39,200	44,800	50,400	56,000	61,600
*Recycled water demand fields will be blank until Table 6-4 is complete.						
NOTES: Volumes are in AF.						

Submittal Table 4-4 Retail: Last Five Years of Water Loss Audit Reporting

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss ^{1,2}
07/2015	8,779
07/2016	7,519
07/2017	9,532
07/2018	8,313
07/2019	9,024

¹ Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.

² **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES: Volumes are in AF. A copy of the City of Modesto's latest Water Audit is provided in Appendix E.

OPTIONAL Table 4-4 Wholesale: Last Five Years of Water Loss Audit Reporting

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss ^{1,2}
01/2020	52

¹ Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.

² **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES: Volumes are in AF. A copy of MID's 2020 Water Audit is provided in Appendix E.

Submittal Table 4-5 Retail Only: Inclusion in Water Use Projections

Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) <i>Drop down list (y/n)</i>	No
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found.	
Are Lower Income Residential Demands Included In Projections? <i>Drop down list (y/n)</i>	Yes
NOTES:	

Submittal Table 5-1 Baselines and Targets Summary
From SB X7-7 Verification Form
Retail Supplier or Regional Alliance Only

Baseline Period	Start Year *	End Year *	Average Baseline GPCD*	Confirmed 2020 Target*
10-15 year	1999	2008	285	228
5 Year	2003	2007	279	

**All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)*

NOTES: Historical per capita use from Hickman and Waterford are excluded in calculations.

Submittal Table 5-2: 2020 Compliance
From SB X7-7 2020 Compliance Form
Retail Supplier or Regional Alliance Only

2020 GPCD			2020 Confirmed Target GPCD*	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD*	2020 TOTAL Adjustments*	Adjusted 2020 GPCD* <i>(Adjusted if applicable)</i>		
175	0	175	228	Yes

**All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)*

NOTES: Historical per capita use from Hickman and Waterford are excluded in calculations.

Submittal Table 6-1 Retail: Groundwater Volume Pumped						
<input type="checkbox"/>	Supplier does not pump groundwater. The supplier will not complete the table below.					
<input type="checkbox"/>	All or part of the groundwater described below is desalinated.					
Groundwater Type <i>Drop Down List</i> <i>May use each category multiple times</i>	Location or Basin Name	2016*	2017*	2018*	2019*	2020*
Alluvial Basin	San Joaquin Valley Groundwater Basin	23,514	21,941	19,876	20,279	27,121
TOTAL		23,514	21,941	19,876	20,279	27,121
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.						
NOTES: Volumes are in AF.						

Submittal Table 6-1 Wholesale: Groundwater Volume Pumped						
<input checked="" type="checkbox"/>	Supplier does not pump groundwater. The supplier will not complete the table below.					
<input type="checkbox"/>	All or part of the groundwater described below is desalinated.					
Groundwater Type	Location or Basin Name	2016*	2017*	2018*	2019*	2020*
TOTAL		0	0	0	0	0
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.						
NOTES:						

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2020

<input type="checkbox"/> There is no wastewater collection system. The supplier will not complete the table below.						
Percentage of 2015 service area covered by wastewater collection system <i>(optional)</i>						
Percentage of 2015 service area population covered by wastewater collection system <i>(optional)</i>						
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? <i>Drop Down List</i>	Volume of Wastewater Collected from UWMP Service Area 2020 *	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? <i>Drop Down List</i>	Is WWTP Operation Contracted to a Third Party? <i>(optional)</i> <i>Drop Down List</i>
City of Modesto	Metered	20,815	City of Modesto	Sutter Avenue Primary Treatment Plant	Yes	
City of Modesto	Metered	23,587	City of Modesto	Jennings Road Treatment Plant	No	
Salida Sanitary Sewer District	Metered	1,234	Salida Sanitary Sewer District	Salida Sanitary Treatment Plant	No	
Grayson Community Services District	Estimated	107	Grayson Community Services District	Grayson WWTP	No	
Del Rio	Estimated	153	Del Rio Community Services Corporation	N/A - septic systems and packaged plants	No	
City of Turlock	Estimated	129	City of Turlock	Turlock Regional Water Quality Control Facility	No	
Total Wastewater Collected from Service Area in 2020:		46,026				
<i>* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3 .</i>						
NOTES: Volumes are in AF.						

Submittal Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020

No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.											
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number (optional) 2	Method of Disposal Drop down list	Does This Plant Treat Wastewater Generated Outside the Service Area? Drop down list	Treatment Level Drop down list	2020 volumes 1				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area 3	Recycled Outside of Service Area	Instream Flow Permit Requirement
City of Modesto Sutter Avenue Primary Treatment Plant	N/A	N/A		Other	No	Secondary, Undisinfected	20,815	0	0	0	0
Del Rio septic systems and packaged plants	N/A	N/A		Other	No	Secondary, Undisinfected	153	0	0	0	0
Total							20,969	0	0	0	0

¹Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

² If the **Wastewater Discharge ID Number** is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at <https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CIwqsReportServlet?inCommand=reset&reportName=RegulatedFacility>

NOTES: Volumes are in AF. The Sutter Avenue Primary Treatment Plant provides primary treatment only. All primary effluent from the Sutter Avenue Primary Treatment Plant is sent to the Jennings Road Treatment plant (located outside the City's service area).

Submittal Table 6-3 Wholesale: Wastewater Treatment and Discharge Within Service Area in 2020

Wholesale Supplier neither distributes nor provides supplemental treatment to recycled water.
The Supplier will not complete the table below.

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number (optional) ²	Method of Disposal <i>Drop down list</i>	Does This Plant Treat Wastewater Generated Outside the Service Area? <i>Drop down list</i>	Treatment Level <i>Drop down list</i>	2020 volumes ¹				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
							0	0	0	0	0
Total							0	0	0	0	0

¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

² If the Wastewater Discharge ID Number is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at <https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility>

NOTES:

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area

Recycled water is not used and is not planned for use within the service area of the supplier.
The supplier will not complete the table below.

Name of Supplier Producing (Treating) the Recycled Water:																						
Name of Supplier Operating the Recycled Water Distribution System:																						
Supplemental Water Added in 2020 (volume) <i>Include units</i>																						
Source of 2020 Supplemental Water																						
Beneficial Use Type <i>Insert additional rows if needed.</i>	Potential Beneficial Uses of Recycled Water (Describe)	Amount of Potential Uses of Recycled Water (Quantity) <i>Include volume units¹</i>	General Description of 2020 Uses	Level of Treatment <i>Drop down list</i>	2020 ¹	2025 ¹	2030 ¹	2035 ¹	2040 ¹	2045 ¹ (opt)												
Agricultural irrigation																						
Landscape irrigation (exc.golf courses)																						
Golf course irrigation																						
Commercial use																						
Industrial use																						
Geothermal and other energy production																						
Seawater intrusion barrier																						
Recreational impoundment																						
Wetlands or wildlife habitat																						
Groundwater recharge (IPR)																						
Reservoir water augmentation (IPR)																						
Direct potable reuse																						
Other (Description Required)																						
		Total:			0	0	0	0	0	0												
		2020 Internal Reuse																				

¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES:

Submittal Table 6-4 Wholesale: Current and Projected Retailers Provided Recycled Water Within Service Area

<input checked="" type="checkbox"/>	Recycled water is not directly treated or distributed by the Supplier. The Supplier will not complete the table below.						
Name of Receiving Supplier or Direct Use by Wholesaler	Level of Treatment <i>Drop down list</i>	2020*	2025*	2030*	2035*	2040*	2045* (<i>opt</i>)
Total		0	0	0	0	0	0
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.							
NOTES:							

Submittal Table 6-5 Retail: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual

<input checked="" type="checkbox"/>	Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table.	
Beneficial Use Type	2015 Projection for 2020 ¹	2020 Actual Use ¹
Agricultural irrigation		
Landscape irrigation (exc golf courses)		
Golf course irrigation		
Commercial use		
Industrial use		
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Reservoir water augmentation (IPR)		
Direct potable reuse		
Other (Description Required)		
Total	0	0
¹ Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.		
NOTE:		

Submittal Table 6-5 Wholesale: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual

<input checked="" type="checkbox"/>	Recycled water was not used or distributed by the supplier in 2015, nor projected for use or distribution in 2020. The wholesale supplier will not complete the table below.	
Name of Receiving Supplier or Direct Use by Wholesaler	2015 Projection for 2020*	2020 Actual Use*
Total	0	0
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.		
NOTES:		

Submittal Table 6-6 Retail: Methods to Expand Future Recycled Water Use

<input checked="" type="checkbox"/>	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.
-------------------------------------	---

6-18	Provide page location of narrative in UWMP
------	--

Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use *
Total			0

**Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
<input checked="" type="checkbox"/>	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
<input type="checkbox"/>	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
Provide page location of narrative in the UWMP						
Name of Future Projects or Programs	Joint Project with other suppliers?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type <i>Drop Down List</i>	Expected Increase in Water Supply to Supplier* <i>This may be a range</i>
	<i>Drop Down List (y/n)</i>	<i>If Yes, Supplier Name</i>				
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.						
NOTES:						

Submittal Table 6-7 Wholesale: Expected Future Water Supply Projects or Programs						
<input checked="" type="checkbox"/>	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
<input type="checkbox"/>	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
Provide page location of narrative in the UWMP						
Name of Future Projects or Programs	Joint Project with other suppliers?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type <i>Drop Down list</i>	Expected Increase in Water Supply to Supplier*
	<i>Drop Down Menu</i>	<i>If Yes, Supplier Name</i>				
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.						
NOTES:						

Submittal Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2020		
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Purchased or Imported Water	Purchases from MID	25,983	Drinking Water	
Groundwater (not desalinated)		27,121	Drinking Water	
Total		53,104		0
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>				
NOTES: Volumes are in AF.				

Submittal Table 6-8 Wholesale: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2020		
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Surface water (not desalinated)	Tuolumne River	25,983	Drinking Water	
Total		25,983		0
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>				
NOTES: Volumes are in AF.				

Submittal Table 6-9 Retail: Water Supplies — Projected												
Water Supply		Projected Water Supply* Report To the Extent Practicable										
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool	Additional Detail on Water Supply	2025		2030		2035		2040		2045 (opt)		
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	
Purchased or Imported Water	Purchases from MID	39,200		44,800		50,400		56,000		61,600		
Groundwater (not desalinated)		24,466	51,500	23,489	51,500	22,511	51,500	21,533	51,500	20,556	51,500	
Total		63,666	51,500	68,289	51,500	72,911	51,500	77,533	51,500	82,156	51,500	
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.												
NOTES: Volumes are in AF. Assumes supply from MRWTP Phase Two Expansion will increase linearly between 2020 and 2050; any increase in supply will need to conform to requirements of the ARTDA. Groundwater makes up the difference between MID supplies and projected demands. Since the City no longer serves Hickman and Waterford, the City's groundwater safe yield was reduced by 2,000 AFY (estimate based on historical use for Hickman and Waterford).												

Submittal Table 6-9 Wholesale: Water Supplies — Projected												
Water Supply		Projected Water Supply* Report To the Extent Practicable										
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool	Additional Detail on Water Supply	2025		2030		2035		2040		2045 (opt)		
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	
Surface water (not desalinated)	Tuolumne River	39,200		44,800		50,400		56,000		61,600		
Total		39,200	0	44,800	0	50,400	0	56,000	0	61,600	0	
*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.												
NOTES: Volumes are in AF. Assumes supply from MRWTP Phase Two Expansion will increase linearly between 2020 and 2050. Treated surface water supplies shown above are approximations based off of demand. Any and all treated surface water to be provided shall be in accordance with the ARTDA.												

Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020	Available Supplies if Year Type Repeats	
		<input type="checkbox"/>	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		<input checked="" type="checkbox"/>	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available *	% of Average Supply
Average Year	1984	87,100	100%
Single-Dry Year	2015	66,300	76%
Consecutive Dry Years 1st Year	2011	82,900	95%
Consecutive Dry Years 2nd Year	2012	78,800	90%
Consecutive Dry Years 3rd Year	2013	74,600	86%
Consecutive Dry Years 4th Year	2014	70,500	81%
Consecutive Dry Years 5th Year	2015	66,300	76%

Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.

***Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.**

NOTES: Volumes available are rounded to nearest hundred AF. Includes both purchased water from MID and groundwater supplies. Volume of MID supply for the fifth multiple dry year based on the supply reduction that actually occurred in 2015. 2011 through 2014 MID supply volumes are estimated based on the actual 2015 MID cutback spread equally over five years (2011 to 2015). Assumes total groundwater supply is available (53,500 AFY) and will not be reduced in dry years. During dry years, the City may have the opportunity to purchase additional water from MID (at a higher rate) or to exchange groundwater for agricultural use for treated surface water from MID.

Submittal Table 7-1 Wholesale: Basis of Water Year Data (Reliability Assessment)

Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000	Available Supplies if Year Type Repeats	
		<input type="checkbox"/>	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		<input checked="" type="checkbox"/>	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available *	% of Average Supply
Average Year	1984	33,600	100%
Single-Dry Year	2015	12,800	38%
Consecutive Dry Years 1st Year	2011	29,400	88%
Consecutive Dry Years 2nd Year	2012	25,300	75%
Consecutive Dry Years 3rd Year	2013	21,100	63%
Consecutive Dry Years 4th Year	2014	17,000	51%
Consecutive Dry Years 5th Year	2015	12,800	38%

Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table. Suppliers may create an additional worksheet for the additional tables.

***Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.**

NOTES: Volumes available are rounded to nearest hundred AF. Volume for the fifth multiple dry year based on the supply reduction that actually occurred in 2015. 2011 through 2014 volumes are estimated based on the actual 2015 MID cutback spread equally over five years (2011 to 2015). During dry years, the City may have the opportunity to purchase additional water from MID (at a higher rate) or to exchange groundwater for agricultural use for treated surface water from MID.

Submittal Table 7-2 Retail: Normal Year Supply and Demand Comparison

	2025	2030	2035	2040	2045 (Opt)
Supply totals (autofill from Table 6-9)	63,666	68,289	72,911	77,533	82,156
Demand totals (autofill from Table 4-3)	63,666	68,289	72,911	77,533	82,156
Difference	0	0	0	0	0

NOTES: Volumes are in AF.

Submittal Table 7-2 Wholesale: Normal Year Supply and Demand Comparison

	2025	2030	2035	2040	2045 (Opt)
Supply totals (autofill from Table 6-9)	39,200	44,800	50,400	56,000	61,600
Demand totals (autofill from Table 4-3)	39,200	44,800	50,400	56,000	61,600
Difference	0	0	0	0	0

NOTES: Volumes are in AF. Treated surface water supplies shown above are approximations based off of demand. Any and all treated surface water to be provided shall be in accordance with the ARTDA.

Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 (Opt)
Supply totals*	63,666	68,289	70,700	72,833	74,967
Demand totals*	63,666	68,289	70,700	72,833	74,967
Difference	0	0	0	0	0
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>					
<p>NOTES: Volumes are in AF. For planning purposes, a conservative supply condition assuming a 61.9 percent reduction in MID treated water supply during a single dry year is used here. Available groundwater supply assumed to be 51,500 AFY. The following demand reductions were required to match available supplies during a single dry year condition:</p> <ul style="list-style-type: none"> 2025 - 0% 2030 - 0% 2035 - 3% 2040 - 6% 2045 - 9% 					

Submittal Table 7-3 Wholesale: Single Dry Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 (Opt)
Supply totals*	14,933	17,067	19,200	21,333	23,467
Demand totals*	14,933	17,067	19,200	21,333	23,467
Difference	0	0	0	0	0
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>					
<p>NOTES: Volumes are in AF. During dry years, the City may have the opportunity to purchase additional water from MID (at a higher rate) or to exchange groundwater for agricultural use for treated surface water from MID. For planning purposes, it is conservatively assumed that the supplemental purchase and exchange options are unavailable.</p>					

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison

		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	63,666	68,289	72,911	77,533	82,156
	Demand totals	63,666	68,289	72,911	77,533	82,156
	Difference	0	0	0	0	0
Second year	Supply totals	64,591	69,213	73,836	78,458	83,080
	Demand totals	64,591	69,213	73,836	78,458	83,080
	Difference	0	0	0	0	0
Third year	Supply totals	65,515	70,138	74,760	79,382	84,005
	Demand totals	65,515	70,138	74,760	79,382	84,005
	Difference	0	0	0	0	0
Fourth year	Supply totals	66,440	71,062	75,685	80,307	84,310
	Demand totals	66,440	71,062	75,685	80,307	84,310
	Difference	0	0	0	0	0
Fifth year	Supply totals	67,364	70,281	72,414	74,548	76,681
	Demand totals	67,364	70,281	72,414	74,548	76,681
	Difference	0	0	0	0	0

**Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Volumes are in AF. Projected demand based on the 2017 Water Master Plan (reduced by 15 percent to better align with recent actual demands). For planning purposes, a conservative supply condition assuming a 12.4, 24.8, 37.1, 49.5, and 61.9 percent reduction in MID treated water supply during consecutive dry years is used here. Available groundwater supply assumed to be 51,500 AFY. Demand reductions between 1 and 11 percent were required to match available supplies during the fourth and fifth years.

Submittal Table 7-4 Wholesale: Multiple Dry Years Supply and Demand Comparison

		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	34,347	39,253	44,160	49,067	53,973
	Demand totals	34,347	39,253	44,160	49,067	53,973
	Difference	0	0	0	0	0
Second year	Supply totals	30,321	34,534	38,748	42,961	47,174
	Demand totals	30,321	34,534	38,748	42,961	47,174
	Difference	0	0	0	0	0
Third year	Supply totals	26,023	29,543	33,063	36,583	40,103
	Demand totals	26,023	29,543	33,063	36,583	40,103
	Difference	0	0	0	0	0
Fourth year	Supply totals	21,503	24,330	27,156	29,983	32,810
	Demand totals	21,503	24,330	27,156	29,983	32,810
	Difference	0	0	0	0	0
Fifth year	Supply totals	16,648	18,781	20,914	23,048	25,181
	Demand totals	16,648	18,781	20,914	23,048	25,181
	Difference	0	0	0	0	0

***Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.**

NOTES: Volumes are in AF. During dry years, the City may have the opportunity to purchase additional water from MID (at a higher rate) or to exchange groundwater for agricultural use for treated surface water from MID. For planning purposes, it is conservatively assumed that supplemental purchase and exchange options are unavailable and that multiple dry year reductions are used (Year 1 = 12.4%, Year 2 = 24.8%, Year 3 = 37.1%, Year 4 = 49.5%, and Year 5 = 61.9%).

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)

2021	Total
Total Water Use	55,216
Total Supplies	81,904
Surplus/Shortfall w/o WSCP Action	26,687
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	26,687
Resulting % Use Reduction from WSCP action	0%

2022	Total
Total Water Use	57,329
Total Supplies	78,435
Surplus/Shortfall w/o WSCP Action	21,106
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	21,106
Resulting % Use Reduction from WSCP action	0%

2023	Total
Total Water Use	59,441
Total Supplies	74,757
Surplus/Shortfall w/o WSCP Action	15,316
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	15,316
Resulting % Use Reduction from WSCP action	0%

2024	Total
Total Water Use	61,554
Total Supplies	70,731
Surplus/Shortfall w/o WSCP Action	9,178
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	9,178
Resulting % Use Reduction from WSCP action	0%

2025	Total
Total Water Use	63,666
Total Supplies	66,433
Surplus/Shortfall w/o WSCP Action	2,767
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	2,767
Resulting % Use Reduction from WSCP action	0%

Submittal Table 8-1
Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range	Shortage Response Actions <i>(Narrative description)</i>
1	Up to 10%	Implement actions per DWR Table 8-2 and DWR Table 8-3.
2	Up to 20%	Implement actions per DWR Table 8-2 and DWR Table 8-3.
3	Up to 30%	Implement actions per DWR Table 8-2 and DWR Table 8-3.
4	Up to 40%	Implement actions per DWR Table 8-2 and DWR Table 8-3.
5	Up to 50%	Implement actions per DWR Table 8-2 and DWR Table 8-3.
6	>50%	Implement actions per DWR Table 8-2 and DWR Table 8-3.
NOTES:		

Submittal Table 8-2: Demand Reduction Actions

Shortage Level	Demand Reduction Actions <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement? <i>For Retail Suppliers Only</i> <i>Drop Down List</i>
1	Expand Public Information Campaign	(see Notes)	City to encourage water users to implement best water management and conservation practices associated with higher shortage levels. This is ongoing and can be expanded in accordance with drought severity.	No
	Landscape - Limit landscape irrigation to specific days	Up to 20% reduction in landscape irrigation	See Table 5 for details.	Yes
	Other	(see Notes)	Car washing restriction - see Table 5 for details.	Yes
	CII - Restaurants may only serve water upon request	Up to 50 gal/day per commercial connection	Restaurants encouraged to do so.	Yes
	Other - Prohibit use of potable water for washing hard surfaces	(see Notes)	See Table 5 for details.	Yes
	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	(see Notes)	Once identified, leaks must be repaired within 24 hours.	Yes
	Offer Water Use Surveys	(see Notes)	These are ongoing and can be expanded in accordance with drought severity.	No
	Provide Rebates on Plumbing Fixtures and Devices	Up to 9,000 gal/yr per participating household		No
	Provide Rebates for Landscape Irrigation Efficiency	(see Notes)		No
Provide Rebates for Turf Replacement	Up to 45 gal/yr per square foot of lawn replaced	No		
2	Landscape - Limit landscape irrigation to specific days	Up to 25% reduction in landscape irrigation	See Table 5 for details.	Yes
	Other	(see Notes)	Car washing restriction - see Table 5 for details.	Yes
3	Landscape - Limit landscape irrigation to specific days	Up to 33% reduction in landscape irrigation	See Table 5 for details.	Yes
	Other	(see Notes)	Car washing restriction - see Table 5 for details.	Yes
	CII - Restaurants may only serve water upon request	50 gal/day per commercial connection		Yes
	Other	Up to 9,000 gal/yr per participating household	Low-flow showerhead retrofit - see Table 5 for details.	Yes
	Water Features - Restrict water use for decorative water features, such as fountains	Public display of conservation (see Notes)	See Table 5 for details.	Yes
	Landscape - Other landscape restriction or prohibition	(see Notes)		Yes
	CII - Lodging establishment must offer opt out of linen service	250-500 gal/day per lodging establishment		Yes
	Increase Frequency of Meter Reading	(see Notes)		No
	Decrease Line Flushing	Depends on extent and frequency of current flushing activities		No
	Reduce System Water Loss	Up to 35% reduction of system losses		No
	Increase Water Waste Patrols	(see Notes)	Increase number of patrols and hours available.	No
4	Landscape - Limit landscape irrigation to specific days	Up to 56% reduction in landscape irrigation	See Table 5 for details.	Yes
	Other	(see Notes)	Car washing restriction - see Table 5 for details.	Yes
	Implement or Modify Drought Rate Structure or Surcharge	(see Notes)		Yes
5	Landscape - Prohibit certain types of landscape irrigation	(see Notes)	Outdoor water use limited to hand or drip irrigation.	Yes
	Other	Up to 200 gal/yr per residential connection	Car washing at car wash facilities only.	Yes
	Other	Up to 9,000 gal/yr per participating household	Low-flow showerhead and toilet retrofit - see Table 5 for details.	Yes
6	Landscape - Other landscape restriction or prohibition	No additional landscape demand.	Moratorium on all new landscaping. Only zero-scape allowed.	Yes
	Moratorium or Net Zero Demand Increase on New Connections	No additional demand.	See Table 5 for details.	Yes

NOTES: These methods boost the effectiveness of other actions and are not quantifiable on their own.

Submittal Table 8-3: Supply Augmentation and Other Actions			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUdata online submittal tool</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>
5	Other Purchases	Up to shortage gap	By temporary arrangement, purchase additional treated surface water supply from MID
NOTES:			

Submittal Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
City of Turlock	Yes	Yes
City of Ceres	Yes	Yes
City of Modesto	Yes	Yes
County Name <i>Drop Down List</i>	60 Day Notice	Notice of Public Hearing
Stanislaus County	Yes	Yes
NOTES:		

Submittal Table 10-1 Wholesale: Notification to Cities and Counties (select one)		
<input type="checkbox"/>	Supplier has notified more than 10 cities or counties in accordance with Water Code Sections 10621 (b) and 10642. Completion of the table below is not required. Provide a separate list of the cities and counties that were notified.	
	Provide the page or location of this list in the UWMP.	
<input checked="" type="checkbox"/>	Supplier has notified 10 or fewer cities or counties. Complete the table below.	
City Name	60 Day Notice	Notice of Public Hearing
City of Turlock	Yes	Yes
City of Ceres	Yes	Yes
City of Modesto	Yes	Yes
County Name <i>Drop Down List</i>	60 Day Notice	Notice of Public Hearing
Stanislaus County	Yes	Yes
NOTES:		

DWR 2020 UWMP Checklist

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Appendix C UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X	X	Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and Overview	Executive Summary
X	X	Chapter 1	10630.5	Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter.	Summary	Executive Summary
X	X	Section 2.2	10620(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.	Plan Preparation	Section 2.1
X	X	Section 2.6	10620(d)(2)	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.	Plan Preparation	Section 2.5.2
X	X	Section 2.6.2	10642	Provide supporting documentation that the water supplier has encouraged 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 and contingency plan.	Plan Preparation	Section 2.5.2
X		Sections 2.6 and 6.1	10631(h)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source.	System Supplies	Section 2.5.1
	X	Section 2.6	10631(h)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Section 2.5.1
X	X	Section 3.1	10631(a)	Describe the water supplier service area.	System Description	Section 3.2
X	X	Section 3.3	10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3
X	X	Section 3.4	10631(a)	Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045.	System Description	Section 3.4
X	X	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the supplier's water management planning.	System Description	Section 3.4.3
X	X	Sections 3.4 and 5.4	10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Section 3.4
X	X	Section 3.5	10631(a)	Describe the land uses within the service area.	System Description	Section 3.5

Appendix C UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X	X	Section 4.2	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2
X	optional	Section 4.2.4	10631(d)(3)(C)	Retail suppliers shall provide data to show the distribution loss standards were met.	System Water Use	Section 4.3
X	X	Section 4.2.6	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws.	System Water Use	Section 4.4
X	X	Section 4.2.6	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System Water Use	Section 4.2.3
X	optional	Section 4.3.2.4	10631(d)(3)(A)	Report the distribution system water loss for each of the 5 years preceding the plan update.	System Water Use	Section 4.3
X	optional	Section 4.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.5
X	X	Section 4.5	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System Water Use	Section 4.6
X		Chapter 5	10608.20(e)	Retail suppliers shall 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.	Baselines and Targets	Sections 5.2 and 5.5
X		Chapter 5	10608.24(a)	Retail suppliers shall meet their water use target by December 31, 2020.	Baselines and Targets	Section 5.6
	X	Section 5.1	10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Section 9.3.6
X		Section 5.2	10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Not Applicable (N/A)
X		Section 5.5	10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5-year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.2
X		Section 5.5 and Appendix E	10608.4	Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form in the SB X7-7 2020 Compliance Form.	Baselines and Targets	Section 5.6 and Appendix F
X	X	Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought.	System Supplies	Sections 6.2, 6.3, 6.4, and 7.1

Appendix C UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X	X	Section 6.1	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, including changes in supply due to climate change.	System Supplies	Sections 6.11 and 7.1.3
X	X	Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System Supplies	Sections 6.2, 6.3, and 6.4
X	X	Section 6.1.1	10631(b)(3)	Describe measures taken to acquire and develop planned sources of water.	System Supplies	Section 6.9
X	X	Section 6.2.8	10631(b)	Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030, 2035, 2040 and optionally 2045.	System Supplies	Section 6.10
X	X	Section 6.2	10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.4
X	X	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has 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.	System Supplies	Section 6.4.1.4
X	X	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System Supplies	Section 6.4.1.1
X	X	Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.4.1.3
X	X	Section 6.2.2.1	10631(b)(4)(B)	For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	System Supplies	Section 6.4.1.4
X	X	Section 6.2.2.4	10631(b)(4)(C)	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	System Supplies	Section 6.4.1.6
X	X	Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Section 6.10
X	X	Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.8
X	X	Section 6.2.5	10633(b)	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.	System Supplies (Recycled Water)	Section 6.6.1
X	X	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.6.1

Appendix C UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X	X	Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.6.4
X	X	Section 6.2.5	10633(e)	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.	System Supplies (Recycled Water)	Section 6.6.4
X	X	Section 6.2.5	10633(f)	Describe the actions 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.	System Supplies (Recycled Water)	Section 6.6.5
X	X	Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.6.5
X	X	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.7
X	X	Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods.	System Supplies (Recycled Water)	Section 6.6.2
X	X	Sections 6.2.8 and 6.3.7	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years.	System Supplies	Section 6.9
X	X	Section 6.4 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a supplier can readily obtain.	System Suppliers, Energy Intensity	Section 6.12
X	X	Section 7.2	10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.1.1
X	X	Section 7.2.4	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.1.4
X	X	Section 7.3	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.1.3
X	X	Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water Supply Reliability Assessment	Section 7.2

Appendix C UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X	X	Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years.	Water Supply Reliability Assessment	Section 7.2.1
X	X	Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water Supply Reliability Assessment	Section 7.1.3
X	X	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.	Water Supply Reliability Assessment	Sections 7.1.3 and 7.2.3
X	X	Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water Supply Reliability Assessment	Section 7.1.2
X		Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water Shortage Contingency Planning	Appendix J
X		Chapter 8	10632(a)(1)	Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP	Water Shortage Contingency Planning	Appendix J (Section 1.0)
X		Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water Shortage Contingency Planning	Appendix J (Section 10.0)
X		Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	Water Shortage Contingency Planning	Appendix J (Section 2.1)
X		Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water Shortage Contingency Planning	Appendix J (Sections 2.2 and 2.3)
X		Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water Shortage Contingency Planning	Appendix J (Section 3.0)
X		Section 8.3	10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Water Shortage Contingency Planning	N/A
X		Section 8.4	10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water Shortage Contingency Planning	Appendix J (Section 4.3)

Appendix C UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X		Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water Shortage Contingency Planning	Appendix J (Section 4.1)
X		Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water Shortage Contingency Planning	Appendix J (Section 4.4)
X		Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions.	Water Shortage Contingency Planning	Appendix J (Section 4.2)
X		Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water Shortage Contingency Planning	Appendix J (Sections 4.1 and 4.3)
X	X	Section 8.4.6	10632.5	The plan shall include a seismic risk assessment and mitigation plan.	Water Shortage Contingency Plan	Appendix J (Section 4.6)
X		Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water Shortage Contingency Planning	Appendix J (Section 5.0)
X		Sections 8.5 and 8.6	10632(a)(5)(B) 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water Shortage Contingency Planning	Appendix J (Section 5.0)
X		Section 8.6	10632(a)(6)	Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water Shortage Contingency Planning	Appendix J (Section 6.0)
X		Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Water Shortage Contingency Planning	Appendix J (Section 7.0)
X		Section 8.7	10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Water Shortage Contingency Planning	Appendix J (Section 7.0)
X		Section 8.7	10632(a)(7)(C)	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water Shortage Contingency Planning	Appendix J (Section 2.1)
X		Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Appendix J (Section 8.0)
X		Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Appendix J (Section 8.0)
X		Section 8.8	10632(a)(8)(C)	Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought	Water Shortage Contingency Planning	Appendix J (Section 8.0)

Appendix C

UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X		Section 8.9	10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water Shortage Contingency Planning	Appendix J (Section 9.0)
X		Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water Shortage Contingency Planning	Appendix J (Section 11.0)
X		Sections 8.12 and 10.4	10635(c)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Sections 8.4 and 10.4
X		Section 8.14	10632(c)	Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 after adopted the plan.	Water Shortage Contingency Planning	Sections 8.4 and 10.4
	X	Sections 9.1 and 9.3	10631(e)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Section 9.3
X		Sections 9.2 and 9.3	10631(e)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Section 9.5
X		Chapter 10	10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan Adoption, Submittal, and Implementation	Section 10.3.1
X	X	Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1.	Plan Adoption, Submittal, and Implementation	Section 10.2
X	X	Section 10.4	10621(f)	Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.	Plan Adoption, Submittal, and Implementation	Section 10.4
X	X	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan.	Plan Adoption, Submittal, and Implementation	Section 10.2.2 and Appendix D
X	X	Section 10.2.2	10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Sections 10.2 and 10.3
X	X	Section 10.3.2	10642	Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.2 and Appendix L
X	X	Section 10.4	10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4

Appendix C UWMP Checklist



Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (For Agency Review Use)
X	X	Section 10.4	10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4
X	X	Sections 10.4.1 and 10.4.2	10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Section 10.4
X	X	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5
X	X	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5
X	X	Section 10.6	10621(c)	If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan Adoption, Submittal, and Implementation	N/A
X	X	Section 10.7.2	10644(b)	If revised, submit a copy of the water shortage contingency plan to DWR within 30 days of adoption.	Plan Adoption, Submittal, and Implementation	Section 10.6



Appendix D

Agency and Public Notices

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November 16, 2020

**Utilities
Department**

1010 Tenth Street
Suites 4500 & 4600
P.O. Box 642
Modesto, CA 95353

Administration
(209) 577-5213
(209) 577-5477 Fax

**Engineering
Services
Division:**

**Construction
Administration**
(209) 577-5452
(209) 577-4302 Fax

**Engineering
Design**
(209) 571-5105
(209) 522-1780 Fax

**Water Resources
Engineering**
(209) 571--5557
(209) 522-1780 Fax

Hearing and Speech
Impaired Only
TDD 1-800-735-2929

Notice of Preparation of 2020 Joint Urban Water Management Plan Update

Dear Interested Stakeholders,

The City of Modesto (“City”) and Modesto Irrigation District (“MID”) are currently in the process of updating a Joint Urban Water Management Plan (“UWMP”) for 2020. The Urban Water Management Planning Act, Water Code Section 10610 et seq., requires every urban water supplier 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 to prepare and adopt an UWMP and periodically update that plan at least every five years. The City and MID must adopt and submit a final plan to the California Department of Water Resources by July 1, 2021.

The UWMP is a planning document and a source document which reports, describes and evaluates water deliveries and uses, water supply sources and conservation efforts. As urban water suppliers, the City and MID coordinate with water management agencies, relevant public agencies and other water suppliers on the preparation of the 2020 Joint UWMP update. The City and MID will be reviewing the current UWMP and will make amendments and updates, as appropriate.

If you wish to contact the City and/or MID about its review process, you may do so by writing to the undersigned.

Sincerely,

Jim Alves
Associate Civil Engineer
City of Modesto
Utilities Department
Water Resources Engineering
Office: 209-571-5557
jalves@modestogov.com

Mr. Josh Foster
Water Treatment Plant Manager
Modesto Irrigation District
P.O. Box 4060
Modesto, CA 95352
(209) 526-7656
josh.foster@mid.org



December 14, 2020

SUBJECT: Preparation of Water Shortage Contingency Plan

Dear interested stakeholder:

The City of Modesto is currently in the process of updating its Water Shortage Contingency Plan (WSCP), also known as the Drought Contingency Plan, as part of its 2020 Joint Urban Water Management Plan development. The WSCP will provide a guide for the City of Modesto to assess water supply availability and mitigate water supply shortages to maintain public health and safety. It provides a plan for response to various water supply shortage conditions.

As an urban water supplier, the City of Modesto coordinates with water management agencies, relevant public agencies and other water suppliers on the preparation of the WSCP updates. The City of Modesto will be reviewing the WSCP and will make amendments and updates, as appropriate.

If you wish to contact the City of Modesto about its review process, you may do so by writing to the undersigned or by email to jalves@modestogov.com.

Sincerely,

Jim Alves
Associate Civil Engineer
Water Resources Engineering
Utilities Department
209-571-5557 (office)
209-834-6396 (cell)

cc: Angela Del Valle
Jeff Daniels
Will Wong



DATE: May 20, 2021

TO: All Interested Parties

FROM: Jim Alves, Associate Civil Engineer, City of Modesto
Josh Foster, Water Treatment Plant Manager, Modesto Irrigation District

SUBJECT: Review of Draft City of Modesto/Modesto Irrigation District 2020 Joint Urban Water Management Plan and Modesto Water Shortage Contingency Plan

In accordance with the Urban Water Management Planning Act (California Water Code Section 10610 et seq.), the City of Modesto and Modesto Irrigation District (MID) are required to update their Joint Urban Water Management Plan (UWMP) to meet the California Department of Water Resources (DWR) requirements for a 2020 UWMP. The City of Modesto is also updating its Water Shortage Contingency Plan (WSCP) to comply with new water code requirements.

The City of Modesto and MID have completed the 2020 UWMP and scheduled public hearings for adoptions on Tuesday, June 8, 2021. At this time we invite your agency to review the Draft 2020 UWMP located on the City website at www.modestogov.com/860 and on the MID website at www.mid.org/water/uwmp. The Modesto WSCP update is also included in this review period.

The public review period will start May 24, 2021 and commence with public hearings on June 8, 2021 when it is anticipated that the Draft 2020 UWMP will be formally adopted by both the Modesto City Council and the Modesto Irrigation District Board of Directors immediately following the respective public hearings. The City of Modesto anticipates adopting the updated WSCP on this date by separate resolution. The public hearings are as follows:

Tuesday, June 8, 2021 at 9:00 A.M. Modesto Irrigation District Board meetings are currently being conducted via webinar for all five Board of Directors, pursuant to Executive Orders signed by Governor Gavin Newsom related to the ongoing COVID-19 pandemic. Members of the public may join the Board meeting by utilizing Zoom's webinar feature or through a phone line provided in the meeting agenda.

Members of the public will continue to have the opportunity to provide public input via the webinar or phone features. Members of the public may also email their comments to the Board Secretary by 3 p.m. on the day prior to the Board meeting. Public comment can be emailed to angela.cartisano@mid.org or board@mid.org. All public comments submitted by email on time will be read during the MID Board meeting during the public input section of the agenda. Instructions for attending the MID Board Meeting can be found on the following link: <https://www.mid.org/about/board/webinar-participation.html>.

Tuesday, June 8, 2021 at 5:30 P.M. at the City of Modesto Council Chambers, Basement Level, located at 1010 10th Street, Modesto and will open to the public in a limited capacity. Please note that since capacity in the hearing chambers will be limited, you are encouraged to participate in this meeting by observing a livestream of the meeting at <http://media.modestogov.com> or participating virtually by Zoom Video Conferencing and

Telephone published with the agenda and by submitting your comment via email to ccmeetings@modestogov.com.

If you choose to attend the meeting in person, you will be required to wear a face covering and maintain appropriate social distancing, including maintaining a 6-foot distance between yourself and other individuals.

Mr. Jim Alves
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Mr. Josh Foster
Water Treatment Plant Manager
Modesto Irrigation District
P.O. Box 4060
Modesto, CA 95352
(209) 526-7656
josh.foster@mid.org

Sincerely,



Mr. Jim Alves
City of Modesto

Sincerely,



Mr. Josh Foster
Modesto Irrigation District

THANK YOU for your legal submission!

Your legal has been submitted for publication. Below is a confirmation of your legal placement. You will also receive an email confirmation.

ORDER DETAILS**Order Number:**

IPL0024872

Order Status:

Submitted

Classification:

Legals & Public Notices

Package:

MOD - Legal Ads 2+x

Final Cost:

920.80

Payment Type:

Account Billed

User ID:

IPL0019599

PREVIEW FOR AD NUMBER IPL00248720

**NOTICE OF PUBLIC HEARINGS
UPDATE OF URBAN WATER MANAGEMENT PLAN AND
WATER SHORTAGE CONTINGENCY PLAN**

Public notice is hereby given that public hearings will be held before the City Council of the City of Modesto and the Board of Directors of the Modesto Irrigation District for the purpose of considering the following:

Receive public comment on the Draft City of Modesto/Modesto Irrigation District 2020 Joint Urban Water Management Plan (UWMP), as required by the Urban Water Management Planning Act (California Water Code Section 10610 et seq.). Receive public comments on the Draft Modesto Water Shortage Contingency Plan (WSCP). The Draft UWMP which includes the WSCP is available for public review on the City of Modesto Utilities Department website at <https://www.modestogov.com/860> and the Modesto Irrigation District website at <http://www.mid.org/water/uwmp>.

A public hearing will be held by the Council of the City of Modesto on **Tuesday, June 8, 2021, at 5:30 p.m.** in the Chambers, Basement Level, Tenth Street Place, 1010 10th Street, Modesto, California and will be open to the public in a limited **capacity due to the COVID-19 pandemic**. Please note that since capacity in the hearing chambers will be limited, you are encouraged to participate in this meeting by observing a livestream of the meeting at <http://media.modestogov.com> or participating virtually by Zoom Video Conferencing and Telephone published with the agenda and by submitting your comment via email to ccmeetings@modestogov.com.

If you choose to attend the meeting in person, **you will be required to wear a face covering and maintain appropriate social distancing**, including maintaining a 6-foot distance between yourself and other individuals.

A public hearing will be held by the Modesto Irrigation District Board on **Tuesday, June 8, 2021 at 9:00 A.M.** Board meetings are **currently being conducted via webinar** for all five Board of Directors, pursuant to Executive Orders signed by Governor Gavin Newsom related to the ongoing COVID-19 pandemic. Members of the public may join the Board meeting by utilizing Zoom's webinar feature or through a phone line provided in the meeting agenda.

Members of the public will continue to have the opportunity to provide public input via the webinar or phone features. Members of the public may also email their comments to the Board Secretary by 3 p.m. on the day prior to the Board meeting. Public comment can be emailed to angela.cartisano@mid.org or board@mid.org. All public comments submitted by email on time will be read during the MID Board meeting in the public input section of the agenda. Instructions for attending the MID Board Meeting can be found on the following link: <https://www.mid.org/about/board/webinar-participation.html>.

It is anticipated that the Draft 2020 UWMP will be formally adopted on June 8, 2021 by both the Modesto Irrigation District Board of Directors and Modesto City Council and that the Modesto WSCP will be adopted on June 8, 2021 on separate resolution by the Modesto City Council.

W00000000
Publication Dates

[<< Click here to print a printer friendly version >>](#)

ACCOUNT INFORMATION

CITY OF MODESTO CITY CLERK IP
PO BOX 642
MODESTO, CA 95353-0642
209-577-5396
APVENDORS@MODESTOGOV.COM
CITY OF MODESTO CITY CLERK

TRANSACTION REPORT**Date**

May 19, 2021 7:56:37 PM EDT

Amount:

920.80

SCHEDULE FOR AD NUMBER IPL00248720

May 24, 2021
The Modesto Bee
May 31, 2021
The Modesto Bee

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Appendix E

Water Loss Audits

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AWWA Free Water Audit Software v5.0

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This spreadsheet-based water audit tool is designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. It provides a "top-down" summary water audit format, and is not meant to take the place of a full-scale, comprehensive water audit format.

Auditors are strongly encouraged to refer to the most current edition of AWWA M36 Manual for Water Audits for detailed guidance on the water auditing process and targetting loss reduction levels

The spreadsheet contains several separate worksheets. Sheets can be accessed using the tabs towards the bottom of the screen, or by clicking the buttons below.

Please begin by providing the following information

Name of Contact Person:

Email Address:

Telephone | Ext.:

Name of City / Utility:

City/Town/Municipality:

State / Province:

Country:

Year: Financial Year

Start Date: Enter MM/YYYY numeric format

End Date: Enter MM/YYYY numeric format

Audit Preparation Date:

Volume Reporting Units:

PWSID / Other ID:

The following guidance will help you complete the Audit

All audit data are entered on the [Reporting Worksheet](#)

- Value can be entered by user
- Value calculated based on input data
- These cells contain recommended default values

Use of Option (Radio) Buttons: Pcnt: Value:

Select the default percentage by choosing the option button on the left

To enter a value, choose this button and enter a value in the cell to the right

The following worksheets are available by clicking the buttons below or selecting the tabs along the bottom of the page

<p><u>Instructions</u></p> <p>The current sheet. Enter contact information and basic audit details (year, units etc)</p>	<p><u>Reporting Worksheet</u></p> <p>Enter the required data on this worksheet to calculate the water balance and data grading</p>	<p><u>Comments</u></p> <p>Enter comments to explain how values were calculated or to document data sources</p>	<p><u>Performance Indicators</u></p> <p>Review the performance indicators to evaluate the results of the audit</p>	<p><u>Water Balance</u></p> <p>The values entered in the Reporting Worksheet are used to populate the Water Balance</p>	<p><u>Dashboard</u></p> <p>A graphical summary of the water balance and Non-Revenue Water components</p>
<p><u>Grading Matrix</u></p> <p>Presents the possible grading options for each input component of the audit</p>	<p><u>Service Connection Diagram</u></p> <p>Diagrams depicting possible customer service connection line configurations</p>	<p><u>Definitions</u></p> <p>Use this sheet to understand the terms used in the audit process</p>	<p><u>Loss Control Planning</u></p> <p>Use this sheet to interpret the results of the audit validity score and performance indicators</p>	<p><u>Example Audits</u></p> <p>Reporting Worksheet and Performance Indicators examples are shown for two validated audits</p>	<p><u>Acknowledgements</u></p> <p>Acknowledgements for the AWWA Free Water Audit Software v5.0</p>

If you have questions or comments regarding the software please contact us via email at: wlc@awwa.org



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association.
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? Click to access definition
+ Click to add a comment

Water Audit Report for: City of Modesto (CA 5010010)
Reporting Year: 2016/2017 7/2016 - 6/2017

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 (n/a or 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

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

WATER SUPPLIED

----- Enter grading in column 'E' and 'J' ----->

Volume from own sources:	+	?	5	19,490.691	acre-ft/yr
Water imported:	+	?	5	26,471.177	acre-ft/yr
Water exported:	+	?	n/a	0.000	acre-ft/yr

Master Meter and Supply Error Adjustments

Pcnt:	+	?	3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		acre-ft/yr
Value:	+	?	3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		acre-ft/yr
	+	?		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 45,961.868 acre-ft/yr

AUTHORIZED CONSUMPTION

Billed metered:	+	?	6	38,328.459	acre-ft/yr
Billed unmetered:	+	?	n/a	0.000	acre-ft/yr
Unbilled metered:	+	?	n/a	0.000	acre-ft/yr
Unbilled unmetered:	+	?	5	114.905	acre-ft/yr

Click here: ?
for help using option buttons below

Pcnt: Value: 114.905 acre-ft/yr

Use buttons to select percentage of water supplied
OR
value

AUTHORIZED CONSUMPTION: 38,443.364 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption)

7,518.504 acre-ft/yr

Apparent Losses

Unauthorized consumption: 114.905 acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	+	?	3	782.213	acre-ft/yr
Systematic data handling errors:	+	?		95.821	acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 992.939 acre-ft/yr

Pcnt: 0.25% Value:

2.00%

0.25%

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 6,525.565 acre-ft/yr

WATER LOSSES: 7,518.504 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 7,633.409 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+	?	7	868.0	miles
Number of <u>active AND inactive</u> service connections:	+	?	7	72,015	
Service connection density:	?			83	conn./mile main

Are customer meters typically located at the curbstops or property line? Yes

Average length of customer service line: 60.0 (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 60.0 psi

COST DATA

Total annual cost of operating water system:	+	?	10	\$47,309,942	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+	?	9	\$1.79	\$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	+	?	7	\$280.41	\$/acre-ft <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 61 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: Water imported
- 2: Volume from own sources
- 3: Customer metering inaccuracies

AWWA Free Water Audit Software v5.0

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This spreadsheet-based water audit tool is designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. It provides a "top-down" summary water audit format, and is not meant to take the place of a full-scale, comprehensive water audit format.

Auditors are strongly encouraged to refer to the most current edition of AWWA M36 Manual for Water Audits for detailed guidance on the water auditing process and targetting loss reduction levels

The spreadsheet contains several separate worksheets. Sheets can be accessed using the tabs towards the bottom of the screen, or by clicking the buttons below.

Please begin by providing the following information

Name of Contact Person:

Email Address:

Telephone (incl Ext.):

Name of City / Utility:

City/Town/Municipality:

State / Province:

Country:

Year:

Start Date: Enter MM/YYYY numeric format

End Date: Enter MM/YYYY numeric format

Audit Preparation Date:

Volume Reporting Units:

PWSID / Other ID:

The following guidance will help you complete the Audit

All audit data are entered on the [Reporting Worksheet](#)

- Value can be entered by user
- Value calculated based on input data
- These cells contain recommended default values

Use of Option (Radio) Buttons: 0.25%

Select the default percentage by choosing the option button on the left

To enter a value, choose this button and enter a value in the cell to the right

The following worksheets are available by clicking the buttons below or selecting the tabs along the bottom of the page

<p><u>Instructions</u></p> <p>The current sheet. Enter contact information and basic audit details (year, units etc)</p>	<p><u>Reporting Worksheet</u></p> <p>Enter the required data on this worksheet to calculate the water balance and data grading</p>	<p><u>Comments</u></p> <p>Enter comments to explain how values were calculated or to document data sources</p>	<p><u>Performance Indicators</u></p> <p>Review the performance indicators to evaluate the results of the audit</p>	<p><u>Water Balance</u></p> <p>The values entered in the Reporting Worksheet are used to populate the Water Balance</p>	<p><u>Dashboard</u></p> <p>A graphical summary of the water balance and Non-Revenue Water components</p>
<p><u>Grading Matrix</u></p> <p>Presents the possible grading options for each input component of the audit</p>	<p><u>Service Connection Diagram</u></p> <p>Diagrams depicting possible customer service connection line configurations</p>	<p><u>Definitions</u></p> <p>Use this sheet to understand the terms used in the audit process</p>	<p><u>Loss Control Planning</u></p> <p>Use this sheet to interpret the results of the audit validity score and performance indicators</p>	<p><u>Example Audits</u></p> <p>Reporting Worksheet and Performance Indicators examples are shown for two validated audits</p>	<p><u>Acknowledgements</u></p> <p>Acknowledgements for the AWWA Free Water Audit Software v5.0</p>

If you have questions or comments regarding the software please contact us via email at: wlc@awwa.org



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association.
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?	Click to access definition
+	Click to add a comment

Water Audit Report for: Modesto Irrigation District (CA5010038)
Reporting Year: 2020 1/2020 - 12/2020

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 (n/a or 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

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

WATER SUPPLIED

----- Enter grading in column 'E' and 'J' ----->

Volume from own sources:	+	?	10	26,105.000	acre-ft/yr
Water imported:	+	?	10		acre-ft/yr
Water exported:	+	?	10		acre-ft/yr

Master Meter and Supply Error Adjustments

Pcnt:	+	?	10	0.000	acre-ft/yr
Value:					acre-ft/yr
Pcnt:	+	?	10		acre-ft/yr
Value:					acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 26,105.000 acre-ft/yr

AUTHORIZED CONSUMPTION

Billed metered:	+	?	10	26,053.000	acre-ft/yr
Billed unmetered:	+	?	10		acre-ft/yr
Unbilled metered:	+	?	10		acre-ft/yr
Unbilled unmetered:	+	?	10	0.001	acre-ft/yr

Click here: ? for help using option buttons below

Pcnt:	+	?	10	0.001	acre-ft/yr
Value:					acre-ft/yr

Use buttons to select percentage of water supplied
OR
value

AUTHORIZED CONSUMPTION: 26,053.001 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption)

51.999 acre-ft/yr

Apparent Losses

Unauthorized consumption:	+	?	8	0.020	acre-ft/yr
Customer metering inaccuracies:	+	?	8	0.000	acre-ft/yr
Systematic data handling errors:	+	?	9	0.010	acre-ft/yr

Pcnt:	+	?	10	0.020	acre-ft/yr
Value:					acre-ft/yr
Pcnt:	+	?	10		acre-ft/yr
Value:					acre-ft/yr

Apparent Losses: 0.030 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 51.969 acre-ft/yr

WATER LOSSES: 51.999 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 52.000 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+	?	10	31.0	miles
Number of <u>active AND inactive</u> service connections:	+	?	10	41	
Service connection density:	+	?	10	1	conn./mile main

Are customer meters typically located at the curbside or property line? No (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: 10 ft

Average operating pressure: 5 60.0 psi

COST DATA

Total annual cost of operating water system:	+	?	10	\$8,873,561	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+	?	10	\$0.95	\$/1000 gallons (US)
Variable production cost (applied to Real Losses):	+	?	7		\$/acre-ft

Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 93 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: Variable production cost (applied to Real Losses)
- 2: Customer metering inaccuracies
- 3: Unauthorized consumption



Appendix F

SB X7-7 Compliance Forms

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SB X7-7 Table 0: Units of Measure Used in 2020 UWMP*
(select one from the drop down list)

Acre Feet

**The unit of measure must be consistent throughout the UWMP, as reported in Submittal Table 2-3.*

SB X7-7 Table 2: Method for 2020 Population Estimate

Method Used to Determine 2020 Population (may check more than one)	
<input checked="" type="checkbox"/>	1. Department of Finance (DOF) or American Community Survey (ACS)
<input checked="" type="checkbox"/>	2. Persons-per-Connection Method
<input type="checkbox"/>	3. DWR Population Tool
<input type="checkbox"/>	4. Other DWR recommends pre-review

NOTES: Where DOF data are not available (e.g., Turlock and Ceres (Walnut Manor)), the population has been estimated based on a count of existing dwelling units served by the City (from aerial photographs) and an estimated housing density (people per dwelling unit) (based on Census data for the surrounding communities).

SB X7-7 Table 3: 2020 Service Area Population	
2020 Compliance Year Population	
2020	270,974
NOTES: Population from Hickman and Waterford are excluded, as these areas are no longer served by the City of Modesto.	

SB X7-7 Table 4: 2020 Gross Water Use

Compliance Year 2020	2020 Volume Into Distribution System <i>This column will remain blank until SB X7-7 Table 4-A is completed.</i>	2020 Deductions					2020 Gross Water Use
		Exported Water *	Change in Dist. System Storage* (+/-)	Indirect Recycled Water <i>This column will remain blank until SB X7-7 Table 4-B is completed.</i>	Water Delivered for Agricultural Use*	Process Water <i>This column will remain blank until SB X7-7 Table 4-D is completed.</i>	
	53,104	-	-	-	-	-	53,104

* Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES: Volumes are in AF.

**SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s),
Meter Error Adjustment**

Complete one table for each source.

Name of Source	Treated Surface Water from MID		
This water source is (check one):			
<input type="checkbox"/>	The supplier's own water source		
<input checked="" type="checkbox"/>	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System ¹	Meter Error Adjustment ² Optional (+/-)	Corrected Volume Entering Distribution System
	25,983	-	25,983
¹ <i>Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.</i> ² <i>Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document</i>			
NOTES: Volumes are in AF.			

**SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s)
Meter Error Adjustment**

Complete one table for each source.

Name of Source	Groundwater		
This water source is (check one):			
<input checked="" type="checkbox"/>	The supplier's own water source		
<input type="checkbox"/>	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System ¹	Meter Error Adjustment ² Optional (+/-)	Corrected Volume Entering Distribution System
	27,121		27,121
¹ <i>Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.</i> ² <i>Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document</i>			
NOTES: Volumes are in AF.			

SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)

2020 Gross Water <i>Fm SB X7-7 Table 4</i>	2020 Population <i>Fm SB X7-7 Table 3</i>	2020 GPCD
53,104	270,974	175

NOTES: Volumes are in AF and represent potable water use only.

SB X7-7 Table 9: 2020 Compliance

Actual 2020 GPCD ¹	Optional Adjustments to 2020 GPCD					2020 Confirmed Target GPCD ^{1,2}	Did Supplier Achieve Targeted Reduction for 2020?
	Enter "0" if Adjustment Not Used			TOTAL Adjustments ¹	Adjusted 2020 GPCD ¹ <i>(Adjusted if applicable)</i>		
	Extraordinary Events ¹	Weather Normalization ¹	Economic Adjustment ¹				
175	-	-	-	-	175	228	YES

¹ All values are reported in GPCD

² **2020 Confirmed Target GPCD** is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F.

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Appendix G

Amended and Restated Treatment and Delivery Agreement Between Modesto Irrigation District and City of Modesto

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Amended and Restated Treatment and Delivery Agreement

Between

Modesto Irrigation District and City of Modesto

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TABLE OF CONTENTS

1. PARTIES 1

2. RECITALS..... 1

2.1. District Formation and General Purposes 1

2.2. [NOT USED] 1

2.3. Water Management Study..... 2

2.4. Problems of Reliance on Groundwater 2

2.5. Water Rights. 2

2.6. Study Recommendation..... 2

2.7. Project Expansion 2

2.8. Environmental Clearance 2

2.9. Use of Available Water to Carry Out Recommendations of
the Urban Water Management Plan..... 3

2.10. Enterprise Fund. 3

2.11. Long Term Water Supply 3

2.12. Conservation. 3

2.13. Groundwater..... 3

2.14. DEW Acquisition..... 3

2.15. Purpose of Agreement 3

3. AMENDMENT AND RESTATEMENT OF 1992 AGREEMENT 4

4. DEFINITIONS..... 4

4.1. Advances 4

4.2. Advisory Committees. 4

4.3.	Agreement	4
4.4.	1992 Agreement	4
4.5.	Approvals	4
4.6.	Board	4
4.7.	Chief Executive Officers.....	4
4.8.	City.....	4
4.9.	City Gross Water Revenues	4
4.10.	City Municipal Water System.....	5
4.11.	Commercial Operation Date	5
4.12.	Commercial Operation Phase.....	5
4.13.	Construction Phase.....	5
4.14.	Debt Service	5
4.15.	Debt Service Reserve Fund	5
4.16.	Design Phase.	5
4.17.	DEW	5
4.18.	District.....	5
4.19.	District Interest Rate.	5
4.20.	District’s Electrical Service Area Boundary.....	6
4.21.	District’s Irrigation District Boundary.....	6
4.22.	Domestic Water Year.....	6
4.23.	Finance Committee.	6
4.24.	Financing.....	6
4.25.	First Expansion Facilities.....	6
4.26.	Fixed Costs.....	6
4.27.	Fixed Financing	6
4.28.	Initial Amount.....	6
4.29.	Initial Facilities.	6
4.30.	Maximum Annual Debt Service	6
4.31.	Modifications	7
4.32.	MRWTP.....	7

4.33.	Next Turnout.....	7
4.34.	Other City Water.....	7
4.35.	Parity Debt.....	7
4.36.	Parties.....	7
4.37.	Period.....	7
4.38.	Phases.....	7
4.39.	Policy Committee.....	7
4.40.	Prior Agreement.....	7
4.41.	Project.....	7
4.42.	Project Manager.....	7
4.43.	Project Observer.....	7
4.44.	Property Cost.....	8
4.45.	[NOT USED].....	8
4.46.	Raw Water.....	8
4.47.	Raw Water Charge.....	8
4.48.	Reserve and Contingency Fund.....	8
4.49.	SEIR.....	8
4.50.	Service Area.....	8
4.51.	Surface Water Service Area.....	8
4.52.	Study.....	8
4.53.	Sunk Costs.....	8
4.54.	Technical Committee.....	8
4.55.	Termination.....	8
4.56.	Test Period.....	8
4.57.	TIC.....	9
4.58.	Treated Water.....	9
4.59.	Trustee.....	9
4.60.	Urban Water Management Plan.....	9
4.61.	Variable Financing.....	9
4.62.	Water Shortage Condition.....	9
4.63.	Year.....	9

5.	TERMINATION OF PRIOR AGREEMENT	9
6.	PROJECT AND FIRST EXPANSION FACILITIES	9
6.1.	Obligations of District and Expansion.....	9
6.2.	First Expansion Facilities Phases	10
6.3.	Area to be Served by Project.....	10
6.4.	Ownership, Assignment, and Sale of Project Water To Others.....	11
6.4.1.	District Sole Owner.....	11
6.4.2.	Sale, Transfer, or Assignment.....	11
6.4.3.	Assignment of Management and Operations	11
6.4.4.	Interest of City	11
6.4.5.	Assignment By City.....	11
6.4.6.	Sale of Treated Water to Other Entities.....	12
6.5.	Disposition of Plans	12
6.6.	Cooperation in Proceeding with First Expansion Facilities.....	12
7.	DESIGN PHASE	12
7.1.	Design Phase Work	12
7.1.1.	District to Obtain Approvals	13
7.1.2.	Property Interests	13
7.1.3.	Preliminary and Final Design	13
7.1.4.	Preliminary Financing Work.....	13
7.2.	Costs for Design Phase to be Advanced	13
7.3.	Reimbursement of Advanced Design Phase Costs	13
8.	CONSTRUCTION PHASE	14
8.1.	Finalization of Financing and Construction.....	14

8.2.	First Expansion Facilities Observer	14
9.	COMMERCIAL OPERATION PHASE.....	14
9.1.	Commercial Operation Phase.....	14
9.2.	Test Quantity.....	14
9.3.	District Obligations During Commercial Operation Phase	15
9.4.	Standards of Treated Water.....	15
9.5.	Obligation of City to Take Water	15
9.6.	Cooperation in Operation.....	15
9.7.	Expansion of Groundwater Capacity and Commingling of Groundwater	15
9.8.	Exchange of Groundwater for Treated Water.....	15
9.8.1.	Delivery.....	16
9.8.2.	Costs.....	16
9.8.3.	Records.....	16
9.8.4.	Use of District Pumps	16
9.9.	Force Majeure	16
10.	ADVANCE OF PRE-CONSTRUCTION COSTS	17
10.1.	Advances by District, City, Sunk Costs, and Approval of Other Costs	17
10.2.	Reimbursement	18
10.3.	Interest on Advances	18
10.4.	Costs of Studies and Negotiation Borne by Each Party.....	18
11.	DRAINAGE.....	18
11.1.	Responsibility	18
11.2.	Indemnification.....	18

12.	RESERVE FUNDS	19
12.1.	Reserve and Contingency Fund	19
12.1.1.	Additional Deposits to Reserve and Contingency Fund	19
12.1.2.	Withdrawals From Reserve and Contingency Fund	19
12.1.2.A.	Unbudgeted Items	19
12.1.2.B.	Costs in Excess of Budget Amount	19
12.1.2.C.	Budgeted Items.....	19
12.1.3.	Increase or Decrease in Reserve and Contingency Fund	19
12.1.4.	Reserve and Contingency Fund Advances	19
12.1.5.	Interest on Reserve and Contingency Fund	20
12.1.6.	Reports	20
12.2.	Debt Service Reserve Fund.....	20
12.2.1.	Withdrawals From Debt Service Reserve Fund and Replenishment of Debt Service Reserve Fund	20
12.2.2.	Interest on Debt Service Reserve Fund.....	21
12.2.3.	Final Disposition.....	21
12.2.4.	No Duplication.....	21
13.	FINANCING AND TAKE OR PAY PROVISION	21
13.1.	District to Arrange Financing, Take or Pay Provision, Excuse from Take or Pay	21
13.1.1.	Excuse, 50 Percent of Contracted Water Not Delivered.....	22
13.1.2.	Excuse, 50 Percent of Water Supply.....	22
13.1.3.	Excuse, 80 Percent of Water Treatment Plant Destroyed	22
13.2.	New Period of Excuse.....	22
14.	PAYMENT FOR WATER BY CITY	22

14.1.	Debt Service	22
14.2.	Raw Water Charge	23
14.2.1.	Agricultural Allocation in Acre Feet	23
14.2.2.	Acre Foot Charge	24
14.2.3.	Irrigation Season not Concurrent with Year	24
14.2.4.	Raw Water Charge not Applicable	24
14.2.5.	Change in Method for Charging for Agricultural Water	24
14.2.6.	Measurement of Raw Water	24
14.3.	Operation and Maintenance Costs	25
14.4.	Administrative Services	25
14.5.	Insurance	25
14.6.	Electric Energy.....	25
14.7.	Other Payments and Costs and Deductions From Payments and Costs	25
14.8.	Payments by City to District for Raw Water Only	25
14.9.	First Expansion Facilities.....	26
15.	TIME AND MANNER OF PAYMENT BY CITY TO DISTRICT	26
15.1.	Monthly Payments	26
15.2.	Proration.....	26
15.3.	Calculation of Monthly Payments	26
15.4.	Late Payments.....	27
16.	GENERAL PAYMENT PROVISIONS	27
16.1.	Percentages [NOT USED]	27
16.2.	Records.....	27
16.3.	Security for Payment, Rate Covenant by City.....	27
16.3.1.	[NOT USED]	27
16.3.2.	Security from City.....	27
16.3.2.A.	Rates and Charges.....	27

16.3.2.B. Pledge	28
16.3.2.C. Similar Covenant	28
16.3.2.D. Parity Debt	28
16.3.2.E. Subordinated Debt	28
16.3.2.F. Amendment To Obtain Financing	28
16.3.2.G. Alternative Security	28
17. DELIVERY OF WATER	29
17.1. Water Supply to City.....	29
17.2. Formula for Water Allocation.....	29
17.3. Treated Water Delivery Schedule	30
17.4. Adjustment of Curtailment	31
17.5. Exchange for Groundwater	31
17.6. Water to Remain in District’s Irrigation District Boundary	31
17.7. Conjunctive Use	32
18. PROJECT MANAGEMENT	32
18.1. District’s Board of Directors.....	32
18.1.1. Final Decisions	32
18.1.2. Project Manager	32
18.2. Duties of Project Manager	32
18.2.1. Implementation of this Agreement	32
18.2.2. Notice to Advisory Committees.....	32
18.2.3. Specific Duties	32
18.2.3.A. Work Plans	33
18.2.3.B. Progress Reports	33
18.2.3.C. Administering Contracts	33
18.2.3.D. Public Information	33
18.2.3.E. Recommending Consultants	33

18.2.3.F.	Financial Report	33
18.2.3.G.	Emergency Plans	33
18.2.3.H.	Other Duties	33
18.3.	City Approval of First Expansion Facilities Milestones	33
18.3.1.	Engineering Services	34
18.3.2.	Review of Preliminary Design	34
18.3.3.	Acceptance of Final Design	34
18.3.4.	Construction Contracts	34
18.4.	Processing Milestone Approvals	34
18.5.	Project Financing Approvals	34
18.5.1.	Fixed Financing	35
18.5.2.	Variable Financing	35
18.5.2.A.	Initial Financing	35
18.5.2.B.	Conversion During Construction Phase	36
18.5.2.C.	Conversion Upon Commercial Operation	36
18.6.	Advisory Committees	36
18.6.1.	Policy Committee	36
18.6.1.A.	First Expansion Facilities Milestones	36
18.6.1.B.	Budget Functions	36
18.6.1.C.	Major Decisions and Design Changes (In Excess of \$100,000)	37
18.6.2.	Technical Committee	37
18.6.2.A.	Consultation With Project Manager	37
18.6.2.B.	Recommendations to Policy Committee	37
18.6.2.C.	Advice Relative to Minor Decisions (\$5,000 to \$100,000)	37
18.7.	Budget	38
18.7.1.	Budget Principles	38
18.7.2.	Budget Process	38
18.7.2.A.	Preparation	38
18.7.2.B.	Technical Committee Review and Recommendation	38

18.7.2.C. Information to City.....	38
18.7.2.D. Policy Committee Review	39
18.7.2.E. Consideration of Budget by Policy Committee	39
18.7.2.F. Revision of Budget, Alternate Budget and Report	39
18.7.3. Public Hearing.....	40
18.7.4. Appearance at Hearing.....	40
18.7.5. Increase	40
19. LIABILITY AND INSURANCE	40
19.1. Insurance, General	40
19.1.1. Project General Liability.....	40
19.1.2. Commercial Automobile Liability Insurance	40
19.1.3. Umbrella or Excess Liability Insurance.....	40
19.1.4. Workers' Compensation Insurance	41
19.1.5. Property Insurance	41
19.1.5.A. Course of Construction Insurance.....	41
19.1.5.B. Buildings and Equipment Insurance	41
19.1.6. Insurance Provisions	41
19.1.6.A. Cancellation.....	41
19.1.6.B. City to be Named.....	41
19.1.6.C. Special Limitations.....	41
19.1.6.D. Approval by City.....	42
19.1.7. Insurance Provision in All Contracts	42
19.2. Indemnification and Hold Harmless	42
19.2.1. Indemnification by District	42
19.2.2. Cost of Litigation.....	42
19.2.3. Notification	42
19.2.4. Objections	42
19.3. Third Party Claims Not Covered by Insurance; Willful	43
19.4. Third Party Claims Not Covered by Insurance; Ordinary	43

19.5.	Claims Between Parties	44
19.6.	Workers' Compensation Claims	44
19.7.	Replacement of Pro Rata Rights of Contribution	44
19.8.	Defense by Modesto City Attorney	44
20.	RELATIONSHIP OF PARTIES	45
21.	GENERAL PROVISIONS GOVERNING AGREEMENT	45
21.1.	Severance	45
21.2.	Waiver	45
21.3.	Counterparts	45
21.4.	Supporting Resolutions	45
21.5.	No Rights in Other Parties	45
21.6.	Amendment	46
21.7.	Obligations Prior to Termination	46
21.8.	Captions	46
21.9.	Additional Documents	46
21.10.	Governing Law	46
21.11.	Shall and May	46
21.12.	Non-Discrimination	46
22.	TERM AND TERMINATION	46
22.1.	Execution by Both Parties	46
22.1.1.	Superseded by Other Agreement	46
22.1.2.	Termination by Mutual Agreement	46
22.2.	Termination of Participation in First Expansion Facilities	
	Prior to Financing	46

23. UNDERTAKINGS [Not Used]47

24. WATER RIGHTS AND OWNERSHIP47

25. NOTICES49

Exhibit A – Summary of “Sunk Costs” for First Expansion Facilities

Exhibit B – Map of District Project Facilities

AMENDED AND RESTATED
TREATMENT AND DELIVERY AGREEMENT

AMONG

MODESTO IRRIGATION DISTRICT AND CITY OF MODESTO

1. PARTIES.

The Parties to this Amended and Restated Treatment and Delivery Agreement are Modesto Irrigation District, a California irrigation district, and City of Modesto, a California municipal corporation and charter city, who agree as follows:

2. RECITALS.

This Agreement is made with reference to the following facts and circumstances, among others:

2.1. District Formation and General Purposes. District was formed more than 100 years ago for the purpose of providing irrigation water to serve the needs of agriculture. To that end, District has perfected water rights sufficient to meet those needs. District's development of its water rights and its agricultural irrigation delivery system, and the careful attention to the needs of District's agricultural water users, have been prominent in making Stanislaus County one of the world's foremost agricultural areas. In recent years, population growth within District's boundaries has reduced the irrigated acreage while increasing the demand for municipal uses of water. The Parties desire to put to beneficial municipal use for the inhabitants of District certain amounts of surface water to which District has rights. In doing so, the Parties shall be mindful of the great importance of District's water rights, and the significant role of agriculture within District. The area to be served with water pursuant to this Agreement is within District's Irrigation District Boundary. The water to be supplied by District pursuant to this Agreement is not surplus water, but rather is water which has historically been put to beneficial agricultural use within District and is now necessary for municipal use within District.

2.2. [Not Used]

2.3. Water Management Study. District and City authorized, received, and accepted the Study, which was completed in 1984.

2.4. Problems of Reliance on Groundwater. The Study found, in part, that existing groundwater sources of City are limited and supplies are declining, and that a continued decline in the quantity of groundwater will result in a gradual degradation of the quality of the groundwater. This degradation of quality, combined with on-going Modifications to State and Federal drinking water standards, will make it increasingly difficult to meet domestic water supply demands solely through the use of groundwater.

2.5. Water Rights. District has certain water rights with respect to the waters of the Tuolumne River.

2.6. Study Recommendation. The Water Management Study recommended, in part, that City and DEW contract with District for treated surface water to supplement its groundwater supplies. This resulted in construction of the existing surface water treatment plant located at the Modesto Reservoir. The design, financing, construction, operation and maintenance of the water treatment plant was implemented pursuant to the Treatment and Delivery Agreement Among Modesto Irrigation District, City of Modesto, and Del Este Water Company that was approved in 1992.

2.7. Projection Expansion. Pursuant to the 1992 Agreement, District designed and constructed, and now owns, operates and maintains, the initial Project facilities, including the Modesto Regional Water Treatment Plant, which has a rated treatment capacity of 30 million gallons of treated water per day (mgd). The 1992 Agreement contemplates that the parties may agree at some time to expand the Project up to a capacity of 60 mgd.

2.8. Environmental Clearance. District, with the assistance of its environmental consultant, completed a final environmental impact report for the Initial Facilities and, on April 17, 1990, the Board of Directors of District adopted Resolution 90-50 which, among other things, certified the EIR and caused a Notice of Determination to proceed with the Project to be filed in accordance with the California Environmental Quality Act and the CEQA Guidelines. The parties prepared a Subsequent Environmental Impact Report on the First Expansion Facilities, and District and City cooperated as CEQA co-lead agencies of the preparation of the SEIR, which addresses the First Expansion Facilities and this Amended and Restated Agreement. The SEIR also studies other City water system improvements to be financed, designed,

constructed and operated by City outside of this Agreement. The parties have certified the SEIR and made appropriate CEQA findings. (See District Resolution No. 2005-92, pertaining to SEIR Certification; District Resolution No. 2005-158, pertaining to CEQA Findings; City Resolution No. 2005-378, pertaining to the SEIR Certification; City Resolution No. 2005-515, pertaining to the CEQA Findings.)

2.9 Use of Available Water to Carry Out Recommendations of the Urban Water Management Plan. It is in the best interests of the Parties and their respective water users to utilize District's available water to expand the present capacity of the MRWTP to provide treated water to City in an environmentally acceptable manner, which is not injurious to agricultural water users or any other interests of District.

2.10. Enterprise Fund. It is the intention of the Parties that, except as specifically provided otherwise herein, the Project shall be financially operated as an enterprise fund with costs borne by City, and with neither profits nor losses accruing to District as a result of the Project. All terms of this Agreement shall be construed in accordance with the intent of this Section 2.10.

2.11. Long Term Water Supply. By this Agreement, the Parties intend to provide for and increase the long-term source of domestic Treated Water supply for City.

2.12. Conservation. In entering into this Agreement, the Parties recognize that it is important to continue to encourage both urban and agricultural water users within District to utilize water conservation practices, which are effective, practical, and economical.

2.13. Groundwater. The Parties recognize the importance of an adequate supply of good quality groundwater. The Parties in the future, as they deem appropriate, shall cooperate in necessary ground water management efforts as may be required by future State or Federal legislation or regulations.

2.14. DEW Acquisition. In 1995, City acquired certain assets of DEW, including all of the Company's rights, interests and obligations in and to the Project and 1992 Agreement. The parties acknowledge and confirm that (a) District has consented to this transfer and assignment pursuant to the 1992 Agreement, (b) DEW is no longer a party to the 1992 Agreement, and (c) all DEW's rights, interests and obligations in and to the 1992 Agreement have been transferred to and accepted by City. Consequently, DEW no longer has any right or interest in the 1992 Agreement or the Project and therefore is not a party to this Agreement.

2.15. Purpose of Agreement. The Parties desire to amend the 1992 Agreement to (a) provide for expansion of the MRWTP to 60 mgd and construction of related facilities, (b) address City's acquisition of DEW's interests in the 1992 Agreement and Project, and (c) make certain other changes. In order to simplify and clarify the applicable contract terms and consolidate all current contract terms and conditions into a single document, the parties have incorporated the amendments into this amended and restated agreement, which includes the 1992 Agreement as amended.

3. AMENDMENT AND RESTATEMENT OF 1992 AGREEMENT.

The 1992 Agreement is hereby amended and restated in full with the amendments as set forth in this Amended and Restated Treatment and Delivery Agreement. The 1992 Agreement therefore is hereby terminated and superseded by this Agreement. Any right, debt, obligation or liability under or secured by the 1992 Agreement shall be deemed a right, debt, obligation or liability under or secured by this Agreement.

4. DEFINITIONS.

4.1. Advances. All costs advanced by District pursuant to Section 10.1 during the Design Phase, except Sunk Costs, together with an estimate made just prior to the Financing and agreed upon by the Parties with respect to all advances, which are to be made by District prior to the end of the Design Phase.

4.2. Advisory Committees. The committees created pursuant to Section 18.6.

4.3. Agreement. This Amended and Restated Treatment and Delivery Agreement between District and City.

4.4. 1992 Agreement. The Treatment and Delivery Agreement Among Modesto Irrigation District, City of Modesto, and Del Este Water District that was approved in 1992.

4.5. Approvals. The licenses, permits, entitlements, and privileges necessary for the construction, operation, and maintenance of the Project.

4.6. Board. The Board of Directors of District.

4.7. Chief Executive Officers. The City Manager and the General Manager of District, or their respective designees.

4.8. City. City of Modesto.

4.9. City Gross Water Revenues. All gross income and revenue received or receivable by City from the ownership and operation of City Municipal Water System, which gross income

and revenue shall be calculated in accordance with generally accepted accounting principles, including all rates, fees, and charges received by City for water service and connection and hook-up fees and all other income and revenue however derived by City from the ownership and operation of or arising from City Municipal Water System, but excluding in all cases any proceeds of taxes and any refundable deposits made to establish credit, federal or state grants, or advances or contributions in aid of construction, or monetary recoveries in lawsuits on behalf of City's water rate payers for environmental and other torts and actions at law.

4.10. City Municipal Water System. The municipal water system of City existing on the effective date of this Agreement and all additions, betterments, extensions, and improvements thereto hereafter acquired or constructed.

4.11. Commercial Operation Date. The first day following the Test Period.

4.12. Commercial Operation Phase. The (a) ongoing operation and maintenance of the Initial Facilities, and (b) for the First Expansion Facilities, the Period beginning with the Commercial Operation Date and continuing thereafter.

4.13. Construction Phase. The Period during which the First Expansion Facilities are constructed, ending with the end of the Test Period.

4.14. Debt Service. The payments required to be made for principal, interest, and other charges, if any, to the holders of evidences of indebtedness or certificates of participation issued by District pursuant to this Agreement to finance the Project. If bond insurance is used in connection with Fixed Financing, Debt Service shall include bond insurance premiums.

4.15. Debt Service Reserve Fund. The fund established and maintained pursuant to Section 12.2 of this Agreement.

4.16. Design Phase. The Period of First Expansion Facilities environmental review and design ending with the start of construction of the Project.

4.17. DEW. Del Este Water Company.

4.18. District. Modesto Irrigation District.

4.19. District Interest Rate. For the Period for which interest is to be calculated, interest at the same average monthly yield as District earns on its general fund portfolio, provided, however, that if at any time District's average cost of borrowing money exceeds District's rate of return on its general fund portfolio, the interest on amounts advanced by District shall be District's cost of borrowed money. In no event shall the rate of interest determined pursuant to

this Section 4.18 as applied exceed the legal limit. Interest shall accrue monthly beginning at the time District actually expends the funds on which the interest is to accrue.

4.20. District's Electrical Service Area Boundary. The boundary of the electrical service area of District as shown on the official maps and records of District.

4.21. District's Irrigation District Boundary. The irrigation district boundary of District, as opposed to District's Electrical Service Area Boundary, as shown on the official maps and records of District.

4.22. Domestic Water Year. Each 12 month period commencing on May 1 and ending on the next succeeding April 30.

4.23. Finance Committee. A committee consisting of the Director of Finance of City and the chief financial officer of District, or their respective designees.

4.24. Financing. The actual putting into place of Variable Financing or Fixed Financing to the point of the disbursement of funds as needed to allow construction of the First Expansion Facilities to proceed.

4.25. First Expansion Facilities. The expansion of the MRWTP as described in the SEIR (but excluding those water system transmission and storage facilities to be financed, designed and constructed by City), or such other First Expansion Facilities description as may be approved by the parties in writing.

4.26. Fixed Costs. All costs other than Debt Service which must be borne by District in connection with the Project irrespective of whether the Project is producing Treated Water or not.

4.27. Fixed Financing. Long term Project Financing with fixed terms and rates extending for the length of the repayment period.

4.28. Initial Amount. The amount to be initially deposited to the Reserve and Contingency Fund pursuant to Section 12.1 and thereafter the amount currently required to be maintained in the Reserve and Contingency Fund pursuant to Section 12.1.3.

4.29. Initial Facilities. The diversion facilities, 30 million gallons per day water treatment facilities, pipelines, pumps, storage facilities, and other improvements as described in and completed during the original project pursuant to the 1992 Agreement to deliver Treated Water to City.

4.30. Maximum Annual Debt Service. The largest amount of Debt Service to be paid under Fixed Financing during any Year.

4.31. Modifications. Any improvements or alterations in the Project mandated by regulatory agencies, or required to meet the provisions of Section 9.4, or changes in the Project agreed upon as necessary by the Parties.

4.32. MRWTP. District's Modesto Regional Water Treatment Plant.

4.33. Next Turnout. The first point of diversion onto private land or into a smaller canal or pipeline below any point at which City discharges groundwater into an irrigation canal as provided in Section 9.8.1.

4.34. Other City Water. All groundwater and surface water supplies available to City for municipal and industrial purposes excluding Raw Water and Treated Water.

4.35. Parity Debt. Loans, bonds, notes, advances or indebtedness, or other obligations of City payable from and secured by a pledge of water rates, and charges of City on a parity with the obligations to be paid by City pursuant to this Agreement.

4.36. Parties. District and City.

4.37. Period. One or more Calendar Years or Domestic Water Years and/or any portion thereof.

4.38. Phases. The Design Phase, the Construction Phase, and the Commercial Operation Phase.

4.39. Policy Committee. The Committee created pursuant to Section 18.6.1 of this Agreement.

4.40. Prior Agreement. The Advance Funding and Reimbursement Agreement executed by the parties October 7, 2003, as amended, which identifies environmental review and preliminary design costs to be funded by District and later reimbursed by the First Expansion Facilities Financing.

4.41. Project. The Initial Facilities (as described in and constructed pursuant to the 1992 Agreement) plus the First Expansion Facilities. If the First Expansion Facilities are terminated pursuant to section 22.2 prior to completion, then "Project" shall mean and be limited to the Initial Facilities.

4.42. Project Manager. The person or entity as is appointed pursuant to Section 18.1.2 of this Agreement.

4.43. Project Observer. The observer or observers that may be appointed pursuant to Section 8.2.

4.44. Property Cost. As to an interest in real property either owned or acquired by City and then acquired by District for the Project pursuant to Section 7.1.2, (i) the fair market value of already owned property at the time it is conveyed to District, and (ii) the purchase price of newly acquired property, including, but not limited to, incidental costs such as legal fees, appraisal fees, and title fees.

4.45. [Not Used]

4.46. Raw Water. Water of District diverted to the Project.

4.47. Raw Water Charge. The cost of Raw Water for the year as set forth in Section 14.2.

4.48. Reserve and Contingency Fund. The reserve and contingency fund established and maintained pursuant to Section 12.1 of this Agreement.

4.49. SEIR. The Subsequent Environmental Impact Report for the MRWTP Phase Two Expansion Project dated June 2005.

4.50. Service Area. City municipal water system service areas as shown and described in the Urban Water Management Plan, as the same may be adopted by City from time to time.

4.51. Surface Water Service Area. The portion of the Service Area located within District's Irrigation District Boundary.

4.52. Study. The Water Management Study, prepared by James M. Montgomery Consulting Engineers, dated November 1984.

4.53. Sunk Costs. Those costs associated with the First Expansion Facilities incurred by the Parties and set forth in Exhibit A of this Agreement.

4.54. Technical Committee. The committee created pursuant to Section 18.6.2 of this Agreement.

4.55. Termination. A termination of the Agreement pursuant to section 22.1.

4.56. Test Period. The seven day Period immediately following the completion of the construction of the First Expansion Facilities during which those facilities are tested as to their ability to operate and produce Treated Water meeting the standards of Section 9.4 in the quantity specified in Section 9.2. If during the initial seven day Period the First Expansion Facilities fail to operate and produce Treated Water meeting the standards of Section 9.4 in the quantity

specified in Section 9.2, the Test Period shall be extended until the time when the First Expansion Facilities have in fact demonstrated their ability to operate and produce Treated Water meeting the standards of Section 9.4 in the quantity specified in Section 9.2.

4.57. TIC. "True Interest Cost" as the term is commonly applied in municipal finance.

4.58. Treated Water. All water meeting the standards of Section 9.4 delivered from the Project to City at point or points of delivery.

4.59. Trustee. The trustee or trustees, if any, appointed in the documents executed in connection with any Financing.

4.60. Urban Water Management Plan. The 2000 Urban Water Management Plan dated October 2001, which was adopted by District with District Resolution No. 2001-134 and by City with City Resolution No. 2001-480, as the same may be adopted by the parties from time to time.

4.61. Variable Financing. Project Financing with variable rates and terms during the First Expansion Facilities Construction Phase and until Fixed Financing is put in place.

4.62. Water Shortage Condition. Any Period in which pursuant to Section 17.2 the Treated Water available to City falls below 33,602.1 acre-feet during a full Domestic Water Year because of a reduction in District's water supply due to a cause beyond District's control, whether due to drought, new or amended federal or state statute or regulation, court order, federal or state government agency license, permit, order or ruling, or good faith settlement agreement in lieu of a court order or federal or state government agency order or ruling. Upon completion of the First Expansion Facilities (as evidenced by the Commercial Operation Date), this quantity shall be changed to 67,204.2 acre-feet per year.

4.63. Year. Each 12 month period commencing on January 1 and ending on the next succeeding December 31.

5. TERMINATION OF PRIOR AGREEMENT.

By execution of this Agreement the Parties intend to, and do, hereby terminate and cancel the Prior Agreement, provided, that to the extent provisions of this Agreement are the same or have the same meaning as provisions of the Prior Agreement, those provisions shall be deemed to have been continuously in effect since the date of the Prior Agreement.

6. PROJECT AND FIRST EXPANSION FACILITIES.

6.1. Obligations of District and Expansion. Pursuant to sections 4.41 and 6.1 of the 1992 Agreement, the parties agree to expand the Project to include the First Expansion Facilities.

District shall finance, design, acquire lands and rights-of-way for, acquire licenses and permits for, construct, own, operate and maintain the First Expansion Facilities pursuant to applicable provisions of this Agreement, including, but not necessarily limited to, sections 6 through 13, inclusive and 18. In designing, constructing, operating and maintaining the First Expansion Facilities, District also shall comply with applicable provisions of the SEIR, the related mitigation monitoring plan, and Urban Water Management Plan. The configuration, design, construction, and financing of the First Expansion Facilities shall be determined in accordance with this Agreement.

6.1.1. The parties acknowledge that City intends to concurrently finance, design, acquire lands and rights-of-way for, acquire permits for, construct, own, operate and maintain certain water system transmission, distribution and storage facilities that are described and analyzed in the SEIR but not part of the First Expansion Facilities for purposes of this Agreement.

6.1.2. The Project facilities owned, operated and maintained by District and the points of delivery to City water system are shown on the map attached as Exhibit B and incorporated herein. All municipal water system facilities downstream of such points of delivery are owned by and the responsibility of City. The meters at District-City points of delivery shall be owned and operated by District as part of the Project.

6.2. First Expansion Facilities Phases. Implementation and completion of the First Expansion Facilities shall be undertaken in three Phases consisting of the Design Phase, the Construction Phase, and the Commercial Operation Phase, as described in sections 4.38 and 6 through 9, inclusive.

6.3. Area to be Served by Project. The area to be served by the Project is the Surface Water Service Area. District acknowledges that City's entire Service Area extends beyond the Surface Water Service Area, that the portions of the Service Area located outside of the Surface Water Service Area are served by City with City groundwater and City water supplies other than the Treated Water, and that the Treated Water and Other City Water are commingled in a single water distribution system that serves the entire Service Area. City shall have the right to continue to commingle the Treated Water and Other City Water for use throughout the Service Area, provided that in no event shall water from the Project be transported outside the Surface Water Service Area that is not replaced with an equal or greater amount of Other City Water in

accordance with section 17.6 below. Subject to all other limitations in this Agreement, Treated Water may be used outside the Surface Water Service Area without replacement by Other City Water if the Parties have approved that use after any environmental processing required by law has taken place.

6.4. Ownership, Assignment, and Sale of Project Water to Others.

6.4.1. District Sole Owner. District shall be the sole owner of the Project, however City shall have rights in the Project as set forth in this Agreement.

6.4.2. Sale, Transfer, or Assignment. Except as to management and operation as expressly provided in section 6.4.3, District shall not sell, transfer, or assign any interest in the Project. This section 6.4.2 does not prohibit District from disposing of excess or surplus personal property or land, provided that the proceeds of the disposition shall be credited to the Project.

6.4.3. Assignment of Management and Operations. In the event that District contemplates the assignment or transfer of the management and operation of its interest in the Project to an entity other than City, then, prior to the assignment or transfer, the Parties shall meet and confer to determine whether it is practical to make the assignment or transfer to City. District shall not assign, transfer, contract out, or subcontract all or substantially all of District's operation and maintenance obligations under the Commercial Operation Phase without the prior written consent of City.

6.4.4. Interest of City. Upon completion of the Construction Phase and during the life of this Agreement throughout the Commercial Operation Phase, including after retirement of the Fixed Financing or other debt for the Project, City shall have and continue to have a permanent beneficial interest in the output of the Project in accordance with the terms of this Agreement.

6.4.5. Assignment By City. City shall not assign or transfer its right or interest in the Project, in whole or in part, without the prior written consent of District, which consent shall not be unreasonably withheld. Any assignment or transfer by City without consent of District shall be void. No assignee or transferee of City shall obtain any right or interest in this Agreement until it assumes by written instrument all obligations under this Agreement with respect to the right or interest transferred or assigned, and it becomes a Party to this Agreement by executing this Agreement or an amendment thereto also executed by the Parties.

6.4.6. Sale of Treated Water to Other Entities. District shall not sell, lease, transfer, or in any other manner direct or convey Treated Water from the Project to any person or entity other than City without the prior written consent of City, which consent shall not be unreasonably withheld. Prior to selling, leasing, transferring, or conveying Treated Water from the Project to any person or entity other than City, District shall first offer the water to City. City may take all or a portion of the Treated Water offered. Unless parties otherwise agree, the price of any Treated Water sold, leased, transferred, or conveyed by District to any person or entity other than City shall not be less than the full cost of producing the water including Sunk Costs and Raw Water, capital, treatment, operation, maintenance, and administrative costs, and in any event shall not be lower than the price to City. In the event the cost of furnishing water to any person or entity other than City is less than the charges to that person or entity, the excess revenue shall be applied to the operation of the Project. Subject to the provisions of Section 6.4.5, this Agreement shall inure to the benefit of and be binding upon the Parties and their respective successors and assignees.

6.5. Disposition of Plans. City, upon request, shall be entitled to obtain and keep copies of all reports, drawings, studies, plans, specifications, other engineering documents, and all other documents pertaining to the Project, provided that City has fully paid its share of all costs due up to the time of the request, as those costs are due and owing pursuant to this Agreement.

6.6. Cooperation in Proceeding with First Expansion Facilities. District shall, to the extent it has not already done so, utilize its best efforts to acquire and maintain ownership of all easements, water conveyance rights, water rights, and Approvals necessary for the construction, operation, and maintenance of the First Expansion Facilities. City shall utilize its best efforts to support the First Expansion Facilities and its Financing and assist District in regard to the matters set forth in this Section 6.6 in order to facilitate the Financing, construction, operation, and maintenance of the First Expansion Facilities.

7. DESIGN PHASE.

7.1. Design Phase Work. Under the Advance Funding and Reimbursement Agreement, Design Phase work on the First Expansion Facilities has been commenced and is currently under way. District has retained various engineers and consultants to perform the work. District may utilize different engineers and consultants on the First Expansion Facilities, subject

to City's approval of engineering services contracts pursuant to Agreement section 18.3.1. To the extent items are not already completed or under way, during the Design Phase each of the following shall occur:

7.1.1. District to Obtain Approvals. To the extent practical, District shall obtain all Approvals during the Design Phase. Approvals, which cannot be obtained during Design Phase, shall be obtained as soon thereafter as practical.

7.1.2. Property Interests. District shall acquire all land, easements, and rights of way required for the construction, operation, and maintenance of the First Expansion Facilities including real property interests owned by City where applicable. City shall assist with the identification and acquisition of all water storage sites within its respective Service Areas. If City either acquires real property for District's portion of the First Expansion Facilities, or agrees to the utilization of already owned property for District's portion of the Project, then District shall acquire the real property from City at the Property Cost.

7.1.3. Preliminary and Final Design. The First Expansion Facilities engineers shall prepare preliminary design development plans and specifications and a preliminary cost estimate, and, after approval by the Parties of the preliminary design and cost estimate as provided in Sections 18.3 and 18.4, the engineers shall prepare final and complete construction documents and a final cost estimate.

7.1.4. Preliminary Financing Work. The financial advisor, underwriter, bond counsel, and District shall perform preliminary work necessary for the Financing of the First Expansion Facilities and shall make a Financing proposal to City.

7.2. Costs for Design Phase to be Advanced. Costs for all work performed during the Design Phase shall be advanced in accordance with the provisions of Section 10.1.

7.3. Reimbursement of Advanced Design Phase Costs. Reimbursement of the costs advanced pursuant to Section 10.1 shall be made in accordance with Section 10.2. The SEIR and First Expansion Facilities environmental review costs shall be considered design costs to be advanced by District and reimbursed pursuant to sections 4.1, 7.2, 7.3, 10.1 and 10.2; provided, however, that SEIR, First Expansion Facilities environmental review and other costs paid or advanced by City pursuant to the Prior Agreement shall not be reimbursed to District, but shall be reimbursed to City through the First Expansion Facilities Financing.

8. CONSTRUCTION PHASE.

8.1. Finalization of Financing and Construction. The Construction Phase shall consist of finalization of the Financing and the construction of the First Expansion Facilities. Prior to the commencement of the Construction Phase all necessary agreements for the Financing and construction, purchase, and sale of water, and operation and maintenance of the First Expansion Facilities shall be executed.

8.2. First Expansion Facilities Observer. City may designate a First Expansion Facilities Observer to function during the Construction Phase. City shall pay all costs for the First Expansion Facilities Observer, including, but not limited to, salary and fringe benefits. A First Expansion Facilities Observer may: (i) be at the construction site of the First Expansion Facilities at any time he/she elects; (ii) observe on-going and completed construction; and (iii) have access to all of District's records, files, and documents related to the design and construction of the First Expansion Facilities. He/she shall not direct, comment to, correct, advise, or otherwise deal with personnel of any contractor or District except that the First Expansion Facilities Observer may bring to the attention of the Project Manager any concerns noted by him/her and may bring those concerns to City. The First Expansion Facilities Observer shall observe all applicable requirements of the Occupational and Health Safety Act and all other statutes, rules, and regulations applicable to employee safety on construction sites. The Project Manager may exclude from the construction site any First Expansion Facilities Observer who, after warning, fails to observe the limitations and requirements of this Section 8.2.

9. COMMERCIAL OPERATION PHASE

9.1. Commercial Operation Phase. District shall continue the Commercial Operation Phase as to the Initial Facilities. The Commercial Operation Phase for the First Expansion Facilities shall commence immediately following the Test Period. Any water produced during the Test Period, which meets the standards of Section 9.4, shall be delivered to City.

9.2. Test Quantity. During the Test Period after completion of the First Expansion Facilities, Treated Water from the MRWTP shall be produced at a rate of 60 million gallons per day or at the highest rate below 60 million gallons per day which City system is able to accept. During the Test Period every reasonable effort shall be made to produce Treated Water at the rate of 60 million gallons per day. The Parties shall cooperate during the Test Period in an effort to maximize production of water and acceptance of water by City system.

9.3. District Obligations During Commercial Operation Phase. During the Commercial Operation Phase District shall: (i) operate and maintain the Project in as economic a manner as practical in accordance with generally accepted waterworks practices as evidenced by well designed and operated potable water treatment plants of a similar size in Northern California; and (ii) deliver Treated Water to City consistent with the terms of this Agreement. Until the Commercial Operation Date for the First Expansion Facilities, District's operation and maintenance responsibilities shall be limited to the Initial Facilities. After the Commercial Operation Date for the First Expansion Facilities, District's operation and maintenance responsibilities shall include the First Expansion Facilities.

9.4. Standards of Treated Water. Throughout the term of this Agreement, or any successor or substitute agreement, or extensions thereof, District shall deliver to City Treated Water which meets all state and federal drinking water quality standards applicable to the Project at the time of delivery to City system.

9.5. Obligation of City to Take Water. City at all times shall exercise its best efforts to take all Treated Water made available to City, up to the amount identified in Sections 14.8 and 17.3.

9.6. Cooperation in Operation. The Parties shall cooperate and remain in frequent telephonic or other communication so as to efficiently operate the domestic water system and fully put to use the Treated Water produced by the MRWTP.

9.7. Expansion of Groundwater Capacity and Commingling of Groundwater. Throughout the term of this Agreement, City shall maintain and, to the extent it deems necessary, expand, its well system so that the groundwater used in conjunction with the Treated Water will best enable City to be able to meet its customer demands. It is understood that District's obligations to deliver Treated Water are as otherwise set forth in this Agreement. Groundwater is to be delivered by City through its same water pipelines which will carry the Treated Water, resulting in a physical commingling of the groundwater and surface supplies.

9.8. Exchange of Groundwater for Treated Water. Subject to the absolute limitation of 67,204.2 acre feet per Domestic Water Year, and subject to approval of District as to time and place of delivery, which approval shall not be unreasonably withheld, City, at its option, may deliver groundwater to District irrigation canal system in exchange for an additional amount of

Treated Water from District equal to the quantity of groundwater delivered to District irrigation canal system, provided that each of the following conditions is met:

9.8.1. Delivery. Any groundwater delivered by City shall be delivered into one of the irrigation canals of District. After blending the groundwater discharged with the water then in the canal, the quality of the water, sampled at the Next Turnout, shall be of a quality suitable for agricultural use, including without limitation, use for crops, orchards or livestock.

In the event that water samples at the Next Turnout demonstrate, based upon the quality standards set forth above, that the groundwater after mixing is not suitable for agriculture, City shall immediately cease making those discharges which contribute to the unsuitability of the water at the point at which the sampling occurred

9.8.2. Costs. City shall bear all costs, including the cost of additional capital facilities, if any are necessary, associated with delivering exchange groundwater supply to District irrigation canal system.

9.8.3. Records. City shall maintain a record of the quantity of exchange groundwater delivered to District irrigation canal system and the quality of blended water in the canal at the Next Turnout below each point of introduction of groundwater.

9.8.4 Use of District Pumps. In order to facilitate the exchange of groundwater pursuant to this Section 9.8, City may enter into an agreement with District for the use of District owned or controlled pumps to accomplish the exchange. City shall reimburse District for all costs incurred, including electric rates normally charged for pumping and costs of operations, maintenance, repair, administration, and personnel. Agreements pursuant to this Section 9.8.4 shall be at the sole discretion of District.

9.9. Force Majeure. District shall be excused from its obligation to deliver Treated Water in the event that District is rendered unable, wholly or in part, by force majeure to carryout its obligations under this Agreement. Upon the occurrence of an event of force majeure, District shall give notice and full particulars of the force majeure in writing, or by telephone followed by a writing. District's performance shall be suspended during the continuance of the force majeure. The term "force majeure" as used herein shall mean acts of God, strikes, lock-outs, failure or refusal of any person or entity to comply with then existing agreements to obtain or ship materials or equipment, or industrial disturbances, acts of a public enemy, wars, blockades, insurrections, riots, epidemics, landslides, lightning, earthquakes, volcanic eruptions,

fires, flood, washouts, or other natural disasters, threat of physical harm or damage resulting in the evacuation or shutdown of facilities necessary for the supply, treatment, and distribution of water, arrests and restraints of governments and people, civil disturbances, insurrection, explosions, sabotage, restraint by court order or public authority, other than District, having jurisdiction over the Project, and action or non-action by, or failure to obtain authorizations or approvals from, any governmental agency or authority of competent jurisdiction, and any other causes, whether of the kind herein enumerated or otherwise, not within the control of the Party claiming force majeure and which, by the exercise of due diligence, the Party is unable to prevent or overcome. District shall use its best efforts to promptly bring to an end any condition falling within the definition of force majeure. District shall prepare, revise from time to time as appropriate, and implement when necessary an operational plan to deal with strikes and lockouts so as to minimize interruption of the delivery of Treated Water to City in the event of a strike or lockout. It is understood and agreed that the settlement of strikes or lockouts shall be entirely at the discretion of the Party having the difficulty. In the event of a strike or lockout, District's obligation to perform under this Agreement shall not be suspended for a Period of more than 60 days. If District gives notice of a force majeure event which impacts District's ability to deliver Treated Water, then the provisions of Section 13 shall be determinative as to whether City is excused from its obligation to pay Debt Service and Fixed Costs. Upon the occurrence of any event of force majeure which may render District wholly or in part unable to carry out its obligations under the Agreement, to the extent reasonably practical District shall use its best efforts to promptly implement a plan to ensure the continued operation of the Project and continued delivery of Treated Water to City.

10. ADVANCE OF PRE-CONSTRUCTION COSTS.

10.1. Advances by District, City, Sunk Costs, and Approval of Other Costs. City shall be liable for the payment of all costs and expenses of all Phases of the Project in accordance with this Agreement. To facilitate the planning and construction of the First Expansion Facilities, and pursuant to the Prior Agreement, District has already advanced certain First Expansion Facilities costs. Some costs have been advanced by City. District shall advance all costs reasonably necessary for completion of all engineering and design work, feasibility studies, permit, and licensing costs, and all other work required and conducted during the Design Phase of the First Expansion Facilities. The costs shall be reimbursed by City as set forth in Section 10.2; however,

in order for costs incurred by District to be reimbursed by City, the costs must be either included as Sunk Costs identified in Exhibit A or approved by City. Separate approval shall not be required as to costs approved as a part of a Project milestone as provided in Sections 18.3 and 18.4. Any cost not approved by City shall be subject to further review in the manner provided in Section 18.6. As also indicated on Exhibit A, City has also advanced a portion of Sunk Costs.

10.2. Reimbursement. Upon Termination, City shall reimburse District for all Sunk Costs and Advances not previously reimbursed or incorporated into a Financing, unless the Parties agree otherwise. In the event of a Termination of the First Expansion Facilities pursuant to Section 22.2, and the Parties abandon the First Expansion Facilities, City shall not be required to reimburse District pursuant to this Section 10.2. If the Project proceeds to Financing, reimbursement of Sunk Costs and Advances to District and reimbursement of Sunk Costs to City shall be included in the principal amount of the financed obligation. District and City shall be reimbursed for Sunk Costs and District shall be reimbursed for Advances from the proceeds of the Financing.

10.3. Interest on Advances. Amounts advanced by the Parties pursuant to Section 10.1 shall bear interest at District Interest Rate until repaid.

10.4. Costs of Studies and Negotiation Borne by Each Party. Costs of studies conducted by either Party for its own purposes and costs associated with the preparation and negotiation of this Agreement or subsequent or other agreements between the Parties shall be borne by the Party incurring the costs and shall not be advanced pursuant to Section 10.1, nor reimbursed pursuant to Section 10.2.

11. DRAINAGE.

11.1. Responsibility. District shall not be responsible for any drainage pumping or facilities necessary to maintain water tables so as to avoid damage to structures and crops within the Service Area of City. City shall not be responsible for any drainage pumping or facilities necessary to maintain water tables so as to avoid damage to structures and crops outside the Service Area of City.

11.2. Indemnification. Each Party shall indemnify, protect, defend, and hold harmless the other Party, and its respective officers, directors, officials, employees, agents, and volunteers, from and against any and all liabilities, claims, damages, losses, judgments, penalties, costs or expenses (including attorney fees) arising from rising groundwater tables within the service area

of the indemnifying Party. For the purposes of this Section 11.2, District's service area shall be that portion of District lying outside of the Service Area of City.

12. RESERVE FUNDS.

12.1. Reserve and Contingency Fund. District shall continue to maintain a Reserve and Contingency Fund. The Initial Amount shall be \$500,000.

12.1.1. Additional Deposits to Reserve and Contingency Fund. If the balance in the Reserve and Contingency Fund shall fall below the Initial Amount as of the end of any Year, then the amount of the shortfall shall be added to the amount to be paid by City pursuant to Section 15 during the next ensuing Domestic Water Year.

12.1.2. Withdrawals From Reserve and Contingency Fund. The Reserve and Contingency Fund shall be subject to withdrawals by District for the following purposes:

12.1.2.A. Unbudgeted Items. The cost of (i) unbudgeted necessary repairs and replacements required to maintain the Project in good order in keeping with the standards evidenced by similar sized potable water treatment plants in Northern California and at all times able to produce Treated Water meeting the standards of Section 9.4; plus (ii) all unbudgeted Modifications.

12.1.2.B. Costs in Excess of Budget Amount. Costs, including, among other things, Fixed Costs and Debt Service, for the operation and maintenance of the Project, which exceed the funds available pursuant to Section 15 for any Period.

12.1.2.C. Budgeted Items. The cost of budgeted repairs, replacements, and Modifications if so agreed by all of the Parties.

12.1.3. Increase or Decrease in Reserve and Contingency Fund. From time to time, as a part of and subject to the budget process set forth in Section 18.7.2, District may, if experience reasonably indicates, increase or decrease the Initial Amount and in the event of an increase in the Initial Amount, provide for necessary additional payments by City during the next ensuing Domestic Water Year so as to increase the balance in the Reserve and Contingency Fund. In the event of a decrease in the Initial Amount, the excess balance in the Reserve and Contingency Fund shall be credited against payments due from City during the next Domestic Water Year.

12.1.4. Reserve and Contingency Fund Advances. If at any time because the Reserve and Contingency Fund is depleted or contains insufficient funds so that District must

advance funds which otherwise would be obtained from withdrawals from the Reserve and Contingency Fund under Section 12.1, then the aggregate amount of the advances during any Year and the amount necessary to replenish the Reserve and Contingency Fund to its established balance shall be added to the amount to be paid by City pursuant to Section 15 during the next ensuing Domestic Water Year. The amount of advances by District to the Reserve and Contingency Fund while outstanding shall bear interest at District Interest Rate. Funds received monthly by District by payments from City pursuant to this Section 12.1.4 shall be applied first to interest and then to the replenishment of the Reserve and Contingency Fund.

12.1.5. Interest on Reserve and Contingency Fund. Funds in the Reserve and Contingency Fund shall be invested by District and actual interest earned on the funds shall be credited to the Reserve and Contingency Fund.

12.1.6. Reports. District shall submit to the Technical Committee no less often than quarterly a report setting forth the current balance of the Reserve and Contingency Fund, income and expenditures from the Fund, and anticipated expenditures, if any during the remainder of the year.

12.2. Debt Service Reserve Fund. District shall establish and maintain a Debt Service Reserve Fund. There shall be deposited into the Debt Service Reserve Fund from the Fixed Financing, an amount equal to the Maximum Annual Debt Service. The Debt Service Reserve Fund shall be held by the Trustee. If the First Expansion Facilities proceed to Financing, then the amount of the Debt Service Reserve Fund under this section shall be increased by an amount equal to the Maximum Annual Debt Service for the Fixed Financing of the First Expansion Facilities. In the alternative, District may establish and maintain under this section a second, separate Debt Service Reserve Fund in this amount for the First Expansion Facilities.

12.2.1. Withdrawals From Debt Service Reserve Fund and Replenishment of Debt Service Reserve Fund. Withdrawals from the Debt Service Reserve Fund shall only be made for the purpose of making current payments of Debt Service obligations. If any such withdrawal is made from the Debt Service Reserve Fund, due at any time that funds available under the provisions of Section 15 and/or Section 12.1 are insufficient to meet current Debt Service Reserve Fund, City shall pay pursuant to Section 14.1 and Section 15.1 that amount necessary to replenish the amount on deposit in the Debt Service Reserve Fund to an amount

equal to the Maximum Annual Debt Service no later than one year following such withdrawal from the Debt Service Reserve Fund.

12.2.2. Interest On Debt Service Reserve Fund. Funds in the Debt Service Reserve Fund held by the Trustee shall be invested by District and actual interest earned on the funds shall be credited annually as a part of each Year's budget to sums otherwise due from City pursuant to Section 15 after deducting from interest earnings any amounts which must by law be paid to the United States. It is anticipated that the Debt Service Reserve Fund will be invested in an investment vehicle such as Guaranteed Investment Contingent Fund or a state and local government securities fund.

12.2.3. Final Disposition. The balance on hand in the Debt Service Reserve Fund shall be applied to the final payment or payments of Debt Service.

12.2.4. No Duplication. To the extent the Financing documents provide for a Debt Service Reserve Fund, the provisions of the Financing documents shall prevail. In the event that any reserve requirements set forth in any Financing documents duplicate or parallel the requirements of this Section 12.2, it is agreed that in no event shall contributions to the Debt Service Reserve Fund and any similar fund exceed an aggregate amount equal to the Maximum Annual Debt Service.

13. FINANCING AND TAKE OR PAY PROVISION.

13.1 District to Arrange Financing, Take or Pay Provision, Excuse from Take or Pay. District, subject to Section 18.5, shall use its best efforts to arrange Financing for the construction of the First Expansion Facilities using bonds or other evidences of indebtedness or certificates of participation, which shall be secured in part by the provisions of this Agreement.

City shall pay the Fixed Costs and Debt Service of the Project whether or not the Project or any part of it is operating or operable or its output or capability is suspended, interrupted, interfered with, reduced or curtailed, or terminated in whole or in part except as excused below. The payments of Fixed Costs and Debt Service shall not be subject to reduction whether by offset, counterclaim, recoupment, or otherwise and shall not be conditioned upon the performance or nonperformance by either Party to any agreement or for any other cause or reason whatsoever. The "take or pay" obligation of City with respect to Debt Service shall commence at the time that Debt Service payments actually commence under the applicable Financing. The "take or pay" obligation of City with respect to Fixed Costs shall commence at

the time of the commencement of the Commercial Operation Phase, which shall occur at the end of the Test Period. City shall not be required to pay Debt Service or Fixed Costs if any of the following specific conditions shall occur:

13.1.1. Excuse, 50 Percent of Contracted Water Not Delivered. District for any reason other than Drought shall fail to deliver at least 50% of the Treated Water that City is scheduled to receive for any Domestic Water Year (as determined pursuant to sections 17.1 and 17.2 of the Agreement) for a Period in excess of 18 consecutive months. For purposes of this provision, the particular Domestic Water Year shall be that year in effect at the beginning of the 18-month term.

13.1.2. Excuse, 50 Percent of Water Supply. 50 percent or more of District's total annual water supply, as adjusted as provided in Section 17.2 shall be lost or unavailable for physical reasons beyond District's best efforts to control, other than Drought, for a Period in excess of 24 consecutive months.

13.1.3. Excuse, 80 Percent of Water Treatment Plant Destroyed. 80 percent or more of the water treatment plant, which is a part of the Project, shall be destroyed or disabled for a period in excess of 24 consecutive months.

13.2. New Period of Excuse. A new 18 month, and if applicable, 24 month Period, shall not commence for the purpose of Section 13.1 until a consecutive 12 month Period, during which at least 75 percent of the Treated Water which City is to receive pursuant to Sections 17.1 and 17.2 of this Agreement has been delivered, has passed.

14. PAYMENT FOR WATER BY CITY.

In exchange for District agreeing to make available to City Treated Water in the manner set forth in this Agreement, City shall pay each Domestic Water Year in equal monthly installments the sum of the items set forth below. The sum shall be calculated and paid to District as set forth in Section 15 regardless of the amount of Treated Water actually delivered to City, or, subject to the exceptions found in Section 13.1, whether any Treated Water is delivered. The sum to be paid shall be comprised of the following:

14.1. Debt Service. Debt Service, so long as there is outstanding indebtedness incurred by District in connection with the Project, plus the amounts, if any, necessary to replenish the Debt Service Reserve Fund pursuant to Section 12.2.1.

14.2. Raw Water Charge. District shall charge City for Raw Water at the same rate as District charges for water furnished by District to its agricultural water users. The Raw Water Charge shall be charged only for water actually delivered to the Water Treatment Plant. In setting the rates for Raw Water, District shall be guided by the following principles:

- (i) The economy of District is, to a great extent, dependent upon fair, reasonable, and economical irrigation water rates, and District, in setting such irrigation water rates shall be mindful of the impact that increases in water rates would have on agriculture and the economy of District.
- (ii) District shall not derive a profit from its Raw Water diverted to the Project.
- (iii) City shall be fully advised through the budget process set forth in Section 18.7 of the proposed water rates to be set by District.
- (iv) The rates established for Raw Water and water furnished to District's agricultural water users shall be adopted by the Board only after a public hearing for which at least ten days' notice has been given in writing to City.
- (v) Water rates shall be fair, reasonable, and economical as to both District's agricultural water users, and to City.

In order to observe the foregoing principles, it will be necessary to convert the agricultural water users supply to acre feet and the agricultural water users charge to a "per acre foot charge." The cost of Raw Water shall then be calculated as follows:

14.2.1. Agricultural Allocation in Acre Feet. District provides a water supply to its agricultural water users during each irrigation season. In some seasons, it is possible to allow irrigation water to each agricultural water user to the extent of demand. In other seasons it is found necessary by the Board to allocate, that is to reduce, the amount of water available to agricultural water users. When allocation is necessary it is the practice of the Board to announce, usually in March or April, the allocation for the season allowing a certain number of inches of water for the season for each agricultural acre to which agricultural water is provided. For the purposes of this Agreement, if no allocation of agricultural water is announced for any agricultural season, then the allocation for that season shall be presumed to be 42 inches. The

allocation for agricultural water for each irrigation season shall be converted to acre feet by taking the number of inches of water allocated and dividing by 12. In some Years the Board may provide for an allocation on an optional basis. For example, the Board may provide for a base supply of 33 inches of water for each agricultural acre at a charge of \$7.50 per acre with an option of up to another 12 inches for \$7.50 per acre with a limited option in certain cases for additional water at \$15.00 per acre-foot. Under such an allocation, a maximum allocation of 42 inches would be assumed and the allocation of 42 inches would be divided by 12 to obtain acre-feet.

14.2.2. Acre Foot Charge. Presently, District charges for water furnished to agricultural water users on a per acre basis; Raw Water furnished pursuant to this Agreement shall be charged on a per acre foot basis. Accordingly, the per acre charge for agricultural water set for each irrigation season by District shall then be divided by the number of acre feet derived pursuant to Section 14.2.1 and the result shall be the charge for each acre foot of Raw Water supplied to the Project for that irrigation season. In the event of an allocation similar to the example, as described in Section 14.2.1, the first 33 inches would be divided by 12 and the quotient would be divided into \$7.50. The remaining nine inches of the total of 42 inches would be divided by 12 and would be charged at the rate of \$7.50 per acre-foot.

14.2.3. Irrigation Season not Concurrent with Year. Each irrigation season, depending upon need, commences at some time after the beginning of each Year. Thus, two Raw Water rates may be applicable for portions of each Year; the actual Raw Water charges for each Year shall be calculated accordingly.

14.2.4. Raw Water Charge not Applicable. Treated Water delivered in exchange for groundwater delivered to District irrigation canals pursuant to Section 9.8 shall be subject to the same costs as all other Treated Water except there shall be no charge for Raw Water provided for in this Section 14.2.

14.2.5. Change in Method for Charging for Agricultural Water. In the event that District adopts a new method of charging for, or allocating, agricultural water, the Parties shall agree upon a new method of calculating the Raw Water charge devised so that the Project shall bear the same cost per acre foot as is borne by the agricultural water users of District.

14.2.6. Measurement of Raw Water. Raw Water shall be measured at its point of entry into the MRWTP.

14.3. Operation and Maintenance Costs. The actual operation, maintenance, repair, replacement, and Modification costs directly attributable to the operation of the Project for the Year, less sums drawn against the Reserve and Contingency Fund pursuant to Section 12.1.2, except any sum drawn against the Reserve and Contingency Fund for Debt Service. It is agreed that no item for depreciation shall be included in the sums calculated and paid pursuant to this Section 14 and Section 15.

14.4. Administrative Services. An amount equal to the reasonable actual cost of administrative services fairly attributable to the operation of the Project and the administration of this Agreement including, but not limited to, legal, accounting, and consulting engineering services, and the actual cost of paying agents or other services which District requires in processing and making payments to the holders of indebtedness incurred by District in connection with the Project.

14.5. Insurance. The actual cost of all insurance required by this Agreement to be maintained by District.

14.6. Electric Energy. The cost of electric energy provided to the Project. Electric energy will be provided by District. District shall charge the Project, from time to time, consistent with District policy as to use and applicable rate structure and cost the same as would be charged to District itself.

14.7. Other Payments and Costs and Deductions From Payments and Costs. The amount of payments or costs and deductions from payments or costs specified by Sections 12.1.1, 12.1.3, 12.1.4, and 12.2.2, and 16.3.2.

14.8. Payments by City to District for Raw Water Only. To assist District in planning its budget, City will pay District on an annual Domestic Water Year basis in accordance with the following:

1. City shall estimate and provide its estimate to District no later than thirty (30) days prior to the commencement of each Domestic Water Year, its anticipated usage of Treated Water.
2. District shall multiply the raw water charge determined in accordance with Section 14.2, above, by City's estimate to obtain a total estimated annual Raw Water Charge to City for budget planning purposes.

3. At the end of each Domestic Water Year, District shall calculate City's actual total Raw Water Charge in accordance with Section 14.2 of this Agreement, based on actual Raw Water used and use this cost for calculation of City's payments pursuant to Sections 15.3 and 15.4.

14.9. First Expansion Facilities. Upon completion of the First Expansion Facilities (as evidenced by the Commercial Operation Date), the application of the billing and payment provisions in this section shall be modified to provide for billing and payment to include the operation and maintenance of the First Expansion Facilities.

15. TIME AND MANNER OF PAYMENT BY CITY TO DISTRICT.

15.1. Monthly Payments. Payment of the total sum due for each Year pursuant to Section 14 shall be as set forth in this Section 15. Each monthly payment to be made pursuant to this Section 15 shall be made on the first day of each month.

15.2. Proration. Any payment made pursuant to this Agreement which covers less than a full month or which covers less than a Year shall be prorated accordingly.

15.3. Calculation of Monthly Payments. Prior to December 31 of each Year, District shall prepare and adopt a budget for the forthcoming Year pursuant to section 18.7 of this Agreement. The budget shall include all of the items listed in section 14. The budget for a Year shall determine and set forth a monthly payment amount to be made by City which shall be the net amount of budgeted expenses for the Year, less any refunds or credits allowed to District in connection with the Project pursuant to the Agreement, divided by 12. Each Year, the new monthly payment calculated as provided in this section 15.3 shall take effect at the beginning of the next ensuing Domestic Water Year (i.e., the new monthly payment for a Year shall take effect on May 1 of that Year). Regarding the First Expansion Facilities, (a) the budget and City payments shall be increased to include Debt Service for the First Expansion Facilities Financing for the Year in which the Debt Service payments for such Financing become due, and (b) the budget and City payments shall be increased to include the other expense items for the First Expansion Facilities listed in section 14 after the Commercial Operation Date for the First Expansion Facilities.

At the conclusion of each Year, District shall prepare an accounting of the actual expenses for the Year as compared with the Year's budget and City payments for the Year, and determine whether City made overpayments or underpayments for the Year based on the actual

City payments compared to actual expenses. City shall pay the amount of any underpayment for a Year in a lump sum payment to District. District shall pay the amount of any overpayment for the Year in a lump sum payment to City. The amount of any such overpayment or underpayment shall be reflected in the first invoice for the Domestic Water Year immediately following the completion of the accounting, and shall be due and payable at the time payment of such invoice is due and payable.

15.4 Late Payments. Any amounts owed by one Party to the other Party under this Agreement that is not paid in full when due shall thereafter bear interest at the rate of 1% per month of the unpaid balance, or at the maximum lawful rate, whichever is less.

16. GENERAL PAYMENT PROVISIONS.

16.1. Percentages. [Not Used].

16.2. Records. District shall (i) keep and maintain and provide to City detailed cost accounting reports documenting the Project costs, (ii) keep and maintain separate accounting and bookkeeping records with a separate account and fund for the Project, and (iii) allow City and its employees, accountants, attorneys and agents to review, inspect, copy and audit the accounting and bookkeeping records of District, including all source documents. District shall have the right to review, inspect, copy, and audit all accounting and bookkeeping records of City, including all source documents, as may pertain to the receipt, delivery, and sale of water received from the Project.

16.3. Security for Payment, Rate Covenant by City. Prior to obtaining the Financing for the First Expansion Facilities as set forth in Section 13.1, District shall be entitled to the assurances it may reasonably deem necessary, and be entitled to the financial information as may be necessary, to ascertain that City is in the financial condition as will allow it to fulfill its financial commitments to the First Expansion Facilities.

16.3.1. [Not Used]

16.3.2. Security from City. City's security obligation pursuant to this Section 16.3 shall be satisfied by the following rate covenant and pledge of City Gross Water Revenues which shall be effective and binding upon City upon the execution of this Agreement by the Parties:

16.3.2.A. Rates and Charges. City shall fix, prescribe, and collect water rates and charges which shall be at least sufficient to yield City Gross Water Revenues during

each fiscal year of City in an amount equal to: (i) the payment obligations of City under this Agreement during the fiscal year other than Debt Service; (ii) City maintenance and operations costs to the extent not included in clause (i) above; plus (iii) one hundred twenty-five percent (125%) of the Debt Service to be paid during the fiscal year.

16.3.2.B. Pledge. All City Gross Water Revenue and all money on deposit in the funds established by this Agreement are hereby irrevocably pledged to the punctual payment of the interest on and principal of and redemption premiums if anyone the obligations evidencing the Financing and all obligations of City under any Parity Debt. This pledge shall constitute a lien on and security interest in City Gross Water Revenues and funds established by this Agreement and shall attach, be perfected, and be valid and binding from and after the consummation of the Financing or the issuance of Parity Debt, without any physical delivery thereof or further act. If City gives any additional collateral to secure the payment of the Financing, City agrees that such collateral shall also secure all obligations of City under any Parity Debt on a pari passu basis.

16.3.2.C. Similar Covenant. City hereby covenants and agrees that it shall require a covenant substantially similar to clauses (i), (ii), and (iii) of Section 16.3.2.A with respect to all Parity Debt.

16.3.2.D. Parity Debt. In addition to its obligations hereunder, City may issue or incur Parity Debt in such principal amount as shall be determined by City in accordance with Section 16.3.2.C.

16.3.2.E. Subordinated Debt. In addition to its obligations hereunder, City may issue or incur loans, bonds, notes, advances or indebtedness payable from City Gross Water Revenues on a junior and subordinated basis with its obligations hereunder in such principal amount as shall be determined by City.

16.3.2.F. Amendment To Obtain Financing. This Section 16.3.2 may be amended from time to time by the Parties to the extent necessary to obtain the Financing as set forth in Section 13.1 and, after the Financing is obtained and so long as it remains unpaid, may only be amended in accordance with the terms and conditions of the legal documents for the Financing.

16.3.2.G. Alternative Security. City may be relieved from its obligation to perform any of the covenants set forth in this Section 16.3.2 by providing to District for

deposit with Trustee a policy of municipal bond insurance, irrevocable letter of credit, surety bond or similar credit facility assuring payment of Debt Service due and payable by City pursuant to this Agreement, and which is acceptable to District and Trustee in accordance with the terms and conditions of the Financing.

17. DELIVERY OF WATER.

17.1. Water Supply to City. Subject to Sections 4.41 and 17.2, District shall make available to City an amount of Treated Water equal to 30 million gallons per day. District shall consult with City on a regular basis during the Commercial Operation Phase to determine the schedule of deliveries, and, consistent with the terms of this Agreement, District shall use its best efforts to meet the requirements of City. Notwithstanding any other provision of this Agreement, in a Drought situation the delivery of surface water by District for agricultural uses to its agricultural customers and for municipal uses to City shall be reduced in equal proportions in accordance with the formula in Section 17.2.

Upon completion of the First Expansion Facilities (as evidenced by the Commercial Operation Date), the Treated Water quantities as set forth in sections 17.1 to 17.7 shall be changed from 33,602.1 acre-feet per year and 30 million gallons per day to 67,204.2 acre-feet per year and 60 million gallons per day.

District promises and agrees to treat District's agricultural customers and City on a parity basis. If District is required to reduce deliveries, it will cut back its deliveries to its agricultural customers and to City in equal proportions. In keeping with the foregoing, District agrees that its commitments to its agricultural customers and to City shall be met before any subsequent water transfers for delivery of water outside District's boundaries. It must be understood, however, that "transfers" between District and Turlock Irrigation District made in the ordinary course of operations are not included in the foregoing, as District and Turlock Irrigation District regularly deliver water to each other in the interest of maximizing beneficial use of their water rights and facilities.

17.2. Formula for Water Allocation. During each Domestic Water Year, District shall make available to City 33,602.1 acre feet of Treated Water provided that the allocation of City shall be reduced in any Domestic Water Year that the following calculation results in a sum less than 33,602.1 acre feet:

$$(Y/42) \times 33,602.1 = X$$

"Y" shall be the actual number of inches of water allocated by the Board to agricultural water users for the subject irrigation season commencing immediately prior to each Domestic Water Year. In the event a portion of the water allocation is optional as in 1991 as described in Section 14.2.1 and the fixed and optional amounts equal or exceed 42 inches, then City shall be assumed to have exercised the available option up to a total of 42 inches for the purposes of the above calculation. If no allocation is made for any irrigation season, the allocation shall be presumed to be 42 inches. The actual maximum Treated Water allocation of City for the subject Domestic Water Year shall be 33,602.1 acre feet of Treated Water or the amount calculated as "X" in the above formula, whichever is less. It is anticipated that from time to time District may modify its current agricultural water allocation. When District makes changes in its agricultural water allocation that result in the above allocation formula no longer ensuring that reductions or increases in available water are in equal proportions as between District's agricultural customers and City, subject to the limitation of 33,602.1 acre feet of Treated Water, the Parties shall meet and confer and agree upon necessary changes in the above allocation formula so as to ensure that reductions and increases in available water are in equal proportions as between District's agricultural customers and City.

Except as provided in Section 17.3, in no event shall District be required to make available to City, more than 33,602.1 acre feet of Treated Water for First Expansion Facilities during any Domestic Water Year. If the applicable formula during any Domestic Water Year provides for an annual allocation of less than 33,602.1 acre feet, there shall be no suspension in the payment obligations of City, set forth in Section 14, regardless of the length of the Period during which deliveries of Treated Water shall be less than 33,602.1 acre feet for each Domestic Water Year. Nothing contained in this Section 17.2 shall be deemed to modify in any way District's right to suspend, curtail, or reduce water deliveries as provided in Section 9.9 and in this Section 17.2. Nothing in this Agreement shall be construed to require District to curtail deliveries of water during any Period.

17.3. Treated Water Delivery Schedule. The parties acknowledge that City's water needs vary throughout the Domestic Water Year with high peak day demands in summer and lower demands in winter. City shall have the right to specify, on a daily basis, its water delivery requirement for the following day (or longer period of time as agreed between the parties) and

District shall be obliged, subject to its engineering, operating, maintenance, regulatory, safety and other practical requirements, to make a good faith effort to meet the daily (or longer period) demands specified by City.

17.4. Adjustment of Curtailment. In the event that a severe and prolonged drought threatens the ability of City to deliver adequate drinking water to its customers despite its efforts to impose rationing and to utilize all water resources available to it, the Parties shall meet and confer to determine whether, and upon what terms, water allocations other than those provided for in this Agreement could be implemented which would alleviate hardships to the customers of City without unduly or disproportionately injuring agriculture. In the event that water deliveries during a Domestic Water Year must be curtailed pursuant to Section 17.2, for the reasons set forth in the preceding sentence or for any other reason, the Parties shall meet and confer for the purpose of reaching an agreement as to an alternative curtailment formula or water allocation basis which more equitably and more fairly meets the then current needs of the agricultural and municipal water users within District's boundaries. The Parties shall also endeavor to reach agreement upon other terms and conditions necessary to implement an agreement. The duration of an adjustment agreement shall be specified in the agreement. In the event that no agreement can be reached, the deliveries shall be curtailed in accordance with the formula set forth in Section 17.2 of this Agreement.

17.5. Exchange for Groundwater. During a Domestic Water Year in which City's allocation is reduced below 33,602.1 acre feet of Treated Water, City shall continue to have the option to deliver groundwater to the irrigation canal system in exchange for additional surface water as provided by Section 9.8.

17.6. Water to Remain in District's Irrigation District Boundary. No Treated Water delivered by District to City, not offset by City groundwater and City water supplies other than the Treated Water within District's Irrigation Boundary, shall be allowed to flow outside District's Irrigation District Boundary. In order to demonstrate and ensure compliance with this Section 17.6, City shall install and maintain meters to monitor flow and usage at appropriate locations on its water delivery systems to determine (i) the amount of all Other City Water delivered to the Service Area, and (ii) the amount of all water (whether Treated Water or Other City Water) transported outside District's Irrigation District Boundary. City shall monitor these records to ensure that the amount recorded under (i) is at all times greater than or equal to the

amount recorded under (ii). City shall maintain records as to the items set forth above in this Section 17.6 which records shall be open to reasonable inspection by District, and its officers, directors, officials, employees, agents, and volunteers. A monthly summary of the applicable records shall be provided to District by City .

17.7. Conjunctive Use. It is understood by the Parties that from time to time water allocations for a Domestic Water Year to City may be reduced below 33,602.1 acre feet by the application of the formula set forth in Section 17.2. Accordingly, City shall exert its best efforts to maintain, in its judgment, reasonable groundwater pumping capacity to meet the needs of its Service Area during times of reduced surface water allocations. City's obligation to maintain reasonable groundwater pumping capacity shall be subject to the constraints of the groundwater basin underlying City as described in the Urban Water Management Plan and other City records, and City's obligation shall be subject to what is feasible and cost-effective.

18. PROJECT MANAGEMENT.

18.1. District's Board of Directors.

18.1.1. Final Decisions. Subject to the Approvals set forth in Section 18.3 and Section 18.5 and subject to the review set forth in Section 18.5 and Section 18.6, the Board shall be the final decision making authority with regard to the Project. The Board shall consider the recommendations of the Project Manager. All Board decisions shall be made at duly noticed regular meetings or special meetings.

18.1.2. Project Manager. The Board shall appoint a Project Manager, who shall perform those duties set forth in Section 18.2.

18.2. Duties of Project Manager.

18.2.1. Implementation of this Agreement. The responsibility for implementing and administering this Agreement and for carrying out the tasks necessary for the successful completion of each of the Phases of the First Expansion Facilities shall be vested in the Project Manager.

18.2.2. Notice to Advisory Committees. The Project Manager, in the course of fulfilling his responsibilities, shall provide the Advisory Committees reasonable advance notice of impending major decisions as defined in Section 18.6.1.C.

18.2.3. Specific Duties. The Project Manager shall have the following powers, duties, and responsibilities:

18.2.3.A. Work Plans. Developing a work plan for each Phase of the Project.

18.2.3.B. Progress Reports. Submitting periodic progress reports to the Parties and to the Board.

18.2.3.C. Administering Contracts. Administering this Agreement and any contracts as are entered into pursuant to this Agreement.

18.2.3.D. Public Information. Serving as public information officer for the Project.

18.2.3.E. Recommending Consultants. Recommending the hiring or utilization of consultants, engineers, contractors, attorneys, underwriters, and other services necessary to carry out the Project.

18.2.3.F. Financial Report. Preparing an annual financial report within three months of the end of each Year of the operation of the Project for review by the Advisory Committees. The annual financial report shall include the amount of water delivered by District to its agricultural customers and to City during the preceding Year. To the extent permitted by data available at the time of preparation of the report, the report shall also include estimates of the amount of water which will be available during the current Year for delivery to the agricultural water users of District and to City. In the event that during the Year changed water conditions modify the projections of the availability of water to District's customers, the Project Manager shall promptly notify the Advisory Committees.

18.2.3.G. Emergency Plans. Developing emergency plans for dealing with reasonably anticipated events of force majeure so as to minimize, to the extent practical, the interruption or curtailment of the operation of the Project and, to the extent practical, ensure the continued delivery of Treated Water to City.

18.2.3.H. Other Duties. Other duties as are necessary and proper to carry out the Project.

18.3. City Approval of First Expansion Facilities Milestones. Since City will be paying virtually all costs associated with design, construction, operation, maintenance, repair, reconstruction, and Modifications of and to the First Expansion Facilities, the Parties agree and consent that City shall have the authority to approve or disapprove major First Expansion Facilities milestones as follows:

18.3.1. Engineering Services. Prior to District's approval of any engineering services contract concerning the design and engineering of the First Expansion Facilities, City shall review the contract or contracts and each shall provide District with written authorization to proceed.

18.3.2. Review of Preliminary Design. Prior to proceeding with the final Design Phase under an engineering services contract, City shall review the preliminary design plans and preliminary cost estimate and each shall provide District with its written authorization to proceed.

18.3.3. Acceptance of Final Design. Prior to accepting the final design work, including construction ready final plans and specifications and final cost estimate, City shall review the final design work and cost estimate and shall provide District with its written authorization to proceed.

18.3.4. Construction Contracts. Prior to District's approval of a construction contract or contracts for the construction of the First Expansion Facilities, City shall review the construction contract documents and shall provide District with its written authorization to proceed.

18.4. Processing Milestone Approvals. City shall act promptly in giving or refusing to give any of the written authorizations to proceed as set forth above. The written authorizations to proceed to be given by City shall not be unreasonably withheld. If City fails to provide its written authorization to proceed, or written refusal of authorization, within 45 days from the date of the written request for authorization from District, then City shall be deemed to have authorized District to proceed with the milestone in question. If City refuses to authorize any of the foregoing Project milestones, it shall set forth in writing its reason or reasons for the refusal and shall timely provide the writing to the other Party. Thereafter either (i) District shall work to address and resolve City's concerns and then re-request the written authorization to proceed for the particular Project milestone, or (ii) either Party may terminate the First Expansion Facilities pursuant to Section 22.2.

18.5. Project Financing Approvals. Prior to issuing bonds or other evidences of indebtedness or certificates of participation for the purpose of Financing the First Expansion Facilities, District shall give written notice to City that the time to commence Financing has arrived. Within 30 days of the notice, the Finance Committee shall meet and confer at least once

and within 60 days of the notice City shall advise District in writing as to whether Fixed Financing or Variable Financing shall be used. If City advises in writing that Fixed Financing is to be used or fail to give their written advice within 60 days of the notice, the Fixed Financing shall be used.

18.5.1. Fixed Financing. If Fixed Financing is to be used, District shall give written notice to City that Fixed Financing is to be used and shall request that City give to District a not-to-exceed TIC within 30 days of the notice and request. Within 15 days of the notice and request by District, the Finance Committee shall meet at least once. Upon receipt of a not-to-exceed TIC from City, District shall thereafter be responsible for marketing the Financing subject to the not-to-exceed TIC approved by City. The members of the Finance Committee shall be present at the time and place of marketing and they and their financial advisers shall consult with the persons responsible for the marketing for District and the terms and conditions of the Financing, but all final decisions shall be made by District, provided that the TIC of the issue is (i) the lowest then available, and (ii) at or below the not-to-exceed TIC approved by City. In the event City fails to approve a not-to-exceed TIC within 30 days of the notice from District that Fixed Financing is to be used, then the Parties shall seek to reach agreement as to a not-to-exceed TIC or either Party may terminate the First Expansion Facilities pursuant to Section 22.2. It is understood that bond insurance shall be used with Fixed Financing if, when the cost of bond insurance premiums is included in Debt Service, the result is the lowest Fixed Financing alternative available at the time of Fixed Financing.

18.5.2. Variable Financing. Variable Financing shall be used only during the Construction Phase, except as otherwise provided herein. If City agrees that Variable Financing should be undertaken, District shall issue Variable Financing for the duration of the Construction Phase. No later than 60 days after the Commercial Operation Date, the Variable Financing shall be replaced entirely by Fixed Financing unless the Parties unanimously agree to the contrary. It is understood that Variable Financing may require the use of a letter of credit and, if that is the case, the cost of the letter of credit shall be financed out of the Variable Financing.

18.5.2.A. Initial Financing. Variable Financing shall initially be issued in the maturities and at the interest rates as, in the judgment of District after consulting with the Finance Committee, provides the most cost-effective combination of maturities and interest rates.

Thereafter, as the securities mature, District shall be solely responsible for the remarketing of the securities until the Issuance of the Fixed Financing.

18.5.2.B. Conversion During Construction Phase. If Variable Financing is issued for the First Expansion Facilities, City may, during the Construction Phase, request that District convert the Variable Financing to Fixed Financing. The request may be conditioned upon the ability of District to secure the Fixed Financing at a TIC specified in City's request.

18.5.2.C. Conversion Upon Commercial Operation. If no request to convert Variable Financing to Fixed Financing has been made prior to the Commercial Operation Date, District shall convert the Variable Financing to Fixed Financing on the Commercial Operation Date, or within 60 days thereafter without regard to the provisions of Section 18.5.1, provided, however, that District shall consult with the Finance Committee during the time it is converting the Variable Financing to Fixed Financing unless the Parties unanimously agree to the contrary.

18.6. Advisory Committees. In order to assist District and the Project Manager with the implementation of the Project, the following committees are formed and shall have the following duties, responsibilities, and authority:

18.6.1. Policy Committee. A Policy Committee consisting of two City Council members and two members of the Board. The Policy Committee shall meet at least twice each Year, and at other times when a meeting is called by the Project Manager. Each member of the Policy Committee shall serve at the pleasure of the Party selecting that member. The Policy Committee shall function during all three Phases, and shall have the following responsibilities and authority:

18.6.1.A. First Expansion Facilities Milestones. To review and make recommendations to City concerning the request for authorization to proceed with First Expansion Facilities milestones pursuant to Section 18.3. District and the Project Manager shall not request written authorization to proceed with any of the First Expansion Facilities milestones until after the Policy Committee has reviewed the proposal and made a recommendation to City.

18.6.1.B. Budget Functions. To perform the functions with respect to District budget for the Project as set forth in Section 18.7. All expenditures of District concerning the Project shall be consistent with the approved budget.

18.6.1.C. Major Decisions and Design Changes (In Excess of \$100,000).

To review and advise District and the Project Manager concerning major decisions or changes in the Project or design of the First Expansion Facilities. A major decision shall be defined as any contract, change order, purchase, change in policy, or any other action with an estimated cost in excess of \$100,000. A major change in the design of the First Expansion Facilities shall be defined as any change involving an estimated increase or decrease in the cost of the First Expansion Facilities in excess of \$100,000. A major decision shall not include any budgeted expenditure in a budget that has been approved pursuant to Section 18.7.

18.6.2. Technical Committee. A Technical Committee, consisting of one staff person appointed by each Party, and one alternate member as each Party deems necessary. Each member of the Technical Committee shall serve at the pleasure of the Party selecting that member. The Technical Committee shall meet at least once each month, and at all other times as requested by the Project Manager. During the Construction Phase of the Project, the Technical Committee shall meet once a month. If additional meetings are required, any of the parties, with five days prior notice, may schedule a Technical Committee meeting. The Technical Committee shall function during all three Phases of the Project, and shall have the following responsibilities and authority:

18.6.2.A. Consultation With Project Manager. To advise and consult with the Project Manager and District, to exchange information, and to make any necessary recommendations relating to the Project design, construction, operation, and maintenance. The Project Manager shall, from time to time, inform the Technical Committee of any material event, incident, occurrence, or condition that the Project Manager anticipates may impair District's ability to perform its obligations under this Agreement, including, but not limited to, labor disputes and threatened or pending litigation.

18.6.2.B. Recommendations to Policy Committee. To review and make recommendations to the Policy Committee for all matters within the scope of authority and responsibility of the Policy Committee.

18.6.2.C. Advice Relative to Minor Decisions (\$5,000 to \$100,000). To review and advise the Project Manager concerning any minor decision affecting the Project. A minor decision shall be defined as any contract, change order, purchase, change in policy, or any other action with an estimated cost between \$5,000 and \$100,000, and any action involving

changes in Treated Water quality beyond the range of normal plant operation variability. A major decision shall not include any budgeted expenditure in a budget that has been approved pursuant to Section 18.7.

18.7. Budget.

18.7.1. Budget Principles. In preparing and reviewing budgets for the Project, the Parties shall be guided by the principle that the Project shall be operated in as economic a manner as practical in accordance with generally accepted waterworks practices as evidenced by well designed and operated similar sized potable water treatment plants in Northern California.

18.7.2. Budget Process.

18.7.2.A. Preparation. For each Year during the Commercial Operation Phase, District shall prepare a budget for the Project prior to December 31 for the next ensuing Year. All Project budgets shall include both operating and capital components and shall include a monthly payment to be paid during the next ensuing Domestic Water Year in accordance with Sections 14 and 15. Upon completion of the First Expansion Facilities (as evidenced by the Commercial Operation Date), the budget shall be expanded to include the First Expansion Facilities costs and the increased Treated Water allocation of 67,204.2 acre-feet per year.

18.7.2.B. Technical Committee Review and Recommendation. Prior to completion of the first administrative draft of each Year's budget by District, the Project Manager shall meet with the Technical Committee at least once to discuss and receive input from the Committee concerning development of the budget. Prior to submission of the budget to the Policy Committee, the Technical Committee may make a recommendation with respect to the budget to the Policy Committee. Upon completion of the first administrative draft of a Year's budget and not later than September 15 of each Year, the Project Manager shall forthwith furnish it to the members of the Technical Committee. Within 15 days of receipt of the draft budget, the Technical Committee members may individually or collectively submit to the Project Manager their recommendations and/or comments regarding draft budget. The documents shall not be mailed to City as provided in Section 18.7.2.C until after the expiration of this 15 day Period.

18.7.2.C. Information to City. At least 10 days before the mailing of the annual budget to City as provided in this Section 18.7.2.C, the Project Manager shall mail copies of the budget to the Technical Committee and during the 10 day Period the Project Manager shall arrange at least one meeting of the Technical Committee for review of the budget. After the

expiration of the above 10 day Period and at least 20 days before the submission of each annual budget to District Board, the Project Manager shall mail to City copies of the proposed budget for the ensuing Year and a detailed calculation of the proposed monthly payment obligations of City for the ensuing Domestic Water Year calculated pursuant to Section 15.3 of this Agreement. Commencing after the first Year of operation, the Project Manager shall also at the same time mail copies of the most recent update of the current Year's expenditures and revenues, and the balance sheet and income statement for the most recent Year, if available.

18.7.2.D. Policy Committee Review. Approximately 10 days before the submission of the budget to District Board, the Policy Committee shall meet to review and discuss the proposed budget for the ensuing Year. District staff at this meeting shall explain and justify the need for all of the various budget items and proposed expenditures. At this meeting, the Parties shall strive to agree upon a budget for the ensuing Year.

18.7.2.E. Consideration of Budget by Policy Committee. The budget shall be deemed approved by the Policy Committee unless, at the meeting, the Committee by an affirmative vote of at least two members of the Committee objects to one or more of the budget items. If the Policy Committee objects to one or more budget items, the Committee members objecting shall specify the item or items of the budget which are objectionable, and why the item or items are objectionable.

18.7.2.F. Revision of Budget, Alternate Budget and Report. If one or more budget items are objected to by the Policy Committee, District shall either (i) revise the budget at the Policy Committee meeting so that it is acceptable to at least three members of the Policy Committee, (ii) continue the Policy Committee meeting and thereafter consider the objections raised at the meeting and prepare a revised budget for consideration by the Policy Committee at a subsequent meeting, or (iii) District may determine to submit the budget to District Board over the objections of the Policy Committee. In the latter event, District shall give written notice to the Policy Committee, and the Policy Committee may, within 10 days after receipt of this notice, submit an alternative to the objectionable budget item or items to District Board to be considered along with the budget submitted by District. The alternative budget item or items shall be accompanied report as to the reasons the alternate budget should be adopted in place of the budget submitted by District.

18.7.3 Public Hearing. The annual budget for the Project shall be adopted by the Board only after a public hearing for which ten days' notice has been given by publication in a newspaper of general circulation published and circulated within District. The period of notice commences on the first day of publication and terminates on the 10th day following, including the day of publication.

18.7.4. Appearance at Hearing. The foregoing provisions on review concerning the budget are not intended to, and shall not, preclude City, and its officers, , officials, employees, agents, and volunteers, from appearing before District Board regarding the proposed budget.

18.7.5. Increase. If, during the course of any Year, District proposes to make any budget increase, then the provisions of Sections 18.7.1 through 18.7.2.F concerning review of budgets shall apply to the budget increase.

19. LIABILITY AND INSURANCE.

19.1. Insurance, General. During all Phases of the Project, District shall procure and maintain Project Insurance, including coverage for the construction, operation, and maintenance of the Project, and all operation and activities concerning all Phases of the Project. Such Project insurance coverage shall be primary insurance coverage for all claims related to this Project and City shall be named as an additional insured. Any insurance or self insurance maintained by City, District or their respective directors, officers, officials, employees, agents or volunteers shall be excess of the Project insurance and shall not contribute with it.

19.1.1. Project General Liability. Project General Liability insurance in an amount not less than \$1,000,000 per occurrence, combined single limit for bodily injury and property damage, \$3,000,000 aggregate.

19.1.2. Commercial Automobile Liability Insurance. Commercial Automobile Liability insurance including, as applicable, owned, non-owned and hired automobiles, in an amount not less than \$1,000,000 per occurrence combined single limit for bodily injury and property damage.

19.1.3. Umbrella or Excess Liability Insurance. Umbrella or Excess Liability insurance in an amount not less than \$10,000,000 over and above the underlying limits with the Umbrella or Excess Liability policy containing insuring agreements, exclusions and conditions of coverage substantially similar to the underlying policies.

19.1.4. Workers' Compensation Insurance. Workers' Compensation Insurance as required by the State of California, including employer's liability limits of not less than \$1,000,000 per accident. All rights of subrogation against City, its officers, elected officials, officials, employees, and volunteers shall be waived by the insurer for losses arising from work performed by District. All costs for the waiver of subrogation shall be borne by the Project.

19.1.5 Property Insurance.

19.1.5.A. Course of Construction Insurance. District shall maintain this coverage in its insurance policy portfolio protecting the First Expansion Facilities.

19.1.5.B. Buildings and Equipment Insurance. Special form (all risks subject to approved exclusions) insurance for the Project shall be placed on a replacement cost basis, including the agreed amount or comparable endorsement, all buildings and structures comprising the Project and all fixtures, equipment, and facilities located in, on, or connected with the Project, excluding the pipeline and its associated equipment and fixtures. Such insurance shall include coverage for loss of use, loss of rents, or loss of financing payment. Loss payee under this policy mentioned in this Section 19.1.5.B shall be determined by the Financing documents.

19.1.6. Insurance Provisions. Each insurance policy required by this Agreement shall contain the following clauses:

19.1.6.A. Cancellation. This insurance shall not be cancelled, limited in scope or coverage or non-renewed until 30 days after prior written notice has been given to District and City. Upon receipt of a notice of cancellation of non-payment, District shall give City immediate notice of non-payment of any insurance policy premium required to maintain the insurance coverage required by this Agreement.

19.1.6.B. City to be Named. On all policies, City and its officers, elected officials, officials, employees, agents, and volunteers are to be covered as additional insureds as respects to claims or losses arising out of activities related to the Project. This additional insured requirement shall not apply to Workers' Compensation Insurance.

19.1.6.C. Special Limitations. No policy shall contain any special limitation as to the scope of protection afforded City or its officers, elected officials, officials, elected officials, employees, agents, and volunteers.

19.1.6.D. Approval by City. The policies of insurance required by this Agreement shall be issued by an insurer, or insurers, and shall be in a form approved by City, which approval shall not be unreasonably withheld. Any deductible, and/or self insured retention must be declared to City. District and City shall meet annually to review Project insurance and, if changes are necessary, make recommendations to the Technical Committee.

19.1.7. Insurance Provision in All Contracts. In any and all contracts entered into concerning the construction, operation, or maintenance of the Project, District shall include a provision requiring that the contractor and all of its subcontractors provide insurance protection in an amount agreed by City and District.

19.2. Indemnification and Hold Harmless.

19.2.1. Indemnification by District. Except as provided in Sections 19.3 through 19.6, District shall indemnify, defend, protect, and hold harmless City, and its officers, elected officials, officials, employees, agents, and volunteers from any and all liabilities, claims, damages, losses, judgments, penalties, costs, or expenses (including attorneys' fees) arising out of or relating to the performance of the Project caused in whole or in part by any negligent act or omission of District or contractors, any subcontractors, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, except where caused by the active negligence, sole negligence, or willful misconduct of City, its officers, officials, elected officials, employees and volunteers.

19.2.2. Cost of Litigation. Subject to the other provisions of this Agreement, the reasonable cost of the prosecution and defense of litigation and the payment of settlements or judgments in connection with litigation necessary to perform, or arising from, the construction, financing, operation, or maintenance of the Project by District shall be a cost of the Project.

19.2.3. Notification. District shall advise City in writing promptly as to any litigation the cost of which, including settlements or judgments, District proposes be a cost of the Project.

19.2.4. Objections. If City raises any objection in writing within 10 days of notification pursuant to Section 19.2.3 as to the cost of litigation being a cost of the Project, then the matter shall be subject to review by the Parties. In the event that City takes the position that the cost of particular litigation should not be an expense to be passed on to the Project or that only a portion of the cost of particular litigation should be an expense to be passed on to the

Project, then City Attorney, and the General Counsel of District shall meet and endeavor to reach an agreement relative to the sharing of the costs related to the particular litigation. If the attorneys are unable to promptly come to an agreement, the issue shall be submitted to the Chief Executive Officers. If the Chief Executive Officers are unable to promptly come to an agreement, the Parties shall promptly agree upon an independent attorney or retired judge to determine the matter. If the Parties cannot, within thirty (30) days of the dispute first arising, agree upon a decision relative to the dispute or an independent attorney or retired judge to determine the matter, any Party may request the American Arbitration Association to appoint an independent attorney or retired judge. For purposes of calculating the foregoing 30 day period, the dispute shall be deemed to have arisen on the day City gave notice to District of an objection pursuant to this Section 19.2.4. Upon appointment, the independent attorney or retired judge shall promptly decide the dispute based upon whether the litigation involved is necessary to perform, or arises from, the construction, financing, operation, or maintenance of the Project by District.

19.3. Third Party Claims Not Covered by Insurance; Willful. With respect to claims and lawsuits against one or more of the Parties by third parties concerning injury, death, property damage, or construction claims resulting from the construction, operation or maintenance of the Project, which claims and lawsuits are not covered by insurance, including self insurance, maintained by District pursuant to Section 19.1, and which are the result of willful misconduct, intentional tort, or gross negligence of one of the Parties, the Party whose willful misconduct, intentional tort, or gross negligence resulted in the damage claimed by the third party shall indemnify, defend, protect, and hold harmless the other Party, and its respective officers, elected officials, officials, employees, agents, and volunteers from any and all liabilities, claims, damages, losses, judgments, penalties, costs, or expenses (including attorneys' fees) resulting from a claim or lawsuit by a third party. This Section 19.3 shall not apply if the lack of insurance coverage is because of a denial of coverage based on District's failure to comply with any claim reporting requirement of any applicable insurance.

19.4. Third Party Claims Not Covered by Insurance; Ordinary. With respect to claims and lawsuits against one or more of the Parties by third parties concerning injury, death, or property damage resulting from the construction, operation or maintenance of the Project, which claims and lawsuits are not covered by insurance, including self insurance, maintained by

District pursuant to Section 19.1, and which are not the result of willful misconduct, intentional tort, or gross negligence of one of the Parties, District shall defend the claim or lawsuit on behalf of either or both of the Parties to this Agreement which are named in the claim or lawsuit, and District shall pay any settlement entered into by District or judgment entered against District or City. City shall reimburse District for its defense costs (including attorneys' fees and litigation expenses), settlement and judgment amounts incurred pursuant to this provision, in accordance with their respective percentage obligations to reimburse all Project costs pursuant to this Agreement, provided, however, that City shall not be obligated to pay any settlement of any Project related claim unless City approves the settlement. This Section 19.4 shall not apply if the lack of insurance coverage is because of a denial of coverage based upon District's failure to comply with any claim reporting requirement of any applicable insurance.

19.5. Claims Between Parties. With respect to claims and lawsuits by one of the Parties against the other, the claims and lawsuits shall be processed and resolved in accordance with (i) the Tort Claims Act and/or (ii) breach of contract remedies provided by this Agreement, or applicable law. Nothing in this Agreement shall relieve either Party of any contractual liability or duty imposed by this Agreement.

19.6. Workers' Compensation Claims. Each Party shall bear the costs of discharging all liability imposed, including costs and expenses for attorneys' fees and other costs of defending, settling, or otherwise administering claims arising out of workers' compensation or employers liability claims brought by its employees.

19.7. Replacement of Pro Rata Right of Contribution. The insurance, indemnification, hold harmless, and reimbursement provisions set forth above in Sections 19.1 through 19.4 are intended to and shall replace, and be applicable instead of, the pro rata right of contribution provisions of Government Code Section 895.6, to the extent that Section is applicable.

19.8. Defense by Modesto City Attorney. For any claim or lawsuit against City (whether or not also against District) which falls under Section 19.4, City may defend its own interests through its City Attorney's office; provided, however, that if District is also named in the claim or lawsuit, defense of District by the Modesto City Attorney shall only be with the consent of District, which consent shall not be unreasonably withheld. City shall bear all costs and expenses in representing its own interests pursuant to this Section 19.8. If the Modesto City Attorney represents both parties, then its costs and expenses shall be divided equally among the

Parties to the claim or lawsuit. If City decides not to represent its own interests pursuant to this Section 19.8 , then District shall defend the claim or lawsuit on behalf of City pursuant to Section 19.4.

20. RELATIONSHIP OF PARTIES.

Except as provided in Section 19, the covenants, obligations, and liabilities of the Parties are intended to be several and not joint or collective, and nothing herein contained shall ever be construed to create an association, joint venture, trust, or partnership, or to impose a trust or partnership covenant, obligation, or liability on or with regard to one or both of the Parties. Each Party shall be individually responsible for its own covenants, obligations, and liabilities pursuant to this Agreement. No Party shall be under the control of or shall be deemed to control any other Party or the Parties as a group. No Party shall be the agent of or have a right or power to bind any other Party without its express prior written consent, except as expressly provided in this Agreement.

21. GENERAL PROVISIONS GOVERNING AGREEMENT.

21.1. Severance. In the event that any of the terms, covenants or conditions of this Agreement or the application of any term, covenant or condition shall be held invalid as to any Party or circumstance by any court having jurisdiction over the Parties or subject matter of this Agreement, all other terms, covenants or conditions of this Agreement and their application shall not be affected thereby, but shall remain in force and effect unless a court holds that the provisions are not separable from all other provisions of this Agreement.

21.2 Waiver. The waiver at any time by any Party of its rights with respect to a default or other matter arising in connection with this Agreement shall not be deemed a waiver with respect to any subsequent default or matter.

21.3. Counterparts. This Agreement may be executed in counterparts.

21.4. Supporting Resolutions. Each Party represents that it has legal authority to enter into this Agreement and to perform its obligations hereunder, and shall attach to this Agreement a duly authorized resolution evidencing the authority and authorizing the person executing this Agreement to do so.

21.5. No Rights in Other Parties. This Agreement is for the sole benefit of the Parties and shall not be construed as granting rights to any person other than the Parties or, except as

specifically set forth in this Agreement, imputing to any person the obligations imposed on a Party.

21.6. Amendment. This Agreement may be amended only by a written instrument duly executed by both of the Parties hereto.

21.7. Obligations Prior to Termination. The obligations of the Parties incurred pursuant to this Agreement prior to Termination of this Agreement shall survive the Termination.

21.8. Captions. The captions and the headings in this Agreement are inserted merely to facilitate reference and shall have no bearing upon the interpretation of any of the terms and provisions hereof.

21.9. Additional Documents. Each Party agrees to make, execute, and deliver any and all documents reasonably required to implement this Agreement.

21.10. Governing Law. This Agreement shall be interpreted, governed by, and construed under the laws of the State of California.

21.11. Shall and May. “Shall” is mandatory and “may” is permissive.

21.12. Non-Discrimination. In performing the obligations of this Agreement, there shall be no discrimination against any employee or applicant for employment because of race, color, religion, sex, or national origin.

22. TERM AND TERMINATION.

22.1. Execution by Both Parties. This Agreement shall not become effective until it has been executed by both Parties. Following execution by both Parties, this Agreement shall continue in effect until the earlier of the following:

22.1.1. Superseded by Other Agreement. This Agreement is superseded by another, or an amended, agreement which, by its terms, supersedes this Agreement.

22.1.2. Termination by Mutual Agreement. Termination by mutual agreement of the Parties.

22.2. Termination of Participation in First Expansion Facilities Prior to Financing. Notwithstanding any other provision in this Agreement to the contrary, either Party, prior to the time District issues either Variable Financing or Fixed Financing, whichever occurs first, for the purpose of Financing the First Expansion Facilities, upon not less than 30 days' written notice to the other Party, shall be entitled to terminate its participation in the First Expansion Facilities at any time (i) the Party determines that the First Expansion Facilities is not feasible because of

technical, engineering, or economic reasons, or if adequate insurance is not, or probably will not, be available at a commercially reasonable price, or for other reasons as would cause a reasonably prudent utility in the same or similar circumstances to terminate its participation in a First Expansion Facilities as is contemplated by this Agreement (failure of District to permanently secure a permit to divert sufficient water for urban purposes to meet its obligations under this agreement shall be such cause for termination), or (ii) City determines that District has failed to meet its Design Phase or, if Financing has not yet been obtained, its Construction Phase obligations, and has failed to pursue those obligations with due diligence. If the First Expansion Facilities is terminated pursuant to the provision, then this Agreement shall remain in effect as to the Initial Facilities.

23. UNDERTAKINGS. [Not Used]

24. WATER RIGHTS AND OWNERSHIP.

City shall not own or acquire any of District's water rights, but shall have an absolute right to the delivery of Treated Water in accordance with the terms of this Agreement. City shall not have any ownership rights in any of the facilities of the Project except as specified in this agreement. District shall use its best efforts to exercise and utilize all of its available water rights and supplies to ensure that it delivers the full allocation of Treated Water to City to the extent feasible. District, though, retains the discretion and flexibility to exercise its water rights in such a manner as to reasonably and prudently manage and plan for single and multiple-year Droughts. District also agrees to vigorously defend its water rights and oppose any litigation or regulatory proceeding that could adversely impact District's ability to provide the full allocation of Treated Water to City.

24.1. The parties contemplate that City may increase its reclamation of waste water from its primary or secondary wastewater treatment plants by additional advanced treatment/ technologies and/or methods for groundwater recharge, resale, or any other use whatsoever, inside or outside District's irrigation district boundary. District agrees that City has the right to utilize its reclaimed water in this manner, and shall not object to any such reclaimed water usage, transportation or sale to any, court, administrative agency or other body or tribunal with jurisdiction over any such use, or in the press.

24.2. Nothing in the agreement shall restrict, prohibit, or inhibit in any way, City's right to acquire from third parties and/or exercise water rights additional to or apart from those enumerated in this agreement.

25. NOTICES.

Any notice, demand, or request provided for in this Agreement shall be in writing, and shall be deemed properly served, given, or made if delivered in person or if sent by registered or certified mail, postage prepaid, to the persons specified below:

District: General Manager
 Modesto Irrigation District
 Post Office Box 4060
 Modesto, CA 95352

City: City Manager
 City of Modesto
 Post Office Box 642
 Modesto, CA 95353

MODESTO IRRIGATION DISTRICT

CITY OF MODESTO

By: _____
 President

By: _____
 Mayor

Vice President

City Manager

Approved as to form:

Approved as to form:

General Counsel

City Attorney

Attest:

Attest:

Secretary

City Clerk

EXHIBIT A – MID SUNK COSTS

(Through October 1, 2005)

Consultants = \$982,773.00

Kind Labor = \$501,580.46

Materials & Supplies = \$18,558.08

Advertising = \$9,271.65

Meals & Lodging = \$2,701.07

Transportation = \$2,666.26

Miscellaneous = \$940.73

Meetings = \$ 875

TOTAL = \$1,519,366.25*

*Detailed accounts, reported by date and expenditure type, are included on the attached spreadsheets.

PHASE TWO DOMESTIC WATER EXPANSION PROJECT-COSTS FRONTED BY MID
EXPENDITURES THROUGH MAY 28, 2005

Table with columns: Line No., Project, Task, Employee/Supplier, Expend Type, Item Date, Quantity, UOM, Burdened Cost, Comment, Expend Orig. Rows 1-80, including a 'Total Labor' row and various dates and costs.

PHASE TWO DOMESTIC WATER EXPANSION PROJECT-COSTS FRONTED BY MID EXPENDITURES- MAY 29, 2005 THROUGH OCTOBER 1, 2005

Project	Task	Expend Type	Item Date	Employee/Supplier	Quantity	UOM	Project Burdened Comment	Expend Org
Total From 6-1-05 Report (Expenditures through May 28 2005)								\$1,295,461.30
701620	01.0		11-Jun-05	DIAS, GREGORY PAUL (GREG)	46	Hours	\$4,511.17	8420-Civil Engineering
701620	01.0		25-Jun-05	DIAS, GREGORY PAUL (GREG)	50	Hours	\$4,903.44	8420-Civil Engineering
701620	01.0		9-Jul-05	DIAS, GREGORY PAUL (GREG)	51	Hours	\$5,001.51	8420-Civil Engineering
701620	01.0		23-Jul-05	DIAS, GREGORY PAUL (GREG)	34	Hours	\$3,334.34	8420-Civil Engineering
701620	01.0		6-Aug-05	DIAS, GREGORY PAUL (GREG)	36	Hours	\$3,530.48	8420-Civil Engineering
701620	01.0		20-Aug-05	DIAS, GREGORY PAUL (GREG)	24	Hours	\$2,353.65	8420-Civil Engineering
701620	01.0		3-Sep-05	DIAS, GREGORY PAUL (GREG)	58	Hours	\$6,688.00	8420-Civil Engineering
				Total Greg Dias Labor			\$29,322.59	
701620	01.1		20-Aug-05	DURRER, CHARLES L (CHUCK)	20	Hours	\$912.12	8220-Modesto Dom Water
				Total Charles Durrer Labor			\$912.12	
701620	01.1		9-Jul-05	EDWARDS, KENNETH W (KEN)	15	Hours	\$1,366.11	8220-Modesto Dom Water
701620	01.1		23-Jul-05	EDWARDS, KENNETH W (KEN)	10	Hours	\$910.74	8220-Modesto Dom Water
701620	01.1		6-Aug-05	EDWARDS, KENNETH W (KEN)	25	Hours	\$2,276.85	8220-Modesto Dom Water
701620	01.1		20-Aug-05	EDWARDS, KENNETH W (KEN)	20	Hours	\$1,821.48	8220-Modesto Dom Water
				Total Ken Edwards Labor			\$6,375.18	
701620	01.1		23-Jul-05	EICHMAN, MARK A (MARK)	8	Hours	\$412.90	8220-Modesto Dom Water
701620	01.1		6-Aug-05	EICHMAN, MARK A (MARK)	20	Hours	\$1,032.26	8220-Modesto Dom Water
701620	01.1		20-Aug-05	EICHMAN, MARK A (MARK)	25	Hours	\$1,290.33	8220-Modesto Dom Water
701620	01.1		3-Sep-05	EICHMAN, MARK A (MARK)	8	Hours	\$412.90	8220-Modesto Dom Water
				Total Mark Eichman Labor			\$3,148.39	
701620	01.1		11-Jun-05	HIDAH, CLAUDIA LOUISE (CLAUDIA)	3	Hours	\$235.58	8220-Modesto Dom Water
701620	01.1		25-Jun-05	HIDAH, CLAUDIA LOUISE (CLAUDIA)	8	Hours	\$628.21	8220-Modesto Dom Water
701620	01.1		9-Jul-05	HIDAH, CLAUDIA LOUISE (CLAUDIA)	8	Hours	\$628.21	8220-Modesto Dom Water
701620	01.1		23-Jul-05	HIDAH, CLAUDIA LOUISE (CLAUDIA)	5	Hours	\$392.63	8220-Modesto Dom Water
701620	01.1		6-Aug-05	HIDAH, CLAUDIA LOUISE (CLAUDIA)	12	Hours	\$942.31	8220-Modesto Dom Water
701620	01.1		20-Aug-05	HIDAH, CLAUDIA LOUISE (CLAUDIA)	25	Hours	\$2,062.45	8220-Modesto Dom Water
701620	01.1		3-Sep-05	HIDAH, CLAUDIA LOUISE (CLAUDIA)	28	Hours	\$2,309.94	8220-Modesto Dom Water
				Total Claudia Hidah Labor			\$7,199.33	
701620	01.0		11-Jun-05	KETSCHER, WILLIAM M (BILL)	4	Hours	\$454.95	8420-Civil Engineering
701620	01.0		25-Jun-05	KETSCHER, WILLIAM M (BILL)	8	Hours	\$909.91	8420-Civil Engineering
701620	01.0		9-Jul-05	KETSCHER, WILLIAM M (BILL)	10	Hours	\$1,137.39	8420-Civil Engineering
701620	01.0		23-Jul-05	KETSCHER, WILLIAM M (BILL)	10	Hours	\$1,137.39	8420-Civil Engineering
701620	01.0		6-Aug-05	KETSCHER, WILLIAM M (BILL)	12	Hours	\$1,364.86	8420-Civil Engineering
701620	01.0		20-Aug-05	KETSCHER, WILLIAM M (BILL)	8	Hours	\$909.91	8420-Civil Engineering
701620	01.0		3-Sep-05	KETSCHER, WILLIAM M (BILL)	6	Hours	\$682.43	8420-Civil Engineering
				Total Bill Ketscher Labor			\$6,596.84	
701620	01.1		9-Jul-05	MASON, JOSEPH EDWARD (JOE)	4	Hours	\$206.45	8220-Modesto Dom Water
701620	01.0		23-Jul-05	MASON, JOSEPH EDWARD (JOE)	2	Hours	\$103.23	8220-Modesto Dom Water
701620	01.1		6-Aug-05	MASON, JOSEPH EDWARD (JOE)	8	Hours	\$412.90	8220-Modesto Dom Water
701620	01.1		20-Aug-05	MASON, JOSEPH EDWARD (JOE)	20	Hours	\$1,032.26	8220-Modesto Dom Water
				Total Joe Mason Labor			\$1,754.84	
701620	01.0		6-Aug-05	MAZARIEGOS, LEISSER PATRICIA (LEISSI)	42	Hours	\$1,424.14	8420-Civil Engineering
				Total Leisser Mazariegos Labor			\$1,424.14	
701620	01.1		9-Jul-05	MILLER, JEFFERY LEE (JEFF)	50	Hours	\$3,556.80	8220-Modesto Dom Water
701620	01.1		9-Jul-05	MILLER, JEFFERY LEE (JEFF)	-50	Hours	-\$3,556.80	8220-Modesto Dom Water
701620	01.1		9-Jul-05	MILLER, JEFFERY LEE (JEFF)	42	Hours	\$2,987.71	8220-Modesto Dom Water
701620	01.1	P12	9-Jul-05	MILLER, JEFFERY LEE (JEFF)	0	Hours	\$106.70	8220-Modesto Dom Water
701620	01.1		9-Jul-05	MILLER, JEFFERY LEE (JEFF)	3	Hours	\$213.41	8220-Modesto Dom Water
701620	01.1		23-Jul-05	MILLER, JEFFERY LEE (JEFF)	30	Hours	\$2,134.08	8220-Modesto Dom Water
701620	01.1		20-Aug-05	MILLER, JEFFERY LEE (JEFF)	16	Hours	\$1,138.18	8220-Modesto Dom Water
				Total Jeff Miller Labor			\$6,580.08	
701620	01.0		6-Aug-05	RATTO, VALERIE I (VALERIE)	1	Hours	\$33.91	8420-Civil Engineering
				Total Valerie Ratto Labor			\$33.91	
701620	01.0		11-Jun-05	RYAN, PATRICK J (PAT)	8	Hours	\$644.94	8220-Modesto Dom Water
701620	01.0		25-Jun-05	RYAN, PATRICK J (PAT)	19	Hours	\$2,006.73	8220-Modesto Dom Water

701620	01.0	1	23-Jul-05 RYAN, PATRICK J (PAT)	17 Hours	\$1,795.49	8220-Modesto Dom Water
701620	01.0	1	6-Aug-05 RYAN, PATRICK J (PAT)	15 Hours	\$1,584.26	8220-Modesto Dom Water
701620	01.0	1	20-Aug-05 RYAN, PATRICK J (PAT)	15 Hours	\$1,584.26	8220-Modesto Dom Water
701620	01.0	1	3-Sep-05 RYAN, PATRICK J (PAT)	53 Hours	\$5,597.71	8220-Modesto Dom Water
			Total Pat Ryan Labor		\$13,413.39	
701620	01.0	1	11-Jun-05 WARD, WALTER PAUL (WALT)	2.5 Hours	\$314.68	8010-AGM-Water Operations
701620	01.0	1	25-Jun-05 WARD, WALTER PAUL (WALT)	6 Hours	\$755.23	8010-AGM-Water Operations
701620	01.0	1	23-Jul-05 WARD, WALTER PAUL (WALT)	2 Hours	\$251.74	8010-AGM-Water Operations
701620	01.0	1	6-Aug-05 WARD, WALTER PAUL (WALT)	4 Hours	\$503.48	8010-AGM-Water Operations
701620	01.0	1	20-Aug-05 WARD, WALTER PAUL (WALT)	8 Hours	\$1,006.97	8010-AGM-Water Operations
701620	01.0	1	3-Sep-05 WARD, WALTER PAUL (WALT)	8 Hours	\$1,006.97	8010-AGM-Water Operations
			Total Walter Ward Labor		\$3,539.07	
	Total Labor				\$80,599.88	
701620	01.1 201-Materials		7-Jul-05 CENTER STATE PIPE & SUPPLY	59.99 Currency	\$59.99 PO 44100	0000-Balance Sheet
701620	01.1 255-Material Sales Tax		7-Jul-05 CENTER STATE PIPE & SUPPLY	4.42 Currency	\$4.42 PO 44100	0000-Balance Sheet
			Total Center State Pipe & Supply Materials		\$64.41	
701620	01.1 201-Materials		1-Jul-05 DELTA RUBBER	835.61 Currency	\$835.61 PO 42750	0000-Balance Sheet
701620	01.1 201-Materials		8-Jul-05 DELTA RUBBER	111.84 Currency	\$111.84 PO 42750	0000-Balance Sheet
701620	01.1 201-Materials		1-Sep-05 DELTA RUBBER	285.94 Currency	\$285.94 PO 42750	0000-Balance Sheet
701620	01.1 255-Material Sales Tax		1-Jul-05 DELTA RUBBER	61.67 Currency	\$61.67 PO 42750	0000-Balance Sheet
701620	01.1 255-Material Sales Tax		8-Jul-05 DELTA RUBBER	8.25 Currency	\$8.25 PO 42750	0000-Balance Sheet
701620	01.1 255-Material Sales Tax		1-Sep-05 DELTA RUBBER	21.1 Currency	\$21.10 PO 42750	0000-Balance Sheet
			Total Delta Rubber Materials		\$1,324.41	
701620	01.1 201-Materials		10-Aug-05 WATERFORD FARM SUPPLY	15.76 Currency	\$15.76 PO 43010	0000-Balance Sheet
701620	01.1 255-Material Sales Tax		10-Aug-05 WATERFORD FARM SUPPLY	1.16 Currency	\$1.16 PO 43010	0000-Balance Sheet
			Total Waterford Farm Supply Materials		\$16.92	
701620	01.1 207-Freight		4-Jul-05 BANK ONE, NA	62.66 Currency	\$62.66 FEDEX FREIGHT WEST INC 30-JUN-05	8220-Modesto Dom Water
			Total Bank One Freight		\$62.66	
701620	01.1 214-Repair Parts		29-Jun-05 BANK ONE, NA	264.89 Currency	\$264.89 MICMASTER-CARR 27-JUN-05	8220-Modesto Dom Water
701620	01.1 214-Repair Parts		29-Jun-05 BANK ONE, NA	388.38 Currency	\$388.38 MICMASTER-CARR 27-JUN-05	8220-Modesto Dom Water
701620	01.1 214-Repair Parts		30-Jun-05 BANK ONE, NA	\$416.81 Currency	\$416.81 MICMASTER-CARR 28-JUN-05	8220-Modesto Dom Water
701620	01.1 214-Repair Parts		1-Jul-05 BANK ONE, NA	43.8 Currency	\$43.80 MICMASTER-CARR 29-JUN-05	8220-Modesto Dom Water
701620	01.1 214-Repair Parts		1-Jul-05 BANK ONE, NA	483.51 Currency	\$483.51 MICMASTER-CARR 29-JUN-05	8220-Modesto Dom Water
701620	01.1 214-Repair Parts		1-Jul-05 BANK ONE, NA	244.55 Currency	\$244.55 MICMASTER-CARR 05-JUL-05	8220-Modesto Dom Water
701620	01.1 214-Repair Parts		7-Jul-05 BANK ONE, NA	100.38 Currency	\$100.38 MICMASTER-CARR 13-JUL-05	8220-Modesto Dom Water
701620	01.1 214-Repair Parts		18-Jul-05 BANK ONE, NA	114.57 Currency	\$114.57 MICMASTER-CARR 14-JUL-05	8220-Modesto Dom Water
701620	01.1 214-Repair Parts		18-Jul-05 BANK ONE, NA	136.96 Currency	\$136.96 MICMASTER-CARR 13-JUL-05	8220-Modesto Dom Water
701620	01.1 214-Repair Parts		28-Jul-05 BANK ONE, NA	74.53 Currency	\$74.53 MICMASTER-CARR 26-JUL-05	8220-Modesto Dom Water
701620	01.1 214-Repair Parts		29-Jul-05 BANK ONE, NA	230.84 Currency	\$230.84 MICMASTER-CARR 27-JUL-05	8220-Modesto Dom Water
			Total Bank One Repair Parts		\$3,751.08	
	Total Materials and Supplies				\$5,219.48	
701620	01.1 401-Consulting		1-Jun-05 BLACK & VEATCH	16841.86 Currency	\$16,841.86 CLIENT 66518 / PROF SVCS / MRWTP PHASE 2 EXP PROJ / 3/5/05-4/7/05	0000-Balance Sheet
701620	01.1 401-Consulting		22-Jun-05 BLACK & VEATCH	34983.76 Currency	\$34,983.76 CLIENT 66518 / PROF SVCS / MRWTP PHASE 2 EXP PROJ / 4/2/05-6/3/05	0000-Balance Sheet
701620	01.1 401-Consulting		15-Jul-05 BLACK & VEATCH	18137.81 Currency	\$18,137.81 PROJ / 6/4/05-6/30/05	0000-Balance Sheet
701620	01.1 401-Consulting		1-Sep-05 BLACK & VEATCH	47247.97 Currency	\$47,247.97 MRWTP PHASE TWO EXPANSION PROJECT SEIR PROFESSIONAL SERVICES - JUL 05 BILLING /	0000-Balance Sheet
			Total Black & Veatch Consulting		\$117,211.40	
701620	01.1 401-Consulting		6-Jun-05 JONES & STOKES ASSOCIATES	2100.15 Currency	\$2,100.15 PROFESSIONAL SERVICES / MAY 05 BILLING / MRWTP PHASE TWO EXPANSION PROJECT SEIR PROJ 03/05/03 / PROF SVCS - 5/23/05-6/28/05 /	0000-Balance Sheet
701620	01.1 401-Consulting		7-Jul-05 JONES & STOKES ASSOCIATES	7475.79 Currency	\$7,475.79 MRWTP PHASE 2 EXPANSION PROJECT SEIR PROFESSIONAL SERVICES - MRWTP PHASE TWO	0000-Balance Sheet
701620	01.1 401-Consulting		1-Aug-05 JONES & STOKES ASSOCIATES	4260.25 Currency	\$4,260.25 EXPANSION PROJECT SEIR / JUL 05 BILLING / PROFESSIONAL SERVICES - JUL 05 BILLING /	0000-Balance Sheet
701620	01.1 401-Consulting		1-Sep-05 JONES & STOKES ASSOCIATES	786.1 Currency	\$786.10 MRWTP PHASE TWO EXPANSION PROJECT SEIR PROFESSIONAL SERVICES - JUL 05 BILLING /	0000-Balance Sheet
			Total Jones & Stokes Consulting		\$14,632.29	
701620	01.1 425-Other Outside Services		30-May-05 BSK ANALYTICAL LABORATORIES	1350 Currency	\$1,350.00 PO 41760	0000-Balance Sheet
701620	01.1 425-Other Outside Services		2-Jun-05 BSK ANALYTICAL LABORATORIES	185 Currency	\$185.00 PO 41760	0000-Balance Sheet
701620	01.1 425-Other Outside Services		8-Jun-05 BSK ANALYTICAL LABORATORIES	240 Currency	\$240.00 PO 41760	0000-Balance Sheet
701620	01.1 425-Other Outside Services		15-Jun-05 BSK ANALYTICAL LABORATORIES	2025 Currency	\$2,025.00 PO 41760	0000-Balance Sheet

701620	01.1 425-Other Outside Services	17-Jun-05 BSK ANALYTICAL LABORATORIES	365 Currency	\$365.00 PO 41760	0000-Balance Sheet
701620	01.1 425-Other Outside Services	21-Jun-05 BSK ANALYTICAL LABORATORIES	495 Currency	\$495.00 PO 41760	0000-Balance Sheet
701620	01.1 425-Other Outside Services	21-Jun-05 BSK ANALYTICAL LABORATORIES	150 Currency	\$150.00 PO 41760	0000-Balance Sheet
701620	01.1 425-Other Outside Services	21-Jun-05 BSK ANALYTICAL LABORATORIES	185 Currency	\$185.00 PO 41760	0000-Balance Sheet
701620	01.1 425-Other Outside Services	23-Jun-05 BSK ANALYTICAL LABORATORIES	150 Currency	\$150.00 PO 41760	0000-Balance Sheet
701620	01.1 425-Other Outside Services	30-Jun-05 BSK ANALYTICAL LABORATORIES	150 Currency	\$150.00 PO 41760	0000-Balance Sheet
701620	01.1 425-Other Outside Services	13-Jul-05 BSK ANALYTICAL LABORATORIES	30 Currency	\$30.00 PO 41760	0000-Balance Sheet
701620	01.1 425-Other Outside Services	8-Aug-05 BSK ANALYTICAL LABORATORIES	375 Currency	\$375.00 PO 41760	0000-Balance Sheet
	Total Consulting & Outside Services	Total BSK Analytical Lab Outside Services		\$5,850.00	
				\$137,663.69	
701620	01.1 503-Meals/Lodg/Park/Rent/Car	1-Aug-05 BANK ONE, NA	66.67 Currency	\$66.67 DOUBLETREE MODESTO F & 28-JUL-05	8220-Modesto Dom Water
701620	01.0 503-Meals/Lodg/Park/Rent/Car	24-Jun-05 EDWARDS, KENNETH W (KEN)	43.56 Currency	\$43.56 EXP REIMB / AWWA IN SF ON 6/15/05	0000-Balance Sheet
701620	01.0 503-Meals/Lodg/Park/Rent/Car	24-Jun-05 EICHMAN, MARK A (MARK)	26.12 Currency	\$26.12 EXP REIMB / AWWA IN SF ON 6/14/05	0000-Balance Sheet
701620	01.0 503-Meals/Lodg/Park/Rent/Car	6-Sep-05 JAKE SONKE, CONTROLLER	4 Currency	\$4.00 FOR FUNDS ISSUED	0000-Balance Sheet
701620	01.1 503-Meals/Lodg/Park/Rent/Car	26-Jul-05 WARD, WALTER PAUL (WALT)	85 Currency	\$85.00 LUNCHONEN / MODESTO , CA / JUL 25, 2005	0000-Balance Sheet
		Total Meals/Lodg/Park/Rent/Car		\$225.35	
701620	01.0 601-Advertising	31-Jul-05 MODESTO BEE	146.55 Currency	\$146.55 PO 44564 / ACCT #10133800 / JUL 05 BILLING	0000-Balance Sheet
		Total Advertising		\$146.55	
701620	01.0 642-Trash Removal/Dumping Fees	31-Aug-05 GILTON RESOURCE RECOVERY	30 Currency	\$30.00 ACCT #00000386-00 / AUG 05 BILLING / PO 44573	0000-Balance Sheet
		Total Misc. Expenses		\$30.00	

Task 01 Totals	
Labor	\$501,580.46 33.0%
Consultants/Outside Services	\$982,773.00 64.7%
Meals/Lodging/Parking/Rent/Car	\$2,701.07 0.2%
Transportation	\$2,666.26 0.2%
Materials, Postage, Pats, Supplies	\$16,559.08 1.2%
Seminars/Training/Meetings	\$673.00 0.1%
Advertising	\$2,271.05 0.2%
Misc. Expenses	\$940.73 0.1%

Check sum for this report \$223,904.95
Total from June 1 2005 report \$1,295,461.30
Total for All 01 Task Charges \$1,519,366.25
100.0%

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Appendix H

Groundwater Information

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San Joaquin Valley Groundwater Basin Modesto Subbasin

- Groundwater Subbasin Number: 5-22.02
- County: Stanislaus
- Surface Area: 247,000 acres (385 square miles)

Basin Boundaries and Hydrology

The San Joaquin Valley is surrounded on the west by the Coast Ranges, on the south by the San Emigdio and Tehachapi Mountains, on the east by the Sierra Nevada and on the north by the Sacramento-San Joaquin Delta and Sacramento Valley. The northern portion of the San Joaquin Valley drains toward the Delta by the San Joaquin River and its tributaries, the Fresno, Merced, Tuolumne, and Stanislaus Rivers. The southern portion of the valley is internally drained by the Kings, Kaweah, Tule, and Kern Rivers that flow into the Tulare drainage basin including the beds of the former Tulare, Buena Vista, and Kern Lakes.

The Modesto subbasin lies between the Stanislaus River to the north and Tuolumne River to the south and between the San Joaquin River on the west and crystalline basement rock of the Sierra Nevada foothills on the east. The northern, western, and southern boundaries are shared with the Eastern San Joaquin Valley, Delta-Mendota, and Turlock Groundwater Subbasins, respectively. The subbasin comprises land primarily in the Modesto Irrigation District (MID) and the southern two-thirds of the Oakdale Irrigation District (OID). The City of Modesto is in the southwestern portion of the subbasin. Average annual precipitation for this subbasin is 11 to 15 inches, increasing eastward.

Hydrogeologic Information

The San Joaquin Valley represents the southern portion of the Great Central Valley of California. The San Joaquin Valley is a structural trough up to 200 miles long and 70 miles wide. It is filled with up to 32,000 feet of marine and continental sediments deposited during periodic inundation by the Pacific Ocean and by erosion of the surrounding mountains, respectively. Continental deposits shed from the surrounding mountains form an alluvial wedge that thickens from the valley margins toward the axis of the structural trough. This depositional axis is below to slightly west of the series of rivers, lakes, sloughs, and marshes, which mark the current and historic axis of surface drainage in the San Joaquin Valley.

Water Bearing Formations

The primary hydrogeologic units in the Modesto Subbasin include both consolidated and unconsolidated sedimentary deposits. The consolidated deposits include the Ione Formation of Miocene age, the Valley Springs Formation of Eocene age, and the Mehrten Formation, which was deposited during the Miocene to Pliocene Epochs. The consolidated deposits lie in the eastern portion of the subbasin and generally yield small quantities of water to wells except for the Mehrten Formation, which is an important aquifer. In the Subbasin, the Mehrten Formation is composed of up to 300 feet of sandstone, breccia, conglomerate, tuff siltstone and claystone (Page 1973).

The unconsolidated deposits were laid down during the Pliocene to present and, from oldest to youngest, include continental deposits lacustrine and marsh deposits, older alluvium, younger alluvium, and flood-subbasin deposits. The continental deposits and older alluvium are the main water-yielding units in the unconsolidated deposits. The lacustrine and marsh deposits (which include the Corcoran, or "E-" Clay), and the flood-subbasin deposits yield little water to wells, and the younger alluvium in most places probably yields only moderate quantities of water to wells (Page 1973).

The continental deposits consist of poorly sorted gravel, sand, silt and clay varying in thickness from 0 to 450 feet occurring at the surface on the eastern side of the subbasin to over 400 feet deep in the western portion. These deposits are the equivalent of the North Merced Gravels and the lower Turlock Lake Formation (Davis and others 1959). The older alluvium consists of intercalated beds of gravel sand, silt and clay with some hardpan. This alluvium is up to 400 feet thick and is generally present near or at the surface of the western one-half of the subbasin. The older alluvium is largely equivalent to the Riverbank and Modesto Formations (Davis and others 1959).

Ground water occurs under unconfined, semi-confined, and confined conditions. The unconfined water body occurs in the unconsolidated deposits above and east of the Corcoran Clay, which underlies the southwestern portion of the subbasin at depths ranging from 150 to 250 feet (DWR 1981). Where clay lenses restrict the downward flow of ground water, semi-confined conditions occur. The confined water body occurs in the unconsolidated deposits below the Corcoran Clay and extends downward to the base of fresh water.

The estimated average specific yield of this subbasin is 8.8 percent (based on DWR San Joaquin District internal data and Davis and others 1959).

Restrictive Structures

Groundwater flow is primarily to the southwest, following the regional dip of basement rock and sedimentary units. The lower to middle reaches of the Stanislaus and Tuolumne Rivers in the Subbasin appear to be gaining streams with groundwater flow into both, especially the Tuolumne River (DWR 2000). No faults have been identified that affect the movement of fresh groundwater (Page and Balding 1973).

Recharge Areas

Groundwater recharge is primarily from deep percolation of applied irrigation water and canal seepage from MID and OID facilities. Seepage from Modesto Reservoir is also significant (STRGBA 1995). Lesser recharge occurs as a result of subsurface flows originating in the mountains and foothills along the east side of the subbasin, losses from minor streams, and from percolation of direct precipitation.

Groundwater Level Trends

Changes in groundwater levels are based on annual water level measurements by DWR and cooperators. Water level changes were

evaluated by quarter township and computed through a custom DWR computer program using geostatistics (kriging). On average, the subbasin water level has declined nearly 15 feet from 1970 through 2000. The period from 1970 through 1978 showed steep declines totaling about 12 feet. The six-year period from 1978 to 1984 saw stabilization and rebound of about 7 feet. 1984 through 1995 again showed steep declines, bottoming out in 1995 at nearly 20 feet below the 1970 level. Water levels then rose about 5 feet from 1996 to 2000. Water level declines have been more severe in the eastern portion of the subbasin, but have risen faster in the eastern subbasin between 1996 and 2000 than in any other portion of the subbasin.

Groundwater Storage

Estimations of the total storage capacity of the subbasin and the amount of water in storage as of 1995 were calculated using an estimated specific yield of 8.8 percent and water levels collected by DWR and cooperators. According to these calculations, the total storage capacity of this subbasin is estimated to be 6,500,000 af to a depth of 300 feet. According to published literature, the amount of stored groundwater in this subbasin as of 1961 is 14,000,000 af to a depth of ≤ 1000 feet (Williamson 1989).

Groundwater Budget (Type B)

Although a detailed budget was not available for this subbasin, an estimate of groundwater demand was calculated based on the 1990 normalized year and data on land and water use. A subsequent analysis was done by a DWR water budget spreadsheet to estimate overall applied water demands, agricultural groundwater pumpage, urban pumping demand and other extraction data.

Natural recharge into the subbasin is estimated to be 86,000 af. Artificial recharge and subsurface inflow values are not determined. There is approximately 92,000 af of applied water recharge. Annual urban and agricultural extractions are estimated to be 81,000 and 145,000 af, respectively. There are no other extractions, and values for subsurface outflow are not determined.

Groundwater Quality

Characterization. The groundwater in this basin is of a calcium bicarbonate type in the eastern subbasin to a calcium-magnesium bicarbonate or calcium-sodium bicarbonate type in the western portion. TDS values range from 60 to 8,300 mg/L, with a typical range of 200 to 500 mg/L. The Department of Health Services, which monitors Title 22 water quality standards, reports TDS values in 88 wells ranging from 60 to 860 mg/L, with an average value of 295 mg/L.

Impairments. There are areas of hard groundwater and localized areas of high chloride, boron, DBCP, nitrate, iron, and manganese. Some sodium chloride waters of high TDS values are found along the east side of the subbasin. There are also some areas of shallow groundwater in the subbasin that require dewatering wells.

Water Quality in Public Supply Wells

Constituent Group ¹	Number of wells sampled ²	Number of wells with a concentration above an MCL ³
Inorganics – Primary	110	3
Radiological	109	25
Nitrates	114	3
Pesticides	117	14
VOCs and SVOCs	117	8
Inorganics – Secondary	110	8

¹ A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).

² Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

³ Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: 350 – 4,500	Average: 1,000 - 2,000
	Total depths (ft)	
Domestic		
Municipal/Irrigation	Range: 50 - 500	

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR (incl. Cooperators)	Groundwater levels	230 Semi-annually
Oakdale Irrigation District	Drinking water parameters	15 Monthly to every 3 years
Department of Health Services (including Cooperators)	Title 22 water quality	209 Varies

Basin Management

Groundwater management: The Stanislaus and Tuolumne Rivers' Groundwater Subbasin Association has developed an AB3030 ground water management plan for the individual Association members (City of Modesto, Del Este Water Company, County of Stanislaus, Oakdale I.D., City of Oakdale, City of Riverbank, and Modesto I.D.)

Conjunctive use programs, stormwater recharge subbasins, water conservation programs operated by Oakdale and Modesto I.Ds., Stanislaus County and other public entities.

Water agencies

Public

Oakdale I.D., Modesto I.D.; Stanislaus and Tuolumne Rivers' Groundwater Subbasin Association; City of Oakdale; City of Riverbank

Private

References Cited

California Department of Water Resources (DWR), San Joaquin District. Unpublished Land and Water Use Data.

_____. Well completion report files.

_____. 1981. *Depth to Top of Corcoran Clay*. 1:253,440 scale map.

_____. 1995. Internal computer spreadsheet for 1990 normal computation of net water demand used in preparation of DWR Bulletin 160-93.

_____. 2000. *Spring 1999, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer*. 1:253,440 scale map sheet.

Davis, GH, Green, JH, Olmstead, SH, and Brown, DW. 1959. *Ground Water Conditions and Storage Capacity in the San Joaquin Valley, California*; US Geological Survey Water Supply Paper No. 1469, 287p.

Page, RW, and Balding, GO. 1973. *Geology and Quality of Water in the Modesto-Merced Area, San Joaquin Valley, California, with a Brief Section of Hydrology*. USGS Water-Resources Investigations 6-73, 85p.

Stanislaus and Tuolumne Rivers' Groundwater Subbasin Association (STRGBA). 1995. *Development of a Groundwater Management Plan Phase I*. Technical Memorandum. Prepared by Black & Veatch, Provost & Pritchard, and Kenneth D. Schmidt & Associates Consulting Firms.

Williamson, Alex K, Prudic, David E, and Swain, Lindsay A. 1989. *Groundwater flow in the Central Valley, California*. US Geological Survey Professional Paper 1401-D. 127 p.

Additional References

Balding, GO, and Page, RW. 1971. Data for Wells in the Modesto-Merced Area San Joaquin Valley, California. US Geological Survey Open-File Report.

California Department of Water Resources (DWR). 1980. Bulletin 118-80, Ground Water Subbasins in California.

_____. 1994. Bulletin 160-93. California Water Plan Update, Vol. 1.

Davis, SN and Hall, FR. 1959. Water Quality of Eastern Stanislaus and North Merced Counties, California; Stanford Univ. Pubs., Geol. Sci., v. 6, no. 1. 112 p.

Errata

Changes made to the basin description will be noted here.

San Joaquin Valley Groundwater Basin Turlock Subbasin

- Groundwater Basin Number: 5-22.03
- County: Stanislaus, Merced
- Surface Area: 347,000 acres (542 square miles)

Basin Boundaries and Hydrology

The San Joaquin Valley is surrounded on the west by the Coast Ranges, on the south by the San Emigdio and Tehachapi Mountains, on the east by the Sierra Nevada and on the north by the Sacramento-San Joaquin Delta and Sacramento Valley. The northern portion of the San Joaquin Valley drains toward the Delta by the San Joaquin River and its tributaries, the Fresno, Merced, Tuolumne, and Stanislaus Rivers. The southern portion of the valley is internally drained by the Kings, Kaweah, Tule, and Kern Rivers that flow into the Tulare drainage basin including the beds of the former Tulare, Buena Vista, and Kern Lakes.

The Turlock Subbasin lies between the Tuolumne and Merced Rivers and is bounded on the west by the San Joaquin River and on the east by crystalline basement rock of the Sierra Nevada foothills. The northern, western, and southern boundaries are shared with the Modesto, Delta-Mendota, and Merced Groundwater Subbasins, respectively. The subbasin includes lands in the Turlock Irrigation District, the Ballico-Cortez Water District, the Eastside Water District, and a small portion of Merced I.D. Average annual precipitation is estimated as 11 to 13 inches, increasing eastward, with 15 inches in the Sierran foothills.

Hydrogeologic Information

The San Joaquin Valley represents the southern portion of the Great Central Valley of California. The San Joaquin Valley is a structural trough up to 200 miles long and 70 miles wide. It is filled with up to 32,000 feet of marine and continental sediments deposited during periodic inundation by the Pacific Ocean and by erosion of the surrounding mountains, respectively. Continental deposits shed from the surrounding mountains form an alluvial wedge that thickens from the valley margins toward the axis of the structural trough. This depositional axis is below to slightly west of the series of rivers, lakes, sloughs, and marshes that mark the current and historic axis of surface drainage in the San Joaquin Valley.

Water Bearing Formations

The primary hydrogeologic units in the Turlock Subbasin include both consolidated and unconsolidated sedimentary deposits. The consolidated deposits include the Ione Formation of Miocene age, the Valley Springs Formation of Eocene age, and the Mehrten Formation, which was deposited during the Miocene to Pliocene Epochs. The consolidated deposits lie in the eastern portion of the subbasin and generally yield small quantities of water to wells except for the Mehrten Formation, which is an important aquifer. The Mehrten Formation is composed of up to 800 feet of sandstone, breccia, conglomerate, tuff siltstone and claystone (Page 1973).

Unconsolidated deposits include continental deposits, older alluvium, younger alluvium, and flood-basin deposits. Lacustrine and marsh deposits, which constitute the Corcoran or E-clay aquitard, underlie the western half of the subbasin at depths ranging between about 50 and 200 feet (DWR 1981). The continental deposits and older alluvium are the main water-yielding units in the unconsolidated deposits. The lacustrine and marsh deposits and the flood-subbasin deposits yield little water to wells. The younger alluvium, in most places, probably yields only moderate quantities of water.

There are three ground water bodies in the Turlock Subbasin: the unconfined water body; the semi-confined and confined water body in the consolidated rocks; and the confined water body beneath the E-clay in the western Subbasin. The estimated average specific yield of the subbasin is 10.1 percent (based on DWR San Joaquin District internal data and Davis 1959).

Restrictive Structures

Groundwater flow is primarily to the southwest, following the regional dip of basement rock and sedimentary units. Based on recent groundwater measurements (DWR 2000), a paired groundwater mound and depression appear beneath the city of Turlock and to its east, respectively. The lower to middle reaches of the Tuolumne River and the reach of the San Joaquin River in the subbasin appear to be gaining streams during this period also. No faults have been identified that affect the movement of fresh groundwater (Page 1973).

Groundwater Level Trends

Changes in groundwater levels are based on annual water level measurements by DWR and cooperators. Water level changes were evaluated by quarter township and computed through a custom DWR computer program using geostatistics (kriging). On average the subbasin water level has declined nearly 7 feet from 1970 through 2000. The period from 1970 through 1992 showed a generally steep decline totaling about 15 feet. Between 1992 and 1994, water levels stayed near this low level. From 1994 to 2000, the water levels rebounded about 8 feet, bringing them to approximately 7 feet below the 1970 levels. Water level declines have been more severe in the eastern portion of the subbasin after 1982. From 1970 to 1982, water level declines were more severe in the western portion of the subbasin.

Groundwater Storage

Estimations of the total storage capacity of the subbasin and the amount of water in storage as of 1995 were calculated using an estimated specific yield of 10.1 percent and water levels collected by DWR and cooperators. According to these calculations, the total storage capacity of this subbasin is estimated to be 15,800,000 af to a depth of 300 feet and 30,000,000 af to the base of fresh groundwater. These same calculations give an estimate of 12,800,000 af of groundwater to a depth of 300 feet stored in this subbasin as of 1995 (DWR 1995). According to published literature, the amount of stored groundwater in this subbasin as of 1961 is 23,000,000 af to a depth of \leq 1000 feet (Williamson 1989).

Groundwater Budget (Type B)

Although a detailed budget was not available for this subbasin, an estimate of groundwater demand was calculated based on the 1990 normalized year and data on land and water use. A subsequent analysis was done by a DWR water budget spreadsheet to estimate overall applied water demands, agricultural groundwater pumpage, urban pumping demand and other extraction data.

Natural recharge of the subbasin was estimated to be 33,000 af. Artificial recharge and subsurface inflow were not determined. Applied water recharge was calculated to be 313,000 af. Annual urban extraction and annual agricultural extraction were calculated at 65,000 and 387,000 af, respectively. Other extractions and subsurface inflow were not determined.

Groundwater Quality

Characterization. The groundwater in this subbasin is predominately of the sodium-calcium bicarbonate type, with sodium bicarbonate and sodium chloride types at the western margin and a small area in the north-central portion. TDS values range from 100 to 8,300 mg/L, with a typical range of 200 to 500 mg/L. The Department of Health Services, which monitors Title 22 water quality standards, reports TDS values in 71 wells ranging from 100 to 930 mg/L, with an average value of 335 mg/L. EC values range from 168 to 1,000 μ mhos/cm, with a typical range of 244 to 707 μ mhos/cm.

Impairments. There are localized areas of hard groundwater, nitrate, chloride, boron, and DBCP. Some sodium chloride type water of high TDS is found along the west side of the subbasin. Two wells in the city of Turlock have been closed, one for nitrate and one for carbon tetrachloride (Dan Wilde 2001).

Water Quality in Public Supply Wells

Constituent Group¹	Number of wells sampled²	Number of wells with a concentration above an MCL³
Inorganics – Primary	84	0
Radiological	80	12
Nitrates	90	8
Pesticides	89	5
VOCs and SVOCs	86	3
Inorganics – Secondary	84	11

¹ A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).

² Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

³ Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Characteristics

Well yields (gal/min)	
Municipal/Irrigation	Range: 200 – 4,500 Average: 1,000 - 2,000
Total depths (ft)	
Domestic	
Municipal/Irrigation	Range: 50 - 350

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR (incl. Cooperators)	Groundwater levels	307 Semi-annually
Department of Health Services (including cooperators)	Title 22 water quality	163 Varies

Basin Management

Groundwater management:	Turlock District has an adopted AB 3030 ground water management plan. Eastside WD adopted its plan on September 25, 1997.
Water agencies	
Public	Eastside Water District , Turlock Irrigation District, Ballico-Cortez Water District (inactive), Merced I.D. (portion).
Private	

References Cited

- California Department of Water Resources (DWR), San Joaquin District. Unpublished Land and Water Use Data.
- _____. 1995. Internal computer spreadsheet for 1990 normal computation of net water demand used in preparation of DWR Bulletin 160-93.
- _____. 1981. *Depth to the Top of the Corcoran Clay*. 1:253,440 scale map.
- _____. 2000. *Spring 1999, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer*. 1:253,440 scale map sheet.
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- Davis, G.H., Green, J.H., Olmstead, S.H., and Brown, D.W. 1959. *Ground Water Conditions and Storage Capacity in the San Joaquin Valley, California*. US Geological Survey Water Supply Paper No. 1469. 287p.
- Page, R.W. and Balding, G.O. 1973. Geology and Quality of Water in the Modesto-Merced Area, San Joaquin Valley, California, with a Brief Section of Hydrology. USGS Water-Resources Investigations 6-73. 85p.
- Wilde, Dan. City of Turlock. 2001. Response to DWR questionnaire February 12.
- Williamson, Alex K., Prudic, David E., and Swain, Lindsay A. 1989. *Groundwater flow in the Central Valley, California*. US Geological Survey Professional Paper 1401-D. 127 p.

Additional References

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California Department of Water Resources (DWR). 1980. Bulletin 118-80, *Ground Water Subbasins in California*.

_____. 1994. Bulletin 160-93. *California Water Plan Update, Vol. 1*.

Davis, S.N. and Hall, F.R. 1959. *Water Quality of Eastern Stanislaus and North Merced Counties, California*. Stanford Univ. Pubs., Geol. Sci., v.6, no. 1. 112 p.

Errata

Updated groundwater management information and added hotlinks where applicable.
(1/20/06)

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San Joaquin Valley Groundwater Basin Delta-Mendota Subbasin

- Groundwater Subbasin Number: 5-22.07
- County: Stanislaus, Merced, Madera, Fresno
- Surface Area: 747,000 acres (1,170 square miles)

Basin Boundaries and Hydrology

The San Joaquin Valley is surrounded on the west by the Coast Ranges, on the south by the San Emigdio and Tehachapi Mountains, on the east by the Sierra Nevada and on the north by the Sacramento-San Joaquin Delta and Sacramento Valley. The northern portion of the San Joaquin Valley drains toward the Delta by the San Joaquin River and its tributaries, the Fresno, Merced, Tuolumne, and Stanislaus Rivers. The southern portion of the valley is internally drained by the Kings, Kaweah, Tule, and Kern Rivers that flow into the Tulare drainage basin including the beds of the former Tulare, Buena Vista, and Kern Lakes.

The Delta-Mendota subbasin is bounded on the west by the Tertiary and older marine sediments of the Coast Ranges, and on the north by the Stanislaus/San Joaquin county line. The eastern boundary follows the San Joaquin River to Township 11 S, where it jogs eastward and follows the eastern boundary of Columbia Canal company to the San Joaquin River, then follows the Chowchilla Bypass and the eastern border of Farmer's Water District. It then trends southerly through Township 14S Range 15E on the eastern side of Fresno Slough, then follows the Tranquility ID boundary to its southern extremity. Heading northward, it follows the eastern, northern, and northwestern boundary of San Joaquin Valley – Westside Groundwater Subbasin (corresponding with Westlands Water District boundaries). Average annual precipitation is nine to 11 inches, increasing northwards.

Hydrogeologic Information

The San Joaquin Valley represents the southern portion of the Great Central Valley of California. The San Joaquin Valley is a structural trough up to 200 miles long and 70 miles wide filled with up to 32,000 feet of marine and continental sediments deposited during periodic inundation by the Pacific Ocean and by erosion of the surrounding mountains, respectively. Continental deposits shed from the surrounding mountains form an alluvial wedge that thickens from the valley margins toward the axis of the structural trough. This depositional axis is below to slightly west of the series of rivers, lakes, sloughs, and marshes, which mark the current and historic axis of surface drainage in the San Joaquin Valley.

Water Bearing Formations

The geologic units that comprise the ground water reservoir in the Delta-Mendota subbasin consist of the Tulare Formation, terrace deposits, alluvium, and flood-basin deposits. The Tulare Formation is composed of beds, lenses, and tongues of clay, sand, and gravel that have been alternately deposited in oxidizing and reducing environments (Hotchkiss 1971). The Corcoran Clay Member of the formation underlies the basin at depths ranging about 100 to 500 feet and acts as a confining bed (DWR 1981).

Terrace deposits of Pleistocene age lie up to several feet higher than present streambeds. They are composed of yellow, tan, and light-to-dark brown silt, sand, and gravel with a matrix that varies from sand to clay (Hotchkiss 1971). The water table generally lies below the bottom of the terrace deposits. However, the relatively large grain size of the terrace deposits suggests their value as possible recharge sites.

Alluvium is composed of interbedded, poorly to well-sorted clay, silt, sand, and gravel and is divided based on its degree of dissection and soil formation. The flood-basin deposits are generally composed of light-to-dark brown and gray clay, silt, sand, and organic materials with locally high concentrations of salts and alkali. Stream channel deposits of coarse sand and gravel are also included.

Groundwater in the Delta-Mendota subbasin occurs in three water-bearing zones. These include the lower zone, which contains confined fresh water in the lower section of the Tulare Formation, an upper zone which contains confined, semi-confined, and unconfined water in the upper section of the Tulare Formation and younger deposits, and a shallow zone which contains unconfined water within about 25 feet of the land surface (Davis 1959).

The estimated specific yield of this subbasin is 11.8 percent (based on DWR San Joaquin District internal data and Davis 1959). Land subsidence up to about 16 feet has occurred in the southern portion of the basin due to artesian head decline (Ireland 1964).

Restrictive Structures

Groundwater flow was historically northwestward parallel to the San Joaquin River (Hotchkiss 1971). Recent data (DWR 2000) show flow to the north and eastward, toward the San Joaquin River. Based on current and historical groundwater elevation maps, groundwater barriers do not appear to exist in the subbasin.

Groundwater Level Trends

Changes in groundwater levels are based on annual water level measurements by DWR and cooperators. Water level changes were evaluated by quarter township and computed through a custom DWR computer program using geostatistics (kriging). On average, the subbasin water level has increased by 2.2 feet from 1970 through 2000. The period from 1970 through 1985 showed a general increase, topping out in 1985 at 7.5 feet above the 1970 water level. The nine-year period from 1985 to 1994 saw general declines in groundwater levels, reaching back down to the 1970 groundwater level in 1994. Groundwater levels rose in 1995 to about 2.2 feet above the 1970 groundwater level. Water levels fluctuated around this value until 2000.

Groundwater Storage

Estimations of the total storage capacity of the subbasin and the amount of water in storage as of 1995 were calculated using an estimated specific yield of 11.8 percent and water levels collected by DWR and cooperators.

According to these calculations, the total storage capacity of this subbasin is estimated to be 30,400,000 af to a depth of 300 feet and 81,800,000 af to the base of fresh groundwater. These same calculations give an estimate of 26,600,000 af of groundwater to a depth of 300 feet stored in this subbasin as of 1995 (DWR 1995). According to published literature, the amount of stored groundwater in this subbasin as of 1961 is 51,000,000 af to a depth of $\leq 1,000$ feet (Williamson 1989).

Groundwater Budget (Type B)

Although a detailed budget was not available for this subbasin, an estimate of groundwater demand was calculated based on the 1990 normalized year and data on land and water use. A subsequent analysis was done by a DWR water budget spreadsheet to estimate overall applied water demands, agricultural groundwater pumpage, urban pumping demand and other extraction data.

Natural recharge is estimated to be 8,000 af. Artificial recharge and subsurface inflow are not determined. Applied water recharge is approximately 74,000 af. Annual urban and agricultural extractions estimated to be 17,000 af and 491,000 af, respectively. Other extractions are approximately 3,000 af, and subsurface outflow is not determined.

Groundwater Quality

Characterization. The groundwater in this subbasin is characterized by mixed sulfate to bicarbonate types in the northern and central portion with areas of sodium chloride and sodium sulfate waters in the central and southern portion. TDS values range from 400 to 1,600 mg/L in the northern portion of the subbasin and from 730 to 6,000 mg/L in the southern portion of the subbasin (Hotchkiss 1971). The Department of Health Services (DHS), which monitors Title 22 water quality standards, reports TDS values in 44 public supply wells to range from 210 to 1,750 mg/L, with an average value of 770 mg/L. A typical range of water quality in wells is 700-1,000 mg/L.

Impairments. Shallow, saline groundwater occurs within about 10 feet of the ground surface over a large portion of the subbasin. There are also localized areas of high iron, fluoride, nitrate, and boron in the subbasin (Hotchkiss 1971).

Water Quality in Public Supply Wells

Constituent Group¹	Number of wells sampled²	Number of wells with a concentration above an MCL³
Inorganics – Primary	47	2
Radiological	47	1
Nitrates	51	4
Pesticides	47	1
VOCs and SVOCs	45	0
Inorganics – Secondary	47	18

¹ A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).

² Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.

³ Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Characteristics

Well yields (gal/min)		
Municipal/Irrigation	Range: 20 – 5,000	Average: 800-2,000
Total depths (ft)		
Domestic		
Municipal/Irrigation	Range: 50 - 800	Average: 400-600

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR (incl. Cooperators)	Groundwater levels	816 Semi-annually
DWR (incl. Cooperators) Department of Health Services (incl. Cooperators)	Mineral, nutrient, & minor element. Title 22 water quality	120 Varies

Basin Management

Groundwater management:	Panoche Water District is approximately 11 months into the AB3030 process and will be doing a joint plan with other districts and the county. San Luis and Delta-Mendota Water Authority North adopted an AB 3030 plan on December 5, 1997.
Water agencies	
Public	Merced County, Fresno County, Broadview WD, Centinella WD, Central California ID, Davis WD, Del Puerto WD, Eagle Field WD, El Solyo WD, Farmers WD, Firebaugh Canal WD, Foothill WD, Fresno Slough WD, Grasslands WD, Hospital WD, Kern Canon WD, Laguna WD, Mercy Springs WD, Mustang WD, Oak Flat WD, Orestimba WD, Oro Loma WD, Pacheco WD, Panoche WD, Patterson WD, Romero WD, Salado WD, San Luis Canal Company, San Luis WD, Santa Nella C.WD, Sunflower WD, Tranquility ID, West Stanislaus ID, Widren WD, Quinto WD
Private	None.

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Additional References

- California Department of Water Resources (DWR). 1994. Bulletin 160-93. *California Water Plan Update, Volume 1*.
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Errata

Updated groundwater management information and added hotlinks to applicable websites.
(1/20/06)

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APPENDIX 4A GROUNDWATER OPERATIONAL YIELD MEMORANDUM



PREFACE

The attached memorandum entitled “Discussion on Operational Yield for the 2005 Urban Water Management Plan” was prepared by the City of Modesto and included in the Joint City of Modesto/MID 2005 and 2010 Urban Water Management Plans (UWMPs). The purpose of the memorandum was to describe the basis for estimating the “operational yield”, or annual groundwater pumping quantity, that could be extracted from the aquifer underlying the City’s water service area that includes the Modesto, Turlock and Delta-Mendota sub-basins. As described in the memorandum, the City’s Operational Yield was estimated to be 53,500 acre-feet per year.

The memorandum describes that the City had increased its groundwater pumping from 1999 to 2002 to meet growing demands, but that the City’s reliance on groundwater was anticipated to decrease when the Modesto Regional Water Treatment Plant (MRWTP) Phase Two is completed. Although the completion of MRWTP Phase Two has been delayed (currently anticipated to be completed in mid 2015), the findings and conclusions described in the memorandum have not changed.

It should be noted that the United States Geological Survey (USGS) is currently in the process of developing a simulation/optimization model of the Modesto Area Groundwater Basin for use in evaluating water resources management alternatives. It is not known when the USGS study will be completed. The findings of the USGS study may result in changes to the City’s estimate of the Operational Yield. However, the City’s current estimate of the Operational Yield of 53,500 af/yr will continue to be assumed pending the USGS study findings.

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Memo

To: Nick Pinhey – Public Works Director
Rolly Stevens – Assistant City Attorney
Alison Barratt-Green – Senior Deputy City Attorney

From: William Wong – Associate Civil Engineer

CC: Rich Ulm, Jack Bond, Garner Reynolds, Jim Alves, Violet Jakab, Allen Lagarbo

Date:

Re: **FINAL** - Discussion on Operational Yield for the 2005 Urban Water Management Plan (UWMP)

This memorandum establishes an empirical basis for estimating the “operational yield” for the rate of groundwater pumping within the City’s water service area that includes the Modesto, Turlock, and Delta-Mendota sub-basins. Information incorporated into this study includes water well pumping records, groundwater elevation data, and future demands based on land use densities at build-out.

For clarification, and as used in this report, the following terms are defined:

Operational Yield – is an amount (or rate in acre-feet per year) of localized groundwater withdrawn on an annual average basis by a given agency that does not exceed the long-term annual average recharge rate of the localized aquifer(s) from which the groundwater is being pumped.

Sustainable Yield – is similar to operational yield, but applies to an entire groundwater basin and all of the entities pumping from it as a whole, rather than just a localized area and a specific agency.

Safe Yield – is everything defined for sustainable yield, but also includes other considerations beyond just a quantity of water extracted or recharged, such as its quality and potential surface subsidence issues. Safe yield can be defined as the maximum amount of water that can be pumped without creating any long-term undesirable results. However, for the purposes of this report, safe yield is considered to be synonymous with sustainable yield.

Overdraft – is when the long-term annual average rate of extracted groundwater exceeds the annual average rate of recharge, as measured by groundwater levels (as measure of groundwater volume is difficult). Overdraft is also defined as the deficit between the water pumped from a groundwater basin and the long-term basin recharge.

The basis of previous estimates of the combined City’s “safe yield” of 50,000 AFY repeated in various City documents is not clear through researching of available literature. Previous documents reference a historic water budget, using data that was not directly measured, but estimated. The uncertainty of this data and the

determination of the safe yield are currently considered questionable, and recent data suggests that this value may not be correct.

This memorandum attempts to use existing data from various sources to reconcile an estimate of the City's current groundwater operational yield, instead of "safe yield" for the entire City of Modesto's Water Service Area.

Establishing an Operational Yield:

It is envisioned that the City will undertake a more comprehensive, hydro-geological groundwater yield study in the upcoming fiscal year where more resources can be devoted to the task of quantifying the City's groundwater operational yield. Until then, it is believed that the rate of extraction established in this report accurately reflects the best data readily available to staff and will be incorporated into the 2005 Urban Water Management Plan.

Prior to 1995, the City's sole source of domestic water was from groundwater pumping. The effect of long-term groundwater extraction consequently resulted in a decline of groundwater elevation, which led to temporary overdraft conditions, primarily in the downtown Modesto area. However, once the City began to implement conjunctive use by supplementing its water supplies with 33,602 AFY of treated surface water from Phase 1 of the MID Modesto Regional Water Treatment Plant (MRWTP) in 1995, the City has been able to reduce its groundwater extraction. As a result, groundwater levels began to rise correcting the temporary overdraft conditions. **Figure 1** shows that recent groundwater levels have decreased slightly as groundwater pumping increased over the last six years (2000 – 2005); however, until additional hydrogeologic studies are completed, it appears that current groundwater extractions and water levels are, to some extent, in a steady state condition.

The current annual water demands for the entire City of Modesto water system, in the Modesto and Turlock sub-basins, are over 79,000 AFY. The City's current rate of groundwater extractions is about 70% of the historically high pumping levels of 1994, and is not causing an overdraft condition.

Table 1 – Current Annual Groundwater Extractions

Year	Annual GW Extractions from the Modesto Subbasin (AFY) ^a	Annual GW Extractions from the Turlock Subbasin (AFY) ^{a,b}	Average GW Extractions from the Delta-Mendota Subbasin (AFY) ^{a,c}	Totals
2000	37,495	4,958	261	42,714
2001	40,857	4,837	297	45,991
2002	43,535	5,445	324	49,304
2003	41,990	5,053	287	47,330
2004	41,681	4,194	261	46,136
2005	41,090	4,849	237	46,176
Average Annual Groundwater Extractions	41,108	4,889	278	46,275

- a. Based on City of Modesto SCADA records
- b. Includes South Modesto, Hickman, portions of North Ceres and Turlock.
- c. The Community of Grayson is within the Delta-Mendota Subbasin

As shown in **Table 1**, current six-year average (between 2000 and 2005) of groundwater extractions for the entire City of Modesto water system is 46,275 AFY. These water demands also reflect some water conservation due to continuous implementation of Stage I restrictions from the City's Drought Contingency Plan in 2003.

The City maximizes its surface water allocation within the City's contiguous service area, and must rely on groundwater pumping to meet its maximum day and peak hour demands. To meet the demands of future development, the City will currently be working with the MID to double the capacity of the Modesto Regional Water Treatment Plant (MRWTP) to 67,204 AFY. However, the Phase 2 Expansion of the MRWTP is not anticipated to be on-line until mid- to late-2009, and therefore the City will need to increase its groundwater pumping to meet the demands for near-term development. This would be done by drilling new wells, rehabilitating currently out-of-service wells, or increasing the pumping from existing wells.

The movement of groundwater for both sub-basins is generally in a westward direction from the Sierra Nevada foothills. Recent analysis by the USGS and information from California's Groundwater Bulletin 118 has indicated that the geological characteristics of the Modesto and portions of Turlock sub-basins that are served by the City of Modesto appear to be similar. Although the Tuolumne River separates the Modesto and Turlock sub-basins, the USGS has determined that both groundwater and surface water systems are interconnected, and it can be reasonably assumed that groundwater flows between the two sub-basins. This has also been indirectly substantiated by analysis of the City's static well level data; the average groundwater elevations of the City's production wells between the Modesto and Turlock groundwater sub-basins are very comparable. Therefore, in this analysis, it is assumed that the cumulative groundwater extractions by the City apply to the entire City's water service area and no further distinctions are made between the two sub-basins (this does not apply to the Delta-Mendota sub-basin).

Based on California's Groundwater Bulletin 118 for the Modesto Sub-basin, as a result of long-term groundwater pumping, a cone of depression formed when the groundwater elevations reached around 30 feet above sea level (ASL) (see **Figure 2**). In order to extrapolate an operational yield using empirical data, a minimum groundwater elevation of 40 feet ASL was selected as the lowest elevation that the City will allow groundwater to reach. By establishing this minimum groundwater elevation allowable, the City can reasonably establish a conservative operational yield and be certain that the associated amount groundwater pumping should not result in an overdraft condition.

Based on a relative stabilization of groundwater elevations through the City's water service area, the City's current annual average groundwater pumping constitutes a non-overdraft condition, and therefore it can be assumed that the City is within its operational yield range. **Figure 3** plots the City's groundwater pumping and associated well levels between 1993 through 2006. It is apparent that there is not a linear relation between groundwater extractions to groundwater levels. Nevertheless, a linear factor rate was extrapolated from existing well information and can be considered a conservative representation of the effects of groundwater levels due to pumping. An empirical equation was extrapolated from these data points, which estimates that the groundwater levels will decline at a rate of approximately **0.685 feet/1,000 AFY** (or 1 foot per 1,430 AFY) of groundwater extracted over the entire water service area.

It is reasonable that, until hydrogeologic studies are complete, the City can use this estimated rate as the City's "**operational yield factor**". Using 40 ft ASL as the minimum allowable groundwater elevation, the associated **operational groundwater yield** is approximately **53,500 AFY**. This calculated operational yield is a projection of the City's water service area's groundwater pumping capacity (AFY) and is based on the following:

- Groundwater elevation data from 1993 to 2006 obtained from spring and fall field measurements by the City Water Department.
- Groundwater pumping data obtained from Water Department and from the City's SCADA from 2003 to current. Prior pumping records were obtained through Del Este and City of Modesto files.
- Assumes that Ag-to-Urban conversion accounted for in the calculated operational yield estimate.

The calculated operational yield does not account for:

- The City's ability to extract groundwater from the subbasins to meet demands.
- Seasonal peak water demands, and localized water distribution and pressure issues.

- Growth beyond the City's current water service area, either within the contiguous Modesto System or the outlying areas.
- Varying economic factors that could effect the projected growth assumptions.
- More stringent water quality standards would result in potential losses in well production from taking wells out-of-service due to contamination, such as from Arsenic, Nitrates and Uranium.

Additionally, once the City begins necessary groundwater studies to determine an actual operational yield (or specific yield) of the groundwater sub-basins, water budget and quality analyses for the groundwater sub-basins, the City would be able to develop procedures to optimize its groundwater extractions, and determine potential Aquifer Storage and Recovery (ASR) opportunities, where the City could potentially recharge the groundwater basins with surface water during seasonal low demand periods.

Conclusions:

Recent projections from MID anticipate that Phase 2 of the MRWTP expansion will be complete by mid- to late-2009. However, until the additional 33,602 AFY of surface water is available to meet demands, the City will need to increase its groundwater extractions to meet water demands until Phase 2 is on-line.

More extensive studies and modeling will be required to quantify the City's operational yield and water budget for both the Modesto and Turlock sub-basins. However, based on self-imposed groundwater level limits, the City's current Operational Yield is estimated at **53,500 AFY**.

Recent information has indicated that the City has gradually increased its groundwater pumping over the last few years to meet growth demands. It is not anticipated that the City will continue to increase its groundwater extractions for an extended period of time, since Phase 2 is expected to be online by mid- to late- 2009. It is not expected that this short term increase of pumping would cause an overdraft condition in the Modesto Subbasin, which is typically a result from a cumulative effect of long-term over-pumping.

Figure 1 - 1993-2006 Groundwater Elevation and Pumping Data

**ESTIMATED ANNUAL
GROUND WATER ELEVATION vs GROUND WATER
PUMPING
1993 - 2006**

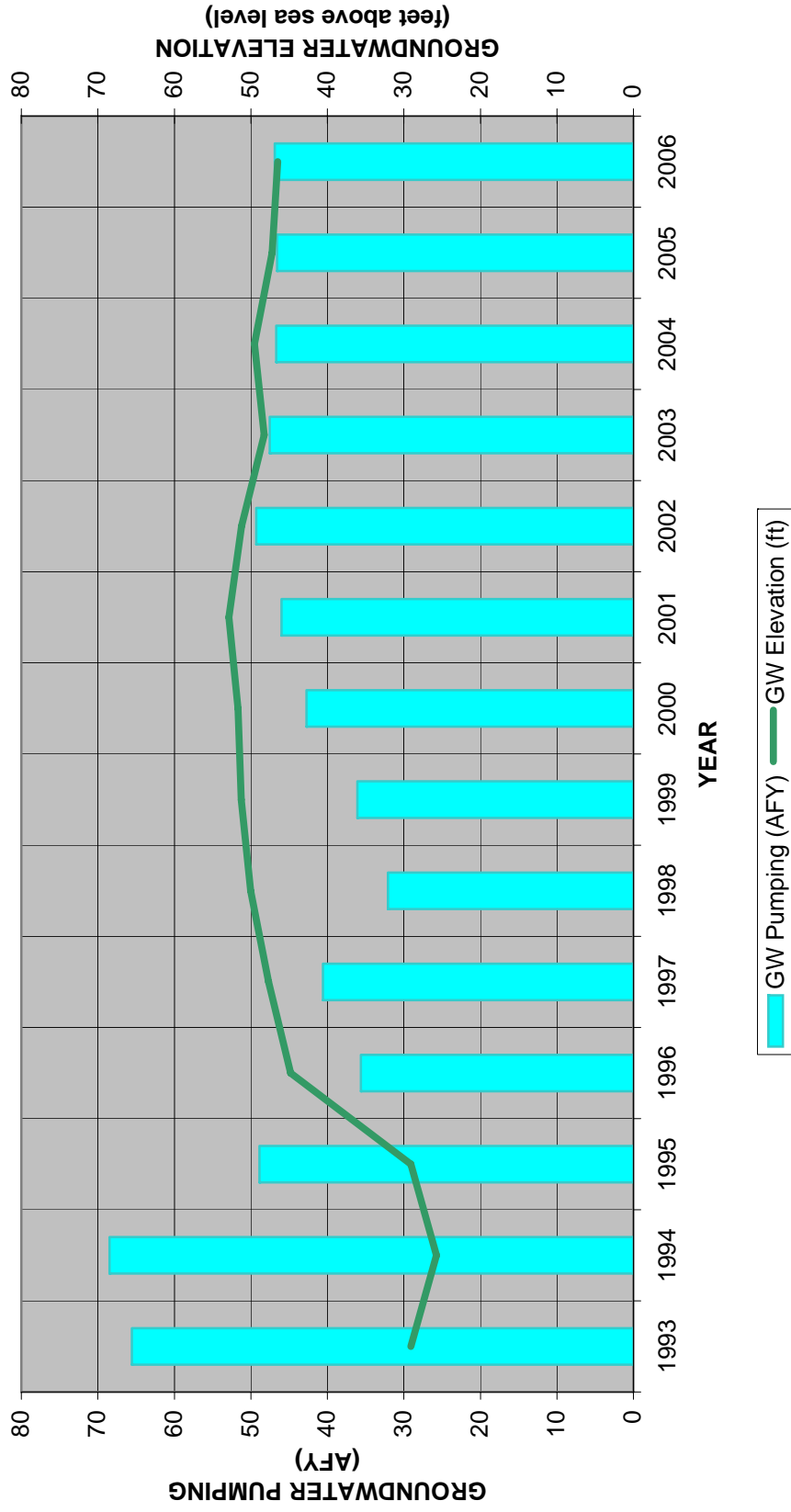
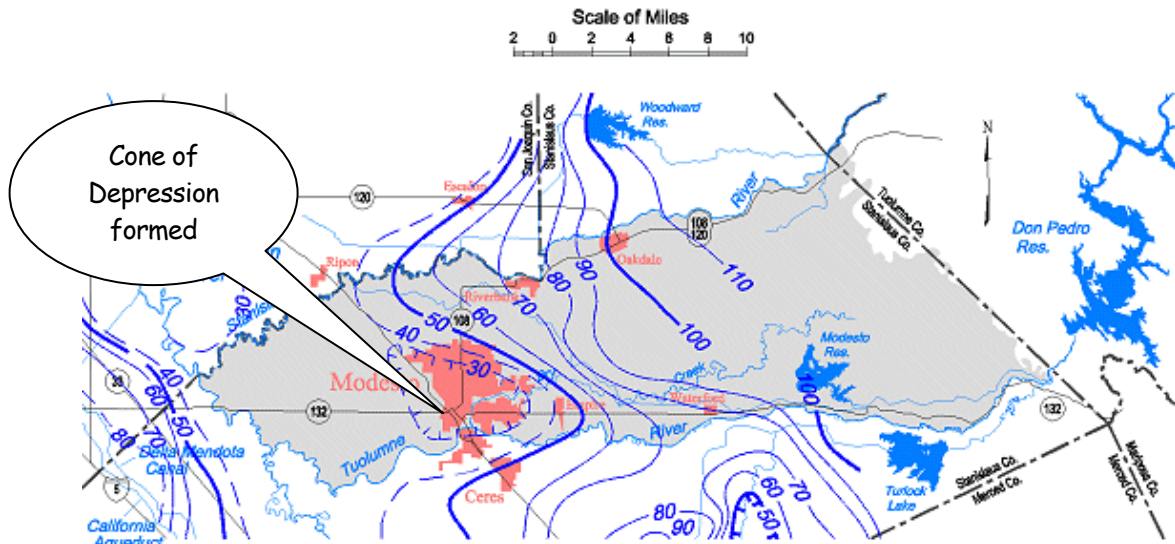


Figure 2 – 1993 and 1998 Groundwater Elevations (above sea level)

Source: Department of Water Resources (DWR) Website - http://www.sjd.water.ca.gov/groundwater/basin_maps/index.cfm

Modesto Groundwater Basin

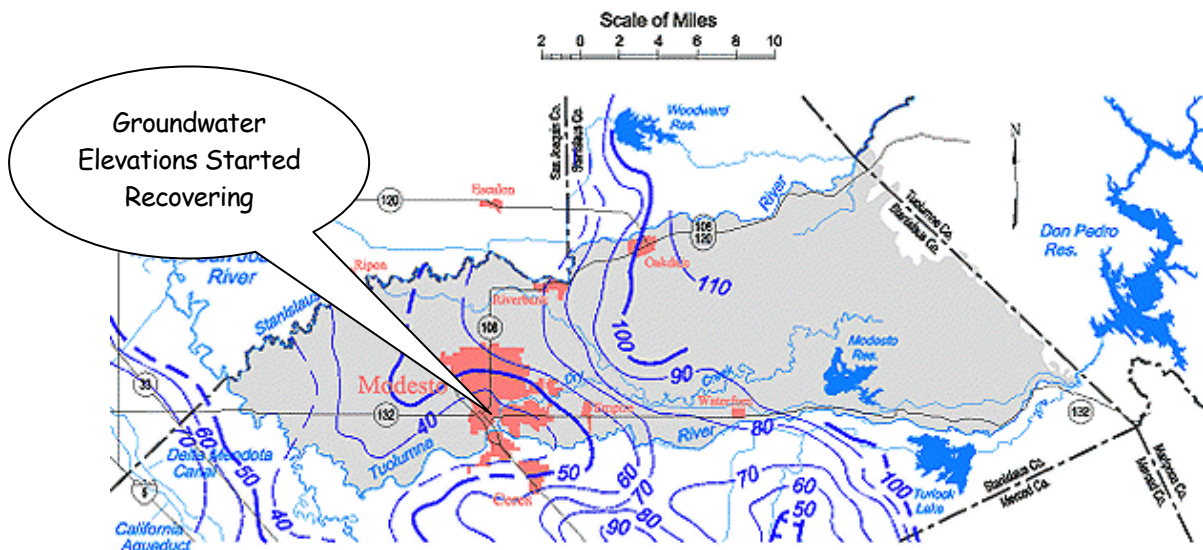
Spring 1993, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer



Contours are dashed where inferred. Contour interval is 10 feet.

Modesto Groundwater Basin

Spring 1998, Lines of Equal Elevation of Water in Wells, Unconfined Aquifer



Contours are dashed where inferred. Contour interval is 10 feet.

Figure 3 - Annual Groundwater Pumping (AFY) vs. Groundwater Elevation (feet, above sea level)

Groundwater Pumping vs Elevation (1993-2006)

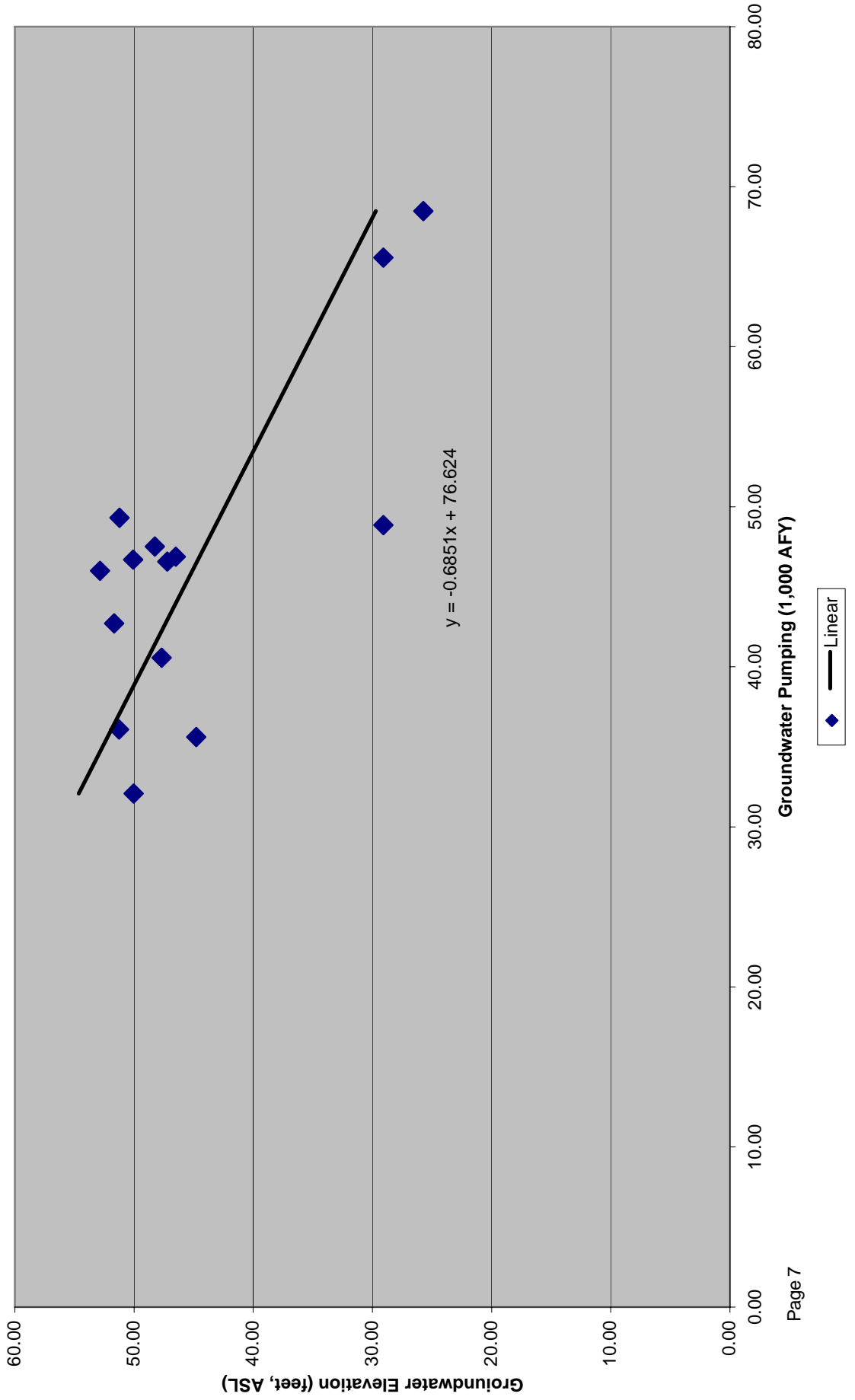
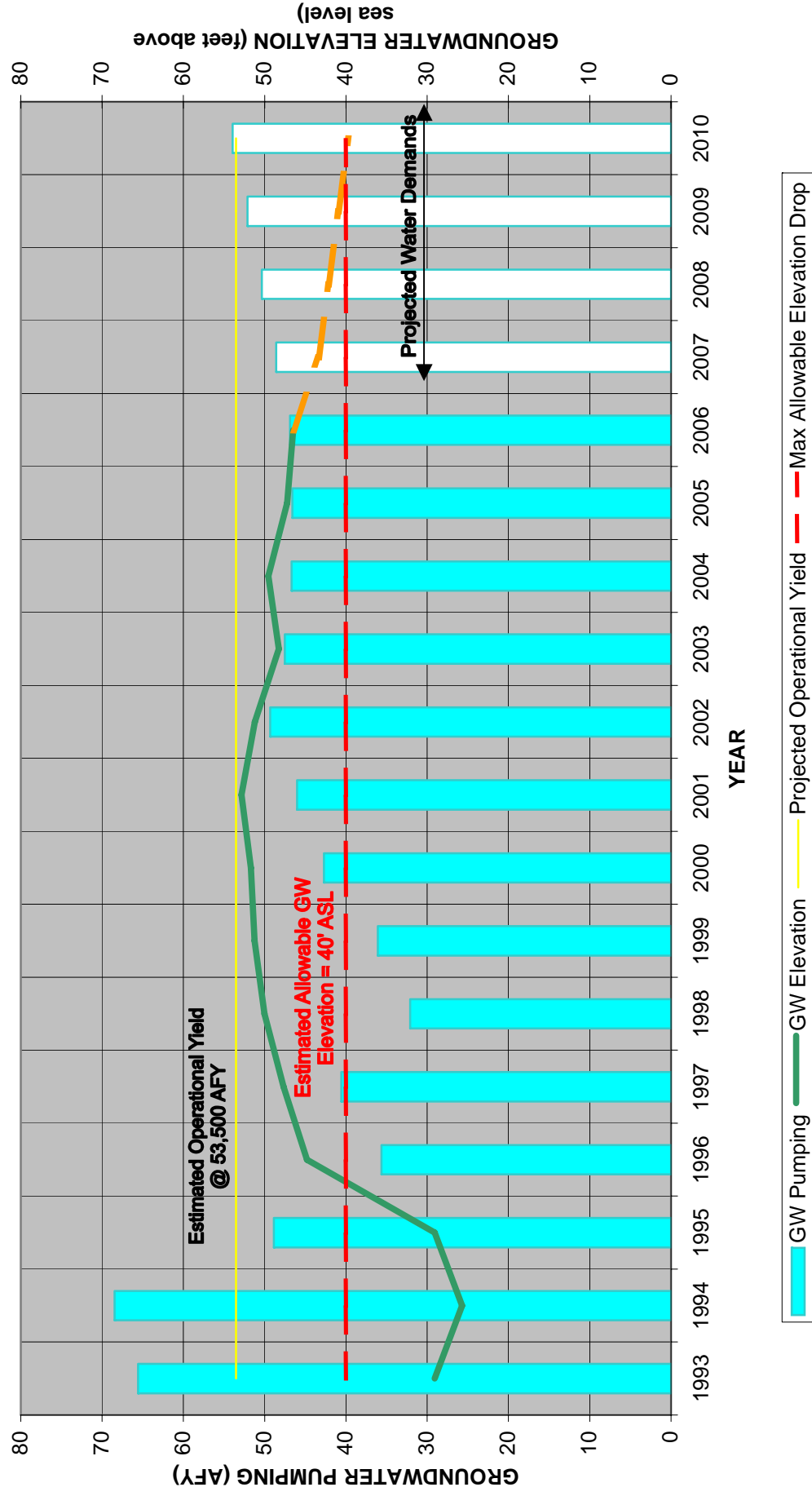


Figure 4 - Projected Near-Term Water Demands (to 2010)

ACTUAL ANNUAL AND PROJECTED GROUND WATER ELEVATION vs GROUND WATER PUMPING

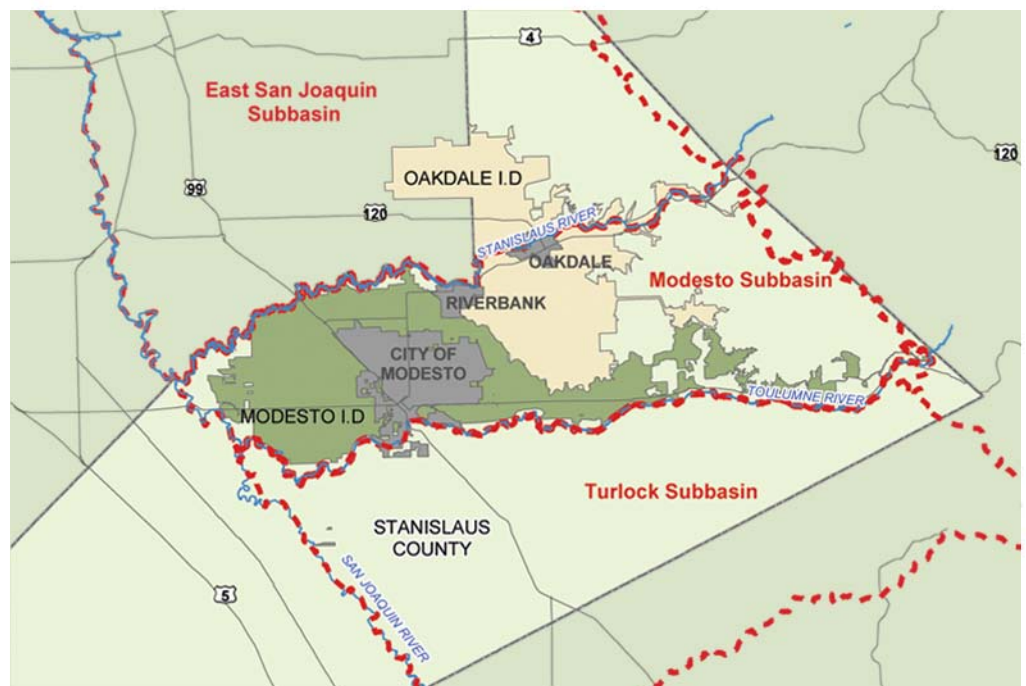


FINAL
DRAFT

Integrated Regional Groundwater Management Plan

for the Modesto Subbasin

Stanislaus and Tuolumne Rivers Groundwater Basin Association



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TURLOCK GROUNDWATER BASIN

Groundwater Management Plan

Prepared for:

Turlock Irrigation District
333 East Canal Drive/P.O. Box 949
Turlock, CA 95381

March 18, 2008

Prepared by:

Turlock Groundwater Basin Association

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Groundwater Management Plan for the Northern Agencies in the Delta-Mendota Canal Service Area

Groundwater Management Plan Update



San Luis & Delta-Mendota Water Authority

July 2011

Revised November 7, 2011

http://www.sldmwa.org/OHTDocs/pdf_documents/Groundwater/GroundwaterManagementPlanNorthernApproved11_2011.pdf



1120 West "I" Street, Suite C

Los Banos, CA 93635

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Energy Intensity Calculation Tables and
Supporting Information

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Urban Water Supplier:

Modesto Irrigation District

Water Delivery Product (If delivering more than one type of product use Table O-1C)

Wholesale Potable Deliveries

Table O-1B: Recommended Energy Reporting - Total Utility Approach

Enter Start Date for Reporting Period	1/1/2019	Urban Water Supplier Operational Control		
End Date	12/31/2019			
<input type="checkbox"/> Is upstream embedded in the values reported?		Sum of All Water Management Processes	Non-Consequential Hydropower	
<i>Water Volume Units Used</i>	AF	Total Utility	Hydropower	Net Utility
<i>Volume of Water Entering Process (volume unit)</i>		29,604	0	29,604
<i>Energy Consumed (kWh)</i>		8,787,000	0	8,787,000
<i>Energy Intensity (kWh/volume)</i>		296.8	0.0	296.8

Quantity of Self-Generated Renewable Energy

0 kWh

Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data)

Metered Data

Data Quality Narrative:

Data is provided by MID from water and electric meters.

Narrative:

Water management processes consuming energy include treatment, distribution/pumping, and reservoir operations.

Urban Water Supplier:

City of Modesto

Water Delivery Product (If delivering more than one type of product use Table O-1C)

Retail Potable Deliveries

Table O-1B: Recommended Energy Reporting - Total Utility Approach

Enter Start Date for Reporting Period	1/1/2019	Urban Water Supplier Operational Control		
End Date	12/31/2019			
<input type="checkbox"/> Is upstream embedded in the values reported?		Sum of All Water Management Processes	Non-Consequential Hydropower	
<i>Water Volume Units Used</i>	AF	Total Utility	Hydropower	Net Utility
<i>Volume of Water Entering Process (volume unit)</i>		49,883	0	49,883
<i>Energy Consumed (kWh)</i>		15,844,410	0	15,844,410
<i>Energy Intensity (kWh/volume)</i>		317.6	0.0	317.6

Quantity of Self-Generated Renewable Energy

0 kWh

Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data)

Metered Data

Data Quality Narrative:

Data is provided by the City from water and electric meters.

Narrative:

Water management processes consuming energy include distribution/pumping, storage tank operations, and groundwater pumping and treatment.

Urban Water Supplier:

City of Modesto

Table O-2: Recommended Energy Reporting - Wastewater & Recycled Water				
Enter Start Date for Reporting Period		1/1/2019	Urban Water Supplier Operational Control	
End Date		12/31/2019	Water Management Process	
<input type="checkbox"/>	Is upstream embedded in the values reported?		Collection / Conveyance	Treatment
			Discharge / Distribution	Total
Volume of Water Units Used		AF		
Volume of Wastewater Entering Process (volume units selected above)		0	23,797	23,797
Wastewater Energy Consumed (kWh)		921,963	21,472,485	22,394,448
Wastewater Energy Intensity (kWh/volume)		0.0	902.3	941.1
Volume of Recycled Water Entering Process (volume units selected above)		0	0	0
Recycled Water Energy Consumed (kWh)		0	0	0
Recycled Water Energy Intensity (kWh/volume)		0.0	0.0	0.0

Quantity of Self-Generated Renewable Energy related to recycled water and wastewater operations

0 kWh

Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data)

Metered Data

Data Quality Narrative:

Data is provided by the City from wastewater flow meters and electric meters. Energy consumption in the "Treatment" process includes discharge/distribution (e.g., effluent pumps).

Narrative:

Wastewater management processes consuming energy include lift stations, pumps, treatment, and discharge. The total wastewater volume is listed under the "Treatment" process, even if a portion was not treated (i.e., cannery waste). The City does not produce or distribute recycled water within its service area, so the recycled water table has not been completed.

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Water Shortage Contingency Plan

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City of Modesto Water Shortage Contingency Plan

JOINTLY PREPARED BY



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Table of Contents

1.0 Water Supply Reliability Analysis	1
2.0 Annual Water Supply and Demand Assessment Procedures	2
2.1 Decision-Making Process	2
2.2 Key Data Inputs.....	4
2.3 Assessment Methodology	5
3.0 Six Standard Water Shortage Stages	5
4.0 Shortage Response Actions and Effectiveness	7
4.1 Demand Reduction	7
4.2 Additional Mandatory Restrictions	9
4.3 Supply Augmentation and Other Actions.....	10
4.4 Operational Changes	11
4.5 Emergency Response Plan.....	11
4.6 Seismic Risk Assessment and Mitigation Plan.....	11
5.0 Communication Protocols	12
5.1 Communication for Foreseeable Events	12
5.2 Communication for Unforeseeable Events	13
6.0 Compliance and Enforcement	13
7.0 Legal Authorities	14
8.0 Financial Consequences of WSCP	14
9.0 Monitoring and Reporting	15
10.0 WSCP Refinement Procedures	15
10.1 Systematic Monitoring	15
10.2 Feedback from City Staff and Customers.....	15
11.0 Special Water Feature Distinction	16
12.0 Plan Adoption, Submittal, and Availability	16

Table of Contents

LIST OF TABLES

Table 1. Schedule of Annual Assessment Activities	3
Table 2. Schedule of Decision-Making Activities if Water Shortage Condition Exists.....	4
Table 3. Water Shortage Contingency Plan Levels (DWR Table 8-1).....	6
Table 4. Water Shortage Contingency Plan Demand Reduction Actions (DWR Table 8-2).....	8
Table 5. City of Modesto Additional Mandatory Restrictions	9
Table 6. Water Shortage Contingency Plan Supply Augmentation and Other Actions (DWR Table 8-3).....	11

LIST OF ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
Annual Assessment	Annual Water Supply and Demand Assessment
ccf	Hundred Cubic Feet
City	City of Modesto
County	Stanislaus County
CWC	California Water Code
Director	Utilities Director
DWR	Department of Water Resources
ERP	Emergency Response Plan
FEMA	Federal Emergency Management Agency
LHMP	Local Hazard Mitigation Plan
MGD	Million Gallons Per Day
MID	Modesto Irrigation District
MMC	Modesto Municipal Code
MOU	Memorandum of Understanding
MRWTP	Modesto Regional Water Treatment Plant
PIO	Public Information Officer
SB	Senate Bill
SGMA	Sustainable Groundwater Management Act
TCC	Technical Command Center
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
WD	Water Division
WRE	Water Resources Engineering
WSCP	Water Shortage Contingency Plan
WSM	Water System Manager
Legislature	California State Legislature

Water Shortage Contingency Plan

This document presents the City of Modesto's (City) Water Shortage Contingency Plan (WSCP), which describes the strategic plan for preparing and responding to water shortages, including the water shortage stages and associated actions. While the City and its wholesale water supplier, Modesto Irrigation District (MID), jointly prepared their 2020 Urban Water Management Plan (UWMP), this WSCP focuses on the City only as an urban water supplier. MID is primarily an agricultural supplier and has prepared a separate 2020 Agricultural Water Management Plan, which includes its water shortage allocation policies and drought plan.

Water shortages occur whenever the available water supply cannot meet the normally expected customer water use. This can be due to several reasons, such as climate change, drought, and catastrophic events. Drought, regulatory action constraints, and natural and manmade disasters may occur at any time. As part of the WSCP, the City's legal authorities, communication protocols, compliance and enforcement, and monitoring and reporting are described. Section 11-1.14 of the Modesto Municipal Code (MMC) supports the City's WSCP.

In 2018, the California State Legislature (Legislature) enacted two policy bills, (Senate Bill (SB) 606 (Hertzberg) and Assembly Bill (AB) 1668 (Friedman)) (2018 Water Conservation Legislation), to establish a new foundation for long-term improvements in water conservation and drought planning to adapt to climate change and the resulting longer and more intense droughts in California. The 2018 Water Conservation Legislation set new requirements for water shortage contingency planning.

The City's WSCP provides a guide for the City to proactively prevent catastrophic service disruptions and has been updated to be consistent with the 2018 Water Conservation Legislation requirements. The City intends for this WSCP to be dynamic so that it may assess response action effectiveness and adapt to emergencies and catastrophic events. Refinement procedures to this WSCP are provided to allow the City to modify this WSCP outside of the UWMP process.

1.0 WATER SUPPLY RELIABILITY ANALYSIS

Chapters 6 and 7 of the Joint 2020 UWMP, prepared in coordination with MID, present the City's water supply sources and reliability, respectively. Findings show the City can reliably meet its projected demands through 2045 in normal and dry hydrologic conditions, including single dry years and five consecutive dry years. In general, the City's conjunctive use allows it to offset reductions in treated surface water deliveries with increased groundwater pumping.

Statewide water supply conditions, changes in groundwater levels, and actions by other agencies may impact the City's available water supply. A water shortage condition occurs when the available supply of potable water cannot meet ordinary water demands for human consumption, sanitation, fire protection, and other beneficial uses. In some cases, the City may foresee a water shortage, but the water shortage may also be caused by an unforeseen sudden or emergency event. In general, the City's water supply conditions may be affected by the following:

- Climatic variability and drought conditions (i.e., Tuolumne River supply reliability, snowpack, and snowmelt runoff timing);
- Water quality;
- Water supply facility failures (loss of treatment facilities, pumps, tanks, or transmission pipes);

Water Shortage Contingency Plan

- Legislative restrictions or policies (i.e., reductions through voluntary settlements or other mandated instream flow requirements and/or diversion restrictions); and
- Unforeseen Sustainable Groundwater Management Act (SGMA) requirements to available groundwater supply in the future.

In future years, the City will conduct an annual water supply and demand assessment as described below in Section 2.0. The analysis associated with this WSCP was developed in the context of the City's water supply sources and reliability.

2.0 ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

Beginning July 1, 2022, California Water Code (CWC) §10632.1 requires water suppliers to complete an Annual Water Supply and Demand Assessment (Annual Assessment) and submit an Annual Water Shortage Assessment Report to the Department of Water Resources (DWR). This section provides the procedures for the City to conduct its Annual Assessment, which will inform the City's Annual Water Shortage Assessment Report and assist the City with planning for potential water supply shortages. The objective of the Annual Assessment is to determine actual forecasted near-term supply conditions so that the City can prepare logistically and financially for any anticipated water supply constraints, as well as enact appropriate shortage response actions in a timely manner.

The Annual Assessment procedures below describe the steps the City may take to declare a water shortage emergency and associated water shortage stage (see Section 3.0) and implement water shortage response actions (see Section 4.0).

2.1 Decision-Making Process

The City will use the decision-making process described below to consistently determine its water supply reliability on an annual basis. The City may adjust and improve this process as needed.

The City's Water Resources Engineering (WRE) section and Water Division (WD) are responsible for preparing the City's Annual Assessment and Annual Water Shortage Assessment Report and for submitting the report to DWR by July 1st of each year (starting in 2022). This team will gather key data inputs described in Section 2.2 and conduct the assessment in accordance with Section 2.3. In June, the City will finalize the assessment based on MID's adopted surface water deliveries. The Water Resources Engineering section and Water Division will present the Annual Assessment and Annual Water Shortage Assessment Report to the Utilities Director (Director) and Water System Manager (WSM), or designee, for review and approval. If the Annual Assessment finds that available water supply will be sufficient to meet expected demands for the current year and one subsequent dry year, no further action will be required. The final approved documents will be submitted to DWR by July 1 each year.

The City will follow the schedule of activities shown in Table 1 for conducting the Annual Assessment. Due to variations in climate and hydrologic conditions, the start and end dates shown in the table are approximate and may be adjusted as needed. The intent of the schedule is to allow shortage response actions to effectively address anticipated water shortage conditions in a timely manner while complying with the State's reporting requirements.

Table 1. Schedule of Annual Assessment Activities

Schedule	Activities	Responsible Party
February	Convene Water Resources Engineering section and Water Division (WRE/WD).	WRE/WD
February to March	Determine water supply sources for current year and one subsequent dry year. Describe sources and quantities considering factors affecting supply as described in Section 2.2.	WRE/WD
February to March	Determine water demands for current year and one subsequent dry year. Describe demand types and quantities considering factors affecting demand as described in Section 2.2.	WRE/WD
Early to Mid-April	Calculate the City’s water supply reliability for the current year and one subsequent dry year using the methodology described in Section 2.3.	WRE/WD
Early to Mid-April	Complete assessment based on groundwater monitoring data, SGMA protocols for implementing a sustainable groundwater supply, and MID’s available supply.	WRE/WD
Late April	Based on determinations of Annual Assessment, prepare the Annual Water Shortage Assessment Report with recommendations on water shortage condition determination and response actions. Submit to Utilities Director (Director) and Water System Manager (WSM), or designee(s), for review.	WRE/WD
Early May	Review Annual Assessment and Annual Water Shortage Assessment Report and provide comments as needed.	Director/WSM
Mid-May to Early June	Finalize and approve Annual Assessment and Annual Water Shortage Assessment Report.	WRE/WD, Director, and WSM
Before July 1	Submit Annual Assessment and finalized Annual Water Shortage Assessment Report to DWR.	WRE/WD

Should the Annual Assessment find that available supply will not meet expected demands, the City will coordinate interdepartmentally, with the region’s water service providers, and with Stanislaus County (County) for the possible proclamation of a local emergency. The Water Resources Engineering section and Water Division will present the finalized assessment to the City Council, along with recommendations on water shortage condition determination and actions. Recommended actions may include declaration of a water shortage emergency, declaration of a water shortage stage, and water shortage actions.

Based on the findings of the Annual Assessment, the City Council will determine if a water shortage condition exists and, if needed, adopt a resolution declaring a water shortage emergency and an associated water shortage stage and authorizing water shortage actions. The Water Resources Engineering section and Water Division will then prepare the City’s Annual Water Shortage Assessment Report, incorporating City Council determinations and approved actions. The schedule of decision-making activities is provided in Table 2. The start and end dates and the activities shown in this table are approximate and may be adjusted as needed.

Table 2. Schedule of Decision-Making Activities if Water Shortage Condition Exists

Schedule	Activities	Responsible Party
Early May	Based on finalized determinations of Annual Assessment regarding water shortage condition and recommended actions, prepare recommendations on water shortage condition determination and actions.	WRE/WD
Early May	Prepare resolutions approving determinations and actions.	WRE/WD
Mid-May	Coordinate interdepartmentally and with the County for the possible proclamation of a local emergency.	WRE/WD
Early May to Mid-May	Present finalized determinations and recommendations, along with resolutions approving determinations and actions.	WRE/WD
Late May to Early June	Receive presentation of finalized determinations and recommendations. Make determination of degree of emergency and act on resolutions that declare a water shortage emergency condition. Authorize water shortage response actions for implementation.	City Council
Mid-June	If a water shortage emergency condition is declared, implement the WSCP and the water shortage response actions as approved by City Council.	WRE/WD
July 1	Finalize Annual Water Shortage Assessment Report (See Table 1).	WRE/WD

2.2 Key Data Inputs

The Annual Assessment requires evaluating supplies and demands for the current year and one subsequent dry year.

In reviewing planned water supplies, the Annual Assessment will consider the following key inputs:

1. Hydrological conditions
2. Regulatory conditions
3. Contractual constraints
4. Surface water and groundwater quality conditions
5. Modesto Regional Water Treatment Plant (MRWTP) production limitations
6. Groundwater well production limitations (e.g., issues with physical assets or SGMA constraints)
7. Infrastructure capacity constraints or changes
8. Capital improvement project implementation

Planned water supply sources and quantities will be described and should be reasonably consistent with the supply projections in Chapter 6 of the City’s most recent UWMP. If the Annual Assessment and UWMP supply sources and projections differ significantly, the City will explain the difference.

Water Shortage Contingency Plan

In reviewing planned unconstrained (i.e., without conservation) water demands, the Annual Assessment will consider the following key inputs:

1. Weather conditions
2. Water year type
3. Population changes (e.g., due to development projects)
4. Anticipated new demands (e.g., changes to land use)
5. Pending policy changes that may impact demands

Planned water demand types and quantities will be described and should be reasonably consistent with the demand projections in Chapter 4 of the City's most recent UWMP. If the Annual Assessment and UWMP demand differ significantly, the City will explain the difference.

2.3 Assessment Methodology

In preparing the Annual Assessment, the City will use the following assessment methodology and evaluation criteria to evaluate water supply reliability for the current year and one subsequent dry year.

The City uses a spreadsheet tool to plan for current year and future year supply and demands. Planned supply and demand inputs described in Section 2.2 will be entered in the spreadsheet in annual increments, or closer time intervals as necessary during water shortage conditions.

Supply and demand will be compared to determine the reliability of the City's water supply in the current year and one subsequent dry year. The City's water supply for the current year and the subsequent dry year will be deemed reliable if projected water supply can meet projected water demands. If the projected water supply cannot meet the projected water demands in the current year or the subsequent dry year, the extent of the water shortage condition will be determined, and the City will prepare response actions in accordance with this WSCP.

The Annual Assessment findings will be presented to the City Council, along with recommendations for action for City Council consideration.

3.0 SIX STANDARD WATER SHORTAGE STAGES

To provide a consistent regional and statewide approach to conveying the relative severity of water supply shortage conditions, the 2018 Water Conservation Legislation mandates that water suppliers plan for six standard water shortage levels that correspond to progressive ranges of up to 10, 20, 30, 40, 50 percent, and greater than 50 percent shortages from the normal supply condition. Each shortage condition should correspond to additional actions water suppliers would implement to meet the severity of the impending shortages.

For each of the State's standard shortage levels (also called "stages"), Table 3 summarizes the water shortage range (i.e., percent shortage from normal supplies) and a brief narrative description of the corresponding water shortage condition and shortage response actions. These water shortage stages apply to both foreseeable and unforeseeable water supply shortage conditions. The City's 2015 UWMP included four stages that addressed up to 50 percent water demand reduction. Table 3 presents the City's reorganized stages, which align with the State's standard stages.

Table 3. Water Shortage Contingency Plan Levels (DWR Table 8-1)

Shortage Level	Percent Shortage Range	Water Shortage Condition	Shortage Response Actions
1	Up to 10%	<ul style="list-style-type: none"> Annual Assessment shows that water supply is not able to meet normal demands by up to 10%; or Definable event has reduced the City's ability to meet normal demands by up to 10%. 	Implement actions per Table 4
2	Up to 20%	<ul style="list-style-type: none"> Annual Assessment shows that water supply is not able to meet normal demands by up to 20%; or Definable event has reduced the City's ability to meet normal demands by up to 20%. 	Implement actions per Table 4
3	Up to 30%	<ul style="list-style-type: none"> Annual Assessment shows that water supply is not able to meet normal demands by up to 30%; or Definable event has reduced the City's ability to meet normal demands by up to 30%. 	Implement actions per Table 4
4	Up to 40%	<ul style="list-style-type: none"> Annual Assessment shows that water supply is not able to meet normal demands by up to 40%; or Definable event has reduced the City's ability to meet normal demands by up to 40%. 	Implement actions per Table 4
5	Up to 50%	<ul style="list-style-type: none"> Annual Assessment shows that water supply is not able to meet normal demands by up to 50%; or Definable event has reduced the City's ability to meet normal demands by up to 50%. 	Implement actions per Table 4 and Table 6
6	>50%	<ul style="list-style-type: none"> Annual Assessment shows that water supply is not able to meet normal demands by more than 50%; or Definable event has reduced the City's ability to meet normal demands by more than 50%. 	Implement actions per Table 4 and Table 6

Notes: Annual Assessment = Annual Water Supply and Demand Assessment

As described in Section 2.0, the City will conduct an Annual Assessment to determine its water supply condition for the current year and a subsequent dry year. Preparing the Annual Assessment helps the City ascertain the need to declare a water shortage emergency and water shortage stage. In other cases, the City may need to declare a water shortage emergency due to unforeseen water supply interruptions. When the City anticipates or identifies that water supplies may not be adequate to meet the normal water supply needs of its customers, the City Council may determine that a water shortage exists and consider a resolution to declare a water shortage emergency and associated stage. The shortage stage provides direction on shortage response actions.

4.0 SHORTAGE RESPONSE ACTIONS AND EFFECTIVENESS

CWC §10632 (a)(4) requires shortage response actions that align with the defined shortage levels. The City's shortage response actions consist of a combination of demand reduction, supply augmentation, and operational changes. The City's suite of response actions depends on the event that precipitates a water shortage stage, the time of the year the event occurs, the water supply sources available, and the condition of its water system infrastructure.

In general, the City plans to use a balanced approach, combining demand reduction, supply augmentation, and operational changes to respond to the event and the resulting water shortage stage. The City will adapt its response actions to close the gap between water supplies and water demand and meet the water use goals associated with the declared water shortage stage.

Meters, along with an automated reading system, allow the City to compare current water demands with demand reduction goals and adjust its shortage response actions accordingly. Approximately 97 percent of the City's water customers are metered, with the remainder to be completed by 2022. Meters can be read monthly to track the extent of the effectiveness of the City's response actions.

Water production and water use can be compared to previous periods by customer sector or individual customer. This continuous monitoring allows the City to assess water system demands and compare it with water demand reduction goals. The City may then adjust its shortage response actions as needed to balance demands with available water supplies. For example, the City may intensify its public outreach or more vigorously enforce compliance to water use prohibitions if needed water demand reduction goals are not met for any specific stage. Conversely, the City may reduce public outreach frequency or decrease compliance actions if demand reduction goals are exceeded. During the 2012-2016 drought, the City achieved a 30 percent reduction in water demands in part due to increased outreach, increased staffing for water waste enforcement, and reduced watering schedules.

The shortage response actions discussed below may be considered as tools that allow the City to respond to water shortage conditions. Shortage response actions are initiated at the shortage levels shown and continue to be implemented at higher shortage levels. Because the City may continuously monitor and adjust its response actions to reasonably balance demands with available supply, the extent to which implementation of each action reduces the gap between water supplies and water demand is difficult to accurately quantify and can only be estimated. For example, certain response actions, such as public outreach and enforcement, support the effectiveness of other response actions and do not have a quantifiable effect on their own.

4.1 Demand Reduction

During water shortage conditions, the City plans to reduce demand by implementing the actions shown in Table 4. Demand reduction actions are organized by the triggering water shortage level (i.e., stage), and each action includes an estimate of how much its implementation will reduce the shortage gap. For each demand reduction action, Table 4 also indicates if the City uses compliance actions such as penalties, charges, or other enforcement. Demand reduction actions are initiated at the shortage levels shown and will continue to be implemented at higher shortage levels.

Table 4. Water Shortage Contingency Plan Demand Reduction Actions (DWR Table 8-2)

Shortage Level	Demand Reduction Actions <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement? <i>For Retail Suppliers Only</i> <i>Drop Down List</i>
1	Expand Public Information Campaign	(see Notes)	City to encourage water users to implement best water management and conservation practices associated with higher shortage levels. This is ongoing and can be expanded in accordance with drought severity.	No
	Landscape - Limit landscape irrigation to specific days	Up to 20% reduction in landscape irrigation	See Table 5 for details.	Yes
	Other	(see Notes)	Car washing restriction - see Table 5 for details.	Yes
	CII - Restaurants may only serve water upon request	Up to 50 gal/day per commercial connection	Restaurants encouraged to do so.	Yes
	Other - Prohibit use of potable water for washing hard surfaces	(see Notes)	See Table 5 for details.	Yes
	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	(see Notes)	Once identified, leaks must be repaired within 24 hours.	Yes
	Offer Water Use Surveys	(see Notes)	These are ongoing and can be expanded in accordance with drought severity.	No
	Provide Rebates on Plumbing Fixtures and Devices	Up to 9,000 gal/yr per participating household		No
	Provide Rebates for Landscape Irrigation Efficiency	(see Notes)		No
Provide Rebates for Turf Replacement	Up to 45 gal/yr per square foot of lawn replaced	No		
2	Landscape - Limit landscape irrigation to specific days	Up to 25% reduction in landscape irrigation	See Table 5 for details.	Yes
	Other	(see Notes)	Car washing restriction - see Table 5 for details.	Yes
3	Landscape - Limit landscape irrigation to specific days	Up to 33% reduction in landscape irrigation	See Table 5 for details.	Yes
	Other	(see Notes)	Car washing restriction - see Table 5 for details.	Yes
	CII - Restaurants may only serve water upon request	50 gal/day per commercial connection		Yes
	Other	Up to 9,000 gal/yr per participating household	Low-flow showerhead retrofit - see Table 5 for details.	Yes
	Water Features - Restrict water use for decorative water features, such as fountains	Public display of conservation (see Notes)	See Table 5 for details.	Yes
	Landscape - Other landscape restriction or prohibition	(see Notes)		Yes
	CII - Lodging establishment must offer opt out of linen service	250-500 gal/day per lodging establishment		Yes
	Increase Frequency of Meter Reading	(see Notes)		No
	Decrease Line Flushing	Depends on extent and frequency of current flushing activities		No
	Reduce System Water Loss	Up to 35% reduction of system losses		No
Increase Water Waste Patrols	(see Notes)	Increase number of patrols and hours available.	No	
4	Landscape - Limit landscape irrigation to specific days	Up to 56% reduction in landscape irrigation	See Table 5 for details.	Yes
	Other	(see Notes)	Car washing restriction - see Table 5 for details.	Yes
	Implement or Modify Drought Rate Structure or Surcharge	(see Notes)		Yes
5	Landscape - Prohibit certain types of landscape irrigation	(see Notes)	Outdoor water use limited to hand or drip irrigation.	Yes
	Other	Up to 200 gal/yr per residential connection	Car washing at car wash facilities only.	Yes
	Other	Up to 9,000 gal/yr per participating household	Low-flow showerhead and toilet retrofit - see Table 5 for details.	Yes
6	Landscape - Other landscape restriction or prohibition	No additional landscape demand.	Moratorium on all new landscaping. Only zero-scape allowed.	Yes
	Moratorium or Net Zero Demand Increase on New Connections	No additional demand.	See Table 5 for details.	Yes

NOTES: These methods boost the effectiveness of other actions and are not quantifiable on their own.

The City may request that its customers reduce their water demands in response to any water shortage stage through MMC §11-1.14, including imposing additional mandatory restrictions as discussed in Section 4.2. The City will monitor water production, water consumption, and changing conditions to determine the intensity of its public outreach, the extent of its enforcement actions, and the need to adjust its water shortage stage declaration as discussed in Section 9.0.

4.2 Additional Mandatory Restrictions

In addition to the above discussed demand reduction response actions, the City may implement mandatory water use restrictions. Table 5 lists the mandatory restrictions for each shortage stage. These restrictions are in addition to State-mandated prohibitions and are cumulative, so restrictions associated with a given water shortage stage also include any restrictions from lower stages.

Table 5. City of Modesto Additional Mandatory Restrictions

Consumption Reduction Measures
Standard Shortage Level 1 (Up to 10% Shortage)
Outdoor water use prohibited from noon to 7:00 p.m. Odd-numbered addresses water on Wednesdays, Fridays, and Sundays Even-numbered addresses water on Tuesdays, Thursdays, and Saturdays No outdoor water use on Mondays Car washing is permitted with use of a positive shutoff nozzle and is allowed all hours of the approved watering days cited above. Restaurants encouraged to serve water only upon request. Hosing concrete areas, building exteriors, etc. is prohibited except for health/safety concerns and only with use of a positive shutoff nozzle. Water leaks, once identified by home owner, must be repaired within 24 hours.
Standard Shortage Level 2 (Up to 20% Shortage)
3-day Summer Schedule (April 1st to October 31st) Outdoor water use prohibited from noon to 7:00 p.m. Odd-numbered addresses water on Wednesdays, Fridays, and Sundays Even-numbered addresses water on Tuesdays, Thursdays, and Saturdays No outdoor water use on Mondays 2-day Fall Schedule (November 1st to March 31st) Outdoor water use prohibited from noon to 7:00 p.m. Odd-numbered addresses water on Wednesdays and Sundays Even-numbered addresses water on Tuesdays and Saturdays No outdoor water use on Mondays, Thursdays, and Fridays Car washing is permitted with use of a positive shutoff nozzle and is allowed all hours of the approved watering days cited above.
Standard Shortage Level 3 (Up to 30% Shortage)
Outdoor water use prohibited from noon to 7:00 p.m. Odd-numbered addresses water on Wednesdays and Sundays Even-numbered addresses water on Tuesdays and Saturdays No outdoor water use on Mondays, Thursdays, and Fridays Car washing is permitted with use of a positive shutoff nozzle and is allowed all hours of the approved watering days cited above.

Water Shortage Contingency Plan

Consumption Reduction Measures
Restaurants and food service establishments prohibited from serving water except upon request.
Mandatory retrofit of low-flow showerheads in homes when building remodeling occurs.
No use of outdoor fountains except for maintenance purposes.
No irrigating turf or ornamental landscapes during and 48 hours following measurable rain.
Operators of hotels and motels must provide guests with the option of choosing not to have towels and linens laundered daily and prominently display notice of this option.
Standard Shortage Level 4 (Up to 40% Shortage)
Outdoor water use prohibited from 9:00 a.m. to 7:00 p.m.
Odd-numbered addresses water on Sundays
Even-numbered addresses water on Saturdays
No outdoor water use on Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays
Car washing subject to above-cited limitations with use of a positive shutoff nozzle.
Standard Shortage Level 5 (Up to 50% Shortage)
No outdoor water use except for trees and shrubs by hand, and vegetation maintained through drip irrigation.
Car washing permitted at car wash facilities only.
Mandatory retrofit of toilets (in addition to low-flow showerheads) in homes when remodeling occurs.
Standard Shortage Level 6 (More than 50% Shortage)
Moratorium on all new landscaping. Only zero-scape allowed.
Building moratorium on all new connections, including new swimming pools.

4.3 Supply Augmentation and Other Actions

The City’s water supply portfolio consists of purchased treated water from MID and local groundwater, as described in Chapter 6 of the Joint 2020 UWMP. At any water shortage stage and depending on the water shortage event, the City’s water supplies will be managed conjunctively. For example, should deliveries from MID be reduced, the City may increase its groundwater pumping.

Supply augmentation options available to the City include increased groundwater pumping and a temporary arrangement with MID for additional surface water. Since groundwater pumping is already considered for reliability and dry conditions, it is included in determining the gap between supply and customer water use and should not be counted again as a potential shortage response. In a temporary arrangement, the City may have the opportunity to purchase additional water from MID (at a higher rate). Since this arrangement was not included in the supply reliability analysis described in Chapter 7 of Joint 2020 UWMP, it is presented here as a supply augmentation option.

Table 6 lists the supply augmentation method the City can utilize during each shortage level. Supply augmentation response action initiated at the shortage level shown will be implemented at higher shortage levels.

Table 6. Water Shortage Contingency Plan Supply Augmentation and Other Actions (DWR Table 8-3)

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>
5	Other Purchases	Up to shortage gap	By temporary arrangement, purchase additional treated surface water supply from MID

4.4 Operational Changes

Beginning in Stage 3, the City will adjust operations to minimize supply losses and more closely track customer water use. These adjustments include decreasing line flushing, increasing meter reading, and increasing water waste patrols.

4.5 Emergency Response Plan

As stated in Section 3.0, the City’s water shortage stages outlined in Table 3 apply to both foreseeable and unforeseeable water supply shortage conditions, including catastrophic water shortage conditions. Catastrophic water shortage conditions are addressed in the City’s Emergency Response Plan (ERP). ERPs outline preparation, response, and recovery procedures associated with unforeseeable incidents such as water supply contamination, earthquake, infrastructure failure, and other events.

The City’s 2008 ERP describes the equipment and resources available in an unforeseen water shortage, including backup generators (stationary and portable) and emergency water storage (i.e., groundwater and reservoirs). In the event of an emergency that impacts water delivery, the City will coordinate with MID to organize and deliver alternate water supplies to their customers if possible.

The City is currently in the process of updating its 2008 ERP.

4.6 Seismic Risk Assessment and Mitigation Plan

CWC §10632.5(a) requires that UWMPs include a seismic risk assessment and mitigation plan to assess and mitigate a water system’s seismic vulnerabilities. A Local Hazard Mitigation Plan (LHMP) can be incorporated in the UWMP to meet this requirement if it addresses seismic risk. The Stanislaus County LHMP (County LHMP, updated in 2017) addressed seismic risk and is incorporated into this plan by reference. It identified risks posed by disasters (including earthquakes) and ways to minimize damage from those disasters. The County LHMP was adopted by Stanislaus County on July 11, 2017 and submitted to the Federal Emergency Management Agency (FEMA), which found it in conformance with Title 44 Code of Federal Regulations Part 201.6 Local Mitigation Plans. The County’s LHMP is updated periodically, and reports are provided through the [Stanislaus County website](#).

While California experiences hundreds of earthquakes each year, most are below 3.0 on the Richter Scale (i.e., magnitude 3.0) and cause minimal damage. The United States Geological Survey (USGS) roughly defines strong earthquakes (which can cause moderate damage to structures) as measuring greater than 5.0 on the Richter Scale, while major earthquakes measure more than 7.0 on the Richter Scale. Generally, in California, strong earthquakes occur every two to three years, and major earthquakes occur once a decade.

Water Shortage Contingency Plan

Seismic activity within Stanislaus County has been historically rare, but earthquakes still present a significant risk. As described in the County LHMP, there are no known active faults within the County, though inactive faults are found on the extreme eastern parts of the County and within the Diablo Range. Since 1930, only one earthquake with a magnitude greater than 4.0 has occurred in the County. Nevertheless, USGS estimates more than an 80 percent chance of a strong earthquake occurring within 50 kilometers (31 miles) of the County in the next 50 years. Shaking and aftershocks from nearby earthquakes could damage facilities within the County.

Section Six of the County LHMP identifies earthquake hazard mitigation activities that achieve stated hazard mitigation goals (e.g., minimize loss of life and reduce property damage) and objectives (e.g., continue critical business operations). Mitigation activities from the County LHMP potentially applicable to the City and MID include the following:

- Conduct public outreach about earthquake risk and mitigation activities;
- Integrate LHMP priorities into Capital Improvement Plans and other planning activities; and
- Develop, adopt, maintain, and update a continuity of operations plan.

5.0 COMMUNICATION PROTOCOLS

In the event of a water shortage, the City must inform their customers, the general public and interested parties, and local, regional, and state entities. Communication protocols for foreseeable and unforeseeable events are provided in this section. In any event, timely and effective communication must occur for appropriate response to the event. Cell phone numbers for City staff are shared internally, and City email accounts are available for internal and external communication.

5.1 Communication for Foreseeable Events

Water shortage may be foreseeable when the City conducts its Annual Assessment as described in Section 2.0. When the City determines the potential of a water shortage event, the City Council may declare a water shortage emergency by resolution and authorize shortage response actions in accordance with MMC §11-1.14.

The City will follow the communication protocols and procedures detailed below. The City may trigger any of these protocols at any water shortage stage.

1. If a water shortage emergency is anticipated, the City will coordinate interdepartmentally, with the region's water service providers, and with Stanislaus County for the possible proclamation of a local emergency.
2. The City will schedule a City Council meeting in which the Annual Assessment findings and recommendations for a water shortage emergency and shortage response actions are presented.
3. The City will communicate conditions to the general public using some or all of the following options, as needed at the various shortage levels: press releases, radio/television coverage, social media posts, bill inserts, newsletters, and postings on the City's website. Public entities and officials are informed of water shortage information via email.

5.2 Communication for Unforeseeable Events

Water shortage may occur during unforeseeable events such as earthquakes, fires, infrastructure failures, civil unrest, and other catastrophic events. The City's ERP provides specific communication protocols and procedures to convey water shortage contingency planning actions during these events. The City may trigger any of these communication protocols at any water shortage stage, depending on the event.

In general, communications and notifications should proceed along the chain of command. As described in the City's ERP, events causing a water shortage are significant enough to activate the Technical Command Center (TCC), led by the TCC Commander. Notification decisions will be made under the direction of the TCC Commander, who must verify and approve all information before the Communications/Media Coordinator releases it to the media and the public. Internal and external communications will be managed by the Communications/Media Coordinator, a role typically assigned to the Public Information Officer (PIO).

All City staff are provided their communication responsibilities. Depending on the event, the City may designate someone other than the Communications/Media Coordinator as a spokesperson to interact with the media. The ERP also provides a list of relevant contacts to notify at the local, regional, and state level.

6.0 COMPLIANCE AND ENFORCEMENT

When a water shortage is anticipated, City Council will adopt a resolution declaring a water shortage emergency condition and the regulations and restrictions that should be enforced in response to the declared water shortage level.

Where the City has installed meters, customer water use can be quantified and compared to determine their extent of compliance to water reduction requirements. The City may also become aware of non-compliance through its water waste reporting outreach or through staff inspections. Non-compliance is deemed a violation and is classified as an infraction. Under MMC §11-1.14, first-time violators of water use restrictions are served with a notice either personally, by mail, or by posting at the water user's, customer's or property owner's business or place of residence. The notice will identify the date, time, and circumstances of the violation and notify the user that further violations may result in penalty fees being assessed.

Penalty fees vary with the water shortage level and escalate with subsequent violations within 12 months of the first violation. In Stages 1, 2, and 3, the second violation results in a \$150 administrative fee, which increases to \$250 on the third violation and \$500 for each subsequent violation. In Stages 4, 5, and 6, the second violation results in a \$200 administrative fee, which increases to \$300 on the third violation and \$500 for each subsequent violation.

Water users or property owners can appeal the notice of violation or the administrative fee by submitting a written request for an appeal hearing within 15 days from the date of notice of either the violation or the intent to impose a penalty. The appeal hearing shall be held before the Utilities Director, or a duly designated representative, and the appellant may present witnesses and evidence as desired. The decision of the hearing officer is final.

Water Shortage Contingency Plan

7.0 LEGAL AUTHORITIES

MMC §11-1.14 supports the City's water shortage contingency actions, including provisions for compliance and enforcement of its water use regulations, restrictions, and prohibitions.

When a water shortage is determined, the City will coordinate interdepartmentally, with the region's water service providers (including MID), and with Stanislaus County for the possible proclamation of a local emergency in accordance under California Government Code, California Emergency Services Act (Article 2, Section 8558).

In a duly noticed meeting, the City Council will determine whether a water shortage emergency condition exists and, if so, the degree of the emergency and what regulations and restrictions should be enforced in response to the shortage. The City shall declare a water shortage emergency in accordance with CWC Chapter 3 of Division 1.

California Water Code Division 1, Section 350

...The governing body of a distributor of a public water supply...shall declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.

The water shortage emergency declaration triggers communication protocols described in Section 5.0 and compliance and enforcement actions described in Section 6.0.

8.0 FINANCIAL CONSEQUENCES OF WSCP

The City's water operations are organized as an Enterprise Fund in which the costs of providing goods or services to the general public on a continuing basis are financed or recovered primarily through user charges. Historically, water revenues have been sufficient to allow inter-fund transfers for repayment of contributed capital or to fund capital improvement projects and information and technology projects.

Implementation of the WSCP results in reduced water usage, and accordingly, reduced operating revenues. However, operating expenses would also be reduced due to lower customer water demands that result in decreased water production (i.e., purchasing less surface water and/or pumping less groundwater).

Implementation of Stage 3 or higher is expected to decrease operating revenues up to 50 percent. Previously, revenue from flat rate water sales provided a level of financial stability for the City. Since the City has nearly completed converting its flat rate accounts to metered accounts, it is now more vulnerable to revenue impacts from water use reductions.

Expenditure impacts resulting from implementation of the WSCP may include additional costs to provide increased outreach to customers about water conservation, purchase more expensive water supplies, and implement a drought rate structure. As of April 1, 2020, the City's volumetric water rate would increase from \$1.98 to \$2.10 per hundred cubic feet (ccf) during a drought. The goal of the drought rates is to recover the temporary loss of revenue due to reduction of water sales during a period of drought and offset increased costs associated with enforcing compliance with water use restrictions. Drought rates also encourage water use conservation.

In addition to rate adjustment, the City may also initiate a water shortage contingency fund, temporary deferral of capital improvement projects, or seek outside funding sources to overcome revenue and expenditure impacts from water shortages.

9.0 MONITORING AND REPORTING

Meter readings are an important tool to help the City adjust public outreach, enforcement, and other water shortage response actions. The City has meters at its water sources (MID turnouts and groundwater production wells) and is in the process of installing meters for all its water customers. Approximately 97 percent of the City's water customers are metered, with the remainder to be completed by 2022. Customers' water meters can be read monthly to track the extent of their compliance with the City's water use restrictions. Water production information may be read daily.

At the time of preparation of this WSCP, the State Water Resources Control Board is preparing regulations for monthly reporting of water production and other uses, along with associated enforcement metrics. The City regularly records its water meter readings, along with enforcement actions, ensuring that the City will be able to comply with upcoming reporting requirements.

10.0 WSCP REFINEMENT PROCEDURES

This WSCP is an adaptive management plan. It is subject to refinements as needed to ensure that the City's shortage response actions and mitigation strategies are effective and produce the desired results. Based on monitoring described in Section 9.0 and the need for compliance and enforcement actions described in Section 6.0, the City may adjust its response actions and modify its WSCP. The City may also modify its WSCP based on improvements identified through systematic monitoring or feedback from City staff and customers as discussed below. When a revised WSCP is proposed, the revised WSCP will undergo the process described in Section 12.0 for adoption by the City Council and distribution to Stanislaus County, MID, City of Ceres, City of Turlock, the City's customers, and the general public.

10.1 Systematic Monitoring

The City will monitor meters at its water sources to evaluate the overall effectiveness of its response actions in meeting the declared water shortage stage. Should overall demands fall short of the goals of the declared water shortage stage, the City can increase the intensity of public outreach for water conservation and the extent of enforcement of water use restrictions. Conversely, should overall demands meet or exceed the goals of the declared water shortage stage, the City can decrease the intensity of public outreach for water conservation and the extent of enforcement of water use restrictions.

The City may implement operational changes in combination with enforcement of its water use restrictions and prohibitions to meet the objectives of the water shortage stage while maintaining overall public health and safety.

10.2 Feedback from City Staff and Customers

Feedback from City staff and the public is important in refining or incorporating new actions. The City seeks input from staff who interface with customers to gauge the effectiveness of its response actions and solicit response action ideas.

Water Shortage Contingency Plan

Customer water meter data may be evaluated for each customer sector or each individual customer. The City tracks water use violations and may evaluate their frequency to determine restrictions that customers may not be able to meet. This evaluation may also show water demand reduction actions that customers can implement effectively.

The City seeks input from its customers and the general public through its website, through public hearings, and through regularly scheduled City Council meetings.

11.0 SPECIAL WATER FEATURE DISTINCTION

The City distinguishes special water features, such as decorative fountains and ponds, differently from pools and spas. Special water features are regulated separately. The use of outdoor fountains is prohibited except for maintenance purposes and a building moratorium is imposed on new swimming pools when the City anticipates critical shortage potential (Level 6).

12.0 PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

This WSCP is adopted concurrently with the City and MID's Joint 2020 UWMP, by separate resolution. Prior to adoption, a duly noticed public hearing was conducted. An electronic copy of this WSCP will be submitted to DWR within 30 days of adoption.

No later than 30 days after adoption, a copy of this WSCP will be available at the City's offices. A copy will also be provided to Stanislaus County, City of Ceres, and City of Turlock. An electronic copy of this WSCP will also be available for public review and download on the City's website.

The City's WSCP is an adaptive management plan and is subject to refinements as needed to ensure that the City's shortage response actions and mitigation strategies are effective and produce the desired results. When a revised WSCP is proposed, the revised WSCP will undergo the process described above for adoption by City Council and distribution to Stanislaus County, MID, City of Ceres, City of Turlock, the City's customers, and the general public.

Water Conservation Plan and Related Documents

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Water Conservation Plan Update



Prepared for
City of Modesto

April 2017

WEST YOST

ASSOCIATES
Consulting Engineers

418-12-15-42

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WEST YOST ASSOCIATES
consulting engineers

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Water Conservation Plan Update

Prepared for

City of Modesto

Project #418-12-15-42



Project Manager: Elizabeth T. Drayer, PE

April 6, 2017

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Table of Contents

1.0 Introduction	1
1.1 Overview of the City's Water Conservation Program	1
1.2 Relationship to the City's 2015 UWMP	1
1.3 Contents and Organization	1
2.0 Background	3
2.1 History	3
2.2 Physical Setting	4
2.3 System Description	5
3.0 Water Use Patterns and Trends	8
3.1 Historical Water Use	8
3.2 Compliance with SBx7-7 Per Capita Water Use Targets	9
3.3 Compliance with State Water Conservation Standards	9
3.4 Water Use Patterns	10
4.0 Conservation Policies and Goals	14
5.0 Existing Water Conservation Programs	15
5.1 BMP 1: Utility Operations Programs	15
5.1.1 BMP 1.1: Operations Practices	15
5.1.1.1 BMP 1.1.1: Conservation Coordinator (formerly BMP 12)	15
5.1.1.1.1 CUWCC Description	15
5.1.1.1.2 CUWCC Goal	15
5.1.1.1.3 CUWCC Documentation Requirement	16
5.1.1.1.4 Implementation Status	17
5.1.1.1.5 Existing Program	17
5.1.1.2 BMP 1.1.2: Water Waste Prevention (formerly BMP 13)	18
5.1.1.2.1 CUWCC Description	18
5.1.1.2.2 CUWCC Goal	18
5.1.1.2.3 CUWCC Documentation Requirement	18
5.1.1.2.4 Implementation Status	19
5.1.1.2.5 Existing Program	19
5.1.1.3 BMP 1.1.3: Wholesale Agency Assistance Programs (formerly BMP 10)	20
5.1.2 BMP 1.2: Water Loss Control (formerly BMP 3)	20
5.1.2.1 CUWCC Description	20
5.1.2.2 CUWCC Goal	21
5.1.2.3 CUWCC Documentation Requirement	22
5.1.2.4 Implementation Status	22
5.1.2.5 Existing Program	22
5.1.3 BMP 1.3: Metering with Commodity Rates for All New Connections and Retrofit for Existing Connections (formerly BMP 4)	24
5.1.3.1 CUWCC Description	24
5.1.3.2 CUWCC Goal	24
5.1.3.3 CUWCC Documentation Requirement	25
5.1.3.4 Implementation Status	25
5.1.3.5 Existing Program	25
5.1.4 BMP 1.4: Retail Conservation Pricing (formerly BMP 11)	26
5.1.4.1 CUWCC Description	26



Table of Contents

5.1.4.2 CUWCC Goal	27
5.1.4.3 CUWCC Documentation Requirement.....	28
5.1.4.4 Implementation Status.....	28
5.1.4.5 Existing Program	29
5.2 BMP 2: Educational Programs	30
5.2.1 BMP 2.1: Public Information Programs (formerly BMP 7)	30
5.2.1.1 CUWCC Description.....	30
5.2.1.2 CUWCC Goal	31
5.2.1.3 CUWCC Documentation Requirement.....	31
5.2.1.4 Implementation Status.....	32
5.2.1.5 Existing Program	32
5.2.2 BMP 2.2: School Education Programs (formerly BMP 8)	34
5.2.2.1 CUWCC Description.....	34
5.2.2.2 CUWCC Goal	34
5.2.2.3 CUWCC Documentation Requirement.....	35
5.2.2.4 Implementation Status.....	35
5.2.2.5 Existing Program	36
5.3 BMP 3: Residential	36
5.3.1 BMP 3.1: Residential Assistance Program (formerly BMPs 1 & 2)	36
5.3.1.1 CUWCC Description.....	36
5.3.1.2 CUWCC Goal	36
5.3.1.3 CUWCC Documentation Requirement.....	37
5.3.1.4 Implementation Status.....	37
5.3.1.5 Existing Program	37
5.3.2 BMP 3.2: Landscape Water Survey (formerly BMP 1)	37
5.3.2.1 CUWCC Description.....	37
5.3.2.2 CUWCC Goal	38
5.3.2.3 CUWCC Documentation Requirement.....	38
5.3.2.4 Implementation Status.....	38
5.3.2.5 Existing Program	38
5.3.3 BMP 3.3: High-Efficiency Clothes Washers (formerly BMP 6)	38
5.3.3.1 CUWCC Description.....	38
5.3.3.2 CUWCC Goal	38
5.3.3.3 CUWCC Documentation Requirement.....	39
5.3.3.4 Implementation Status.....	39
5.3.3.5 Existing Program	39
5.3.4 BMP 3.4: WaterSense Specification Toilets (formerly BMP 14).....	39
5.3.4.1 CUWCC Description.....	39
5.3.4.2 CUWCC Goal	39
5.3.4.3 CUWCC Documentation Requirement.....	39
5.3.4.4 Implementation Status.....	40
5.3.4.5 Existing Program	40
5.3.5 BMP 3.5: WaterSense Specifications for New Residential Development	40
5.3.5.1 CUWCC Description.....	40
5.3.5.2 CUWCC Goal	40
5.3.5.3 CUWCC Documentation Requirement.....	40
5.3.5.4 Implementation Status.....	40
5.3.5.5 Existing Program	41
5.4 BMP 4: Commercial, Industrial, and Institutional (formerly BMP 9)	41
5.4.1 CUWCC Description	41
5.4.2 CUWCC Goal.....	41



Table of Contents

5.4.3 CUWCC Documentation Requirement	42
5.4.4 Implementation Status	42
5.4.5 Existing Program	42
5.5 BMP 5: Landscape (formerly BMP 5)	44
5.5.1 CUWCC Description	44
5.5.2 CUWCC Goal	45
5.5.3 CUWCC Documentation Requirement:	45
5.5.4 Implementation Status	46
5.5.5 Existing Program	46
6.0 Future Water Conservation Policies	48

LIST OF TABLES

Table 2-1. Monthly Average Climate Data Summary	4
Table 3-1. Historical Per Capita Water Use	8
Table 3-2. Historical water Use by Sector	10
Table 5-1. CUWCC BMP Naming Changes	16
Table 5-2. City of Modesto Current Water Rates and Charges	29
Table 5-3. Public Education Programs	34
Table 5-4. School Education Presentations	36
Table 5-5. City of Modesto CII Rebate Programs	43
Table 5-6. Water Use for CII Accounts	43

LIST OF FIGURES

Figure 2-1. City of Modesto Water Service Areas	6
Figure 2-2. City of Modesto Existing Water System Facilities	7
Figure 3-1. Historical Annual Water Use	12
Figure 3-2. Monthly Residential Per Capita Water Use	13

LIST OF APPENDICES

- Appendix A: City of Modesto Drought Contingency Plan
- Appendix B: City of Modesto Resolutions:
 - Resolution No. 2016-178
 - Resolution No. 2016-395
- Appendix C: Water Conservation Programs
- Appendix D: 2015 AWWA Water Audit
- Appendix E: Executive Order B-37-16

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Water Conservation Plan Update

1.0 INTRODUCTION

1.1 Overview of the City's Water Conservation Program

The City of Modesto (City) Water Conservation Program is administered through the Water Services Division of the City's Utilities Department. The City has implemented, or plans to implement all of the Best Management Practices (BMPs) defined in the January 2016 California Urban Water Conservation Council (CUWCC) Memorandum of Understanding (MOU) (the corresponding document to the demand management measures denoted in the 2015 Urban Water Management Plan (UWMP) Guidelines) and the State's Assembly Bill 1420 (AB 1420) water use efficiency program.

The City has acknowledged the importance of water conservation and management, and implemented significant water conservation efforts during the drought years of 1976-1977, 1987-1992, and in recent years, especially 2014 and 2015, in response to drought conditions and statewide water conservation mandates.

In March 1990, the City Council approved a Water Conservation Program (Section 11-1.14 of Title XI of the Modesto Municipal Code) which combined a strong education program with watering restrictions and prohibition of water waste. A detailed Water Conservation Plan was prepared and adopted in conjunction with the City's 2010 UWMP¹. The City has now developed this updated Water Conservation Plan, building upon the demand management measures and conservation strategies identified and documented in the City's 2015 UWMP, with the intent to better define the City's Water Conservation Program and plan for conservation program implementation in the future.

1.2 Relationship to the City's 2015 UWMP

In previous UWMPs, a substantial amount of data was required to document a water supplier's progress in implementing fourteen specific Demand Management Measures (DMMs). In 2014, Assembly Bill 2067 simplified, clarified and updated reporting requirements for DMMs. Starting with the 2015 UWMP, focus has turned away from detailed descriptions of each of the fourteen DMMs and has turned to key water conservation measures that are being implemented to achieve compliance with SB X7-7 (the Water Conservation Act of 2009). For retail agencies, the number of DMMs has been reduced from fourteen to six measures (plus an "other" category). A narrative description of the status of the DMMs and how the DMMs will help the water supplier achieve its SB X7-7 water use targets is required to be discussed in the 2015 UWMP, and is provided in Chapter 9 of the City's 2015 UWMP. Detailed data on the status of the City's DMMs are also included in this Water Conservation Plan Update.

1.3 Contents and Organization

This update to the City's Water Conservation Plan has been prepared based on the guidance provided in the January 2016 MOU Regarding Urban Water Conservation in California. The intent of the MOU is to guide individual water suppliers in developing comprehensive conservation Best

¹ City of Modesto Water Conservation Plan, prepared by RMC, May 2011.



Water Conservation Plan Update

Management Programs (BMPs) using sound economic criteria, and to consider water conservation on an equal basis with other water management options. Although the City is not a signatory to this MOU, the City recognizes the need to provide long-term water supply reliability for urban water suppliers and long-term protection of the environment. Therefore, the City has implemented, or plans to implement, all of the BMPs defined in the CUWCC MOU.

This Water Conservation Plan Update is organized into the following sections:

- Section 1: Introduction
- Section 2: Background
- Section 3: Water Use Patterns and Trends
- Section 4: Conservation Policies and Goals
- Section 5: Existing Water Conservation Programs
- Section 6: Future Water Conservation Policies

2.0 BACKGROUND

2.1 History

Currently, the City's service area consists of one large "contiguous" service area and several "outlying" non-contiguous service areas. The central contiguous service area is primarily defined by the City's current sphere of influence (SOI) and includes Modesto, Salida, portions of North Ceres, and several unincorporated Stanislaus County "islands" located within the City's SOI. These County islands include Empire, Bret Harte, Shackelford, and West Modesto, among several others. The outlying service areas are not contiguous to the central service area and include Grayson, Del Rio, Ceres (Walnut Manor), and portions of Turlock.² The City's water service area is shown on Figure 2-1.

The City has been providing potable water service to its urban area since 1895 through the purchase and acquisition of several private water companies. Until 1995, the sole source of water supply to the City was groundwater pumped from the San Joaquin Valley Groundwater Basin. Groundwater levels started to decline in 1924, particularly in the downtown area, due to increased groundwater pumping for urban uses.

In the early 1990s, the City, the Modesto Irrigation District (MID), and the former Del Este Water Company, formed the Modesto Domestic Water Partnership (in 1995, the City acquired the Del Este Water Company) to use a portion of MID's surface water rights for municipal uses, and entered into a Treatment and Delivery Agreement (TDA) to cover the design, construction, commercial operation (i.e., governing delivery of treated surface water from MID to the City), and financing for the Initial Phase (Phase One) of the Modesto Regional Water Treatment Plant (MRWTP). This new surface water treatment plant, along with associated storage and delivery facilities, became operational in 1995, and the City has purchased wholesale treated surface water from MID since. This availability of surface water supply has allowed the City to reduce and stabilize groundwater pumping rates to allow for groundwater aquifer recovery.

The MRWTP is owned and operated by MID and per the original TDA, delivers an annual average supply of 30 million gallons per day (mgd) (33,600 acre-feet per year (af/yr)) to the City with a functional hydraulic peaking capacity up to 42.5 mgd. This treated surface water supply from MID, coupled with the available groundwater supply, together termed a "conjunctive supply", is used to meet the City's water supply needs for municipal customers in the contiguous service area located north of the Tuolumne River (this is the southern boundary of the MID service area).

The MRWTP Phase Two Expansion project was essentially completed in May 2016, and will provide the City with up to an additional 30 mgd of treated surface water supply for a total annual average supply of up to 60 mgd (67,200 af/yr) by 2050.³ The peaking capacity for the Phase Two Expansion will be determined after start-up operations and testing protocols are completed. It should be noted that the total 60 mgd capacity is based on a normal and wet year annual average. The delivery of Phase Two treated surface water is governed by the October 2005 Amended and

² Effective July 1, 2015, the City no longer provides water service to the communities of Hickman and Waterford. The water supplies for Hickman and Waterford are now owned and operated by the City of Waterford.

³ An additional 10 mgd is assumed to be available by 2020, gradually increasing to an additional 30 mgd by 2050 (buildout).

Water Conservation Plan Update

Restated TDA (AR TDA), and the AR TDA includes formulas to determine supply reductions during dry years.

2.2 Physical Setting

The climate of the City’s service area is best described as Mediterranean, characterized by hot, dry summers and cool winters. Precipitation in the area averages about 12.2 inches per year.

Water use within the City’s service area is dependent on various climate factors such as temperature, precipitation, and evapotranspiration (ET_o). Climate data, including temperature and precipitation estimates, were obtained for Modesto, California. The period of record was March 1, 1906 to January 20, 2015. ET_o describes water lost through evaporation from the soil and surface-water bodies combined with plant transpiration. In general, the reference ET_o is given for turf grass, and then corrected for a specific crop type. Local ET_o data was obtained from California Irrigation Management Information System (CIMIS) monitoring station in West Modesto (Station #71).

The historical climate characteristics affecting water management in the City’s service area are shown in Table 2-1.

Month	Standard Monthly Average ET _o , inches ^(a)	Average Total Rainfall, inches ^(b)	Average Temperature, degrees Fahrenheit ^(b)	
			Maximum	Minimum
January	1.10	2.44	53.8	37.6
February	1.88	2.07	60.9	40.8
March	3.57	1.93	66.9	43.5
April	5.23	1.03	73.3	46.8
May	6.98	0.46	81.2	51.8
June	7.87	0.13	88.3	56.6
July	7.95	0.02	94.3	60.0
August	6.89	0.04	92.3	58.8
September	5.10	0.17	87.7	56.0
October	3.40	0.63	77.9	49.6
November	1.70	1.24	64.6	41.7
December	1.05	2.05	54.4	37.7
Total or Average	52.7	12.2	74.6	48.4

^(a) Source: California Irrigation Management Information System (CIMIS) data for Station #71: Modesto (downloaded January 28, 2016).
^(b) Source: Western Regional Climate Center data for DWR for Modesto, California (period of record: March 1, 1906 to January 20, 2015).

2.3 System Description

The City currently uses a conjunctive water use strategy with two primary water sources to meet potable water demands within the City's service area. These include:

- Treated Tuolumne River surface water purchased on a wholesale basis from MID; and
- Local groundwater pumped from City wells located throughout the City's service area.

The City's contiguous service area consists of approximately 900 miles of transmission and distribution pipelines. A portion of the transmission mains traversing the City is owned and operated by MID, and these transmission mains provide treated surface water through a series of turnouts that have the ability to control water supply into the City's water distribution system. The contiguous system currently has 77 active groundwater wells. The contiguous water system also has ten at-grade storage tanks with a combined total storage capacity of 22.1 million gallons (MG). Each storage tank has a booster pump station to pump water from the tank into the distribution system. The City is currently constructing a new storage facility, the North Tank (Tank 11), which is expected to be operational by the end of 2017. In addition, the City plans to construct another additional storage facility, the Industrial Tank (Tank 13), in the near-term. These two additional storage facilities will add an additional 10 MG, bringing the total storage capacity in the contiguous service area to 32.1 MG.

The City's outlying service areas are served by groundwater wells located in each of the outlying service areas. Only the Grayson service area has an at-grade storage tank and booster pump station. The other outlying service areas are served exclusively from the existing groundwater wells.

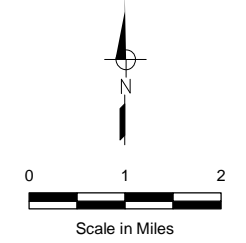
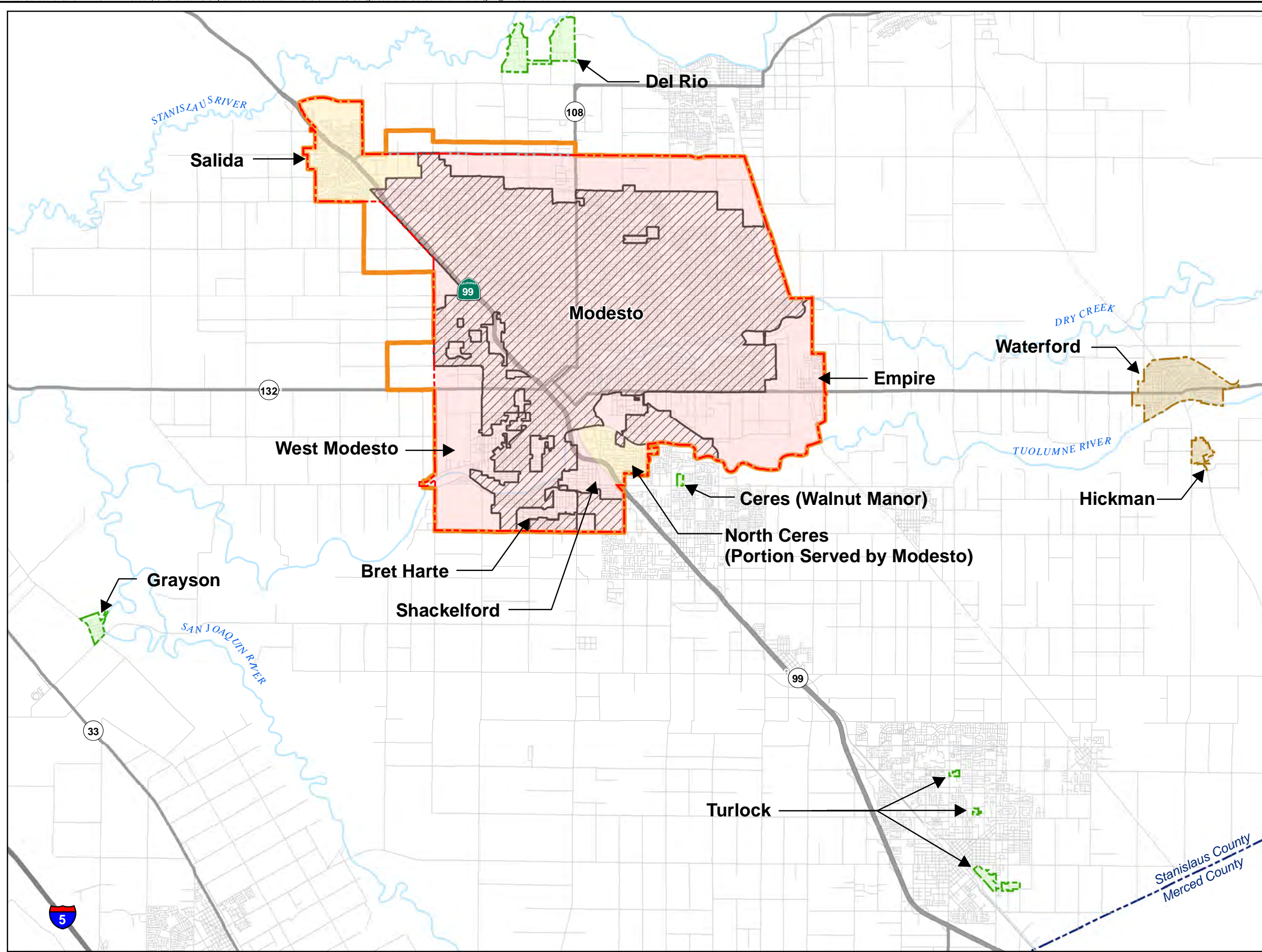
The major water distribution system facilities in the City's contiguous and outlying service areas are shown on Figure 2-2.

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FIGURE 2-1

**City of Modesto
2017 Water Conservation
Plan Update**

**CITY OF MODESTO
WATER SERVICE AREAS**



- Notes**
1. Sphere of influence boundary obtained from the City on 11/6/2014.
 2. The City's contiguous service area is co-terminus with the City's SOI boundary except for the Salida and North Ceres areas.
 3. Effective July 1, 2015, the City no longer provides water service to the communities of Hickman and Waterford.
 4. The City's study area boundary represents the maximum area. The actual boundary will be determined by future Council action.
 5. City limit boundary based on County GIS data downloaded on October 6, 2014.

- LEGEND**
- Sphere of Influence (SOI)
 - Contiguous Service Area
 - Contiguous Area Outside of SOI
 - Outlying Service Area
 - Outlying Service Area No Longer Served by City (see Note 3)
 - Contiguous Water System Study Area (see Note 4)
 - City Limits

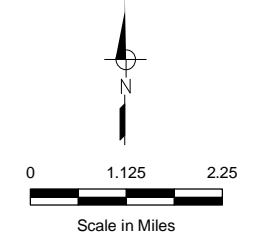
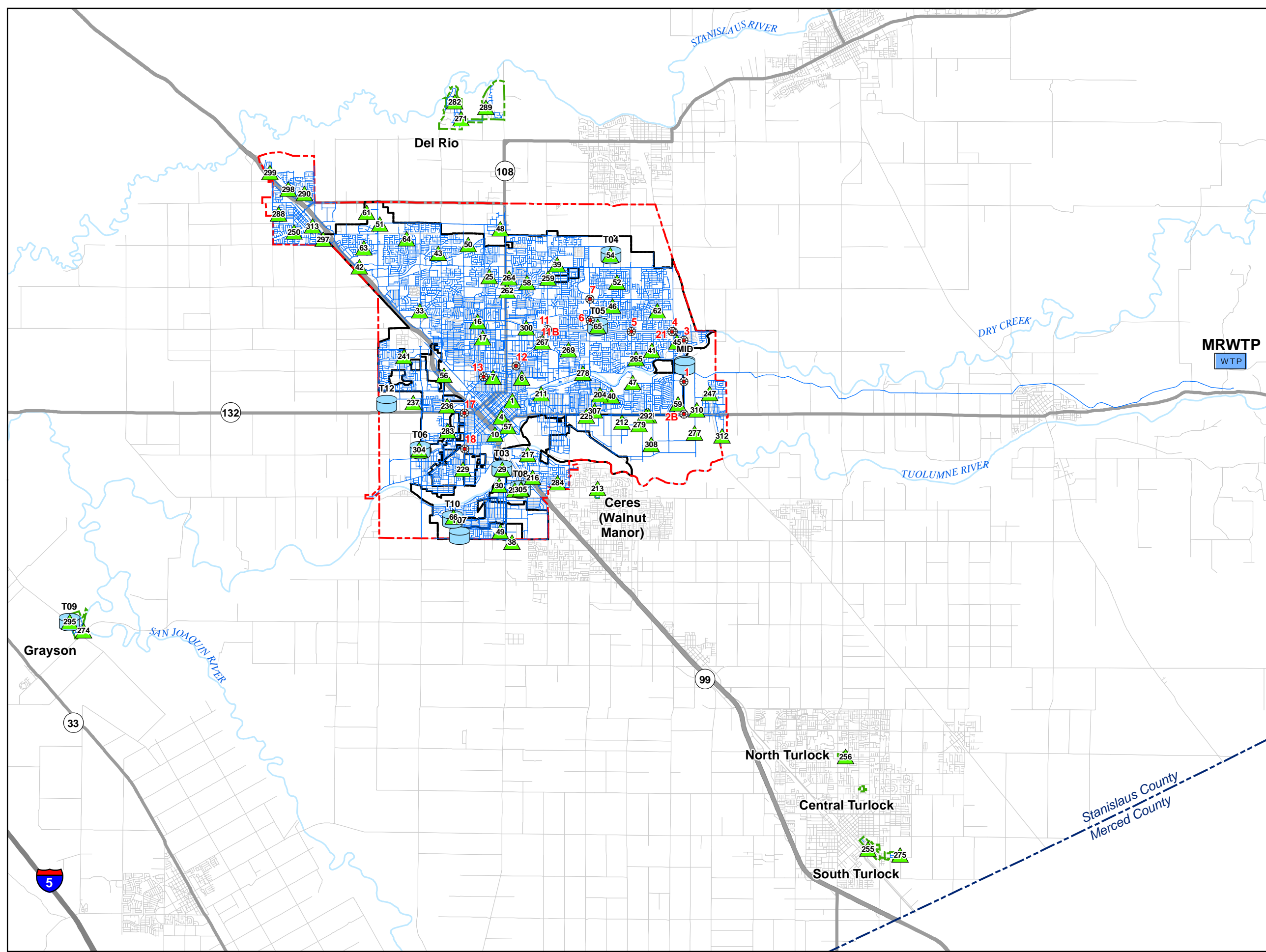


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FIGURE 2-2

**City of Modesto
2017 Water Conservation
Plan Update**

**CITY OF MODESTO
EXISTING WATER SYSTEM
FACILITIES**



- Notes**
1. Pipeline diameters are based on City's current GIS provided by the City on 10/23/2014.
 2. Effective July 1, 2015, the City no longer provides water service to the communities of Hickman and Waterford.
 3. City limit boundary based on County GIS data downloaded on October 6, 2014.

- LEGEND**
- WTP Modesto Regional Water Treatment Plant (MRWTP)
 - ▲ Active Well
 - Tank and Booster Pump Station
 - ⊗ MID Turnout
 - Existing Pipeline
 - Contiguous Service Area
 - Outlying Service Area
 - City Limits



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3.0 WATER USE PATTERNS AND TRENDS

3.1 Historical Water Use

The City has historically been among the fastest growing areas in California. The City’s population grew steadily from 1996 through 2004 (at an average rate of 1.8 percent per year). However, since 2005, growth within the City’s service area has slowed significantly as a result of the national statewide economic downturn.

Annual water production for the City peaked in 2002 and has decreased annually since then with major decreases in 2009 and 2010 and more recently in 2014 and 2015. The significant decreases in water production for 2009 and 2010 are most likely attributed to the lingering economic downturn. The more recent 2014 and 2015 decreases are due to increased conservation efforts during the continuing drought.

As of July 1, 2015, water utility customers in Waterford and Hickman are no longer being served by the City of Modesto. To accurately project water demands for the City’s water service area, the historical water use and populations from the Waterford and Hickman service areas are not included in this Water Conservation Plan Update.

Historical per capita water use for the City’s contiguous and outlying service areas between 2005 and 2015 is presented in Table 3-1. As shown in Table 3-1, the City’s per capita water use has decreased from a high of 274 gallons per capita per day (gpcd) in 2005 and 2007 to 163 gpcd in 2015. Recent water use in 2014 and 2015 has decreased significantly, and is a response to the on-going drought and increased conservation efforts in response to statewide mandates, and the City’s continued meter retrofit program for residential customers. Figure 3-1 shows the City’s historical annual water production and per capita water use from 2005 to 2015.

Year	Total Population ^(b)	Total Annual Water Production ^(c)		Per Capita Water Use ^(d) , gpcd
		gallons	AF	
2005	249,691	24,933,028,521	76,517	274
2006	249,918	24,854,274,476	76,275	272
2007	250,877	25,096,996,024	77,020	274
2008	251,639	24,448,696,132	75,030	266
2009	252,838	22,395,558,895	68,729	243
2010	251,098	20,478,260,041	62,845	223
2011	251,668	20,366,747,154	62,503	222
2012	252,777	20,905,112,631	64,155	227
2013	255,919	20,987,211,431	64,407	225
2014	257,830	18,702,448,079	57,396	199
2015	259,187	15,464,601,113	47,459	163

^(a) Includes the City’s contiguous and outlying service areas, except Hickman and Waterford. As of July 1, 2015, the City no longer serves Hickman and Waterford. Therefore, historical water use and populations from Hickman and Waterford have been removed from the totals presented above.

^(b) Based on data from Table 3-1 in the City of Modesto’s Water Master Plan (2017).

^(c) Based on data from Table 3-3 in the City of Modesto’s Water Master Plan (2017).

^(d) Per capita water use shown is based on City’s total water use for all customer classes.

3.2 Compliance with SBx7-7 Per Capita Water Use Targets

SB X7-7 requires a state-wide average 20 percent reduction of urban per capita water use⁴ by the year 2020. As part of the City's compliance with SB X7-7, the City has established its baseline per capita water use, interim (2015) per capita water use target, and final (2020) per capita water use target. The development of the City's baseline and per capita water use, as stated in the City's 2015 UWMP, are summarized as follows:

- Base Daily Per Capita Water Use (10 year): 285 gpcd;
- 2015 Interim Per Capita Water Use Target: 257 gpcd; and
- 2020 Final Per Capita Water Use Target: 228 gpcd.

Urban water suppliers must verify that their 2020 final water use target is at least a 5 percent reduction from the 5-year baseline per capita water use. The City's maximum 2020 target is 265 gpcd (95 percent of the City's 5-year base daily per capita water use of 279 gpcd). The City's Method 1 2020 target of 228 gpcd complies with the minimum reduction.

The City has calculated its actual water use for the 2015 calendar year as 163 gpcd, which is well below the 2015 interim water use target of 257 gpcd. Figure 3-1 also shows the City's historical per capita water use compared to its baseline per capita use, interim (2015) per capita water use target, and final (2020) per capita water use target. As shown, the City has met its interim 2015 water use target and is well positioned to meet its final 2020 water use target.

3.3 Compliance with State Water Conservation Standards

In 2015, the State Water Resources Control Board (SWRCB) mandated a 36 percent reduction in residential water use for the City. To meet this goal, the City's Utilities Department recommended the City Council to adopt a revised Drought Contingency Plan (to include an additional Stage IIA drought condition) and to also declare a more severe Stage II drought condition. The City's revised Drought Contingency Plan was approved, and the City entered into a Stage II drought condition on May 1, 2015. A copy of the City's current Drought Contingency Plan is provided in Appendix A. On November 24, 2015, City Council approved enacting a Stage IIA drought condition, effective December 1, 2015.

On March 1, 2016, the Urban Water Supplier Water Conservation Standard for the City was reduced to 33 percent⁵. On April 26, 2016, City Council adopted Resolution 2016-178 reinstating Stage II of the City's Drought Contingency Plan, and on October 4, 2016, City Council adopted Resolution 2016-395 reinstating Stage IIA of the City's Drought Contingency Plan. Copies of Resolution 2016-178 and Resolution 2016-395 are included in Appendix B.

⁴ For SB X7-7 compliance, per capita water use goals and compliance gpcd is based on total water use for all customer classes.

⁵ Effective June 1, 2016, the Urban Water Supplier Conservation Standard for the City of Modesto was reduced to 20 percent.

Water Conservation Plan Update

To assess compliance with the State mandates for residential water conservation, urban water suppliers are required to submit monthly water use reports to the SWRCB documenting residential water use, amount of conservation achieved, and any enforcement efforts. Figure 3-2 shows the City’s reported monthly residential per capita water use since monthly reporting began in June 2014. As shown, the City continues to reduce its monthly residential water use through 2016.

3.4 Water Use Patterns

In Table 3-2, the City’s past urban water use is categorized by water use sectors. As shown, the majority of the City’s water use is single-family residential accounts (approximately 43 percent of the City’s total demand in 2015). Institutional and landscape accounts consume the least amount of water in the City’s service area (approximately 3.1 percent and 3.7 percent of the City’s total demand in 2015, respectively).

Water Use Type	Volume, af/yr		Percent of Total Demand	
	2010 ^(b)	2015 ^(c)	2010	2015
Single-Family	16,596	20,203	26.4%	42.6%
Unmetered	18,737	4,305	29.8%	9.1%
Multi-Family	5,389	4,710	8.6%	9.9%
Commercial	8,050	7,537	12.8%	15.9%
Industrial	3,209	2,728	5.1%	5.7%
Institutional/Governmental	2,013	1,486	3.2%	3.1%
Landscape	2,567	1,744	4.1%	3.7%
Losses (10 percent)	6,285	4,746	10.0%	10.0%
Total	62,846	47,459	100%	100%

^(a) Historical volumes do not include production from Hickman and Waterford service areas, which are no longer served by the City of Modesto.
^(b) Table 4-1 in the City of Modesto’s 2015 Urban Water Management Plan.
^(c) Table 4-2 in the City of Modesto’s 2015 Urban Water Management Plan.

Monthly water production for the City usually peaks in either July or August with the lowest monthly water use typically occurring in the winter months of December, January and February. The City’s monthly water production for 2010, 2013, and 2015 is shown in Table 3-3.

Month	Volume, af/yr		
	2010	2013	2015
January	3,010	2,937	2,768
February	2,695	2,992	2,601
March	3,521	4,369	3,644
April	4,057	5,011	4,055
May	5,724	6,597	4,192
June	7,413	7,197	4,754
July	8,502	8,093	5,478
August	8,514	7,862	5,586
September	7,523	6,462	4,926
October	5,430	5,387	4,105
November	3,505	4,080	2,767
December	2,951	3,419	2,585
Total	62,846	64,408	47,459

^(a) Historical volumes do not include production from Hickman and Waterford service areas, which are no longer served by the City of Modesto.

^(b) Source: Data for 2010 and 2013 provided by City staff in October 2014. Data for 2015 provided by City staff in January 2016.

Indoor and outdoor water uses can be estimated by evaluating winter and summer water uses. Typically, people do not irrigate in the winter months, so water use in those months can be considered to be primarily indoor water use. Any water use above that amount in other months, can then be considered as outdoor water use. Comparison of indoor and outdoor water use can be important to determine how best to plan for future water conservation programs. Table 3-4 provides an estimate of the City’s indoor and outdoor water use for 2010, 2013 and 2015. In 2015, estimated indoor water use was about 15 percent lower than in 2013, and estimated outdoor water use was about 43 percent lower than in 2013, indicating that the majority of the City’s water savings in 2015 likely occurred because of reductions in outdoor water use.

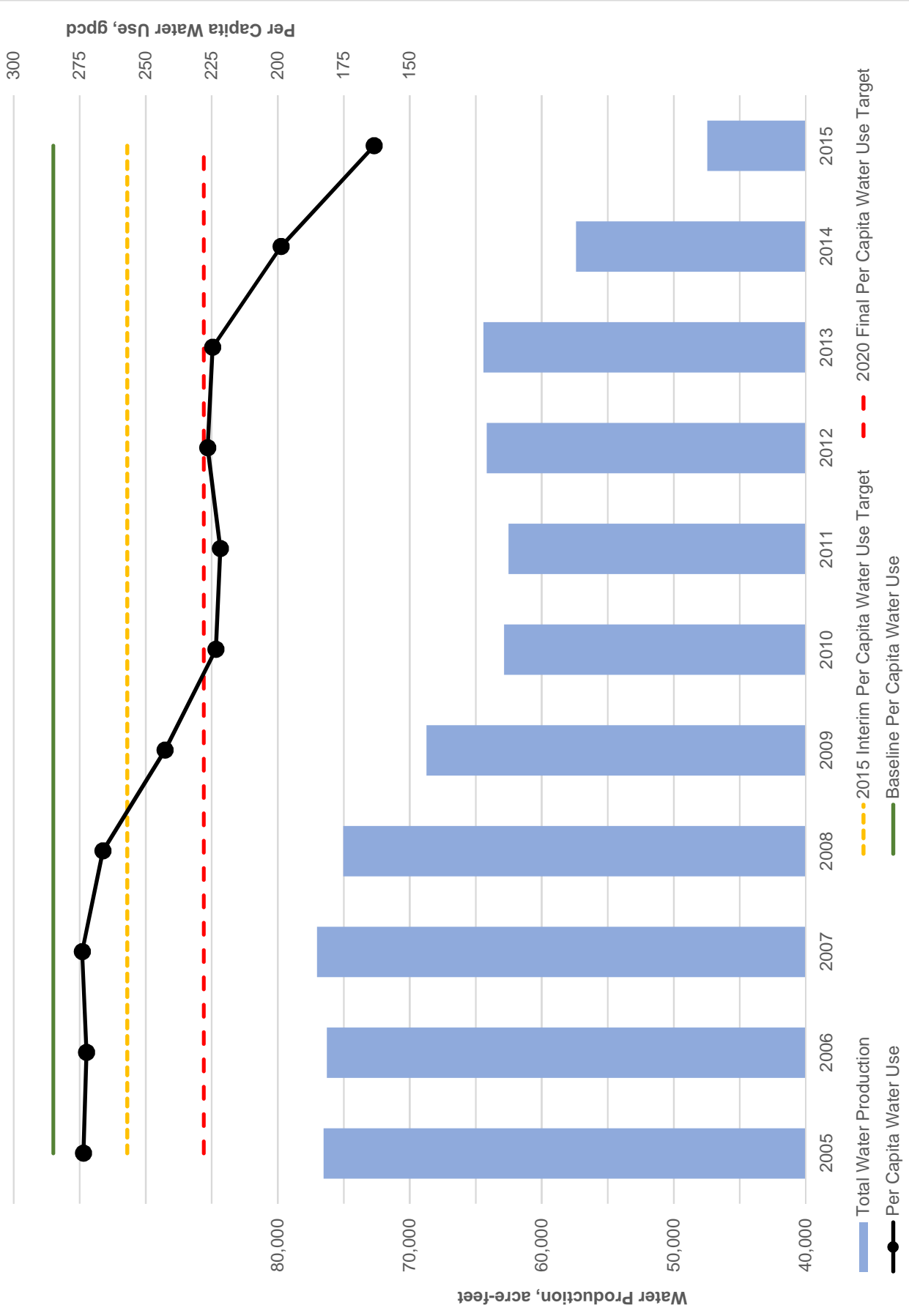
Month	Volume, af/yr		
	2010	2013	2015
Average Monthly Winter Use ^(a)	2,885	3,116	2,651
Estimated Annual Indoor Water Use ^(b)	34,620	37,392	31,812
Estimated Annual Outdoor Water Use ^(c)	28,226	27,016	15,647
Estimated Indoor Water Use, Percent of Total Annual	55%	58%	67%
Estimated Outdoor Water Use, Percent of Total Annual	45%	42%	33%

^(a) Estimated as the average December, January, and February consumption.

^(b) Estimated as the “Average Monthly Winter Use” x 12 months.

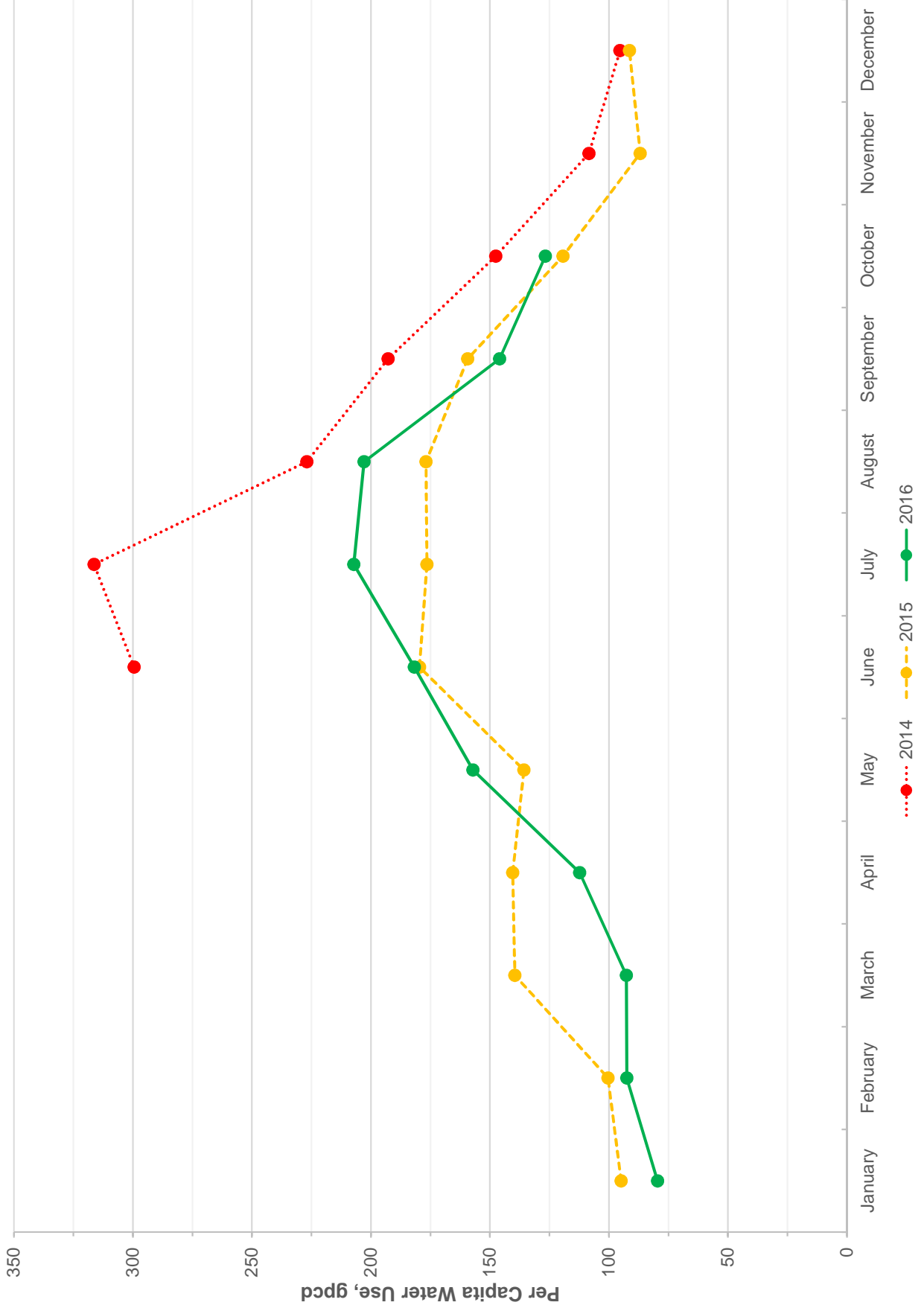
^(c) Estimated as the “Total Annual Water Use” (shown in Table 3-3) minus the “Estimated Annual Indoor Water Use”.

Figure 3-1. Historical Annual Water Use



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Figure 3-2. Monthly Residential Per Capita Water Use



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4.0 CONSERVATION POLICIES AND GOALS

The City's goals are to promote the need for water conservation through public relations, education, customer service, and enforcement. The City strives to meet this challenge by working in a friendly, respectful and positive manner with homeowners, businesses and property managers. In preparation of this Water Conservation Plan Update, the City developed the following policy statement, reflecting its belief in water conservation:

To protect, conserve, and manage all water resources for the current and future needs of the community and the environment.

The overall goal is to develop a system-wide water conservation plan containing acceptable water efficiency measures and an implementation plan which will decrease water use and water loss while using the most cost-effective methods.

Furthermore, with the preparation and implementation of this plan, the City aims to:

- Be compliant with Assembly Bill 1420 (AB 1420) requiring the implementation of the following five water conservation measure categories:
 - Utility Operations Programs
 - Education Programs
 - Residential
 - Commercial, Industrial and Institutional
 - Landscape
- Although not a signatory, the City plans to meet CUWCC goals as outlined in the Memorandum of Understanding Regarding Urban Water Conservation in California (and as described below) for the five water conservation measure categories.
- Meet the City's SB X7-7 per capita water use target for 2020.
- Create an implementation program for conservation measures based on affordability and feasibility.

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5.0 EXISTING WATER CONSERVATION PROGRAMS

This section describes the existing water conservation measures or programs, referred to interchangeably as BMPs or DMMs, that the City is implementing and/or plans for future implementation. Examples of the City's Water Conservation Programs are provided in Appendix C.

In the January 2016 MOU, the CUWCC's 14 BMPs were reorganized into five categories. Two categories, Utility Operations and Educational Programs, are "Foundational BMPs." Foundational BMPs are considered to be essential water conservation activities by any utility and are adopted by all signatories to the MOU as ongoing practices with no time limits. The remaining BMPs are "Programmatic BMPs" and are organized into three categories: (1) Residential, (2) Commercial, Industrial, and Institutional (CII), and (3) Landscape. For the Programmatic BMPs, the City has the option of implementing each BMP as described below, or implementing measures identified in the Flex Track Menu alternative.

Table 5-1 provides an overview of the reorganization of the CUWCC BMPs and their relationship to the DMMs discussed in the City's 2015 UWMP.

Compliance with AB 1420 requires that each BMP be implemented to the levels of coverage specified in the CUWCC MOU. For each BMP, the measure is described and the requirements for the CUWCC MOU compliance and compliance documentation are presented. Detailed data on how the City has implemented its BMPs in recent years are included in the descriptions below.

5.1 BMP 1: Utility Operations Programs

5.1.1 BMP 1.1: Operations Practices

Operations practices are actions that better enable conservation program implementation, supplement conservation incentives with regulations where appropriate, and assist wholesaler-retailer relationships. The City's operations practices are discussed below.

5.1.1.1 *BMP 1.1.1: Conservation Coordinator (formerly BMP 12)*

5.1.1.1.1 CUWCC Description

The Conservation Coordinator is the person responsible for program management, tracking, planning, and reporting on BMP implementation. Coverage consists of staffing and maintaining the position of a trained conservation coordinator, or equivalent consulting support, and providing that person with the necessary resources to implement BMPs.

5.1.1.1.2 CUWCC Goal

Staff and maintain a position of a trained conservation coordinator, or equivalent consulting support, and provide that function with the necessary resources to implement BMPs.

Table 5-1. Reorganization of CUWCC BMPs

CUWCC BMP Organization and Names (2016 MOU)		CUWCC BMP Organization and Names (2008 MOU)		2015 UWMP			
Type	Category	BMP#	BMP Name	Previous BMP#	Previous BMP Name	DMM Name	
Foundational	1. Utility Operations Programs	1.1.1	Conservation Coordinator	12	Water conservation coordinator	Water Conservation Coordination and Staffing Support	
		1.1.2	Water Waste Prevention	13	Water waste prohibition	Water Waste Prevention Ordinances	
		1.1.3	Wholesale Agency Assistance Programs	10	Wholesale agency programs	Wholesaler Supplier Assistance Programs	
	1.2	Water Loss Control	3	System water audits, leak detection, and repair	Programs to Assess and Manage Distribution System Real Loss		
	1.3	Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections	4	Metering with commodity rates for all new connections and retrofit of existing connections	Metering		
	1.4	Retail Conservation Pricing	11	Retail conservation pricing	Conservation Pricing		
	2. Educational Programs	2.1	Public Information Programs	7	Public education programs	Public Education and Outreach	
		2.2	School Education Programs	8	School education programs		
	Programmatic	3. Residential	3.1	Residential Assistance Program	1	Water survey programs for single-family residential and multi-family residential customers ^(a)	Other
					2	Residential plumbing retrofit	
		3.2	Landscape Water Survey	1	Water survey programs for single-family residential and multifamily residential customers ^(a)		
		3.3	High-Efficiency Clothes Washers	6	High-efficiency clothes washers		
		3.4	WaterSense Specification Toilets	14	WaterSense Specification Toilets		
	3.5	WaterSense Specification for New Residential Development					
4	Commercial, Industrial, and Institutional	9	Commercial, industrial, and institutional	Other			
5	Landscape	5	Landscape	5	Large landscape conservation programs and incentives	Other	

^(a) Components of Previous BMP#1 (Water survey programs for single-family residential and multi-family residential customers) apply to both BMP#3.1 (Residential assistance program) and BMP#3.2 (Landscape water survey).

Water Conservation Plan Update

5.1.1.1.3 CUWCC Documentation Requirement

Provide the contact information for the conservation coordinator, or consultant assigned, and verification that the position is responsible for implementing the tasks identified above.

5.1.1.1.4 Implementation Status

The City has fully implemented this BMP and has achieved the CUWCC goal.

5.1.1.1.5 Existing Program

A full-time water conservation coordinator position was authorized by the City Council and was filled in 2001. This position, also known as the “Water Conservation Specialist,” works in the City’s Water Quality Division. The Water Conservation Coordinator’s role is to develop, implement, and manage the City’s water conservation program and to coordinate with on-going conservation programs in other departments and other agencies. Specifically, the Water Conservation Coordinator performs the following tasks:

- Runs school education outreach programs;
- Trains and directs activities of other staff assigned to water conservation functions;
- Provides conservation information to residents and commercial businesses;
- Coordinates the development of uniform conservation policies and enforcement;
- Develops, recommends and maintains various media sources for providing conservation information to both internal and external customers;
- Plans, coordinates and administers various day-to-day activities pertaining to the City’s Water Conservation Program;
- Promotes the efficient use of the City’s water supply by residential, irrigation, industrial, commercial public agencies and other customers to ensure sufficient pressure throughout the system for fire protection and other essential City services; and
- Investigates and identifies compliance issues and communicates with regulatory agencies as required.

The Conservation Coordinator also has an administrative office assistant and four to six temporary (seasonal) employees to help with the water conservation program. The administrative office assistant helps with phone calls, answers questions, and assists with the work flow of the temporary-seasonal employees. The seasonal employees help with water waste enforcement and public education. In addition, there are other staff members of the City’s Water Quality Division that help with conservation program tasks. However, these staff members are not specifically assigned to the water conservation program.

The City will continue to keep the position of the Conservation Coordinator filled. The effectiveness of this program will be evaluated through the development of effective working relationships between conservation program staff and success of water conservation programs.

Water Conservation Plan Update

5.1.1.2 BMP 1.1.2: Water Waste Prevention (formerly BMP 13)

5.1.1.2.1 CUWCC Description

The CUWCC describes the Water Waste Prevention BMP as applying in three different ways:

New development – Enact, enforce, or support legislation, regulations, ordinances, or terms of service that (1) prohibit water waste such as, but not limited to: single-pass cooling systems; conveyer and in-bay vehicle wash and commercial laundry systems which do not reuse water; non-recirculating decorative water fountains and (2) address irrigation, landscape, and industrial, commercial, and other design inefficiencies.

1. Existing users – Enact, enforce, or support legislation, regulations, ordinances, or terms of service that prohibit water waste such as, but not limited to: landscape and irrigation inefficiencies, commercial or industrial inefficiencies, and other misuses of water.
2. Water shortage measures – Enact, enforce, or support legislation, regulations, ordinances, or terms of service that facilitate implementation of water shortage response measures.

5.1.1.2.2 CUWCC Goal

The CUWCC goal of this BMP is for water agencies to implement one or more of the following:

1. Enact and enforce an ordinance or establish terms of service that prohibit water waste.
2. Enact and enforce an ordinance or establish terms of service for water efficient design in new development.
3. Support legislation or regulations that prohibit water waste.
4. Enact an ordinance or establish terms of service to facilitate implementation of water shortage response measures.
5. Support local ordinances that prohibit water waste.
6. Support local ordinances that establish permit requirements for water efficient design in new development.

5.1.1.2.3 CUWCC Documentation Requirement

Documentation requirements for this BMP includes any of the following:

1. A description of, or electronic link to, any ordinances or terms of service adopted by water agency to meet the requirements of this BMP.
2. A description of, or electronic link to, any ordinances or requirements adopted by local jurisdictions or regulatory agencies within the water agency's service area.
3. A description of any water agency efforts to cooperate with other entities in the adoption or enforcement of local requirement consistent with this BMP.
4. A description of agency support positions with respect to adoption of legislation or regulations consistent with this BMP.

Water Conservation Plan Update

5.1.1.2.4 Implementation Status

The City has implemented this BMP through its adoption of a water conservation policy that supports a local ordinance that prohibits water waste.

5.1.1.2.5 Existing Program

Since 2002, the City has implemented the water waste prevention measures defined in Stage I of the City's Drought Contingency Plan (see Appendix A). Therefore, there have always been basic water conservation measures and varying degrees of water waste prevention enforced by the City. In April 2015, the City adopted Resolution 2015-134 revising the Water Shortage Contingency Plan (to include an additional Stage IIA drought condition) and implementing Stage II of the Plan.

In November 2015, the City adopted Resolution 2015-455 implementing Stage IIA of the City's Drought Contingency Plan. Any violations of the rules and regulations established as part of Stage IIA of the Drought Contingency Plan are considered water waste. The rules and regulations for Stage IIA are as follows:

1. Outdoor water use prohibited Saturday and Sunday from 9:00 AM to 7:00 PM.
2. Odd-numbered addresses shall water outdoors only on Sundays.
3. Even-numbered addresses shall water outdoors only on Saturdays.
4. No outdoor water use is permitted on Monday through Friday.
5. City residents shall not wash cars without the use of a quick-acting positive shut-off nozzle or permit others to do so on their behalf. In addition, car washing must be done in compliance with the schedule for outdoor water use. There shall be no washing of building exteriors, mobile home exteriors, recreational vehicle exteriors, sidewalks, patios, driveways, gutters, or other exterior surfaces.
6. City residents shall not have leaky faucets or plumbing fixtures on their premises for more than 24 hours after the leak has been identified or notice has been received from the City, whichever comes first.
7. Eating establishments are required to serve water only at the customer's request.
8. New landscaping installations must comply with all applicable landscape ordinances.
9. The following penalties may be added to the utility service customer's account upon violation of the above regulations:
 - a) A penalty of \$150 upon the second violation within one year after having received a Notice of Violation.
 - b) A penalty of \$250 upon the third violation within said one-year period.
 - i. Upon the third violation within one year of having received a Notice of Violation, the resident shall also have a water meter installed if one is not present and metered billing shall commence.
 - c) A penalty of \$500 upon the fourth and any subsequent violations within said one-year period.
 - d) The customer shall be advised of these charges through a Notice of Intention to Impose a Penalty.

Water Conservation Plan Update

On April 26, 2016, the City Council adopted Resolution 2016-178 reinstating Stage II of the City's Drought Contingency Plan. Under Stage II, outdoor watering is allowed two days per week, but all other regulations listed above remain in effect. However, on October 4, 2016, the City Council adopted Resolution 2016-395 reinstating Stage IIA of the City's Drought Contingency Plan. Copies of Resolution 2016-178 and Resolution 2016-395 are included in Appendix B.

The City will continue to enforce its water waste ordinance by having the Utilities Department perform site visits. Presently, the City's Utilities Department employs four part-time water patrols that patrol during the summer hours enforcing water restrictions. In fiscal year 2014/15, the City's water patrols performed 10,260 site visits and reported 132 violations of the water waste ordinance. In fiscal year 2015/16, the City's water patrols performed 15,214 site visits and reported 5,660 violations of the water waste ordinance. The effectiveness of this program will continue to be evaluated based on the number of violations observed, as well as the overall demand reduction associated with invoking drought restrictions.

5.1.1.3 BMP 1.1.3: Wholesale Agency Assistance Programs (formerly BMP 10)

The City is not a wholesale water agency and is therefore not required to implement this BMP.

5.1.2 BMP 1.2: Water Loss Control (formerly BMP 3)

In 2014, SB 1420 was passed requiring urban water suppliers to submit water loss audits as part of their UWMPs once every five years. SB 555, passed in October 2015, builds upon SB 1420 and requires the submittal of completed and validated annual water loss reports to the Department of Water Resources beginning in 2017.

The requirements for the Water Loss Control BMP according to the January 2016 MOU are described below. However, it should be noted that the completion of annual water audits is no longer just a CUWCC goal, but a State mandated requirement.

5.1.2.1 CUWCC Description

Per the CUWCC program, implementation of the Water Loss BMP shall consist of at least the following actions:

1. Standard Water Audit and Water Balance – All agencies shall quantify their current volume of apparent and real water loss. Agencies shall complete the standard water audit and balance using the AWWA Water Loss software to determine their current volume of apparent and real water loss and the cost impact of these losses on utility operations at no less than annual intervals (as also required by SB 555).
2. Validation – Agencies may use up to four years to develop a validated data set for all entries of their water audit and balance. Data validation shall follow the methods suggested by the AWWA Software to improve the accuracy of the quantities for real and apparent losses.
3. Economic Values – For purposes of this BMP, the economic value of real loss recovery is based upon the agency's avoided cost of water as calculated by the Council's adopted Avoided Cost Model or other agency model consistent with the Council's Avoided Cost Model.

Water Conservation Plan Update

4. Component Analysis – A component analysis is required at least once every four years and is defined as a means to analyze apparent and real losses and their causes by quantity and type. The goal is to identify volumes of water loss, the cause of the water loss and the value of the water loss for each component. The component analysis model then provides information needed to support the economic analysis and selection of intervention tools. An example is the Breaks and Background Estimates Model (BABE) which segregates leakage into three components: background losses, reported leaks and unreported leaks.
5. Interventions – Agencies shall reduce real losses to the extent that is cost-effective. Agencies are encouraged to refer to the AWWA’s 3rd Edition M36 Publication, Water Audits and Loss Control Programs (2009) for specific methods to reduce system losses.
6. Customer Leaks – Agencies shall advise customers whenever it appears possible that leaks exist on the customer’s side of the meter.

5.1.2.2 CUWCC Goal

The CUWCC goal of this BMP includes:

1. Agencies to compile the standard water audit and balance annually using the AWWA Software (as also required by SB 555). Beginning in the 2nd year of implementation agencies to test source, import, and production meters annually.
2. Agencies shall improve the data accuracy and data completeness of the standard water balance during the first four years of implementation. Agencies shall achieve a Water Audit Data Validity score of 66 or higher using the AWWA software no later than the end of the first four-year period; and shall achieve data validity Level IV no later than the end of the 5th year of implementation. Estimations for data that are not directly measured should be improved using the methods outlined by the AWWA.
3. Agencies shall seek training in the AWWA water audit method and component analysis process (offered by CUWCC or AWWA) during the first four years of BMP implementation. They shall complete a component analysis of real losses by the end of the fourth year, and update this analysis no less frequently than every four years.
4. Beginning in the fifth year of implementation, through the tenth year of implementation, agencies shall demonstrate progress in water loss control performance as measured by the AWWA software real loss performance indicator "gallons per service connection per day;" "gallons per mile of mains per day;" or other appropriate indicator by one of the following:
 - a) Achieving a performance indicator score less than the agency's score the previous year;
 - b) Achieving a performance indicator score less than the average of the agency's scores for the previous three years; or
 - c) Achieving a performance indicator score in the top quintile (20%) of all signatory agencies reporting such performance indicator with a Data Validity Level IV; or
 - d) In year 6 and beyond reducing real losses to or below the benchmark value determined by CUWCC.

Water Conservation Plan Update

5. Agencies shall repair all reported leaks and breaks to the extent that is cost effective. By the end of the second year, agencies shall establish and maintain a record-keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair. By the end of the fourth year, agencies shall include estimated leakage volume from report to repair, and cost of repair (including pavement restoration costs and paid-out damage claims, if any).
6. Agencies shall locate and repair unreported leaks to the extent that is cost effective.

5.1.2.3 CUWCC Documentation Requirement

Documentation requirements for this BMP includes the following:

1. Agency shall submit the completed AWWA Standard Water Audit and Water Balance worksheets in the BMP 1.2 report form every reporting period.
2. For each reporting period, agency shall keep and make available validation for any data reported.
3. Agency shall maintain in-house records of audit results, methodologies, and worksheets for each completed audit period.
4. Agency keeps records of each component analysis performed, and incorporates results into future annual standard water balances.

5.1.2.4 Implementation Status

The City is currently implementing this BMP, but actual water losses within the City's water system cannot be confirmed until the City has completed its current efforts to implement metering citywide. Therefore, current unaccounted-for water and system losses are assumed to be approximately 10 percent of the City's total water production. The City's meter retrofit program is expected to be completed in 2022.

5.1.2.5 Existing Program

A water audit is a process of accounting for water use throughout a water system in order to quantify the unaccounted-for water. Unaccounted-for water is the difference between metered production and metered consumption on a system-wide basis. A leak detection program typically consists of both visual inspection as well as audible inspection. Visual inspection includes the inspection of distribution system appurtenances (e.g., fire hydrants, valves, meters, etc.) to identify obvious signs of leakage. To perform audible leak detection, specialized electronic listening equipment is used to detect the sounds associated with distribution system leakage. This process allows the agency to pinpoint the location of suspected leaks.

Repair and maintenance of the water distribution systems are priorities for the City. The City has Capital Improvement Projects that provide for maintenance programs that maximize efficiency of water distribution system operations and minimize water losses. These programs include using Supervisory Control and Data Acquisition (SCADA) systems to monitor groundwater and surface water production, quick responses to water main leak detection and repair, recalibration of each

Water Conservation Plan Update

well meter every four years, annual pump efficiency testing, and water quality efforts including main flushing and water quality testing.

Daily water production from the City's wells and the MRWTP is recorded and used to monitor water use. Additionally, the City maintains records of main breaks which are used to identify mains to be replaced and estimate system water loss. Water line workers (four servicemen and one supervisor) are responsible for identifying excessive water waste, standing water and system leaks. At the customer's request, City staff will investigate and, where appropriate, repair leaks within the City's right-of-way. In addition, staff conduct repairs of water line leaks and replaces or repairs meters. A repair crew will repair leaks in areas where leak detection equipment has pinpointed hidden leaks.

Each year, 25 percent of well sites are serviced and meters are recalibrated as routine maintenance. Pump efficiency tests are completed annually. Repairs are promptly made on pumps showing decreased efficiency, and well meters found to be inaccurate or exhibiting signs of wear are promptly replaced. Well efficiency is consistently tracked through the City's SCADA System.

A Maintenance Avoidance Program was implemented in 1995 to analyze motor well vibration using a probe and recorder. This program allows the City to schedule maintenance on motors and pumps based on predictive trends calculated by the vibration analysis instruments. As a result, motors and pumps can be repaired or parts replaced before their complete failure, extending their useful life.

The City's Water Services Division uses Geographical Information Systems (GIS) and Global Positioning Systems (GPS) to record fire hydrant locations, valves, water meters, and map water lines of all water distribution systems. The GIS data is organized in a database of the water system. In conjunction with the data assembled through SCADA, the database aids in hydraulic modeling of the water system. The City uses CassWorks, a maintenance management system, to improve the efficiency of completing work orders, managing imported records and scheduling maintenance. In addition, the City's metered customers are able to use automatic meter reading (AMR) technology to help them detect leaks themselves. Leak reports and repairs are also logged on GIS to document and track the frequency of issues by location and to aid in identifying, planning, and prioritizing which areas need to be budgeted for water main and service line replacements. These programs are effective tools for providing customers with an efficiently operated and dependable water distribution system.

The City's Annual Pipe Replacement Program has City Engineering staff working with City Operations crews to identify old pipelines that are leaking, and provide follow-up in replacing those lines. The City's work on its Annual Pipe Replacement Program has allowed them to identify areas within its service area that are problematic with high percentages of leaking and repair frequency. A schedule and budget have been developed to systematically replace the pipes in these identified areas. The City has been implementing this program for several years, and on average replaces slightly less than one mile of pipelines every year.

In 2015, the City completed a standard water audit and balance using AWWA Software. As required by SB 555, the City plans to continue to conduct one detailed water audit per year. A copy of the City's 2015 Water Audit worksheet is provided in Appendix D.

Water Conservation Plan Update

5.1.3 BMP 1.3: Metering with Commodity Rates for All New Connections and Retrofit for Existing Connections (formerly BMP 4)

5.1.3.1 *CUWCC Description*

Implementation of the Metering BMP consists of the following actions:

1. Require meters for all new service connections.
2. Establish a program for retrofitting existing unmetered service connections.
3. Read meters and bill customers by volume of use.
 - a) Establish and maintain billing intervals that are no greater than bi-monthly (every two months) for all customers.
 - b) For each metered connection, perform at least five actual meter readings (including remotely sensed) per twelve-month period.
4. Prepare a written plan, policy or program that includes:
 - a) A census of all meters, by size, type, year installed, customer class served and manufacturer's warranty accuracy when new;
 - b) A currently approved schedule of meter testing and repair, by size, type and customer class;
 - c) A currently approved schedule of meter replacement, by size, type, and customer class; and
5. Identify intra- and inter-agency disincentives or barriers to retrofitting mixed use commercial accounts with dedicated landscape meters, and conducting a feasibility study(s) to assess the merits of a program to provide incentives to switch mixed use accounts to dedicated landscape meters.

Service lines dedicated to fire suppression systems are exempt from this requirement.

5.1.3.2 *CUWCC Goal*

The CUWCC goal of this BMP is to meter 100 percent of existing unmetered accounts and bill by volume of use within the specified time periods:

1. Initiating volumetric billing for all metered customers within one year of signing the MOU.
2. Complete meter installation for all service connections within 6 years of signing the MOU, but in no case, later than one year prior to the requirements of state law.
3. For unmetered service areas newly acquired or newly operated by otherwise metered agencies, meter installation shall be completed in these service areas within 6 years of the acquisition or operational agreement.
4. A feasibility study examining incentive programs to move landscape water uses on mixed-use meters to dedicated landscape meters to be completed by the end of Year Four following the date implementation was to commence.
5. A written plan, policy or program to test, repair and replace meters shall be completed and submitted electronically within one year of signing the MOU.

Water Conservation Plan Update

5.1.3.3 CUWCC Documentation Requirement

Documentation required for compliance with the CUWCC MOU for this BMP is as follows:

1. Confirmation that all new service connections are metered and are being billed by volume of use and provide:
 - a) Number of metered accounts
 - b) Number of metered accounts read
 - c) Number of metered accounts billed by volume of use
 - d) Frequency of billing (i.e. six or twelve times per year) by type of metered customer (e.g. single-family residential, multiple-family residential, commercial, industrial, and landscape irrigation)
 - e) Number of estimated bills per year by type of metered customer (e.g. single-family residential, multiple-family residential, commercial, industrial, and landscape irrigation) vs. actual meter readings
2. Number of unmetered accounts in the service area. For the purposes of evaluation, this shall be defined as the baseline meter retrofit target and shall be used to calculate the agency's minimum annual retrofit requirement.
3. Number of unmetered service connections retrofitted during the reporting period.
4. Estimated number of CII accounts with mixed-use meters.
5. Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period.

5.1.3.4 Implementation Status

The City is currently implementing this program, but has not yet achieved the CUWCC goal of becoming fully metered. The completion of the City's meter retrofit program is expected to be in 2022.

5.1.3.5 Existing Program

The City's water system is not yet fully metered. The City has been installing meters on new homes since the City Council enacted the Modesto Municipal Code 11-1 on May 14, 1991⁶, and in 2005 the City changed its water rate structure to include a volumetric rate charge. From 2010 to 2015, the City has reduced its unmetered consumption from about 30 percent to about 9 percent. Currently, all of the City's non-residential services are metered, and all new development in the City since 1991 has had meters installed. As of November 2016, the City has approximately 9,194 unmetered accounts remaining. The City plans to convert 2,250 unmetered accounts per year until the City's water system is fully metered.

⁶ Though the City did start installing meters in 1991, these meters were not read for volumetric billing purposes and these homes remained on a flat rate billing method until 2005 when, as a result of AB 2572 mandating all homes to be metered by 2025, the City started installing meters on existing homes and changed its rate structure to bill metered homes on a volumetric basis.

Water Conservation Plan Update

In 2004, the California Legislature passed AB 2572, requiring all water suppliers to install water meters on all customer connections by January 1, 2025. The City is on track to convert all of the City's water system to metered accounts by 2022, and therefore satisfy the 2025 deadline.

5.1.4 BMP 1.4: Retail Conservation Pricing (formerly BMP 11)

5.1.4.1 *CUWCC Description*

Retail conservation pricing promotes water conserving retail water rate structures, and recognizes that each agency or water enterprise fund has a unique rate setting system and history. When creating a rate case, professional judgments are made to determine whether costs are accounted to a variable or fixed cost center by the staff of the agency. The final water rate case is an accumulation of all the decisions and judgments made by staff and supplemented by the financial projections leading an agency to establish its final water rate recommendation. This BMP is not intended to supplant this process, but rather to reinforce the need to establish a strong nexus between volume-related system costs and volumetric commodity rates.

Conservation pricing requires volumetric rates. While this DMM defines a minimum percentage of water sales revenue from volumetric rates, the goal of this DMM is to recover the maximum amount of water sales revenue from volumetric rates that is consistent with utility costs (which may include utility long-run marginal costs), financial stability, revenue sufficiency, and customer equity. In addition to volumetric rates, conservation pricing may also include one or more of the following other charges:

1. Service connection charges designed to recover the separable costs of adding new customers to the water distribution system.
2. Monthly or bimonthly meter/service charges to recover costs unrelated to the volume of water delivered or new service connections and to ensure system revenue sufficiency.
3. Special rates and charges for temporary service, fire protection service, and other irregular services provided by the utility.

The following volumetric rate designs are potentially consistent with the above definition:

1. Uniform rate in which the volumetric rate is constant regardless of the quantity consumed.
2. Seasonal rates in which the volumetric rate reflects seasonal variation in water delivery costs.
3. Tiered rates in which the volumetric rate increases as the quantity used increases.
4. Allocation-based rates in which the consumption tiers and respective volumetric rates are based on water use norms and water delivery costs established by the utility.

5.1.4.2 CUWCC Goal

A retail agency’s volumetric rate shall be deemed sufficiently consistent with the definition of conservation pricing when it satisfies at least one of the following three options:

- Option 1: Let V stand for the total annual revenue for the volumetric rate(s) and M stand for total annual revenue from customer meter/service (fixed) charges, then:

$$\frac{V}{(V+M)} \geq 70\%$$

This calculation shall only include utility revenues from volumetric rates and monthly or bi-monthly meter/service charges. It shall not include utility revenues from new service connection charges; revenue from special rates and charges for temporary service, fire protection, or other irregular services; revenue from grants or contributions from external sources in aid of construction or program implementation; or revenue from property or other utility taxes.

- Option 2: Use the rate design model included with the Municipal Water and Wastewater Rate Manual published by the Canadian Water & Wastewater Association with the signatory's water system and cost information to calculate V', the uniform volumetric rate based on the signatory's long-run incremental cost of service, and M', the associated meter charge. [Let HCF be annual water delivery (in hundred cubic feet).] The volumetric rate(s) shall be deemed sufficiently consistent with the definition of conservation pricing if:

$$\frac{V}{(V+M)} \geq \frac{V'}{(V'+M')}$$

The rate design model can be downloaded at <http://www.cuwcc.org/resource-center/technical-resources/bmp-tools.aspx>.

This calculation only includes utility revenues from volumetric rates and monthly or bi-monthly meter/service charges. It does not include utility revenues from new service connection charges; revenue from special rates and charges for temporary service, fire protection, or other irregular services; revenue from grants or contributions from external sources in aid of construction or program implementation; or revenue from property or other utility taxes.

- Option 3: A utility that chooses to report using this Option 3 will be considered “on track” for BMP 1.4, Part 1, if it has a score of at least 26 points from the three-section retail conservation pricing matrix, set out below. The 26 points can be earned from any combination of the points awardable in any of the three sections; there is no “minimum point” requirement for any one individual section. In calculating a utility’s matrix points, the following definitions and requirements apply:
 - A seasonal rate is a higher unit cost for water usage during a utility’s peak demand season. A rate design that reduces the unit cost of water during the peak season, either through reduced rates or through increased volumes at a fixed or flat rate, does not qualify for points in Section 1.0 of Option 3.

Water Conservation Plan Update

- b) A minimum volume, billed as part of a fixed charge, qualifies for points in Section 1.0 of Option 3, if the minimum volume is limited to amounts that all customers are likely to use in a billing period, e.g., ≤ 4 units per month. However, any water use apportioned to a fixed charge does not qualify as a tier in the rate structure.
- c) A unit is defined as the billing metric for volume of water, i.e., 1 hcf, 1 kgal, etc.
- d) For tiered rates, the commodity charges that apply to consumption in each tier (or “block”) are ascending; each higher tier must have a higher commodity charge than the tier immediately preceding it.
- e) Option 3 is not applicable to any dedicated fire sprinkler or fire-fighting service connections.

As part of this BMP, a rate structure that satisfies at least one of the options specified above needs to be maintained. Conformance to Option 1 or Option 2 will first be assessed using the revenue from the most recent year. If the most recent year does not satisfy the option, the average revenue from the three (3) most recent years will be used. For determining its implementation status under Option 3, for each reporting year, a water supplier may select a rate structure in effect on any day of that year.

5.1.4.3 CUWCC Documentation Requirement

Documentation required for compliance with the CUWCC MOU for this BMP is as follows:

1. Report the rate structure in effect for each customer class for the reporting period.
2. [If using Options 1 or 2] Report the annual revenue derived from volume charges for each retail customer class, as defined above. (Note: Compliance with BMP 1.4 will be determined based on the City’s total revenue from all retail customer classes.)
3. [If using Options 1 or 2] Report the annual revenue derived from monthly or bimonthly meter/service charges for each retail customer class, as defined above.
4. If agency does not comply with Option 1 in Section A, report V’ and M’ as determined by the Canadian Water & Wastewater Association rate design model described above.
5. If agency does not comply with Option 1 in Section A, submit the completed Canadian Water & Wastewater Association rate design model described above.
6. If using Option 3, an agency shall report the bill paid by its average single family residential user; the bill paid by a customer using 75% of the volume of water used by the average customer; and the bill paid by a customer using 150% of the volume of water used by the average customer.

5.1.4.4 Implementation Status

The City is currently implementing this program, and has achieved the CUWCC goal under Option 1:

$$\frac{V}{(V+M)} \geq 70\%$$

5.1.4.5 Existing Program

The City’s water rate structure, as of September 2016, is shown in Table 5-2. This rate structure encourages conserving behavior by incorporating a uniform volume charge in addition to the fixed meter charge for those customers who are metered. Consequently, water usage reductions directly reduce cost to the metered customer, while excessive water use results in increased costs. As described above, not all of the City’s residential customers are currently metered. Unmetered residential customers are billed based on a flat rate based on lot size. As customers become metered, they are converted from the flat rate charge to the metered charge.

Customer Class	Rate ^(a)
Flat Rate Residential – Monthly Service Charges^(b)	
0 –5,000 sq. ft. lot	\$47.38
5,011 – 7,000 sq. ft. lot	\$54.72
7,001 – 11,000 sq. ft. lot	\$69.22
11,001 – 17,000 sq. ft. lot	\$90.88
Over 17,000 sq. ft. lot	\$101.80
Metered Charges (Residential & Commercial)	
Uniform Volume Charge (\$/ccf/unit)	\$1.79
Fixed Meter Charges	
5/8” – 3/4”	\$20.79
1”	\$29.30
1 ½”	\$50.58
2”	\$76.11
3”	\$156.98
4”	\$276.14
6”	\$561.28
8”	\$1,029.42
10”	\$1,625.23
12”	\$2,135.93
^(a) City of Modesto Current Water Rate (as of September 1, 2016) from City of Modesto website.	
^(b) Flat rates shown do not include tax.	

Because conservation pricing requires volumetric rates, metered service is a necessary condition. The City is implementing its Meter Conversion Program in which it is installing meters at unmetered accounts and replacing (converting) existing old meters with new automatic read models. Once the meter has been installed, the City begins charging volumetrically, using a uniform volume charge as shown in Table 5-2.

Water Conservation Plan Update

As stated in *Section 5.1.4.1*, the City's $V/(V+M)$, in which V is equal to the total annual revenue from volumetric rates and M equals the total annual revenue from customer service (fixed) charges, must be greater than 70 percent to be consistent with the definition of conservation pricing according to Option 1. In fiscal year 2014/15, the City's calculated $V/(V+M)$ was 83 percent, in which $V = \$42.5M$ and $M = \$9M$. In fiscal year 2015/16, the City's calculated $V/(V+M)$ was 87 percent, in which $V = \$40.8M$ and $M = \$7M$.

The City is currently performing a water rate study to evaluate the potential effectiveness of different rate structures. As a result of this study, the City has decided to not implement tiered rates at this time, but instead to implement a uniform surcharge to cover costs associated with a statewide mandate for water conservation. To ensure continued compliance for this BMP, the City will continue to evaluate the effectiveness of conservation rates by tracking changes in unit water use resulting from rate increases.

5.2 BMP 2: Educational Programs

The City has played a major role in stressing the need for their customers to conserve water through both public information and school education programs. The specifics of how these programs are implemented are detailed below.

5.2.1 BMP 2.1: Public Information Programs (formerly BMP 7)

5.2.1.1 *CUWCC Description*

Public information programs shall be implemented to promote water conservation and water conservation-related benefits. Implementation shall consist of at least the following actions:

1. The program should include, when possible, providing speakers to employees, community groups and the media; using paid and public service advertising; using bill inserts; providing information on customers' bills showing use for the last billing period compared to the same period the year before; providing public information to promote water conservation measures; and coordinating with other government agencies, industry groups, public interest groups, and the media.
2. The program should include, when possible, social marketing elements which are designed to change attitudes to influence behavior. This includes seeking input from the public to shape the water conservation message; training stakeholders outside the utility staff in water conservation priorities and techniques; and developing partnerships with stakeholders who carry the conservation message to their target markets.
3. When mutually agreeable and beneficial, the wholesale agency or another lead regional agency may operate all or part of the public information program. If the wholesale agency operates the entire program, then it may, by mutual consent with the retail agency, assume responsibility for CUWCC reporting for this BMP. Under this arrangement, a wholesale agency may aggregate all or portions of the reporting and coverage requirements of the retail agencies joining into the mutual consent.

Water Conservation Plan Update

5.2.1.2 CUWCC Goal

At minimum, a public information program shall consist of the following components:

1. Contacts with the public (minimum = 4 times per year, i.e., at least quarterly)
2. Water supplier contacts with media (minimum = 4 times per year, i.e., at least quarterly)
3. An actively maintained website that is updated regularly (minimum = 4 times per year, i.e., at least quarterly)
4. Description of materials used to meet minimum requirement
5. Annual budget for public outreach programs
6. Description of all other outreach programs

5.2.1.3 CUWCC Documentation Requirement

Agencies are only expected to meet the minimum requirements described in *Section 5.2.1.2 CUWCC Goal*. However, agencies may report on all of the following activities:

1. Newsletter articles on conservation
2. Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets
3. Landscape water conservation media campaigns
4. General water conservation information
5. Website
6. Email messages
7. Website - provide link to or list of qualified landscape professionals (WaterSense, California Landscape Contractors Association, Irrigation Association, etc.) and other helpful sites
8. Direct mail - seasonal postcards noting irrigation requirement changes
9. Direct mail or other notification to customer if water use is significantly higher than neighbors with similarly-sized lots
10. Customer notification when neighbor reports runoff or runoff is noticed by employees or meter reads show rise in use of 20% or more from same time previous year
11. Dedicated phone line or “on hold” messages with recorded conservation information
12. Booths at local fairs/events
13. Monthly water use reports provided with comparison of water use to water budget
14. Presentations
15. Point of purchase pieces, including internet point of purchase by type: high-efficiency clothes washers, weather based irrigation controller, high-efficiency toilets, plant palette information, other

Water Conservation Plan Update

16. Media outreach: news releases, editorial board visits, written editorials, newspaper contacts, television contacts, radio contacts, articles or stories resulting from outreach. Provide names of local media markets: newspaper, TV stations, radio stations reached via media outreach program during the reporting period
17. Adult Education/Training Programs: Topic(s), number of presentations, number of attendees
18. Water Conservation Gardens: involvement in a garden that promotes and educates the public about water-efficient landscaping and conservation techniques. May include “corporate” or “business” sponsorship or membership
19. Sponsor or co-sponsor landscape workshops/training for homeowners and/or homeowners’ associations: number of presentations; number in attendance
20. Landscape watering calculator and watering index to assist with weekly irrigation scheduling
21. Additional program(s) supported by agency, but not mentioned above
22. Total reporting period budget expenditure for public outreach/training/adult education programs (include all agency costs)

5.2.1.4 Implementation Status

The City has fully implemented this BMP and has achieved the CUWCC goal for Public Information Programs beginning in 1987.

5.2.1.5 Existing Program

To promote water conservation, the City seeks to foster sustainable changes in behavior, not just temporary responses to drought. The purpose of the City’s water conservation program is to promote indoor and outdoor water conservation, as well as landscape ideas incorporating the use of drought tolerant landscaping and irrigation systems. Water conservation information is distributed to the public through a variety of methods including personal contact, brochures, radio and television public service announcements, a dedicated conservation website, bill inserts, exhibits at community events, school presentations and videos. A water conservation telephone line is available to provide residents with any additional information they might request regarding water conservation.

The City has also coordinated with the media to better inform the public. Media coverage of the City’s water conservation program is provided through public service announcements on television and radio in both English and Spanish, live interviews and taped cable television. Videotapes on water conservation and efficient landscaping practices are available from the Utilities Department, Water Services Division for use by the public. Copies of these tapes have also been donated to the Stanislaus County Library and several landscape nurseries in the City. In addition, the City’s local newspaper, the *Modesto Bee*, also provides frequent and extensive coverage of current water conditions within the Modesto area.

The City has attended and promoted water conservation at the Stanislaus County Home and Garden show, Modesto Home Improvement Show, and Earth Day in the Park. At these events, the

Water Conservation Plan Update

City provides conservation kits for both children and adults. There are three conservation kits the City distributes for different purposes. These include:

1. Childs Water Conservation Kit
 - a) A Water Wise bag
 - b) BE WATER WISE coloring book with crayons and stickers
 - c) A NIAGARA water conservation “showering Coach” timer
 - d) Water conservation website links for parents
2. Use Water Wisely Kit
 - a) Five Tips to Save Water bag
 - b) A Use Water Wise Wheel
 - c) Our World of Water activity book
 - d) 6” Use Water Wisely Ruler
 - e) Water conservation website links
3. Water Conservation Adult Kit
 - a) 15 Ways to Use Water Wisely bag
 - b) Leak detection dye tablets
 - c) Water Conservation slide guide
 - d) Use Water Wisely note pad
 - e) Water Conservation Brochures
 - f) Water conservation website links

On May 18, 2016, the Cities of Modesto, Ceres, Turlock, Manteca, and the UC Davis California Center of Urban Agriculture organized a landscape workshop in Modesto on how to maintain landscapes and reduce water waste through water management and system efficiency. At the workshop, attendees received indoor presentations and outdoor demonstrations on the following topics:

1. Understanding precipitation rates to mitigate water and pesticide runoff;
2. Improving sprinkler distribution uniformity to reduce water use;
3. Improving controller programs to reduce and manage water use;
4. Determining application rates and precipitation rates of drop/micro irrigation; and
5. Understanding and reading water meters to improve irrigation efficiency.

The number of public education programs implemented during fiscal years 2014/15 and 2015/16 are shown in Table 5-3. The City plans to continue to use media and their website to notify the public of available educational programs.

Table 5-3. Public Education Programs			
	FY 2014/15	FY 2015/16	FY 2016/17^(a)
Public Presentations/Demos	6	6	2
Commercial/ Radio Ads	9,132	8,949	5,716
^(a) Fiscal year 2016/17 data is not complete and only goes through November 2016.			

5.2.2 BMP 2.2: School Education Programs (formerly BMP 8)

5.2.2.1 *CUWCC Description*

School education programs are implemented to reach the youngest water users at an early age and enforce the need to engage in water conservation as a life-long behavior. Implementation shall consist of at least the following actions:

1. Implement a school education program to promote water conservation and water conservation-related benefits.
2. Programs shall include working with school districts and private schools in the water suppliers’ service area to provide instructional assistance, educational materials, and classroom presentations that identify urban, agricultural, and environmental issues and conditions in the local watershed. Educational materials shall meet the state education framework requirements and grade-appropriate materials shall be distributed.
3. When mutually agreeable and beneficial, the wholesale agency or another lead regional agency will operate all or part of the education program; if the wholesale agency operates all or part of the retail agency’s school education program, then it may, by mutual consent with the retail agency, assume responsibility for CUWCC reporting of this BMP; under this arrangement, a wholesale agency may aggregate all or portions of the reporting and coverage requirements of the retail agencies joining into the mutual consent.

As part of this BMP, an active school education program should be maintained to educate students in their service area about water conservation and efficient water use. An agency or other local entity may participate in a mutual arrangement as described above.

5.2.2.2 *CUWCC Goal*

At minimum, a school education program shall consist of the following:

1. Curriculum materials developed and/or provided by agency (including confirmation that materials meet state education framework requirements and are grade-level appropriate).
2. Materials distributed to K-6 students. When possible, school education programs will reach grades 7-12 as well.
3. Description of materials used to meet minimum requirement.

Water Conservation Plan Update

4. Annual budget for school education program.
5. Description of all other water supplier education programs.

5.2.2.3 CUWCC Documentation Requirement

Agencies are only expected to meet the minimum requirements described in *Section 5.2.2.2 CUWCC Goal*. However, agencies may report on all of the following activities:

1. Classroom presentations: number of presentations, number of attendees, topics covered: conservation, recycled water, water sources, pollution prevention, etc.
2. Large group assemblies: number of presentations, number of attendees
3. Children's water festivals or other events: number of presentations, number of attendees
4. Cooperative efforts with existing science/water education programs (various workshops, science fair awards or judging) and follow-up: number of presentations, number of attendees
5. Other methods of disseminating information (i.e. themed age-appropriate classroom loaner kits); description; number distributed
6. Staffing children's booths at events & festivals: number of booths, number of attendees
7. Water conservation contests such as poster and photo: description; number of participants
8. Offer monetary awards/funding or scholarships to students: number offered, total funding
9. Teacher training workshops: number of presentations, number of attendees
10. Fund and/or staff student field trips to treatment facilities, recycling facilities, water conservation gardens, etc.: number of tours or field trips, number of participants
11. College internships in water conservation offered: number of internships, total funding
12. Career fairs/workshops: number of presentations, number of attendees
13. Additional program(s) supported by agency but not mentioned above: description, number of events (if applicable), number of participants
14. Total reporting period budget expenditures for school education programs (include all agency costs)

5.2.2.4 Implementation Status

The City has fully implemented this BMP and has achieved the CUWCC goal for School Education Programs beginning in 1987.

5.2.2.5 Existing Program

City staff give school presentations to students at elementary schools in Modesto’s service area each year. During these presentations, elementary school students are taught about the water cycle and water conservation, and receive Water Conservation Kits. The Water Conservation Coordinator has also met with school district principals to encourage participation in the program as it focuses on water conservation while incorporating state content standards. Two AWWA publications, “Splash” and the “Story of Water,” as well as the video “Water Follies,” are used in conjunction with school programs and other community events. Elementary school students are particularly receptive to the conservation message and they share that message with their parents. Though fifth graders are targeted with the school presentations, similar presentations are given to junior and high school students upon request.

The number of water conservation kit giveaways and school education presentations during fiscal years 2014/15 and 2015/16 are shown in Table 5-4.

	FY 2014/15	FY 2015/16	FY 2016/17 ^(a)
# of kit giveaways	783	5,393	1,749
# presentations	0	15	38

^(b) Fiscal year 2016/17 data is not complete and only goes through November 2016.

5.3 BMP 3: Residential

Residential water users throughout California depend on a reliable and safe supply of water for their homes. This BMP defines the best and most proven water conservation methods and measures that residents, working in conjunction with water agencies, can implement. By implementing these methods and measures, homeowners, multi-family property owners, and tenants will increase water use efficiency and reliability. The specifics of these practices are detailed below.

5.3.1 BMP 3.1: Residential Assistance Program (formerly BMPs 1 & 2)

5.3.1.1 *CUWCC Description*

Residential assistance programs provide site-specific leak detection assistance that may include, but are not limited to the following: a water conservation survey, water efficiency suggestions, and/or inspection. Coverage can consist of providing showerheads and faucet-aerators that meet the current water efficiency standard as stipulated in the WaterSense Specifications (WSS) as needed.

5.3.1.2 *CUWCC Goal*

The CUWCC goal is to provide leak detection assistance to an average of 1.5 percent per year of current single-family accounts and 1.5 percent per year of current multi-family units during the first ten years after signing the MOU. After completing the ten-year 15 percent target, agencies will maintain a program at the level of high-bill complaints or not less than 0.75 percent per year of current single family accounts and 0.75 percent per year of current multi-family units. Showerhead distribution will be considered complete when 75 percent market saturation is achieved.

Water Conservation Plan Update

5.3.1.3 CUWCC Documentation Requirement

Documentation requirements for this BMP are to provide reports, disaggregated by single-family and multi-family units, identifying: the number of residential assistance/leak detection survey visits completed; number of WSS showerheads distributed; and number of WSS faucet aerators distributed during the reporting period.

5.3.1.4 Implementation Status

The City is currently implementing this program and is on track to meet the CUWCC goal of providing leak detection assistance to 15 percent of single-family and multi-family accounts after the first ten years of implementation.

5.3.1.5 Existing Program

The City will identify the high water users in its service and focus on those areas; service technicians and/or City interns will visit the residential users to provide leak detection assistance by performing surveys that include both indoor and outdoor investigations and offer suggestions for both single-family and multi-family residences to improve water use efficiency. Surveys are offered via mailers, bill inserts and/or the City's website.

The City requires water efficient equipment to be installed in all new construction and remodels. In addition, Water Conservation Kits are distributed by the City through its Water Conservation Program. Conservation kits are also distributed after each water conservation presentation to both adults and children. Each kit contains one toilet displacement bag, dye tablets to detect toilet leaks, general conservation information, and installation instructions. When using the displacement bag in a standard toilet, approximately one gallon of water is saved with each flush. It is estimated that 20 percent of all toilets leak, and that the average leak wastes nearly 47 gallons a day. Using the dye tablet will help citizens detect those leaks. The water savings from using lawn watering guides is estimated to be 20 percent per household with automatic sprinklers and 10 percent for manual systems.

As of 2015, the City had approximately 67,616 active residential accounts (4,676 multi-family accounts and 62,940 single-family accounts). In fiscal year 2014/15, the City performed approximately 2,958 surveys for leak detection which includes about 4.4 percent of the City's residential accounts. In fiscal year 2015/16, the City performed approximately 3,298 surveys for leak detection which includes about 4.9 percent of the City's residential accounts. As of November 2016, the City has performed 1,996 leak detection survey visits in fiscal year 2016/17 (approximately 3 percent of the City's residential accounts). During the survey visits, the City distributes WSS faucet aerators to its residential customers.

5.3.2 BMP 3.2: Landscape Water Survey (formerly BMP 1)

5.3.2.1 CUWCC Description

Site-specific landscape water surveys that shall include, but are not limited to, the following: check irrigation system and timers for maintenance and repairs needed; estimate or measure landscaped area; develop customer irrigation schedule based on precipitation rate, local climate, irrigation system performance, and landscape conditions; review the scheduling with customer; provide

Water Conservation Plan Update

information packet to customer; and provide customer with evaluation results and water savings recommendations.

5.3.2.2 CUWCC Goal

The CUWCC goal is to provide landscape water surveys to an average of 1.5 percent per year of current single-family accounts during the first ten years after signing the MOU. After completing the ten-year 15 percent target, agencies will maintain a program at the level of high-bill complaints or no less than 0.75 percent per year of current single-family accounts.

5.3.2.3 CUWCC Documentation Requirement

Documentation requirements for this BMP is to provide the number of single-family and multi-family account landscape water surveys completed during the reporting period.

5.3.2.4 Implementation Status

The City is currently implementing this program, but has not yet achieved the CUWCC goal of providing landscape water surveys to at least 1.5 percent per year of single-family accounts.

5.3.2.5 Existing Program

Water surveys for residential users help raise awareness of water conservation in the home and help conserve water during everyday use. Program staff members are available to set sprinkler timers upon request, adjust sprinkler heads, and provide minor advice on sprinkler systems. Staff members agree that the small amount of extra time spent assisting customers creates goodwill, ultimately reducing the likelihood of enforcement staff having to return in the future. In the past, the City has offered these free services upon request.

In addition to high efficiency toilets and clothes washer rebates, the City also provides rebates up to \$2,000 for residential turf replacement. Up to \$2 per square foot of removed and replaced turf can be rebated per eligible household.

In fiscal years 2014/15 and 2015/16, the City performed approximately 178 and 416 residential landscape water surveys, respectively. As of November 2016, the City has performed 186 landscape water surveys in fiscal year 2016/17.

5.3.3 [BMP 3.3: High-Efficiency Clothes Washers \(formerly BMP 6\)](#)

5.3.3.1 CUWCC Description

Implementation of this BMP consists of providing incentives or institute ordinances requiring the purchase of high efficiency clothes washing machines (HECWs) that meet an average water factor value of 5.0. If the WaterSense Specification (WSS) is less than 5.0, then the average water factor value will decrease to that amount.

5.3.3.2 CUWCC Goal

Incentives shall be provided to 0.9 percent of current single-family accounts during the first reporting period following BMP implementation, rising to 1.0 percent per year of current

Water Conservation Plan Update

single-family accounts for the remainder of ten-year period following signing of the MOU. An alternative method is to demonstrate 1.4 percent per year of the market penetration during the first ten years after signing the MOU.

5.3.3.3 CUWCC Documentation Requirement

Documentation required for this BMP includes the number of installations credited to the agency's replacement program for HECWs with an average water factor value of 5.0. If the WSS is less than 5.0, then the water factor value will decrease to that amount.

5.3.3.4 Implementation Status

The City is currently implementing this program, but has not yet achieved the CUWCC goal of providing HECW rebates to 0.9 percent of single-family accounts after the first year of implementation.

5.3.3.5 Existing Program

The City will also provide \$100 rebates to users towards the purchase of HECWs meeting the average WSS water factor value of 5.0 or better. As part of the implementation of this program, the City will develop and maintain a list of qualifying HECWs for residents to use.

In fiscal years 2014/15 and 2015/16, the City provided approximately 126 and 40 HECW rebates, respectively. As of November 2016, the City has provided about 38 HECW rebates in fiscal year 2016/17.

5.3.4 BMP 3.4: WaterSense Specification Toilets (formerly BMP 14)

5.3.4.1 CUWCC Description

Implementation of this BMP consists of providing incentives or ordinances requiring the replacement of existing toilets using 3.5 or more gpf (gallons per flush) with a toilet meeting the WaterSense Specification.

5.3.4.2 CUWCC Goal

The CUWCC goal of this BMP is to continue to offer financial incentives for toilets meeting the current WSS and updated standard whenever a more efficient toilet is identified by WSS. Compliance will entail demonstrating a number of toilet replacements of 3.5 gpf or greater toilets at or above the level achieved through a retrofit on resale ordinance until 2014, or a market saturation of 75 percent is demonstrated, whichever is sooner.

5.3.4.3 CUWCC Documentation Requirement

Documentation requirements for this BMP includes a description of the program along with the number of WSS toilet installations credited to the agency's replacement program disaggregated by single-family or multi-family units.

Water Conservation Plan Update

5.3.4.4 Implementation Status

The City is currently implementing this BMP and plans to continue to offer financial incentives for WSS Toilets until a market saturation of 75 percent is demonstrated.

5.3.4.5 Existing Program

The City has implemented a formal rebate program to provide financial incentive for customers to install the WSS Toilets. The City offers up to \$100 in rebates for customers that replace a less efficient (using more than 1.6 gallons per flush) with the purchase of a qualified high efficiency toilets (1.28 gallons per flush).

In fiscal years 2014/15 and 2015/16, the City provided approximately 556 and 352 WSS toilet rebates, respectively. As of November 2016, the City has provided about 79 WSS toilet rebates in fiscal year 2016/17.

5.3.5 BMP 3.5: WaterSense Specifications for New Residential Development

5.3.5.1 CUWCC Description

Implementation of this BMP is by providing incentives such as, but not limited to, rebates, recognition programs, or reduced connection fees, or ordinances requiring residential construction meeting WSS for single-family and multi-family housing until a local, state or federal regulation is passed requiring water efficient fixtures.

5.3.5.2 CUWCC Goal

The CUWCC goal of this BMP is to continue to offer incentives until a water agency, or local, state or federal regulation is in effect meeting at a minimum, WSS for water efficient single-family homes. Multi-family housing shall also meet the WSS in all applicable criteria regardless of the total number of stories in the building.

5.3.5.3 CUWCC Documentation Requirement

Documentation required for this BMP is to provide a copy of the new development ordinance currently adopted by the reporting unit or provide the following incentive program details: number of new single-family and multi-family units built in service area during the reporting period; description of incentives offered; list of incentive amounts; number of WSS fixtures installed; and number of participating single-family home and multi-family units.

5.3.5.4 Implementation Status

The City is currently providing financial incentives for WSS Toilets. In addition, the 2013 California Plumbing Code (Section 403.2.1.1), requires all toilets installed on or after July 2, 2011, to meet or exceed the minimum performance criteria developed for certification of high-efficiency toilets under the WaterSense program. Because of this State regulation, the City has fully addressed this BMP.

Water Conservation Plan Update

5.3.5.5 Existing Program

As described previously, the City has implemented a formal rebate program to provide financial incentive for customers to install the WSS Toilets. The City currently does not provide incentives for other types of WSS fixtures.

5.4 BMP 4: Commercial, Industrial, and Institutional (formerly BMP 9)

5.4.1 CUWCC Description

Implementation of this BMP shall consist of item 1) or 2) or both in order to reach the agency's water savings goals:

1. Implement measures on the CII list with well-documented savings that have been demonstrated for the purpose of documentation and reporting. The full list and their associated savings are included in the "Demonstrated Savings Measure List" found in the MOU Compliance Policy.
2. Implement unique conservation to achieve the agency's water saving goals. Sample measures include:
 - a) Industrial process water use reduction
 - b) Industrial laundry retrofits
 - c) Car wash recycling systems
 - d) Water efficient commercial dishwashers
 - e) Wet cleaning

Agencies will be required to document how savings were realized and the method and calculations for estimating savings.

5.4.2 CUWCC Goal

Implement measures to achieve the water savings goal for CII accounts of 10 percent of the baseline water use over a 10-year period. Baseline water use is defined as the water consumed by CII accounts in the agency's service area in 2008. Credit for prior activities, as reported through the BMP database, will be given for up to 50 percent of the goal; in this case, coverage will consist of reducing annual water use by CII accounts by an amount equal to the adjusted percentage goal within 10 years.

Although it is not one of the criteria in meeting implementation, agencies will be considered on track if estimated savings as a percent of baseline water use equals or exceeds the following:

- 0.5 percent by the end of first reporting period (year two)
- 2.4 percent by the end of year four,
- 4.3 percent by the end of year six,
- 6.4 percent by the end of year eight, and
- 9 percent by the end of year ten.

Water Conservation Plan Update

5.4.3 CUWCC Documentation Requirement

In each reporting period, agencies are required to report the estimated reduction in annual water use for all CII accounts. The two reporting methods are described below.

1. CII Demonstrated Savings Measure List – For measures on the CII Demonstrated Savings Measure list with demonstrated savings, agencies shall report the measure type and quantity installed, as well as savings attributed to water shortage measures, intervention and actions.
2. Flex Track Menu – For measures on the Flex Track Menu, agencies shall use one of three methods of measurement listed below to track savings. Agencies shall report the type of measure implemented, the industry in which the measure was implemented, and estimated savings as well as the measure life. Agencies shall keep detailed usage data on file and report the annual and lifetime savings.
 - a) Point of Retrofit Metering – Usage data collected from meters installed at the point of retrofit.
 - b) Customer Bill Analysis – Pre- and post-program usage from utility bills from the appropriate meters related to the measures implemented. For mixed-use meters, a minimum of 12 months pre-retrofit and 12 months post-retrofit usage data shall be used to calculate savings. The data shall be normalized for weather. For dedicated meters, a minimum of 6 months pre-retrofit and 6 months post-retrofit data shall be used to calculate savings.
 - c) Agency Provided Calculation – If an agency is unable to provide point of retrofit metering or customer bill analysis, the agency must document how savings were realized and the method and calculations for estimated savings. The calculation and assumptions are subject to approval by CUWCC on a case-by-case basis.

5.4.4 Implementation Status

The City is currently implementing this program and is on track to achieve the CUWCC goal of a 10 percent reduction of the CII baseline water use over a 10-year period.

5.4.5 Existing Program

The City has provided water use audits to any CII customer upon request as an informal service. The City implements two different strategies, one for new CII accounts and one for existing CII accounts. For new users, the City works to inform the user of potential wastewater saving measures by having them conduct a self-audit of their operations and equipment. This effort can save the user wastewater connection charges in addition to reducing their water consumption per square foot of operation. The City plans to develop tools and information sources to inform new CII customers of these potential savings. For existing CII users, a similar effort can be developed to display the economic savings through self-audits. It is estimated the savings on both the water and wastewater side will offset the cost of the self-audit in a short time. In the future, the City may have staff attend training that would increase their knowledge of such water saving measures. Currently, the City's Environmental Compliance Division, who handles wastewater discharge permits among other regulatory tasks, is instrumental in assisting larger CII users with water savings measures to reduce wastewater discharge impacts.

Water Conservation Plan Update

In 2016, the City developed a formal survey program for CII accounts that consists of free water use surveys (performed upon request) and evaluations of water using apparatus and processes, as well as recommended efficiency measures. Rebates were provided for some water saving devices such as those included in Table 5-5. In addition, the City has also adopted the Commercial Green Building Code which requires higher water use efficiency standards (i.e., 20 percent reduction). As of November 2016, two (2) formal surveys have been performed for CII accounts.

Device	Incentive Amount
High Efficiency (HE) Toilets	\$200
HE Urinals	\$200
Ultra Low Volume Urinals	\$200
Zero Consumption Urinals	\$200
Commercial HE Single Load Clothes Washers	\$200
Cooling Tower Conductivity Controllers	\$400
Cooling Tower pH Controllers	\$400
Connectionless Food Steamers	\$400
Medical Equipment Steam Sterilizers	\$400
Water-Efficient Ice Machines	\$250
Pressurized Water Brooms	\$125
Dry Vacuum Pumps	\$125

As shown in Table 5-6, the City has reduced its CII water use by approximately 11 percent from 2010 to 2015. This demonstrates that the City is on track to achieve its water savings goal of 10 percent reduction of its baseline water use for CII accounts over a 10-year period.

Water Use Type	2010		2015	
	# of Accounts ^(a)	Deliveries, af/yr ^(b)	# of Accounts ^(c)	Deliveries, af/yr ^(d)
Commercial	3,790	8,050	4,244	7,537
Industrial	67	3,209	65	2,728
Institutional/Governmental	372	2,013	375	1,486
Total	4,229	13,272	4,684	11,751

(a) Table 4-4 of the City of Modesto's 2010 Urban Water Management Plan.
 (b) Table 4-1 of the City of Modesto's 2015 Urban Water Management Plan.
 (c) Number of available accounts based on data provided by City staff on February 2016.
 (d) Table 4-2 of the City of Modesto's 2015 Urban Water Management Plan.

Water Conservation Plan Update

5.5 BMP 5: Landscape (formerly BMP 5)

5.5.1 CUWCC Description

Implementation of this BMP consists of providing non-residential customers with support and incentives to improve their landscape water use efficiency. Credit for prior activities, as reported through the BMP database, will be given for documented water savings achieved through 2008. This support shall include, but not be limited to, the following:

1. Accounts with Dedicated Irrigation Meters
 - a) Identify accounts with dedicated irrigation meters and assign ET_o -based water use budgets equal to no more than an average of 70 percent of ET_o (reference evapotranspiration) of annual average local ET_o per square foot of landscape area in accordance with the schedule below.

Recreational areas (portions of parks, playgrounds, sports fields, golf courses, or school yards in public and private projects where turf provides a playing surface or serves other high-use recreational purposes) and areas permanently and solely dedicated to edible plants, such as orchards and vegetable gardens, may require water in addition to the water use budget. (These areas will be referred to as “recreational” below.) The water agency must provide a statement designating those portions of the landscape to be used for such purposes and specifying any additional water needed above the water use budget, which may not exceed 100 percent of ET_o on an annual basis.

If the California Model Water Efficient Landscape Ordinance is revised to reduce the water allowance, this BMP will be revised automatically to reflect that change.
 - b) Provide notices each billing cycle to accounts with water use budgets showing the relationship between the budget and actual consumption.
 - c) Offer site-specific technical assistance to reduce water use to those accounts that are 20 percent over budget.
2. CII Accounts without Meters or with Mixed-Use Meters
 - a) Develop and implement a strategy targeting and marketing large landscape water use surveys to CII accounts with mixed-use meters.
 - b) In unmetered service areas, actively market landscape surveys to existing accounts with large landscapes, or accounts with landscapes which have been determined by the purveyor not to be water efficient.
3. Offer financial incentives to support 1) and 2) above.

Water Conservation Plan Update

5.5.2 CUWCC Goal

Per the CUWCC MOU, goals for this BMP consist of:

1. Develop ET_0 based water budgets for 90 percent of CII accounts with dedicated irrigation meters at an average rate of 9 percent per year over 10 years.
2. Offer site-specific technical assistance annually to all accounts that are 20 percent over budget within six years of the date implementation was to commence.
3. Complete irrigation water use surveys for not less than 15 percent of CII accounts with mixed use meters and un-metered accounts within 10 years of the date implementation is to commence. (Note: CII surveys that include both indoor and outdoor components can be credited against coverage requirements for both the Landscape and CII BMPs.)
 - a) An agency will be considered on track if the percent of CII accounts with mixed-use meters receiving a landscape water use survey equals or exceeds the following:
 - 1.5 percent by the end of the first reporting period (year two),
 - 3.6 percent by the end of year four,
 - 6.3 percent by the end of year six,
 - 9.6 percent by the end of year eight, and
 - 13.5 percent by the end of year ten.
4. Agency will implement and maintain a customer incentive program(s) for irrigation equipment retrofits.

5.5.3 CUWCC Documentation Requirement

As a CUWCC requirement, agencies shall preserve water use records and budgets for customers with dedicated landscape irrigation accounts for at least four years. This information may be used by the CUWCC to verify the agency's reporting on this BMP. The following information that will be preserved for the two types of accounts are described below.

1. Dedicated Landscape Irrigation Accounts
 - a) Number of dedicated irrigation meter accounts.
 - b) Number of dedicated irrigation meter accounts with water budgets.
 - c) Aggregate water use for dedicated non-recreational landscape accounts with budgets.
 - d) Aggregate acreage assigned water budgets and average ET_0 for dedicated non-recreational landscape accounts with budgets.
 - e) Number of Accounts 20 percent over-budget.
 - f) Number of accounts 20 percent over-budget offered technical assistance.

Water Conservation Plan Update

- g) Number of accounts 20 percent over-budget accepting technical assistance.
 - h) Aggregate acreage of recreational areas assigned water budgets and average ET_o for dedicated recreational landscape accounts with budgets.
2. CII Accounts without Meters or with Mixed-Use Meters
- a) Number of mixed use and un-metered accounts.
 - b) Number, type, and dollar value of incentives, rebates, and no- or low-interest loans offered to, and received by, customers.
 - c) Number of surveys offered.
 - d) Number of surveys accepted.
 - e) Estimated annual water savings by customers receiving surveys and implementing recommendations.

5.5.4 Implementation Status

The City is currently implementing this program, and is on track to meet the CUWCC goals after the first ten years of implementation.

5.5.5 Existing Program

The City Utilities Department, Water Services Division has implemented an efficient ET_o-based irrigation system at eleven City parks. The ET_o-based irrigation systems involve irrigating parks using field computers connected by modem to a weather station. The weather station relays weather forecasts and evapotranspiration data to the field computers and the irrigation is adjusted according to incoming weather forecasts. Recently, the system has expanded to include more parks and public land. The City's three certified landscape auditors oversee landscaping maintenance of the City's parks and golf courses. Although the City is currently implementing ET_o based water budgets, they have not yet developed ET_o based water budgets for 90 percent of its CII accounts (BMP Goal #1).

The City also strives to match water quality with use. For example, the shallower aquifers in the area are generally not tapped for potable water uses due to the presence of contaminants that require treatment. The City plans to convert older, shallower wells or develop new shallow wells to be used exclusively for park and school landscaping irrigation instead of using the treated surface and groundwater sources for these demands. This strategy serves as both a cost savings to the Parks Department and as a means by which available potable water supply sources can be conserved for potable uses. Irrigation conservation measures are still utilized at the parks, regardless of water source; but using the shallower water-bearing aquifer zones puts a supply to use that would otherwise go unused in highly urban areas. Currently, the City has converted seven older groundwater wells to be used for non-potable uses such as street sweeping or construction. These non-potable wells have been disconnected from the potable water system and are accessed via specially painted hydrants.

In addition to the actions the City is already taking, the City has begun to formally offer surveys to large landscape accounts. Under this program, the City will visit customers who irrigate and recommend an efficient irrigation schedule and improvements. The City will provide each dedicated irrigation account with an ET_o-based water use budget equal to no more than an average

Water Conservation Plan Update

of 70 percent of ET_o of annual average local ET_o per square foot of landscape area. The recreational areas, such as parks, may require additional water than allotted in the budget, but their use still may not exceed 100 percent of ET_o on an annual basis.

To aid the customer in tracking their water use, the City will provide notices each billing cycle to the accounts with water use budgets showing the relationship between the budget and actual water consumption. The City will offer technical assistance to customers that are 20 percent over budget. In addition, the City will implement a weather-based irrigation controller (WBIC) rebate program, offering a \$50 rebate per WBIC purchased.

In December 2015, the City adopted the State of California's Model Water Efficient Landscape Ordinance (MWELo). The City plans to use MWELo until the City has time to revise its ordinance. The revisions will be minor changes that aim at simplifying the process for smaller landscape projects.

CII accounts are able to take advantage of the City's turf replacement rebates discussed in *Section 5.3.2 Landscape Water Survey*. Under the City's turf replacement program, the City provides rebates up to \$1.25 per square foot of removed and replaced turf. Currently, one CII account has taken advantage of the City's turf replacement program.

During fiscal years 2014/15 and 2015/16, the City performed approximately 178 and 416 landscape water surveys, respectively. During fiscal year 2015/16, the City provided approximately 97 residential landscape rebates to its customers. As of November 2016, the City has performed 186 landscape surveys and provided 41 landscape rebates during fiscal year 2016/17.

From 2010 to 2015, the City has reduced its annual landscape irrigation use from approximately 2,567 af/yr to 1,744 af/yr. This 32 percent reduction in landscape water use demonstrates the effectiveness of the City's existing landscape reduction program.

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6.0 FUTURE WATER CONSERVATION POLICIES

On May 6, 2016, Governor Brown signed Executive Order (EO) B-37-16 which directed the State of California to establish a long-term framework for water conservation and drought planning. The actions directed in the EO B-37-16 were based on four primary objectives: (1) use water more wisely, (2) eliminate water waste, (3) strengthen local drought resilience, and (4) improve agricultural water use efficiency and drought planning.

In November 2016, the California Department of Water Resources (DWR), State Water Resources Control Board (SWRCB), California Department of Food and Agriculture, California Public Utilities Commission, and the California Energy Commission (collectively referred to as the “EO Agencies”) released the Draft Report “Making Water Conservation in California a Way of Life.” In the Draft Report, the EO agencies describe the framework for implementing EO B-37-16. Some of the key points of the report include:

- New Water Use Targets (Executive Order Items 2 and 6): Upon statutory authorization, urban water suppliers will be required to calculate new water use targets based on new urban water use standards and methodology. Interim targets that are applicable are planned to start in 2018, and full compliance with the final targets will be required by 2025.
- Permanent Monthly Reporting (Executive Order Item 3): A rulemaking process to establish permanent monthly urban water reporting on water usage, amount of conservation achieved, and any enforcement efforts will start at the end of 2016 and run through 2017.
- Water Use Prohibitions (Executive Order Item 4): A rulemaking process to establish permanent prohibitions on wasteful water practices, building on current prohibited uses in the emergency regulation, will start at the end of 2016 and run through 2017.
- Minimizing Water Loss (Executive Order Items 5 and 6): By July 1, 2010, the SWRCB will adopt rules requiring urban retail water suppliers to meet performance standards for the volume of water losses.
- Water Shortage Contingency Plans (Executive Order Items 8, 9, and 6): Upon statutory authorization, urban water suppliers will be required to submit a Water Shortage Contingency Plan and conduct a 5-year Drought Risk Assessment every five years, and conduct and submit a water budget forecast annually.

The fundamental premise of EO B-37-16 is to help California prepare for longer and more severe droughts caused by climate change. EO B-37-16 will create a fundamental shift in how water as a resource is managed throughout the State and therefore, will likely change the existing water conservation policies for urban water suppliers in the years to come. A copy of EO B-37-16 is included in Appendix E.

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APPENDIX A

City of Modesto Drought Contingency Plan

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CITY OF MODESTO – DROUGHT CONTINGENCY PLAN (Revised October 4, 2016)

**(Applies to all COM water users including residential, commercial, industrial, institutional, and private wells)*

Drought Stage I – Minor Shortage Potential	Drought Stage II – Moderate Shortage Potential	Drought Stage IIA – Medium Storage Potential	Drought Stage III – Critical Shortage Potential
Phasing Criteria			
U.S. Drought Monitor D0 – D1 Abnormally Dry – Moderate Drought	U.S. Drought Monitor D2 – D3 Severe Drought – Extreme Drought April 1 through October 31	U.S. Drought Monitor D3 – D4 Extreme Drought – Exceptional Drought November 1 through March 31	U.S. Drought Monitor D4 – Exceptional Drought, with the following conditions: * Groundwater levels are dropping due to the increased use associated with a warm, dry season, and due to lower than average precipitation and runoff. * Production from wells is decreasing. *There is a possibility that customer demands and system pressure requirements cannot be met at all times.
Consumer Water Use Restrictions			
* Outdoor water use prohibited daily from noon - 7 p.m.* Odd-numbered addresses water W, F, Su Even-numbered addresses water, T, Th, Sa No outdoor water use on Mondays. * Car washing subject to above-cited limitations with use of a positive shutoff nozzle * Hosing concrete areas, building exteriors, etc., is prohibited except for health/safety concerns and only with use of a positive shutoff nozzle. * Water leaks, once identified by home owner, must be repaired within 24 hours. * Restaurants encouraged serving water only on request. * New landscaping to comply with existing & future landscape ordinances.	* Outdoor water use prohibited daily from 9 a.m. - 7 p.m.* Odd-numbered addresses water W, Su Even-numbered addresses water, T, Sa No outdoor water use on Mondays, Thursdays, & Fridays. * Car washing subject to above-cited limitations with use of a positive shutoff nozzle * Hosing concrete areas, building exteriors, etc., is prohibited except for health/safety concerns and only with use of a positive shutoff nozzle. * Water leaks, once identified by home owner, must be repaired within 24 hours. * Restaurants and food service establishments prohibited from serving	Odd-numbered addresses water Sunday Even-numbered addresses water Saturday * Outdoor water use prohibited Saturday and Sunday from 9 a.m. - 7 p.m.* <u>No outdoor water use on Mondays, Tuesdays, Wednesdays, Thursdays, & Fridays.</u> * Car washing subject to above-cited limitations with use of a positive shutoff nozzle * Hosing concrete areas, building exteriors, etc., is prohibited except for health/safety concerns and only with use of a positive shutoff nozzle. * Water leaks, once identified by home owner, must be repaired within 24 hours. * Restaurants and food service establishments prohibited from serving	* No outdoor water use except for trees shrubs by hand, and vegetation maintained through drip irrigation. * Car washing permitted at car wash facilities only. * Hosing concrete areas, building exteriors, etc., is prohibited except for health/safety concerns and only with use of a positive shutoff nozzle. * Water leaks, once identified by home owner, must be repaired within 24 hours. * Restaurants prohibited from serving water except upon request. * Mandatory retrofit of low flow showerheads and toilets in homes when Remodeling occurs. * No use of outdoor fountains except for maintenance purposes. *Moratorium on all new landscaping.

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<p>* Water meter installation on all new single-family homes.</p> <p>* Hours of restricted outdoor use may be extended to 9 a.m. – 7 p.m. at Council discretion.</p>	<p>water except upon request.</p> <p>* New landscaping to comply with existing & future landscape ordinances.</p> <p>* Mandatory retrofit of low flow showerheads in homes when building remodeling occurs.</p> <p>* No use of outdoor fountains except for maintenance purposes.</p> <p>*Water meter installation on all new single-family homes.</p> <p>*No irrigating turf or ornamental landscapes during and 48 hours following measureable rain.</p> <p>* Operators of hotels and motels must provide guests with the option of choosing not to have towels and linens laundered daily and prominently display notice of this option.</p>	<p>water except upon request.</p> <p>* New landscaping to comply with existing & future landscape ordinances.</p> <p>* Mandatory retrofit of low flow showerheads in homes when building remodeling occurs.</p> <p>* No use of outdoor fountains except for maintenance purposes.</p> <p>*Water meter installation on all new single-family homes.</p> <p>*No irrigating turf or ornamental landscapes during and 48 hours following measureable rain.</p> <p>* Operators of hotels and motels must provide guests with the option of choosing not to have towels and linens laundered daily and prominently display notice of this option.</p>	<p>*Building moratorium on all new connections, including new swimming pools.</p>
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Penalties for Violations of Water Usage Restrictions

<p>\$ 50 Administrative Fee assessed upon 2nd violation.</p> <p>\$200 Admin. Fee assessed upon 3rd violation (includes meter installation</p> <p>\$500 Administrative fee assessed for each subsequent violation.</p>	<p>\$ 150 Administrative Fee assessed upon 2nd violation.</p> <p>\$250 Admin. Fee assessed upon 3rd violation (includes meter installation</p> <p>\$500 Administrative fee assessed for each subsequent violation.</p>	<p>\$ 150 Administrative Fee assessed upon 2nd violation.</p> <p>\$250 Admin. Fee assessed upon 3rd violation (includes meter installation</p> <p>\$500 Administrative fee assessed for each subsequent violation.</p>	<p>\$ 200 Administrative Fee assessed upon 2nd violation.</p> <p>\$300 Admin. Fee assessed upon 3rd violation (includes meter installation</p> <p>\$500 Administrative fee assessed for each subsequent violation.</p>
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** Applies to residents inside the City limits or with a City of Modesto water service agreement.*

** Penalties assessed for violations occurring within 12 months of first violation.*

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APPENDIX B

City of Modesto Resolutions

- Resolution No. 2016-178
- Resolution No. 2016-395

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**MODESTO CITY COUNCIL
RESOLUTION NO. 2016-178**

RESOLUTION APPROVING REINSTATEMENT OF THE DROUGHT STAGE II REQUIREMENTS OF THE CITY OF MODESTO DROUGHT CONTINGENCY PLAN TO ALLOW OUTDOOR WATERING TO TWO DAYS A WEEK EFFECTIVE MAY 1, 2016 THROUGH OCTOBER 31, 2016

WHEREAS, on March 17 2015, the State Water Resources Control Board (SWRCB) adopted additional emergency drought regulations to govern the use of urban water in California, which required the City of Modesto to meet a thirty-six percent (36%) cumulative reduction for the period of June 2015 through February 2016, and

WHEREAS, Section 11-1.14 of the Modesto Municipal Code authorizes the City Council to establish rules and regulations by resolution concerning the City's municipal water system, the use of water, and water conservation, and

WHEREAS, on November 24, 2015 City Council, by Resolution No. 2015-455, revised the City of Modesto Drought Contingency Plan and enacted Drought Stage IIA requirements to restrict outdoor watering to one day a week effective December 1, 2015, and

WHEREAS, California continues to endure severe drought conditions and most of the state, including our local area, is experiencing exceptional drought conditions as defined by the United States Drought Monitor, and

WHEREAS, the Governor recently extended the emergency drought regulations through October 2016 by executive order, and

WHEREAS, the SWRCB eased the restriction for the City of Modesto to require a thirty-four percent (34%) cumulative reduction in water use through October 2016, and

WHEREAS, staff recommended that the City Council approve returning to Drought Stage II of the Drought Contingency Plan effective May 1, 2016 through October 31, 2016 and,

WHEREAS, Drought Stage II of the Drought Contingency Plan implements a two-day per week outdoor watering schedule for all City of Modesto customers with addresses ending in an even number watering only on Tuesdays and Saturdays and addresses ending in an odd number watering only on Wednesdays and Sundays, and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Modesto that it hereby approves reinstatement of the Drought Stage II requirements of the City of Modesto Drought Contingency Plan that restrict outdoor watering to two days a week effective May 1, 2016 through October 31, 2016.

The foregoing resolution was introduced at a regular meeting of the Council of the City of Modesto held on the 26th day of April, 2016, by Councilmember Ridenour, who moved its adoption, which motion being duly seconded by Councilmember Kenoyer, was upon roll call carried and the resolution adopted by the following vote:

AYES: Councilmembers: Ah You, Grewal, Kenoyer, Madrigal, Ridenour, Zoslocki, Mayor Brandvold

NOES: Councilmembers: None

ABSENT: Councilmembers: None

ATTEST: 
STEPHANIE LOPEZ, City Clerk

(SEAL)

APPROVED AS TO FORM:

By: 
ADAM U. LINDGREN, City Attorney

**MODESTO CITY COUNCIL
RESOLUTION NO. 2016-395**

RESOLUTION APPROVING REINSTATING STAGE IIA REQUIREMENTS, OF THE CITY OF MODESTO DROUGHT CONTINGENCY PLAN, TO RESTRICT OUTDOOR WATERING TO ONE DAY A WEEK, EFFECTIVE NOVEMBER 1, 2016 THROUGH MARCH 31, 2017, AND REVISING THE PHASING CRITERIA OF THE PLAN TO BE CONSISTENT WITH THE U.S. DROUGHT MONITOR

WHEREAS, on March 17, 2015, the State Water Resources Control Board adopted emergency drought regulations to govern the use of urban water in California, which required the City of Modesto to meet a 36 percent (36%) cumulative reduction for the period of June 2015 through February 2016, and

WHEREAS, on May 9, 2016, Governor Edmund G. Brown Jr. issued Executive Order B-37-16 requiring the State Water Resources Control Board (SWRCB) to adjust its emergency water conservation regulation through the end of January 2017 in recognition of the differing water supply conditions across the state, and

WHEREAS, on June 21, 2016, the City of Modesto submitted projections and calculations to the SWRCB of a minimum conservation standard of 20% reduction versus the 2013 water production level, and

WHEREAS, to ensure that we meet the 20% requirement, a 25% conservation target has been set through January 2017, and

WHEREAS, Section 11-1.14 of the Modesto Municipal Code authorizes the City Council to establish rules and regulations by resolution concerning the City's municipal water system, the use of water, and water conservation, and

WHEREAS, on April 26, 2016, the City Council, by Resolution No. 2016-178, reinstated the Stage II Plan requirements of the Drought Contingency Plan, which restricted outdoor watering to twice weekly, and

WHEREAS, staff is tracking water production reduction percentages and as of August 31, 2016, the City is at a 28.2% cumulative reduction, and

WHEREAS, to assist us in sustaining our water supply and meet our reduction goals, staff recommends reinstating Stage IIA requirements of the City of Modesto Drought Contingency Plan which implements one day a week watering for all City of Modesto customers, and

WHEREAS, addresses ending in an even number will water only on Saturday and addresses ending in an odd number will water only on Sunday, and

WHEREAS, outdoor water use is prohibited daily from 9:00 a.m. – 7:00 p.m., and

WHEREAS, most of the state including our area continues to endure extreme drought conditions as defined by the United States Drought Monitor, and

WHEREAS, staff proposes the revision of the City of Modesto Drought Contingency Plan phasing criteria consistent with the U.S. Drought Monitor, and

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Modesto that it hereby approves reinstating Stage IIA requirements of the City of Modesto Drought Contingency Plan to restrict outdoor watering to one day a week, effective November 1, 2016 through March 31, 2017, and revising the phasing criteria of the Plan to be consistent with the U.S. Drought Monitor.

The foregoing resolution was introduced at a regular meeting of the Council of the City of Modesto held on the 4th day of October, 2016, by Councilmember Kenoyer, who moved its adoption, which motion being duly seconded by Councilmember Grewal, was upon roll call carried and the resolution adopted by the following vote:

AYES: Councilmembers: Ah You, Grewal, Kenoyer, Madrigal, Ridenour, Zoslocki, Mayor Brandvold

NOES: Councilmembers: None

ABSENT: Councilmembers: None

ATTEST: 
STEPHANIE LOPEZ, City Clerk

(SEAL)

APPROVED AS TO FORM:

By: 
ADAM U. LINDGREN, City Attorney

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APPENDIX C

Water Conservation Programs

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RESIDENTIAL LANDSCAPES

WATER USE EFFICIENCY IDEAS



IRRIGATION SYSTEM

Read your irrigation controller (timer) manual to understand its features. Learn how to adjust the controller and change the setting when plants need less water. Replace lost manuals – many can be downloaded from the manufacturer's website. You will need the model number of the controller.

Change the controller battery at least once a year to preserve the schedule in case of a power failure. A power failure may cause the controller to revert to the default setting which will probably not water the correct amount.

Adjust the sprinklers so that they don't spray pavement, fences, and buildings.

Install a rain shut-off device.

Check for leaks, sprinkler head misalignments, broken pipes, and other system problems at least twice a month. If your automatic irrigation system normally runs at night or when you are unable to observe the system's operation, run the system manually for a short time during daytime. Repair with correct parts.

Observe for signs of irrigation system problems such as dry spots, ponding, erosion, and soggy spots. These indicate the system may need adjustment.

Clean filters in sprinkler heads and drip systems regularly.

Use sprinkler heads with matched precipitation rates; don't mix types of sprinklers on one line.

Allow for a five minute recovery between station run times to ensure adequate water pressure to operate the irrigation system.

WATERING

Keep a written record of last year's watering schedule near the controller unit and use it to base this year's schedule. If you think the landscape needs less water than it received last year, shorten the run times, or lengthen the time interval (days) between run times.

Adjust irrigation controllers with the seasons. For example, start out in spring with about 50% of the water that will be used in summer. Be sure to turn the controller down in fall and off (if possible) in winter. Use the water budget or seasonal adjust feature (%) on the controller to make adjusting easier.

Use low output sprinklers such as drip, soaker hoses, and microspray whenever possible.

Use "cycle and soak" or multiple run times on the sprinkler controller. Dividing the total watering time into shorter increments allows water to soak in. Set a goal of no runoff.

Water trees and shrubs less frequently than lawns, deep soak occasionally to promote deep rooting.

Check soil moisture below surface with a soil probe or large screwdriver. Don't assume the plants need water just because the soil surface looks dry.

Water only during the late afternoon, night and early mornings to minimize evaporation. Don't water when windy or raining.

Water shady areas less frequently.

Use a hose timer to shut off automatically when watering with a hose end sprinkler.

PLANTS

Prune only to rejuvenate and restore the health of the plant. If you must prune heavily to keep a plant small, consider replacing it with a plant that will mature at a smaller size.

Add compost to improve soil and spread mulch over garden beds to slow evaporation and reduce weeds.

Use balanced slow-release fertilizers. The nutrient content, found on the package, is a set of three numbers such as 10-10-10, 16-16-16, or 12-8-8. The numbers represent the percentage of Nitrogen, Phosphorus and Potassium.

RESIDENTIAL LANDSCAPES

Design new landscapes with natives or ornamental plants from a similar climate. Consider renewing existing landscapes with water wise plants.

In dry weather, place a saucer under potted plants to hold water for plants to drink when the soil dries out.

Replace "space-filler" lawns with rock gardens, mulched areas, or ground covers. Reduce lawn area to the size your family actually uses.

Use lower water-use grass types such as Hybrid Bermuda, St. Augustine grass and Dwarf Tall Fescues on new and rehabilitated lawns.

Use a higher setting to mow lawns so that the longer grass blades can shade the soil and roots. Remove the collection bag when mowing to grass cycle the clippings. Grass clippings will decompose quickly, returning nutrients that would otherwise be thrown away. Aerate lawns and remove thatch as necessary.

HARDSCAPE

Sweep sidewalks, patios and driveways instead of hosing them down.

Use a bucket and automatic shut off sprayer when washing cars and boats or go to a car wash that recycles wash water.

Use permeable paving wherever possible to allow rain to soak into the ground rather than run off.

Use pool and spa covers to reduce evaporation.

COMMUNITY

Share ways to conserve water with family members.

Report leaks, broken pipes and out of adjustment sprinklers in common areas and parks to property association or the city.

Find out what conservation programs your local water agency or city may provide.

Consider attending community college, cooperative extension or adult education classes and workshops to learn better horticultural practices. Some water agencies offer landscape classes.

Use licensed and qualified landscapers and arborists for better quality work and healthier gardens. Look for professionals that advocate wise water use. Some professionals can help you develop an efficient irrigation schedule. Make sure the landscape professional you hire knows that wise water use is important to you

FOR FURTHER INFORMATION

And to request this brochure in an alternate format, contact:

**California Department of
Water Resources**

Office of Water Use Efficiency

901 P Street, Third Floor

P.O. Box 942836

Sacramento, California

94236-0001

landscape@water.ca.gov

(916) 651-9676





Water-Wise Gardening Guide

*Water...
every drop is precious!*





Watering Habits

A water-wise landscape can be beautiful and it can help you save water too. Do you want to be a wiser water miser? You don't have to pull out all your plants and start over. Lets begin by examining the way you water.

It may surprise you to learn that it is not necessary to water every day. In fact, watering 2-3 times per week may be enough. The key is to water deeply, allowing water to penetrate through the soil and reach plant roots.

Your Irrigation System

Turn on your sprinkler system and observe. Does it water your plants or the sidewalk? Does water flow into the gutter? If so, you are applying water faster than your soil can absorb it.

Turn on your drip irrigation system and observe. Are the emitters clogged? Is water flowing out of the pipe where your emitter should be? Check your emitters weekly, use a filter, and use a pressure regulator on your system.

Check Your Soil

For lawns—after watering, take a screwdriver and probe it into the soil. If you can push it 6 inches deep, you have watered enough. If you can't, set your timer to water longer . Then wait a few days and check it again. When the screwdriver can't go in as deep, it is time to water.

For trees and shrubs—after watering, the soil should be wet 2-3 feet deep. If you can easily dig with a shovel, you have watered enough. Trees and shrubs can go for weeks and sometimes months without adding water, if they are watered deeply enough.

How Should I Water?

Sprinkler irrigation may not provide enough water for established trees and shrubs. You can supplement by deep soaking with a garden hose on low for several hours. Check the soil several inches below the surface before you decide to water again.



Soil Types

What's My Soil Type?

No matter your soil type, plants use the same amount of water. Sandy soils absorb water quickly but also dry out quickly. Loamy soils absorb and hold water well. Soils composed mostly of clay absorb water slowly and stay wet longer. Compacted soils have trouble absorbing water.

Compost and Mulch

Before planting, always add a 3-4" layer of compost. Till it to a depth of several inches. After planting, mulch around your plants with a 2-3" layer of ground, shredded bark, decomposed granite, or even gravel. The purpose of mulch is to help the soil hold its moisture. Replace the mulch as needed.

Talk Lawn

Q: Should I remove my lawn?

A: A wisely watered lawn uses less water than an overwatered lawn. However, if you don't use your lawn for pets or physical activity, consider removing all or part of it and planting water-wise plants or installing permeable surfaces like gravel and paving stones.

Q: I'd like to have a small lawn, which variety should I choose?

A: Warm season grass like Bermuda needs the least amount of water. Cool season grasses like Kentucky bluegrass, perennial ryegrass and tall fescue need more water. All are good choices for our area. Most nurseries carry a "blend" of grasses which thrive in Modesto's climate.

Hard fescue is an alternative lawn and grows 4-6" tall. It does not need to be mowed but does not tolerate hot summers and may die back. However, hard fescue grows in shade and can be quite drought tolerant.

Did You Know?

Your lawn mower cutting height should be adjusted by season and grass type.

Warm Season - 1"

Cool Season - 2 1/2"

In most cases, mushrooms in the lawn indicate the breakdown of organic material. This process is not harmful to your lawn. Simply rake them out as they appear.

However, a circular pattern of mushrooms may indicate the presence of a fungus called a "fairy ring."

Aerate your soil and water properly to help reduce mushrooms.



Lawn Fertilizing

My Lawn Looks Brown Even Though I Water Deeply

In winter, warm season grasses go dormant. To green up a dormant, brown lawn, over seed it in late fall with an annual ryegrass

In summer, dying patches of lawn may indicate faulty sprinklers or a layer of thatch. Thatch is a buildup of living and dead plant materials blocking water from reaching the soil. If you water for 20 minutes and water does not penetrate the soil, there is most likely a thatch problem.

To reduce thatch, rent dethatch equipment from a nursery or garden center.

Fertilizing Lawn

If your lawn is green and healthy, there is no need to add fertilizer. If you choose to fertilize, the best time is in late fall. Fertilizing during warm temperatures may stress your lawn and/or add to the mowing frequency.



Water... every drop is precious!



Plant Zones

A plant “zone” is an area where plants are grouped together with similar watering requirements. Here are some suggested zones:

ZONE

1

Zone 1 Lawn & Container Plants need water most frequently. Check garden soil and plants in pots with a screwdriver, especially during summer.

ZONE

2

Zone 2 Fruit Trees, Vegetables, Roses and other water-thirsty plants not listed as “water-wise” should be watered deeply. Sprinkler irrigation is often not enough during summer and late fall. These plants do not tolerate dry soil.

ZONE

3

Zone 3 Water-Wise Plants need deep water, but less frequently. Newly established water-wise plants should be treated like a new plant until after their first year. However, pay special attention to new trees, which take longer to establish and often need water during their second year.

Set your watering system to water each zone differently. Experiment with time to see if plants are thriving. Try less water before you add more.

Should I Only Plant California Natives?

Not all California native plants are water-wise, in fact, some California natives need frequent water. The term “California Native” can be misleading. The best choice for Modesto landscapes is a mix of water-wise California native plants and water-wise Mediterranean plants. Look for plants or seeds marked Zone 9 or 10 at your local nursery to make sure they are suitable to our climate.

Did You Know?

During the warm months, 50% of your water bill may be from watering your landscape.

*Changing the **way** you water can help save money.*

More plants die from too much water than from not enough.

*Plants need **air** in the soil as much as they need water.*

Mulch can help conserve water by protecting the soil from drying out.



California Poppy

Common & Botanical Name

Features of Interest

Height Width

Cool Season Annuals - Plant in fall & early winter

California Poppy (C) <i>Escholzia californica</i>	orange, red, yellow, cream colored flowers	8-18" 8-18"
Iceland Poppy <i>Papaver nudicale</i>	white, yellow, pink, purple, red, orange flowers	10"-3' 6-11"
Nasturtium <i>Tropaeolum majus</i>	orange, red, yellow flowers	1-2' 1-2'
Pansy <i>Viola species</i>	white, yellow, orange, purple, blue, bi-colored flowers	6-11" 4-5"
Stock <i>Matthiola incana</i>	pink, white, red, purple flowers	8"-3' 1'
Sweet William <i>Dianthus barbatus</i>	white, pink, purple, bi-colored flowers	1-2' 4-6"

Warm Season Annuals - Plant in spring & summer

Black-Eyed Susan <i>Rudbeckia hirta</i>	yellow, gold, red, bi-colored flowers	10"-3' 11-18"
Coreopsis <i>Coreopsis tinctoria</i>	yellow, brown, red, orange, bi-colored flowers	8"-2' 8"-2 1/2'
Cosmos <i>Cosmos species</i>	pink, white, red, yellow, orange flowers	1-7' 1-2'
Marigold (African) <i>Tagetes erecta</i>	yellow, red, orange flowers	18"-3' 1'
Zinnia <i>Zinnia elegans</i>	white, yellow, blue, pink, orange, pink, purple flowers	1-4' 1-4'

Plants for Modesto

Remarks

Fall annuals generally live from October-May, while spring annuals live from late March until November frost.

Plant in full sun in fall. Seedling plants often available in spring. Flowers early spring then dies back with summer heat. Usually returns the following year.

Plant in full sun. Plant seeds or seedlings in fall. Flowers late fall through spring.

Plant in partial shade. Plant seeds or seedlings in fall or spring. Flowers almost continually when replaced each fall or spring.

Plant in full sun or partial shade. Plant seeds or seedlings in fall. Flowers fall through spring.

Plant in full sun or partial shade. Plant seeds or seedlings in fall. Flowers fall through spring.

Plant in partial shade. Plant seeds or seedlings in fall or spring. Flowers in fall & spring.

Plant in full sun. Plant seeds or seedlings in spring. Flowers in summer. Native to Eastern U.S.

Plant in full sun. Plant from seed in spring or seedlings in spring or summer. Flowers in summer. Reseeds itself each year.

Plant in full sun. Plant from seed in spring or seedling in spring or summer. Flowers summer through frost. Has a tendency to reseed itself.

Plant in full sun. Plant from seed in spring or seedlings in spring or summer. Flowers early summer through frost.

Plant in full sun. Plant from seed in spring or seedling in spring or summer. Flowers summer through fall.



Marigold



Pansy



Zinnia



Cosmos



Wisteria

Common & Botanical Name

Features of Interest

Height Width

Ground Covers - Plant year round

Bearberry (C)

Arctostaphylos uva-ursi

white, bell-shaped flowers

6-8"

8-18"

Mock Strawberry

Duchesnea indica

small yellow flowers, red fruit

3-4"

1'

Santa Barbara Daisy

Erigeron karvinskianus

small white, lavender or pink flowers

10-20"

2-3'

Ornamental Grasses - Plant year round

Deer Grass (C)

Muhlenbergia rigens

yellow, pink or purplish plumes

4'

4'

Pink Muhly Grass

Muhlenbergia capillaris

pink plumes

2-6'

1-5'

Giant Feather Grass

Stipa gigantea

yellow plumes

2-3'

3-4'

Vines - Plant year round

Carolina Jessamine

Gelsemium sempervirens

fragrant yellow flowers

20'

10-15'

Lilac Vine

Hardenbergia violacea

lilac, pink or white pea shaped flowers

9-10'

6-8'

Wisteria

Wisteria sinensis

fragrant white or purple flowers

20-30'

20-30'

Plants for Modesto

Remarks

Groundcovers are great for greening up large areas

Plant in full sun. Flowers late winter to early spring. Evergreen plant grows slowly. Mulch between plants to prevent weeds.

Plant in full sun, partial or full shade. Flowers in spring. Evergreen doesn't tolerate foot traffic. Aggressive if over-watered.

Plant in full sun or partial shade. Cut back perennial plant after flowering for quick re-bloom. Does not tolerate foot traffic. Keep contained or it can be aggressive.

Give all grasses a "haircut" in early spring

Plant in full sun or partial shade. Bright green grass forms clumps that get 2' taller when they "bloom." Goes dormant in winter.

Plant in full sun or partial shade. Dies back in winter.

Plant in full sun. Plumes add an additional 2-3' in height. Semi-evergreen, may go dormant in winter.

Vines need yearly pruning in spring, after March 30th

Plant in full sun or partial shade. Flowers spring through summer. Evergreen. Does not damage houses or fences.

Plant in partial shade. Flowers for just a few weeks during early spring. Evergreen.

Plant in full sun or partial shade. Flowers in spring. Goes dormant in winter. Wisteria grows quickly and should be trained it's first year and carefully pruned every year.



Santa Barbara Daisy



Pink Muhly Grass



Bearberry



Deer Grass



Blue Mist Spirea

Common & Botanical Name

Features of Interest

Height Width

Perennials & Herbs - Plant year round

Blue Mist Spirea Caryopteris x clandestina	blue flowers	2' 2'
Bergenia Bergenia crassifolia	pink flowers	2-3' 1'
California fuchsia(C) Zauschenaria californica	orange to red trumpet-shaped flowers	6"-4' 3-4'
Dusty Miller Senecio cineraria	powdery gray leaves, yellow flowers	2-3' 2-3'
Germander Teucrium chamaedrys	purple or blue flower spikes	6-11" 6-9"
Heuchera Hybrids	colorful flower spikes	1-3' 1-2'
Lamb's Ears Stachys byzantina	soft, silvery green leaves	1-2' 1-3'
Lavender Lavandula species	purple, pink, white flowers	1-2' 1-3'
Marjoram Origanum marjorana	tiny white or pink flowers	1-2' 1-2'
Rosemary Rosmarinus species	blue, purple, pink or white flowers	varies
Salvia Salvia species	red, purple, blue, pink, white flowers	varies
Penstemon Penstemon species	spiky flowers in many colors	2-4' 1-2'
Purple Coneflower Echinacea species	purple or white flowers	2-4' 1-3'

Plants for Modesto

Remarks

Prune after March 30th to avoid early frost damage

Plant in full sun. Flowers late summer through fall. Goes dormant in winter.

Plant in partial shade to full shade. Flowers in winter and spring. Evergreen.

Plant in full sun. Flowers summer through fall. Evergreen.

Plant in full sun. Flowers most of the year. Great border plant, shear back when it gets rangy. Evergreen.

Plant in full sun to partial shade. Flowers mid summer through early fall. Can be sheared into a nice hedge. Evergreen.

Plant in full sun or partial shade. Flowers mid-summer through frost, spikes can be cut off. Divide clumps when plant appears rangy. Evergreen.

Plant in full sun. Flowers in spring. Evergreen.

Plant in full sun. Flowers in spring. Creeps along ground like a ground cover. May go dormant in winter.

Plant in full sun. Flowers in spring. Evergreen. Can be used as a groundcover, small or large shrub.

Plant in partial sun to full shade. Flowers in spring. Great under oak trees. Evergreen.

Plant in full sun. Choose drought tolerant species like *S. apiana*, *S. clevelandii*, *S. officinalis*, *S. nemorosa*, *S. "Bee's Bliss"*. These species are also non-invasive, unlike some *Salvias* which shouldn't be planted near waterways or meadows. Goes dormant in winter.

Plant in full sun to partial shade. Flowers spring through fall. Short-lived (3-4 years). Evergreen.

Plant in full sun. Flowers spring through frost. Divide clumps after 3-4 years.
Native to central and eastern North America.



Dusty Miller

Purple Coneflower

Rosemary

Lamb's Ears

Bergenia 11



Euryops

Common & Botanical Name	Features of Interest	Height Width
<i>Shrubs - Plant year round</i>		
Buckwheat (C) Eriogonum species	pale flowers	5-6' 5-6'
Euryops Euryops pectinatus	bright yellow daisy-like flowers	3-6' 3-6'
Indian Hawthorne Raphiolepis indica	pink flowers, blue berries	4-5' 5-6'
Manzanita (C) Arctostaphylos densiflorus, 'Howard McMinn'	whitish pink bell-shaped flowers	5-6' 6-7'
Nandina foliage Nandina domestica	changes color in fall, red berries	3-6' 3-4'
Olive Olea europaea, 'Little Ollie'	silvery green foliage	4-8' 4-8'
Oregon Grape Mahonia aquifolium	blue-black fruit	5-6' 4-5'
Rockrose Cistus species	white, pink or purple flowers	2-6' 4-8'
Spirea Spirea vanhouttei	numerous tiny white flowers	5-6' 7-8'
Texas Ranger Leucophyllum frutescens	silvery gray foliage, pink or white flowers	5-7' 5-7'
Valley Violet Ceanothus maritimus	purple flowers	varies

Plants for Modesto

Remarks

Shrubs help define a landscape

Plant in full sun. Flowers in summer. Prune to retain shape. Attractive to bees and butterflies. Evergreen.

Plant in full sun. Flowers year-round. Remove dead flowers for longer bloom.
Prune for shape in early spring. Evergreen

Plant in full sun or partial shade. Flowers in fall and spring followed by berries. Evergreen.

Plant in full sun or partial shade. Flowers in spring. Prune for size and shape in early spring. Evergreen.

Plant in full sun or partial shade. Prune for size and shape in early spring. Semi-evergreen.

Plant in full sun. Has tiny flowers and should not bear much fruit. Evergreen.

Plant in partial shade. Flowers in spring followed by berries. In fall, foliage turns color. Evergreen.

Plant in full sun Flowers spring through summer. Evergreen.

Plant in full sun or partial shade. Flowers mid to late spring. Loses leaves in fall. Prune after March 30th.

Plant in full sun. Flowers in spring and summer. Prune straggly plants for shape. Prune after March 30th.
Loses leaves in fall.

Plant in full sun or partial shade. Blooms in spring. Evergreen.

Lightly prune evergreen varieties in late spring and summer.



Texas Ranger



Spirea



Indian Hawthorne



Nandina



Rockrose



Crape Myrtle

Common & Botanical Name

Features of Interest

Height Width

Trees - Plant year round

Australian Tea Tree Leptospermum laevigatum	white, pink or red flowers	10-30' 10-30'
Australian Willow Gejera parviflora	willowy foliage, inconspicuous flowers	25-30' 15-20'
California Fan Palm (C) Washingtonia filifera	tall tree with attractive leaves	50-60' 15-20'
Chinese Pistache Pistacia chinensis	female trees have red berries that turn black	30-50' 30-50'
Crape Myrtle Lagerstroemia indica	pink, purple or white flowers	20-25' 20-25'
Desert Willow (C) Chilopsis linearis	pink, purple, rose, or white flowers	15-30' 10-20'
Holly Oak Quercus ilex	oval, 1 1/2" brownish gray acorns	30-60' 30-60'
Olive Tree Olea europaea	fruitless varieties best	25-30' 25-30'
Silver Dollar Eucalyptus Eucalyptus cinerea	interesting seed capsules	20-50' 20-40'
Strawberry Tree Arbutus unedo	attractive red fruit, dark brown bark 10-30'	10-30'
Sweet Bay Laurus nobilis	small yellow flower clusters, purple fruit	15-40' 15-40'
Western Redbud (C) Cercis occidentalis	sweet pea-like purple flowers	10-18' 10-18'

Plants for Modesto

Remarks

Plant trees in full sun. Prune to keep at desired height

Evergreen tree needs minimal pruning. Spring blooming flowers are “show-stopping.”

Evergreen tree grows slowly. Resembles weeping willow but has non-invasive roots.

Evergreen palm best used on large property. Trunk can reach up to 2' in diameter.

Leaves turn color before dropping in fall. Slow to moderate grower. Has well-behaved roots.

Colorful blooms in spring and summer. Leaves turn color before dropping in fall.
Choose varieties resistant to powdery mildew.

Flowers in spring. Willow-like in appearance. Grows quickly when young. Loses leaves in fall.

Evergreen tree has moderate growth rate. Makes an excellent lawn or street tree. Well-behaved roots.

Evergreen tree is drought tolerant. ‘Majestic Beauty’ bears almost no fruit. ‘Bonita’ does bear tiny fruit.

Evergreen tree grows quickly. Young foliage has round leaves, mature foliage is slender.

Evergreen tree has slow to moderate growth rate. Makes an excellent lawn tree.

Evergreen tree can be planted in partial shade or full sun. ‘Saratoga’ is an excellent cultivar.

Flowers in spring. Heart-shaped leaves are bluish-green. Usually grown as a multi-trunk tree.
Loses leaves in fall.



Western Redbud



CA Fan Palm



Chinese Pistache



Desert Willow



Holly Oak



For more information on water-wise plants,
contact the City of Modesto
Water Conservation Program at: (209) 342-2246
or visit us online at:
www.modestogov.com/savewater



APPENDIX D

2015 AWWA Water Audit

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AWWA Free Water Audit Software v5.0

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This spreadsheet-based water audit tool is designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. It provides a "top-down" summary water audit format, and is not meant to take the place of a full-scale, comprehensive water audit format.

Auditors are strongly encouraged to refer to the most current edition of AWWA M36 Manual for Water Audits for detailed guidance on the water auditing process and targetting loss reduction levels

The spreadsheet contains several separate worksheets. Sheets can be accessed using the tabs towards the bottom of the screen, or by clicking the buttons below.

Please begin by providing the following information

Name of Contact Person:

Email Address:

Telephone (incl Ext.):

Name of City / Utility:

City/Town/Municipality:

State / Province:

Country:

Year:

Start Date: Enter MM/YYYY numeric format

End Date: Enter MM/YYYY numeric format

Audit Preparation Date:

Volume Reporting Units:

PWSID / Other ID:

The following guidance will help you complete the Audit

All audit data are entered on the [Reporting Worksheet](#)

- Value can be entered by user
- Value calculated based on input data
- These cells contain recommended default values

Use of Option (Radio) Buttons: Pcnt: Value:

Select the default percentage by choosing the option button on the left

To enter a value, choose this button and enter a value in the cell to the right

The following worksheets are available by clicking the buttons below or selecting the tabs along the bottom of the page

<p><u>Instructions</u></p> <p>The current sheet. Enter contact information and basic audit details (year, units etc)</p>	<p><u>Reporting Worksheet</u></p> <p>Enter the required data on this worksheet to calculate the water balance and data grading</p>	<p><u>Comments</u></p> <p>Enter comments to explain how values were calculated or to document data sources</p>	<p><u>Performance Indicators</u></p> <p>Review the performance indicators to evaluate the results of the audit</p>	<p><u>Water Balance</u></p> <p>The values entered in the Reporting Worksheet are used to populate the Water Balance</p>	<p><u>Dashboard</u></p> <p>A graphical summary of the water balance and Non-Revenue Water components</p>
<p><u>Grading Matrix</u></p> <p>Presents the possible grading options for each input component of the audit</p>	<p><u>Service Connection Diagram</u></p> <p>Diagrams depicting possible customer service connection line configurations</p>	<p><u>Definitions</u></p> <p>Use this sheet to understand the terms used in the audit process</p>	<p><u>Loss Control Planning</u></p> <p>Use this sheet to interpret the results of the audit validity score and performance indicators</p>	<p><u>Example Audits</u></p> <p>Reporting Worksheet and Performance Indicators examples are shown for two validated audits</p>	<p><u>Acknowledgements</u></p> <p>Acknowledgements for the AWWA Free Water Audit Software v5.0</p>

If you have questions or comments regarding the software please contact us via email at: wlc@awwa.org



AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0
American Water Works Association.
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? Click to access definition
+ Click to add a comment

Water Audit Report for: City of Modesto (CA 5010010)
Reporting Year: 2015 1/2015 - 12/2015

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 (n/a or 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

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

Master Meter and Supply Error Adjustments

WATER SUPPLIED

<----- Enter grading in column 'E' and 'J' ----->

Volume from own sources:	+ ? 8	32,058.000	acre-ft/yr
Water imported:	+ ? 8	15,401.000	acre-ft/yr
Water exported:	+ ? 10	0.000	acre-ft/yr

Pcnt:	+ ?	Value:		acre-ft/yr
	+ ?	Value:		acre-ft/yr
	+ ?	Value:		acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 47,459.000 acre-ft/yr

AUTHORIZED CONSUMPTION

Billed metered:	+ ? 8	38,408.000	acre-ft/yr
Billed unmetered:	+ ? 5	3,712.000	acre-ft/yr
Unbilled metered:	+ ? 10	0.000	acre-ft/yr
Unbilled unmetered:	+ ? 5	593.238	acre-ft/yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: 42,713.238 acre-ft/yr

Click here: ?
for help using option
buttons below

Pcnt:	1.25%	Value:		acre-ft/yr
-------	-------	--------	--	------------

Use buttons to select
percentage of water
supplied
OR
value

Pcnt:	0.25%	Value:		acre-ft/yr
-------	-------	--------	--	------------

Pcnt:	2.50%	Value:		acre-ft/yr
Pcnt:	0.25%	Value:		acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) 4,745.763 acre-ft/yr

Apparent Losses

Unauthorized consumption: + ? 118.648 acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	+ ? 5	984.821	acre-ft/yr
Systematic data handling errors:	+ ? 5	96.020	acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 1,199.488 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 3,546.274 acre-ft/yr

WATER LOSSES: 4,745.763 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 5,339.000 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+ ? 7	900.0	miles
Number of <u>active AND inactive</u> service connections:	+ ? 8	74,686	
Service connection density:	?	83	conn./mile main

Are customer meters typically located at the curbside or property line? Yes

(length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: + ?

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: + ? 7 60.0 psi

COST DATA

Total annual cost of operating water system:	+ ? 7		\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ? 7		
Variable production cost (applied to Real Losses):	+ ? 7		\$/acre-ft <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

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: Billed unmetered
- 3: Customer metering inaccuracies

APPENDIX E

Executive Order B-37-16

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Executive Department

State of California

EXECUTIVE ORDER B-37-16 MAKING WATER CONSERVATION A CALIFORNIA WAY OF LIFE

WHEREAS California has suffered through a severe multi-year drought that has threatened the water supplies of communities and residents, devastated agricultural production in many areas, and harmed fish, animals and their environmental habitats; and

WHEREAS Californians responded to the drought by conserving water at unprecedented levels, reducing water use in communities by 23.9% between June 2015 and March 2016 and saving enough water during this period to provide 6.5 million Californians with water for one year; and

WHEREAS severe drought conditions persist in many areas of the state despite recent winter precipitation, with limited drinking water supplies in some communities, diminished water for agricultural production and environmental habitat, and severely-depleted groundwater basins; and

WHEREAS drought conditions may persist in some parts of the state into 2017 and beyond, as warmer winter temperatures driven by climate change reduce water supply held in mountain snowpack and result in drier soil conditions; and

WHEREAS these ongoing drought conditions and our changing climate require California to move beyond temporary emergency drought measures and adopt permanent changes to use water more wisely and to prepare for more frequent and persistent periods of limited water supply; and

WHEREAS increasing long-term water conservation among Californians, improving water use efficiency within the state's communities and agricultural production, and strengthening local and regional drought planning are critical to California's resilience to drought and climate change; and

WHEREAS these activities are prioritized in the California Water Action Plan, which calls for concrete, measurable actions that "Make Conservation a California Way of Life" and "Manage and Prepare for Dry Periods" in order to improve use of water in our state.

NOW, THEREFORE, I, EDMUND G. BROWN JR., Governor of the State of California, in accordance with the authority vested in me by the Constitution and statutes of the State of California, in particular California Government Code sections 8567 and 8571, do hereby issue this Executive Order, effective immediately.

IT IS HEREBY ORDERED THAT:

The orders and provisions contained in my January 17, 2014 Emergency Proclamation, my April 25, 2014 Emergency Proclamation, Executive Orders B-26-14, B-28-14, B-29-15, and B-36-15 remain in full force and in effect except as modified herein.

State agencies shall update temporary emergency water restrictions and transition to permanent, long-term improvements in water use by taking the following actions.

USE WATER MORE WISELY

1. The State Water Resources Control Board (Water Board) shall, as soon as practicable, adjust emergency water conservation regulations through the end of January 2017 in recognition of the differing water supply conditions across the state. To prepare for the possibility of another dry winter, the Water Board shall also develop, by January 2017, a proposal to achieve a mandatory reduction in potable urban water usage that builds off of the mandatory 25% reduction called for in Executive Order B-29-15 and lessons learned through 2016.
2. The Department of Water Resources (Department) shall work with the Water Board to develop new water use targets as part of a permanent framework for urban water agencies. These new water use targets shall build upon the existing state law requirements that the state achieve a 20% reduction in urban water usage by 2020. (Senate Bill No. 7 (7th Extraordinary Session, 2009-2010).) These water use targets shall be customized to the unique conditions of each water agency, shall generate more statewide water conservation than existing requirements, and shall be based on strengthened standards for:
 - a. Indoor residential per capita water use;
 - b. Outdoor irrigation, in a manner that incorporates landscape area, local climate, and new satellite imagery data;
 - c. Commercial, industrial, and institutional water use; and
 - d. Water lost through leaks.

The Department and Water Board shall consult with urban water suppliers, local governments, environmental groups, and other partners to develop these water use targets and shall publicly issue a proposed draft framework by January 10, 2017.

3. The Department and the Water Board shall permanently require urban water suppliers to issue a monthly report on their water usage, amount of conservation achieved, and any enforcement efforts.

ELIMINATE WATER WASTE

4. The Water Board shall permanently prohibit practices that waste potable water, such as:
 - Hosing off sidewalks, driveways and other hardscapes;
 - Washing automobiles with hoses not equipped with a shut-off nozzle;
 - Using non-recirculated water in a fountain or other decorative water feature;
 - Watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and
 - Irrigating ornamental turf on public street medians.
5. The Water Board and the Department shall direct actions to minimize water system leaks that waste large amounts of water. The Water Board, after funding projects to address health and safety, shall use loans from the Drinking Water State Revolving Fund to prioritize local projects that reduce leaks and other water system losses.
6. The Water Board and the Department shall direct urban and agricultural water suppliers to accelerate their data collection, improve water system management, and prioritize capital projects to reduce water waste. The California Public Utilities Commission shall order investor-owned water utilities to accelerate work to minimize leaks.
7. The California Energy Commission shall certify innovative water conservation and water loss detection and control technologies that also increase energy efficiency.

STRENGTHEN LOCAL DROUGHT RESILIENCE

8. The Department shall strengthen requirements for urban Water Shortage Contingency Plans, which urban water agencies are required to maintain. These updated requirements shall include adequate actions to respond to droughts lasting at least five years, as well as more frequent and severe periods of drought. While remaining customized according to local conditions, the updated requirements shall also create common statewide standards so that these plans can be quickly utilized during this and any future droughts.
9. The Department shall consult with urban water suppliers, local governments, environmental groups, and other partners to update requirements for Water Shortage Contingency Plans. The updated draft requirements shall be publicly released by January 10, 2017.

10. For areas not covered by a Water Shortage Contingency Plan, the Department shall work with counties to facilitate improved drought planning for small water suppliers and rural communities.

IMPROVE AGRICULTURAL WATER USE EFFICIENCY AND DROUGHT PLANNING

11. The Department shall work with the California Department of Food and Agriculture to update existing requirements for Agricultural Water Management Plans to ensure that these plans identify and quantify measures to increase water efficiency in their service area and to adequately plan for periods of limited water supply.

12. The Department shall permanently require the completion of Agricultural Water Management Plans by water suppliers with over 10,000 irrigated acres of land.

13. The Department, together with the California Department of Food and Agriculture, shall consult with agricultural water suppliers, local governments, agricultural producers, environmental groups, and other partners to update requirements for Agricultural Water Management Plans. The updated draft requirements shall be publicly released by January 10, 2017.

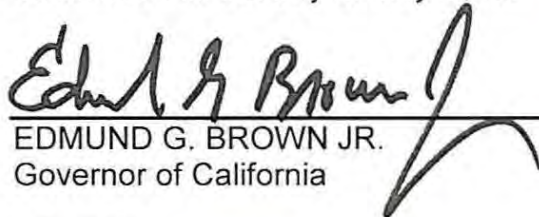
The Department, Water Board and California Public Utilities Commission shall develop methods to ensure compliance with the provisions of this Executive Order, including technical and financial assistance, agency oversight, and, if necessary, enforcement action by the Water Board to address non-compliant water suppliers.

This Executive Order is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its agencies, departments, entities, officers, employees, or any other person.


I FURTHER DIRECT that as soon as hereafter possible, this order be filed in the Office of the Secretary of State and that widespread publicity and notice be given of this order.



IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 9th day of May 2016.


EDMUND G. BROWN JR.
Governor of California

ATTEST:


ALEX PADILLA
Secretary of State

WEST YOST



ASSOCIATES

Consulting Engineers

www.westyost.com

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CITY OF MODESTO – DROUGHT CONTINGENCY PLAN (Revised April 1, 2017)

(Applies to all COM water users including residential, commercial, industrial, institutional, and private wells)

Stage 1 – Minor Shortage Potential	Stage 2 – Moderate Shortage Potential	Stage 3 – Medium Storage Potential	Stage 4 – Critical Shortage Potential
Consumer Water Use Restrictions			
<p>* Outdoor water use prohibited daily from noon - 7 p.m.*</p> <p>Odd-numbered addresses water W, F, Su</p> <p>Even-numbered addresses water, T, Th, Sa</p> <p>No outdoor water use on Mondays.</p> <p>* Car washing is permitted with use of a positive shutoff nozzle and is allowed all hours of the approved watering days cited above.</p> <p>* Hosing concrete areas, building exteriors, etc., is prohibited except for health/safety concerns and only with use of a positive shutoff nozzle.</p> <p>* Water leaks, once identified by home owner, must be repaired within 24 hours.</p> <p>* Restaurants encouraged serving water only on request.</p> <p>* New landscaping to comply with existing & future landscape ordinances.</p> <p>* Water meter installation on all new single-family homes.</p>	<p>* Outdoor water use prohibited daily from noon - 7 p.m.*</p> <p>Odd-numbered addresses water W, Su</p> <p>Even-numbered addresses water, T, Sa</p> <p>No outdoor water use on Mondays, Thursdays, & Fridays.</p> <p>* Car washing is permitted with use of a positive shutoff nozzle and is allowed all hours of the approved watering days cited above.</p> <p>* Hosing concrete areas, building exteriors, etc... is prohibited except for health/safety concerns and only with use of a positive shutoff nozzle.</p> <p>* Water leaks, once identified by home owner, must be repaired within 24 hours.</p> <p>* Restaurants and food service establishments prohibited from serving water except upon request.</p> <p>* New landscaping to comply with existing & future landscape ordinances.</p> <p>* Mandatory retrofit of low flow showerheads in homes when building remodeling occurs.</p>	<p>Odd-numbered addresses water Sunday</p> <p>Even-numbered addresses water Saturday</p> <p>* Outdoor water use prohibited Saturday and Sunday from 9 a.m. - 7 p.m.*</p> <p><u>No outdoor water use on Mondays, Tuesdays, Wednesdays, Thursdays, & Fridays.</u></p> <p>* Car washing subject to above-cited limitations with use of a positive shutoff nozzle</p> <p>* Hosing concrete areas, building exteriors, etc..., is prohibited except for health/safety concerns and only with use of a positive shutoff nozzle.</p> <p>* Water leaks, once identified by home owner, must be repaired within 24 hours.</p> <p>* Restaurants and food service establishments prohibited from serving water except upon request.</p> <p>* New landscaping to comply with existing & future landscape ordinances.</p>	<p>* No outdoor water use except for trees shrubs by hand, and vegetation maintained through drip irrigation.</p> <p>* Car washing permitted at car wash facilities only.</p> <p>* Hosing concrete areas, building exteriors, etc..., is prohibited except for health/safety concerns and only with use of a positive shutoff nozzle.</p> <p>* Water leaks, once identified by home owner, must be repaired within 24 hours.</p> <p>* Restaurants prohibited from serving water except upon request.</p> <p>* Mandatory retrofit of low flow showerheads and toilets in homes when Remodeling occurs.</p> <p>* No use of outdoor fountains except for maintenance purposes.</p> <p>* Moratorium on all new landscaping.</p> <p>* Building moratorium on all new connections, including new swimming pools.</p>

<p>* Hours of restricted outdoor use may be extended to 9 a.m. – 7 p.m. at Council discretion.</p>	<p>* No use of outdoor fountains except for maintenance purposes. *Water meter installation on all new single-family homes. *No irrigating turf or ornamental landscapes during and 48 hours following measurable rain. * Operators of hotels and motels must provide guests with the option of choosing not to have towels and linens laundered daily and prominently display notice of this option.</p>	<p>* Mandatory retrofit of low flow showerheads in homes when building remodeling occurs. * No use of outdoor fountains except for maintenance purposes. *Water meter installation on all new single-family homes.</p>	
<p>Penalties for Violations of Water Usage Restrictions</p>			
<p>\$150 Administrative Fee assessed upon 2nd violation. \$250 Admin. Fee assessed upon 3rd violation (includes meter installation.) \$500 Administrative fee assessed for each subsequent violation.</p>	<p>\$150 Administrative Fee assessed upon 2nd violation. \$250 Admin. Fee assessed upon 3rd violation (includes meter installation.) \$500 Administrative fee assessed for each subsequent violation.</p>	<p>\$150 Administrative Fee assessed upon 2nd violation. \$250 Admin. Fee assessed upon 3rd violation (includes meter installation.) \$500 Administrative fee assessed for each subsequent violation.</p>	<p>\$200 Administrative Fee assessed upon 2nd violation. \$300 Admin. Fee assessed upon 3rd violation (includes meter installation.) \$500 Administrative fee assessed for each subsequent violation.</p>
<p>* Applies to residents inside the City limits or with a City of Modesto water service agreement. * Penalties assessed for violations occurring within 12 months of first violation.</p>			

11-1.14 - Rules and Regulations.

In addition to all other provisions and requirements of this chapter, the Council may, from time to time by resolution, establish additional rules and regulations concerning the operation of the municipal water system, the use of water, and water conservation. These provisions shall apply to all property owners, customers and water users regardless of whether the property owner, customer, or water user shall have a contract for water service with the City or not. Failure to comply with any provision, requirement, rule, or regulation under this chapter shall be unlawful and may be punishable as an infraction.

- (a) Should the Director of Utilities, or his/her designee, determine that any water user has committed acts which violate the regulations of the drought contingency plan, as provided by resolution, the water user and property owner shall be notified in the following manner:
 - (1) Shall be served with a notice of violation either personally, by mail, or by posting such notice at the water user's, customer's or property owner's business or place of residence. Such notice shall:
 - (i) Identify the date, time, and circumstances of violation.
 - (ii) Notify that further violations may result in penalty fees being assessed.
 - (2) Should a water user violate the regulations of the drought contingency plan after being served with a notice of violation, that water user and property owner shall be served with a notice of intention to impose a penalty. Said notice shall:
 - (i) Identify the date, time, and circumstances of violation;
 - (ii) State the amount of penalty to be imposed;
 - (iii) Advise the water user, customer or property owner of his/her appeal rights as provided herein.

The notice of intention to impose a penalty shall be served in the same manner as the notice of violation.

- (3) After a notice of intention to impose a penalty is served, a penalty shall be assessed to the utility account of the water user in an amount as set by Council resolution from time to time. Penalties will be assessed for violations occurring within a one (1) year time period and will be progressive in nature. The penalty may be collected in the same manner as any unpaid water service charges.
- (4) A water user, customer, or property owner shall have the right to appeal either the notice of violation or the imposition of the penalty assessed to his/her utility account. The water user or property owner must request an appeal hearing in writing within fifteen (15) days from the date of service of the notice of violation; or within fifteen (15) days of the service of the notice of intention to impose a penalty. The request for hearing shall be addressed to the Director of Utilities and shall be deemed served only when received by the City. Failure to properly serve the request for hearing within the fifteen (15) day period shall be deemed a waiver of the right to appeal the matter, and the penalty will be assessed against the property owner's, customer's or water user's account.
- (5) The appeal hearing shall be held before the Director of Utilities, or his/her designee, who shall make a factual finding on the existence of a violation in this matter. The water user, customer, or property owner shall be allowed to present such witnesses and evidence as he/she may desire and may be represented by an attorney or other representative of his/her choosing. The hearing officer shall give written notice by mail to the property owner, customer or water user of the date and time of the appeal hearing. Said hearing shall not be held sooner than ten (10) days from receipt of the request for hearing and not longer than thirty (30) days. The decision of the hearing officer shall be final. If a violation is found the penalty shall be assessed to the property owner's, customer's or water user's account.

- (6) The City Council hereby designates the Water Division personnel as the persons authorized to investigate and serve any notices required by the provisions of this subsection.
- (b) All water services installed shall have a wheel valve where the service pipe enters the house and/or structure.
 - (c) No person shall supply water in any way for use outside of the premises to which the service is assigned or appurtenant except by permission from the Director of Utilities.
 - (d) Access to service connections and water meters must be provided at all times.
 - (e) All water users, customers and property owners must keep the service pipes in good order at their own expense and may be held liable for damages which may result from their failure to do so. When leaky faucets or fixtures are discovered and not immediately repaired, the water service may be disconnected. Authorized employees of the City of Modesto shall be admitted at all reasonable hours to all parts of any premises supplied with water, except the interior of dwellings, but including the meter box, to see that the regulations contained in this chapter are observed and complied with.
 - (f) It shall be unlawful for any person to interfere with the City service lines, valves or meters or to construct a bypass around a meter or service.
 - (g) In making plumbing connections, the water user, customer and property owner shall comply with the regulations of the State and County Department of Public Health and the State Water Resources Control Board. Such regulations prohibit (1) unprotected cross-connections between a public supply and any unapproved source of water and (2) water service to premises where there is a possibility of contaminated water backflowing into the public water system. In addition, approved backflow assemblies shall be installed on water services when (1) another source of water, whether cross-connected or not, is in use or is available for use; or (2) contaminating liquid substances of any kind are used, produced or processed. The City's Cross Connection Specialist or designee shall determine the type, design and layout of backflow prevention assemblies required at each premises; and the assemblies shall be installed at the expense of the water user, customer and property owner. The control assemblies shall be inspected, tested and approved by the City's Cross Connection Specialist or designee as a condition of service to the premises.
 - (h) Regulations of the State Water Resources Control Board require the water user and property owner at premises on or for which backflow prevention assemblies are installed to inspect these assemblies for water tightness and tested for reliability at least once per year or more often depending on conditions and to take corrective actions as required to maintain the integrity of the domestic water system.
 - (1) As a condition of connection to the municipal water system, the City reserves the right at all time to inspect and test all backflow prevention assemblies maintained by water users and property owners and to undertake corrective actions up to and including termination of water service to a non-compliant water user and/or property owner until the corrective action is taken. All costs incurred by the City performing such tests and taking such corrective action shall be a cost of the water user and property owner as set forth below. If a City inspection cannot be made without undue difficulty because of an obstruction or other interference, the property owner and/or water user will be notified and requested either to correct the condition or have the inspection made at his/her own expense and witnessed by the City.
 - (2) Annually, the City will provide customers or property owners of any premises on or for which backflow prevention assemblies are installed with a "Notification of Annual Compliance Testing" which shall require that the backflow assembly be tested within thirty (30) days of the notice. Inspections and testing shall be done by persons certified with the State of California as a Backflow Prevention Assembly Tester and on the City's certified testers list. City will be notified of the results of the test and any corrective action taken by the Tester.

- (3) If testing indicates that the assembly(s) fail, the City shall notify the property owner, customer or water user inspection findings, listing the corrective actions to be taken. Within thirty (30) days of this inspection finding property owner, customer or water user must complete all corrective actions including the installation of ba assemblies and provide notice to the City of such corrective action taken.
- (4) If no inspection or testing is arranged to be performed by the property owner and/or water user within thirty (30) days of Notification of Annual Compliance Testing, the City will arrange testing, necessary repairs and if necessary order that the property owner, customer or water user replace a failed backflow assembly(s) with all costs and fees incurred to be charged as provided in subsection (6).
- (5) Whenever after providing the notices set forth above, the City is required to undertake inspection, testing or corrective action of a backflow prevention assembly due to the failure of the property owner, customer or water user to arrange to have such inspection, testing and or corrective action taken, the property owner, customer or water user shall incur a processing fee charge and shall be required to reimburse all costs incurred by the City.
- (6) All processing fees, any other fees and all costs incurred by the City for the corrective actions required to be made in order to be in compliance and costs incurred by the City enforcing and/or implementing the provisions of this subsection (h) shall be invoiced to the property owner, customer or water user separate from the water user's utility billing account and shall become a civil debt of the owner and water user to the City. After invoice, any amount unpaid shall be collected pursuant to the provisions of Chapter 6 of Title 11 of the Municipal Code.
- (i) When the City finds water uses that represent a clear and immediate hazard to the potable water supply that cannot be immediately abated, the City shall institute the procedure for discontinuing water service. Conditions or water uses that create a basis for water service termination shall include, but are not limited to, the following items:
 - (1) Property owner, customer or water user refusal to install a required backflow assembly device,
 - (2) Property owner, customer or water user refusal to test a backflow assembly device,
 - (3) Property owner, customer or water user refusal to repair a faulty backflow assembly device,
 - (4) Property owner, customer or water user refusal to replace a faulty backflow assembly device,
 - (5) Direct or indirect connection between the public water system and a sewer line,
 - (6) Unprotected direct or indirect connection between the public water system and a system or equipment containing contaminants,
 - (7) Unprotected direct or indirect connection between the public water system and an auxiliary water system,
 - (8) A situation which presents an immediate health hazard to the public water system.

For conditions 1-4, The City will take corrective actions at the customer, water user or property owner's expense including applicable fees. The City shall reserve the right to terminate water services to the affected property owner, customer or water user until the corrective action is taken.

For conditions 5-8, the City will take the following steps: (1) make reasonable effort to advise property owner, customer or water user of intent to terminate water service; and (2) terminate water supply and lock service valve. The water service will remain inactive until correction of violations has been approved by the City's Cross Connection Specialist or designee.

- (j) Independent fire sprinkler systems and private fire hydrant systems shall have a "double-check detector backflow assembly" installed in the service. If the City's Cross Connection Specialist or designee determines

that an independent fire sprinkler system or private fire hydrant system is being used for other than fire prevention and suppression purposes, he/she may install an appropriate backflow assembly. The cost of such installation shall be paid by the property owner, customer or water user.

- (k) When a water connection fee is paid for a particular parcel, it shall be credited to subsequent owners of that parcel. Refunds shall be made for duplicate payments. Additional fees will be required where there are zoning, use or density changes that will increase the fees.
- (l) If a property owner, customer or water user refuses or fails to eliminate a cross-connection and disconnecting water service would cause significant disruption to building occupants and/or emergency response agencies, the Director of Utilities may test, repair and/or replace a Backflow Prevention Assembly, or take other required action to eliminate the cross-connection. The property owner, customer or water user shall be required to pay for all costs of such action.
- (m) Whenever the Director of Utilities determines that an existing or potential unprotected cross-connection poses an imminent risk of hazard to the Public Water System and requires immediate abatement, the Director of Utilities may immediately shut off water service to the property at the meter until the cross-connection has been eliminated and necessary payments have been made for turn-on services as specified under regulations adopted by the Director of Utilities.

(Ord. 1069-N.S., amended by Ord. 430-C.S., Ord. 850-C.S., Ord. 1050-C.S., Ord. 1443-C.S., Ord. 1619-C.S., Ord. 1620-C.S., Ord. 1971-C.S., § 1, Ord. 2088-C.S., § 1, Ord. 2440-C.S., § 1, Ord. 2607-C.S., § 1, Ord. 2656-C.S., § 1, Ord. 2704-C.S., § 1, Ord. 2711-C.S., § 1, Ord. 2725-C.S., § 1, Ord. 2734-C.S., § 1, Ord. 2763-C.S., § 1, Ord. 2877-C.S., § 1, Ord. 3133-C.S., § 1, Ord. 3280-C.S., § 1, and Ord. 3368-C.S., § 1, effective 12-9-04; Ord. 3678-C.S., § 1, effective 10-26-17)

**MODESTO CITY COUNCIL
RESOLUTION NO. 2017-406**

RESOLUTION APPROVING TWO DAYS A WEEK OUTDOOR WATER USE FOR CITY OF MODESTO CONTIGUOUS WATER CUSTOMERS (SERVED BY SURFACE AND GROUNDWATER) FROM NOVEMBER 1, 2017 THROUGH MARCH 31, 2018 AND THREE DAYS A WEEK WATERING SCHEDULE APRIL 1, 2018 THROUGH OCTOBER 31, 2018 AND CONTINUING THESE SCHEDULES YEAR-ROUND; AND APPROVING TWO DAYS A WEEK OUTDOOR WATER USE FOR ALL CUSTOMERS SERVED BY GOUNDWATER (DEL RIO, GRAYSON, TURLOCK AND CERES - WALNUT MANOR), EFFECTIVE NOVEMBER 1, 2017, AND CONTINUING THIS SCHEDULE YEAR-ROUND, AND AUTHORIZING THE INTERIM CITY MANAGER, OR HIS DESIGNEE, TO EXECUTE THE NECESSARY DOCUMENTS RELATED TO THE IMPLEMENTATION OF OUTDOOR WATER USE

WHEREAS, on May 23, 2017, Council, by Resolution No. 2017-206, approved Outdoor Water Use Regulations for June through October 2017 for water customers served by the Modesto sub-basin groundwater supply or surface water which implemented a three days a week watering schedule, and

WHEREAS, by executive order B-40-17 on April 7 1017, Governor Brown declared an end to California's drought, and

WHEREAS, the City is now receiving the full allotment of surface water from the Modesto Regional Water Treatment Plant, and

WHEREAS, staff will continue to monitor groundwater levels, especially in the outlying water systems, precipitation and snow pack levels to determine if further restrictions become necessary to meet State conservation goals and water supply requirements, and

WHEREAS, staff is recommending a two days a week outdoor water use for City contiguous water customers (served by surface water and groundwater), from November 1, 2017 through March 31, 2018, and

WHEREAS, since the City's outlying water service areas are served with only groundwater, staff is recommending two days a week outdoor watering year-round for customers in those areas, and

WHEREAS, staff is also recommending return to three days a week watering schedule April 1, 2018 through October 31, 2018 for contiguous water customers and continuing these schedules year-round, and

WHEREAS, staff estimates the two-day watering schedule will keep usage at the current rate and therefore keep revenues consistent with the winter months when customers typically use less water, and

WHEREAS, this item was considered by the Finance Committee at the September 25, 2017 meeting and Committee recommended forwarding to full Council for approval.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Modesto that it hereby approves two days a week outdoor water usage for City of Modesto contiguous water customers (served by surface and groundwater) from November 1, 2017 through March 31, 2018 and three days a week watering schedule April 1, 2018 through October 31, 2018 and continuing these schedules year-round; and approving two days a week outdoor water use for customers served by groundwater (Del Rio, Grayson, Turlock and Ceres - Walnut Manor), effective November 1, 2017, and continuing this schedule year-round.

BE IT FURTHER RESOLVED that the Interim City Manager, or his designee, is hereby authorized to execute the necessary documents related to the implementation of outdoor water use.

The foregoing resolution was introduced at a regular meeting of the Council of the City of Modesto held on the 10th day of October, 2017, by Councilmember Kenoyer, who moved its adoption, which motion being duly seconded by Councilmember Ah You, was upon roll call carried and the resolution adopted by the following vote:

AYES: Councilmembers: Ah You, Grewal, Kenoyer, Madrigal, Ridenour, Zoslocki, Mayor Brandvold

NOES: Councilmembers: None

ABSENT: Councilmembers: None

ATTEST: 
STEPHANIE LOPEZ, City Clerk

(SEAL)

APPROVED AS TO FORM:

By: 
ADAM U. LINDGREN, City Attorney

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UWMP and WSCP Adoption Resolutions

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RESOLUTION 2021-30
ADOPTING MODESTO IRRIGATION DISTRICT AND CITY OF MODESTO
JOINT 2020 URBAN WATER MANAGEMENT PLAN COMPLETED IN ACCORDANCE
WITH THE URBAN WATER MANAGEMENT PLANNING ACT (CHAPTER 1, PART 2.6, DIVISION 6
OF THE WATER CODE) INCLUDING AMENDMENTS BY THE WATER CONSERVATION ACT
OF 2009 (SBX7-7) AND WATER CONSERVATION LEGISLATION OF 2018 (SB 606 AND AB 1668) AND
DIRECTING STAFF TO MAKE ANY NECESSARY CHANGES PRIOR TO SUBMISSION TO DWR

WHEREAS, Modesto Irrigation District has been actively involved in urban water management planning efforts since Modesto Irrigation District and the City of Modesto began planning for the Modesto Regional Water Treatment Plant in the late 1980's; and

WHEREAS, Modesto Irrigation District's first Urban Water Management Plan was prepared in voluntary compliance with provisions of California Assembly Bill 3616 in 2000; and

WHEREAS, the City of Modesto and Modesto Irrigation District have previously submitted Joint Urban Water Management Plan's in 2005 and 2010; and

WHEREAS, Legislation passed in 2009, commonly referred to as SBx7-7, made the once voluntary program mandatory; and

WHEREAS, the City of Modesto and Modesto Irrigation District entered into a cost share agreement for the preparation of the 2020 Joint Urban Water Management Plan for a total cost of \$119,400, of which MID agreed to pay \$39,171 to cover its portion of the UWMP; and

WHEREAS, Modesto Irrigation District has prepared this 2020 Joint Urban Water Management Plan jointly with the City of Modesto as a coordinated Plan to ensure the availability and reliability of the City's water supplies through the year 2035; and

WHEREAS, Modesto Irrigation District and the City of Modesto held a Public Hearing to obtain public input on June 8, 2021; and

WHEREAS, the 2020 Joint Urban Water Management Plan is just a plan and local control and flexibility is retained by the MID Board and Modesto City Council; and

WHEREAS, Modesto Irrigation District released the draft 2020 Urban Water Management Plan for a 14 day public review period on May 25, 2021 and subsequently held a public hearing on June 8, 2021 to hear and consider comments from the public on the draft 2020 Joint Urban Water Management Plan.

BE IT RESOLVED, That the Board of Directors of the Modesto Irrigation District does hereby adopt the Modesto Irrigation District and City of Modesto Joint 2020 Urban Water Management Plan completed in accordance with the Urban Water Management Planning Act (Chapter 1, Part 2.6, Division 6 of the Water Code) including amendments by the Water Conservation Act of 2009 (SBX7-7) and Water Conservation Legislation of 2018 (SB 606 and AB 1668), and directing staff to make any necessary changes prior to submission to DWR.

Moved by Director Blom, seconded by Director Gilman, that the foregoing resolution be adopted.

The following roll call vote was had:

Ayes: Directors Blom, Byrd, Campbell, Gilman and Mensinger

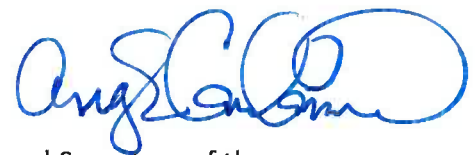
Noes: Director None

Absent: Director None

The President declared the resolution adopted.

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I, Angela Cartisano, Board Secretary of the Modesto Irrigation District, do hereby CERTIFY that the foregoing is a full, true and correct copy of a resolution duly adopted at a regular meeting of said Board of Directors held the eighth day of June 2021.



Board Secretary of the
Modesto Irrigation District

**MODESTO CITY COUNCIL
RESOLUTION NO. 2021-219**

RESOLUTION ADOPTING THE 2020 JOINT URBAN WATER MANAGEMENT PLAN AS REQUIRED BY THE STATE'S WATER CODE AND INSTRUCTING STAFF TO SUBMIT THE FINAL 2020 JOINT URBAN WATER MANAGEMENT PLAN TO DEPARTMENT OF WATER RESOURCES BY JULY 1, 2021

WHEREAS, under the Urban Water Management Planning Act (1983) per the State Water Code, the State Department of Water Resources (DWR) requires Urban Water Management Plans (UWMPs) to be updated and submitted every five years, and

WHEREAS, in addition to being a required water resource planning document, an UWMP is an important document for water supply and demand land use planning and is necessary for water purveyors to be eligible for state grants and loans, and

WHEREAS, per State Water Code (Division 6, Part 2.6, Chapter 2), water purveyors delivering more than 3,000 acre-feet of potable water per year or serving more than 3,000 customers with potable water must submit an UWMP to the State, and

WHEREAS, as a wholesale water supplier to the City of Modesto, the Modesto Irrigation District (MID) is also required to submit an UWMP because it provides potable water supply of more than 3,000 acre-feet or to more than 3,000 customers, and

WHEREAS, the City and MID have previously submitted joint UWMPs in 2000, 2005, and 2010 in order to simplify the required efforts and coordinate urban water needs more closely, and

WHEREAS, on September 1, 2020, by Resolution No. 2020-352, the City Council approved an Agreement with West Yost Associates to develop the 2020 Joint UWMP, and

WHEREAS, on September 1, 2020, by Resolution No. 2020-353 the City approved a Cost Sharing Agreement with MID for development of the 2020 Joint UWMP, and

WHEREAS, on February 22, 2011, by Resolution No. 2011-063, the City Council conducted a public hearing and adopted a Methodology Consumption Calculation determining 2015 and 2020 per-capita water use targets and associated per-capita water uses as required by the State's Water Code, and

WHEREAS, the City has achieved its 2015 and 2020 water use reduction targets by a significant margin, and

WHEREAS, in December 2020, the City notified stakeholders of initiation of the 2020 Joint UWMP and on May 24, 2020, released the Draft 2020 Joint UWMP for public review, and

WHEREAS, on June 8, 2021, the City has held a public hearing as required by the State to adopt the 2020 Joint UWMP.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Modesto that it hereby adopts the 2020 Joint Urban Water Management Plan as required by the State's Water Code and instructs staff to submit the Final 2020 Joint Urban Water Management Plan to Department of Water Resources by July 1, 2021.

The foregoing resolution was introduced at a regular meeting of the Council of the City of Modesto held on the 8th day of June, 2021, by Councilmember Wright, who moved its adoption, which motion being duly seconded by Councilmember Escutia-Braaton, was upon roll call carried and the resolution adopted by the following vote:

AYES: Councilmembers: Escutia-Braaton, Kenoyer, Madrigal, Ricci, Wright, Zoslocki, Mayor Zwahlen

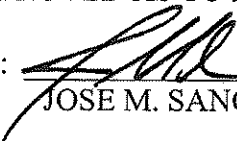
NOES: Councilmembers: None

ABSENT: Councilmembers: None

ATTEST: 
STEPHANIE LOPEZ, City Clerk

(SEAL)

APPROVED AS TO FORM:

BY: 
JOSE M. SANCHEZ, City Attorney

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**MODESTO CITY COUNCIL
RESOLUTION NO. 2021-220**

**RESOLUTION ADOPTING THE CITY OF MODESTO WATER SHORTAGE
CONTINGENCY PLAN UPDATE AND INSTRUCTING STAFF TO SUBMIT AS
PART OF THE FINAL 2020 JOINT URBAN WATER MANAGEMENT PLAN TO
DEPARTMENT OF WATER RESOURCES BY JULY 1, 2021**

WHEREAS, the City of Modesto has been implementing water conservation measures since the 1980's, and

WHEREAS, the City developed a Drought Contingency Plan in 2001 which has been updated from time to time with currently four supply reduction stages of up to fifty percent reduction with associated shortage response actions and has implemented this plan as necessary to address water supply shortages, and

WHEREAS, recent revisions in 2015 and 2016 to the Drought Contingency Plan in response to the severe 2011-2016 drought have been approved by City Council through Resolutions Nos. 2015-134, 2015-445, 2016-178, and 2016-395 to adapt the plan as necessary to changing conditions and plan implementation, and

WHEREAS, in October 2018 the California State Legislature enacted policy bills SB 606 and AB 1668 setting new requirements for water shortage contingency planning regarding long-term improvements in water conservation and drought planning to adapt to climate change with potentially longer and more intensive droughts in California, and

WHEREAS, the State's new guidelines for Water Shortage Contingency Plans (WSCP) include a six-stage water supply reduction format with a supply reduction exceeding fifty percent of normal water supplies, and

WHEREAS, the City has updated its Drought Contingency Plan to match the State's six-stage format and to include a sixth stage for supply reduction exceeding fifty

percent of normal water supplies and has renamed the document as Water Shortage Contingency Plan, and

WHEREAS, on September 1, 2020, by Resolution No. 2020-352, the City Council approved an Agreement with West Yost Associates to develop the 2020 Joint UWMP which includes a WSCP, and

WHEREAS, in December 2020, the City notified stakeholders of an update to the City's WSCP and on May 24, 2020, released the WSCP for public review, and

WHEREAS, it is recommended that Council adopt the WSCP as a separate resolution action from the UWMP adoption so the WSCP can be implemented as a dynamic and adaptive management tool with its own protocols and approval process to respond effectively to foreseen and unforeseen events as necessary and allow for updates outside of the UWMP preparation process, and

WHEREAS, on June 8, 2021, the City has held a public hearing as required by the State to adopt the WSCP.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Modesto that it hereby adopts the City of Modesto Water Shortage Contingency Plan as required by the State's Water Code and instructs staff to submit the document as part of the Final 2020 Joint Urban Water Management Plan to Department of Water Resources by July 1, 2021.

The foregoing resolution was introduced at a regular meeting of the Council of the City of Modesto held on the 8th day of June, 2021, by Councilmember Escutia-Braaton, who moved its adoption, which motion being duly seconded by Councilmember Kenoyer, was upon roll call carried and the resolution adopted by the following vote:

AYES: Councilmembers: Escutia-Braaton, Kenoyer, Madrigal, Ricci, Wright, Zoslocki, Mayor Zwahlen

NOES: Councilmembers: None

ABSENT: Councilmembers: None

ATTEST:


STEPHANIE LOPEZ, City Clerk

(SEAL)

APPROVED AS TO FORM:

BY:


JOSE M. SANCHEZ, City Attorney

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