Appendix H

Groundwater Management Policy Mitigated Negative Declaration (Excerpted)
City of Tracy, 2001

GROUNDWATER MANAGEMENT POLICY

MITIGATED NEGATIVE DECLARATION

PREPARED FOR:

CITY OF TRACY
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TRACY, CA 95376

PREPARED BY:

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APRIL 2001

MITIGATED NEGATIVE DECLARATION

FOR THE

GROUNDWATER MANAGEMENT POLICY

CITY OF TRACY

Prepared for:

CITY OF TRACY
Development and Engineering Department
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APRIL 2001

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2.1 PROJECT LOCATION

The Tracy Planning Area, as considered by the 1993 General Plan/Urban Management Plan (UMP), includes the City of Tracy, as well as approximately 63,000 acres of adjacent land located within San Joaquin County. The City of Tracy regional location is shown in **Figure 2-1.** The Tulare Formation, the City of Tracy's groundwater resource, consists of groundwater-bearing materials composed of poorly sorted gravelly material, including clay, sand, and silt underlying the Tracy Planning Area. These materials, which contain fresh groundwater, are referred to as the Tulare Formation of the Central Valley groundwater basin. Corcoran clay, laterally expansive clay up to 100 feet thick, separates the upper aquifer zone, which is up to 200 feet thick, from the lower aquifer zone, which is up to 650 feet thick.

2.2 BACKGROUND

The City of Tracy currently obtains water from both surface water and groundwater sources. The City, as a public purveyor of water, excises its appropriative right to utilize groundwater for beneficial use by the public. However, the UMP identified constraints to planned growth associated with water supply and the City's continued reliance on groundwater. The 1993 UMP EIR and the 1994 Water Master Plan suggested gradual phase out of groundwater as a regular water supply for the City after additional surface water supplies have been identified and acquired. Although additional surface water supplies have been identified and appear adequate to meet the City's need at projected UMP buildout, the final acquisition of these new surface water supplies would likely occur over the next two to five years.

The groundwater resources available in the Tracy Planning Area were analyzed in 1990. Based on a report prepared by Kennedy/Jenks/Chilton, the City recognized a "safe yield" from the Tulare Formation of 6,700 acre-feet a year (AFY), and adopted the report's recommendation that the City produce no more than 6,000 AFY in groundwater from the formation. The safe yield identified by Kennedy/Jenks/Chilton was based on the maximum historical withdrawal of 5,200 AFY, plus 1,500 AFY based on abandonment of a well by the West Side Irrigation District. Since 1974, total groundwater production from the Tulare Formation for use in the Tracy Planning Area has ranged from approximately 500 AFY to 5,800 AFY.

The City of Tracy adopted and certified the Urban Management Plan (UMP) and Environmental Impact Report (UMP EIR) in September 1993 (State Clearinghouse No. 19092060). The UMP directs growth in the Tracy Planning Area (TPA) to ensure well planned and managed growth for the benefit of current and projected future populations of the City at ultimate buildout. The UMP EIR noted that the City obtains surface water from the Delta-Mendota Canal and groundwater from City-owned wells. The UMP EIR included a series of mitigation measures intended to prevent overdraft conditions and phase out the use of and reliance upon groundwater for water supply as new surface water supplies were acquired. However, as noted in the UMP EIR, the Tulare Formation had not experienced overdraft conditions in the TPA.

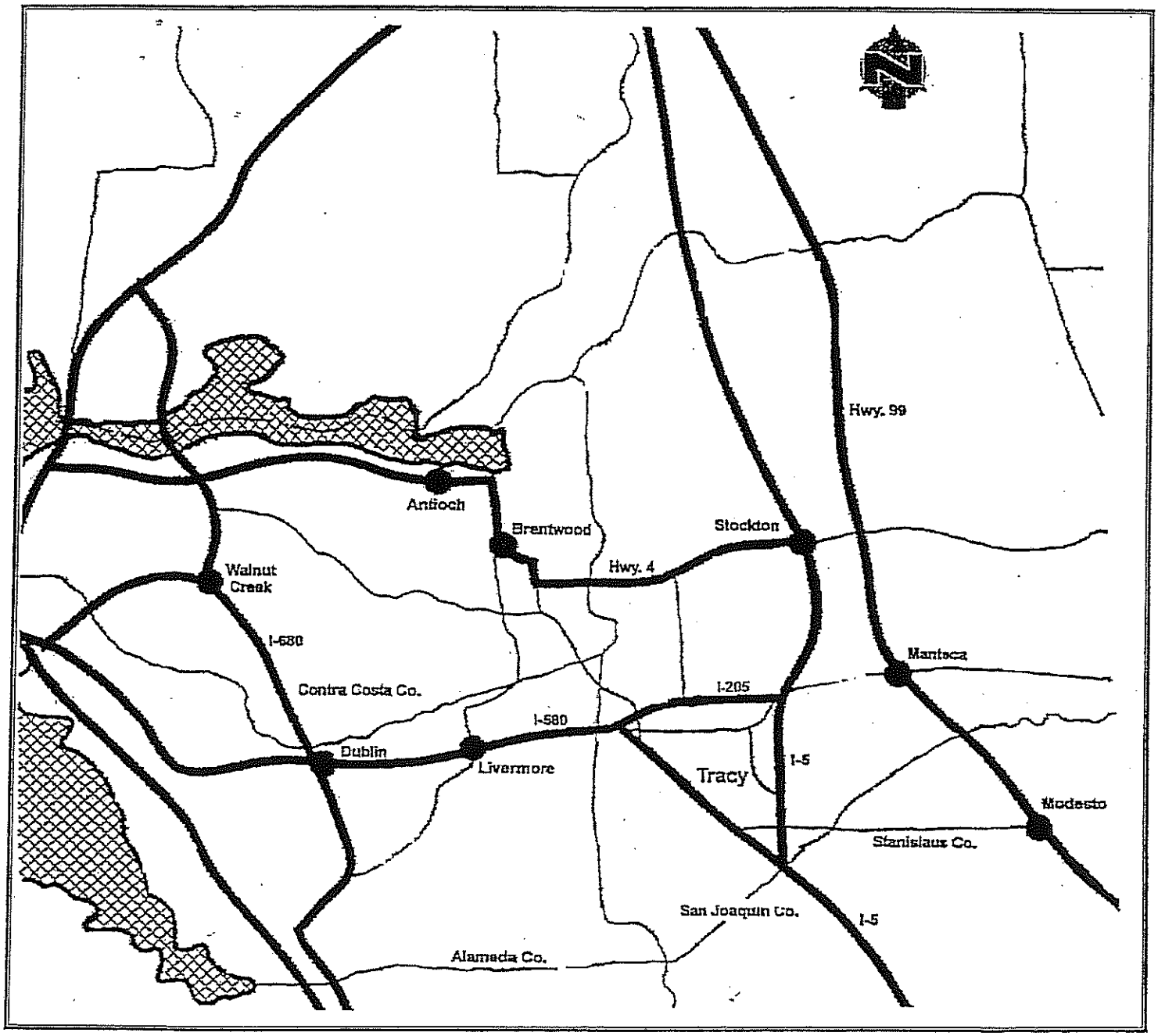

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FIGURE 2-1
REGIONAL LOCATION MAP

The City's 1994 Water Master Plan recommended that the coordinated management and use of groundwater and surface water resources ("conjunctive use") continue until additional surface water supplies were acquired, with a gradual phase out of groundwater as a supply. The Water Master Plan noted that the biggest challenge to the City would be securing enough surface water supplies to meet the needs of projected growth.

A groundwater management plan for eight governmental entities, including the City of Tracy, was completed in April 1996. The Groundwater Management Plan (GMP) is titled, "Groundwater Management Plan for Northern Agencies in the Delta-Mendota Canal Service Area and a Portion of San Joaquin County" and prepared by Stoddard & Associates for the San Luis & Delta-Mendota Water Authority. The City adopted this plan under Ordinance No 511. The plan included a hydrologic inventory of the and was designed to assess impacts to the groundwater basin and optimize sustained use of groundwater resources. Various elements of the plan included; monitoring of groundwater levels and storage, facilitating conjunctive use operations, coordination with state and federal regulating agencies, regulation of contaminant migration into groundwater of the northern sub-basin, well construction, construction and operation of groundwater management facilities, mitigation of groundwater overdraft, etc.

Based on recommendations of the 1993 Urban Management Plan (UMP) and 1994 Water Master Plan, the City of Tracy typically requires that all new major developments to secure sufficient surface water supplies. Existing and projected surface water supplies have been identified and appear adequate to meet the City's needs on a long-term basis. However, the final acquisition of these new surface water supplies is anticipated to occur over the next two to five years.

2.3 PROPOSED PROJECT

Additional surface water supplies have been identified and appear adequate to meet the City's need. However, the final acquisition of these new surface water supplies is anticipated to occur over the next two to five years. The City is proposing as a policy to utilize additional groundwater above the City's current production rate in order to provide an interim water source until new surface water sources are secured as well as provide the City with an emergency water supply source in the event of failure or contamination of the City's surface water supply sources. This additional water source may be utilized as a permanent source if adequate surface water sources never become available.

In order to determine if additional groundwater resources are available in the Tracy area, the City conducted a groundwater analysis. The Estimated Groundwater Yield Study, prepared by Bookman-Edmonston Engineering (see **Appendix A**) provides an evaluation of potential groundwater yield and determined that a 2,300 AFY increase of the average annual operational groundwater yield over the yield recommended in the 1990 Kennedy/Jenks/Chilton study can be provided within the estimated sustainable yield without adverse impact to groundwater resources or quality in the Tracy area over a fifty year timeframe. This expansion of groundwater usage to 9,000 AFY would be within the City's estimated share of the aquifer's sustainable yield of 22,000 AFY of the 28,000 AFY total (this includes groundwater usage by West Side Irrigation District, Naglee-Burk Irrigation District, Plain View Water District and Banta-Carbona Irrigation

District) and would result in groundwater level drop of 10 feet, but would stabilize at this level (Bookman-Edmonston, 2001). The additional groundwater production would be an operational change and would not require the construction of additional wells or distribution facilities.

The Estimated Groundwater Yield Study was based on quantitative and qualitative analyses, historic rates of groundwater use and changes in groundwater conditions, as well as utilization of prior groundwater studies including the following:

- G.H. Davis et al., *Groundwater Conditions and Storage Capacity in the San Joaquin Valley, California,* USGS Water Supply Paper 1469, 1959.
- W.R. Hotchkiss and G.O. Balding, *Geology, Hydrology, and Water Quality of the Tracy-Dos Palos Area, San Joaquin Valley, California,* USGS Open File Report 72-169, August 6, 1971.
- U.S. Geology Survey, *Groundwater Flow in the Central Valley, California, Regional Aquifer System Analysis,* Professional Paper 1401-D.
- Kennedy/Jenks/Chilton, *Tracy Area Groundwater Yield Evaluation: Final Report,* November 1990.

The Estimated Groundwater Yield Study also considered cumulative groundwater usage in the study area by the City and adjacent irrigation districts (West Side Irrigation District, Naglee-Burk Irrigation District, Plain View Water District and Banta-Carbona Irrigation District).

In addition to identification of increased groundwater production in the Tracy area, Bookman-Edmonston Engineering recommends the establishment of groundwater monitoring network for groundwater quality and subsidence, which is included in the proposed Policy. Specifically, up to six monitor well sites would be installed around the City as shown in **Figure 2-2**. A typical cross-section of the monitor well is shown in **Figure 2-3**. Each monitor well would be a multiple completion well and would consist of three separate 12-inch diameter holes with 6-inch casings and 2 by 2.5 foot above ground concrete caps installed within 50 feet of each other and would monitor three specific portions of the aquifer below the Corcoran Clay confining layer. These monitored portions of the aquifer would be shallow (380 to 480 feet in depth), intermediate (610 to 690 feet in depth) and deep (780 to 870 feet in depth). Five wells are located near roadways including; Grant Line Road, Byron Road, Valpicao Road, corner of Valpico and MacArthur, and the corner of East 11th Street and Chrisman Road. The sixth monitor well would be located at the Tracy Airport.

These wells would be constructed in two phases. The first phase would be the three well sites west of the City. The second phase would install the remaining well sites. Water level readings would be taken at each monitor well and water supply well each month, while water quality sampling would be taken quarterly from each monitor well and would sample for the following constituents:

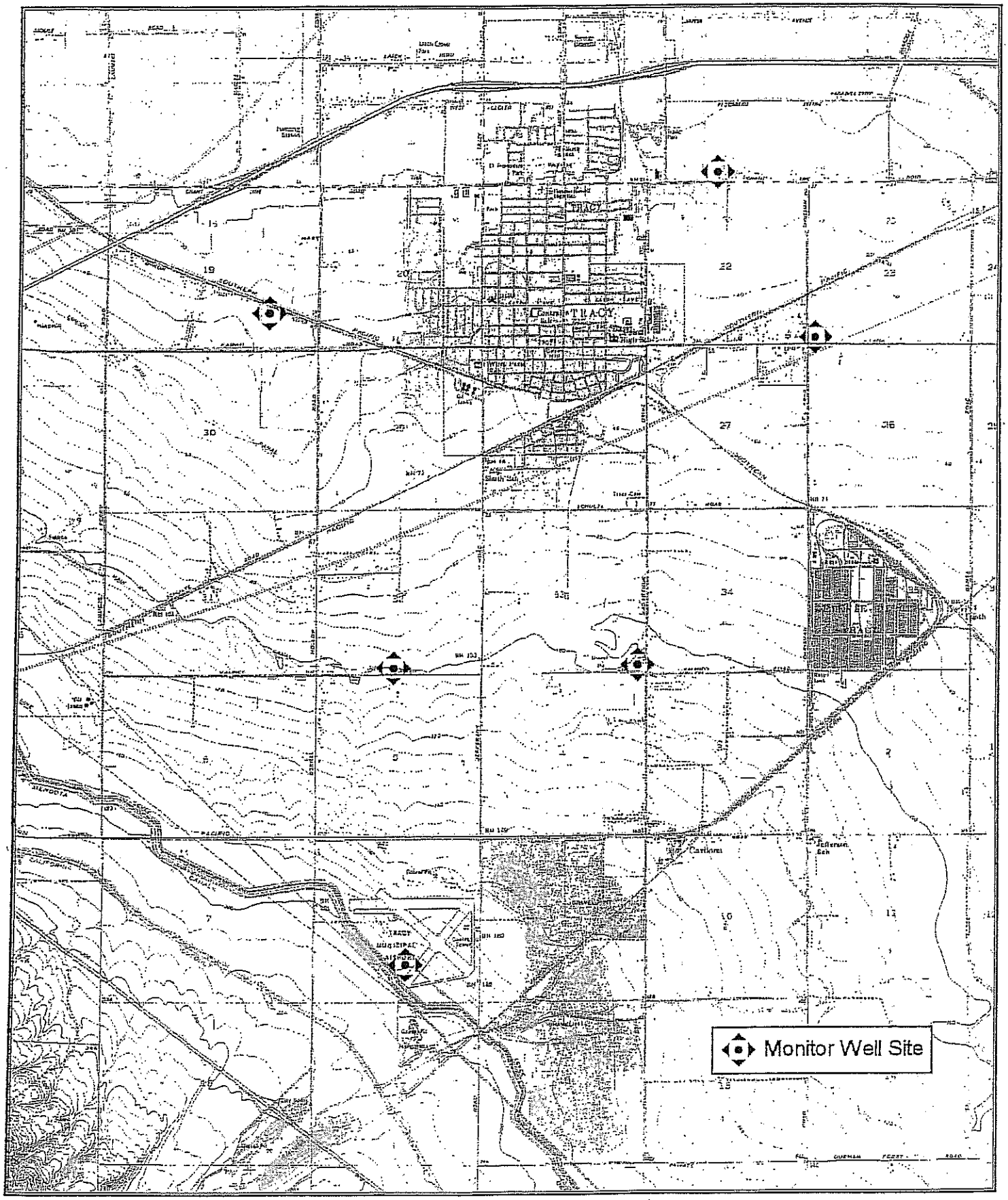

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FIGURE 2-2
PROPOSED MONITOR WELL SITES

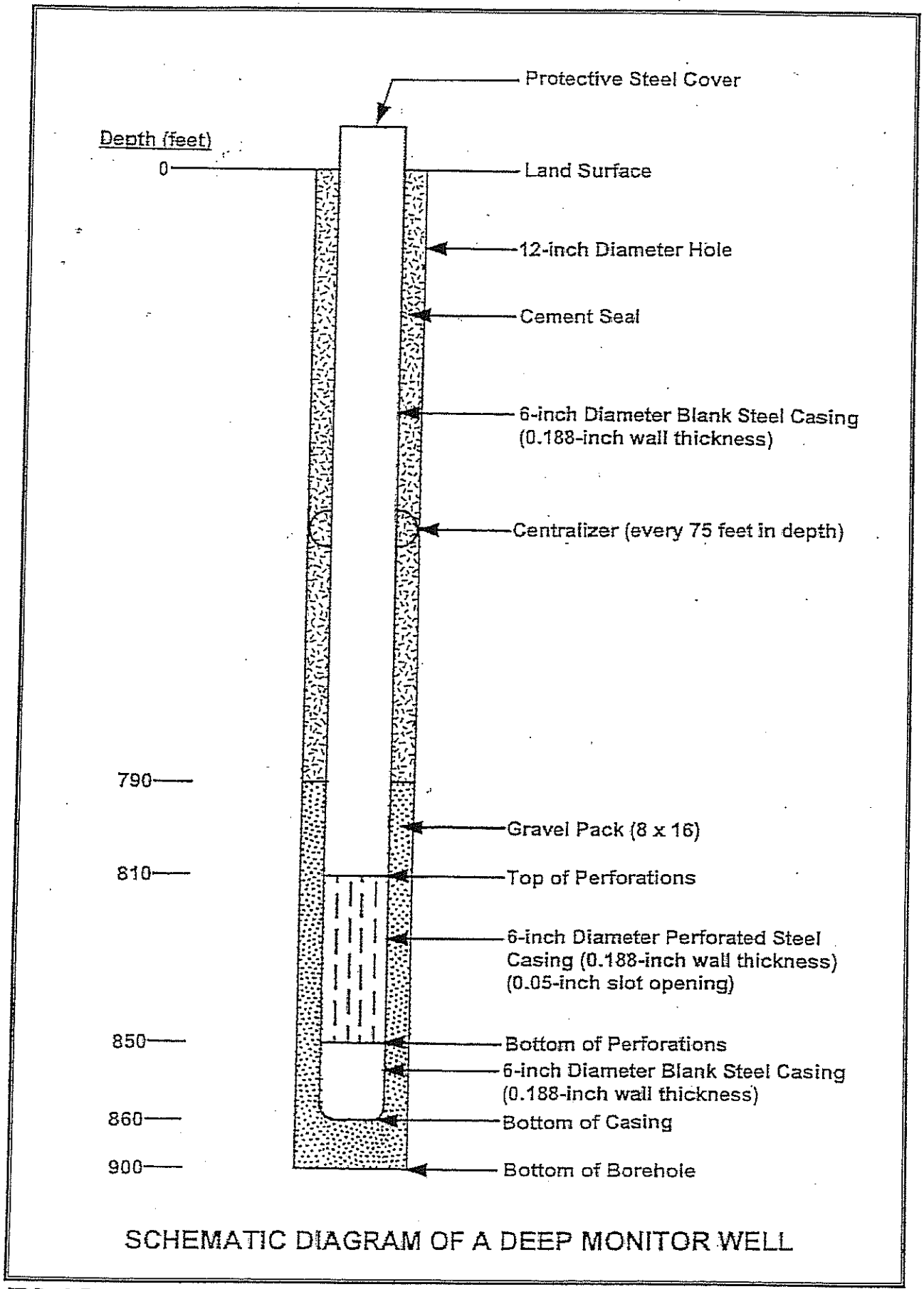

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FIGURE 2-3
TYPICAL CROSS-SECTION OF A MONITOR WELL

- Major cations
- Major anions
- Iron
- Manganese
- Arsenic
- Chromium
- Fluoride
- Alpha activity
- Boron
- PH
- Total dissolved solids
- Electrical conductivity

In addition to water quality monitoring, ground survey monitoring would be conducted to evaluate potential land subsidence from increased groundwater production. This would involve the installation of a benchmark at each monitor well and active production well. If significant subsidence is observed, a compaction well may be installed to further evaluate subsidence impacts.

Adoption of this proposed Policy would implement recommendations of the Groundwater Management Plan for the Northern Agencies in the Delta-Mendota Canal Service Area and a Portion of San Joaquin County, which identified the need for groundwater analysis and monitoring at the local level in the region.

2.4 PROJECT APPROVALS

Based on the results and recommendations of the Estimated Groundwater Yield Study, the Tracy City Council would adopt the following policy associated with increased groundwater production:

GROUNDWATER MANAGEMENT POLICY

Based on the results of the Estimated Groundwater Yield Study prepared by Bookman-Edmonston Engineering, the City intends to increase groundwater production to provide an interim water source until new surface water sources are secured as well as provide the City with an emergency water supply source in the event of failure or contamination of the City's surface water supply sources. This additional water source may be utilized as a permanent source if adequate surface water sources never become available. The City Council hereby adopts this Policy for the extraction and allocation of 9,000 AFY of groundwater. The proposed 9,000 AFY extraction rate represents an increase of 3,200 acre-feet above the current base extraction rate of 5,800 AFY of groundwater. Of this 9,000 AFY, 6,700 AFY has already been allocated through the actions of the City of Tracy

Capacity Allocation Review Board (CARB) established pursuant to Section 11.16.120 of the City of Tracy Municipal Code. Therefore, the extraction of up to 9,000 AFY represents a potential increased extraction of 2,300 AFY over the 6,700 acre-feet per year currently allocated by the CARB. This groundwater would be extracted from the lower confined aquifer and allocated to specific land uses approved by the City. Details of this Policy are presented below:

A. Process for the Extraction of Groundwater

Groundwater in the City of Tracy is currently extracted by eight existing production wells. Generally, these wells and structures occupy no more than one-quarter acre of land. All well pumping equipment is enclosed in single story physical structures. No new production wells are expected to be added to increase groundwater production. However, up to six monitor wells will be installed within and adjacent to the City to monitor changes in groundwater conditions as a result of increased groundwater production.

B. Process for the Monitoring of Groundwater Extraction

While the Estimated Groundwater Yield Study identifies that no significant adverse impacts to groundwater resources are expected, increasing the extraction of groundwater from the aquifer could impact groundwater water levels, ground subsidence, and groundwater quality. In terms of groundwater levels, increasing the extraction could result in declining groundwater storage to levels at a rate that could exceed the recharge capacity of the basin. Reducing the amount of groundwater in storage could also lead to the dewatering of fine-grained geological strata, thus resulting in land subsidence and a potential reduction in the storage capacity of the aquifer. Finally, increasing groundwater extraction could potentially decrease groundwater quality by increasing or changing the concentrations of organic and inorganic chemical substances, or constituents within the aquifer.

1. Groundwater Level and Subsidence Monitoring

   The following process is established to monitor for groundwater level changes and subsidence.

   a. Benchmarks shall be established at each monitor well and active production well and tied to an established local bench circuit to provide the appropriate datum points for elevation measurements.

   b. Groundwater levels shall be measured monthly at each monitor well and active production well and related to the benchmarks to determine changes in groundwater elevation.

c. On an annual basis the bench circuit, which includes the benchmark at each well site (both production and monitor wells), shall be surveyed to determine if there has been any differential settlement resulting from the increase in groundwater extraction.

d. A qualified hydrogeologist shall review the groundwater level and ground elevation measurements annually. Contour maps shall be prepared (for the base year and each subsequent year monitoring occurs) and compared to the prior year's maps for evidence of subsidence or adverse changes in groundwater levels or quality. Should adverse changes be noted, recommended operational changes at each production well shall be implemented (e.g., shut down of specific wells, reduction in groundwater extraction rates) if the monitoring results indicate adverse impacts in order to avoid groundwater overdraft and subsidence conditions.

e. All monitor wells installed in accordance with this Policy will follow all sampling frequencies and protocols outlined in this Policy.

2. Groundwater Quality Monitoring

The following protocols are established to monitor for potential groundwater quality changes due to increased extraction rates:

a. Groundwater shall be sampled and tested on a quarterly basis for the following constituents.

- Major Cations
- Major Anions
- Iron
- Manganese
- Arsenic
- Chromium
- Fluoride
- Alpha Activity
- Boron
- PH
- Total Dissolved Solids
- Electrical Conductivity

b. Monitoring for the constituents listed above shall be conducted to ensure that any changes in constituent levels do not exceed the established maximum contaminant

levels (MCL) or public health goals for each identified constituent. Should adverse water quality conditions be noted, recommended operational changes at each production well (e.g., installation of treatment facilities, shut down of specific wells) shall be implemented to protect public health.

c. Monitoring at all newly constructed monitor wells shall follow the process established above.

C. Allocation of the Groundwater to Development Projects

The City intends to allocate this water to various development projects within the City. A total of 2,300 additional AFY of water (to serve approximately 4,600 "equivalent consumer units") is available from this expanded extraction process, for allocation to approved development projects. In all cases, these projects will be consistent with the City's Urban Management Plan, approved Specific Plans, Development Agreements, Planned Unit Developments, Vesting Tentative Maps, etc., that have received all necessary approvals and are eligible for other findings as part of the CARB/RGMP process forth below. Certain criteria, which will guide the City's allocation of groundwater, are as follows:

1. The City may increase its groundwater production from its current "cap" of 6,700 AFY to 9,000 AFY. This increased production is to provide an interim water source until new surface water sources are secured as well as provide the City with an emergency water supply source in the event of failure or contamination of the City's surface water supply sources. This additional water source may be utilized as a permanent source if adequate surface water sources never become available.

2. The allocation should further the goal to provide a balanced distribution of land uses between residential population, jobs, and ability to provide services. In this context, and yet recognizing current inventory of vested residential projects, approximately 70 percent of the extracted groundwater may be allocated to residential uses, and the remaining 30 percent may be allocated to non-residential uses. Infill projects, whether residential or non-residential, may receive allocations under the above approximate proportions.

3. A maximum of 1,200 equivalent consumer units ("ECUs") of water capacity may be allocated on an annual basis. Water capacity shall not be allocated unless the necessary wastewater capacity is available to the project. The actual number of ECUs may vary from year to year.

4. The project receiving an allocation of groundwater is consistent with the Urban Management Plan.

5. The allocation of groundwater to residential uses should be conducted in accordance with Chapter 10.12 of the Tracy Municipal Code ("Growth Management Ordinance", which establishes and defines RGAs) as amended by Measure A, Chapter 11.16 of the Tracy Municipal Code ("Wastewater Treatment Facilities Capacity Regulation and Allocation", which defines ECUs, and establishes the Capacity Allocation Review Board), as well as the City's Growth Management Guidelines.

6. The allocation of groundwater to non-residential uses should be conducted in accordance with Chapter 11.16 of the Tracy Municipal Code ("Wastewater Treatment Facilities Capacity Regulation and Allocation", which defines ECUs, and establishes the Capacity Allocation Review Board).

2.5 ALTERNATIVE WATER SUPPLY SOURCES

The City is pursuing several sources of additional water supply to meet the needs of planned growth. These sources of water could be expected to be available over varying timeframes and could provide adequate water sources for planned growth in the City without the use of groundwater. These water supply sources are summarized below:

- **Groundwater Banking** - This would involve use of the groundwater basin for water storage and could occur under two options. The first option would involve maximizing the use of surface water resources in lieu of groundwater pumping (i.e., In-Lieu Banking). The groundwater not used would then be available for subsequent use during years when surface water resources are completely utilized. The second option would be to inject surplus water into the groundwater basin for later consumption using the City's existing distribution and well system (i.e., Aquifer Storage and Recovery). The City is currently moving forward with a pilot project to test inject treated surface water into the groundwater basin. The City has received a CALFED grant to pursue groundwater banking.

- **Kern Water Bank (and other Kern County Suppliers)** - The Kern Water Bank (KWB) is located in Kern County, at the southern end of the San Joaquin River valley. The KWB has approximately 50,000 ac-ft of water available for sale on an annual basis for either long-term or short-term deal. The water is highly reliable in all water years. They also have the ability to bank water. They utilize water from the California Aqueduct, Friant-Kern Canal and the Kern River. Kern has an interest in selling water to the City of Tracy either on annual basis or for a long-term contract. Consecutive annual purchases or a long-term water contract would require the CEQA/NEPA process that would likely take two years. Single year water purchased would most likely not require any environmental review to be completed. The City would need to expand its water treatment plant for this water source. California Department of Health Services requirements on the water treatment plant expansion would require the City to construct an intake on the California Aqueduct. On an interim basis, potential water transferred to

the City would require a third party to become involved in the transfer, because of the City's current location of water intakes are on the Delta Mendota Canal and not on the California Aqueduct. The Santa Clara Valley Water District (SCVWD) has been used in discussion as the potential third party because they have rights to both the CA and the DMC and thus a transfer could be made through them. The City is also investigating the potential for the purchase of other long-term water supplies from suppliers in the Kern County area.

- **Purchase of Long-Term Water Contracts** – The City is negotiating with local irrigation districts (e.g., West Side Irrigation District and Banta Carbona Irrigation District) for the purchase of portions of their Bureau of Reclamation contracts. The combined total for the assigned contracts would provide the City with up to 10,000 acre-feet of water per year. This water has agricultural reliability, meaning that the quantity of water delivered would vary significantly year to year depending on hydrologic conditions and endangered species impacts (e.g., 0 to 100 percent reliability). Agreements have been drafted with the districts. Future work includes a CEQA/NEPA environmental document and Bureau approval. These items are anticipated to require two years to complete. This water supply has the potential to supplement City supplies on an annual basis, or to be utilized with a groundwater banking program.

- **BBID** - BBID has pre-1914 water rights. The water is also highly reliable in all water years. BBID takes water from the Sacramento-San Joaquin Delta (Delta) just up stream of the State Water Project (SWP) pumps on the California Aqueduct (CA). Use of BBID water by the City would require a water treatment plant expansion. BBID is currently taking the lead in the design and construction of a pipeline from BBID's intake to City WTP. The pipeline is likely to be completed in the next 2 to 3 years.

- **SSJID** – The City is currently participating in the South San Joaquin County Irrigation District (SSJID) South County Surface Water Supply Project. The City would receive up to 10,000 acre-feet annually of treated surface water by 2004 under best-case conditions. However, the EIR is currently under litigation, which will likely delay the project.

Even if the City ultimately utilizes one or more of the above sources, increased groundwater production is considered necessary to provide an interim water source until these sources are secured as well as provide the City with an emergency water supply source in the event of failure or contamination of the City's surface water supply sources.

Appendix I

Mitigation Monitoring Report, (Excerpted)
GEI, 2009

GEI Consultants

Geotechnical
Environmental and
Water Resources
Engineering

Summary of Groundwater Conditions

November 2007 through November 2008

Prepared for:
City of Tracy

Date: January 23, 2009
Project No: 082910

GEI Consultants
Bookman-Edmonston Division

Geotechnical
Environmental and
Water Resources
Engineering

January 23, 2009

Mr. Steve Bayley
Assistant Director of Public Works
City of Tracy
520 Tracy Boulevard
Tracy, CA 95377

Dear Mr. Bayley:

Re: Summary of Groundwater Conditions
November 2007 through November 2008

GEI Consultants, Inc., Bookman-Edmonston Division is pleased to submit this Summary of Groundwater Conditions Report for the City of Tracy. This report describes the evolution of monitoring, development of groundwater management, a brief discussion of the aquifers, and the purpose for monitoring the groundwater. The report also includes a description of the monitoring network, presents monitoring data, interprets the data for both the confined and unconfined aquifers and contains recommendations for future monitoring efforts.

If you have any questions pertaining to this report, please contact Mr. Shatz at 916-631-4566.

Sincerely,

GEI CONSULTANTS, INC.

Justin Crose
Staff Geologist

Richard W. Shatz, C.HG. 84
Senior Hydrogeologist

Enclosure

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916.631.4500 fax: 916.631.4501

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1 Introduction

The City of Tracy (City or Tracy) recognizes the importance and value of groundwater and is taking a lead role to protect this resource. In 2006, the City led the development of the Tracy Regional Groundwater Management Plan (GMP) for the Tracy Groundwater Subbasin. Other major groundwater users in the subbasin (stakeholders) also participated and as a group are committed to managing groundwater in the subbasin. The GMP recommended that stakeholders monitor the groundwater conditions in each of their respective areas and share the results to cooperatively manage the resource. This report summarizes groundwater levels, groundwater quality, and ground subsidence conditions beneath the City for the period of November 1, 2007, through November 31, 2008. Our interpretations are based on available data and may be revised as additional information is collected.

1.1 Location

The City of Tracy is located near the west-central portion of the Central Valley providence, a large topographic trough located in the center of California (USGS 1971). The Central Valley is bounded on the east by the Sierra Nevada and on the west by the Coast Ranges. Underlying the Central Valley are extensive groundwater aquifers used by agriculture and rural and urban residents, including those in Tracy. This large aquifer is subdivided into basins and subbasins. The City is located near the center of the Tracy groundwater subbasin and is one of the largest groundwater users. Figure 1 shows the general location of the City.

The City is located in San Joaquin County about 15 miles southwest of Stockton, California. It is surrounded by open farmland to the east, the Coast Ranges to the south and west, and the Bay-Delta to the north. The southern portion of the City is adjacent to the Delta-Mendota Canal and the State Water Project canals. The City's airport, water treatment plant, and four of its production wells are also adjacent to the canals. Major roadways providing access to Tracy include Highway 205 from the north, Interstate 5 from the east, and Highway 580 from the south and west. Figure 1 shows these roadways.

1.2 Background

The City adopted an Urban Management Plan in July 2006. The plan directs growth in Tracy to ensure that growth is well planned and managed for the benefit of the current and projected future population.

Currently, the City obtains water from both surface water and groundwater sources. As a public water purveyor, it exercises its appropriative and overlying rights to use

groundwater for beneficial use by the public. The City obtains surface water from the Delta-Mendota Canal and the Stanislaus River and groundwater from eight City-owned groundwater supply wells.

The City requires that all new major developments secure sufficient surface water supplies. Current surface water supplies appear adequate to meet Tracy's needs in the long term. However, groundwater provides the City with an emergency water supply source in the event of the failure or contamination of its surface water supply sources and during peak water demand months. The wells are also used when the surface water treatment is shut down for maintenance.

The City increased groundwater extraction from about 5,800 acre-feet per year to 8,000 acre-feet per year over a three-year period, from 2001 to 2004. Additional groundwater extraction continued through the completion of the South County Surface Water Supply Project (SCSWSP) in 2005 and currently continues, but at a much lesser extent. During this period of increased pumping, in order to comply with the California Environmental Quality Act, the City monitored groundwater and ground surface elevations. Eighteen monitoring wells were constructed and benchmarks were established to ensure there were no significant impacts. Over the three-year period no significant impacts were detected.

The City successfully completed the assignment of up to 10,000 acre-feet per year of water from neighboring irrigation districts during 2003. Additionally, the SCSWSP became operational during July 2005. The City began to take delivery of a portion of the SCSWSP water in August 2005. The addition of these surface water supplies enabled the City to reduce its use of groundwater and allow groundwater to be reserved for emergency use and for peak water demands during the summer months.

In 2007 the City adopted the Tracy Regional GMP, which includes continued groundwater and ground surface elevation monitoring. The results of the monitoring will provide the technical basis for identifying and implementing groundwater management actions to preserve the groundwater quality and quantity.

The GMP reported the presence of two aquifers within the subbasin. An unconfined to confined aquifer is present from ground surface to a depth of about 300 feet below ground surface (bgs). The Corcoran clay separates the unconfined aquifer from the underlying confined aquifers, which extend from about 400 to 800 feet bgs.

4 Findings

The following sections discuss the results of the groundwater and ground elevation monitoring for the reporting period of December 2007 through November 2008.

4.1 Groundwater Production

The City's wells that were pumped during this monitoring period include the Lincoln Well and Production Wells 1 through 7. The Tidewater Well is out of service because of sanding problems. Production Well 8 is being reserved for ASR pending regulatory approval and therefore was not pumped. Figures 14 through 23 show the production totals by month for each well. Appendix B contains monthly production totals for each well. The figures and data show the following:

- Cumulative production from January through October 2008 was 2,557 acre-feet. Groundwater well extractions have been reduced by about 50 to 60 percent since 2005, when the SCSWSP became operational.

- Monthly production in 2008 was the highest in March and April, reaching 449 and 442 acre-feet, respectively. Typically, July is the month with the highest amount of groundwater production; however, groundwater production in 2007 and 2008 was the highest in March and April, showing a shift in the City's pumping towards the spring months for peak groundwater usage, apparently because of the SCSWSP coming online.

4.2 Unconfined Aquifer Groundwater Levels

Groundwater level measurements from Dick's Exxon well MW-1, the 7-11 store well MW-2, former Spreckels Sugar wells BW-3, BW-4, and WP-7, and the Tracy Army Depot wells LM047C, LM065C, and LM124C show a slight cyclic seasonal change, but with little to no effect from pumping. The City does not pump water from this aquifer. Groundwater levels in the unconfined aquifer are significantly deeper at the south end of the City typically measuring about 48 feet below ground surface (bgs), whereas groundwater levels at the north end of the City were as shallow as 5 feet bgs. There appears to be a natural groundwater cycle where the water levels rise and then lower every few years. Currently groundwater levels in the unconfined aquifer appear on the rise at the northern end of the City; however, there are insufficient data in the southern portion of the City to make any conclusions in this regards. Figures 3 through 13 present data showing groundwater level trends for each well. Georgia-Pacific wells BC-19, BC-20, and MW-23 were not measured this monitoring period.

4.3 Confined Aquifer Groundwater Levels

Groundwater level measurements for this monitoring period were collected at the Lincoln well, Production Wells 1 through 7 (no groundwater level measurements were obtained from the Tidewater well and Production Well 8), and 18 clustered monitoring wells. Figures 14 through 41 present data showing groundwater level trends for each well.

4.3.1 Production Wells

The groundwater levels recorded at the production wells (including the Lincoln well) varied considerably during this monitoring period. In general, the production wells showed the following:

- In most wells groundwater levels remained within historic ranges
- In March 2008, groundwater levels reached historic highs (since monitoring began in 2001) at Production Wells 1, 5, and 7
- Groundwater levels reached a historic low (since 2001) at Production Well 3 in September 2008

4.3.2 Clustered Monitoring Wells

As previously stated, monitoring wells at each site have been completed into different confined aquifers (i.e., shallow, intermediate, and deep, as monitored by Zone A, Zone B, and Zone C wells, respectively) in part to assess the water quality and vertical gradient between the individual aquifers that comprise the confined aquifer between 400 and 800 feet bgs. During this monitoring period groundwater levels (piezometric heads) were collected in March, June, and July 2008. The measurements collected in March and July are directly comparable to measurements collected in March and July 2007. A few trends were seen in the groundwater levels; however, there was a fair amount of variance in the trends from well to well. In general, the clustered monitoring wells showed the following:

- During March 2008, groundwater levels reached historic highs or were within a foot of the historic high at all wells (and all aquifer Zones), with the exception of MW-5A, MW-5B, and MW-5C.
- The groundwater levels in aquifer Zones A, B, and C during July 2008 were either at or within a few feet of historic highs at all wells, with the exception of MW-5A, MW-5B, and MW-5C.
- The groundwater levels in aquifer Zones B and C appear to be mostly stabilizing since 2007, whereas the groundwater levels in aquifer Zone A are on the rise in all wells with the exception of MW-5A where groundwater levels are lowering.

- The rise in groundwater levels appears to directly relate to the City's decreased pumping over the past few years since the SCSWSP started. However, groundwater levels near MW-5 appear to relate to increases in pumping wells to the east, outside the City.

- Similar to previous measurements, most monitoring wells showed a downward vertical gradient of about 4 to 13 feet between Zone A and Zone B wells. The measurements collected from MW-5A and MW-5B in July 2008 were the exception to this, having an upward gradient. It appears pumping outside of the City is predominately from Zone A where good quality water is present.

4.4 Comparison of Unconfined to Confined Aquifer

Groundwater level differences can show the vertical direction of groundwater flow if the confining bed has imperfections or wells screened across both aquifers. When combined with water quality results, it can help to explain the occurrence of poorer quality water.

A couple of the groundwater monitoring wells within the unconfined and confined aquifers are within close proximity to one another and offer a direct comparison of groundwater levels in each aquifer. Figures 44 and 45 show the relationship of the water levels in the southern and northern portions of the City. The unconfined aquifer has higher groundwater levels than the confined aquifer.

In the southern portions of the City the difference between the water levels is about 70 feet while in the northern portion, the difference is only about 20 feet. The effects of pumping within the confined aquifer are readily apparent, but are not reflected in the unconfined aquifer indicating that the Corcoran clay is an effective barrier to groundwater flow. No barrier is completely impermeable, however, and slow leakance can occur towards the lower groundwater level (head), in this case from the unconfined towards the confined aquifer.

4.5 Groundwater Contours

Groundwater contours show the horizontal direction of flow in the aquifers. The groundwater flow direction can be different in each aquifer. Figure 42 shows the groundwater contours in the unconfined aquifer for the beginning of 2008. Figure 43 shows groundwater contours in the confined aquifers for July 2008.

4.5.1 Unconfined Aquifer

The groundwater contours for the unconfined aquifer show a flow direction from the south, east, and west towards the Old River north of the City.

4.5.2 Confined Aquifer

In Figure 43, groundwater contours for the confined aquifer are broken down into three sections, one section for each aquifer zone within the overall confined aquifer (Zones A, B, and C). The contours are based on water level measurements from production wells perforated below the Corcoran clay and supplemented with measurements from either the shallow aquifer (Zone A), the intermediate aquifer (Zone B), or the deep aquifer (Zone C) clustered monitoring wells. The production wells typically have screen lengths of 100 feet or more and are often screened opposite multiple depths within the confined aquifer. However, groundwater level data from the production wells represent an aggregate of several aquifers and may not be representative of an individual aquifer's condition. Thus, an interpretation of groundwater level data from production wells must be used cautiously and should be used only to specify general rather than actual conditions of the aquifers at a particular well location.

The groundwater contours for Zone A do not include data from Production Wells 6 (Park n Ride) and 7 (Ball Park), which are not screened across this shallow aquifer. The groundwater flow direction has been reversed and is towards the east. There is one depression in the groundwater contours of Zone A, which appears to be related to pumping. The pumping depression in Zone A is located in the southern portion of the City around Production Well 1. Groundwater is moving radially towards this depression. The lowest groundwater elevation is located around MW-5A on the eastern side of the City. The groundwater is about 20 feet lower at MW-5A than groundwater levels at the west end of the City at MW-1.

The groundwater contours for Zone B and Zone C are similar to one another. There appears to be three pumping depressions in both zones. Two of the pumping depressions are located at the north end of the City, one beneath the northwest portion of the City and the other beneath the north central portion of the City, centered beneath Production Wells 6 and 7, respectively. Groundwater flow is moving in a radial pattern towards these production wells, coming from all directions. The pumping depression near the airport in the southern portion of the City, beneath Production Well 1 also exhibits a radial flow pattern towards this depression, coming from all directions; however, the strongest recharge is coming from the north. The pumping depression has lowered the groundwater surface by about 15 feet around Production Well 7 and by about 20 feet around Production Wells 1 and 6.

The pumping depression centered over Production Well 1, near the airport, is seen in all three Zones. This pumping depression has been present since monitoring began, but the size of the depression is poorly constrained (few or no monitoring wells south, west, or east of the well field), which limits the ability to assess if the confined aquifer is being recharged from these areas.

4.6 Water Quality

Groundwater quality information is limited for the key constituents for the unconfined aquifer. Field electrical conductivity (EC) measurements were obtained and converted to an approximate total dissolved solids (TDS) concentration so that the unconfined aquifer water quality can be compared to the confined aquifer water quality. Figures 3 through 13 show TDS trends in wells within the unconfined aquifer. TDS varies greatly but overall is poorer quality than the confined aquifers and would exceed recommended drinking water maximum contaminant levels (MCL).

Groundwater quality samples were collected from the clustered monitoring wells within the confined aquifer in July 2008 at MW-1 through MW-6 and from Production Wells 2 through 7 and the Lincoln Park well in June 2008. The production wells are screened across all the confined aquifer zones. The water quality results from these wells represent a mixing of all these zones and therefore were not used in the contour maps for analytical results. Background water quality research indicates that boron, chloride, sulfate, nitrate, and TDS are key indicator parameters. Figures 14 through 41 show the concentration trends of these key parameters versus water level and production data. Figures 46 through 49 show the distribution of the concentrations in the aquifers for TDS, chloride, sulfate, and nitrate as nitrogen for July 2008. Significant changes in water quality occur between the clustered wells horizontally and vertically. Historically, clustered monitoring wells MW-2 and MW-5 have the highest levels of the key indicator parameters. These monitoring wells are key to assessing changing groundwater conditions in the area. The laboratory analyses show the following:

- TDS levels were within the historic ranges. The highest concentrations are detected near MW-2 and MW-5 and appear to be coming from areas east and west of the City and not from the overlying unconfined aquifer. Higher groundwater levels in Zone C could be moving higher concentrations into the Zone B aquifer.

- Historically, the highest concentrations of chloride have been at MW-5C, being more than double that of any other monitored well. Concentrations of chloride appear stable at all clustered monitoring wells, including MW-5C, suggesting that the poor quality water in the deep aquifer is not migrating or being drawn into the area by pumping.

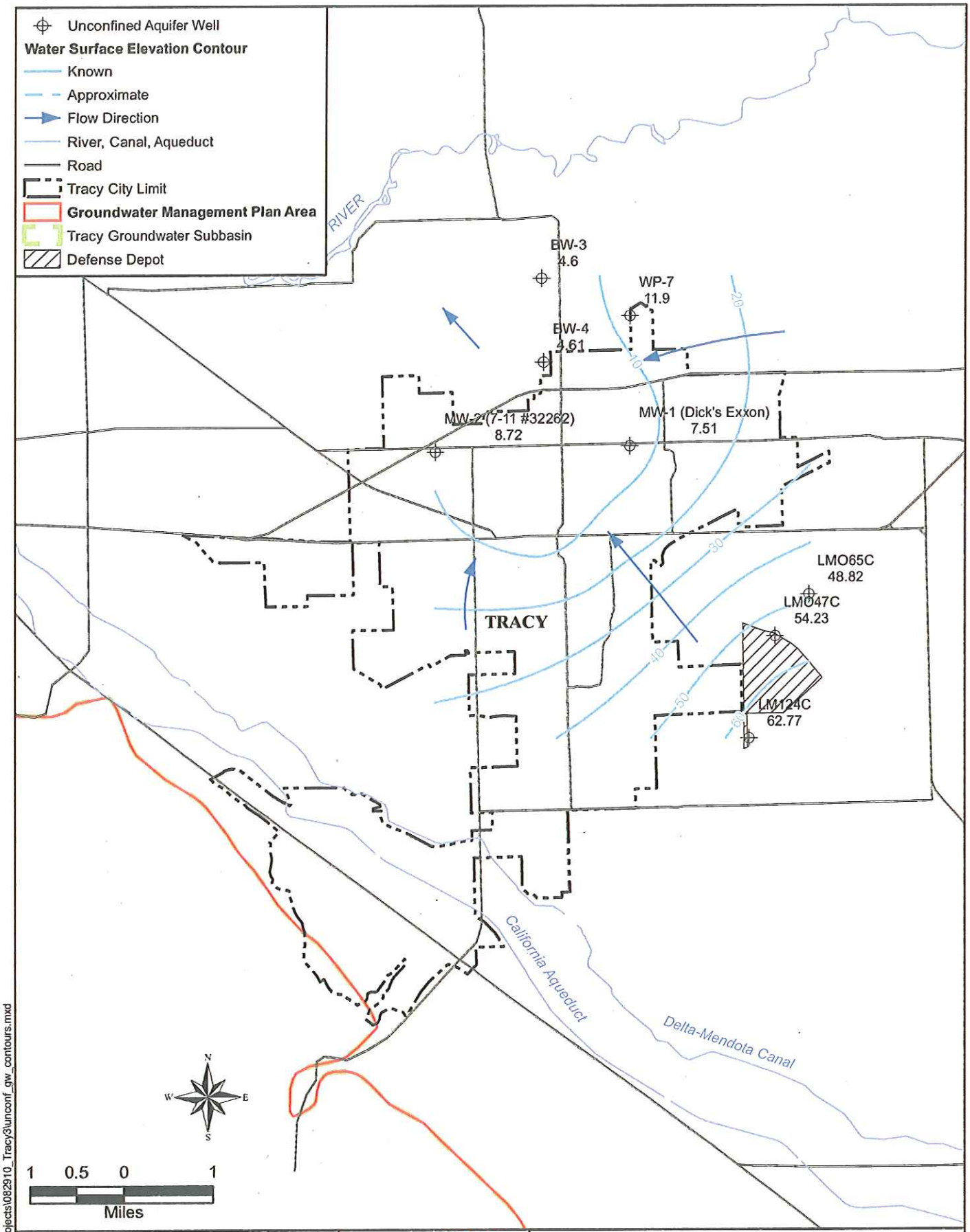
- Concentrations of sulfate were around the historic ranges in all wells; however, more than half the wells were slightly below the historic range. The sulfate levels at MW-6 are the exception to this, with the concentrations dropping nearly 5 times lower than previously reported. MW-2 and MW-5 had the highest concentrations of sulfate.

- Nitrate as nitrogen concentrations were below half the MCL at all wells and are within historic ranges.

- In a continuing fashion, nitrate was not present in Zone A but is present in Zone C, indicating the nitrate is moving horizontally into the aquifers from the east.
- The total chromium concentration in the water sample from MW-2B (8.2 ug/L) is remaining below the MCL since the two anomalously high readings in 2005.
- The TDS concentrations are higher in the unconfined aquifer versus the confined aquifer.
- TDS concentrations in the unconfined aquifer have historically ranged from 400 to 2500 mg/L. The highest concentrations are seen in the northern part of the City and the lowest in the southern part of the City.

4.7 Benchmarks

The annual survey of the benchmarks was conducted for 2008. Ground surface elevations between 2007 and 2008 appear to have risen slightly and relatively uniformly by about 0.2 feet, suggesting the subsidence is regional and not related to the City's pumping.



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20-Jan-09

Summary of Groundwater Conditions
November 2007 through November 2008

City of Tracy
San Joaquin County, California

GEI Consultants
Bookman-Edmonston Division

UNCONFINED AQUIFER GROUNDWATER CONTOURS FEB-APR 2008

JANUARY 2009

FIGURE 42

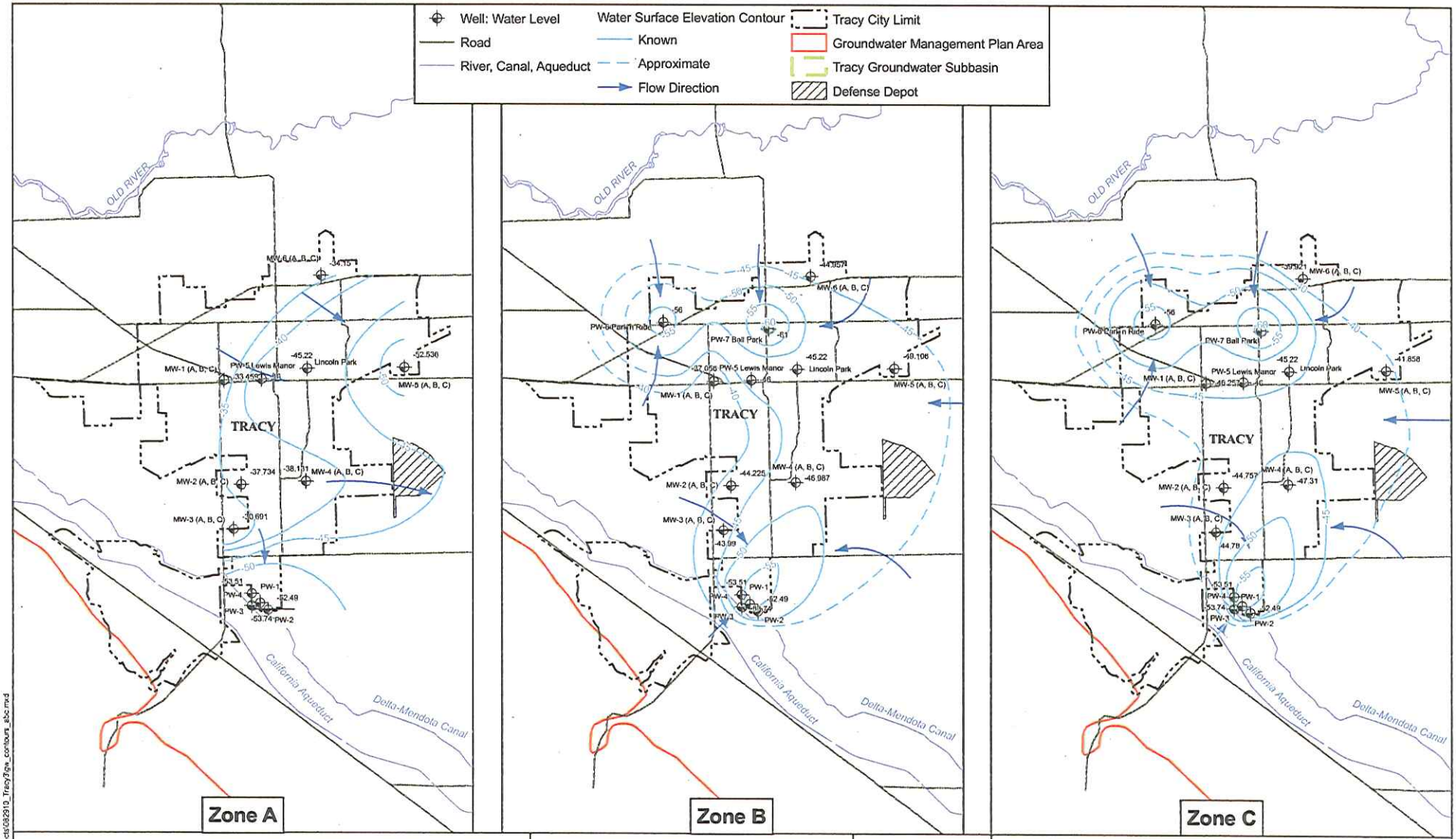
Well: Water Level
Road
River, Canal, Aqueduct
Water Surface Elevation Contour
Known
Approximate
Flow Direction
Tracy City Limit
Groundwater Management Plan Area
Tracy Groundwater Subbasin
Defense Depot
OLD RIVER
TRACY
MW-1 (A, B, C)
MW-2 (A, B, C)
MW-3 (A, B, C)
MW-4 (A, B, C)
MW-5 (A, B, C)
MW-6 (A, B, C)
PW-5 Lewis Manor
PW-6 Corbin Ride
PW-7 Ball Park
Lincoln Park
PW-1
PW-2
PW-3
PW-4
California Aqueduct
Delta-Mendota Canal
Zone A
Zone B
Zone C
2 1 0 2
Miles
N
W
E
S
Summary of Groundwater Conditions
November 2007 through November 2008
City of Tracy
San Joaquin County, California
GEI Consultants
Bookman-Edmonston Division
CONFINED AQUIFER
GROUNDWATER CONTOURS, 2008
ZONES A, B AND C
JANUARY 2009
FIGURE 43
12-Jan-09 S:\GIS\Projects\082310_Tracy\gw_contours_abc.mxd

TABLE 2
CONFINED AQUIFER PRODUCTION WELL CONSTRUCTION DETAILS

WELL NAME	STRATA SEALED (feet)	FILTER PACK INTERVAL (feet)	SCREEN INTERVAL (feet)	CORCORAN CLAY INTERVAL (feet)	AQUIFER MONITORED (DWR defined)	AQUIFER MONITORED (Lower Aquifer Subdivided)
Lincoln	0-250	250-980	490-980	130-380[1]	Lower	Shallow
						Intermediate
						Deep
						Deeper
Tidewater	0-200	200-1159	340-400	290-400	Upper	Shallow
			404-488		Lower	Intermediate
			510-637			Deep
			680-863			Deeper
			886-912			
			934-978			
			1031-1159			
Production Well No. 1	0-300	300-980	450-550	204-293	Lower	Shallow
			580-980			Intermediate
						Deep
Production Well No. 2	0-250	250-850	420-850	220-270	Lower	Shallow
						Intermediate
						Deep
Production Well No. 3	0-250	250-890	420-890	174-270	Lower	Shallow
						Intermediate
						Deep
Production Well No. 4	0-250	250-940	380-940	220-270	Lower	Shallow
						Intermediate
						Deep
Production Well No. 5 (Lewis Manor)			410-480		Lower	Shallow
			601-630			Intermediate
			650-670			Deep
			805-830			Deeper
			900-930			
	0-305	305-990	965-990	229-390[1]		
Production Well No. 6	0-500	500-690	550-598	250-350	Lower	Intermediate
(Park and Ride)	690-700	700-850	610-636			Deep
	850-870	870-1216	656-678			Deeper
			738-754			
			774-796			
			966-982			
			1014-1122			
			1176-1196			
Production Well No. 7	0-490	490-750	550-598	200-340	Lower	Intermediate
(Ball Park)	750-770	770-914	570-732			Deep
			850-874			
Production Well No. 8	0-340	340-850	370-460	240-360	Lower	Shallow
(ASR)			510-640			Intermediate
			680-820			Deep

[1] = Clay interval includes Cocoran clay between 310 and 380 feet.
NA = Not available

TABLE 3

CONFINED AQUIFER MONITORING WELLS CONSTRUCTION DETAILS

WELL NAME	STRATA SEALED (feet)	FILTER PACK INTERVAL (feet)	SCREEN INTERVAL (feet)	CORCORAN CLAY INTERVAL (feet)	AQUIFER MONITORED (DWR defined)	AQUIFER MONITORED (Lower Aquifer Subdivided)
NESTED MONITORING WELLS						
PW-5A	0-100 390-410	410-580	420-460	229-390[1]	Lower	Shallow[2]
PW-5B	580-590	590-780	610-670	229-390[1]	Lower	Intermediate
PW-5C	780-790	790-870	810-830	229-390[1]	Lower	Deep
PW-5D	870-880	880-1020	910-930 970-990	229-390[1]	Lower	Deeper
CLUSTERED MONITORING WELLS						
MW-1A	0-400	400-480	428-468	300-430	Lower	Shallow
MW-1B	0-590	590-670	618-658	300-430	Lower	Intermediate
MW-1C	0-720	720-800	748-788	300-430	Lower	Deep
MW-2A	0-400	400-480	426-466	234-430	Lower	Shallow
MW-2B	0-614	614-690	634-674	234-430	Lower	Intermediate
MW-2C	0-760	760-820	770-810	234-430	Lower	Deep
MW-3A	0-370	370-415	382-402	210-370	Lower	Shallow
MW-3B	0-530	530-595	540-580	210-370	Lower	Intermediate
MW-3C	0-726	726-820	770-810	210-370	Lower	Deep
MW-4A	0-440	440-505	450-490	240-450	Lower	Shallow
MW-4B	0-660	660-715	680-700	240-450	Lower	Intermediate
MW-4C	0-760	760-820	770-810	240-450	Lower	Deep
MW-5A	0-390	390-460	406-446	290-410	Lower	Shallow
MW-5B	0-560	560-640	576-616	290-410	Lower	Intermediate
MW-5C	0-750	750-820	770-810	290-410	Lower	Deep
MW-6A	0-400	410-450	400-465	320-400	Lower	Shallow
MW-6B	0-560	560-645	590-630	320-400	Lower	Intermediate
MW-6C	0-730	755-810	755-795	320-400	Lower	Deep

1 = Clay interval includes Corcoran clay.

2 = Shallow aquifer as defined as between 380 to 420 is present at a lower depth at this location

Appendix J

Excerpts from the Tracy Municipal Code
Recycled and Non-Potable Water Ordinance - Chapter 11.30
Water Conservation and Rationing Plan - Chapter 11.28

Chapter 11.30

RECYCLED AND NON-POTABLE WATER

Sections:

11.30.010	Purpose.
11.30.020	Definitions.
11.30.030	Use and distribution of recycled water.
11.30.040	Exemptions.
11.30.050	Appeal.

11.30.010 Purpose.

It is the policy of the City of Tracy that recycled water determined to be available pursuant to section 13550 of the Water Code may be used for non-potable uses within the designated recyled water use areas set forth in this chapter and as permitted by title 22 of the California Code of Regulations. (Ord. 1035 § 1 (part), 2002)

11.30.020 Definitions.

For purposes of this chapter the following words and terms shall be defined as follows, unless the context in which they are used clearly indicates otherwise.

(a) "Common areas" shall include, but not be limited to, golfcourses, parks, greenbelts, landscaped streets, and landscaped medians.

(b) "Development project" means any development as defined in Government Code section 65927 (the Permit Streamlining Act) and includes a project requiring subdivision approval, a use permit, grading permit or building permit.

(c) "Industrial cooling or processing purposes" means evaporative or heat exchange cooling serving industrial processing, or power production, as accomplished by cooling towers, enclosed heat exchange systems, washdown systems, and other similar equipment and devices.

(d) "Non-potable groundwater" means any groundwater that does not conform to federal, state, and local agency standards for human consumption.

(e) "Non-potable water" means water which does not conform to federal, state, and local agency standards for human consumption. It includes groundwater, untreated surface water, and other subsurface or surface water which may be used for a beneficial purpose in compliance with applicable local, state, and federal laws defining standards for non-potable uses.

(f) "Potable water" means water which conforms to federal, state, and local agency standards for human consumption.

(g) "Recycled water" or "reclaimed water" means: 1) water which, as a result of treatment, is suitable for direct non-potable beneficial use or a controlled use that would not otherwise occur, 2) untreated surface water, or 3) non-potable groundwater.

(h) "Recycled water area" or "designated recycled water use area" means all geographic areas located within the City limits of the City of Tracy.

(i) "Recycled water distribution system" or "water reuse system" means a system intended for the delivery of recycled water, including, but not limited to, pipelines, pumps, and reservoirs. The recycled water distribution system is separate from any potable water distribution system. The system controls the recycled water distribution from the source of supply to the point of connection with a building or structural lateral supply pipeline.

(j) "Recycled water use" means irrigation of common areas and use for industrial cooling purposes.

(k) "Untreated surface water" means surface water that has not received the required treatment necessary to conform with federal, state, and local agency standards for human consumption. (Ord. 1035 § 1 (part), 2002)

11.30.030 Use and distribution of recycled water.

(a) All subdivisions for which a tentative map or parcel map is required pursuant to Government Code section 66426 and located within designated recycled water use areas shall be required to install a recycled water distribution system to provide recycled water to the common areas of any subdivision and for any industrial cooling or processing uses in the subdivision.

(b) The water distribution system shall be constructed in conformance with title 22 of the California Code of Regulations.

(c) The recycled water distribution system shall be independent of the plumbing system provided to serve domestic, residential, or other potable water uses within the subdivision.

(d) Recycled water service shall not commence within a designated recycled water use area in any service area of a private utility as defined in section 1502 of the Public Utilities Code or to any service area of a public agency retail water supplier that is not a local agency as defined in subdivision (b) of section 65603, except in accordance with a written agreement between the recycled water producer and the private utility or public agency retail water supplier. (Ord. 1035 § 1 (part), 2002)

11.30.040 Exemptions.

The ordinance codified in this chapter shall not apply in the following circumstances:

(a) The tentative map, as defined in Government Code section 66424.5, or a development, as defined in Government Code section 65927, was approved by the City prior to February 6, 2002.

(b) The subdivision map application was deemed complete pursuant to Government Code section 65943 prior to February 2, 2002.

(c) The subdivider establishes to the satisfaction of the Public Works Director that any of the following circumstances apply:

(1) There is a higher or better use for the recycled water;

(2) Use of recycled water is not economically justified; or

(3) Use of recycled water is not financially and technically feasible. (Ord. 1035 § 1 (part), 2002)

11.30.050 Appeal.

A subdivider may appeal a staff determination that the exemptions of section 11.30.040(c) are inapplicable in accordance with chapter 1.12 of the Tracy Municipal Code. (Ord. 1035 § 1 (part), 2002)

Chapter 11.28

WATER MANAGEMENT

Sections:

Article 1. Purpose, Definitions

11.28.010 Purpose.
11.28.020 Definitions.
11.28.030 Future restrictions.

Article 2. Fees

11.28.040 Fees.

Article 3. Authority, Enforcement, Fines and Property Owner Responsibility

11.28.050 Authority.
11.28.060 Enforcement.
11.28.070 Fines.
11.28.080 Access to service connections.
11.28.090 Unlawful to tamper with service.
11.28.100 Property owners' responsibility.
11.28.110 Termination of service.
11.28.120 Unlawful to provide false information.

Article 4. Water Management (Reserved)

Article 5. Drought and Other Water Emergency Conditions

11.28.130 Drought declaration.
11.28.140 Trigger mechanisms.

Article 6. Water Conservation and Rationing Plan, Water Emergency Plan, Variances and Appeals

11.28.150 Amendments.
11.28.160 Implementation.
11.28.170 Phase I water conservation measures.
11.28.180 Phase II water restrictions—Ten percent city-wide water reduction goal.
11.28.190 Phase III water restrictions—Fifteen percent city-wide water reduction goal.
11.28.200 Phase IV water restrictions—Twenty-five percent city-wide water reduction goal.
11.28.210 Phase V—Water emergency declaration.
11.28.220 Temporary rate increases.
11.28.230 Excess water use surcharge.
11.28.240 Variances on usage restrictions or usage allotments.
11.28.250 Appeals.
11.28.260 Temporary water service.
11.28.270 Residential use without prior history.

Article 7. Drawing Water from Fire Hydrants and Construction Water

11.28.280 Drawing water from fire hydrants.
11.28.290 Construction water usage prohibited during periods of water emergencies.

Article 1. Purpose, Definitions

11.28.010 Purpose.

It is the purpose of this chapter to provide for an effective means to manage the local water supply as necessary for public health, safety, fire protection and recreational needs. (Prior code § 11-7.101)

11.28.020 Definitions.

For the purposes of this chapter, unless otherwise apparent from the context, certain words and phrases used in this chapter are defined as follows:

(a) "Consumer unit" or "unit" means 100 cubic feet of water, or 748 gallons.

(b) "Customer" means owner, tenant or occupant of property receiving City water service.

(c) "Director" means the Public Works Director of the City.

(d) "Drought" means a water shortage as declared by the Governor of California which affects the local water supply; or any unusual situation or circumstance affecting the quantity or quality of the local water supply.

(e) "Flagrant water waste" means any water which flows directly from a tap connected to the City water system that leaves the property of origin in a continuous flow of any dimension for 150 feet from said property, or for more than five (5) minutes in duration.

(f) "Flow restrictor" means any device expressly used to limit water flow or pressure to a water service.

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(g) "Reclaimed water" means non-potable water or treated wastewater.

(h) "Water emergency" means an event, time or situation that requires extraordinary management or restrictions on water use caused as a result of natural events or as an unanticipated manmade event affecting the quantity or quality of the local water supply. (Prior code § 11-7.102)

11.28.030 Future restrictions.

All applicants for water service are hereby put on notice that further restrictions or prohibitions on water use and service may hereafter become necessary; and nothing herein, no application, permit or approval of water service or water service facilities granted pursuant to these rules shall vest in the applicant any right to a particular use or quantity of water; but such applicant shall be subject to all further prohibitions, restrictions, rules and regulations in the same manner and extent as any other consumer or class of consumers similarly situated existing at the time such prohibitions or restrictions are imposed. (Prior code § 11-7.103)

Article 2. Fees

11.28.040 Fees.

Fees charged pursuant to this chapter shall be set by resolution of the City Council. (Prior code § 11-7.201)

Article 3. Authority, Enforcement, Fines and Property Owner Responsibility

11.28.050 Authority.

Pursuant to the provisions of section 836.5 of the State Penal Code, the following officers and employees of the City are hereby authorized to issue citations for enforcement of this chapter:

Public Works Director
Deputy Public Works Director
Water Resources Coordinator
Environmental Control Inspector
Water Patrol
Sworn Peace Officers
Firefighters

(Prior code § 11-7.301)

11.28.060 Enforcement.

The City Manager or his/her designee is charged with primary responsibility in the implementation and enforcement of this chapter. (Prior code § 11-7.302)

11.28.070 Fines.

(a) A person who violates a provision of Phase I through Phase V of article 6 of this chapter, or who fails to comply with an order or permit made thereunder, is guilty of an infraction, punishable as provided in section 1.04.030. In addition, a fourth violation within six (6) months of the first violation shall result in the installation of a meter service flow restrictor at the customer's expense. The meter service flow restrictor shall remain in place for the remainder of the drought or water emergency. Failure to pay assessed fines will result in termination of water service until payment in full of all fines and usual reconnection charges are collected from the customer.

(b) The following violations are cause for fines, as follows:

(1) Drawing water from a fire hydrant without immediate possession of a valid permit issued by the Public Works Director or his or her designee: see chapter 1.04.

(2) Drawing water from a fire hydrant after receiving notice that reclaimed water is available and is required: see chapter 1.04.

(3) Constructing a bypass around a meter: $500.00 fine. (Ord. 1040 § 5 Exh. E (part), 2002: prior code § 11-7.303)

11.28.080 Access to service connections.

Access to service connections and water meters must be provided at all times to designated City personnel in possession of proper identification. Authorized employees of the City 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 ascertain compliance with the regulations contained in this chapter. (Prior code § 11-7.304)

11.28.090 Unlawful to tamper with service.

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. (Prior code § 11-7.305)

11.28.100 Property owners' responsibility.

Owners of property will be held responsible for water used on their premises, although payments will be accepted from tenants. If the tenants do not pay in accordance with the provisions of this chapter, the service may be disconnected and shall not be restored until the delinquent water charges, including the cost of water delivered, applicable surcharges, as well as the cost of reconnecting the service, have been paid. Owners of property shall be responsible for the maintenance of water pipes, water faucets, water plumbing fixtures, and all other water services

appliances from the point the water meter exits into the plumbing of the property owner. No owner or manager or any other person responsible for the day-to-day operation of any premises shall fail to initiate steps to repair any leaking, broken or defective pipes, faucets, plumbing fixtures, other water appliances, sprinklers, watering or irrigation systems within seventy-two (72) hours after the owner or manager or other responsible person knew or should have known of such leaks, breaks or defects. A written request sent by certified mail to repair such defect or defects from a City representative shall constitute sufficient notice. (Prior code § 11-7.306)

11.28.110 Termination of service.

The City shall terminate service to any customer due to excessive violations of this chapter after written notice to the customer. Said notice shall be posted on the door of the customer by door hanger at least two (2) business days or sent by certified mail three (3) business days prior to the termination of service. For purposes of this chapter, excessive violations shall be considered to be more than four (4) violations within a six (6) month period. (Prior code § 11-7.307)

11.28.120 Unlawful to provide false information.

It is unlawful for any person, firm, partnership, association, corporation, or political entity to use water obtained from the water system of the City through fraud, including misrepresentation made to obtain a particular allocation of water, or for any prohibited or restricted use as herein defined in this chapter. (Prior code § 11-7.308)

Article 4. Water Management (Reserved)

Article 5. Drought and Other Water Emergency Conditions

11.28.130 Drought declaration.

Enactment of the ordinance codified in this chapter shall cause the present implementation of Phase I voluntary conservation as set forth in Section 11.28.170 of Article 6. Phases II through IV are established to achieve subsequent reduction goals in potable water consumption of ten (10%), fifteen (15%) and twenty-five (25%) percent and more as deemed necessary due to drought conditions or other prolonged water emergencies. Phase V is established for water emergency declarations. Phase changes shall be implemented by resolution of the City Council. A duly noticed public hearing shall be required when going from Phase I up to and inclusive of Phase V. Phase changes shall be based upon the trigger mechanisms and criteria set forth in this article. Affected customers shall be notified of phase changes by notice on the utility bill or by actual written notification mailed to the billing address on record with the City Finance Department. (Prior code § 11-7.501)

11.28.140 Trigger mechanisms.

The City Council may declare a drought and direct the City Manager to implement all provisions of Article 6 of this chapter when one or more of the following conditions exist:

(a) The average static groundwater basin level reaches thirty (30') feet below sea level as determined by the Water Production Supervisor by means of monthly groundwater soundings at the water production wells, or if the estimated groundwater demand for the year exceeds 6,000 acre feet, the estimated safe yield for groundwater extraction;

(b) A cutback of available surface water supplies obtained from the Central Valley Project occurs;

(c) A drought is declared by the Governor of California covering the water sources used by the City, and subsequent reductions of water supplied to the City will occur or are likely to occur;

(d) Any unusual situation or circumstance which affects the quantity or quality of the water supply. (Prior code § 11-7.502)

Article 6. Water Conservation and Rationing Plan, Water Emergency Plan, Variances and Appeals

11.28.150 Amendments.

The provisions of this article may be amended from time to time or as deemed necessary by the City Council. (Prior code § 11-7.601)

11.28.160 Implementation.

The City Manager or his/her designee shall be charged with the implementation of the provisions contained

within this chapter, and of any other applicable restrictions or requirements set forth in this chapter. If there is a conflict between two phases, the more restrictive phase shall apply. (Prior code § 11-7.602)

11.28.170 Phase I water conservation measures.

(a) No person, owner, or manager responsible for the day-to-day operation of any premises shall permit flagrant water waste or excessive runoff of water at any time during which Phase I or subsequent phases are imposed.

(b) Proper maintenance of all plumbing and irrigation systems; installation of water-conserving plumbing or attachments; control all leaks within seventy-two (72) hours;

(c) Residents and businesses are to practice prudent water conservation measures at all times. Examples of useful water conservation measures are as follows:

(1) Use of a hand-held sprayer with a self-closing "trigger" handle for all outdoor uses;

(2) The voluntary planting of drought tolerant landscapes; the installation and maintenance of water-efficient irrigation systems such as drip and bubble irrigation, and the installation of sprinkler heads with a low flow rate appropriate for the landscape to prevent overwatering and runoff;

(3) Water in the morning hours during non-windy periods.

(d) All new swimming pools, hot tubs and spas installed after the effective date of the ordinance codified in this section shall have a separation tank and water recovery system installed in the filter backwash system, with a ninety (90%) percent water recovery standard. Nonpermeable floating pool covers shall be required and shall provide ninety (90%) percent surface coverage on all pools, spas and hot tubs. (Prior code § 11-7.603)

11.28.180 Phase II water restrictions—Ten percent city-wide water reduction goal. 10%

In addition to the measures of Phase I, the following restrictions shall apply to landscape irrigation and all other outside water use:

(a) Landscapes, including residential, commercial, industrial, municipal and other public agencies or entities, may be irrigated as follows:

(1) At any time provided that the person irrigating the landscape is present outdoors and maintains a full view of the landscape being irrigated and remains in full control of the water usage;

(i) Unattended between 7:00 p.m. through 9:00 a.m. (May 1 through September 30);

(ii Unattended between 4:00 p.m. through 10:00 a.m. (October 1 through April 30);

(2) At any time providing that drip or bubbler irrigation is used.

(b) The washing of non-commercial sidewalks, driveways, porches, or other outdoor surfaces is prohibited, except in instances where a spill of a hazardous material or other substance which creates a public nuisance occurs and where it is not feasible to clean the affected area in any other manner. The washing of non-commercial, outdoor, hard surfaces utilizing a bucket containing a limited amount of water is allowed at any time.

(c) The washing of commercial sidewalks, driveways, filling stations, parking lots, or other outdoor surfaces is discouraged.

(d) The addition of water above the minimum level necessary to comply with the health or operational requirements for pool, hot tub, or jacuzzi circulation, public or private is prohibited.

(e) Car washing is allowed only with use of a self-closing "trigger" spray nozzle.

(f) No restrictions shall be made with respect to the use of reclaimed water. (Prior code § 11-28.180)

* incentive for reclaim

11.28.190 Phase III water restrictions—Fifteen percent city-wide water reduction goal. 15%.

In addition to the restrictions of Phases I and II, the following restrictions shall apply:

(a) Landscapes, including residential, commercial, industrial, municipal and other public agencies or entities, may be irrigated as follows:

(1) May 1 through September 30.

Odd-numbered addresses shall water only on Monday, Wednesday and Saturday after 7:00 p.m. or before 9:00 a.m.

Even-numbered addresses shall water only on Tuesday, Thursday and Sunday after 7:00 p.m. or before 9:00 a.m.

(2) October 1 through April 30.

Odd-numbered addresses shall water only on Monday, Wednesday and Saturday after 4:00 p.m. or before 10:00 a.m.

Even-numbered addresses shall water only on Tuesday, Thursday and Sunday after 4:00 p.m. or before 10:00 a.m.

(b) The irrigation of landscapes during high winds that cause water to blow away from the landscapes being water is prohibited.

(c) The washing of commercial sidewalks, driveways, filling stations, parking lots, or other outdoor surfaces is prohibited, except on: Friday,
and except in instances where a spill of a hazardous material or other substance which creates a public nuisance occurs and where it is not feasible to clean the area in any other manner.

The washing of commercial, outdoor hard surfaces utilizing a bucket containing a limited amount of water is allowed at any time for cleaning food, grease, oil or other stains from surfaces.

(d) No restaurant may serve water except upon customer request. Restaurants shall post at every table and in restrooms notice of drought conditions and water restrictions. Acceptable methods of notification to patrons include notices or tables tents placed on the tables or in the menus and in restrooms in a form approved or provided by the Director.

(e) The owner and manager of every hotel, motel, inn, guest house, and every other short-term commercial lodging shall post notice of drought conditions information in every guest room, in a form approved or provided by the Director. (Prior code § 11-7.605)

11.28.200 Phase IV water restrictions—Twenty-five percent city-wide water reduction goal. 25%

This phase shall establish a goal of twenty-five (25%) percent or more reduction in water usage by the customer. The customer shall be given a reduction goal based upon the base year's usage.

(a) Except as otherwise provided, car washing shall be allowed only with the use of a bucket.

(b) Automobile and recreational vehicle dealerships shall be allowed to continue washing vehicles with a hose and a handheld self-closing "trigger" nozzle under the following conditions:

(1) Automobiles and recreational vehicles may be washed only on Fridays using the method outlined above.

(2) An automobile, motorcycle, boat or motorhome may be washed the day before or the day of delivery to the purchaser.

(c) No restrictions shall be made to laundromats.

(d) No restrictions shall be made to car washes employing the use of water recycling equipment.

(e) The owner and manger of every facility with a restroom on the premises open to the public shall post in every such public restroom a placard or decal with notice of drought condition information in a form approved by the Director. (Prior code § 11-7.606)

11.28.210 Phase V—Water emergency declaration.

(a) The City Council may declare a water emergency and direct the City Manager to implement appropriate water conservation and/or rationing requirements consistent with this chapter when one or more of the following conditions exist:

(1) A decrease in the ability to draw groundwater due to well contamination, well failure or other equipment or system failure, and no alternative source of water is available;

(2) Contamination of the water system;

(3) Natural disasters affecting water deliveries;

(4) During times of floods which would affect water quality;

(5) Sabotage or threats of sabotage against the water system;

(6) Any unusual situation or circumstance which affects the quantity or quality of the water supply.

(b) In addition to the restrictions of Phases I, II, III and IV, the City Council may mandate specific restrictions and reductions which may include but are not limited to:

(1) All water uses not required for public health and safety and fire protection are prohibited.

(2) No lawn and/or landscaping watering or irrigation uses are allowed.

(3) No recreational water uses are allowed. (Prior code § 11-7.607)

11.28.220 Temporary rate increases.

When drought or water emergency conditions are declared by the City Council, it may become necessary to implement a temporary rate increase to cover reduced revenues as a result of conservation. Rates may be increased by resolution of the Council when it is determined that revenues are inadequate to maintain the water enterprise. (Prior code § 11-7.608)

11.28.230 Excess water use surcharge.

(a) During periods of a declared drought or water emergency, the Council may, by resolution, establish a water rate structure which provides incentives (or disincentives) to conserve water use.

(b) Any water user may seek to have the excess water use surcharge waived or forgiven through the variance process set forth in Section 11.28.240(b) of this chapter upon substantial evidence of the following:

(1) The excess water use was beyond the user's control, and was not reasonably correctable due to special and unique circumstances; or

(2) An incident or condition occurred where public health or safety would have been threatened by decreased water usage. (Prior code § 11-7.609)

11.28.240 Variances on usage restrictions or usage allotments.

The Director, or his/her designee, shall document the type and character of any residential, commercial, or industrial user or public authority requesting a variance in the assigned water goal in Phase I, II, III and IV of this chapter. The Director, or his/her designee shall maintain a separate file of each variance request and the response to that request. This file shall be available for public inspection during regular business hours.

(a) No variance request will be considered until a water use has been prohibited or an excess use fee has been assessed on the customer's bill.

(b) The City Manager or his/her designee may grant variances for uses of water otherwise prohibited or adjust any consumer's allotment or billing, if the City Manager or his/her designee finds and determines that to fail to do so would cause an emergency condition affecting health, sanitation, or fire protection or causes undue hardship of the applicant or public.

(c) Should any condition upon which the variance request approval was based cease to exist (e.g., an occupant of the home vacates), the billed user of the home shall be responsible to notify the Finance Department of such change for appropriate adjustment to the user's allotment.

(d) The City may request periodic confirmation from the billed user that all conditions upon which the variance request was approved are still in existence. Failure on the part of the user to respond to any reasonable inquiry shall be grounds for termination of the variance. Supplying false or erroneous information in such an inquiry for the purpose of obtaining or maintaining additional water allotments shall be deemed fraud. (Prior code § 11-7.610)

11.28.250 Appeals.

Any water service customer who considers an action taken by the City under the provisions of this chapter to have been erroneously taken, may appeal such action and decision to the City Council in the following manner:

(a) The appellant shall continue to pay the monthly charge as billed pending the completion of the appeal process;

(b) All appeals shall be filed in writing with the City Clerk and shall state the nature of the appeal and the basis upon which the decision of the City Manager is considered to be in error;

(c) Such appeals, to be effective, must be received by the City Clerk not later than ten (10) business days following the date that the appellant receives or should have received the notice from the City Manager of such action from which the appeal is being taken;

(d) The City Clerk shall schedule the appeal for consideration by the City Council at the earliest available regularly scheduled Council meeting after receipt of the appeal;

(e) The decision of the Council shall be final;

(f) If the City Council grants the appeal, the decision shall provide for timely reimbursement, if any, of the excess use fee charged by the City. (Prior code § 11-7.611)

11.28.260 Temporary water service.

Notwithstanding any other provisions of this chapter, no prohibition is expressly imposed upon applications, approvals, or installations of water service facilities solely for temporary service to those construction works which are entitled to permanent water service facilities under the terms of this chapter. However, the Director may, at his/her discretion, suspend the issuance of water permits for such temporary uses such as construction works, when acceptable alternative nonpotable sources are available. (Prior code § 11-7.612)

11.28.270 Residential use without prior history.

Where there is no prior history of use and notwithstanding any reduction of water use which would otherwise be a goal for residential water users pursuant to the goals as set forth in this chapter, no residential household shall be given a goal to reduce water consumption below the following: The seasonal average consumption customary for that user class or meter class, less than appropriate conservation goal amount. (Prior code § 11-7.613)

Article 7. Drawing Water from Fire Hydrants and Construction Water

11.28.280 Drawing water from fire hydrants.

(a) No person or persons, other than fire department personnel and City personnel, shall open any fire hydrant or attempt to draw water therefrom, except through a

City-owned hydrant meter, and except pursuant to a permit obtained from the City and approved by the Director or his/her designee in control of such hydrant.

(b) A true copy of the permit must, at all times, be in the possession of any person taking water from such hydrant. If any such person fails to display said permit copy upon demand, the City reserves the right to discontinue service and take possession of the City-owned meter and any appurtenances thereto. A service reinstatement fee will be charged to the applicant for reinstatement of such service.

(c) If no City-owned meter is available to the customer, the customer may use load counts and notify the Public Works Department of such each and every Friday.

(d) Regardless of whether a City-owned meter or load count is utilized, a per day fee will be paid by the permittee for each and every day the permit is in effect, including weekends and holidays, regardless of whether water is used or not used. In addition to the per day fee, the permittee will be charged for the amount of water metered or a load or loads counted at the prevailing rate schedule plus an administrative fee.

(e) When a City-owned meter is utilized, a deposit in an amount determined by City Council resolution, shall be required. The deposit will be returned to the permittee upon closure of the water permit and payment of all applicable fees. The City may use the deposit for any of the unpaid fees. (Prior code § 11-7.701)

11.28.290 Construction water usage prohibited during periods of water emergencies.

(a) The use of fresh water for construction uses during period of drought or during water emergencies is prohibited except upon the approval of the City.

(b) Construction water usage. The use of fresh water for dust control or other construction purposes shall be prohibited during a declared drought or water emergency when an alternative approved water source is available. The City's Wastewater Treatment Plant may, in a drought or water emergency, supply reclaimed wastewater or stormwater for construction purposes whenever feasible to water trucks at no charge.

(c) This requirement may be waived on days of extreme winds which cause a dust control problem which, in the opinion of the Director or his/her designee or the Construction Management Superintendent or his/her designee, find and determine that extreme winds are prevalent which are creating a dust control nuisance which must be abated immediately.

In such instances, a one-day permit may be arranged through the Construction Management Superintendent or his designee, or the Director or his/her designee. Said permit will expire at the end of the work day, and usage of potable-quality water will be billed at the per day permit fee, plus actual water consumption, plus an administrative fee. (Prior code § 11-7.702)

Appendix K

Draft Citywide Water System Master Plan, Chapter 9
West Yost and Associates, 2011

CHAPTER 9
Buildout Recycled Water System Evaluation

The purpose of this chapter is to describe the proposed recycled water system at buildout of the City's Sphere of Influence (SOI). The City is proposing to collect and treat wastewater at two locations (City wastewater treatment plant (WWTP) on Holly Drive and the proposed Tracy Hills Water Recycling Facility (WRF) near the airport), treat it to a Title 22 Disinfected Tertiary standard, and distribute the recycled water to the proposed use areas. Seasonal storage ponds will also be provided, if required to balance flow and demand. The topics discussed in this chapter include:

- Recycled Water Plan
- Recycled Water System Criteria
- Allocation of Recycled Water Demands
- Recycled Water System Model

The recycled water plan is discussed below.

9.1 RECYCLED WATER PLAN

The City intends to construct and operate a recycled water system to reduce treated effluent discharges to Old River and to offset potable water demands. As directed by the City, two independent recycled water systems are proposed. The larger system, serving the entire City SOI except the proposed Tracy Hills development, would collect and treat water at the existing Holly Drive WWTP, and distribute the recycled water throughout the SOI, except for the Tracy Hills area.

The second, smaller, recycled water system would collect and treat wastewater at the proposed Tracy Hills WRF, seasonally store and distribute recycled water sufficient to serve the demand of the Tracy Hills development, and dispose of the wastewater flow in excess of recycled water demand. As directed by the City, the location of the Tracy Hills WRF is to be assumed to be in the vicinity of the City's airport, and the seasonal wastewater storage pond is to be assumed to be located in a previously mined gravel quarry east of Tracy Boulevard.

9.2 RECYCLED WATER SYSTEM CRITERIA

The evaluation of the proposed City recycled water distribution system considers criteria that are different from the criteria used to evaluate the potable water system. The criteria are described in Chapter 6. Because maximum day recycled water demands occur for approximately eight hours per day, and peak hour demands are only slightly greater than maximum day demands as described in Chapter 4, pipeline water velocity must be lower than in potable water systems (to help reduce energy/power costs).

As described in Chapter 6, the desired system delivery pressure ranges from a minimum of 60 psi to a maximum of 100 psi, with pipeline water velocity less than six feet per second.

9.3 ALLOCATION OF RECYCLED WATER DEMANDS

The projected recycled water demands are discussed in Chapter 4. The maximum day and peak hour peaking factors are summarized in Table 9-1.

Table 9-1. Recycled Water Demand Peaking Factors

Parameter	Value
Maximum Month Demand, percent of annual demand[(a)]	16.4
Maximum Day Peaking Factor[(b)]	5.8
Peak Hour Peaking Factor[(c)]	6.4

(a) See value for July recycled water use in Figure 4-10.
(b) Multiply the average day demand times the peaking factor to obtain maximum day demand. Maximum Day Demand Peaking Factor = Maximum month demand (percent)/ 31 days x 365 x (24/8).
(c) Multiply the average day demand times the peaking factor to obtain peak hour demand. Assumed to be 110 percent of Maximum Day Demand, see Chapter 4.

Recycled water annual, average day, maximum day, and peak hour demands are summarized in Table 9-2. The total Recycled Water Demand used in the model and shown in Table 9-2 is slightly greater than that shown in Appendix D because of the addition of recycled water delivery to some City Parks, and the delivery of recycled water to the Gateway Ponds and the Gateway Roadways, which are not included in Appendix D.

9.4 RECYCLED WATER SYSTEM MODEL

The development of the two recycled water distribution systems, the main system and the Tracy Hills system, are described below.

9.4.1 Main System

The main recycled water distribution system is assumed to begin at the Holly Drive WWTP. Seasonal recycled water storage and diurnal storage and the main recycled water pump station would be located on or near the Holly Drive WWTP property.

9.4.1.1 Demand Areas

The demand areas to be served by the main system are shown on Figure 9-1 and include all the development areas except Tracy Hills, plus the City Parks (former Gateway Exchange) areas, and the Gateway Ponds and Roadside Irrigation areas.

Proposed pressure zones were set up in the model to mimic the potable water distribution system pressure zones. The pressure zones, the ground elevation range, and the modeled hydraulic grade range are shown in Table 9-3.

Table 9-2 Summary of Projected Recycled Water Demand

ID	Description	Demand, AF/Year	UAF, AF/Year[a]	Total Demand, AF/Year	ADD, mgd	MDD, mgd	PHD, mgd	PHD, gpm
	Gateway Ponds[b]	228	19	247	0.22	1.28	1.41	976
	City Parks (former Gateway Exchange Water)[c]	722	59	781	0.70	4.04	4.44	3,085
	Gateway Roadways[a]	61	5	66	0.06	0.34	0.38	261
Development Growth Areas								
1	Tracy Gateway Phase 1[c]	84	7	91	0.08	0.47	0.52	359
2	Holly Sugar Sports Park	485	39	524	0.47	2.71	2.98	2,071
3	Westside Residential (URs 5, 7, 8, 9)	313	25	338	0.30	1.75	1.92	1,337
4	UR 1	396	32	428	0.38	2.21	2.44	1,691
5	South Linne (UR 11)	72	6	78	0.07	0.40	0.44	307
6	Tracy Hills	1,758	143	1,901	1.70	9.83	10.81	7,508
7	Tracy Gateway (excluding Phase 1)[c]	449	36	485	0.43	2.51	2.76	1,917
8	Cordes Ranch (UR 6)	1,034	84	1,118	1.00	5.78	6.36	4,416
9	Bright (UR 4)	111	9	120	0.11	0.62	0.68	474
10	Catellus (UR 3)	388	31	419	0.37	2.17	2.39	1,657
11	Filios (UR 2)	26	2	28	0.03	0.15	0.16	111
12	I-205 Expansion	103	8	111	0.10	0.58	0.63	440
13	Westside Industrial	291	24	315	0.28	1.63	1.79	1,243
14	Eastside Industrial	221	18	239	0.21	1.24	1.36	944
15	Larch Clover	299	24	323	0.29	1.67	1.84	1,277
16	Chrisman Road	68	6	74	0.07	0.38	0.42	290
17	Rocha	46	4	50	0.04	0.26	0.28	196
18	Berg/Byron	56	5	61	0.05	0.31	0.34	239
19	Kagehiro	20	2	22	0.02	0.11	0.12	85
	Subtotal Development Growth Areas	6,220	504	6,724	6.0	34.8	38.2	26,562
	Total Recycled Water Demand[d]	7,232	586	7,818	7.0	40	44	30,884

Note: AF/Year = Acre-feet per year; UAF = Unaccounted for Water; ADD = Average Day Demand; MDD = Maximum Day Demand; PHD = Peak Hour Demand; mgd = million gallons per day; gpm = gallons per minute.

(a) Unaccounted for water is assumed to be 7.5 percent of the total amount of water delivered, as discussed in Chapter 4.

(b) The previous Gateway Study included recycled water delivery to the Gateway Ponds and the Gateway Roadways. These demands may be met with non-potable raw water in the future.

(c) For ease of constructing the model, the water demand for the former Gateway Exchange (746 acre-feet) was removed from the recycled water demand for Development Areas 1 and 7. The previous Gateway Study identified a potential 780 acre-feet of demand on various City Parks and that demand has been included in the model.

(d) Because of the changes described in footnotes (a) and (b), the total projected recycled water demand at buildout is approximately 287 acre-feet greater than the projected buildout for the development areas shown in Appendix D.

Table 9-3. Main Distribution Pressure Zone Ground Elevation and Hydraulic Grade

Zone Designation	Ground Elevation, feet			Hydraulic Grade, feet		
	Low	High	Difference	Nominal[a]	Model Low	Model High[b]
A	0	77	77	215	196	260
B	70	153	83	291	273	338
C	150	223	73	361	376	392

(a) Highest elevation in zone at a minimum pressure of 60 psi.
(b) As demonstrated by the computer model, in practice, the hydraulic grade will vary across each pressure zone. Reducing the variation in hydraulic grade across a pressure can be accomplished by construction of larger diameter transmission and distribution pipelines. Hydraulic grade is greatest near the discharge of each pump station.

Ground elevations and hydraulic grades were chosen to provide a range of system pressure from 60 psi to 100 psi as defined in the system evaluation criteria. At the nominal hydraulic grade shown in Table 9-3 and no water flowing through the system (static conditions), the service pressure in each zone would range from 60 psi to approximately 96 psi. Because of friction losses in the distribution system during operations, system pressure near the pump stations can exceed 100 psi. The highest expected pressure in the main system is 115 psi on the discharge side of the Zone B East Pump Station. The pressure gradient can be reduced through construction of larger diameter pipelines.

9.4.1.2 Pipe Sizes

The Main System's proposed recycled water backbone distribution system pipelines range in size from a minimum of 8-inch diameter to a maximum of 36-inch diameter. A Hazen-Williams friction "C" factor of 130 was used in the hydraulic model. This "C" factor would be used for PVC pipelines (16-inch diameter or smaller) and lined ductile iron or steel pipelines (24-inch diameter or larger).

A summary of the proposed pipeline length by diameter is shown in Table 9-4.

Table 9-4 Summary of Main System Pipeline Length by Diameter

Nominal Diameter, inches	Length, feet
8	171,100
12	45,800
16	21,900
24	60,700
36	20,700
Total	320,200

A double barrel transmission main system from the Holly Drive WWTP west to Lammers Road and south in Lammers Road into the Gateway Project is proposed to facilitate project phasing and allow operational flexibility.

The water velocity in all pipelines larger than 8-inch diameter ranges from one foot per second to six feet per second. Because 8-inch diameter is the minimum pipeline size, the velocity in some 8-inch diameter pipelines is less than 1 foot per second. Velocity greater than six feet per second would cause excess friction pressure loss, and would require larger pump station power requirements and greater pipeline pressure near the pump stations.

9.4.1.3 Pipeline Alignment

Pipeline alignments were selected to minimize construction of large diameter recycled water pipelines in major City streets and to avoid difficult utility crossings. The recommended pipeline alignments are shown in Figure 9-1. The largest diameter pipelines (24-inch diameter through 36-inch diameter) would be constructed in currently sparsely developed areas at the north end of the SOI, in Lammers Road, and through the undeveloped areas of the Gateway development. Smaller diameter pipelines (8-inch diameter through 24-inch diameter) would be constructed in potions of MacArthur Drive and Coral Hollow Road.

Major anticipated road and utility crossings include:

- Interstate 205 and Railroad at Lammers Road/Byron Road (36-inch diameter pipeline);
- Grant Line Road at Corral Hollow Road (16-inch diameter pipeline) and MacArthur Drive (24-inch diameter pipeline);
- 11th Street and irrigation/drainage channel at Lammers Road (36-inch diameter pipeline), Corral Hollow Road (12-inch diameter pipeline), and MacArthur Drive (24-inch diameter pipeline); and
- Railroad at Corral Hollow Road (12-inch diameter pipeline) and MacArthur Drive (24-inch diameter pipeline - two locations).

The above list is intended to highlight the anticipated larger utility crossings. Other utility crossings are expected to be encountered during the final design process.

9.4.1.4 Pump Station Location and Capacity

Because the source of the recycled water for all areas within the City's SOI (except for the separately served Tracy Hills Project area) is located at the lowest elevation of Pressure Zone A, the recycled water must be pumped into each pressure zone. Multiple pump stations are required to move water from the Holly Drive facility into Pressure Zone A and then into Pressure Zone B and Pressure Zone C. A further complicating issue is that the zones are split between the west side and the east side and proposed pump stations will be required for both areas. Proposed pump station locations are shown in Figure 9-1. A summary of the pump station design characteristics is shown in Table 9-5.

Table 9-5 Main Distribution System Pump Station Design Criteria

Pump Station	Design Flow Rate, gpm	Design Total Dynamic Head, feet
Zone A[(a)]	23,400	260
Zone B West[(b)]	7,200	250
Zone B East[(c)]	1,445	265
Zone C West	2,830	230
Zone C East	300	60

(a) Includes flow to all other pump stations.
(b) Includes flow to Zone C West booster pump station.
(c) Includes flow to Zone C East booster pump station.

Minimum pressure in all zones is 60 psi, meeting the design criteria described in Chapter 6. As indicated in Chapter 6, neither redundant pumps nor back-up power are required.

9.4.1.5 Seasonal and Diurnal Storage

The average monthly flows are summarized in units of acre-feet in Table 9-6 and in average million gallons per day in Figure 9-2. As shown in both the table and the figure, there will be an excess account of recycled water available from the Holly Drive WWTP in all months and therefore seasonal storage is not required.

Table 9-6 Projected Volume of Recycled Water Seasonal Storage

Month	Available Wastewater Flow, af	Recycled Water Demand, af	Remaining Amount, af
January	1,965	77	1,888
February	1,760	124	1,636
March	1,933	213	1,720
April	1,919	432	1,487
May	1,930	491	1,439
June	1,843	781	1,062
July	1,954	970	984
August	1,941	964	976
September	1,886	751	1,134
October	1,934	633	1,301
November	1,874	302	1,572
December	1,897	172	1,725
Totals	22,836	5,910	16,924

Assuming a peak demand of 23,400 gpm, and a constant flow to diurnal storage of 7,800 gpm at least 11 million gallons of diurnal storage is required. It is recommended that this storage be distributed throughout the system as shown in Table 9-7. Distribution of storage could allow the City to fill the tanks during the day, potentially reducing the need for future infrastructure upgrades.

Table 9-7. Storage Distribution

Pump Station	Storage Volume, million gallons
Zone A	5
Zone B West	3.5
Zone B East	1.0
Zone C West	1.5
Total	11.0

An estimate of the potential capital cost of the recommended facilities for the City SOI recycled water distribution system (excluding the Tracy Hills Project area) and a proposed cost allocation between existing and future recycled water customers are presented in Chapter 10.

9.4.2 Tracy Hills

The Tracy Hills recycled water distribution system begins at the proposed Tracy Hills Water Recycling Facility (WRF), to be located immediately southwest of the Tracy Airport. The layout, demands, and pump stations were based on the October 2000 version of the Tracy Hills Recycled Water Distribution System Master Plan (Tracy Hills Master Plan).

The pipeline alignments and recycled water demands were based on the Tracy Hills Master Plan, although the peak hour demands were adjusted to correspond to the peaking factors described above. The facilities for the Tracy Hills recycled water distribution system are also shown in Figure 9-1.

Pipeline diameters were adjusted to correspond with the nominal pipeline diameters used in the main distribution system.

A summary of the proposed pipeline length by diameter is shown in Table 9-8.

Table 9-8 Summary of Tracy Hills System Pipeline Length by Diameter

Nominal Diameter, inches	Length, feet
8	13,600
12	14,000
16[(a)]	16,600
24	20,100
Total	64,300

(a) Table includes 6300 LF of 16-inch diameter pipeline from the seasonal storage ponds to the WRF

9.4.2.1 Pump Stations

The Tracy Hills recycled water distribution system would be located in recycled water Pressure Zone C and Pressure Zone D, although at slightly higher elevations than the main system. Pressure zone data are shown in Table 9-9.

Table 9-9. Tracy Hills Distribution Pressure Zone Ground Elevation and Hydraulic Grade

Zone Designation	Ground Elevation, feet			Hydraulic Grade, feet		
	Low	High	Difference	Nominal[a]	Model Low	Model High[b]
C	195	290	95	430	332	487
D	285	390	105	530	518	548

(a) Highest elevation in zone at a minimum pressure of 60 psi.
(b) As demonstrated by the computer model, in practice, the hydraulic grade will vary across each pressure zone. Reducing the variation in hydraulic grade across a pressure can be accomplished by construction of larger diameter transmission and distribution pipelines. Hydraulic grade is greatest near the discharge of each pump station.

The Tracy Hills Master Plan recommended that both the Zone C and Zone D Booster Pump Stations be constructed adjacent to the Tracy Hills WRF, instead of having the Zone D Pump Station constructed as a booster station in the Zone C System. West Yost concurs with this recommendation. The logic behind this is three-fold. First, the distribution system is small enough so that the additional pipeline length is not substantial. Second, an emergency pressure reducing valve station was proposed so that some reduced flow could be delivered to the Zone C distribution system through the Zone D distribution system if necessary. Third, having both pump stations at the same location makes it easier for the City to operate and maintain the pump stations. Having all the pressure zone pump stations at one location was not proposed for the main distribution system due to the excessive length of transmission pipeline that would be required.

The pump station design criteria are shown in Table 9-10.

Table 9-10 Tracy Hills Recycled Water Distribution System Pump Station Design Criteria

Pump Station	Design Flow Rate, gpm	Design Total Dynamic Head, feet
Zone C	4,500	280
Zone D	3,000	350

Both the Zone C and Zone D pump stations would pump out of the proposed diurnal storage tank.

9.4.2.2 Seasonal and Diurnal Storage

The seasonal and diurnal storage requirements have been calculated for the Tracy Hills Recycled Water System based on the projected wastewater flow rate provided by others, the projected monthly demand as described in Chapter 4, and the nominal evaporation based on CIMIS data for the City. It is assumed that any wastewater flow in excess of that needed to serve the recycled water demand of Tracy Hills would be either treated, stored, or otherwise disposed of within the Tracy Hills Project area.

The monthly changes in seasonal storage are shown in Table 9-11.

Table 9-11 Projected Volume of Recycled Water Seasonal Storage

Month	Available Wastewater Flow, af	Recycled Water Demand[(a)], af	Evaporation from Ponds, af	Rainfall on Ponds, af	Change in Storage, af	Ending Storage[(b)], af
January	186	25	5	13	170	387
February	167	40	8	10	129	515
March	183	68	17	8	60	575
April	182	139	26	4	—	575
May	183	158	33	2	(6)	569
June	175	251	37	1	(113)	456
July	185	312	40	—	(166)	290
August	184	310	35	—	(160)	129
September	179	241	26	1	(87)	42
October	183	203	17	3	(35)	8
November	178	97	8	8	80	88
December	180	55	5	9	129	217
Totals	2,164	1,899	257	59	—	—

(a) Includes unaccounted-for water.
(b) Assumes 215 acre-feet of storage to begin.

As shown in Table 9-11, to avoid fully depleting the storage of recycled water, at least 575 acre-feet of seasonal storage must be constructed. A 25 percent sizing contingency is recommended to ensure availability of the recycled water supply, for a total recommended seasonal storage volume of 720 acre-feet in the Tracy Hills area. At a nominal water depth of ten feet, a minimum of 75-80 acres would be required, not including required setbacks from property line, roadways, additional levees, and other site considerations.

The proposed location for the seasonal storage is on the southeast side of the Tracy Airport, therefore, a 2,500 gpm return pump station and 2-way pipeline (or two pipelines) must be constructed to convey water from the Tracy Hills WRF to the seasonal storage, and from the seasonal storage back to the diurnal storage tank.

Assuming a peak demand of 7,500 gpm, and a constant flow to diurnal storage of 2,500 gpm, at least 2.4 million gallons of diurnal storage is required. Because of variations in the diurnal wastewater flow rate, a larger diurnal storage tank may be required.

A potential flow balance for the Tracy Hills system is shown in Figure 9-3. The flow to the Tracy Hills WRF, as well as the recycled water demand and the amount of effluent conveyed to seasonal storage, are shown in the figure. As shown, only a small amount of recycled water is produced, in March and April, in excess of irrigation demand, amounting to approximately 60 acre-feet.

An estimate of the potential capital cost of the recommended facilities for the Tracy Hills Project area and a proposed cost allocation between existing and future recycled water customers are presented in Chapter 10.

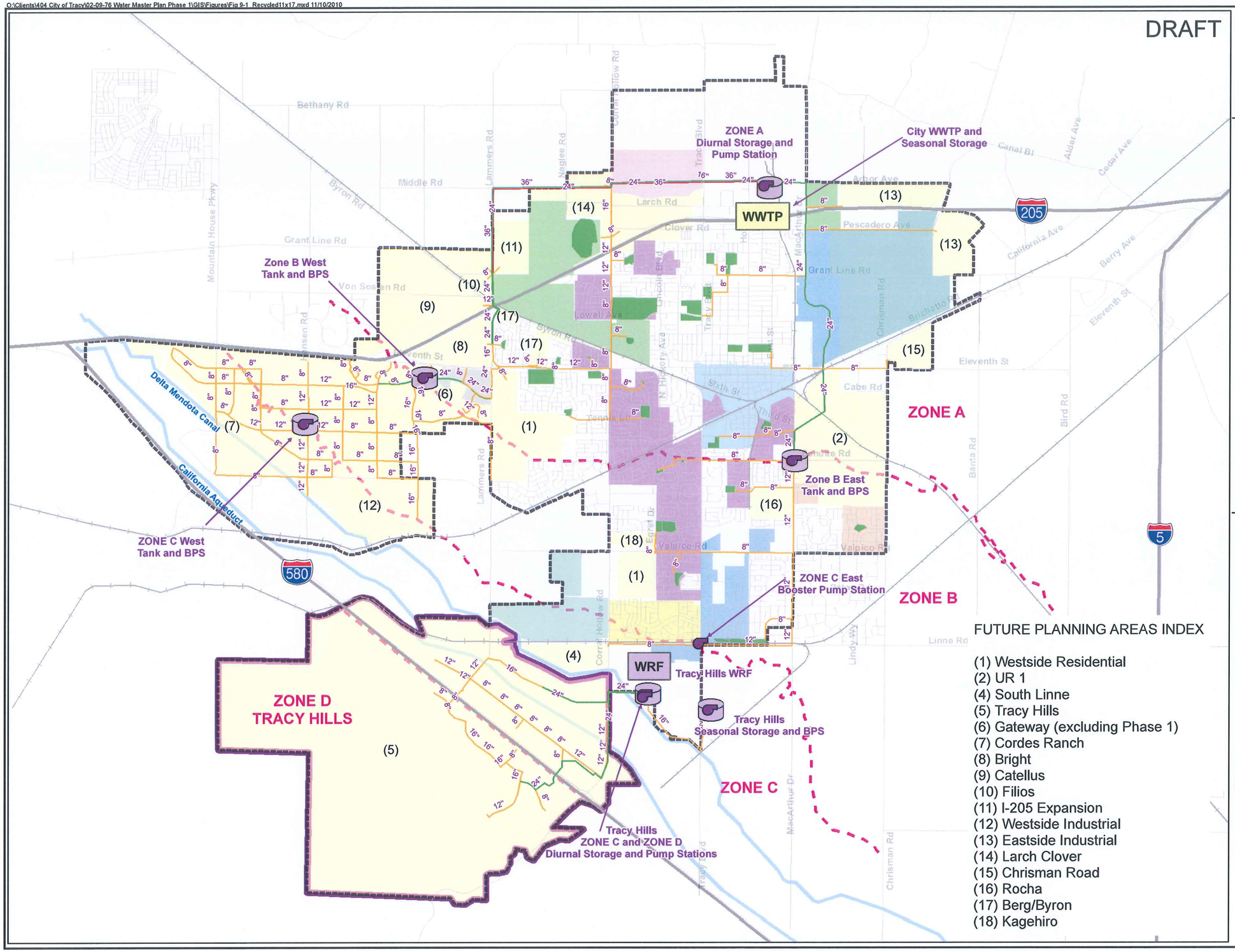
O:\Clients\404 City of Tracy\02-09-76 Water Master Plan Phase 1\GIS\Figures\Fig 9-1_Recycled11x17.mxd 11/10/2010

DRAFT

FIGURE 9-1

City of Tracy Citywide Water System Master Plan

PROPOSED RECYCLED WATER SYSTEM



0 2,640 5,280

Scale in Feet

LEGEND

- Diameter ≤ 16 inches
- 16 inches < Diameter ≤ 30 inches
- Diameter > 30 inches
- Residential Areas Specific Plan
- Industrial Areas Specific Plan
- I-205 Corridor Specific Plan
- Plan "C"
- Northeast Industrial Specific Plan
- South MacArthur
- Downtown Specific Plan
- Ellis Specific Plan
- Tracy Gateway - Phase 1
- Holly Sugar Sports Park
- Future Planning Area (see Index)
- Park/Irrigated Area
- SOI
- Tracy Hills WRF Service Area
- Zone Boundary
- Highway
- Existing Street
- Railroad

FUTURE PLANNING AREAS INDEX

(1) Westside Residential
(2) UR 1
(4) South Linne
(5) Tracy Hills
(6) Gateway (excluding Phase 1)
(7) Cordes Ranch
(8) Bright
(9) Catellus
(10) Filios
(11) I-205 Expansion
(12) Westside Industrial
(13) Eastside Industrial
(14) Larch Clover
(15) Chrisman Road
(16) Rocha
(17) Berg/Byron
(18) Kagehiro

WEST YOST ASSOCIATES
Consulting Engineers

Figure 9-2. Holly Drive WWTP Flow Balance

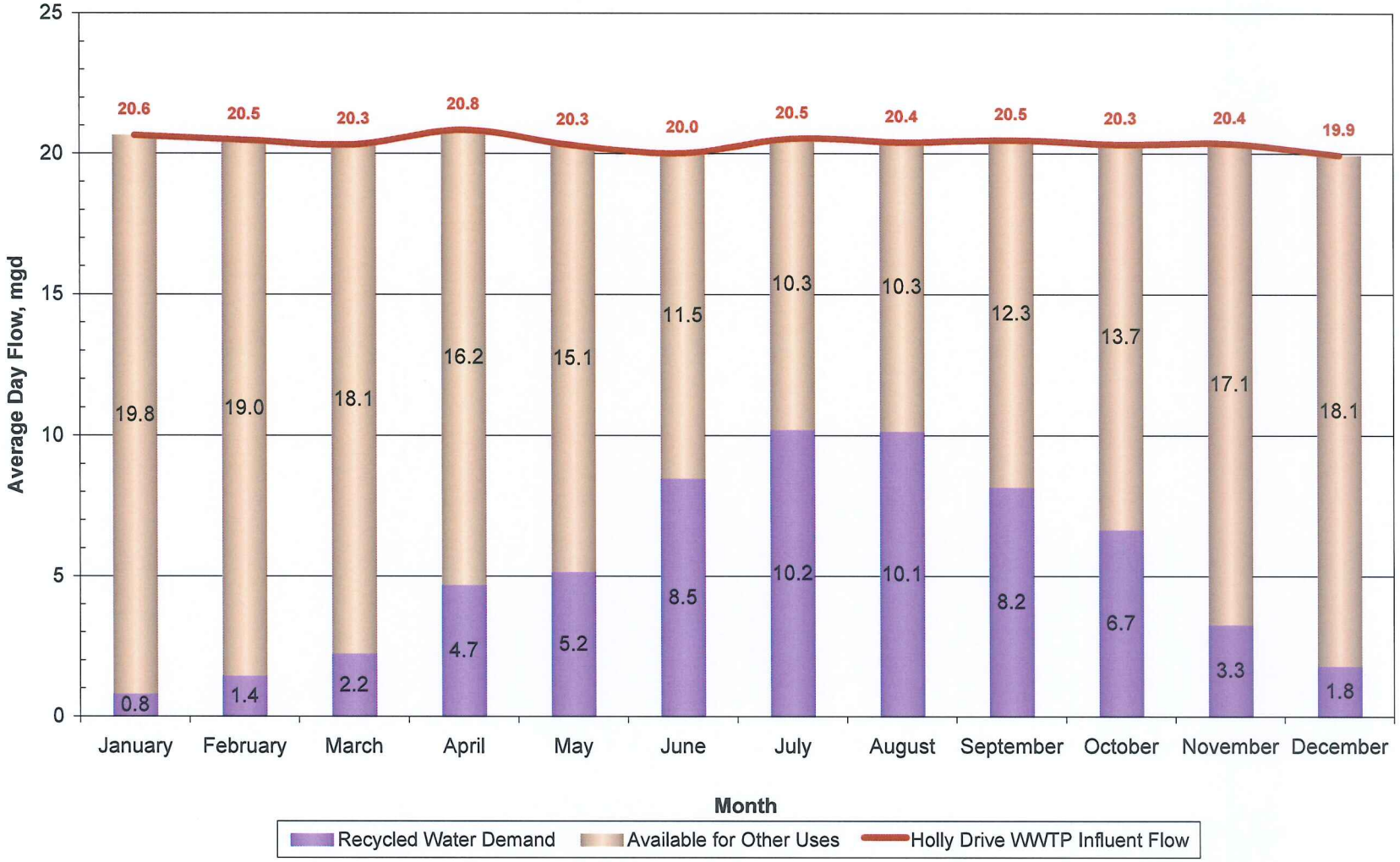


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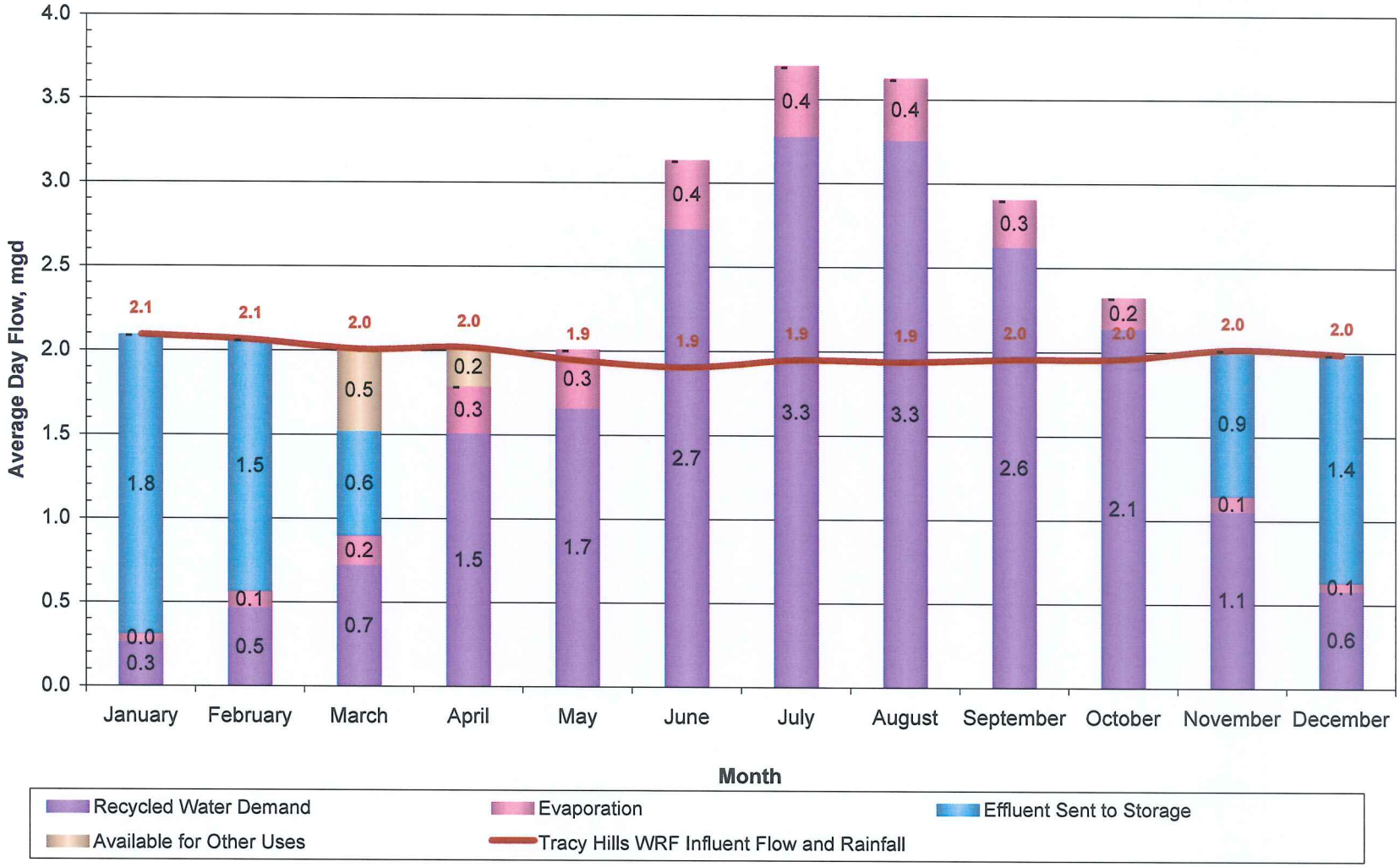
Figure 9-3. Tracy Hills WRF Flow Balance



Appendix L

Final Water Shortage Contingency Plan – City of Tracy
Kennedy/Jenks, 1992

Final Report

Water Shortage Contingency Plan

City of Tracy

K/J 920501.00
February 1992

Kennedy/Jenks Consultants

Kennedy/Jenks Consultants

Engineers and Scientists

Marathon Plaza, Tenth Floor
303 Second Street
San Francisco, California 94107
415-243-2150
FAX 415-896-0999

19 February 1992

Mr. Kevin Tobeck
City of Tracy
520 Tracy Boulevard
Tracy, California 95376

Subject: Water Shortage Contingency Plan
Final Report
K/J 920501.00

Dear Mr. Tobeck:

Per our agreement, enclosed is the Final Water Shortage Contingency Plan prepared for the City of Tracy (City) by Kennedy/Jenks Consultants. This Plan has been developed and based on information and data obtained from you and other City staff. Because there were no public comments received on the Draft Plan, only the City's comments were incorporated into the Final Plan. The Final Plan was adopted by the City Council on 18 February 1992.

If you have any questions regarding this Final Plan, please call me at (415) 243-2452.

Very truly yours,

KENNEDY/JENKS CONSULTANTS, INC.

Elizabeth Teien

Elizabeth Teien, P.E.
Project Engineer

Enclosure

WSCPCVR.LTR/ET-1

WATER SHORTAGE CONTINGENCY PLAN

FINAL REPORT

Prepared for

The City of Tracy

Prepared by

Kennedy/Jenks Consultants
Marathon Plaza, 10th Floor
303 Second Street
San Francisco, CA 94107

February 1992

K/J 920501.00

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C	Water Conservation Resolutions

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Under recent legislation Sections 10621 and 10631 of the California Water Code were adopted, requiring each California urban water supplier providing municipal water directly or indirectly to more than 3,000 customers, or supplying more than 3,000 acre-feet of water annually, to prepare, adopt and submit a Water Shortage Contingency Plan to the California Department of Water Resources (DWR) by 31 January 1992. The Water Shortage Contingency Plan is considered to be an amendment to the urban water suppliers' Urban Water Management Plan. Per the legislation, an urban water supplier that does not submit the Water Shortage Contingency Plan by the 31 January 1992 date will be ineligible to receive drought assistance from the State until the plan is adopted and submitted to the DWR.

1.2 AUTHORIZATION

In December 1991, the City of Tracy (City) authorized (through Purchase Order No. 3539) Kennedy/Jenks Consultants (K/J) to prepare the City Water Shortage Contingency Plan. The following chapters provide the information required by DWR for the Water Shortage Contingency Plan. The information contained herein is based on data obtained from City personnel and data included in Chapter 7 of the Tracy Municipal Code, which is included in Appendix B.

CHAPTER 2

PLAN COORDINATION

2.1 PLAN COORDINATION

Because the City of Tracy holds a contract with the Bureau of Reclamation for a fixed annual allotment of 10,000 acre-feet of surface water from the Central Valley Project (CVP) via the Delta Mendota Canal, development of the City's water conservation and rationing plan was coordinated with the Bureau of Reclamation. This coordination involved discussions regarding potential reductions in the amount of water delivered to the City in dry years. In these discussions, it was indicated that reductions of up to 75 percent of the City's allotment could occur. It was also indicated that in times of extreme hardship, the City may be able to obtain additional water from the CVP. For purposes of this plan, it has been assumed that the worst case supply from the CVP would be a 25 percent delivery (75 percent reduction).

This situation did in fact occur in 1991 when the City's CVP delivery was reduced to just 25 percent of its 10,000 acre-foot allotment (75 percent reduction); the City then applied for "hardship" water and then received an additional amount of water equal to 25 percent of its allotment (overall 50 percent reduction).

CHAPTER 3

CURRENT AND PROJECTED WATER DEMAND

3.1 CURRENT WATER DEMAND

The total water demand for both municipal and industrial uses in 1991 was approximately 9,810 acre-feet (af), or an average of 8.76 million gallons per day (mgd). In 1991, the lowest and highest daily water uses were 5 mgd on a winter day and 16 mgd on a summer day. Based on the City's meter records, municipal (residential and institutional) demand accounted for approximately 69 percent (6,770 af) of the total production, with the remaining 31 percent (3,040 af) divided among commercial and industrial users. A large portion of the water used by commercial and industrial users is used by the Heinz cannery which uses an estimated 5 mgd from July through October.

Water production has steadily increased since 1986 to meet increasing demands as shown in Table 1.

Table 1
Historic Water Production

Year	Total Water Production (af/yr)
1986	8,104
1987	8,262
1988	8,906
1989[1]	8,353
1990[1]	10,804
1991[1]	9,810

[1] Reflects water conservation measures.

The large increase in demand in 1990 was due to the amount of growth and construction activity in Tracy. However, the total demand in 1990 and 1991 is slightly lower than it would have been in a normal rainfall year, because it reflects conservation efforts during the drought.

Based on the total water demand in 1991 (9,810 af/yr) and an estimated total population of approximately 36,000, the per capita consumption rate is estimated to be approximately 0.27 acre-feet per capita per year (af/cap/yr), or approximately 243 gallons per capita per day (gpcd). When this total demand is adjusted to exclude industrial and commercial uses (approximately 3,040 af/yr), the municipal (residential and institutional) consumption rate is approximately 0.19 af/cap/yr, or 168 gpcd.

A per capita consumption rate of 0.308 af/cap/yr (275 gpcd) was used by the U.S. Bureau of Reclamation (USBR) to evaluate a recent request (1984/85 request for an increase of 15,000 af to the annual CVP allotment) from the City for additional water supply from the Central Valley Project. This rate was based on 1986 water production records and includes industrial and commercial use [Kennedy/Jenks Consultants, 1991].

3.2 PROJECTED WATER DEMAND

A recent planning study completed for the City projected that the City's population would increase to 87,000 by the year 2010. Using this projected annual growth rate (approximately 4.5 percent) and USBR's per capita consumption rate of 0.308 af/cap/yr, the projected water demands for 1992 through 1994 are shown in Table 2.

Table 2
Projected Water Demand

	Actual Demand (af/yr)	Projected Demand (af/yr)		
Year	1991	1992	1993	1994
Projected Population[1]	36,000	37,620	39,320	41,100
Municipal (Residential and Institutional)[2]	6,770	8,000	8,360	8,740
Commercial and Industrial	3,040	3,590	3,750	3,920
Total Water Demand[3]	9,810	11,590	12,110	12,660

1 Based on an estimated population of 87,000 in 2010.
2 Assuming that municipal demand is equal to 69 percent of total water demand. Based on 1990 data taken from meter records.
3 Based on a per capita consumption rate of 0.308 af/cap/yr.

CHAPTER 4

CURRENT AND PROJECTED WATER SUPPLY

4.1 CURRENT WATER SUPPLY

4.1.1 Imported Water

The City of Tracy holds a contract with the Bureau of Reclamation for a fixed allotment of 10,000 af/yr of surface water from the Central Valley Project via the Delta Mendota Canal, which is subject to reductions in dry years. Surface water in the Delta Mendota Canal originates from the Sacramento-San Joaquin Delta and is pumped into the Delta Mendota Canal from the Clifton Court Forebay. The City diverts water from the Delta Mendota Canal directly to its water treatment plant, where it is treated, stored and then released into the distribution system. The surface water drawn from the Delta Mendota Canal is of relatively good quality; it is low in hardness and total dissolved solids (TDS).

4.1.2 Groundwater

The City also operates ten wells which provide the City with groundwater. The production capabilities of the wells range from 500 to 2,500 gallons per minute for a total pumping capacity of approximately 17,500 gallons per minute (older wells require rehabilitation to achieve this pumping capacity). Five of the wells are new and are the City's primary wells. Two of the other five wells are in need of pump and casing rehabilitation.

The source of groundwater is primarily the lower section of the Tulare Formation, part of a regional aquifer system in the San Joaquin subregion of the Central Valley groundwater basin. The Tulare Formation is a water-bearing zone which occurs at a depth of approximately 300 to 700 feet below ground surface, and is confined by an extensive clay stratum known as the Corcoran Clay. Based on a recent groundwater yield study [Kennedy/Jenks/Chilton, 1990], the maximum recommended long-term annual groundwater extraction rate for the City was estimated to be approximately 6,000 af/yr. In general, groundwater in the Tracy area is not as good quality as surface water sources (such as the Delta Mendota Canal). The groundwater is very hard (hardness greater than 180 milligrams per liter, mg/L) and contains high concentrations of TDS (750 to 800 mg/L) and sulfates.

Based on 1991 production data, groundwater wells supplied approximately 49 percent of the total demand in 1991 and the remainder was supplied by treated surface water diversions from the Delta Mendota Canal.

In the past, the City has relied on surface water from the CVP for 70 to 80 percent of its supply when it was available because of its higher quality. During 1988 and

1989, the City was in the process of upgrading the water treatment plant and pumped an increased amount of groundwater. In addition, the City's Delta Mendota allotment has been reduced in recent years (1990 reduction 50 percent; 1991 reduction 75 percent with 25 percent hardship, overall reduction 50 percent), due to the ongoing drought conditions and corresponding curtailment of surface water deliveries, and it has had to rely much more on groundwater as shown in Table 3.

Table 3
Historic Water Supply

Year	Water Supply (acre-feet)		
	Central Valley Project via Delta Mendota Canal	Groundwater	Total
1986	5,954	2,150	8,104
1987	6,421	1,841	8,262
1988	5,936	2,970	8,906
1989	3,565	4,788	8,353
1990	4,967	5,837	10,804
1991[1]	4,995	4,815	9,810

[1] In 1991, the City's deliveries were limited to 50 percent of allotment (75 percent reduction with 25 percent hardship).

4.2 PROJECTED WATER SUPPLY

As mentioned in Chapter 2, deliveries to the City from the Central Valley Project (CVP) water could be reduced by up to 75 percent during drought periods. In fact, in 1991 the City's delivery was reduced by 75 percent; however, the City received 25 percent in hardship relief which results in an overall reduction in deliveries of 50 percent. To make up for the reduced CVP deliveries, even with aggressive conservation activities, the City has had to rely more on its groundwater supplies. However, for the period from 15 June to 15 September each year, the City is highly dependent on CVP water for canning purposes due to the high TDS concentrations in the groundwater.

The current water supply and projected worst case water supply, assuming that CVP deliveries will be reduced by 75 percent, is presented in Table 4.

Table 4
Projected Worst Case Water Supply

Source	Contractual Amount (af/yr)	Actual Supply (af/yr)	Projected Worst Case Supply (af/yr)		
		1991	1992	1993	1994
Central Valley Project	10,000	4,995	2,500[3]	2,500[3]	2,500[3]
Groundwater	6,000[1]	4,815	6,000[1]	6,000[1]	6,000[1]
Total	16,000	9,810	8,500	8,500	8,500
Supply Shortage[2]			3,090	3,610	4,160
Percent Supply Shortage[2]		0 %	27 %	30 %	33 %

[1] Recommended long-term annual groundwater extraction rate.
[2] As compared with projected demand (see Table 2).
[3] 75 percent reduction in CVP annual allotment.

The City has also planned for the case where the CVP deliveries are cut off entirely. This emergency situation could occur if service via the Delta Mendota Canal was interrupted due to damage or required long-term maintenance. The projected emergency conditions water supply is presented in Table 4A.

Table 4A
Projected Emergency Conditions Water Supply

Source	Contractual Amount (af/yr)	Actual Supply (af/yr)	Projected Emergency Conditions Supply (af/yr)		
		1991	1992	1993	1994
Central Valley Project	10,000	4,995	0[3]	0[3]	0[3]
Groundwater	6,000[1]	4,815	6,000[1]	6,000[1]	6,000[1]
Total	16,000	9,810	6,000	6,000	6,000
Supply Shortage[2]			5,590	6,110	6,660
Percent Supply Shortage[2]		0 %	48 %	50 %	53 %

1 Recommended long-term annual groundwater extraction rate (annual extraction rate can be increased for short-term periods in the case of emergency conditions).

2 As compared with projected demand (see Table 2).

3 100 percent reduction in CVP annual allotment.

CHAPTER 5

WATER CONSERVATION AND RATIONING PLAN

5.1 STAGES OF ACTION

The City has established a five-stage water conservation and rationing plan to provide for an effective means to manage the local water supply necessary for public health, safety, fire protection and recreational needs. The five stages are summarized in Table 5.

Table 5
Stages of Action

Phase	City-Wide Reduction Goal	Type of Program
Phase I	None established	Voluntary Water Conservation
Phase II	10 percent	Mandatory Restrictions
Phase III	15 percent	Voluntary Reductions and Mandatory Restrictions
Phase IV	25 percent or more	Voluntary Reductions and Mandatory Restrictions
Phase V	Eliminate all uses not related to public health, safety and fire protection needs	Mandatory Restrictions

With the enactment of Chapter 7 of the Tracy Municipal Code, Phase I is automatically implemented. Phases II through IV have been established to achieve subsequent reduction goals in potable water consumption as deemed necessary due to drought conditions or other prolonged water emergencies. Phase V has been established for emergency conditions to eliminate water uses not related to maintaining public health, safety and fire protection needs.

5.2 TRIGGER MECHANISMS

Phase I of the five-stage plan was implemented by the adoption of Chapter 7 of the the Tracy Municipal Code (the Water Management Ordinance). Per Article 5,

"Enactment of [Chapter 7 of the Tracy Municipal Code] shall cause the present implementation of Phase I voluntary conservation."

According to City personnel, one trigger mechanism associated with Phases II, III, IV and V relates to the percent reduction in Central Valley Project water deliveries as shown in Table 6.

Table 6
Trigger Mechanisms

Phase	Percent Reduction in Central Valley Project Deliveries	CVP Deliveries[1] (af/yr)	Ground-water Supply[2] (af/yr)	Total Available Supply[3] (af/yr)	Percent Reduction in Overall Supply[4]
Phase II	25 %	7,500	6,000	13,500	15 %
Phase III	50 %	5,000	6,000	11,000	31 %
Phase IV	75 %	2,500	6,000	8,500	47 %
Phase V	100 %	0	6,000	6,000	62 %

1 Based on contractual amount of 10,000 af/yr.
2 Assumes 6,000 af/yr of groundwater is available during each phase.
3 Central Valley Project deliveries plus groundwater supply.
4 As compared with optimum available amount of 16,000 af/yr (Central Valley Project plus groundwater supplies).

It should be noted that although the percent reduction in overall supply is up to 62 percent, the actual worst case water shortage for 1994 is only 33 percent (53 percent under emergency conditions). This is because the projected demands for 1994 do not require the optimum available quantity of water (10,000 acre-feet of CVP water and 6,000 acre-feet of groundwater). Therefore, under non-emergency water shortage conditions, Phase IV of the City's water conservation and rationing plan is adequate for the projected water shortage. Under emergency conditions ("water emergency" is defined in Tracy City Code Section 11-7.102(b)), as demands approach the optimum available amount and if reductions in CVP deliveries continue, Phase V of the water conservation and rationing plan may need to be implemented.

In accordance with the Chapter 7 of the Tracy Municipal Code, water conservation and rationing plan phase changes are implemented by resolution following a public hearing. Phase changes may occur as a result of either a drought or water emergency declaration by the City Council. The City Council may then direct the

City Manager to implement appropriate water conservation and/or rationing requirements.

With Phase I of the plan already implemented, a drought declaration can be made at any time. Trigger mechanisms associated with a drought declaration are as follows:

- A cutback (25 percent or greater) of available surface water supplies obtained from the Central Valley Project occurs;
- A drought is declared by the Governor of California covering the water sources used by the City, and subsequent reductions of water supplied to the City will occur or are likely to occur;
- Any unusual situation or circumstance (natural disaster, contamination) which affects the quantity or quality of the water supply occurs.

A water emergency can be declared if Phase IV reductions and restrictions are not adequate to maintain water supplies for public health, safety and fire protection. Trigger mechanisms associated with a water emergency declaration are as follows:

- A significant decrease in the ability to pump groundwater due to well contamination, well failure or other equipment or system failure, and no alternative source of water is available;
- Contamination of the water system;
- Natural disasters affecting water deliveries;
- Times of floods which would affect water quality;
- Sabotage or threats of sabotage against the water system;
- Any unusual situation or circumstance which affects the quantity or quality of the water supply.

CHAPTER 6

MANDATORY PROHIBITIONS AND PENALTIES

6.1 PROHIBITIONS AND RESTRICTIONS

The voluntary and mandatory restrictions associated with each of the five conservation and rationing stages discussed in Chapter 5 are summarized in Table 7.

Table 7
Mandatory Restrictions

Phase	Restrictions

Phase I	• No flagrant waste or excessive runoff of water
	• Practice prudent water conservation measures at all times including:
	  • Maintenance of plumbing/irrigation systems (repair all controllable leaks within 72 hours)
	  • Use hand-held sprayer with "trigger" handle
	  • Installation of drought tolerant landscapes and water-efficient irrigation systems
	  • Water in evening hours during nonwindy periods

Phase II	All provisions of Phase I apply, with the following modifications and additions:
	• Provided no unreasonable runoff, landscapes may be irrigated as follows:
	  • Person irrigating must be present and in control of water usage
	  • Unattended between 7:00 pm and 9:00 am (May through September)
	  • Unattended between 4:00 pm and 10:00 am (October through April)
	  • At any time if drip or bubbler irrigation is used
	• Washing of commercial sidewalks, driveways, gas stations, parking lots and other outdoor surfaces is discouraged
	• The addition of water above the minimum level necessary to comply with health or operational requirements for pools, hot tubs or jacuzzi circulation is discouraged
	• No restrictions with respect to reclaimed water use

Phase III	All provisions of Phase I and II apply, with the following modifications and additions: • Irrigation only allowed during certain hours on certain days of the week during nonwindy periods • Washing of commercial sidewalks, driveways, gas stations, parking lots and other outdoor surfaces is prohibited (except on Friday)(except for hazardous materials spills). Use of a bucket is not prohibited at any time • No restaurant may serve water except upon customer request • Hotels, motels, inns, and short-term commercial lodging shall post notice of drought conditions in every guest room • New pools, hot tubs and spas shall have a separation tank and water recovery system installed in the filter backwash system. Floating pool covers required.

Phase IV	All provisions of Phases I, II and III apply, with the following modifications and additions: • Car washing only allowed with a bucket • Auto and RV dealerships can wash vehicles with hose and "trigger" nozzle (only on Fridays or the day before or the day of delivery to purchaser) • No restrictions on laundromats • No restrictions on car washes with water recycling equipment • Facilities with restrooms shall post in each restroom notice of drought condition
Phase V	All provisions of Phases I, II, III and IV apply, with the City Council mandating specific restrictions which may include: • All water uses not required for public health, safety and fire protection are prohibited • No irrigation uses allowed • No recreational water uses allowed

A detailed discussion of the restrictions is provided in Chapter 7, Article 6 of the Tracy Municipal Code (see Appendix B).

Article 6 of the Tracy Municipal Code also sets forth several other prohibitions and restrictions including the following:

- **Temporary water service:** The Public Works Director may suspend the issuance of water permits for such temporary uses such as construction works, when alternative non-potable sources are acceptable and are available.

- **Drawing water from fire hydrants:** No person, other than fire department personnel and City personnel, shall open any fire hydrant or attempt to draw water from a fire hydrant without a permit obtained from the City and approved by the Director of Public Works.

- **Use of fresh water for construction purposes:** The use of fresh water for dust control or other construction purposes shall be prohibited during a declared drought or water emergency when an alternative approved water source is available.

The Tracy Municipal Code also states that further restrictions and/or prohibitions on water use and service may become necessary and that all applicants for water service are subject to all further prohibitions, restrictions, rules and regulations.

6.2 PENALTIES

6.2.1 Rate Structure

The City has adopted two variable rate block structures (one for periods when water conservation is necessary and one for periods when water conservation is no longer necessary). Each rate structure contains both winter and summer consumption ranges. The block rates in dollars per one hundred cubic feet (Ccf) are summarized in Table 8.

Table 8
Rate Structure

Block	Winter Consumption Range (Ccf) (November-April)	Summer Consumption Range (Ccf) (May-October)	Block Rate ($/Ccf)	
			With Conservation	Without Conservation
Block 1	0-12	0-18	$0.60	$0.45
Block 2	13-19	19-29	$0.90	$0.70
Block 3	20-191	30-287	$1.00	$0.80
Block 4	192-10,000	288-15,000	$1.10	$0.90
Block 5[1]	Over 10,000	Over 15,000	$0.45	$0.35

[1] Established for high water users.

Also associated with these rate structures, is a proposed water conservation surcharge for excessive water consumption if voluntary conservation is not sufficient to achieve the City's goals. The water conservation surcharge of $3.00 per Ccf used would be applied when a customer's monthly consumption exceeds prior year seasonal average consumption (i.e. November through April for the winter average and May through October for the summer average). These surcharges would only apply to monthly consumption in excess of 12 Ccf in the winter and 18 Ccf in the summer. This provision minimizes the impact of the surcharge on customers which had previously reduced their water consumption.

6.2.2 Fines

If any of the specific restrictions included within Chapter 7 of the Tracy Municipal Code are violated, the following fines (as described in Chapter 7, Article 3 of the Tracy Municipal Code) shall be assessed:

First violation	$0.00
Second violation	$50.00
Third violation	$100.00
Fourth violation	$200.00

The fourth violation also results in the installation of a meter service flow restrictor at the customer's expense which shall remain in place for the remainder of the drought or water emergency period. Failure to pay the assessed fines will result in termination of service until all fines and reconnection charges are collected.

The following specific violations are not excused from fine or penalty for the first violation:

- Drawing water from a fire hydrant without a valid permit issued by the Public Works Director: Penalty $100.00
- Drawing water from a fire hydrant when a source of reclaimed water is available and is required: Penalty $100.00
- Constructing a bypass around a meter: Penalty $500.00

Excessive violations may also result in termination of service.

CHAPTER 7

REVENUE AND EXPENDITURES ANALYSIS

7.1 PROJECTED REVENUES AND EXPENDITURES

The revenue and expenditures analyses which follow are based on the projected water sales shown in Table 9 for each of the stages of the City's water conservation and rationing plan. The following analyses utilize a base water sales amount of 10,804 af/yr, based on 1990 sales data.

Table 9
Projected Water Sales

Water Conservation and Rationing Plan Phase	Actual 1990	Phase II 10 % Reduction	Phase III 15 % Reduction	Phase IV 25 % Reduction
Projected Water Sales (af/yr)	10,804	9,724	9,183	8,103

A complete Water Revenue and Rate Analysis was prepared for the City in 1991 by Kennedy/Jenks/Chilton. The following information is based on data contained in Kennedy/Jenks/Chilton's final report [Kennedy/Jenks/Chilton, 1991]. The City water department's revenues and expenditures and the projected fiscal impacts of reduced sales due to water conservation and rationing are shown in Table 10.

Table 10
Revenues and Expenditures without Rate Increases

	Actual 1990	Phase II 10 % Reduction	Phase III 15 % Reduction	Phase IV 25 % Reduction
Operating Revenues: Water Sales	$3,150,175	$3,224,872	$3,203,692	$3,053,377
Operating Expenses:				
Purchased Water	$134,010	$100,474	$85,877	$56,739
Maintenance & Operation	$1,968,678	$1,968,678	$1,968,678	$1,968,678
Administration	$173,540	$173,540	$173,540	$173,540
Depreciation	$842,058	$842,058	$842,058	$842,058
Total Operating Expenses	$3,118,286	$3,084,750	$3,070,153	$3,041,015
Surplus or (Deficiency)	$31,890	$140,123	$133,538	$12,362

To offset the financial impact of water conservation and rationing, rate increases are frequently imposed to increase revenues. As discussed in Chapter 6, the City has adopted two different rate structures (one for times without conservation and one for times with conservation). The impacts of the various stages of water conservation and rationing on the City's revenues and expenditures with a rate increase (36 percent increase on variable cost per Ccf and a 25 percent increase on the fixed monthly charge per connection) are shown in Table 11. Other rate scenarios will be reviewed and adopted by the City pending water supply and demand in conjunction with conservation measures.

Table 11
Revenues and Expenditures with Rate Increases

	Actual 1990	Phase II 10 % Reduction	Phase III 15 % Reduction	Phase IV 25 % Reduction
Operating Revenues: Water Sales	$3,150,175	$4,303,851	$4,263,618	$4,047,294
Operating Expenses:				
Purchased Water	$134,010	$100,474	$85,877	$56,739
Maintenance & Operation	$1,968,678	$1,968,678	$1,968,678	$1,968,678
Administration	$173,540	$173,540	$173,540	$173,540
Depreciation	$842,058	$842,058	$842,058	$842,058
Total Operating Expenses	$3,118,286	$3,084,750	$3,070,153	$3,041,015
Surplus or (Deficiency)	$31,890	$1,219,102	$1,193,465	$1,006,279

CHAPTER 8

WATER USE MONITORING PROCEDURES

8.1 MONITORING PROCEDURES

Water use in the City is monitored in three ways:

1. Imported water deliveries from the Delta Mendota Canal are recorded at the City water treatment plant.

2. Daily readings of City of Tracy well production, in gallons, are taken by City of Tracy personnel and summarized on a monthly basis.

3. All of the City's connections are metered and are monitored monthly.

CHAPTER 9

IMPLEMENTATION OF THE PLAN

9.1 ADOPTION OF THE PLAN

The City adopted a Resolution Adopting the Water Shortage Contingency Plan (see Appendix A).

9.2 PLAN ADOPTION STANDARDS

Kennedy/Jenks Consultants prepared this Water Shortage Contingency Plan for the City of Tracy during January 1992. The Plan was adopted on 18 February 1992 and submitted to the Department of Water Resources on 21 February 1992. The Plan includes all the information necessary to meet the requirements of subdivision (e) of the California Water Code Section 10631.

Public meetings and the availability of copies of the Draft Water Shortage Contingency Plan were properly noticed in the City's newspapers. Copies of the Draft Plan were available for public review at City offices and the Public Library. The City held one public meeting on the Water Shortage Contingency Plan.

REFERENCES

Kennedy/Jenks/Chilton, November 1990, "Final Report, Tracy Area Groundwater Yield Evaluation," City of Tracy.

Kennedy/Jenks/Chilton, April 1991, "Final Report, Water Revenue and Rate Analysis," City of Tracy.

Kennedy/Jenks Consultants, April 1991 (revised June 1991), "Existing Conditions Report - Water, Wastewater and Storm Drainage Utilities: Tracy Urban Growth Management Plan," The Planning Center and the City of Tracy.

Tracy Municipal Code, Chapter 7, Water Management.

APPENDIX A

RESOLUTION ADOPTING THE WATER SHORTAGE CONTINGENCY PLAN

RESOLUTION NO. 92-032

WATER SHORTAGE CONTINGENCY PLAN

WHEREAS, Under recent legislation, Sections 10621 and 10631 of the California Water Code were adopted, requiring each California urban water supplier providing municipal water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre feet of water annually to prepare, adopt and submit a Water Shortage Contingency Plan to the California Department of Water Resources, and

WHEREAS, The Water Shortage Contingency Plan is considered to be an amendment to the City's Urban Water Management Plan, and

WHEREAS, The Water Shortage Contingency Plan was prepared by Kennedy Jenks of San Francisco in close coordination with City staff;

NOW, THEREFORE, BE IT RESOLVED That the City Council of the City of Tracy does hereby approve the City's Water Shortage Contingency Plan and authorize the City Manager to file this Plan with the California Department of Water Resources.

****

The foregoing Resolution No. 92-032 was passed and adopted by the Tracy City Council on the 18th day of February, 1992, by the following vote:

AYES: COUNCIL MEMBERS: BILBREY, IVES, MATTHEWS, POMBO, BLAND

NOES: COUNCIL MEMBERS: NONE

ABSENT: COUNCIL MEMBERS: NONE

MAYOR

ATTEST:

DEPUTY CITY CLERK

02-0210.92z
PW

THE FOREGOING DOCUMENT IS CERTIFIED TO BE A CORRECT COPY OF THE ORIGINAL ON FILE IN THIS OFFICE.
BETTY J. DANI
CLERK, CITY OF TRACY
BY: Sharon Smith, Deputy
DATED: Feb 20, 1992

Appendix M

Annual Water Quality Report
City of Tracy, 2009

Water Conservation is Strongly Encouraged

With California facing water delivery challenges, conservation efforts are being stepped up across the state. On February 28, 2008 Governor Arnold Schwarzenegger wrote to the leadership of the California State Senate, outlining key elements of a comprehensive solution to problems in the Sacramento-San Joaquin Delta. The first element on the Governor's list was "a plan to achieve a 20 percent reduction in per capita water use statewide by 2020." In March 2008, the 20x2020 Agency Team was convened to develop a plan to achieve that 20% reduction in per capita urban water use statewide by 2020. However, in early 2009, Governor Schwarzenegger declared an emergency due to continued water shortages and economic impacts. Emergency measures were required to be enacted by all cities and counties in California in an effort to reduce their water consumption. Some local water agencies have already issued mandatory rationing while many others such as the City of Tracy have requested voluntary measures from its consumers in an attempt to lower its water demand.

What does this mean to you as a resident or business owner of the City of Tracy? It means that we must all do our part to conserve water where possible both indoors and outdoors. Simple indoor measures such as taking shorter showers, washing full loads of laundry, never using the toilet as a trash receptacle, running faucets at a lower flow, install restrictors in faucets and showers, repair drips and leaks, run the dishwasher only when it is full, and always turn off water when brushing teeth, are easily achievable and saves hundreds of gallons of water each month. Simple outdoor measures like sweeping instead of rinsing off driveways, parking lots or sidewalks, keeping the water level low on pools to prevent splash out, using a carwash instead of hand washing, always selecting plants that are native to the area, watering lawns only between the hours of 9 pm and 7 am and never longer than 8 minutes per cycle. These simple ways to help conserve will enable the City to meet the required 20% goal and all without mandatory restriction to you the consumer.

For more information on drought conditions visit http://www.water.ca.gov/drought/ .

Substances Expected to be in the Drinking Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or human activity. Contaminants that may be present in source water include:

- **Microbial Contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife;
- **Inorganic Contaminants**, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;
- **Pesticides and Herbicides**, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses;
- **Organic Chemical Contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can, also come from gas stations, urban runoff and septic systems;
- **Radio Active Contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that the tap water is safe to drink, USEPA and the California Department of Public Health prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. California Department of Public Health regulations also establish limits for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (800) 426-4791.

Special Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as those with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune disorders, and some elderly and infants, can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/CDC (Center for Disease Control) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800) 426-4791.

Safe Drinking Water Act

Under the Safe Drinking Water Act (SDWA), USEPA is responsible for setting national limits for hundreds of substances in drinking water and also specifies various treatments that water systems must use to remove these substances. Each system continually monitors for these substances and reports directly to the California Department of Public Health if they were detected in the drinking water. EPA uses this data to ensure that the consumers are receiving clean water and to verify that states are enforcing the laws that regulate drinking water.

This publication conforms to the regulation under SDWA requiring water utilities to provide detailed water quality information to each of their customers annually. We are committed to providing you with this information about your water supply because customers who are well informed are our best allies in supporting improvements necessary to maintain the highest quality drinking water standards.

Where Does Your Water Come From?

Sources of the City of Tracy's water supply include the Stanislaus River, the Delta-Mendota Canal, and groundwater pumped from wells. In 2009, surface water from the Stanislaus River comprised 62%, or 3.4 billion gallons. Surface water from the Delta-Mendota Canal comprised 31% of the total water supply, or 1.7 billion gallons. The groundwater supply comprised 7%, or 0.4 billion gallons of the total water supply. The Stanislaus River water supply is very soft water and has significantly reduced the minerals in the City's water supply. You may no longer need to use a water softener.

Water Quality Control

Before the water reaches your tap, samples are collected and tested in State-certified laboratories. The City of Tracy Utilities Division of the Public Works Department has a regular program of water quality monitoring and system inspection that ensures safe drinking water is delivered to you and your family.

As required by the Federal Safe Drinking Water Act, the City's water supplies must meet stringent water quality standards set by the California Department of Public Health and the United States Environmental Protection Agency. The City of Tracy completed a watershed sanitary survey of its drinking water sources in 2005. This survey can be obtained by contacting the Water Production Supervisor at the number provided below.

Water customers who are landlords receiving this report are asked to share this information with any tenant or user on the premises. The City of Tracy staff is available to answer your questions and provide further information. You are welcome to call Dan Wengrin, Water Production Supervisor, at (209) 831-6302.

We are pleased to report that during the past year, the water delivered to your home or business complied with, or exceeded, all state and federal drinking water requirements! We have compiled a table showing what substances were detected in our drinking water. Although all of the substances listed are under the maximum level allowable set by USEPA, we feel it is important that you know exactly what was detected and how much of the substance was present in the water.

In California, drinking water standards, also called Maximum Contaminant Levels (MCLs), are set in two categories: Primary Standards related to public health, and Secondary Standards which relate to the aesthetic qualities such as taste, odor, and color. Within you will find a complete listing of both types of standards along with the results of the analysis of your water supply.

CITY OF TRACY

2009 Consumer Confidence Report

TRACY

Think Inside the Triangle™

What's in My Water?

ANALYTICAL PARAMETER	SURFACE WATER: SOUTH SAN JOAQUIN IRRIGATION DISTRICT	SURFACE WATER: JOHN JONES WATER TREATMENT PLANT	WELL WATER: AVERAGE	WELL WATER: MINIMUM	WELL WATER: MAXIMUM	REGULATORY LIMITS: MCLG or PHG	REGULATORY LIMITS: MAXIMUM CONTAMINANT LEVEL (MCL)	TYPICAL SOURCE
PRIMARY STANDARDS								
INORGANIC (ug/L)								
Arsenic	ND	0	1	ND	2	0.004	10 ug/L	Erosion of natural deposits
Barium	21	23	24	20	27	2000	1000 ug/L	Erosion of natural deposits
Chromium	ND	1.2	5	4	6	100	50 ug/L	Erosion of natural deposits
Copper	ND	0	1	ND	6	170	1000 ug/L	Erosion of natural deposits
Iron	ND	0	66	ND	210	NA	300 ug/L	Erosion of natural deposits
Manganese	ND	0	7	ND	32	NA	50 ug/L	Erosion of natural deposits
Zinc	ND	0	4	ND	22	NA	5000 ug/L	Erosion of natural deposits
FLUORIDE (mg/L)								
Fluoride	ND	0.00	0.1	ND	0.2	1.0	2.0 mg/L	Erosion of natural deposits
NITRATE/NITRITE								
Nitrate (as NO3)[1]	ND	0.9	5.9	ND	9	45	45 mg/L	Runoff from fertilizer use; Erosion of natural deposits
Nitrate + Nitrite (sum as N)	ND	0.2	1.4	ND	1.9	10	10 mg/L	
REGULATED ORGANICS (ug/L)								
TRIHALOMETHANE								
Bromodichloromethane	1.6	15.0	ND	ND	ND	NA	NA	
Bromoform	ND	7.0	ND	ND	ND	NA	NA	
Chloroform	14.0	6.9	ND	ND	ND	NA	NA	
Dibromochloromethane	ND	19.0	ND	ND	ND	NA	NA	
Total Trihalomethane	15.6	47.9	ND	ND	ND	NA	80 ug/L	By-product of drinking water chlorination
RADIOACTIVITY (pCi/L)								
Gross Alpha	<3.0	<3.0	<3.0	<3.0	<3.0	NA	15 pCi/L	Erosion of natural deposits
SECONDARY STANDARDS								
Aesthetic - Related								
Apparent Color (Units)	ND	3.0	2.0	ND	3.0	NA	15 Units	Naturally occurring organic materials
Copper (ug/L)	ND	ND	1.0	ND	6.0	170	1000 ug/L	Erosion of natural deposits
Corrosivity Index	-0.8	-0.9	1.0	ND	1.0	NA	Non-corrosive	Naturally occurring
Iron (ug/L)	ND	ND	66	ND	210	NA	300 ug/L	Erosion of natural deposits
Manganese (ug/L)	ND	ND	8	ND	32	NA	50 ug/L	Erosion of natural deposits
Odor (TON)	2.0	4.0	2.0	1.0	3.0	NA	3 TON	Naturally occurring organic materials
Turbidity (NTU)[2]	0.2	0.1	1.0	ND	3.0	NA	5 NTU	Soil runoff
Zinc (ug/L)	ND	ND	4.0	ND	22	NA	5000 ug/L	Erosion of natural deposits
Bicarbonate (HCO3) (mg/L)	41	41	162	120	230	NA	NS	Erosion of natural deposits
Total Alkalinity (CaCO3) (mg/L)	34	34	132	96	190	NA	NS	Erosion of natural deposits
Boron (B) (mg/L)	ND	ND	2.0	1.0	2.0	NA	NS	Erosion of natural deposits
Calcium (Ca) (mg/L)	14	16	68	51	91	NA	NS	Erosion of natural deposits
Magnesium (Mg) (mg/L)	2.1	12	26	23	31	NA	NS	Erosion of natural deposits
Sodium (Na) (mg/L)	4.5	57	122	94	150	NA	NS	Erosion of natural deposits
Total Hardness (CaCO3) (mg/L)	44	89	275	220	350	NA	NS	Erosion of natural deposits
TDS (mg/L)	64	270	693	560	830	NA	1000 mg/L	Erosion of natural deposits
Specific Conductance (umhos/cm)	110	480	1067	900	1300	NA	1600 umhos/cm	Substances that form ions when in water
Chloride (mg/L)	13	97	109	94	130	NA	500 mg/L	Erosion of natural deposits
Sulfate (mg/L)	2.4	38	245	190	300	NA	500 mg/L	Erosion of natural deposits
pH	8.2	8.6	7.0	7.0	8.0	NA	6.5 - 8.5 Units	NA
Cryptosporidium (oocyst/L)	0.004	0.091						
WATER DISTRIBUTION SYSTEM DATA SHEET								
BACTERIOLOGICAL (% Present)								
Coliform Density	<1	<1	<1	<1	<1	0	5% Present/mo	Municipal and industrial waste discharge
ORGANICS (ug/L)			**RUNNING ANNUAL AVERAGE**					
Total Trihalomethane			47			NA	80 ug/L	By-product of drinking water chlorination
Total Haloacetic Acids			21			NA	60 ug/L	By-product of drinking water chlorination

[1] Nitrate in drinking water at levels above 45 ppm is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in a serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 45 ppm may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain specific enzyme deficiencies. If you are caring for an infant, or if you are pregnant, you should ask advice from your health care provider.

[2] Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of water quality and the effectiveness of disinfectants.

DEFINITIONS

AL (Action Level): The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements, which a water system must follow.
MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible.
Secondary MCLs (SMCL) are set to protect the odor, taste, and appearance of drinking water.
MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below, which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency.
PHG (Public Health Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.
Primary Drinking Water Standard or PDWS: MCLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.
TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.
NA: Not applicable.
ND: Not detected.
NS: No standard.
NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water.
ppb (Parts Per Billion): One part per billion (or micrograms per liter).
ppm (Parts Per Million): One part per million (or milligrams per liter).
pCi/L (Picocuries Per Liter): A measure of the natural rate of radioactive disintegration.

SAMPLING RESULTS SHOWING TREATMENT OF SURFACE WATER SOURCES

Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water (type of approved filtration technology used).

Turbidity of the filtered water must:
1. Be less than or equal to 0.3 NTU in 95% of measurements in a month.
2. Not exceed 1 NTU for more than eight consecutive hours.
3. Not exceed 3 NTU at any time.

Turbidity Performance Standards: Turbidity (measured in NTU) is a measurement of the cloudiness of water and is a good indicator of water quality and filtration performance. Turbidity results, which meet performance standards, are considered to be in compliance with filtration requirements (that must be met through the water treatment process).

Lowest monthly percentage of samples that met Turbidity Performance Standard No.1: 100%.

STANISLAUS RIVER WATER IS HERE

The City of Tracy is committed to providing a safe, reliable and affordable water supply to meet the needs of the community today and in the future. The City has participated with the cities of Manteca, Lathrop, Escalon and the South San Joaquin Irrigation District to bring high quality Sierra water from the Stanislaus River. This water source has increased the reliability of the City water supplies by having a third source of supply and provide redundancy in treatment facilities by having a second water treatment plant. Delivery of water began in August 2005 and now comprises more than one half of the City's water supply.

CROSS CONNECTION PROTECTION

Backflow prevention assemblies are designed to allow water to flow into your home or office from the public water system but not allow water to flow in the reverse direction, creating effective cross connection protection. Reverse flow can carry untreatable pollutants and contaminants back to the public water system, compromising the water quality for all customers. Backflow prevention assemblies are required to be tested annually to ensure they are effectively protecting the public water system. If your residence has an active well on the premises or your business has fire sprinklers and/or landscaping, you probably have a backflow prevention assembly. For questions regarding annual testing requirements, please call (209) 831-4488.

WATER SOURCE ASSESSMENT

An assessment of the drinking water sources for the City of Tracy's water system was completed in June 2001. The sources are considered most vulnerable to the following activities: airports (maintenance and fueling areas), gas stations (historic and current), mining activities (historic and current), and septic and waste landfill dumps (historic and current). You may request a copy of the assessment by contacting Dan Wengrin at (209) 831-6302.

Six of the City's wells contain elevated levels of Boron. Boron is a naturally occurring, non-carcinogenic, unregulated contaminant.

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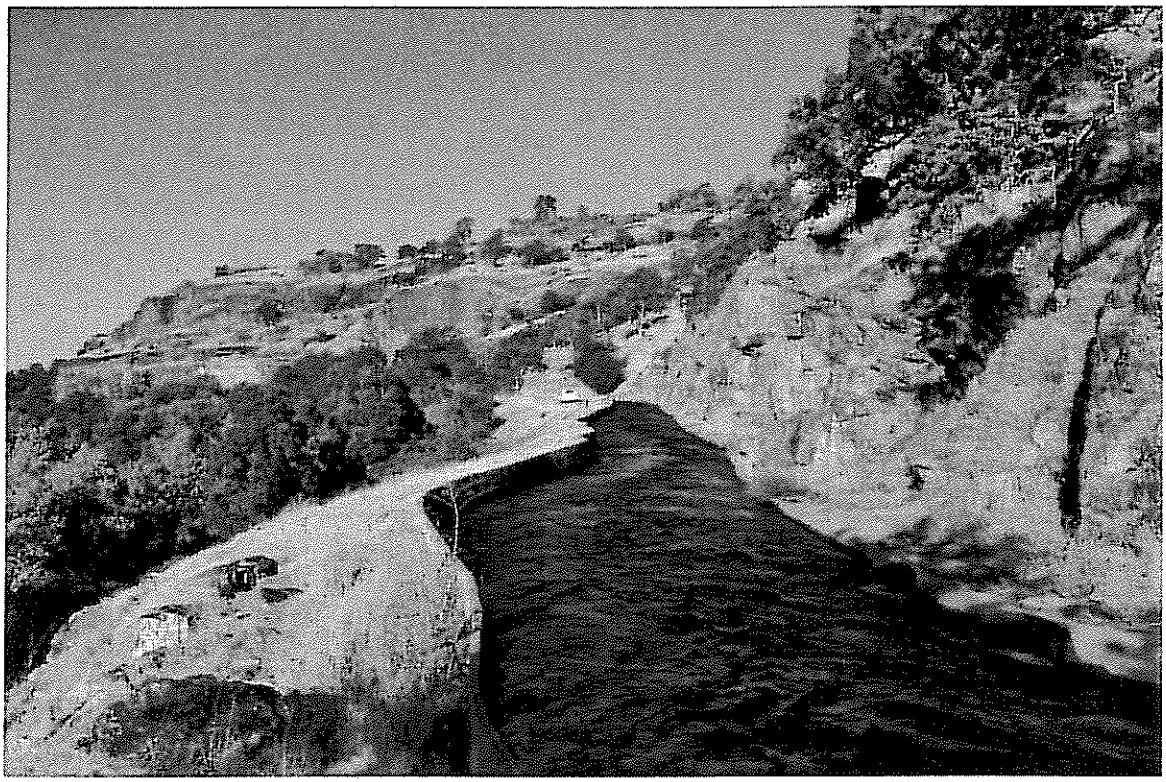
SAMPLING RESULTS SHOWING THE DETECTION OF LEAD AND COPPER						
Lead and Copper (To be completed only if there was a detection of lead or copper in the last sample set)	# Of Samples Collected	90TH Percentile Level Detected	# Sites Exceeding AL	AL	MCLG	Typical Source of Contaminant
Lead (ppb)	41	1.3	0	15	2	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits.
Copper (ppm)	41	0.22	0	1.3	0.17	Internal corrosion of household water plumbing systems; erosion of natural deposits; leaching from wood preservatives.

Appendix N

Excerpts from: *Sanitary Survey Update – South San Joaquin Irrigation District*
Black & Veatch Corporation, March 2005

Sanitary Survey Update

South San Joaquin Irrigation District



Submitted by:

BLACK & VEATCH
Corporation

March 2005

Table 8-1 – Raw Water Quality Data Summary (1998-2004)

Parameter	Reservoir Intake			Canal Intake		
	Average	Maximum	Minimum	Average	Maximum	Minimum
pH	7.59	9.00	6.50	7.45	7.84	6.98
Temperature, °C	17.1	27.3	7.3	13.27	19.7	7.1
TDS, mg/L	50.9	81	16	46.51	72	12
Turbidity, NTU	4.91	14	1	1.12	3.5	0.36
Ca, mg/L as $CaCO_3$	13.83	24	5	16.05	22.9	11.8
Mg, mg/L as $CaCO_3$	4.61	18.25	N.D.	4.97	12.00	N.D.
Total Hardness, mg/L as $CaCO_3$	22.32	33.9	13.0	21.89	29.25	18.35
Total Alkalinity, mg/L as $CaCO_3$	29.27	45.3	18.9	29.44	45	25
SO_4, mg/L	2.53	5	N.D.	2.02	2.7	N.D.
CL^-, mg/L	1.17	2	N.D.	0.97	1.3	N.D.
NO_3^-, mg/L	0.42	1.5	N.D.	N.D.	N.D.	N.D.
Na, mg/L	2.62	5.1	2.00	2.33	2.8	2
K, mg/L	0.88	2.9	N.D.	0.18	1.1	N.D.
NH_3, mg/L	0.55	2.89	N.D.	0.16	0.3	0.01
TOC, mg/L	2.17	4.9	0.60	1.54	2.3	1.3
DOC, mg/L	2.04	4.8	N.D.	1.44	1.7	1.2
UV254, 1/cm	0.09	0.41	0.04	0.04	0.05	0.03
Color	10.98	50	5	8.03	15	3
Odor, TON	10.91	40	N.D.	6.44	17	1
Al, µg/L	284.39	1500	33	30.29	87	N.D.
Fe, µg/L	244.09	1000	N.D.	31.71	95	N.D.
Mn, µg/L	4.34	10	N.D.	6.87	10	3.8
Zn, µg/L	5.45	21	N.D.	---	---	---
MTBE, µg/L	3.31	8.3	N.D.	N.D.	N.D.	N.D.
Copper, µg/L	5.9	15	N.D.	3.45	6.9	N.D.
Lead, µg/L	0.58	1.6	N.D.	N.D.	N.D.	N.D.
Nickel, µg/L	0.5	1	N.D.	N.D.	N.D.	N.D.
Cadmium, µg/L	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Chromium, µg/L	2.2	3.5	N.D.	N.D.	N.D.	N.D.
Barium, µg/L	19.14	26	17	12.22	14	11
Langlier Index	-1.70	-0.75	-2.41	-1.66	-0.90	-2.36
TTHM TFP, µg/L	97	203	53	74.0	102	50
Title 22 Organics, µg/L	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
HAA5 TFP, µg/L	113.65	230	78	87.79	100	75

N.D. – Not Detected

Table 8-2- Total Coliforms Summary at Various Locations in the Watershed

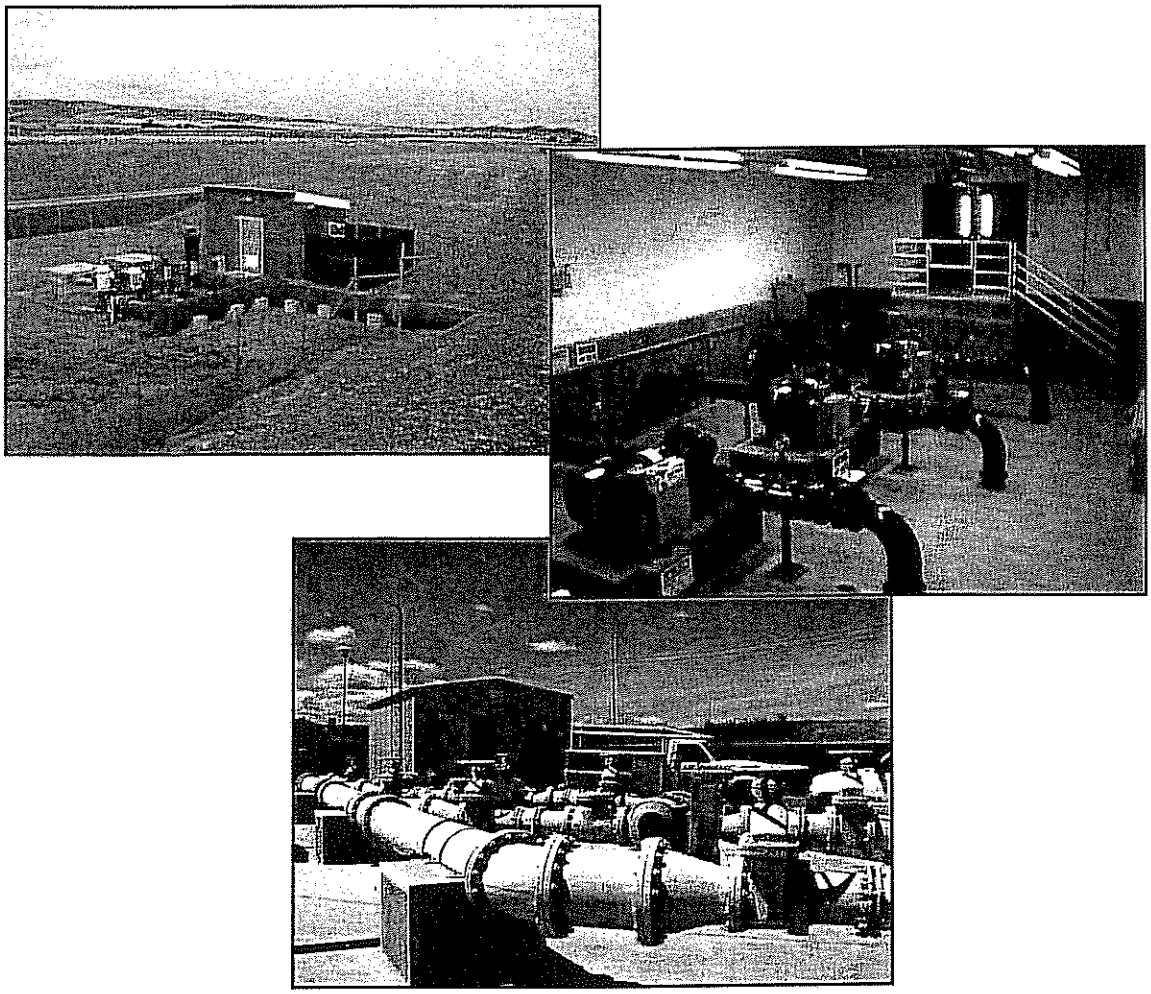
Location	Date Range	# of Samples	Average MPN/100mL	Max MPN/100mL	Min MPN/100mL
Goodwin Dam	4/7/99 - 10/2/00	46	18.4	70	2
SSJMC	4/7/99 - 7/25/04	72	72.5	1600	3
Woodward Reservoir	1/8/98 - 7/25/04	164	71.8	1600	2
Marina	6/1/99 - 7/25/04	15	161	1600	5
Bayview Point	6/1/99 - 7/25/04	15	207	1600	2

Appendix O

Excerpts from: *City of Tracy Water System Emergency Response Plan*
West Yost, 2003

City of Tracy

Water System Emergency Response Plan



Prepared by
West Yost & Associates

June 2004

Compliance with SEMS

The City's Emergency Plan and Emergency Management Organization is consistent with the Standardized Emergency Management System (SEMS). This Water System ERP is also consistent with SEMS. All local government agencies must use SEMS in multi-jurisdictional or multi-agency emergency responses to be eligible for state reimbursement of response-related costs.

SEMS defines a standard organization with accompanying roles and responsibilities to be used by public agencies in the field and in the Emergency Operations Center (EOC) whenever as emergency requires response from multiple agencies. SEMS utilizes the Incident Command System (ICS), which was originally developed by the fire service for managing emergency response to wildland fires.

The five organizational levels of SEMS are defined in Figure 1. Figure 2 shows the California OES regions. The City is located in OES Inland Region IV.

State	→	Statewide resource coordination integrated with federal agencies (e.g. California Office of Emergency Services)	→	California Office of Emergency Services (OES)
Regional	→	Manages and coordinates information and resources among operational areas (e.g. OES Inland Region IV)	→	State OES Inland Region IV
Operational Area	→	Manages and coordinates all local governments within the geographic boundary of a county (e.g. San Joaquin County)	→	San Joaquin County Office of Emergency Services
Local	→	County, city or special district (e.g. City of Tracy)	→	City of Tracy
Field	→	On-scene responders	→	Public Works Department operational and field staff

Figure 1. SEMS Organizational Levels

Emergency Categories

Four response categories have been defined for the Public Works Department to provide a common method of describing the type of event, area affected and extent of coordination or assistance needed. These response categories are described in Table 6.

Table 6. Public Works Department Emergency Response Categories

Emergency Response Category	Types of Emergencies	Examples of Possible Emergencies	Agencies Involved
Category 0: Readiness/ Routine Response	On-going response to daily emergency situations	▪ Minor pipe breaks/leaks ▪ Water supply/quality alerts from DMC ▪ Equipment malfunction at City facility	▪ Public Works staff
Category 1: Local Emergency	Situation confined to one location within the City service area and not adversely affecting local services, populations or traffic. Public Works staff may require assistance from another local agency.	▪ Single pipeline break ▪ Single pump station out of service ▪ Localized hazardous materials spills ▪ Localized power outage ▪ Water supply alert from the Bureau requiring the City to shut off supply from DMC for a short amount of time	▪ City Manager, Public Works Director and staff ▪ County hazardous materials response team ▪ PG&E
Category 2: Local Disaster	Situation affecting multiple local services, populations and geographic areas. Coordination is necessary between several local agencies.	▪ Major transmission pipeline break or failure of a storage reservoir ▪ Landslide ▪ Localized fire ▪ Localized flooding ▪ Large hazardous material spill ▪ Widespread power outage ▪ Water supply alert from the Bureau requiring the City to shut off supply from DMC for an extended amount of time	▪ City Manager, Public Works Director and staff ▪ Local fire department ▪ Local police ▪ Highway patrol ▪ County OES ▪ PG&E
Category 3: Major Disaster	Regional disaster involving widespread damage to structures and disruption of services	▪ Major earthquake with widespread damage to water system ▪ Multiple pipeline breaks ▪ Long-term loss of water supply from DMC	▪ City Manager, Public Works Director and staff ▪ Local, County and State agencies

PLAN ACTIVATION

Definition

This plan will be activated to the extent required by the nature and scope of the emergency. This activation process, including plan triggers, staff responsibilities, mutual aid or assistance availability and damage assessment, is covered in this section.

Triggers/Criteria

As described earlier (Table 6), four emergency categories have been defined for the City's Public Works Department. Responses must be coordinated in accordance with these categories. A summary of response categories, potential triggers and potential response actions are listed in Table 9. During an emergency, changing conditions (including water demand, storage and supply) must be closely monitored in order to assess the impact of the emergency on water system operations and customers and the need for additional response actions.

Table 9. Response Categories, Triggers and Potential Response Actions

Emergency Response Category	Potential Response Triggers	Potential Response Actions
Category 0: Readiness/ Routine Response	▪ Minor pipe breaks/leaks ▪ Equipment malfunction at a water facility ▪ Water supply/quality alerts from DMC	▪ Assess outage duration and determine if additional supplies or reduced demand is necessary. ▪ Assess and repair problem ▪ If possible, fill and maintain storage reservoirs at full in case water supply issue is escalated ▪ Coordinate with SLDMWA to stay informed on water supply status ▪ Remain alert and ready for potential escalation of water supply problem
Category 1: Local Emergency	▪ Single pipeline break/pipeline split ▪ Single pump station out of service ▪ Localized hazardous materials spills ▪ Localized or short-term power outage ▪ Water supply/quality alert from SLDMWA requiring City to shut off supply from DMC for a short amount of time ▪ Potential impact to private property	▪ Assess outage duration and determine if additional supplies or reduced demand is necessary. ▪ Assess and repair problem ▪ Notify impacted homeowners as necessary ▪ Closely monitor water demands and storage levels ▪ Relocate/utilize emergency generators as needed ▪ Contact County hazardous materials response team as needed ▪ Contact PG&E as needed ▪ Coordinate with SLDMWA to stay informed on water supply status from DMC

Emergency Response Category	Potential Response Triggers	Potential Response Actions
Category 2: Local Disaster	▪ Major transmission pipeline break or failure of a storage reservoir ▪ Landslide ▪ Localized fire ▪ Localized flooding ▪ Large hazardous material spill ▪ Widespread or long-term power outage ▪ Water supply/quality alert from SLDMWA requiring City to shut off supply from DMC for an extended amount of time	▪ Assess outage duration and determine if additional supplies or reduced demand is necessary. ▪ Assess damage and develop and implement a prioritized plan for repairs ▪ Closely monitor storage levels in reservoirs still operational ▪ Relocate/utilize emergency generators as needed ▪ Notify customers of supply outage/interruption, as necessary ▪ Coordinate with local fire and law enforcement, as necessary ▪ Coordinate with County OES ▪ Coordinate with SLDMWA to stay informed on water supply status from DMC
Category 3: Major Disaster	▪ Major earthquake with widespread damage to water system ▪ Multiple pipeline breaks ▪ Major fire ▪ Long-term loss of water supply from DMC	▪ Activate EOC ▪ Assess outage duration and determine if additional supplies or reduced demand is necessary. ▪ Notify customers of supply outage ▪ Stop delivery of potable water to customers (or issue Boil Water Order or Unsafe Water Alert), as necessary ▪ Notify County OES ▪ Notify DHS ▪ Assess damage to City water facilities and establish priorities for repairs ▪ Coordinate with SLDMWA to stay informed on water supply/quality status from DMC ▪ Closely monitor storage levels in any reservoirs still operational ▪ Track all emergency expenditures for possible reimbursement

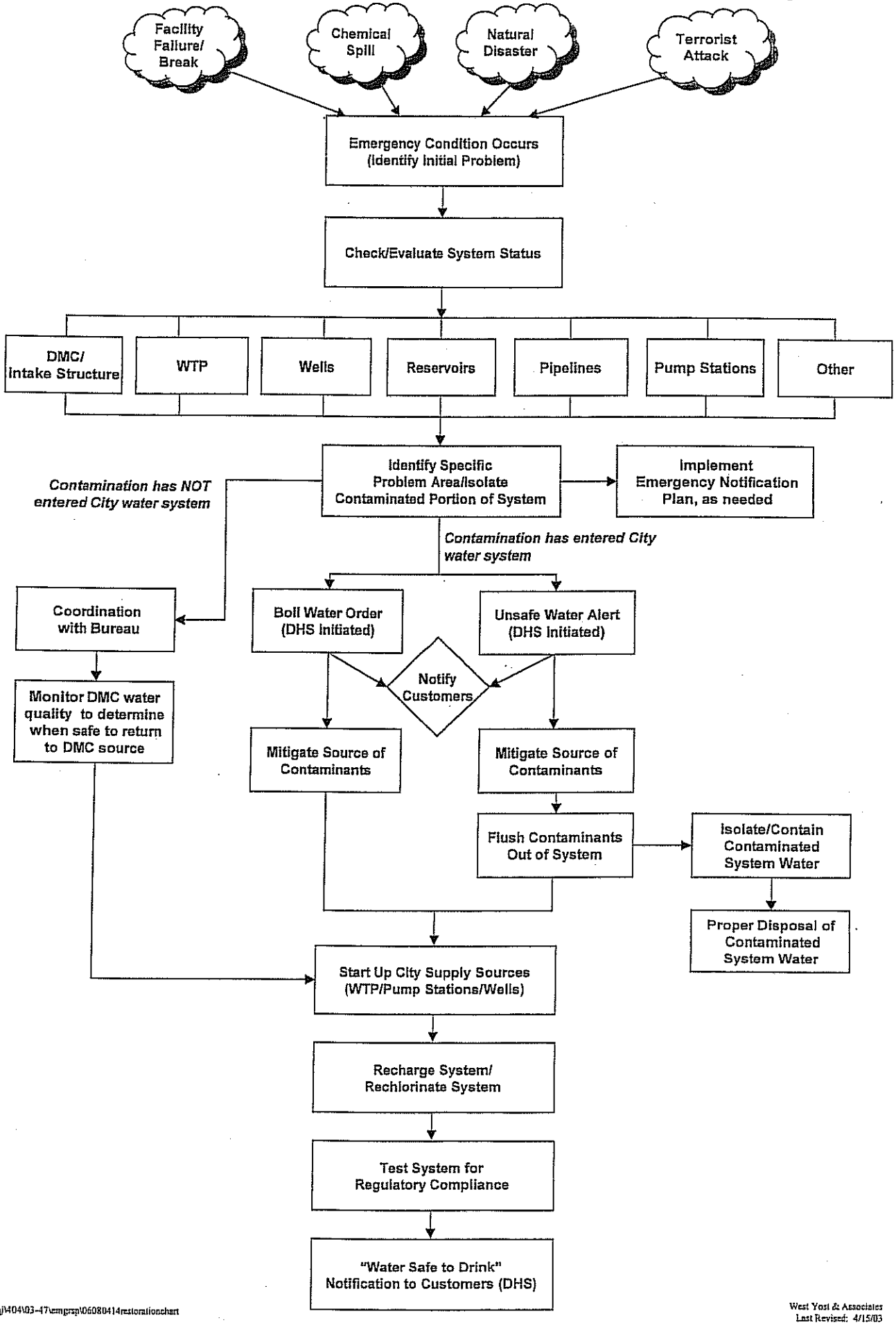
Staff Recall

City Public Works staff resources are limited and most Public Works employees work normal business hours, Monday through Friday. Only the John Jones Water Treatment Plant and the Wastewater Treatment Plant have personnel on-site 24 hours per day, seven days a week. During normal business hours, Public Works staff maintains communications via cell phones, pagers and vehicle radios. If an incident occurs in the field or at one of City's water system facilities during normal business hours, the first person at the emergency scene automatically becomes the Incident Commander until other Public Works personnel or appropriate authorities replace him/her. During off-hours, field personnel are on-call and are reachable via pager or cell phone in the case of an emergency.

Table 10. Deactivation Triggers and Potential Deactivation Actions

Emergency Response Category	Potential Deactivation Triggers	Potential Deactivation Actions
Category 3: Major Disaster	▪ DMC supply has been partially restored ▪ Major pipeline breaks have been repaired ▪ Primary wells, pump stations and reservoir are operational	▪ Deactivate EOC ▪ Notify customers ▪ Notify County OES ▪ Notify DHS ▪ Start disinfection of transmission mains and purge system of all non-potable water ▪ Start to operate water system in a normal operating mode
Category 2: Local Disaster	▪ Demands can now be met utilizing normal flows from DMC ▪ Suppressed local fire or hazardous materials release ▪ Pipelines/storage tanks have been repaired ▪ Power has been restored ▪ SLDMWA advises that DMC supply has been restored	▪ Stop use of emergency generators ▪ Notify customers/agencies that operations are returning to normal
Category 1: Local Emergency	▪ Repair work has been completed by Public Works personnel ▪ SLDMWA advises that DMC is operating normally	▪ Perform testing to ensure that systems are operating normally ▪ Inform all involved that operations are back to normal
Category 0: Readiness/ Routine Response	▪ Repair work or testing has been completed by Public Works personnel ▪ SLDMWA advises that water supply alert is over	▪ Advise all that operations are back to normal

City of Tracy
Plan for Restoration of Water Service After an Emergency



Appendix P

City of Tracy Sewer Rates

EXHIBIT A

Wastewater Rates

Residential (Monthly Charge)	
Single-Family Residential	$31.00
Multiple-Family Dwellings	$26.55
Septage (per 1,000 gallons)	$64.75
Commercial Classes	
(Minimum Monthly Charge)	$26.55
Commercial I (Volume Charge per ccf)	$1.87
Commercial II (Volume Charge per ccf)	$2.70
Commercial III (Volume Charge per ccf)	$4.38
(ccf = 100 cubic feet or 748 gallons)	
Industrial Charges	
Capacity Charges	
Flow ($ per mgd per year)	$328,338
BOD ($ per lb.)	$35.92
SS ($ per lb.)	$54.25
Use Charges	
Flow ($ per mg)	$469
BOD ($ per 1,000 lbs.)	$477.16
SS ($ per 1,000 lbs.)	$225.40
Industrial Charges (Leprino Foods)	
Capacity Charges	
Flow ($ per mgd per year)	$244,984
BOD ($ per lb.)	$27.13
SS ($ per lb.)	$40.96
Use Charges	
Flow ($ per mg)	$469
BOD ($ per 1,000 lbs.)	$477.16
SS ($ per 1,000 lbs.)	$225.40
(mgd = million gallons per day)	
(mg = million gallons)	