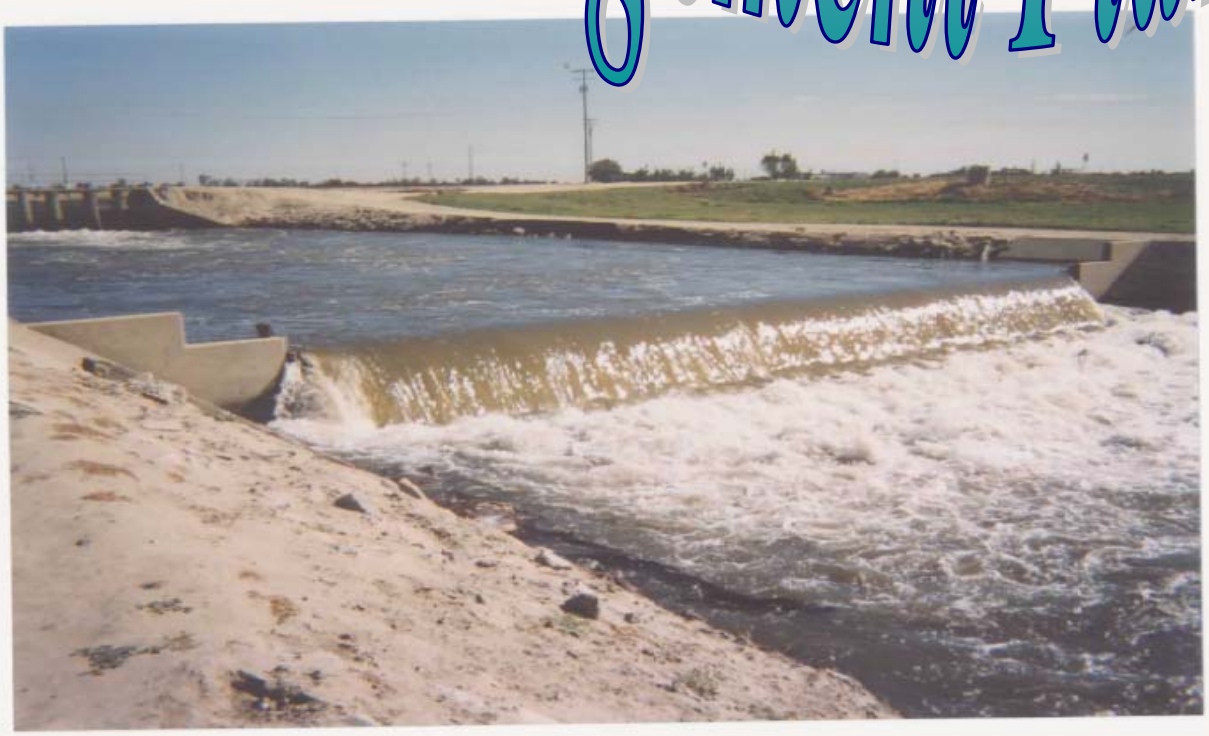
Tulare Lake Basin Water Storage District

Water Management Plan



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SB 1938 GWMP Incorporated

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DEVELOPMENT AND CONTENTS OF WATER MANAGEMENT PLAN (WMP)

STEP 1: COORDINATE WITH OTHER AGENCIES AND THE PUBLIC

A. WORKING COOPERATIVELY WITH INTERESTED PARTIES TO DEVELOP AND IMPLEMENT A WMP:

Other Signatories

- *Agricultural Management Council, Regional Subcommittee Group; Re: discussions with agricultural water suppliers' similar WMP's*

Public Participation

- *Board and Landowner meetings involving Farm Operators in the WMP process, together with members of the Executive Committee of the Tulare Lake Bed Coordinated Groundwater Management Plan*

Workshops/Conferences

- *Bureau of Reclamation's Water Conservation Planning Workshop, December 1997; Re: Bureau's implementation process for evaluating water management plans of Federal water supply contractors California Irrigation Institute's 36th Annual Meeting and Conference, February 1998; Re: Efficient water use by Ag, urban, and the environmental sectors*
- *Agricultural Water Management Council sponsored AB 3616 Workshop, October 1998*
- *Agricultural Water Management Council sponsored Workshop, December 1998; Re: Water Conservation Coordinator Training*

B. DESCRIPTION HOW PARTICIPATION BY INTERESTED PARTIES WAS SOLICITED: (OTHER WATER SUPPLIERS [LOCAL, STATE, AND FEDERAL] AND CITIZENS GROUPS)

The Agricultural Advisory Committee, forerunner to the Agricultural Water Management Council, was created to develop the framework for the WMP's for agricultural water suppliers. Through continued meetings of over 40 water supplier signatories, 3 environmental organization signatories, and over 35 third party interests, a cooperative exchange of information is developed between the three groups.

STEP 2: WATER SUPPLIER (TULARE LAKE BASIN WSD) DESCRIPTION

A. HISTORY AND SIZE:

- Date of Formation: *September 10, 1926*

- Source of Water Supply (District & Non-District): *Kings and Tule Rivers surface water supplies, State Project Water (SPW), groundwater, and floodwaters impounded in the Tulare Lake Bed (Residual Floodwaters)*

- Gross Acreage: *Approximately 190,000 acres (300 square miles)*

- Irrigated Acreage: *Approximately 170,000 acres (266 square miles)*

B. LOCATION AND FACILITIES

- Miles of Unlined Canals: *Lateral A= 12.8; Lateral B= 2.0 (District owned facilities)*

- Miles of Lined Canals: *Lateral A= 2.2; Lateral B= 6.1 (District owned facilities)*

- Miles of Pipelines: *None*

- Miles of Drains: *Interceptor Drains adjacent to Lateral A = 8.3; Lateral B = 5.5*

- Reservoirs and Capacity: *Empire Weir No. 2 Pool at terminus of the South Fork of the Kings River approximate capacity = 400 acre fee*t

- Water Supplier Tailwater/Spill Recovery System: *No District System; All on-farm*

- Water Supplier Delivery System: *Arranged Demand: 24/48 hour-lag time for Kings River water and 24 hour- lag time for SPW.*

Any Additional System Information: *There are no groundwater wells owned or operated by the District. The District is located in the Tulare Lake hydrologic basin, a closed basin. The District neither owns nor operates any internal distribution systems.*

- Map of Service Area of Water Supplier Facilities: *(See Attachment 1)*

- Describe Restrictions on Water Source and How it Affects Delivery Operations:
  - *SWP: Regulatory restrictions (Endangered Species Act, etc.) result in periodic delivery reductions and reduced reliability. The limitation of Delta exports adds some uncertainty to time-of-use for the District's Water Users. Regulatory restrictions have had a negative impact on irrigation scheduling and water management.*

  - *Kings River: Channel losses and fishery management periodically affect delivery flexibility.*

- If Service Area is expected to Materially Change in the Next 5 Years, Describe:
  - *There are no anticipated changes in the District's service area.*

C. TERRAIN AND SOILS

The topography of the Tulare Lake Basin Water Storage District (District) is a gradually sloping trough from the District's outer boundary toward the lowest region in the Tulare Lake Bed. The lowest region of the Tulare Lake Bed is approximately 175 feet above mean sea level (MSL). The generally flat terrain has an average slope of about one-foot per every mile from the lowest area towards the boundary. The District is a "closed" basin with no natural outlet. It is important to note that no natural outflow from the historic Tulare Lake has occurred since the late 1870's. This is a result of upstream diversions on the eastside of the San Joaquin Valley from the four major river tributaries, Kings, Kaweah, Tule and Kern, to the District, and the U.S Army Corps of Engineers flood control projects on the tributaries. However, periodic floodwaters occurring in above-normal runoff years can inundate highly productive farmland within the District approximately 1 out of every 7 years.

The District's boundary follows the rim of the Tulare Lake Bed, indicated on Attachment 1. The map reflects the District's boundary superimposed on the topography. All elevations are based on a spring 1966 survey conducted by the United States Geological Survey. Elevations are subject to revision due to known subsidence, which is occurring throughout the San Joaquin Valley. The elevations were most recently revised in 1983.

The soils in the region are primarily semi-permeable to impermeable clay soils. The rim soils are primarily fine-grained, silty alluvium deposited along the shoreline of the historical Tulare Lake. The Corcoran Clay is an impermeable hydrologic barrier that ranges from 400 to 600 feet below the surface. The clay layer ranges in thickness from 50 to 200 feet. As a result of the clay strata, any economically feasible attempt to directly recharge the aquifer below the Corcoran Clay is impractical within the District boundary. Groundwater found in the southwesterly two-thirds of the District is typically unusable due to the high concentrations of salts and heavy impermeable soils.

The Water Users [farm operators and/or landowners] take advantage of the area's flat topography and fine-textured clay soils to minimize the use of pump lift stations. Due to the terrain and heavy clay soils, border-strip irrigation is a very efficient irrigation method within most of the District. The border-strip method of irrigation produces a highly uniform distribution of applied water. This irrigation method typically involves using high-volume booster pumps to lift water from the supply canals to the cropland. The water spreads between wide borders and flows about half-a-mile along a relatively flat slope to the end of the field. This irrigation method effectively permits the leaching of salts from the clay soils while tailwater recovery systems and tile drains minimize accumulation of perched groundwater.

The long practice of tailwater recovery is also very important in efficiently utilizing and maximizing existing water supplies. In the Tulare Lake Bed, this method achieves some

of the highest irrigation efficiencies throughout California. As noted in Department of Water Resources' (DWR) 1982 Report entitled "Recommended Water Management Plan for Tulare Lake Basin Water Storage District" in response to the Governor's Executive Order B 68-80, the District had an irrigation efficiency of 98%. Additionally, various Water Users are currently implementing sub-surface drip tape as a tool for precise placement and control of water and nutrients; approximately 40,000 acres have been converted to tape. No water savings has been demonstrated. The benefit is driven by crop yield.

D. CLIMATE

The climate in the region is typical of the southern San Joaquin Valley. The Tulare Lake Bed region is semi-arid. Average annual rainfall is 7.4 inches. Spring seasons are usually mild with some wind, summers hot and dry, autumns cool and brisk, and winter seasons are typically characterized by fog and rain with temperatures seldom reaching the freezing point. Average precipitation and maximum and minimum temperatures were measured at a location 4 miles from the District's eastern boundary and provided by the Corcoran Irrigation District.

Table 1 indicates average monthly precipitation from 1940 to 2003. Monthly rainfall ranges from 0.0 to about 1.4 inches. About 70% of the rainfall typically occurs between the months of December to March. Maximum and minimum average monthly temperatures are listed in Table 2. As reflected in Table 2, the 64-year average maximum and minimum temperatures occur respectively during July and December.

Table 1 Average Precipitation from 1940 to 2003 Measured by the Corcoran Irrigation District

Month	Average Precipitation Inches
January	1.45
February	1.46
March	1.22
April	0.68
May	0.21
June	0.04
July	0.01
August	0.02
September	0.14
October	0.33
November	0.71
December	1.11
Average Annual Precipitation	**7.40**

Table 2 Averages Maximum and Minimum Monthly Temperatures from 1940 to 2003 Measured by the Corcoran Irrigation District

Month	57-Year Average Max. Temp. °F	57-Year Average Min. Temp. °F
January	55	39
February	61	40
March	68	44
April	74	47
May	85	54
June	92	60
July	97	64
August	96	63
September	91	60
October	81	50
November	65	42
December	56	36

E. OPERATING RULES AND REGULATIONS

The District allocates 100% of its river and imported water supplies to its Water Users based upon their respective acreage ownership and lands leased within the District. The two primary sources of surface water are the Kings River and imported State Project Water (SPW). The District only manages the surface waters to its boundaries where they are measured and discharged to internal irrigation systems. These internal systems consist of irrigation canals and ditches, which are owned and operated by both private and public entities. Groundwater supplies are privately owned and managed. The District neither owns nor operates any wells.

Currently, water allocation from the major local surface water supply, the Kings River, is based upon Kings River Water Association Administrative Agreements. The Kings River water allocation to the District only occurs during high-flow periods. The District's allocation is, in turn, allocated among its Water Users based upon each of their respective owned/operated lands as a percent of the District's total acreage. Each Water User makes a request for deliveries of its share of Kings River water, either from its storage account or for direct delivery. Requests for deliveries are normally made two days in advance due to the approximately 48 hours required for water to flow from Pine Flat Dam to the District's point of diversion on the Kings River at Stratford, California.

The other primary surface water source, State Project Water (SPW), is allocated based on the District's Water Supply Contract with the California Department of Water Resources (DWR). These quantities are specified in short-term contracts between the District and its landowners. The District's Water Users are provided the option of contracting for SPW on a voluntary basis. Those landowners who choose to contract for SPW are allocated their proportionate share of the District's 88,922 acre-feet of annual Table A contract water based on their respective owned/operated qualified lands as a percent of the District's total contracted acreage. The District's Amended Rules and Regulations,

which are updated periodically, include provisions regarding the operation of SPW deliveries to the Water Users. A copy of the recent Rules & Regulations dated October 2, 2012 is referenced in Attachment 2.

The District is not involved with the collection, storage, or disposal of agricultural drainage water. The Water Users manage all surface water drainage (tailwater) within the District and subsurface drainage with irrigation and crop rotation practices. In addition, approximately 22% of lands within the District have subsurface drains. The Tulare Lake Drainage District (TLDD), established in 1966, manages the collection and disposal of agricultural subsurface drainage water from some of these lands. Reclamation District No. 761 manages subsurface drainage water produced from lands located in the westerly portion of the District. Both entities discharge drain waters to evaporation ponds.

F. WATER DELIVERY MEASUREMENTS OR CALCULATIONS

Water deliveries to Water Users from Lateral A and B and the Kings River are measured by several different methods: a sharp crested weir, a Cipolletti weir, parshall flumes, venturi meters, and propeller-type flowmeters. Float-operated digital and mechanical stage recorders and differential level recorders are used to capture flow data and provide a permanent record of water deliveries. The frequency of measurement, calibration, maintenance, and level of accuracy for the different types of measuring devices are detailed as follows:

- **The Sharp Crested Weir:** measures a portion of the flows of Kings River water into the District. The flowrate is measured on a continual basis using a float-operated chart recorder; flows are periodically validated by current meters. The District's Engineer inspects the weir on a periodic basis for structural integrity, and field personnel routinely clean debris from the weir.

- **The Cipolletti Weir:** measures a portion of SPW delivered from the District's Lateral B. Flowrates are recorded on a continual basis on a float-operated chart recorder and are checked daily by District field personnel for accuracy and debris. The flows are verified periodically by current meter measurements.

- **Parshall Flumes:** are used to measure flows of SPW in the District's Lateral A and B and Kings River water entering the District. The level of water flowing through the flume, which corresponds to a calculated flowrate, is recorded continuously. Discharges in the flumes are calibrated periodically using a current meter. District field personnel maintain the parshall flumes. Accuracy of the flumes is monitored periodically.

- **Venturi Meters:** are used to measure some deliveries from the District's Laterals A and B into existing private and public canals within the District. Stevens® differential recorders are used to measure the head difference that occurs in the venturi installed in the pipe. When deliveries are made, the recorder produces a

continuous record of this differential head. District field personnel maintain the recorders and Venturi meters.

- **Propeller-type Meters:** are used to measure small flowrates of SPW diverted from the District's Laterals A and B. The mechanical meter incorporates a propeller connected to a flowrate indicator and a totalizer. Readings are taken daily during deliveries. The meters are inspected daily for proper operation and are periodically serviced to ensure accuracy.

G. WATER RATE SCHEDULES AND BILLING

The District collects its revenue from Water Users for water charges based on two methods: 1) land assessments and 2) water tolls and charges. The District's Kings and Tule River expenses are collected from assessments levied on all lands within the District on a uniform per-acre rate. SPW is billed to the Water Users based on water tolls and charges. These tolls and charges are based on the annual Statement of Charges from the DWR, plus an additional amount to cover the District's O & M charges attributable to SPW deliveries. These charges are billed monthly to the Water Users based upon their respective percentage of contracted lands to that of the total contracted lands within the District. No District charges are applied to floodwaters entering the District. Floodwaters are managed by private landowners and reclamation districts.

H. WATER SHORTAGE ALLOCATION POLICIES

State Project Water (SPW): The District's Water Shortage Allocation Policy for SPW is contained in the District's Amended Rules and Regulations. The following is an excerpt regarding the water shortage allocation policy:

> *"…14. Water Shortages Pursuant to powers granted by Section 43004 of the California Water Code, in the event of shortage of Project Water, water will be apportioned to each Water User within District, on a pro rata basis relating to their respective contract quantities of Table A Water…"*

Kings River Water: No applicable shortage policy exists for the District's Kings River water. The District's scheduled entitlement water is allocated uniformly to each individual Water User based on acreage owned within the District. Each Water User has access to a share of the District's storage space in Pine Flat and upstream reservoirs, proportionate to lands owned within the District, and manages its own stored water or daily allocated entitlement.

Water Users' manage their water supplies conjunctively utilizing carryover storage, and are permitted to transfer or exchange water. Most Water Users in the District have water rights in one or more various public or mutual water companies which are also Kings River water rights holders.

The District has a continuing policy to secure, enhance, and protect surface water supplies on behalf of its Water Users. Since the District is located within a water deficient area and cannot feasibly directly recharge the groundwater basin, imported surface water supplies are extremely important to meet irrigation demands and provide in-lieu recharge of the groundwater. The local river supplies are not adequate to provide a reliable supply of water on an annual basis. Delivery of both Kings River and SPW in above-normal years greatly enhances the District's in-lieu recharge program. During dry years this recharged groundwater is extracted when surface water supplies are limited. This practice, known as conjunctive use, has been practiced for decades in the District.

Enforcement Policy for Wasteful Use of Water: Because the entire San Joaquin Valley is water deficient, the District's Water Users have to practice sound water management to maximize limited existing supplies. Elements include: conjunctive use, efficient farming and irrigation techniques, and conservation. DWR concluded in its 1982 Report entitled "Recommended Water Management Plan for Tulare Lake Basin Water Storage District", in response to the Governor's Executive Order B 68-80, that the District's irrigation efficiency was 98%. In the Tulare Lake Drainage District's October 2001 Drainage Operation Plan, the Tulare Lake Basin Water Storage District was documented as having a District irrigation efficiency of 97.2% for the year 2000. Therefore, it is not necessary for the District to use or need enforcement policies to minimize the wasteful use of water. The Water Users are among California's most efficient users of irrigation water.

STEP 3: INVENTORY WATER RESOURCES

A. SURFACE WATER SUPPLY

The District's surface water supplies consist of water rights on the Kings and Tule Rivers, and contracted State Project Water (SPW). From time to time, other surface waters are available as discussed in Section C. Some Water Users have additional local surface water supplies through ownership in public agencies and private entities (mutual water companies). Floodwaters, though infrequent, are impounded by the landowners within and immediately south of the District. Since the District began taking deliveries of SPW in 1968, total surface water deliveries have accounted for 80% of the total average annual water supplies utilized within the District (See Attachment 3). Table 3 reflects the various surface water supplies delivered to the District for the water years 1992-1993 thru 2005-2006. No significant changes in the District's available surface water supplies are anticipated in the near future.

Table 3 Surface Water Supplies Delivered Within TLBWSD, Acre Feet

Water Year 1\	Flood Waters 2\	Local River Supplies 3\	State Project Water Supplies 4\	Other Surface Waters 5\	Total
1992 - 1993	0	181,390	44,550	460	226,400
1993 - 1994	0	126,750	109,850	12,869	249,469
1994 - 1995	40,000	177,080	41,075	18,889	277,044
1995 - 1996	0	126,400	261,947	27,104	415,451
1996 - 1997	148,000	95,273	40,989	4,700	288,962
1997 - 1998	135,000	100,482	25,628	0	261,110
1998 - 1999	50,000	82,741	211,404	0	344,145
1999 - 2000	0	149,051	207,470	15,300	371,821
2000 - 2001	0	106,422	121,595	30,983	259,000
2001 - 2002	0	58,890	88,936	12,174	160,000
2002 - 2003	0	136,853	73,147	0	210,000
2003 - 2004	0	64,356	100,858	17,786	183,000
2004 - 2005	45,000	191,107	79,616	277	316,000
2005 - 2006	135,000	70,141	95,907	1,952	303,000
Total	**553,000**	**1,666,936**	**1,502,972**	**142,494**	**3,865,402**
% of Total	**14.3%**	**43.1%**	**38.9%**	**3.7%**	**100.00%**

1 October 1 through September 30.

2 Floodwaters from local rivers impounded in the Tulare Lake Bed or flood releases directly diverted from the rivers.

3 Local River supplies include the District's and individual Water Users' water rights from the Kings and Tule Rivers.

4 SPW supplies include Table A, Carryover, Article 21, and Turnback Pool waters from the California Aqueduct.

5 Other Surface Waters include purchase, exchange, and transfer waters.

Local River Supplies and Floodwaters

The Kings, Kaweah, Tule, and Kern Rivers originate in the southern Sierras east of the District. These four rivers are regulated by dams constructed by the US Army Corps of Engineers in the 1950's and 1960's. Smaller unregulated streams provide unreliable flows, occurring only during flood periods. The Kings River is the primary local river water supply for the District. The District's Tule River water right is usually available only during periods of high-flow. The District's Kern River and Kaweah River water rights have been exchanged primarily due to the relatively small quantities produced as a result of the high-flow water rights and excessive channel losses to the District. Typically during extremely wet years, floodwaters from the four rivers will inundate lands within the Tulare Lake Bed. Flooding of cropland occurs on the average of one out of every seven years. During extreme flooding periods, flood flows will enter the District, not only from the four principal rivers, but also from uncontrolled streams such as Deer Creek, Poso Creek, White River, and runoff from the west side of the San Joaquin Valley. Residual floodwaters in Tulare Lake Bed are used to the maximum extent possible for irrigation. The balance of these waters is lost to evaporation and, to a much lesser extent, seepage.

The Kings River and Tule River water supplies available under the District's water rights are erratic in nature. Since 1968 as much as 220,000 acre feet have been delivered in years of moderate to above-normal runoff, and as little as 40,000 acre-feet delivered in drought years. Generally during above-normal or wet years, the lack of reservoir capacity on the four major rivers results in flood releases from each of the respective reservoirs. Since the Tulare Lake Bed is a closed basin, inundation of cropland leads to decreased demand for surface waters. More surface reservoir capacity would provide greater storage for irrigation deliveries in subsequent years. It would also result in less groundwater pumping in a below-normal year by having more stored water for delivery. The District is actively involved in pursuing additional local surface water storage.

State Project Water Supplies

Erratic local water supplies and continuing groundwater overdraft motivated the District to enter into a contract for SPW in 1963. Deliveries from the California Aqueduct began in September 1968. Through December 31, 2005, more than 3.7 million acre-feet of SPW and other waters have been delivered from the California Aqueduct to the District. The SWP provides an additional supply of water to the District, thereby reducing reliance on groundwater.

Restrictions on Time of Diversions

Kings River water deliveries are primarily made to the District's lands via the South Fork Channel near the northern boundary of the District. Water Users place orders with the District's staff, which summarize the orders and place them with the Kings River Watermaster. The Kings River Water Association (KRWA) manages all Kings River deliveries, including releases from Pine Flat Reservoir. Typically, the Kings River water-run, via the South Fork channel, occurs between June through August. During periods of

encroachment in the Reservoir's flood control reservation space, the U.S. Army Corps of Engineers will direct releases based upon the Corps' Pine Flat Reservoir Operations Manual. Due to the distance of Pine Flat Reservoir from the District's diversion facilities, approximately 48 hours are required for deliveries to flow to the District's point of diversion. Water Users have operated on this basis since Pine Flat became operational in 1954, and therefore, do not consider the lag time a restriction to water deliveries. In certain times, the Watermaster is often able to shorten the delivery time.

SPW is delivered to the District through Laterals A and B, which divert directly from the California Aqueduct. Orders are typically placed 24 hours in advance to the San Joaquin Field Division of the Department of Water Resources (DWR). Water Users have operated under this procedure since September 1968 and do not consider it a restriction to deliveries.

B. GROUNDWATER SUPPLY

The District overlies the southern portion of the Tulare Lake Groundwater Basin (TLGB). The TLGB is described in studies conducted by the Department of Water Resources and the United States Geological Survey. In a simplistic view, the TLGB consists essentially of a shallow aquifer and a deep aquifer separated by the Corcoran Clay hydro-geologic barrier. The Corcoran Clay is located about 400 feet to 600 feet below the surface of the District and ranges in thickness from about 50 to 200 feet. As noted earlier, the soils which underlie District lands are primarily low water-bearing, fine-textured clay materials, with interspersed silty sand lenses. The relatively impermeable heavy clay soils prevent any feasible attempt to directly recharge the shallow aquifer from within the District. Due to the highly concentrated salts in the groundwater lying beneath two-thirds of District lands, both above and below the Corcoran Clay, most of the groundwater is not usable. Wells are generally located in the northern 1/3 portion of the District. The District neither owns nor operates any groundwater wells. The groundwater pumped is conveyed through canal systems by the producers of the groundwater.

In 1995, the District and several other public entities and private landowners established the Tulare Lake Bed Coordinated Groundwater Management Plan ("Plan") under the provisions of AB 3030 chaptered in 1992. In July 2012 the AB 3030 plan was updated to SB 1938 standards. A copy of the SB 1938 Plan is included as Attachment 4. The principle purposes of the Plan are to preserve local management of the groundwater resources and document the long-standing groundwater management practices and programs of the local landowners. The Plan focuses on on-farm management, rather than District management, since the District neither owns nor operates any wells. However, the District's surface water supplies are conjunctively used by the Water Users to enhance the groundwater resources. As the Plan Administrator, the District compiles all data and publishes an annual report for the Plan. The Plan has purchased surface water and recharged areas east of the District.

C. OTHER WATER SUPPLIES

The District is also active in water exchange programs to more efficiently manage its Kings River water and water supplies from the California Aqueduct. The District has no major surface storage reservoir or groundwater banking capabilities. The Empire Weir No. 2 pool, wherein deliveries of Kings River water to the District are received, is only used for temporary storage with a capacity of approximately 400 acre feet. In wet years, due to the lack of surface water or groundwater storage, the District undertakes water exchanges with other agricultural entities which have a demand for the water. In exchange, the District receives water from these entities at a later date or payment to purchase water during dry years. A prime example of a beneficial water exchange is the 1967 agreement with the County of Kings. The County, a SWP contractor, has no direct connection from the California Aqueduct to convey its SPW. By exchange, the District takes delivery of 4,000 acre-feet of the County's contract supply and deliver an equivalent amount of its Kings River water to the County. This exchange provides a net benefit by providing additional water to the District due to less conveyance losses in the River channel. It also provides a supply to the County with no expense of constructing a conveyance facility to take delivery of its SPW.

Purchased waters are also important to the District's overall water management programs. During the dry and drought years, the District was able to purchase Yuba County Water Agency Water, California Drought Water Bank Water, Dry Year Transfer Water, and SWP Supplemental Short Term Water Purchase Water for delivery off the California Aqueduct. In addition to water purchases, Kings River water transfers occur on a regular basis to better utilize the river supply. Without groundwater storage capability, the District continually balances its water supplies through water purchases and transfers to best serve its Water Users.

D. SOURCE WATER QUALITY MONITORING PRACTICES

The Kings River Conservation District (KRCD) performs source water quality monitoring on the Kings River. KRCD carries out real- time water quality monitoring immediately downstream of Pine Flat Dam, while periodic monitoring takes place at the South Fork of the Kings River. DWR monitors the water quality of SPW in the California Aqueduct on a monthly basis. DWR's reports, which are made available to the District, contain actual water quality measurements from the water which is conveyed to the District through Laterals A and B. Attachment 5 includes examples of a water quality analysis performed by DWR. Private Water Users monitor their groundwater quality.

E. WATER USES WITHIN THE WATER SUPPLIER'S SERVICE AREA

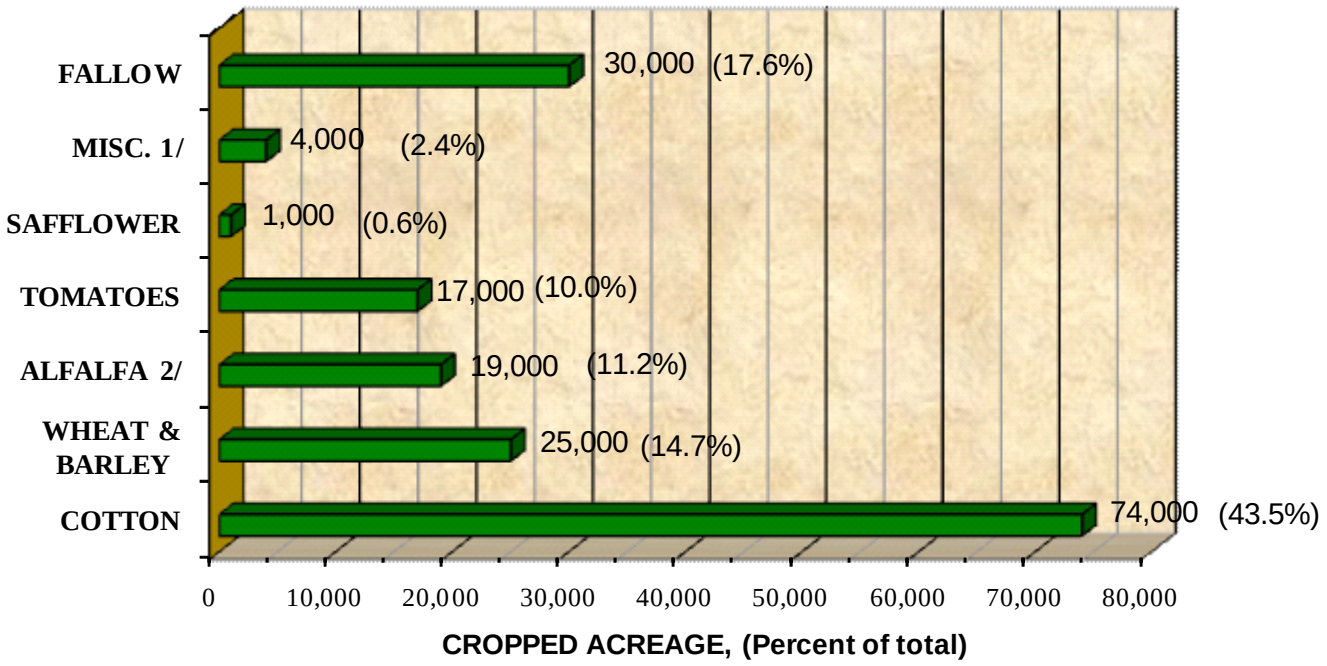
The District supplies 100% of its surface water supplies for agricultural purposes. Not all surface water supplies delivered by the District are utilized by the Water Users in-lieu of groundwater pumping. Without direct groundwater recharge capability, the reduction of pumping allows indirect recharge of the groundwater basin from subterranean flows from the east side of the San Joaquin Valley. This is a key element of the Tulare Lake Bed Coordinated Groundwater Management Plan (Attachment 4) described earlier.

Agricultural Water Use

The District is compromised of 190,000 gross acres, with approximately 170,000 acres in irrigated cropland, and the remaining 20,000 acres in roadways, levees, ditches and canals. For a representative water year, the District assumes approximately 140,000 acres are irrigated, with an average of 30,000 acres fallowed.

Figure 1 reflects the different types of crops and a summary of the cropping pattern within the District for a representative water year. Cotton, the primary crop grown, includes both the upland varieties and extra long staple pima.

Figure 1 Summary of Cropping Patterns for Representative Water Year



1/ Includes pasture, grain corn, milo, oat hay, and Sudan grass.

2/ Includes alfalfa hay and seed alfalfa.

Note: percentages are respective acreage divided by the total District's 170,000 irrigable lands.

The primary use of applied water is to meet the adjusted evapotranspiration rates (Adj ETc) for each crop. The overall crop water requirement also takes into consideration the leaching requirements, available perched shallow groundwater, and the effective precipitation. The estimated representative crop water requirements for crops grown within the District are listed in Table 4.

The Adj. ETc values are derived from available data from the California Irrigation Management Information System (CIMIS) at the Stratford and Lost Hills measuring stations. The hot summers, windy conditions, typical desert-like precipitation quantities, and very low permeability of the basin soils are key factors affecting the evapotranspiration rates for crops in the Tulare Lake Bed.

Leaching requirements are a function of the salinity of the applied water and the soil salinity. The Water Users practice border-strip irrigation, which allows for meeting leaching requirements of the area's heavy clay soils.

A portion of the crop water requirements is reduced to account for perched shallow groundwater for most lands within the District. The available perched groundwater is dependent on previous irrigation and the soil type. The quantity of groundwater used is dependent on the individual crop's effective root zone depth.

Average rainfall within the area is approximately 7 inches. The overall annual effective precipitation measured in the eastern portion of the District is approximately 21,000 acre feet based upon previous calculations using the Soil Conservation Service methodology, from the Tulare Lake Drainage District's *Drainage Operation Plan* Reports for water years 1993-94, 1994-95, and 1995-96. This value is further verified by the farm operators within the District, that 20% (approximately 1.4 inches) of gross rainfall is accounted toward meeting crop water requirements. Thus, given the quantity of water, climate, and soil type, Water Users cannot rely on the timing of rainfall to provide sufficient water to irrigate crops.

Table 4 Crop Water requirement in the District

Crop	Crop Water Requirement, AF / Acre Feet 1\
Cotton	2.6
Wheat & Barley **2**\	1.8
Safflower	1.3
Alfalfa	4.0
Tomatoes	2.7
Misc. **3**\	2.3

1\ Crop Water Requirement - Crop evapotranspiration, plus the leaching requirement, less the perched groundwater water used by crops.

2\ Value for Grain crops are averages based on the values for each crop.

3\ MISC. crop (oat hay, Sudan grass, grain corn, etc.) values are averages for the major crops listed above.

Environmental, Recreational, Municipal, or Industrial Water Uses

The District does not supply any water specifically for environmental, recreational, municipal, or industrial use purposes.

In-lieu Groundwater Recharge Water Use

The District continually strives to deliver as much surface water as possible to meet crop needs and allow the Water Users to maximize conjunctive use practices. The use of surface water supplies versus groundwater provides in-lieu recharge to the groundwater basin. Since 1968, the initial year of SPW deliveries, groundwater accounts for about

20% of the District's average annual water usage. The District historically benefitted from conjunctive use practices during the drought years of 1976-1977, 1987-1992, 1994, and 2001 when groundwater usage increased. The District continues to be active in securing additional imported water supplies as well as opportunities to develop more storage for local surface waters. Through the TLBCGMP, the District, along with other Plan Participants of the TLBCGMP, monitor's groundwater levels in the plan area, and collects mitigation funds for the purchase of supplemental surface water.

Transfers and Exchanges Water Use

Water transfers are another important water management tool. Water transfers have been part of water management on the Kings River for decades. Due to increasing regulatory restrictions on State Project Water export pumping and failure of the State to complete the State Water Project, transfers in the California Aqueduct have become very important.

As discussed in Section C, Step 3, Surface Water Supply, the District has historically participated in transfers and exchanges, both on the Kings River and the California Aqueduct. As previously mentioned, the County of Kings SPW/Kings River Water Exchange Program has been an on-going program since 1968.

F. DRAINAGE FROM THE WATER SUPPLIER'S SERVICE AREA

The Tulare Lake Drainage District (TLDD) formed in 1966, and the Tulare Lake Reclamation District No. 761 overlying the westerly portion of the District lands, manage subsurface drainage for about 15% of the lands within the District. The drainage water is collected and conveyed to evaporation ponds. Water Users manage subsurface drainage on the remaining lands through careful irrigation management and crop rotation. Because the District is located within a closed basin, all tailwater is used and reused until consumed to irrigate croplands by the utilization of extensive tailwater recovery systems. However, the District is not involved in any drainage activities.

G. WATER ACCOUNTING

A water supply inventory of the waters delivered to the District is difficult to represent by one *typical* water-year (October 1 through September 30). As evident in Table 5, water-year deliveries vary from about 150,000 to 420,000 acre-feet to District lands. These quantities include both District and non-District supplies delivered within the District, as discussed in earlier sections of Step 3.

TABLE 5 Water Deliveries to Lands Within TLBWSD

Water Year (Oct. – Sept.)	Flood Waters\1	River Runoff	SWP	Other Water \4	Ground Water \1	Total	Note
1968–1969	57,000	24,486	28,824	0	41,000	151,310	**\2**
1969–1970	189,000	26,524	0	0	0	215,524	**\2**
1970–1971	167,000	31,536	65,295	0	0	263,831	**\2**
1971–1972	0	42,197	237,519	0	66,000	345,716	
1972–1973	10,000	160,911	130,548	0	3,000	304,459	**\2**
1973–1974	0	166,859	127,055	0	3,000	296,914	**\2**
1974–1975	0	164,316	201,202	0	3,000	368,518	
1975–1976	0	94,024	164,703	0	104,000	362,727	
1976–1977	0	41,373	30,742	19,647	210,000	301,762	**\3**
1977–1978	57,000	143,265	16,545	8,474	74,000	299,284	**\2**
1978–1979	0	202,735	130,830	0	2,000	335,565	
1979–1980	60,000	170,608	134,141	0	3,000	367,749	
1980–1981	0	114,137	238,638	0	40,000	392,775	
1981–1982	28,000	187,387	193,613	0	10,000	419,000	
1982–1983	114,000	202,940	1,760	0	0	318,700	**\2**
1983–1984	274,000	36,527	5,902	0	0	316,429	**\2**
1984–1985	88,000	102,586	182,677	0	5,000	378,263	
1985–1986	31,000	226,128	64,546	7,305	2,000	330,979	
1986–1987	0	169,995	155,125	0	27,009	352,129	
1987–1988	0	89,000	120,200	0	133,571	342,771	
1988–1989	0	66,500	129,760	18,411	162,000	376,671	
1989–1990	0	45,300	55,626	68,692	175,000	344,618	
1990–1991	0	44,900	16,098	0	228,100	289,098	**\3**
1991–1992	0	43,000	42,500	31,550	216,000	333,050	
1992–1993	0	181,390	44,550	460	89,700	316,100	
1993–1994	0	126,750	109,850	12,869	92,000	341,469	
1994–1995	40,000	177,080	41,075	18,889	58,000	335,044	
1995–1996	0	126,400	261,947	27,104	0	415,451	
1996–1997	148,000	95,273	40,989	4,700	0	288,962	**\2**
1997–1998	135,000	100472	25628	0	0	261,120	**\2**
1998–1999	90,000	42,741	211404	0	0	344,145	**\2**
1999–2000	0	149,051	207,470	15,300	17,500	389,321	
2000–2001	0	106422	121595	30983	100,000	359,000	
2001–2002	0	58890	88936	12174	160,000	320,000	
2002–2003	0	136853	73147	0	125,000	335,000	
2003–2004	0	64356	100858	17786	170,000	353,000	
2004–2005	45,000	191107	79616	277	10,000	326,000	
2005–2006	135,000	70141	95907	1952	0	303,000	
Total (A.F.)	**1,668,000**	**4,224,160**	**3,976,821**	**296,573**	**2,329,880**	**12,495,454**	
38–Yr. Mean	**43,895**	**111,162**	**104,653**	**7,805**	**61,313**	**328,828**	
% of Total	**13.35%**	**33.81%**	**31.83%**	**2.37%**	**18.65%**	**100.00%**	

\1 Estimated quantities, based on discussions with farm operators.
\2 Irrigation water deliveries reduced due to inundation of some Tulare Lake lands and/or greater than average effective rainfall.
\3 Irrigation water deliveries reduced due to drought.
\4 Includes transferred purchased and other waters delivered via the California Aqueduct.

The erratic local surface water supplies (river runoff, floodwaters) are highly dependent on weather conditions for any given year. Floodwaters impounded in the Tulare Lake Bed are not included in the District's representative water supplies since floodwaters are only available on average in one of every three to four years. Local river supplies are approximately 98% derived from the Kings River with the remainder from the Tule and Kaweah River systems. The water rights on these systems are owned by the District and mutual water companies. The use of groundwater supplies is also dependent on weather conditions and the pumping activities by landowners. State Project Water supplies are more consistent than local river supplies or groundwater. However, SPW water-year deliveries have varied from zero to over 260,000 acre feet. Additionally, increasing restrictions on SPW exports are limiting the quantity and timing of deliveries. Table 6 indicates the representative water supply for the lands within the District.

Table 6 Water Supplies of Representative Water Year

Representative Water Supply	Volume, Acre Feet 1/
Local Rivers **2/**	162,400
State Project Water **3/**	116,500
Exchanges, Transfers, & Purchases **4/**	6,000
Groundwater **5/**	56,200
Precipitation	21,000
Total	**362,100**

1/ Assuming 355,000-acre feet of total applied water and 2% system losses.
2/ Consists of flows from the Kings, Kaweah, and Tule Rivers, and Flood Waters**.**
3/ SPW include Table A Entitlement, Carryover, Interruptible, and Turnback Pool water.
4/ Includes Landowner purchases of additional water supplies.
5/ Private water source; the District neither owns nor operates any groundwater wells.

The components of the water use are described in Step 3, Inventory Water Resources. Table 7 indicates the overall crop water use within the District for a representative year.

Table 7 Water Use of Representative Water Year

Overall Crop Water Requirement **1/**
355,000 Acre Feet

1/ Based upon an overall cropping pattern of 140,000 acres and a weighted crop water requirement of 2.53 acre feet per acre of total applied water required.

The following table, Table 8, reflects a water budget summary based upon a representative water year.

Table 8 Water Budget Summary for Representative Year

Water Supplies	**Volume (Acre Feet) 1/**
Surface Water	278,900
Exchange Transfers, & Purchases	6,000
Groundwater	56,200
Effective Precipitation	21,000
Total Water Available	**362,100**
Water Use	
Crop Water Use	355,000
System Losses **1**	7,100
Total Crop Water Use	**362,100**
Net Balance	0

1 System losses are estimated at 2% and include canal seepage and evaporation, and operational spills.

H. SUPPLY RELIABILITY

The District's primary purpose, in addition to protecting, preserving, and enhancing the District's water rights, is to deliver reliable and affordable water. The District's cropping pattern since 1974 reflects an annual farmed average of 151,000 acres. This 19,000 acre reduction from the gross farmable land (170,000-151,000), takes into account severe flood and drought years. The estimated cropping pattern for a representative water year is 140,000 acres. The additional 11,000 acres of fallow lands, takes into account the flexibility individual Water Users must exercise when preparing annual cropping plans. Since no major permanent crops exist within the District, an additional 30,000 acres, or approximately 15% more land, could be utilized when adequate water supplies are projected. Crops grown within the District include cotton, tomatoes, alfalfa hay, grains, and seed alfalfa, which require a water supply of approximately 355,000 acre feet annually, for a representative water year. Therefore, the District landowners must conjunctively operate their surface water and groundwater sources to meet their overall water requirement for all water-year types; from flood years to drought years. The varying surface water supply, coupled with the soil types, topography, and the District's location within a closed basin, requires careful and efficient water management. Even with the high irrigation efficiencies of the Water Users, no one water supply source can meet peak irrigation demands. Therefore, the District needs reliable sources of surface water and is continually pursuing additional sources to minimize groundwater pumping.

The local Kings and Tule River supplies are very erratic. In the wettest years the Tule River produces no more than 10,000 acre-feet annually to the District. It is the District and non-District Kings River water supplies that are utilized to a greater degree. Floodwaters are additional water sources from the local rivers. In wet years, with insufficient reservoir storage on the four local rivers, lower irrigation demands and excess water conditions have caused tens of thousands of acres normally farmed to be flooded. This situation takes place in about one out of every seven years. Even though

floodwaters are erratic and occur in unreliable quantities and periods, they do provide some benefit since they can be utilized to irrigate non-flooded lands in the Tulare Lake Bed.

The Department of Water Resource's Bulletin 118-80 ("*Ground Water Basins in California"*) states that the Tulare Lake Groundwater Basin is over drafted, as are most groundwater basins in the San Joaquin Valley. The District joined several other public agencies and private landowners to form the Tulare Lake Bed Coordinated Groundwater Management to monitor and provide local management of the groundwater basin.

Due to the erratic nature of the local surface water supplies and the continuing groundwater overdraft, the District contracted for SPW with the California Department of Water Resources in 1963 in order to increase surface water supply reliability and reduce reliance on groundwater. State Project Water has become an important water source to meet irrigation demands as illustrated in Table 5. Restrictions caused by the federal Endangered Species Act, and failure of the State to complete the State Water Project, have caused SPW to become less reliable. The District cannot depend on DWR to provide the District's full Table A entitlement of 88,922 acre feet.

STEP 4: REVIEW PREVIOUS WATER MANAGEMENT ACTIVITIES

A. HISTORICAL WATER MANAGEMENT PRACTICES

The District is situated within a closed basin with no out-flow to the ocean. Since the District's formation in 1926, water management has been an important part of the Water Users' practices. All water delivered to the District has to be used efficiently or flooding and saturation of the low areas will occur. The following discusses the practices and the results produced for the District.

List A: Efficient Water Management Practices (EWMP) Previously Implemented

3. Support the availability of water management services to Water Users

The District supports educational programs for farm operators, staff, and the general public in Kings and Tulare Counties. Water Users are continually informed regarding water conditions on a weekly basis. The Water Users are also among the most water efficient users in California as documented in DWR's 1982 Report entitled "Recommended Water Management Plan for Tulare Lake Basin Water Storage District" published in response to the Governor's Executive Order B 68-80.

4. Improving Communication and Cooperation Among Water Suppliers, Water Users and other Agencies

The District's Board Members and staff are involved with and work with other water agencies on local, state, and federal water supply issues. This is evident in the District's involvement with the State Water Contractors, the Kings River Water Association, and the Kings County Water Commission.

5. Policy Changes of Institutions

The District works closely with the Kings River Water Association and the Department of Water Resources with reference to policies regarding water supplies.

List B: Efficient Water Management Practices Previously Implemented

1. Facilitating Alternate Land Use

The District facilitates this EWMP by providing its landowners with information on various alternative land use programs. The District recently supplied a landowner with information on the Agricultural Stabilization and Conservation Service's Wetlands Reserve Program. Participation by the landowner is completely voluntary. The District is within an area that experiences both surface and subsurface drainage problems. The District also has information available to landowners related to surface flooding, which occurs intermittently. As a closed basin, all floodwaters impact downstream landowners. District Water Users have a history of working together to manage and mitigate the

flooding problems. In the same way, subsurface drainage problems are being addressed by the TLDD, which was formed by landowners in 1966 to manage and control the ongoing accumulation of salts occurring on lands within the TLDD.

2. Facilitating Use of Recycled Water

The District has facilitated the ongoing use of recycled municipal wastewater by one of its Water Users in the western portion of the District from both the City of Lemoore and Kettlemen City. If the water was not available, the Water User would have to lift irrigation water, thereby incurring increased operational costs and decreased delivery flexibility. By exchange of SPW deliveries to these lands via gravity flow, reduced pumping costs and greater delivery flexibility is provided by the delivery of recycled water to lands within the District. The agreement with DWR to facilitate this exchange is based on an equivalent or a larger quantity of recycled water brought into the District in excess of the quantity of SPW delivered to lands outside the District. The recycled water is not conveyed through any of the District's facilities. This net additional water amounts to less than 0.4% of the total District's water supply and, therefore, is not included as part of the representative water supply.

4. Facilitate Voluntary Water Transfers

The District is actively involved in water transfers on the Kings River as a standard practice in the District's overall water management programs. SPW transfers into the District have provided additional surface water to enhance conjunctive use practices. The District or individual Water Users' transfer of floodwaters to other agencies in wet years has been helpful in minimizing flood impacts and crop damage. The District generally participates as the administrator to the transfers and exchanges which occur.

5. Lining of Canals

The District owns and operates approximately 8.3 miles of concrete-lined canals conveying SPW. The Kings River conveyance facility and Empire Weir No. 2 Pool are not lined.

6. Increasing Flexibility in Water Ordering and Water Deliveries to Water Users

The District and its Water Users have cooperatively worked together to meet demand delivery requirements on a timely and efficient manner. The District operates with an arranged demand schedule, whereby the Water Users have the flexibility of ordering and shutting-off water supplies with the minimum advance notice in accordance with their irrigation demands, as provided in the Rules and Regulations. Excellent communication exists among Water Users and the District. The communication system has been continually upgraded. All water deliveries to Water Users are measured. In order to

reduce operational costs and increase safety for District personnel, automatic upstream-control gates have been installed on Lateral B.

8. Conjunctive Use of Surface and Groundwater Supplies

The District and its Water Users conjunctively manage the available surface water and groundwater resources. Because the District cannot directly bank groundwater, it promotes the use of surface water supplies in-lieu of groundwater whenever available. In drier years the surface water supplies are reduced, thereby requiring groundwater pumping by the Water Users to meet crop water requirements (i.e. 1977 and 1991). To decrease the need for groundwater pumping, the District purchases and/or makes exchanges of surplus local river waters and SPW, including Article 21 and Turnback Pool Water. The District's and Water Users' conjunctive water management practices are an important component of the overall efficiency of the District's water management program.

9. Automate Canal Structures

As a pilot project, the District installed one constant-upstream water level automatic gate in its Lateral B SPW conveyance facility. Subsequently, the District installed additional automatic gates in the early 1980's to provide a more efficient manner of maintaining deliveries and minimizing operation & maintenance costs. A total of nine (9) automatic gates have been installed on approximately 6 miles of Lateral B.

List C: Efficient Water Management Practice Previously Implemented

10. Water Measurement and Water Use Report

The District measures all turnouts from its SWP conveyance facilities and Kings River facilities. The different types of measurements are discussed in the Water Delivery Measurements Section of Step 2: Water Supplier Description. The District maintains and periodically verifies the accuracy of its measuring devices.

The District provides its Water Users with information on a regular basis regarding their SPW and Kings River water deliveries and account balances. Monthly Water Use Reports are provided which contain water management information as well as operational summaries. The District also provides additional communication to the Water Users when a specific circumstance arises which could or would affect water deliveries or available quantities.

CURRENT IMPLEMENTED EFFICIENT WATER MANAGEMENT PRACTICES

The District's water management practices have been in effect since its formation in 1926. The District continues to practice all cost effective EWMP's listed above in Section A of this Step 4.

STEP 5: IDENTIFY EFFICIENT WATER MANAGEMENT PRACTICES

A. GENERALLY APPLICABLE EFFICIENT WATER MANAGEMENT PRACTICES: EXHIBIT A, LIST A

1. Prepare and Adopt a Water Management Plan (WMP)

The District's Board of Directors took action in October 1996, approving and authorizing the signing of the AB 3616 Memorandum of Understanding (MOU) regarding Agricultural Efficient Water Management Practices by Water Suppliers in California. The District is one of the initial agricultural entities which signed the MOU in December 1996.

The District is submitting this WMP with the understanding that the assumptions made regarding the representative water year are in accordance with the MOU.

2. Designate A Water Conservation Coordinator

The District's Board of Directors appointed a Water Conservation Coordinator in February 1997, and by a letter dated February 13, 1997, notified DWR and the Agricultural Water Management Council (AWMC). The Water Conservation Coordinator has worked with District staff, the District's Water Users, and other local MOU signatories (water suppliers) in developing the WMP. The Water Conservation Coordinator is the Assistant General Manger who is Jacob J. Westra.

3. Support the Availability of Water Management Services to Water Users

The District supports educational programs for Water Users, staff, and the general public in Kings and Tulare Counties. Water Users are continually informed regarding water conditions and District water delivery operations on a weekly basis. In addition, the District staff actively participates in water awareness and water safety programs, primarily in Kings County, whereby, financial assistance is provided annually to teach over 15,000 K-12 grade children about the importance of water resources and water safety. Educational materials are annually distributed and in-school presentations are provided.

The District is not directly involved with on-farm irrigation and drainage issues. However, the District provides information on AGWATER, CIMIS, and other irrigation management tools to the Water Users. On-farm irrigation and drainage issues are managed by other private and public entities. General information is also distributed to the Water Users through other agencies, including the Kings River Conservation District, Department of Water Resources, etc.

4. Improving Communication and Cooperation among Water Suppliers, Water Users, and Other Agencies.

It is the policy of the District's staff to work closely with Water Users on all aspects of water supplies and deliveries. The Board of Directors is actively involved in reviewing and evaluating District policies regarding the protection and enhancement of the District's water supplies. District representatives participate in local water management issues on the Kings, Kaweah, Tule, and Kern Rivers as well as participating in state-wide and local water forum entities such as the San Joaquin Valley Agricultural Water Committee. These entities promote awareness of agricultural and water issues affecting water suppliers and other water entities.

The District also works with other State Water Contractors (SWC) and DWR in reviewing and discussing overall SWP operations. The District staff members are involved in several SWC Committee's, including the Water Operations, the Engineering, the Audit Finance, and the Operation & Maintenance Committees.

As a member of the AWMC, the District has been, and will be involved in evaluating other MOU signatories' WMPs. This process will facilitate discussions on a wide range of water management issues. Thus, the District will be directly communicating with these entities to gain a broader understanding of efficient water management practices. This will not only improve communication amongst the water suppliers and provide a forum of shared knowledge, but will also provide information which the District can utilize to enhance the District's WMP.

5. Evaluate Changes in Policies of the Institutions to which the Water Supplier Is Subject

The District is a water rights holder on the Kings River and a member of the Kings River Water Association (KRWA) comprised of 28 member units who hold water rights on the Kings River. As a member unit, the District is actively involved in the policies and procedures that govern the operation of the Kings River, both from a water delivery and a fisheries management perspective. The District is also one of the 27 members of the SWC. The SWC organization is actively involved in reviewing the policies of DWR in the overall operation of the SWP and negotiating contract amendments to the State Water Supply Contract.

6. Evaluate and Improve Efficiencies of Water Supplier's Pumps

As stated throughout this WMP, the District neither owns nor operates any groundwater wells. Nor does the District own or operate any water delivery booster pumps; all District deliveries (SPW and Kings River) are made via gravity flow. However, the District does provide Water Users with information on meetings and seminars pertaining to pump efficiency provided by Southern California Edison or the Pacific, Gas, & Electric Company.

B. CONDITIONALLY APPLICABLE EFFICIENT WATER MANAGEMENT PRACTICES: EXHIBIT A, LIST B

The EWMP Analysis Tables are included in Attachment 6 of this WMP.

EWMP 1. Facilitate Alternative Land Use - ***TECHNICALLY INFEASIBLE***

Alternative land use is practiced and managed by the private landowners/Water Users within the District. The Water Users explore and evaluate different marketable crops for growing in the District. Since the District is geographically located within a "closed basin" consisting of an abundance of clay soils throughout the surface and subsurface soils, the Water Users must contend with salt accumulation in the shallow root-zones. Water Users can successfully minimize collection of salts in the shallow root zones of the crops by crop rotation, including land fallowing, whereby, different crops with varying effective root-zones are planted in cyclical periods. Crop rotation does minimize the effects of salt accumulation on crops and maximizes the yields and quality of crops grown in the Tulare Lake Bed. In addition, as discussed on the drainage issue, Water Users also practice subsurface drainage using tile drains to reduce salt buildup in the root zone. A significant portion of the lands within the District are also within the Tulare Lake Drainage District. Individual landowners and the Tulare Lake Drainage District manage subsurface drainage issues within the District.

In addition to on-farm crop management, some Water Users participate in the Agricultural Stabilization and Conservation Service's Wetlands Reserve Program via a Wetlands Reserve Program Easement. The District facilitates this program by providing information to interested landowners who voluntarily choose to participate in the program. The program involves retiring certain lands from farming for the purpose of providing alternative wetland habitat for the benefit of wildlife preservation and some secondary benefits such as floodwater retention. These lands do not contract for SPW, which is, therefore, reallocated to contracting lands. Thus, the alternative land use provides an additional amount of water that can be beneficially utilized by other Water Users within the District in-lieu of groundwater pumping.

This EWMP is being implemented primarily through crop management by Water Users as a form of alternative land use. Furthermore, the District's past and future facilitation of alternative land use provides willing landowners with an opportunity to voluntarily participate in the wetlands reserve program. The District was established in 1926 to secure, enhance, and protect the water rights held on the four major tributary rivers on behalf of its landowners. Its responsibilities for the past several decades include management for the administration of Kings River Water and State Project Water. Therefore, it is the District's intention to provide information regarding alternative land use to interested landowners, but not become involved with governing any such programs; therefore this EWMP is technically infeasible.

EWMP 2. Facilitate Use of Recycled Water - ***FULLY IMPLEMENTED***

The District is not directly involved with the purchase or delivery of recycled wastewater. The District is fully cognizant of water quality issues and regulations on the discharge and conveyance of treated wastewater through rivers or public channels. If suitable recycled water becomes available, the District would consider delivering recycled water to its Water Users.

The District supports individual programs initiated by the Water Users individually to beneficially use recycled water, since it is an additional net amount of water delivered within the District. These current recycled water programs do not discharge or convey water through District facilities. Water Users within the District have taken and utilized treated wastewater from the Olam Tomato Processing plant, Leprino Foods, City of Lemoore, and Kettleman City to lands within the District. Some these deliveries are summarized in Attachment 7. The Central Valley Regional Water Quality Control Board monitors the program to ensure the water quality meets State requirements. The programs operate independently of the District and are managed by the individual Water User. However, the District is precluded from pursuing this EWMP due to concerns of water quality issues and constraining discharge requirements.

EWMP 3. Facilitate the Financing of Capital Improvements for On-Farm Irrigation Systems - ***DEMONSTRABLY INAPPROPRIATE***

The internal water distribution systems within the District are independently owned and operated by private and public entities. These entities have been farming within the Tulare Lake Bed for several decades and have developed highly efficient irrigation techniques. The intricate systems of irrigation canals and ditches have been developed and improved over the past 80 years. The system can accommodate deliveries of water from several different sources which is necessary due to the erratic local surface water supplies and, more recently, regulatory restrictions on SPW deliveries. The internal distribution systems are also used to store and reuse operational spills and tailwater runoff for subsequent irrigation use. All water supplies are put to beneficial use.

Based upon the level of development of the internal on-farm irrigation systems and the highly efficient irrigation management practices of the Water Users, opportunities for the District to facilitate capital improvements for on-farm irrigation systems are very limited. Furthermore, the District has no financing source to support landowner on-farm irrigation system improvements. Nor has direct legal process been established for the District to provide financial assistance for on-farm improvements.

In addition to the institutional constraint, the process of developing a District project is administratively expensive. The funding for approved projects by the landowners is through District assessments, which would require a separate assessment program to be implemented. Legal and engineering consulting will also add to the overall costs. In summary, the restructuring of on-farm irrigation systems in the Tulare Lake Bed, which

have been developed and perfected by individual landowners over several decades, would not increase on-farm irrigation efficiency or be cost effective.

EWMP 4. Facilitate Voluntary Transfers - ***FULLY IMPLEMENTED***

The District and its Water Users work cooperatively with DWR, the U.S. Bureau of Reclamation, the Kings River Water Association, and/or other entities to maximize the beneficial use of surface water supplies and are fully implementing this EWMP on a year to year basis. Attachment 8 summarizes several examples of voluntary transfers into and out of the District. During above-normal water years and subsequent flooding in the Tulare Lake Bed, the Water Users in the District generally participate in transfers to entities outside the area. These transfers can include floodwaters that would have inundated cropland within the District or unusable SPW that is offered back to the SWP via the Turnback Pool Program. The District also purchases water from the SWP Article 21 and Turnback Pool Programs to meet water demands and reduce ground water pumping during normal and below normal water-years. In addition, during the 1987-1992 and 1994 severe drought years, the District purchased other surface waters, including water from the Yuba County Water Agency and the California Emergency Drought Water Bank. In a year of decreased allocation of SPW Table A entitlement water and a reduced quantity of Kings River water, the District anticipates receiving transfers of other surface waters in order to provide sufficient water for irrigation and to minimize groundwater pumping.

EWMP 5. Line or Pipe Ditches and Canals – ***FULLY IMPLEMENTED***

The South Fork of the Kings River, which terminates just north of the District's northwestern boundary, is unlined and has been declared a designated floodway by the State Reclamation Board. Therefore, channel losses through the Kings River are uncontrollable by the District. From the point the South Fork of the channel terminates, the District's Kings River supplies are delivered through private and public owned water distribution systems. In addition, these canals and several ditches convey private water supplies of Kings River water, groundwater, and other local river waters. The Water Users' several miles of internal water distribution systems are mostly comprised of heavy clay-rich soils and, therefore, preclude any measurable amount of seepage. Therefore, the only canals the District could consider for implementing this EWMP are the District's Laterals A and B, which are used for the conveyance of SPW from the California Aqueduct to the District's boundaries.

The District owns and operates approximately 15 miles of Lateral A and 8 miles of Lateral B. Approximately 8.3 miles of portions of the two canals are concrete-lined. Therefore, the District has achieved a satisfactorily level of implementation of this EWMP. The District continually monitors the conveyance losses of deliveries from the California Aqueduct to the various turnouts from the two canals. The District has not measured any significant losses between DWR California Aqueduct deliveries and the

District's headgate deliveries to the Water User's turnouts on average over the past 38 years.

EWMP 6. Increase Flexibility in Water Ordering by Water Users – ***FULLY IMPLEMENTED***

The District operates on an arranged demand water-ordering system which provides considerable flexibility to the Water Users in their operations. The District works very closely with Water Users in placing water orders with DWR and the Kings River Water Association. The District measures all turnouts while delivering the requested quantities to the Water Users. Operational variances in deliveries are also managed carefully and with proper notifications to the Water Users to eliminate unexpected shortages or operational spills. The existing coordination between the District, its Water Users, and the agencies responsible for the source delivery has worked effectively for several decades and is continually monitored to ensure that operational flexibility is maintained. As a result, this EWMP is implemented at a high level.

EWMP 7. Construct and Operate Water Supplier Spill and Tailwater Recovery Systems – ***FULLY IMPLEMENTED***

The Water Users themselves have the ability to absorb spills and apply them at a later time or divert the water to other croplands for irrigation. Due to the extensive canal and ditch systems developed within the District, excellent coordination between the District and the Water Users, and amongst the Water Users themselves, provide sufficient operating flexibility and the greatest efficiency of water use. Thus, the District and its Water Users are implementing this EWMP.

The Water Users control and reuse their tailwater for irrigation on other lands within the District. Approximately 10 to 15 percent of the applied waters are collected and reused for subsequent irrigation on other lands within the District. Tailwater recovery has been a standard ongoing practice for over 80 years within the Tulare Lake Bed as a result of the closed basin, low permeable clay soils and the border-strip method of irrigation. The tailwater is blended with supply water to reduce the higher concentrations of salts in the tailwater and, thereby, minimizing impacts to crop yields and improving the overall water quality deliveries. However, the total salt loading does not decrease, requiring the Water Users to continually manage the salt accumulation by crop management and rotation practices. As a result of the intricate tailwater recovery systems constructed and operated by Water Users, further implementation by the District is not necessary.

Institutional restriction is another reason further implementation of this EWMP would be inappropriate. An agreement among several public and private entities was developed, allowing the internal water distribution systems to be managed by the individual Water Users and not the District. This agreement states that the tailwater originating within the District from irrigation practices and non-District operational spill waters will remain in

the control of the individual Water User. Therefore, the District is restricted from further involvement in tailwater recovery and spill water recovery systems.

EWMP 8. Optimize Conjunctive Use of Surface Water and Groundwater – ***FULLY IMPLEMENTED***

Conjunctive use is the District's primary and oldest water management tool. The conjunctive use practice of delivering surface water during wet years and utilizing groundwater during drought periods has been employed in the District for decades. This practice provides flexibility to the District and its Water Users as a result of the different District and non-District water supplies available. This is reflected in Attachment 3, which summarizes the total annual surface water and groundwater supplies listed in Table 5 of Step 3, the Water Accounting section of this WMP. The District's water supplies to the Water Users are solely surface water. The District neither owns nor operates groundwater wells. All groundwater wells are owned and operated by individual Water Users. Therefore, during successive dry years when local river waters and SPW are limited, the Water Users will utilize groundwater. During the wet years, the District and its Water Users maximize deliveries of surface water in-lieu of groundwater pumping. In-lieu recharge of the groundwater basin is an important integral part of the Tulare Lake Bed Coordinated Groundwater Management Plan and efficient water management in the District.

Unlike most groundwater banking programs, the District's ability to directly recharge the groundwater is limited by the geology of the Tulare Lake Bed. In addition, the water quality of existing groundwater underlying two-thirds of the District lands above and below the Corcoran Clay is of poor quality compared to surface water supplies. As a result of the limited groundwater storage which the Water Users can safely access before over drafting, the District's conjunctive use program is greatly reliant on deliveries of surface water supplies as well as surplus surface water supplies, when available. The District takes delivery of varying categories of SPW supplies other than Table A water to enhance its conjunctive use program. The District historically purchases additional imported surface water at costs sometimes higher than groundwater pumping in order to preserve groundwater supplies for dry year augmentation.

The District and its Water Users continue to utilize surface waters to the maximum extent possible and fully implement this EWMP. Water Users will utilize groundwater during dry periods or during operational or regulatory restrictions on delivery of surface water supplies, such as the federal Endangered Species Act (ESA) restrictions. The District augments these conjunctive use practices by having surface water available whenever possible. Also, it continually promotes greater surface water storage facilities, and the purchase of additional surface water supplies when available.

EWMP 9. Automate Canal Structures – ***DEMONSTRABLY INAPPROPRIATE***

The District operates on an arranged demand order-delivery system. Close monitoring of orders, deliveries, and shut-offs are important to the overall success of efficient water use within the District. District field personnel work closely, on a daily basis, with the Water Users to ensure proper flowrates and time of use. A major reason for considering automation of canal structures is to improve operational flexibility and efficiency by reducing operational spills. The District believes the use of automated turnouts is unnecessary, given the present system has been refined over several decades and provides for efficient control of deliveries to the Water Users. In addition, since the District is in a closed basin, individual Water Users manage all District operational spills or shortages by respectively storing excess amounts and delivering stored water from their extensive internal distribution systems when needed. Thus, constructing additional automated structures would not provide any improved water use efficiency to the existing efficient water management practices. The Water Users are able to do this given their private internal water distribution systems and the high level of flexibility they provide. However, a net benefit analysis was conducted and is included in Attachment 6.

As stated in Step 4, Previous Water Management Activities, the District has completed a satisfactorily level of automation by installing nine AMIL automatic gate structures within Lateral B. The gates maintain a constant upstream water level for efficient gravity-flow deliveries to downstream turnouts through 6 miles of lined canal, thereby eliminating operational costs of manually operating the check structures, reducing canal-lining repair maintenance due to the raising and lowering of canal water surfaces, and greater safety for the District's field workers.

In addition to the implementation of automation to the District's facilities, the District also invests in automation of DWR's State Water Project facilities. The automation includes automatic check structures, automatic turnouts, and real-time water level monitoring. The automatic check gates help regulate California Aqueduct pool levels to maintain constant water levels for minimizing turnout operations. The automatic turnouts for Laterals A and B help provide timely and efficient deliveries from the California Aqueduct. The real-time monitoring provides a check on delivery rates for better coordination between Water Users, District field personnel, and DWR field operations.

Given the level of implementation, flexibility in the current water delivery system, basin and irrigation efficiencies, and results from conducting a net benefit analysis, the District concludes there are no realistic opportunities to further improve water use efficiency. This EWMP is demonstrably inappropriate.

The following paragraphs provide additional information to the questions in Part 2 General Information for Detailed Analysis and Part 3 EWMP Environmental, Third Party, and Indirect Economic Analysis, which is requested as part of completing the net benefit analysis.

Part 2 Questions and Answers: General Information for Detailed Analysis

Question A: Describe how EWMP will impact other EWMPs on List B and C? (In response to required discussion from Question A, Net Benefit Analysis for EWMP 9.

Answer A: Installation of automatic check structures in Lateral A will allow a greater amount of water delivery flexibility and reduce soil erosion in the unlined five mile reach of Lateral A. This EWMP would provide an incremental increase in the existing high level of water order and delivery operations between the District and its Water Users as described in EWMP 6. However, the incremental amount of flexibility is not needed given the fully implemented coordination of water deliveries and the capability of most of the Water Users to manage any shortages or spills from their internal distribution systems. EWMP 6 is the only EWMP affected by implementation of additional canal structure automation.

Question C: Explain why three locations would be potential for automation?

Answer C: Lateral A is located along the west-northwest rim of the historical Tulare Lake Bed. The canal is excavated in mostly alkaline, clay-loam soils and erosion is typical in most of the canal. Specifically, the unlined stretch of Lateral A has been problematic with regard to District's O&M expenses, resulting in additional District costs of approximately $15,000 to $25,000 annually. This location does not have any check structures and was selected for automation to protect against soil erosion and provide an additional amount of delivery flexibility. The automation selected by the District was based on its experience with AMIL automatic gates. The gates provide a constant upstream water level, which is needed to maintain constant delivery rates. However, the present delivery system already provides a high level of efficient and flexible water deliveries.

The installation of the gates would also provide slower velocities in the unlined reach, reducing soil erosion and annual maintenance expenses. Consequently, the cost of automation is greater than the benefit of delivery flexibility, given that present deliveries are already efficient. More importantly, no water would be conserved from the implementation of this EWMP 9.

Question D: Explain how EWMP was considered with respect to other EWMPs?

Answer D: The implementation of this EWMP would allow a greater amount of water delivery flexibility and, therefore, would provide some additional benefits to EWMP 6: Increasing Flexibility in Water Ordering and Water Deliveries to Water Users. However, as stated in EWMP 6, the District feels that the current level of flexibility in water orders and deliveries are reasonable.

Part 3 EE: Environmental Questions and Answers

Question A: Explain why implementation would not result in reduced demands?

Answer A: The water demand of the Water Users is based upon meeting crop water requirements. The implementation of this EWMP has no effect on water demands. Installation of automatic canal structures will allow a greater amount of water delivery flexibility and reduce soil erosion. The District's basin efficiency and the Water User's irrigation efficiencies are very high. DWR concluded in its 1982 Report entitled *"Recommended Water Management Plan for Tulare Lake Basin Water Storage District"* in response to the Governor's Executive Order B 68-80, that the District's irrigation efficiency was 98%. In confirmation, the Tulare Lake Drainage District's October 2001 Drainage Operation Plan determined the Tulare Lake Basin Water Storage District had a District irrigation efficiency of 97.2% for the year 2000. The Tulare Lake area is a closed basin. All water delivered is used to meet the local crop water requirements. Automation of additional canal control structures will not reduce the water demands.

Question E: Explain why implementation would result in beneficial impact through automation by reducing soil erosion?

Answer E: The installation of AMIL automatic gates would reduce the soil erosion of Lateral A especially in the five mile unlined reach. The reduction of soil erosion is due to minimizing flow velocities and maintaining constant water levels, which prevents undermining the toe of the embankments in the canal. The benefit of reduced soil erosion would save annual O&M expenditures on embankment repairs, riprap placement, and personnel canal maintenance. The net estimated annual savings in O&M expenditures for Lateral A is approximately $9,500 or 48% of the estimated average annual costs of the unlined segment of the canal.

Part 3 TPE: Third Party Questions and Answers

Question A: Explain why implementation would not result in any changes to groundwater levels?

Answer A: The automation will not save any water or reduce existing demands. The implementation will also not create or cause any significant contribution to the groundwater. The canal structures would provide higher water levels in the canal, potentially causing some additional seepage within the unlined reach, but it is assumed this will be insignificant. Furthermore, the tight clay soils preclude any significant amount of vertical seepage from Lateral A.

Question D: Explain why implementation would result in beneficial impact by reducing soil erosion?

Answer D: The installation of AMIL automatic gates would reduce the soil erosion of Lateral A particularly within the unlined segment. The reduction of soil erosion is due to minimizing flow velocities and maintaining constant water levels, which prevents undermining the toe of the embankments in the canal. The benefit of reduced soil erosion would save annual O&M expenditures on embankment repairs, riprap placement, and personnel canal maintenance. The five unlined miles of Lateral A is cost shared with Empire West Side Irrigation District (EWSID), which also receives SPW through the District's Lateral A. Thus, EWSID would also benefit from the O&M cost savings by implementing this EWMP.

C. CONDITIONALLY APPLICABLE EFFICIENT WATER MANAGEMENT PRACTICES: EXHIBIT A, LIST C

EWMP 10. Water Measurement and Water Use Report - ***FULLY IMPLEMENTED***

The District measures all surface water deliveries at each turnout from the District's conveyance facilities, Laterals A & B. Attachment 9 is a summary of the turnouts from the Kings River and Laterals A and B and each respective flow-measuring device. Each type of measuring device is explained in Step 2: Water Supplier Description, Section F: Water Delivery Measurements or Calculations. Flowrates are measured using acceptable water measuring techniques, including parshall flumes, venturi meters, and propeller-type flowmeters. For most of the devices, the District field personnel record the flowrate daily using water levels from recorder charts in conjunction with rating tables developed by standard engineering calculations for each respective measuring device. Periodic validations of the measuring devices are made using current meters to verify flow rates compared to the theoretical values from the standard tables. For the propeller-type flowmeter turnouts, the District field personnel read the totalizers during deliveries, recording the flowrates in acre-foot quantities.

Deliveries from the data collected by the District are summarized and provided to Water Users in various water-use reports. One form is the Water User letter, which is frequently distributed to provide information on current water issues affecting the District as well as KRW and SPW account balances for each Water User. The District works closely with the Water Users to assure that they are continually informed as to deliveries and account balances. The information on SPW deliveries is provided monthly by SWP billings to Water Users. The water accounting for KRW and SPW is updated weekly as headgate deliveries are made and is finalized once the KRWA and the DWR respectively prepare their final delivery quantities.

This EWMP is being fully implemented by the District. In addition, Water Users measure waters delivered to their respective lands within the District. The District also provides a Net Benefit Analysis included as Attachment 6. The results of the Net Benefit Analysis indicate that the EWMP has insignificant environmental, third-party, and indirect economic effects.

The District estimates no water savings would result from any further implementation or improvement of this EWMP. As previously discussed, the District is located within a closed basin. The District Water Users can deliver water during temporary shortages or store any spills when variations occur in deliveries due to measurement. The Water Users utilize their internal distribution systems to meet the difference in daily deliveries and use their extensive tailwater recovery systems to maximize the use of available water supplies. In the absence of water savings, the economic analysis indicates this EWMP is not feasible. The District is already accomplishing this EWMP at a high level of implementation.

The following paragraphs provide additional information to the questions in Part 1 General Information for Detailed Analysis and Part 2 EWMP Environmental, Third Party, and Indirect Economic Analysis, which is requested as part of completing the net benefit analysis.

Part 1: Questions and Answers: General Information for Detailed Analysis

Question B: Describe the current water measurement practices?

Answer B: As described on pages 8 and 9, the District uses several acceptable methods of measuring flowrate including parshall flumes and venturi meters. Field personnel gather water level recordings from chart recorders in concrete float wells. The float wells measure the water level at various locations such as the upstream side of parshall flumes or at two points for the venturi meters. Using standard tables developed through appropriate testing, the theoretical flow is calculated based on the water level or head reading and an empirical formula. The actual flow may differ and, therefore, the District verifies the actual flow by current meter to calibrate the parshall. The District performs this calibration periodically to maintain the integrity of the calibrated flowrates for the measuring device.

Part 2 EE: Environmental Questions and Answers

Question A: Why implementation will not result in reduced diversions?

Answer A: As stated for the implementation of EWMP 9: Automating Canal Structures: Implementation of this EWMP does not result in reduced water demand in the District. The Water Users deliver the necessary amount of water to meet crop water requirements. Small errors in the District's current high-level of flow measurement are compensated by the Water Users' ability to manage shortages and spills in their internal distribution systems. Furthermore, the District and its Water Users have been and continue to be highly efficient in their water management and water deliveries. As stated in DWR's 1982 Report entitled "Recommended Water Management Plan for Tulare Lake Basin Water Storage District", in response to the Governor's Executive Order B 68-80, the

District's irrigation efficiency was documented at 98%. Additionally, in the Tulare Lake Drainage District's October 2001 Drainage Operation Plan, the Tulare Lake Basin Water Storage District was stated as having an irrigation efficiency of 97.2%. It can, therefore, be concluded that the Water Users within the Tulare Lake Bed are among the most efficient irrigators throughout California. Greater accurate measurements would not reduce the Districts diversions. Water sources are continually and fully utilized for crop water requirements and Water Users manage any over-under deliveries.

Question C: Explain why shallow groundwater will not be impacted as a result of not implementing or implementing this EWMP?

Answer C: Further implementation of EWMP 10 will not result in reduced water demands in the District, nor will not implementing this EWMP increase water demands. The District is a closed basin and all waters delivered to the District remain in the District, less any minimal losses. Furthermore, water demands are a function of crop water requirements. Any shortages or spills are satisfied by the Water Users internal irrigation delivery and tailwater recovery systems. Therefore no additional or reduced amount of water is being applied to the crops. Thus, no significant change occurs in the shallow groundwater.

Part 2 TPE: Third Party Effects Questions and Answers

Question A: Explain why groundwater levels in the confined and unconfined aquifers will not significantly change as a result of not implementing this EWMP?

Answer A: This EWMP is being implemented. The Water Users flexibility to manage any shortages or spills of the District's water deliveries prevents any excess seepage to the groundwater. As discussed in previous sections of this WMP, Tulare clay dominates the soil profile and, thus, precludes significant vertical drainage from surface soils. There would be additional minor amounts of seepage from deliveries resulting from any measurement errors or operational spills. The clay soils, however, prevent any significant contribution to the unconfined or confined aquifer. The unconfined aquifer has a water table level varying roughly from 30 to 180 feet below ground surface (based upon data collected since 1980), while vertical percolation to the confined aquifer is precluded by the Corcoran Clay hydrologic barrier. Groundwater levels are primarily impacted by groundwater pumping on lands to the north and east of the District and by the hydrologic conditions in the Sierra Mountains. Hence, the westward movement of groundwater is insignificantly impacted by the assumed additional seepage.

Part 3: Economic Analysis Question and Answers

Question A: Explain annual water conserved estimate?

Answer A: No water savings are achievable based upon the current level of implementation and the Water Users ability to manage any shortages or spills in daily deliveries from the District's conveyance facilities.

Part 5 Summary Question: Explain the regarding selection of benefit measure by implementing this EWMP?

Part 5 Summary AnswerB: None of the benefits listed apply since it is assumed no water will be conserved through further implementation of this EWMP. The benefit of this EWMP would primarily be focused on the annual O&M cost savings of installing a more accurate measuring device. However, the District fully measures water deliveries from the District's conveyance facilities to the Water Users turnouts.

EWMP 11. Pricing and Other Incentives – ***DEMONSTRABLY INAPPROPRIATE***

As stated previously in this WMP, the District does not manage or deliver any waters available to Water Users within the District. The District has two primary surface water sources from which it provides supplies to its Water Users - Kings River Water (KRW) and State Project Water (SPW). Additional local surface waters are also delivered to District Water Users via individual and private water rights on the Kings and Tule Rivers. The costs for these water supplies are paid by the individual Water Users through ownership in other public entities and mutual water companies. Groundwater is also pumped and delivered by the respective Water Users and therefore, does not involve the District in the pricing structure. The reclamation districts and the Water Users manage floodwaters entering the District boundaries for which the District claims no rights or responsibilities. Thus, the District cannot implement a pricing structure for those waters, which it neither owns, controls, nor manages. The following paragraphs address how a pricing structure relates to the District's KRW and SPW. Even though the District provides KRW and SPW, it does not control costs of these waters other than the internal operation and maintenance costs. The O & M costs are minimized by practicing efficient water management, including measurement of deliveries and providing flexible water operations.

A new pricing structure is not feasible since the District neither owns nor controls any of the waters delivered within the District. Furthermore, a majority of the price for District water supplies is set by other entities (i.e. Department of Water Resources and Kings River Water Association). A major reason the District has no need to implement a new pricing structure is that District Water Users maintain highly efficient water management practices. The District's current, as well as historical, water management practices meet two of the basic objectives of incentive pricing: supporting effective conjunctive use programs and increasing groundwater recharge. In accordance with DWR's 1982 Report entitled "Recommended Water Management Plan for Tulare Lake Basin Water Storage

District", in response to the Governor's Executive Order B 68-80, the District's Water Users do practice highly efficient irrigation techniques with respect to farming in the Tulare Lake Bed. The Water Users conjunctively use surface water and groundwater minimizing impacts to groundwater during normal and wet years. This provides a groundwater supply to protect against economic disaster during dry years. The on-going practice of in-lieu groundwater recharge was expanded when the District contracted for SPW in 1963. SPW initially provided a more reliable surface water supply than the KRW. Thus, due to the lack of control over the total water supplies delivered to lands within the District and the fact that the majority of SPW and KRW costs are respectively set by DWR and KRWA, the District does not have the ability to mandate the price or control the costs of water supplies to further improve water management.

Pricing of the District's Kings River Water

The annual expense of KRW includes administrative costs of the Kings River by the Kings River Water Association, the operation of Pine Flat Dam and Reservoir by the US Army Corp of Engineers, and the District's internal operation and maintenance expenses. These total costs are assessed to each landowner/Water User on a uniform per acre basis. The costs of KRW are independent of the annual entitlement or annual amount of the District's KRW delivered. The Water User must pay the assessed charges regardless of the amounts of water available. The District's annual KRW supply fluctuates depending on the water year type. The Water User's utilize their KRW allocation individually in order to better manage their respective water budgets. Therefore, the District cannot rely on a specific availability of KRW and does not control the utilization of KRW by the Water Users. For instance, during periods of little or no KRW supplies, such as the 1987-1992 drought period, delivery of the District's KRW supplies was severely limited. However, in proceeding wet years, the District received above-normal supplies which were used in-lieu of groundwater pumping. A tiered-pricing system on surface water would have negative impacts on the groundwater basin by encouraging additional groundwater usage. The District cannot implement volumetric pricing on KRW since it neither controls the costs nor the amounts delivered. There are no plans to change the current pricing structure. Furthermore, there would be legal obstacles in implementing EWMP 11 based on current water law. In summary, the erratic nature of KRW entitlement, the delivery flexibility provided to the Water Users, and the historical efficiency of water use further discourages the District from implementing this EWMP.

Pricing of the District's State Project Water

The District's policy continually emphasizes conjunctive use of District and non-District water supplies in the most efficient manner possible. The District coordinates with other local public agencies and private entities to manage groundwater resources in the area via the Tulare Lake Bed Coordinated Groundwater Management Plan. The Plan focuses on the use of surface water supplies to the fullest extent possible when available. In turn, groundwater is used as a supplemental source during dry years to augment below-normal surface water supplies (e.g. 1977, 1987-92, 1994, and 1999-2004). The District's

contract for SPW provides a more reliable surface water supply in addition to the KRW supplies. The SPW also provides additional flexibility to the Water Users to conjunctively use other water supplies.

Similar to KRW, the District does not control the major costs of SPW. DWR's billing for SPW is based on fixed and variable charges. The payment provisions for SPW are documented in the District's State Water Supply Contract and are included as part of Attachment 10. The District's policy on the SPW pricing structure is contained in Short Term Contracts with the Water Users, also included as part of Attachment 10. The SPW fixed charges are determined by DWR and paid monthly by the Water Users, via the District, regardless of the delivered amount of SPW. The District participates with other SWC in reviewing the SPW fixed charges, but it has no actual control of these charges. The SPW variable (energy) charge is based on a unit rate per acre-foot of volumetric water delivered. DWR measures all SPW delivered to the District and, in turn, the District measures all SPW delivered to the Water Users. Since the Water Users must pay SPW fixed charges, they are, therefore, encouraged to take delivery of SPW in-lieu of groundwater. The high cost of SPW also discourages the waste of water. With respect to SPW, water efficiency is maintained and is even more prominent in the Water User's water management programs.

SPW costs to the District are billed to the water users based on a volumetric basis. The billing is proportionate to the landowners respective SPW Table A amounts and are not based on acreage owned in the District. Over the past 10 years, various landowners have chosen to sell and permanently transfer their respective SPW Table A amounts to urban water agencies out of the area due to the escalating costs of the SPW water and the reduced reliability. This is an example of how the increased costs of water can have the unfortunate and unintended consequence of forcing lands out of production despite existing highly efficient uses. Therefore, after further evaluation using the net benefit analysis, EWMP 11 is determined to be demonstrably inappropriate to the District.

The following paragraphs provide additional information to the questions in Part 1 General Information for Detailed Analysis, Part 2 EWMP Environmental, Third Party, and Indirect Economic Analysis, & Part 3 Economic Analysis, which is requested as part of completing the net benefit analysis.

Part 1: General Information for Detailed Analysis Questions & Answers:

*Question B.1: Why is **Tiered Pricing** not considered a feasible pricing structure?*

Answer B.1: In 1982, DWR issued a Report entitled "Recommended Water Management Plan for Tulare Lake Basin Water Storage District" in response to the Governor's Executive Order B 68-80, stating that the District's irrigation efficiency was 98%. Throughout the years, the District's Water Users have continued their efficient use of available water supplies. Included in each Water Users' water management program, is

the practice of conjunctive use - delivering groundwater during dry years as a result of the lack of surface water supplies and delivering surface water in-lieu of groundwater pumping during normal and wet years. Implementing a tiered-pricing structure, for example, on SPW would place a greater cost on water already beneficially and efficiently used to meet crop water requirements. With the existing high water use efficiency, this would not promote any additional water management efficiency or conserve any additional water. In fact, tiered-pricing could create an economic decision for Water Users to pump additional groundwater at a cheaper rate, rather than taking delivery of SPW water at a higher rate. Implementing this EWMP could cause continual pumping of groundwater by the Water Users, thus negatively impacting the groundwater basin that is pumped by other regional Water Users, as reflected during the 1977, 1987-1992, 1994 and 1999-2003 drought years. The current pricing system of a unit rate for SPW and KRW assures the continuation of efficient conjunctive use programs within the District. Also, since the District is committed to effectively managing the groundwater resources as a member in the Tulare Lake Bed Coordinated Groundwater Management Plan, a pricing structure, which would increase groundwater pumping, would be in conflict with the purpose of the Plan. Thus, continuing to practice conjunctive use is the primary pricing objective of the District.

Question B.2: Why is **Wet versus Dry Year Pricing** not considered a feasible pricing structure?

Answer B.2: The District has fully implemented programs over several decades to promote in-lieu groundwater recharge during wet years for dry year water use. The utilization of all surface water supplies during wet years is a major component of the District's water management plan. The District contracted for SPW to provide an additional and more reliable source of surface water supplies. Therefore, Water Users are able to more effectively practice in-lieu recharge of the groundwater basins even though the cost of SPW is typically more expensive than pumping groundwater. Thus, the price of water within the District is only one factor in water management, while the availability of surface water supplies for in-lieu groundwater recharge and continuing conjunctive use efforts are others. These factors impact the ability to establish a wet-year versus dry-year pricing structure.

*Question B.3: Why is **Uniform Block Pricing** not considered a feasible pricing incentive?*

Answer B.3: The District does not consider further implementation of this pricing structure on the basis that: 1) it is partially implemented due to DWR's billing structure for SPW; 2) the pricing structure is not applicable to KRW; and 3) the District has no control over the costs of other Water User supplies. The pricing structure is applicable to the variable portion of SPW, which is based on actual water deliveries. Actual SPW deliveries to the District have a uniform cost per acre-foot. With respect to the District's KRW supply, costs are based upon land assessments and, therefore, are charged on a

uniform cost per acre. Since the amount of available surface water varies greatly year by year, KRW costs per acre-foot of water vary dramatically. Water Users pay less per acre-foot for KRW delivered in wet years, while in dry years they would pay more due to reduced water deliveries. The cost of other water supplies (incl. groundwater, floodwaters, mutual water companies and reclamation districts) is not controlled by the District.

*Question B.5: Why is a **Supplier Buy-Back Program** not considered a feasible pricing incentive?*

Answer B.5: The District implements this program to some extent with regard to SPW through contracts with the Water Users. Available SPW not utilized by a Water User can be offered to the District for redistribution. In this instance, the District facilitates the buy-back program of SPW for the benefit of its other Water Users.

The District does not control redistribution of KRW among the Water Users. However, the District works cooperatively with the Water Users to assist in transfers and exchanges to beneficially utilize the KRW. In this instance, the District does not purchase KRW from the Water Users, but rather purchases water from other King River water right holders on behalf of its Water Users.

The District's modified water supplier buy-back program enhances the overall water management programs and has no adverse effect on the historical water balance within the District. Furthermore, Water Users are not allowed to substitute groundwater for SPW they provide to the buy-back program or KRW that they transfer or exchange with other Water Users. This is a policy reflected in the District's groundwater water management program as previously referred to in the Tulare Lake Bed Coordinated Groundwater Management Plan.

*Question B.6: Why are **Low Interest Loans** not considered a feasible pricing incentive?*

Answer B.6: The District has no said authorization under the provisions of the California Water Code 42552. Funding for any District or Water User project requires landowner approval through District elections. The elections are costly to prepare and administer. Since water use efficiency within the District is already at a high level, there is no incentive to implement this type of program.

*Question B.7: Why is **Cost Sharing for On-Farm Improvements** not considered a feasible pricing incentive?*

Answer B.7: Funding for such on-farm improvement programs by the District would also require an election by the landowners for authorizing. However, based upon the level of development and water use efficiency of the existing internal on-farm irrigation systems utilized by the Water Users, capital improvements for on-farm irrigation systems

facilitated by the District are not necessary. Furthermore, the District was not formed for the purpose of being involved with on-farm improvements or management of private lands within the District.

Question C: Explain how this EWMP ***impacts other EWMP's****?*

Answer C: Due to the current level of highly efficient water management practices implemented by the District and its Water Users, if different pricing structures were implemented, such as tiered pricing, the overall effect on other water management practices in the District would be minimal. Increasing the costs of KRW or SPW water, which is beneficially used by the Water Users, could promote additional pumping of groundwater, which is a supplemental dry-year source. Additional normal or wet year pumping as a result of a modified pricing structure would negatively impact the groundwater. This impacts the List B EWMP 8, which is to optimize the conjunctive use of surface water and groundwater.

Part 2 EE: Environmental Effects Questions & Answers

Question A: Why implementation will not result in reduced diversions?

Answer A: The modification of existing pricing structures could negatively impact the highly efficient conjunctive use programs implemented by the District's Water Users. Since the District's Water Users have maintained efficient water management practices with their existing supplies, it is not anticipated that the implementation of this EWMP will result in reduced diversions. The Water Users are highly efficient in their use of available water and maximize deliveries through extensive tailwater recovery systems.

Question C: Why implementation will not impact shallow groundwater?

Answer C: Implementation of this EWMP will not decrease the amount of water delivered to lands within the District. If implementing this EWMP reduces the surface water supplies delivered, it will require more groundwater to be utilized instead of surface water supplies. The groundwater would be applied to the cropland in the same manner as applying surface water and, therefore, the same amount will be contributed to the perched groundwater table. The perched groundwater table is not affected by the shallow aquifer and deep aquifer respectively above and below the Corcoran Clay hydro-geologic barrier.

Part 2 TPE: Third Party Effects Questions & Answers

Question A: Explain effects on groundwater levels and Third Party Users by implementation of this EWMP?

Answer A: Implementation of this EMWP, if it reduces the purchase of surface water supplies, will cause additional groundwater pumping which will accelerate groundwater overdraft in the groundwater basin. This would affect the ability of Third Party water users to utilize the groundwater resources in surrounding areas by increasing the depth to groundwater and the costs to pump groundwater to the surface. Thus, the net impact would be negative to the District and Third Party interests.

Part 2 IEE: Indirect Economic Effects Questions & Answers

Question A: Why will implementation result in negative impacts on local economies through changes in on-farm operations?

Answer A: Implementation of this EWMP, if it reduces the purchase of surface water supplies, could promote groundwater pumping. Increased groundwater pumping would continue until the costs exceeded the costs of delivering SPW. At that point Water Users would be unable to continue farming economically, resulting in drastic cutbacks in production and labor. The economies of local urban and rural regions, which depend on a thriving agricultural economy, would be negatively impacted.

Part 3 Economic Analysis Questions & Answers:

Question A: Explain the method for selecting the estimated amount of water conserved by implementing this EWMP 11.

Answer A: This EWMP will produce no measurable quantity of conserved water due to the current efficient water management practices implemented by the District and its Water Users. The District's water demand is not a function of the pricing structure, but instead a function of the crop water requirements. Water User's are paying greater prices for SPW in place of groundwater to meet their irrigation demands and efficiently manage the water supplies available. The augmentation of surface water supplies with SPW and other purchased water supplies provide benefits to the groundwater resources for dry year utilization. Since the District does not control all water sources, the Water Users would utilize other available private and public supplies to meet their irrigation demands and therefore, no water is conserved.

Question B: Explain why implementation of EWMP 11 will not result in capital or operation and maintenance costs?

Answer B: If the implementation of this EWMP for the District's supplies reduces the diversion of SPW or KRW, Water Users would be required to pump additional groundwater to meet their irrigation demands. This would increase costs to Water Users for rehabilitating or constructing new wells for groundwater pumping. Since the District

neither owns nor operates groundwater wells, these costs are borne solely by the Water Users.

Question C, D, E: Why does the implementation of this EWMP 11 result in no benefit measures as listed in the net Part 3?

Answer C, D, E: It is estimated that no water would be conserved by the implementation of this EWMP. As a result, there is no benefit from this EWMP. Implementing this EWMP would have no beneficial effect on any water supply projects for the District. As for Question E, Would EWMP increase water sales? There would be no water conserved, and, therefore, no excess water for sale.

STEP 6: DEVELOP SCHEDULES, BUDGETS, AND PROJECTED RESULTS

EWMPS's 1 through 11 are being exempted by the District. The EWMP's are either already implemented by the District and/or its Water Users or the EWMP's do not feasibly improve the efficient water management practices of the District and, therefore, are demonstrably inappropriate. Net benefit analyses were performed for EWMP 9, 10 and 11. The District concludes that all of these EWMP's are infeasible.

All feasible and appropriate EWMP's are fully implemented at this time. The District has no defined schedules, budgets, or projected results. The EWMP's practiced by the District and its Water Users are implemented on an ongoing basis.

STEP 7: REVIEW, EVALUATE, AND ADOPT THE WATER MANAGEMENT PLAN

A. REVIEW AND EVALUATION PROCESS

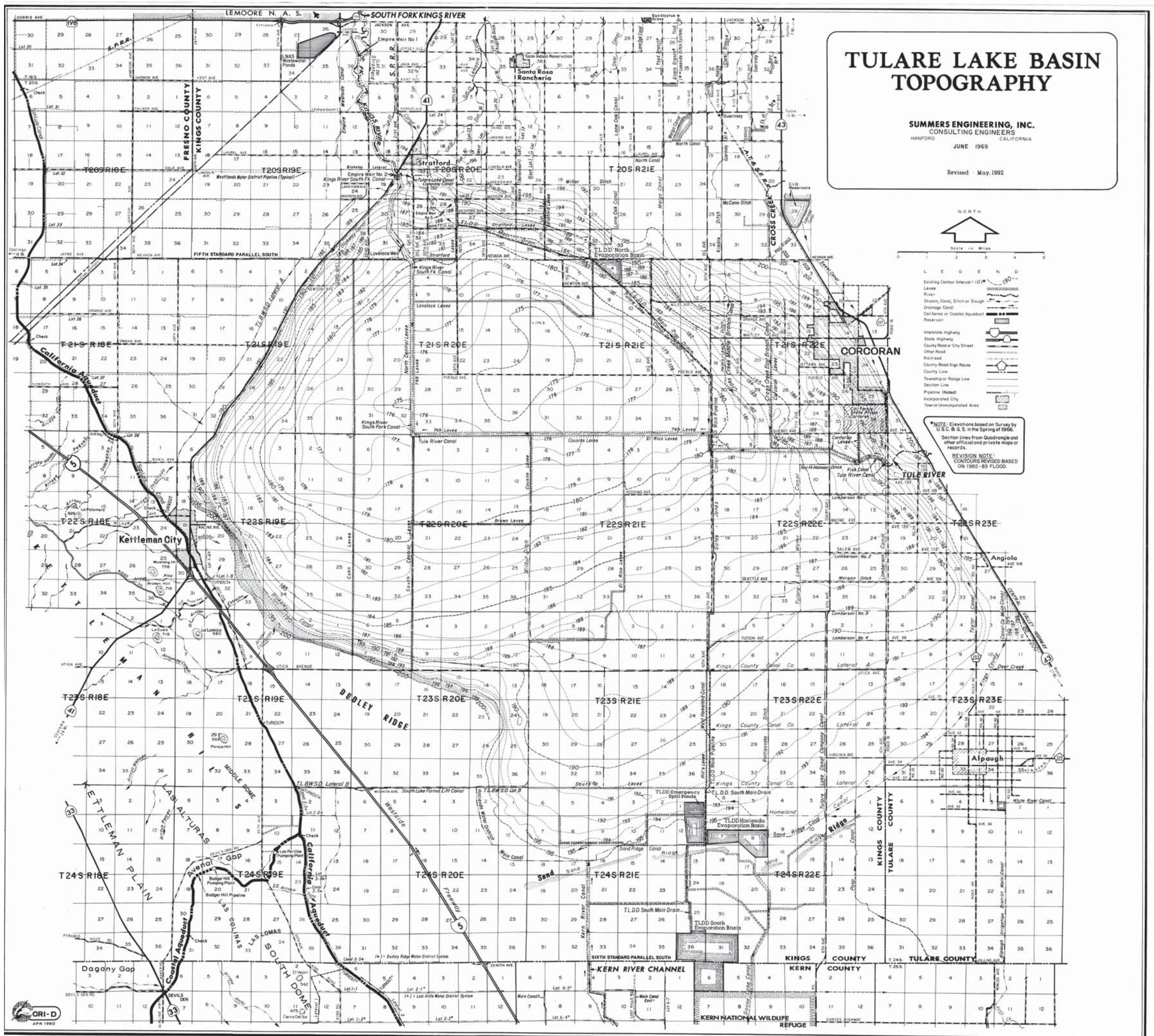
The District's staff worked with the Water Users and other water agencies to review and evaluate the WMP. The process review initially began in mid-1999 and continued through December 1999. The Steps 1-4 of Exhibit B of the WMP were submitted to the Agricultural Water Management Council (Council) on July 16, 1999. The Steps 5-7, including the net benefit analysis, were submitted on January 5, 2000, following further review by the District's staff and the review committee. Subsequent to a meeting with DWR personnel to discuss their general comments and net benefit analysis review, staffing and budget issues prevented the submission of a revised WMP incorporating the net benefit analysis sheets. The WMP being submitted has undergone a peer review on April 22, 2009. The peer review committee recommended endorsement by the full Agricultural Water Management Council with minor changes. This final WMP incorporates the comments from the peer review committee.

The Water Users provided useful review and comments to emphasize the ongoing efficient water management practices implemented within the District. Any additional annual updates will contain the input from the Water Users.

B. ADOPTION BY BOARD OF DIRECTORS

In August 2007 the District's Board of Directors directed an ad hoc committee to review the draft WMP and, upon its acceptance, authorized the committee to forward it to the Water Management Council (WMC). The District's ad hoc committee has examined the draft WMP and recommends it be submitted to the WMC. Furthermore, the NBA was also reviewed and submitted to the Council. Revisions to the WMP, including the net benefit analysis, were accepted through consultation with Water Users.

Attachment 1


TULARE LAKE BASIN
TOPOGRAPHY
SUMMERS ENGINEERING, INC.
CONSULTING ENGINEERS
HANFORD CALIFORNIA
JUNE 1969
Revised - May, 1992
NORTH
Scale in Miles
0 1 2 3 4 5
LEGEND
Existing Contour Interval = 10'*
Levee
River
Stream, Canal, Ditch or Slough
Drainage Canal
California or Coastal Aqueduct
Reservoir
Interstate Highway
State Highway
County Road or City Street
Other Road
Railroad
County Road Sign Route
County Line
Township or Range Line
Section Line
Pipeline (Noted)
Incorporated City
Town or Unincorporated Area
*NOTE: Elevations based on Survey by U.S.C.&G.S. in the Spring of 1966.
Section lines from Quadrangle and other official and private maps or records.
REVISION NOTE: CONTOURS REVISED BASED ON 1982-83 FLOOD.
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FRESNO COUNTY
KINGS COUNTY
TULARE COUNTY
KERN COUNTY
FIFTH STANDARD PARALLEL SOUTH
SIXTH STANDARD PARALLEL SOUTH
Santa Rosa Rancheria
Stratford
Kettleman City
CORCORAN
Angiola
Alpaugh
TULE RIVER
CROSS CREEK
DUDLEY RIDGE
KETTLEMAN HILLS
KETTLEMAN PLAIN
LAS ALTURAS
MIDDLE DOME
LAS COLINAS
LAS TOMAS
SOUTH DOME
California Aqueduct
Coastal Aqueduct
Avenal Gap
Dagany Gap
KERN RIVER CHANNEL
KERN NATIONAL WILDLIFE REFUGE
T.L.D.D. North Evaporation Basin
T.L.D.D. Hacienda Evaporation Basin
T.L.D.D. South Evaporation Basin
T.L.D.D. South Main Drain
T.L.D.D. Emergency Spill Ponds
T.L.B.W.S.D. Lateral B
T.L.B.W.S.D. Lat. B
South Lake Farms Lift Canal
Westside
Freeway 5
Kings River South Fk. Canal
Tule River Canal
Kings County Canal Co.
Lateral A
Lateral B
Lateral C
Deer Creek
Kaweah River Canal
Alpaugh Irrigation District Main Canal
Kern River Canal
Sand Ridge Canal
Sand Ridge
Main Canal
Main Canal East
Main Canal West
Dudley Ridge Water District System
Lost Hills Water District System
Westlands Water District Pipeline (Typical)
Los Perillos Pumping Plant
Badger Hill Pumping Plant
Badger Hill Pipeline
Lemoore Weir
Lovelace Weir
Empire Weir No. 1
Empire Weir No. 2
Tulare Weir
Kings River South Fk. Canal
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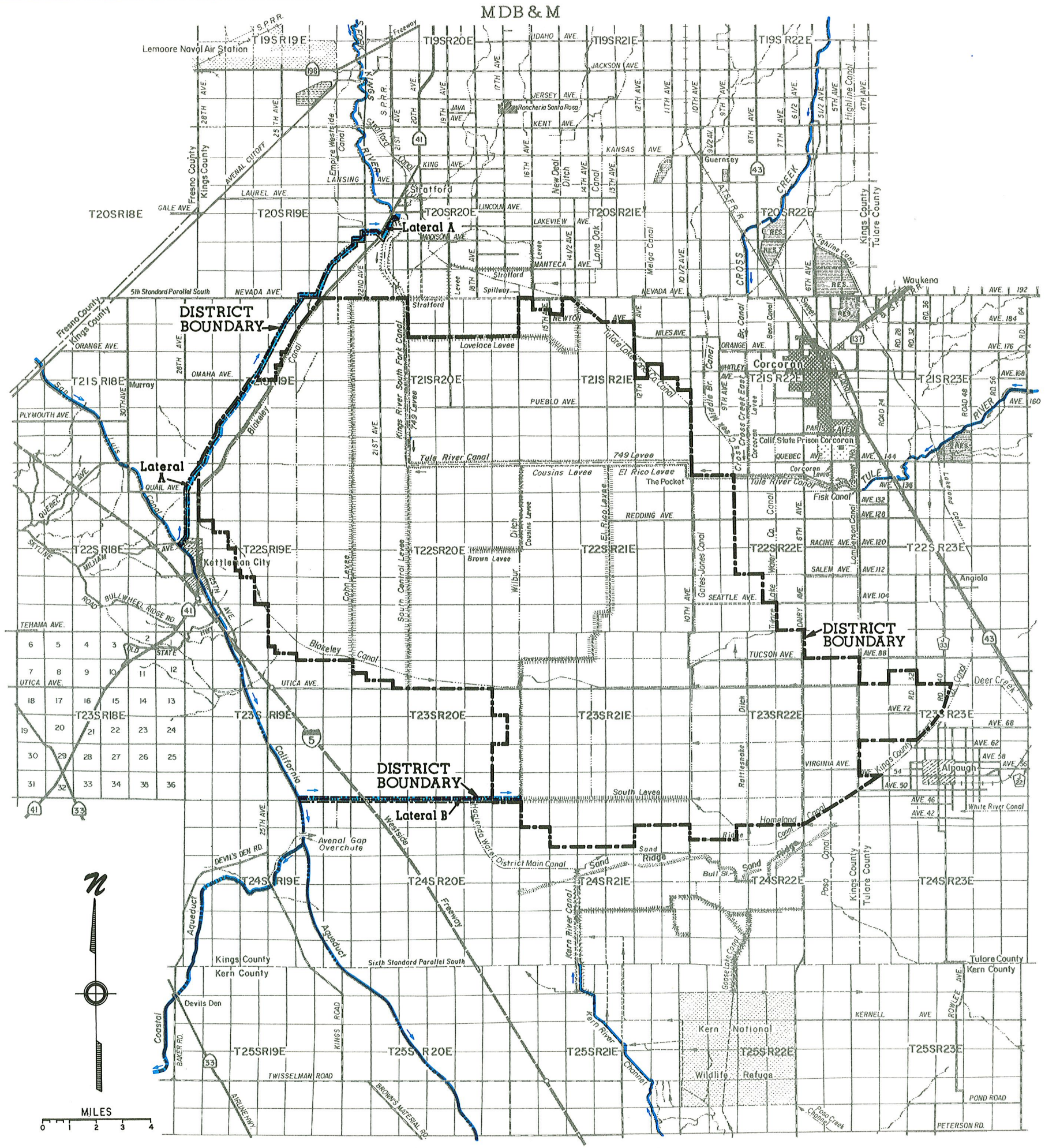

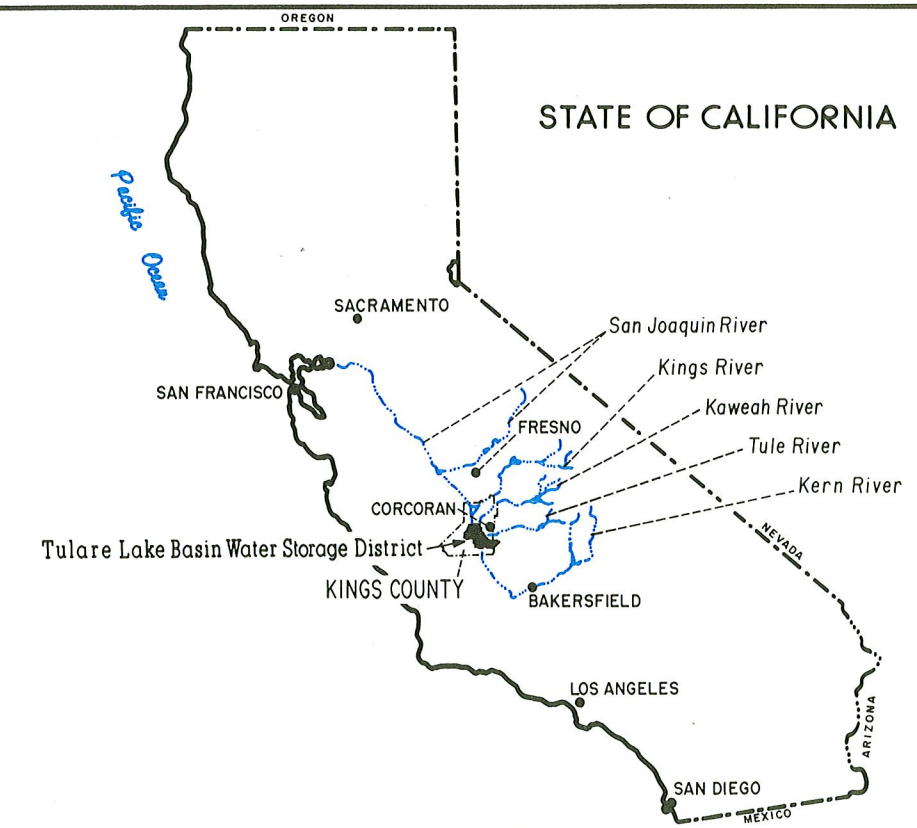

LOCATION MAP

LEGEND

- DISTRICT BOUNDARY
- COUNTY LINE
- TOWNSHIP LINE
- SECTION LINE
- RIVER
- CANAL, DITCH, CREEK OR SLOUGH
- LEVEE
- INTERSTATE HIGHWAY
- STATE HIGHWAY
- COUNTY ROAD, CITY STREET
- OTHER ROAD
- RAILROAD
- IRRIGATION FACILITIES
- WATER SOURCES

TULARE LAKE BASIN WATER STORAGE DISTRICT

CORCORAN CALIFORNIA

SUMMERS ENGINEERING, INC.
Consulting Engineers
HANFORD CALIFORNIA

MAY 1992

Attachment 2

THIRTEENTH AMENDED
RULES AND REGULATIONS OF THE
TULARE LAKE BASIN WATER STORAGE DISTRICT
ADOPTED OCTOBER 2, 2012

Pursuant to the requirements of Section 43003, Article 1, Chapter 1, Division 14, Water Code of the State of California, the Board of Directors of the Tulare Lake Basin Water Storage District hereby adopts these Rules and Regulations. These Thirteenth Amended Rules & Regulations supersede all previously Adopted Rules and Regulations.

1. Definitions

The terms used in these Rules and Regulations shall have the same meaning as those used in the most current Water Service Contracts.

2. Irrigation Year

The irrigation year means the twelve-month period from and including January 1 of any year through the 31 of December of said year.

3. Interlake Agreement

The District expressly recognizes that a controversy exists as to the meaning and effect of the Interlake Agreement and it is expressly understood that the transmission of water through Laterals A and B to the District for use within the District is not to be and shall not be construed as ownership or operation of distribution facilities within District, and that said controversy is expressly left unresolved and undetermined.

4. Management Of Project Facilities

The Project Facilities of District, are under the exclusive management and control of the Board of Directors through its authorized agents, and no other persons shall have any right to interfere with, operate, or manage the said Project Facilities in any manner.

5. Authorized Agent(s) Of Water Users

Each Water User who desires water service shall advise the District in writing the names of his authorized agent(s) and such authorized agent(s) may be changed from time to time by the Water User by giving such notice, in writing, to the District.

6. Policy Regarding Allocation Of Project Water

It is the policy of the Board of Directors of this District that:

(a) The District's ability to deliver State Project Water to District's Water Users is limited to the use of Laterals A and B. Nothing herein contained shall ever be so construed as to impose on the District or create for District any obligation or

liability to District's landowners not existing under the adopted Projects of District, the Interlake Agreement, the pertinent provisions of the Water Code of the State of California, or other applicable law. All landowners shall be given the opportunity to receive their proportionate share of District's State Project Water supply and/or other water on a uniform basis per assessed acre, under terms and conditions set forth in the Water Service Contract, except for those lands which have been stripped of the right to contract for State Project Water. Unless a landowner timely enters into a Water Service Contract, the Landowner will be precluded from doing so until the subsequent Water Service Contract is offered.

(b) In the event that all or a portion of District's State Water Project Table A Water is not subscribed by landowners in accordance with their respective percentages of eligible lands to contract with the District, the other Water Users in District will be afforded the, opportunity to subscribe for quantities in excess of their respective percentages.

(c) In the event Water Users subscribe for quantities in excess of their respective percentages of eligible lands to contract with the District, as provided for in subparagraph (b) above, the reallocable quantity will be apportioned to said Water Users on a pro rata basis per contracted Table A Water.

(d) In the event the under-subscribed quantity is in excess of the quantity requested by over-subscribing Water Users, then, and in that event, assessments will be levied from time to time all as provided for in Section 44030 of the California Water Code (California Water Storage District Law). District will, however, make reasonable efforts to dispose of the under-subscribed quantities of water at the best prices available for the accounts of the under-subscribing Water Users.

7. <u>Water Orders</u>

(a) All Water Users' orders for Project Water, Supplemental Water and Non-District Water deliveries shall be made to the District office or District personnel 24 hours prior to actual delivery. Annual requested monthly deliveries shall be submitted on forms provided, on or before October 1 and May 5 of each year, to allow District to comply with the requirements of the State and District's operational requirements.

(b) Delivery Schedule requirements of the State include, but are not limited to, the following:

(1) On or before October 1 of each year, District must submit in writing to the State a preliminary Table A Water delivery schedule and, if appropriate, a carryover water delivery schedule, indicating the amounts of water desired by the District during each month of the succeeding year.

(2) On December 1 of each year, the State shall determine and furnish to District the water delivery schedule for the next succeeding year which shall show the amounts of Table A Water to be delivered to District during each month of that year.

(3) A water delivery schedule may be amended by the State upon District's written request. Requested amendments shall be submitted by the Water User in time for the District to submit the desired change prior to the month or months the desired change is to become effective, and shall be subject to review and modification by the State in like manner as the schedule itself.

(c) From time to time there may be made available to District other Project Water, including Turnback Water, Article 21 Water, and Supplemental Water from other sources delivered through Project Facilities. The District shall promptly notify the Water Users of the availability and estimated cost of said water and the allocated amounts to each Water User based upon respective percentage of Table A Water. Water Users desiring to participate shall enter into an agreement with the District for the delivery of such water.

(d) It is expected that, under normal operational conditions, and within the limitations of contract obligations and capacities of the Project Facilities, it will generally be possible to accommodate Water Users' requests for water deliveries and changes in daily water deliveries provided that advance notice is given by such Water Users to District in accordance with the operating procedures of the State.

8. <u>Continual Delivery</u>

To the extent practicable, delivery of water shall be made continually, day and night.

9. <u>Proration Of Available Capacity</u>

At any time or location where total Water User requests for delivery capacity in Project Facilities exceeds the actual capacity of Project Facilities, then the actual capacity of Project Facilities will be allocated among those Water Users requesting delivery capacity in proportion to the respective percentages of Table A Water under the Water Service Contracts and any reserved capacity rights relating to the permanent transfer of Table A Water. Water Users may use their allocated share of delivery capacity in Project Facilities to take delivery of any type of water, irrespective of the source.

10. <u>Charge For Water Spilled</u>

If water is ordered, and the Water User is not ready or able to receive water or continue to take delivery at the times of requested delivery, said Water User shall be charged for any water spilled until the State, at District's notification, has effected a change at the Turnout(s) in the California Aqueduct, unless another Water User agrees

to take said water. In the event no other Water User agrees to take said water, District shall notify the State as soon as reasonably possible.

11. Termination Of Water Deliveries

No water will be delivered to a landowner or Water User if he is delinquent in the payment of any District charges, billings, or assessments or is in violation of these Rules & Regulations or in breach of the Water Service Contract.

12. Water Transfers/Exchanges

(a) *Delivery To Lands Outside District Boundaries:* Deliveries of water from Project Facilities to lands outside District boundaries shall be made in accordance with the provisions contained in "POLICY RE DELIVERY OF STATE PROJECT WATER TO LAND OUTSIDE OF DISTRICT BY ACTION OF THE BOARD OF DIRECTORS JANUARY 3, 1974" and further specified in "AGREEMENT BETWEEN TULARE LAKE BASIN WATER STORAGE DISTRICT (HEREIN TERMED DISTRICT) AND 'WATER USER' (HEREIN TERMED WATER USER) IN SUPPORT OF REQUEST FOR STATE CONSENT TO DISPOSITION OF PROJECT WATER OUTSIDE THE BOUNDARIES OF DISTRICT", all as may be amended. Copies of both documents are on file in the offices of the District.

(b) *Annual Landowner to Landowner:* Water User may annually transfer any portion of his Table A Water to his lands or lands that the Water User farms outside of the District boundaries under the following conditions:

(1) The Water User shall provide details of the proposed transfer and obtain permission from the Board or General Manager to make the transfer under the conditions herein;

(2) The transfer shall not adversely impact the financial integrity of the District or cause an adverse water or financial impact to other Water Users;

(3) The Water User may not increase his historical groundwater pumping capacity within the District as a result of the transfer;

(4) If lands are fallowed as a result of the transfer, the Water User shall comply with the District's transfer condition for Fallowed Land Management Practices specified in Paragraph 12 (d)(5) below;

(5) The Water User shall pay an administrative and processing fee to the District as determined by the Board;

(6) The transfer will be subject to all State, regulatory and other required approvals.

(c) *Annual Exchanges:* Water User may annually exchange any portion of his Table A Water to another State Water Project Contractor or a non-Contractor under the following conditions:

(1) The Water User shall provide details of the proposed exchange and obtain permission from the Board or General Manager to make the transfer under the conditions herein;

(2) The exchange shall not adversely impact the financial integrity of the District or cause an adverse water or financial impact to other Water Users;

(3) The Water User shall cause an equal amount of surface water from any source, other than Article 21 or Turnback Pool water, to be returned within the boundaries of the District within 4 years of the transfer of the exchange water out of the District. In the event the Water User fails to do so in full within said 4 year period, Water User shall pay the District a non-refundable mitigation fee of $50.00 for each acre-foot of water not returned and no additional exchanges will be permitted by the District until the return water requirement is satisfied by the Water User or the District. The Board may, in its sole and absolute discretion, grant extensions in the return period based on demonstrated hydrologic hardship conditions. Floodwater entering the local area and diverted by Water User to a beneficial use through irrigation or storage may be utilized as return water.

(4) The Water User shall pay an administrative and processing fee to the District as determined by the Board;

(5) The exchange will be subject to all State, regulatory and other required approvals.

(d) *Permanent Transfers Out of the District:* Conditions for Permanent Transfers are to assure that the financial integrity of the District is not affected and to prevent adverse water and financial impacts to the other landowners/Water Users by virtue of the transfer. Only those landowners/Water Users that are under a current Water Service Contract may permanently transfer Table A water.

(1) Bond Repayment: Payment in full of principal and interest on any outstanding Bond Assessment for lands identified as no longer having ability to contract for State Project Water.

(2) District Annual Operation and Maintenance (O & M): A one-time O & M mitigation fee shall be paid to the District to avoid annual O & M costs from being shifted to other landowners/Water Users. Calculation of the fee shall be based on a term of 35 years, at an interest rate based on the U.S. Money Rate 30-Year Treasury Bonds, as published in The Fresno

Bee, seven days prior to the targeted close date, and a District O & M inflation factor based on the District's O & M Costs from 1991 forward.

In lieu of paying the one-time O & M mitigation fee to the District, the landowner may, under an agreement with the District and the Transferee, continue to annually pay the District O & M charges, provided the transferred SWP Table A Entitlement water right or other adequate security for such payment is provided under terms and conditions acceptable to the Board. The estimated annual O & M charges shall be paid in advance on or before January 1 of the contract year. The landowner may elect to cease annually paying the District's O & M charges by paying a one-time O & M mitigation fee. Said fee shall be calculated and based on a 35 year period commencing from such election. Upon payment of the one-time mitigation fee, landowner shall then have the right to continue utilizing the allocated capacity for a period of 35 years as provided below.

(3) *District's Project Facilities Capacity*: In the event landowner has paid the one-time O & M mitigation fee provided for above, landowner shall for a period of 35 years retain the right to utilize the capacity in the District's Project Facilities that would have been allocated to the landowner absent the transfer of the State Project Table A Entitlement water. Such capacity may be used for deliveries inside or outside of the District boundaries. At the end of said 35 year period, landowner shall release and no longer have the right to utilize the subject capacity.

In the event the Transferee enters into an agreement with the District to annually pay the District's O & M charges, the transferring landowner shall retain the right to utilize the capacity in the District's Project Facilities that would have been allocated to the landowner absent the transfer of the State Project Table A Entitlement water, provided the landowner (or the party responsible under the agreement) remains current.

(4) *Groundwater Impacts:* The future use of the landowner's groundwater wells within the District shall be limited to the landowner's historic maximum pumping capacity within the District prior to any permanent transfer of the State Water Project Table A Entitlement Water right. The landowner and the District shall verify and document the historic maximum pumping capacity prior to the close of the transfer. The landowner may only increase the documented pumping capacity with the prior approval of the District's Board of Directors. A notice of this limitation shall be recorded against the landowner's lands within the District.

(5) *Fallowed Land Management Practices*: Customary and accepted farming practices (Management Practices) such as disking, planting native grasses, etc., shall be implemented, if necessary, on designated lands

that are fallowed as a result of the permanent transfer to avoid harm to adjoining landowners. The landowner shall annually designate such fallowed lands not later than April 1 by providing notice of such designation to the District. Nothing in this section of the Conditions shall require the landowner to fallow lands.

The amount of such designated fallowed lands shall be calculated based on an assumed irrigation rate of 2.4 acre-feet per acre. For example, if the landowner does not have sufficient water supplies to continue farming his historical cropped acreage, after permanently transferring 1,000 acre-feet of State Project Table A Entitlement Water, the maximum amount of designated fallowed lands that shall be subject to the above required Management Practice shall be determined as follows:

1,000 acre-feet/2.4 acre-feet per acre = 417 designated fallowed lands

Notwithstanding the foregoing, the landowner shall only be required to implement the Management Practices on the area of the designated fallowed lands that physically lies within ½ mile of another Water User's cropped lands (buffer zone), unless said Water User agrees otherwise. For example, if a landowner fallows as a result of a transfer and designates 500 acres of which only 200 acres physically lie within the ½ mile buffer zone, the landowner is only required to implement Management Practices on the 200 acres within the buffer zone.

The landowner shall enter into a recorded agreement with the District to insure the appropriate Management Practices within the buffer zone are implemented. In the event the landowner fails to implement the Management Practices after 30 days written notice to do so from the District, the District may take whatever action it deems reasonably necessary to implement the required Management Practices and bill the landowner for all of its costs, including its out-of-pocket costs, administrative costs and legal fees. If the landowner fails to reimburse District within 30 days of billing for said costs, the District may enforce lien rights on the entire designated fallowed acreage. Such lien rights shall include the right to foreclose.

In addition to the aforedescribed lien rights against the designated fallowed lands, the District may withhold and dispose of the Kings River Water supplies allocated to the designated fallowed lands by the District. Any revenues received from the disposition of said Kings River supplies shall be first applied toward the District's costs provided for above. Any excess revenues shall be returned to the landowner. Notwithstanding the foregoing, the District may exchange said Kings Water supplies with another landowner to perform the Management Practices on behalf of the District.

(6) *Deed Restrictions*: The Landowner shall designate lands that shall be stripped of any further right to contract for State Project Water with the District by a recorded deed restriction. The duty of Table A Water is deemed to be 0.64 acre-feet per acre for calculating the amount of acreage to be stripped of the right to contract.

(7) *Administrative and Processing Fee:* The Water User shall pay an administrative and processing fee to the District as determined by the Board.

(8) *Right of First Refusal:* Landowners proposing to permanently transfer Table A water out of the District shall present the proposed transfer to the Board for review to determine if it is consistent with the District's transfer policy and rules. The landowner shall provide a copy of the executed transfer agreement to the District. The District shall in turn make a copy of the transfer agreement to the other landowners in the District (non-transferring landowners) and the other SWP Contractors in Kings County who shall have a 30 day first right-of-refusal to buy all or a portion of the Table A amount proposed to be transferred on the same terms and conditions as being proposed. Landowners in the District shall have priority over the other SWP Contractors in the County.

13. <u>Kern River Water Settlement Agreement</u>

Project Facilities may be used to convey water made available to District under the terms of the Supplement to Kern River Water Settlement Agreement dated August 15, 1974. The money or water received by the District under the Kern River Agreement shall be allocated in proportion to the assessed acreage in the District.

14. <u>Kings County State Project Water Exchange and Kings River Buy Back Agreement</u>

Project Facilities may be used to convey water made available to District under the Agreement dated April 26, 1967, by and between the County of Kings of the State of California and the District. The Kings River water and State Water Project water to be exchanged under said County of Kings Agreement and the buy back of the Kings River water under the December 23, 1980, agreement between the County of Kings and certain local water entities shall be administered in accordance with the AWD vs. TLBWSD Settlement Agreement dated December 15, 2009 (Kings County Superior Court, Central Division, Case No. 08 C-0175). A true and correct copy of said settlement agreement is available at the District's office presently located at 1001 Chase Ave., Corcoran, CA 93212, and is incorporated herein by this reference as though fully set forth herein.

15. Other District Water Supplies

Except for (1) District State Water Project supplies under its water supply contract with the Department of Water Resources, including District's Table A Amounts and all other supplies made available to the District based on its Table A Amounts and (2) the County's Table A Amounts made available to the District under the 1967 District-County Exchange Agreement for the term specified in the AWD vs. TLBWSD Settlement Agreement, any and all other water available to the District, whether now existing or subsequently becoming available at any time in the future, (including, but not limited to, (1) the County's Article 21, Turnback Pool, Yuba Accord water and all other waters arising under the County's contract for SWP water supplies, whether made available to the District under the 1967 District-County Exchange Agreement [including any renewals or extensions] or otherwise, (2) the Kern River Settlement water, and (3) the District's local river supplies), shall be allocated and apportioned to all District landowners in proportion to their respective assessed acreage of land in the District, unless the District is required by law, or for reasons beyond its control, to allocate such supplies in some other manner.

16. Grievances

Any grievance or complaint of a Water User that cannot be settled directly with the Operations Superintendent, shall be appealed to the General Manager and, from his decision, appeal may be made to the Board of Directors, provided, however, no such Water User shall be precluded from taking any legal action available in a court of competent jurisdiction after exhausting these administrative remedies.

17. Inspection Of Records

Landowners/Water Users may inspect water and financial records at the District's office during regular business hours, except for those documents protected under the Public Records Act.

18. Water Shortages

Pursuant to powers granted by Section 43004 of the California Water Code, in the event of a shortage of Project Water, water will be apportioned to each Water User within District, in accordance with the AWD vs. TLBWSD Settlement Agreement.

19. Responsibility For Damage To District Property

Each landowner/Water User shall be responsible to District for all damage to District property caused by negligent or careless acts of himself or his agent. All such damage will be repaired by District or to District's specifications and the cost thereof shall be borne by the landowner and/or Water User.

20. Limitations Of District Responsibility

District shall not be liable for any damages of any kind or nature resulting directly or indirectly from any private ditch or the water flowing therein, or for negligent, wasteful or

other use or handling of water by the users thereof. District's responsibility shall absolutely cease when the water leaves the Project Facilities.

21. <u>Encroachment On Project Facilities</u>

(a) No opening shall be made or structure placed in any Project Facilities, except by District, or without written approval of the District's Board of Directors.

(b) A permit for encroachment shall be required before any irrigation or drainage ditches, fences, pipelines, or other encroachments from private sources will be permitted to be used within any District right-of-way.

(c) The work for all encroachments on Project Facilities shall be constructed and maintained to District's specifications at the sole expense of the applicant.

(d) Any person using any District right-of-way for any purpose assumes all risk of so doing and by his use accepts responsibility for any damage to District property resulting therefrom and also for any damage or claims of damage to private property caused by such damage to District property.

(e) Any landowner/Water User constructing or doing work on District right-of-way or Project Facilities shall first enter into an agreement which shall, among other things, provide a hold harmless to the District.

(f) Access roads along Laterals A and B banks may be used by landowners at such time and in such a manner that neither the road nor the bank is damaged, within terms and conditions to be set from time to time by the Board.

(g) No livestock may be pastured, or allowed to trespass, upon Project Facilities at any time.

(h) No waste of any kind shall be either dumped into Project Facilities or placed on or adjacent to the banks of Project Facilities where it might fall, slide or be blown into the Project Facilities.

(i) No tail water from any source shall be spilled into Project Facilities, except by District or with the written approval of the District's Board of Directors.

22. <u>Non-District Water Charge</u>

The District shall bill non-Water Users a wheeling charge, at a unit rate to be set by the Board of Directors, for water conveyed through Project Facilities. Water Users will not be billed for Non-District Water conveyed through Project Facilities.

23. <u>Authority Of Rules And Regulations</u>

(a) These Rules and Regulations, among other things, govern the water under the Water Supply Contract between the State of California, Department of Water

Resources, and Tulare Lake Basin Water Storage District, and the Water Service Contract between the District and its Water Users, and any amendments to the foregoing. In the event of a conflict between such Contracts and these Rules and Regulations, reconciliation amendments shall be adopted as soon as reasonably possible. In the event the conflict is not or cannot be reconciled, the Water Supply Contract and the Water Service Contract shall govern.

(b) Pursuant to said Section 43003 of the Water Code of the State of California, District may enter into water service contracts with landowners in District, which contracts may, in the discretion of the Board, provide, among other things, that the obligations are a lien on the land with the same force and effect and priority as an assessment lien if such contract is recorded in the office of the County Recorder in the County in which such land is situated and such contracts may provide for delivery of water outside District's boundaries as contemplated by Article 15(a) of the Water Supply Contract and the obligations resulting from such deliveries may likewise be secured by a lien on lands within the boundaries of District. The Water Service Contracts entered into between District and Water User shall be recorded.

24. Changes In Rules And Regulations

Except as these and future District's Rules and Regulations may be subject to limitations set forth in judicial decrees or litigation settlements, including with respect to District's future water allocations, these Rules and Regulations shall become effective immediately and may be changed from time to time by resolution of the District's Board of Directors.

25. Enforcement Of Rules And Regulations

The General Manager of District shall be responsible for the enforcement of the Rules and Regulations. Refusal to comply with any of the Rules and Regulations shall be sufficient cause for the termination of water service, and water service shall not again be furnished until full compliance has been made with all the requirements herein set forth. In no event shall any liability accrue against District or any of its officers, agents, or employees, for damage, direct or indirect, arising from such temporary discontinuance or reduction of water deliveries; provided, however, that liability of District hereunder shall be governed by and under the provisions of the Government Code of the State of California, commonly known as the "Claims Against Public Entities Statute", Section 810 et seq. of said Code and applicable law with respect thereto and as said Code and law may be interpreted by courts of competent jurisdiction; and, provided further that in the event a grievance or complaint is being processed pursuant to Section 12 hereof, any action hereunder shall be suspended pending decision of the Board of Directors.

END OF DOCUMENT

Attachment 3

TULARE LAKE BASIN WATER STORAGE DISTRICT
SUMMARY OF SURFACE WATER SUPPLIES AND GROUNDWATER DELIVERIES TO LANDS WITHIN THE DISTRICT

WATER YEAR (OCT. - SEPT.)			SURFACE WATER SUPPLIES 1/ (ACRE FEET)	GROUNDWATER SUPPLY (ACRE FEET)
1968	-	1969	110,310	41,000
1969	-	1970	215,524	0
1970	-	1971	263,831	0
1971	-	1972	279,716	66,000
1972	-	1973	301,459	3,000
1973	-	1974	293,914	3,000
1974	-	1975	365,518	3,000
1975	-	1976	258,727	104,000
1976	-	1977	91,762	210,000
1977	-	1978	225,284	74,000
1978	-	1979	333,565	2,000
1979	-	1980	364,749	3,000
1980	-	1981	352,775	40,000
1981	-	1982	409,000	10,000
1982	-	1983	318,700	0
1983	-	1984	316,429	0
1984	-	1985	373,263	5,000
1985	-	1986	328,979	2,000
1986	-	1987	325,120	27,009
1987	-	1988	209,200	133,571
1988	-	1989	214,671	162,000
1989	-	1990	169,618	175,000
1990	-	1991	60,998	228,100
1991	-	1992	117,050	216,000
1992	-	1993	226,400	89,700
1993	-	1994	249,469	92,000
1994	-	1995	277,044	58,000
1995	-	1996	415,451	0
1996	-	1997	288,962	0
1997	-	1998	261,120	0
1998	-	1999	344,145	0
1999	-	2000	371,821	17,500
2000	-	2001	259,000	100,000
2001	-	2002	160,000	160,000
2002	-	2003	210,000	125,000
2003	-	2004	183000	170,000
2004	-	2005	316,000	10,000
2005	-	2006	303,000	0
TOTAL			**10,165,574**	**2,329,880**
% OF TOTAL ANNUAL SUPPLIES			**81.3%**	**18.7%**

1/ Includes Residual Floodwaters, Local Rivers Water, State Project Water and Other surface waters.

Attachment 4

TULARE LAKE BED COORDINATED GROUNDWATER MANAGEMENT PLAN (SB 1938 COMPLIANT)

Adopted
7/27/12

July 27, 2012

TULARE LAKE BED
COORDINATED
GROUNDWATER MANAGEMENT PLAN
(SB 1938 COMPLIANT)

Adopted
7/27/12

July 27, 2012

Prepared by:

SUMMERS ENGINEERING, INC.
CONSULTING ENGINEERS
HANFORD, CALIFORNIA

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I. INTRODUCTION

Participants in this Coordinated Groundwater Management Plan (the Plan) consist of water agencies and private landowners located within the Tulare Lake area. Due to the unique geology, topography, and water resources in the Tulare Lake area, the participants have elected to manage their groundwater resources under a single coordinated plan. Figure 1 is a location map of the Tulare Lake sub-basin and the Plan boundary. Plan participants are listed as follows and a brief summary about each participant is provided at the end of this chapter.

- Alpaugh Irrigation District
- Angiola Water District
- Atwell Island Water District
- City of Corcoran
- Corcoran Irrigation District
- Lovelace Reclamation District #739
- Melga Water District
- MOU Private Lands
- Salyer Water District
- Tulare Lake Basin Water Storage District
- Tulare Lake Reclamation District #761

Plan Authority

Agencies participate in the Plan in accordance with the terms of a Joint Powers Agreement (JPA) entered into pursuant to California Water Code Section 10755.2 which provides for adoption and implementation of coordinated groundwater management plans. The JPA allows for amendments to include additional local agencies, public and private entities, and private parties as participants in the Plan. Private landowners participate in accordance with the JPA and a Memorandum of Understanding (MOU). Tulare Lake Basin Water Storage District is the administrator of the Plan.

The Plan was first adopted and implemented in 1997 under California Water Code Sections 10750 et. seq., which includes codification of California Assembly Bill 3030. This document updates the original Plan to comply with requirements of California Senate Bill 1938, which amended the Water Code in 2002.

Purpose

The coordinated approach provides a framework for the local management of groundwater resources, allowing participants to collectively pursue Plan objectives versus each agency implementing its own groundwater management activities. A key element of the Plan is monitoring of groundwater levels. Plan participants conduct quarterly meetings and monitoring data is disseminated annually to neighboring groundwater management agencies and the State. The Plan also includes preparation of an annual report describing water supplies and groundwater levels. By coordinating monitoring and reporting activities, plan participants are kept apprised of groundwater conditions and are able to optimize their management of available water supplies. The regular dissemination of data also serves to establish and maintain a line of communication between the Plan participants and other local or State agencies.

Historically the Tulare Lake Bed area has conjunctively managed its water supplies to maximize the importation of surface water for irrigation so groundwater usage can be minimized. These activities are documented in the annual report as Plan participants continue to use conjunctive water management in the area.

Another goal of the Plan is to preserve local management of groundwater resources in the Tulare Lake Bed area. The JPA, which allows other public and private entities to join the Plan, encourages local stakeholder involvement in managing groundwater.

Plan Participants

Alpaugh Irrigation District

Alpaugh Irrigation District (AID) was formed in March of 1915 and is located in the southeastern portion of the Plan area. Figure 2 is a location map of AID's boundary. AID obtains water from the Friant-Kern Canal as a US Bureau of Reclamation (USBR) Class II Contractor, as well as periodic flood release water known as the USBR's Section 215 water. This water can be delivered to the entire District. Deer Creek occasionally provides some unregulated waters during periods of heavy precipitation and high runoff. Deer Creek is also used as AID's conveyance facility for delivery of USBR Water. AID owns and operates eighteen wells which provide the major portion of its water supplies. The wells extend below the Corcoran clay to an average depth of 1,500 feet. AID has ponds that capture and recover local surface water supplies and provide incidental groundwater recharge.

Angiola Water District

Angiola Water District (AWD), formed in November of 1957, owns and operates all the irrigation wells within its boundaries. Figure 3 is a location map of AWD's boundaries. The wells are located in well fields owned by AWD on both the east and west sides of Highway 43. The wells east of Highway 43 are generally considered to provide better quality water. Currently, the wells have a combined pumping capacity of approximately 100 cubic feet per second (cfs). All but seven of the wells draw water from the confined aquifer below the Corcoran Clay and range in depth from 850 to 1,850 feet.

Groundwater is used to supplement AWD's surface water supplies from the State Water Project (SWP), Central Valley Project (CVP), Kings River, Tule River, Deer Creek, and residual floodwaters from Tulare Lake. As the representative of lands within its boundaries, AWD receives a percentage of Kings River Water and SWP Water from the Tulare Lake Basin Water Storage District. AWD holds a permit for diversions from Deer Creek and is one of only two permitted

appropriators thereof. Deer Creek, Tule River, and Kings River water is available to AWD dependent on the local hydrologic conditions.

Atwell Island Water District

The Atwell Island Water District (AIWD) was established in 1977. Figure 4 is a location map of AIWD's boundary. All wells within AIWD are owned and operated by the landowners or their farmer tenants. These are deep wells which are perforated below the Corcoran Clay. AIWD started receiving Federal water in June of 1978 after entering into a water service contract with the USBR, through the County of Tulare. The USBR contract provides for a maximum of 1,055 acre-feet of water to be transported annually through the San Luis Canal and California Aqueduct to the Cross Valley Canal. Rather than taking delivery from the Cross Valley Canal, AIWD exchanges its USBR water with Arvin-Edison Water Storage District and receives deliveries from the Friant-Kern Canal.

In June of 1993 AIWD, together with Hills Valley Irrigation District, entered into a contract with Tulare County for additional USBR water available for delivery within Cross Valley Canal. Through this agreement, both districts contracted for an additional 954 acre-feet of surface water annually.

AIWD has also periodically contracted for surplus USBR water through temporary water service contracts.

City of Corcoran

The City of Corcoran was incorporated in 1914. The City is approximately 7.5 square miles (4,800 acres). Figure 5 is a location map of the City limits. The California State Prison Corcoran, with approximately 5,000 inmates, and the California Substance Abuse Treatment Facility and State Prison Corcoran, with an inmate population of approximately 7,000, are included in the City limits.

The sole source of water for the City of Corcoran's municipal water service is two well fields located northeast of the City. The City currently utilizes five wells. Two other existing wells are being rehabilitated or replaced. Annual pumping from the City's wells is approximately 6,427 acre-feet. The City's service population is approximately 25,900 people, including the two Department of Corrections units and some residents located outside the City limits.

The City has voluntarily implemented a water conservation policy that includes among other provisions, prohibitions against water waste, domestic irrigation restrictions and City Manager authority to require property owners and/or water users to utilize certain restrictions on their water use.

The City provides for groundwater recharge through the operation of a storm water drainage basin and wastewater basins. The City has also required the use of treated wastewater by the California State Prison Corcoran for irrigation of alfalfa fields in-lieu of groundwater pumping.

Corcoran Irrigation District

Corcoran Irrigation District (CID) was formed in July of 1919. Figure 6 shows the location of CID. CID owns and operates storage and percolation reservoirs totaling 3,000 acres, with a surface storage capacity of approximately 10,000 acre-feet. The reservoirs can recharge up to 200 acre-feet daily and are a key part of CID's conjunctive water management program.

CID's available surface water supplies include Kings River water, Kaweah River water, and supplemental water available from the Kaweah Delta Water Conservation District and others as well. CID has a contract with the USBR to access USBR Section 215 water when available. In most years the principal source of water to CID is Kings River water derived from stock held in the Corcoran Irrigation Company, Peoples Ditch Company, and other mutual water companies on the Kings River.

CID maintains a well field of both shallow and deep wells located northeasterly of the City of Corcoran. The Corcoran Clay is approximately 50 feet thick and at a depth of 500 feet below the well field. The shallow wells tap the unconfined aquifer located above the Corcoran Clay while the deeper wells penetrate the confined aquifer below the clay and produce the majority of CID's groundwater supplies.

Lovelace Reclamation District #739

Lovelace Reclamation District #739 (LRD) encompasses approximately 5,900 acres located immediately north of Tulare Lake Basin Water Storage District. The location of the LRD's boundary is shown on Figure 7. The primary purpose of LRD is flood control. However, lands within LRD receive local surface water and State Water Project water. There are privately owned groundwater wells within the LRD boundary.

Melga Water District

Melga Water District (MWD) encompasses approximately 75,000 acres, most of which lie within the boundaries of the Tulare Lake Basin Water Storage District. MWD's boundaries are indicated on Figure 8. MWD was formed in January of 1953. Approximately 7,200 acres of MWD is outside of the Tulare Lake Basin Water Storage District's boundary in the northeastern part of the Plan area.

The surface water supplies available to lands within MWD include State Water Project water and Kings River water. Lands in MWD also periodically receive water from the Kaweah and Tule Rivers.

Privately owned and operated groundwater wells are located within MWD and provide supplemental irrigation water during water-deficient periods.

MOU Private Lands

There are approximately 10,300 acres of MOU lands within the Plan boundary as shown on Figure 9. These landowners requested that their lands be brought into the Plan because a part of their land was not included or they preferred to have all of their lands included under a single plan. Available water sources for MOU lands include local surface water, State Water Project water, and groundwater.

Salyer Water District

Salyer Water District (SWD) encompasses approximately 10,400 acres. Its boundaries are indicated on Figure 10. A portion of the acreage lies inside the boundary of Tulare Lake Basin Water Storage District with the remaining acreage located in the northeastern portion of the Plan area. Lands within SWD can receive local surface water and State Water Project water. Some privately owned groundwater wells are located within SWD.

Tulare Lake Basin Water Storage District

The Tulare Lake Basin Water Storage District (TLB) was formed in September of 1926, at which time nearly all the lands within its boundaries were in agricultural production. TLB has water and storage rights on the Kings and Tule Rivers. TLB's primary source of local surface water is considered to be the Kings River. Figure 11 is a location map of the TLB boundary.

TLB's Kings River water right is held under the Empire Weir No. 2 account and TLB is one of the twenty-eight member units of the Kings River Water Association (KRWA). This water right is erratic in nature, providing substantial water in years of moderate to heavy precipitation, while providing little or no water in years of below average precipitation. TLB's average Kings River entitlement totals approximately 58,500 acre-feet per year. Some lands within TLB also receive deliveries of Kings River water from other KRWA units (water rights).

TLB contracted with the California Department of Water Resources in 1963 to provide a more dependable surface supply for its landowners and to reduce reliance on groundwater. TLB's annual State Water Table A 2012 entitlement totals 88,922 acre-feet. Deliveries of State Water Project (SWP) water began in 1968. TLB delivers substantial quantities of surplus State Water Project water when available. TLB neither owns nor operates any wells. When sufficient surface water supplies are available almost no groundwater is pumped by TLB's water users. It should be noted that this is true for most of the Plan participants.

Tulare Lake Reclamation District #761

Tulare Lake Reclamation District #761 (TLRD) encompasses approximately 35,000 acres, nearly all of which lie within the boundary of Tulare Lake Basin Water Storage District. Figure 12 is a location map of the TLRD boundary. Lands within TLRD can receive local surface water and State Water Project water. TLRD 's average Kings River entitlement is approximately 24,500 acre-feet per year. There are some privately owned groundwater wells within TLRD's boundary.

II. MANAGEMENT AREA

Location

Figure 1 is a location map of the Coordinated Groundwater Management Plan (Plan) area boundary. The Plan area is roughly bounded by the Kings County line on the east, Interstate 5 and Highway 41 on the west, Lansing Avenue on the north, and Wichita Avenue on the south (also Tulare Lake Basin Water Storage District's Lateral B Canal). Some participants' boundaries extend beyond this rough perimeter.

Climate and Hydrology

The climate in the region is typical of the southern San Joaquin Valley. The Tulare Lake Bed region is semi-arid. Average annual rainfall is 7.4 inches. Spring seasons are usually mild with some wind, summers are hot and dry, autumns are cool, and winter seasons are typically characterized by fog and rain with temperatures seldom dropping below the freezing point.

Corcoran Irrigation District measures and records precipitation and maximum and minimum temperatures at a station near the eastern boundary of the Plan area. Historic data from this site is presented as follows in Tables 1 and 2. Average monthly rainfall varied from 0 to 1.47 inches. Approximately 70% of the rainfall typically occurs during the months of December through March. Average maximum and minimum temperatures occur respectively during July and December.

Table 1
Average Precipitation from 1931 to 2011

Month	Average Precipitation (inches)
January	1.47
February	1.44
March	1.18
April	0.68
May	0.22
June	0.04
July	0.01
August	0.03
September	0.14
October	0.37
November	0.69
December	1.16
Average Annual Precipitation	**7.42**

Source: Corcoran Irrigation District records

Table 2
Average Maximum and Minimum
Monthly Temperatures from 1948 to 2010

Month	Average Maximum Temperature (°F)	Average Minimum Temperature (°F)
January	55	37
February	62	40
March	68	43
April	76	47
May	85	53
June	93	59
July	99	63
August	97	62
September	91	57
October	81	49
November	66	41
December	55	36

Source: Corcoran Irrigation District records

The Plan area is a “closed” basin with no natural outlet. No natural outflow from the historic Tulare Lake has occurred since the late 1870’s. This is a result of upstream diversions of the four major river tributaries on the east side of the San Joaquin Valley and the U.S Army Corps of Engineers flood control projects on these tributaries. However, during years of above normal runoff, floodwaters can inundate highly productive farmland within the Plan area. On average, some flooding occurs during one of every four to five years.

Land Use

The majority of land in the Plan area is used for irrigated agriculture. Typical crops grown in the area include tomatoes, wheat, barley, safflower, alfalfa, and cotton. There are some nut orchards, but these are much less prevalent than row crops. There are a number of dairies in the northerly and easterly regions of the Plan area. Urban land use is minor in comparison to the overall Plan area. The largest urban area is the City of Corcoran and the nearby California State Prison Corcoran. Alpaugh is a small community located near the southeast corner of the Plan area.

Water Resources and Supplies

Water resources and supplies for the Plan area include various surface water sources and groundwater. The descriptions of individual Plan participants found in Chapter 1 indicate specific supplies that are available to participants.

Surface Water

Surface water supplies are generally derived from participant and landowner water rights on the Kings, Kaweah, and Tule Rivers, State Water Project (SWP) contracts, and US Bureau of Reclamation (USBR) contracts. Water is occasionally available from Deer Creek. Water users in the Plan area also acquire additional local surface water supplies when available. Floodwater,

which occurs infrequently, is impounded by the landowners in the southern and northeastern parts of the Plan area.

The Kings, Kaweah, Tule, and Kern Rivers originate in the southern Sierras east of the Plan area. These four major rivers are regulated by dams and reservoirs constructed by the US Army Corps of Engineers in the 1950's and 1960's. Smaller uncontrolled streams, including Deer Creek, Poso Creek, and the White River, provide erratic flows during flood periods. The Kings River is the primary source of surface water into the Plan area. Kings River water is delivered to the Plan area from the northeast through the Lakeland Canal, from the northwest through the South Fork of the Kings River, and through other privately owned canals. Tule River water is delivered to the Plan area from the east. The Kern River enters the Plan area from the south and the Kaweah River enters from the northeast.

In very wet years floodwater entering the Plan area can inundate Tulare Lake Bed lands. Flooding of cropland occurs an average of one in four to five years. During extreme flooding periods the four principal rivers, smaller uncontrolled streams, and arroyos on the west side of the San Joaquin Valley can all flow into the Plan area. Residual floodwaters in Tulare Lake Bed are used to the maximum extent possible for irrigation. Floodwater not used for irrigation is lost primarily to evaporation.

Local river water supplies vary greatly from year to year depending on hydrologic conditions. Flood releases can occur on the four major rivers at times of above average runoff. Since the Tulare Lake Bed is a closed basin, inundation of cropland leads to decreased demand for surface water supplies. The inundation and decreased demand typically occur at the same time there are flood releases from east side reservoirs. Subsequently an even greater proportion of the total reservoir releases is lost through flood releases. More reservoir capacity would permit the flood water to be stored and conserved

providing increased surface water deliveries in subsequent years, thereby resulting in less groundwater pumping. Plan participants actively pursue projects that will increase local surface water storage.

Groundwater

The Plan area overlies the southern portion of the Tulare Lake Groundwater Basin (TLGB). The TLGB has been described in studies conducted by the Department of Water Resources and the United States Geological Survey. Generally, the TLGB consists of a shallow aquifer and a deep aquifer separated by a hydrogeologic formation known as the Corcoran Clay. The Corcoran Clay layer varies from approximately 50 to 200 feet in thickness, and occurs at depths of 400 to 600 feet. The soil profile above and below the Corcoran Clay layer consists of very dense clay as well. The soils that underlie the Plan area are primarily low water bearing, fine textured clay materials with interspersed lenses of silty sand. These relatively impermeable soils limit direct recharge of the shallow aquifer.

Shallow groundwater in the interior of the Plan are has high concentrations of salts and is not suitable for agricultural purposes. Shallow wells in the Plan are located at the edges of the historic lake bed.

Geology

Figure 13 is a location map of the Tulare Lake Bed and a corresponding geologic cross section through the Plan area. The cross section indicates the elevation and thickness of major geologic formations along the cross section line. This information was sourced from the U.S. Geologic Survey Water Supply Paper (WSP) 1999-H, which includes detailed technical descriptions of the southern San Joaquin Valley's subsurface geology. A general description of the Plan area topography and geology is provided as follows.

The topography is a gradually sloping trough from the area's outer boundary toward the lowest region in the Tulare Lake Bed, which lies at approximately 175 feet above mean sea level (MSL). The generally flat terrain has an average slope of about one-foot per mile.

The soils in the historic lake bed are primarily impermeable clays. Soils along the rim of the historic lake bed are primarily fine grained, silty alluvium which were deposited along the shoreline. Older Continental alluvium deposits have noticeably finer texture than the younger Sierra Nevada deposits, which are highly permeable and consist of gravel, fine to very coarse sand, and silt. The alluvium deposits interfinger with clay layers near the Plan area boundary, and diminish approaching the interior of the lake bed. Areas near the center of the lake bed are almost entirely clay strata.

Groundwater Levels

The numeric depth to groundwater data presented herein dates to 1994. From 1994 to 2010, depth to water measurements were collected from a group of 28 wells within the Plan area. In 2011 the monitoring program was reorganized to conform with the California Statewide Groundwater Elevation Monitoring (CASGEM) program. A group of 16 wells was selected as being representative of conditions in the Plan area. Ground and well head elevations were surveyed and tied-in to a statewide elevation datum so groundwater elevations can be determined from the depth to water readings of the wells. Approximately 10 of the 16 CASGEM wells were in the original group of 28 wells. Table 3 indicates the average depth to water readings in the Plan area from 1994 to 2011. The data is separated into average readings for the shallow and deep wells that are monitored. Shallow wells are perforated above the Corcoran clay and deep wells are perforated below the Corcoran clay. Over the period of record, the average depth to water has ranged from about 70 to 175 feet for the upper aquifer and 110 to 310 feet for the lower aquifer.

Table 3
Depth to Static Water in Plan Area

Year	Shallow Well Average in feet		Deep Well Average in feet	
	Spring	Fall	Spring	Fall
1994	130		250	
1995	87		145	
1996	85		135	
1997	142	90	169	172
1998	82	65	120	116
1999	67	69	110	146
2000	75		150	
2001	132	103	242	267
2002		91	266	209
2003	121	118	256	260
2004	126		254	
2005			257	
2006				
2007	146	141	271	259
2008	156	175	274	289
2009	147	176	268	313
2010	150	147	285	269
2011	127	118	213	213

Depth to water readings in the Plan area fluctuate up and down in response to hydrologic conditions and the availability of imported surface supplies. Figure 14 is a chart that illustrates these trends from water years 1993-94 to 2010-11.

Table 4 is a listing of the CASGEM wells and elevation data for each well site, and Figure 15 is a location map of the CASGEM wells. Beginning in the fall of 2011 these wells will be measured two times per year and the groundwater elevation data will be reported to the designated regional monitoring entity, Kings River Conservation District, and ultimately to the State.

Table 4
CASGEM Well Information

Well No.	Latitude	Longitude	Groundwater Subbasin	Reference Elevation	Ground Elevation
Shallow Wells					
2	36.17	-119.67	Tulare Lake	197.0	195.3
4	36.20	-119.58	Tulare Lake	210.2	207.4
9	36.13	-119.55	Kaweah	203.2	199.1
11	36.09	-119.47	Kaweah	211.6	210.2
14	35.99	-119.49	Tule	188.8	187.4
Deep Wells					
1	36.17	-119.88	Tulare Lake	205.7	202.7
3	36.17	-119.69	Tulare Lake	195.6	193.1
5	36.19	-119.58	Tulare Lake	209.1	206.7
6	36.14	-119.89	Tulare Lake	199.9	196.9
7	36.06	-119.78	Tulare Lake	176.6	176.4
8	36.09	-119.66	Tulare Lake	179.8	177.2
10	36.07	-119.61	Tulare Lake	182.0	180.2
12	36.09	-119.46	Kaweah	212.3	211.3
13	36.04	-119.59	Tulare Lake	182.2	181.3
15	35.96	-119.48	Tule	185.3	184.3
16	35.91	-119.45	Tule	199.0	197.5

Water Quality

Surface water supplies to the Plan area are of excellent quality due to low total dissolved solids (TDS). Kings River supplies have TDS of approximately 100 parts per million (ppm) and State Project water TDS is about 250 ppm. Well water in the Plan area generally has higher TDS than Kings River surface water and is comparable to State Project water. Kings River and State Project water typically ranges from 100 to 300 ppm. Most of the groundwater wells range in TDS from 150 to 500 (ppm).

The City of Corcoran, which is the only Plan participant that relies exclusively on well water for its supplies, monitors and reports its source water quality in accordance with Title 22 requirements for potable water systems.

III. GROUNDWATER MANAGEMENT PLAN COMPONENTS

This chapter summarizes the components of the Coordinated Groundwater Management Plan (Plan). Components that are recommended for SB1938 compliance but are not applicable to this Plan, are also identified.

Saline Intrusion

Saline intrusion of the groundwater aquifer is not a concern in the Plan area.

Management of Wellhead Protection Areas

Wellhead protection areas, if such areas exist, are managed in accordance with County requirements.

Regulation of Migration of Contaminated Groundwater

There are no known issues related to the migration of contaminated groundwater within the Plan area.

Well Abandonment and Destruction

Well abandonment and destruction within the Plan area are conducted in accordance with County requirements.

Existing Groundwater Management and Conjunctive Use Activities

As stated elsewhere in the Plan, direct recharge is limited due to the geologic conditions throughout most of the Plan area. However, most participants use surface water supplies whenever possible in-lieu of groundwater pumping. Conjunctive management of local water resources, including surface water through indirect or in-lieu recharge, has been practiced in the Plan area for nearly a century. Groundwater levels that have declined during dry periods typically recover when adequate surface water supplies are available to the Plan area.

Direct Recharge

The confined and unconfined aquifers underlying the Plan area are primarily recharged from seepage from rivers and irrigation facilities on the east side of the San Joaquin Valley. Corcoran Irrigation District (CID) owns ponding basins in the northeastern corner of the Plan area which are used to provide direct recharge primarily to the unconfined aquifer above the Corcoran clay with limited benefit to the lower aquifer. CID uses the ponds for direct recharge when excess surface water is available, typically during years with above average runoff.

Surface Storage

Landowners can store water in ponds at the south end of the Tulare Lake Bed. These ponds are located on land that is marginal for farming and not suitable for direct recharge. When floodwater enters the Lake Bed from the various tributary rivers and creeks, and it threatens to inundate prime farmland, the water is diverted into these storage ponds using a system of ditches and pumps. As irrigation demands increase, the water stored in the ponds is used for irrigation in-lieu of groundwater pumping.

State Water Project

Irrigating with imported surface water supplies minimizes groundwater pumping and recharges the groundwater aquifers through indirect or in-lieu recharge. Erratic local river supplies and the desire to reduce groundwater pumping motivated Tulare Lake Basin Water Storage District (TLB) to enter a contract for State Water Project (SWP) water in the early 1960's. Two diversion points and canals were constructed from the California Aqueduct to the west side of the Plan area. From 1968 through 2011, more than 4.5-million acre-feet of irrigation water was imported into the Plan area from the California Aqueduct. Although the cost of imported surface water is frequently higher than the cost of pumping groundwater, growers in the Plan

area continue to purchase and deliver this water to reduce their reliance on groundwater.

Empire Weir No. 2 Pool

TLB is also active in water exchange programs using its delivery facilities from the Kings River and California Aqueduct. The District does not have major surface storage or groundwater banking capabilities. However, Kings River water is received through the Empire Weir No. 2 pool, which has about 400 acre-feet of temporary storage capacity.

Kings County Exchange

The County of Kings is a SWP Contractor but it has no direct connection from the California Aqueduct to deliver its SWP water. The TLB entered into an exchange agreement with the County of Kings in 1967. Through that agreement TLB accessed 4,000 acre-feet per year of the County's contract supply from the Aqueduct in exchange for an equivalent amount of Kings River water.

In 1979, the County determined it could no longer afford the cost of the SWP water and therefore entered into an agreement with various water agencies in the area to sell them the exchanged Kings River water for the cost of maintaining the County's SWP contract. The water agencies were willing to pay for this supply to offset groundwater pumping and not lose this imported water supply. The original agreement has since been amended several times and the current exchange amount is 3,100 acre-feet.

Urban and Prison Water Use Mitigation Program

The City of Corcoran and the California State Prison Corcoran rely solely on groundwater for their water supplies. To offset impacts on groundwater, the City and prison contribute annually to a mitigation fund. Under the Plan the mitigation fund can be used to purchase and divert affordable surface water

to CID's recharge ponds, which are located near the City's well field. Alternatively, growers in CID can receive surface water purchased through the mitigation fund in lieu of operating their irrigation wells. Approximately 12,250 acre-feet of surface water has been purchased under this program since it began.

Drought Year Surface Water Purchases

TLB also purchases surface water supplies for conjunctive use. During dry years, District water users purchased Yuba County Water Agency Water, California Drought Water Bank Water, and SWP Supplemental Short Term Water Purchase water for delivery from the California Aqueduct.

These programs demonstrate Plan participants' cooperation and coordination with each other to optimize and manage their groundwater supplies. In years when surface water from local rivers or other imported surface water is available, groundwater use is reduced and indirect recharge occurs. In dry years groundwater supplies are used. Figure 14 is a chart that graphically illustrates the effectiveness of these programs. The chart shows how the proportion of surface water and groundwater use varies depending on hydrologic conditions, and the responsiveness of groundwater levels when surface supplies are abundant and groundwater pumping is reduced.

Monitoring of Groundwater Levels and Storage

A key component to the Plan is monitoring of groundwater levels within the Plan area. Collection and dissemination of this data was recently reorganized to conform with the California Statewide Groundwater Elevation Monitoring (CASGEM) program. Under this program, a group of 16 representative wells was selected. Figure 15 is a location map of the wells. The well location symbols and map legend indicate if the wells are perforated above or below the Corcoran clay layer.

To conform with the CASGEM program, the selected well sites were surveyed and the elevations were tied-in to a statewide elevation datum. Included in the survey were the elevations of the natural ground adjacent to the wells, bench marks on the well head concrete pads, and measurement reference points on the sounding tubes.

The well owners are responsible for measuring their respective CASGEM wells during the spring and fall each year. Depth to water measurements are taken after the well pumps have been turned off for a period of time to allow the water level to stabilize. These readings are submitted to the Plan administrator, TLB, which processes all the CASGEM data and submits it in an electronic format to the designated reporting agency, Kings River Conservation District (KRCD).

Monitoring of Groundwater Quality

Owners of the CASGEM wells periodically test their well water for electrical conductivity (EC) which relates to the total dissolved solids in the water. EC measurements will be logged by TLB acting as Plan administrator.

Monitoring of Surface Flow and Surface Water Quality Relative to Groundwater and Groundwater Pumping

Surface soils in the Plan area are primarily semi-permeable to impermeable, and the depth to usable groundwater, if any, is far below the ground surface or any canals or stream beds within the Plan area. Surface flow does not comingle with the usable groundwater and therefore does not affect groundwater quality or quantity. The naturally high concentration of salts in the perched groundwater precludes its use for irrigation or municipal uses.

Monitoring and Management of Inelastic Land Surface Subsidence

Plan participants are currently reviewing options for monitoring land subsidence. One option would be to establish a set of reference points

throughout the Plan area and perform periodic elevation surveys of the points. The reference points could be located on canal structures or other permanent concrete structures that are at least several years old and have undergone most of the settlement that is typical following construction. Since these types of structures are founded near the ground surface, changes to their elevation would be approximately the same as the surrounding ground. Monitoring of the reference points could also include an assessment of how changes in ground elevations might affect surface flows in the Plan area.

Well Construction Policies

Wells constructed within the Plan area are done in accordance with County and State Department of Water Resources requirements.

Construction and Operations of In-Lieu Recharge, Storage, Conservation, Water Recycling, and Extraction Projects

As previously discussed, many of the Plan participants have constructed and operated projects related to storage, conservation, water recycling and extraction.

Angiola Water District Projects

Angiola Water District (AWD) continues to research a number of projects involving their system which would benefit groundwater in the Plan area. These projects are presented conceptually as follows and will require additional investigations to determine their feasibility.

Surface Storage Basins

AWD has a system of production wells and ditches located just west of Highway 43. The land surrounding the wells is marginal ground that is not continuously farmed and it encompasses most of three sections (3 square miles). Two of the sections are partially owned by AWD and the third is held by a private owner. The well system ditches are generally located along the

perimeter of the parcels. It is proposed that earthen levees be constructed on the land for storage basins. Floodwater from Deer Creek could be diverted into the proposed basins. Instead of pumping groundwater, water stored in the basins could later be released into the existing well system ditches for AWD's irrigation demands.

Injection Wells

There are a number of locations within the above described AWD well field where existing wells have been retired and new wells were constructed within a few hundred feet or less. The wells were retired because the casings deteriorated and were no longer suitable for pumping. These casings might still be utilized to inject surface water into the aquifer. This may be done by connecting the existing well system ditches to the injection wells and using water stored in the proposed basins for direct recharge. It might also be possible to divert surface water to the injection wells from other parts of the Plan area using AWD's main delivery ditch.

Groundwater Conservation Easement

Another concept or related concepts being considered by AWD is a groundwater conservation easement or land fallowing program which result in reducing groundwater pumping.

Other Projects

Another concept which has been discussed by the Plan participants would be a program to flood fallowed land for temporary storage. As with AWD's proposed storage basins, this program would require construction of earthen berms or levees to contain the floodwater, and coordination among the Plan participants to divert floodwater to the designated areas.

Relations with Local, State, and Federal Regulatory Agencies

Under the Plan, participants attend regular quarterly meetings. These meetings provide a forum for the Plan administrator, TLB, to report on groundwater and surface water conditions, review conjunctive management activities being implemented by other Plan participants, and review regulations that could affect groundwater use and management. The meetings also provide an opportunity for Plan participants to meet and coordinate with other local water management agencies such as Kaweah Delta Water Conservation District.

The participants submit groundwater elevation data to TLB and the District disseminates the data to Kings River Conservation District (KRCD) and the State Department of Water Resources. KRCD is the designated reporting agency for the Plan under the State's SBx7-6 California Statewide Groundwater Elevation Monitoring (CASGEM) program. Data for this program is submitted semi-annually.

The formation of the Plan participants under the Joint Powers Agreement and their ongoing participation in monitoring groundwater and attending the quarterly meetings demonstrates the effectiveness of the coordinated plan approach being used for groundwater management in the Tulare Lake Bed.

Land Use Planning

Land use planning in the Plan area is done in accordance with County and City General Plans and zoning ordinances.

IV. MANAGEMENT OBJECTIVES

The primary objectives of the Coordinated Groundwater Management Plan are listed as follows.

- Monitor groundwater levels and disseminate data to plan participants.
- Maintain relationships with local and State agencies.
- Define opportunities for sustaining local groundwater supplies, including enhancing conjunctive use.
- Enhance existing conjunctive use through operational programs to import additional surface water and capital projects to increase surface water use and groundwater storage.

V. MONITORING

Following are the monitoring protocols for the Coordinated Groundwater Management Plan:

Groundwater Levels

- California Statewide Groundwater Elevation Monitoring (CASGEM) program.
- CASGEM Well locations indicated on Figure 15.
- Designated well owners measure depth to groundwater in spring and fall.
- Measurements taken when well is not being pumped and level has stabilized.
- Measurements are transmitted to Tulare Lake Basin Water Storage District (TLB).
- TLB processes data and transmits summary of depth to water and water elevations to Kings River Conservation District (KRCD).
- KRCD forwards groundwater level data to California Department of Water Resources.

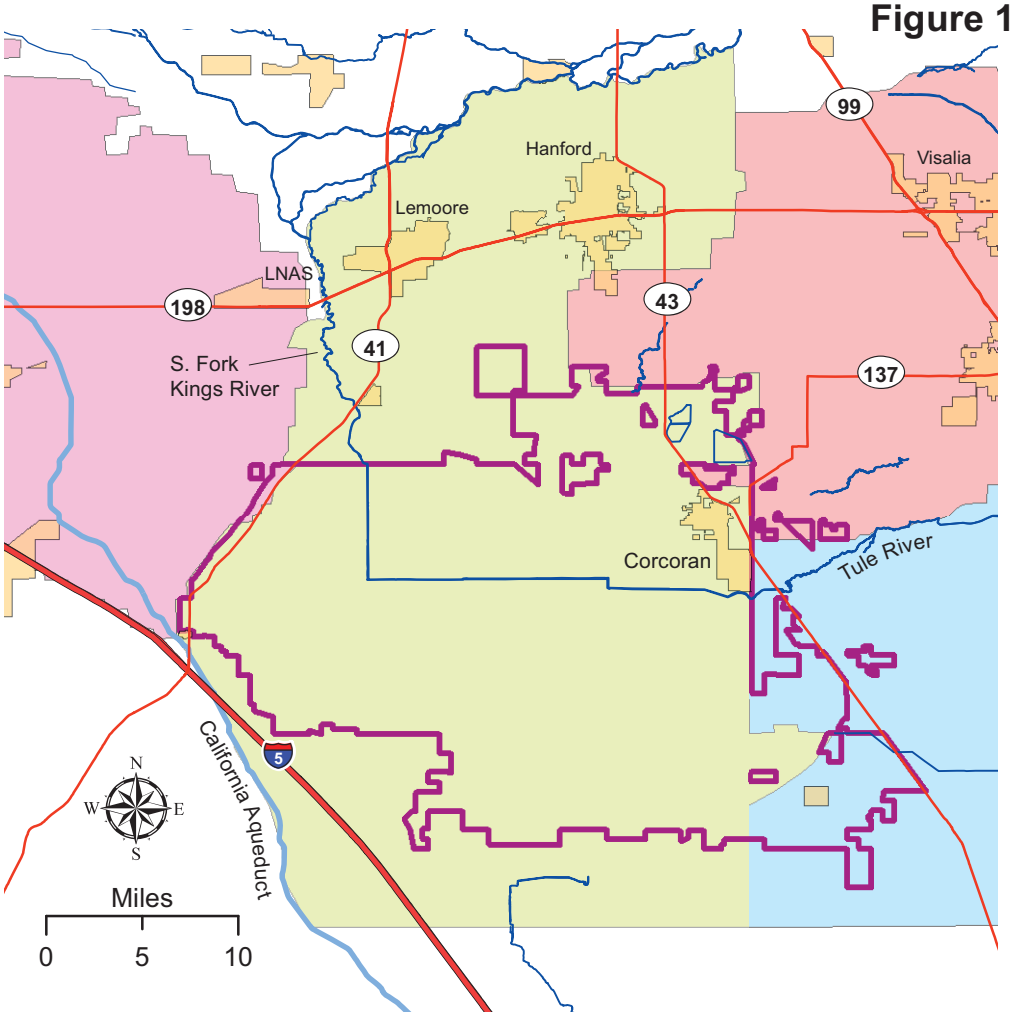
Groundwater Quality

- CASGEM well owners periodically test well water for electrical conductivity (EC).
- Samples taken after well has been pumped for a short time.

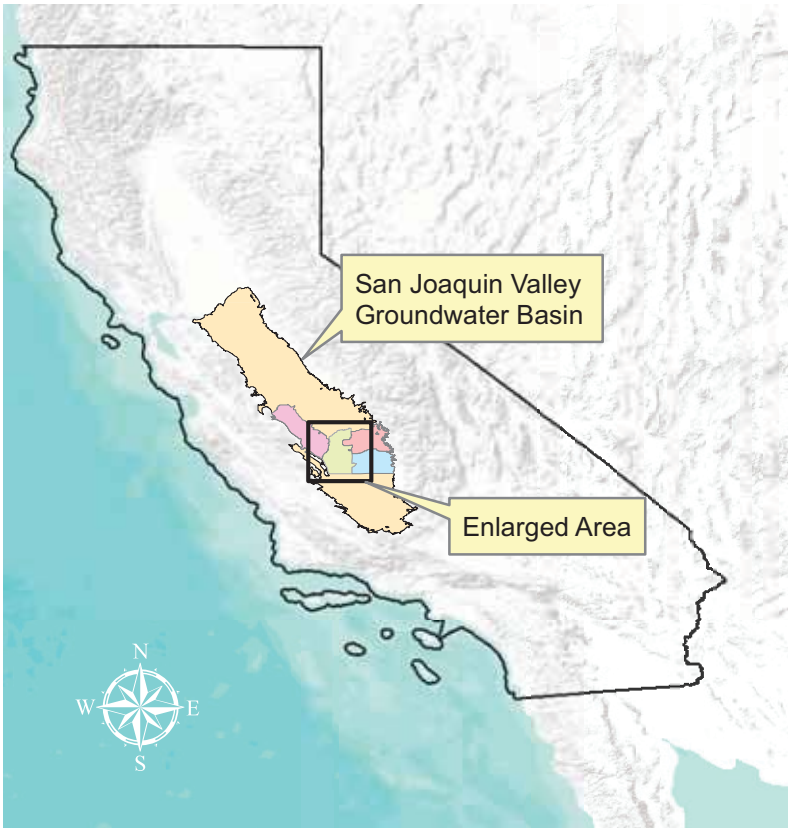
Inelastic Land Subsidence

- Monitoring program currently under review by Plan participants.

Figure 1



ENLARGED AREA



STATE OF CALIFORNIA

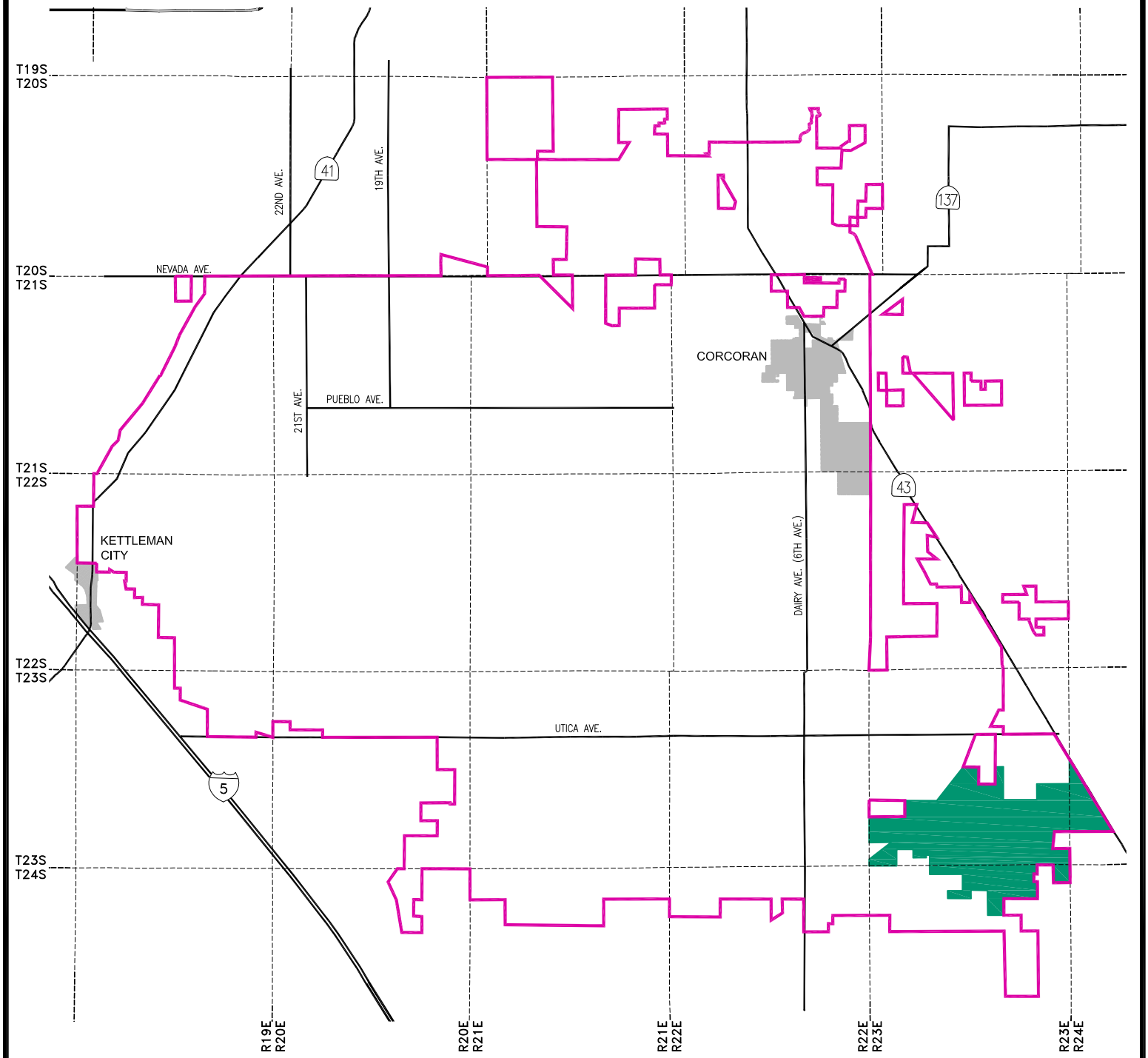
Legend

- Interstate Highway
- State Highway
- Rivers
- **Canals**
- **Plan Area Boundary**
- Westside Groundwater Sub-basin
- Tule Groundwater Sub-basin
- Tulare Lake Groundwater Sub-basin
- Kaweah Groundwater Sub-basin

Tulare Lake Bed Coordinated Groundwater Management Plan Plan Area Location Map

Summers Engineering, Inc.
Consulting Engineers
Hanford California

FIGURE 2



LEGEND

GROUNDWATER MANAGEMENT PLAN BOUNDARY

ALPAUGH IRRIGATION DISTRICT

SCALE IN MILES

0 1 2 3 4

TULARE LAKE BED COORDINATED GROUNDWATER MANAGEMENT PLAN

ALPAUGH IRRIGATION DISTRICT LOCATION MAP

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Consulting Engineers
HANFORD CALIFORNIA

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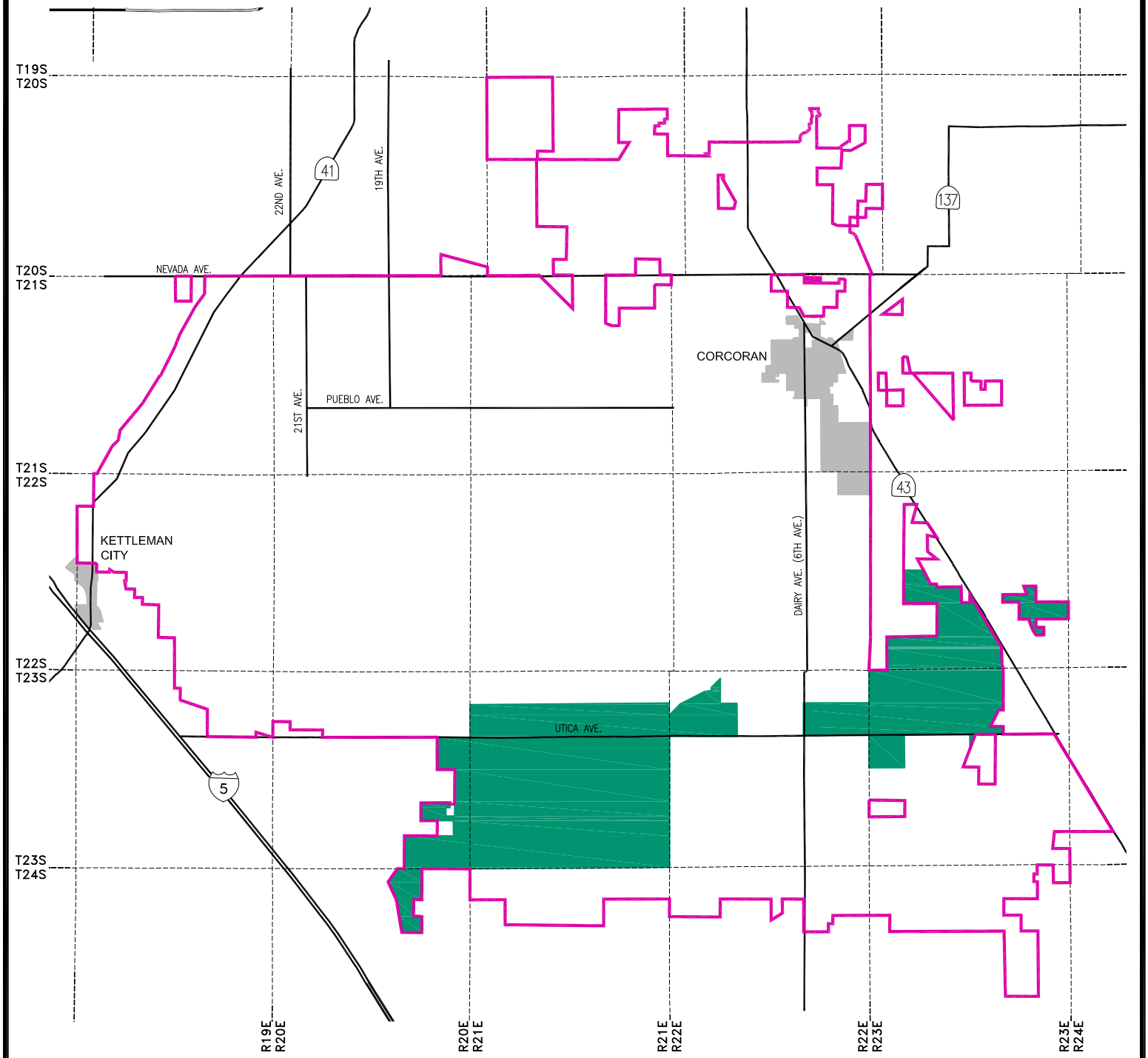
FIGURE 3



LEGEND

GROUNDWATER MANAGEMENT PLAN BOUNDARY

ANGIOLA WATER DISTRICT

SCALE IN MILES

0 1 2 3 4

TULARE LAKE BED COORDINATED GROUNDWATER MANAGEMENT PLAN

ANGIOLA WATER DISTRICT LOCATION MAP

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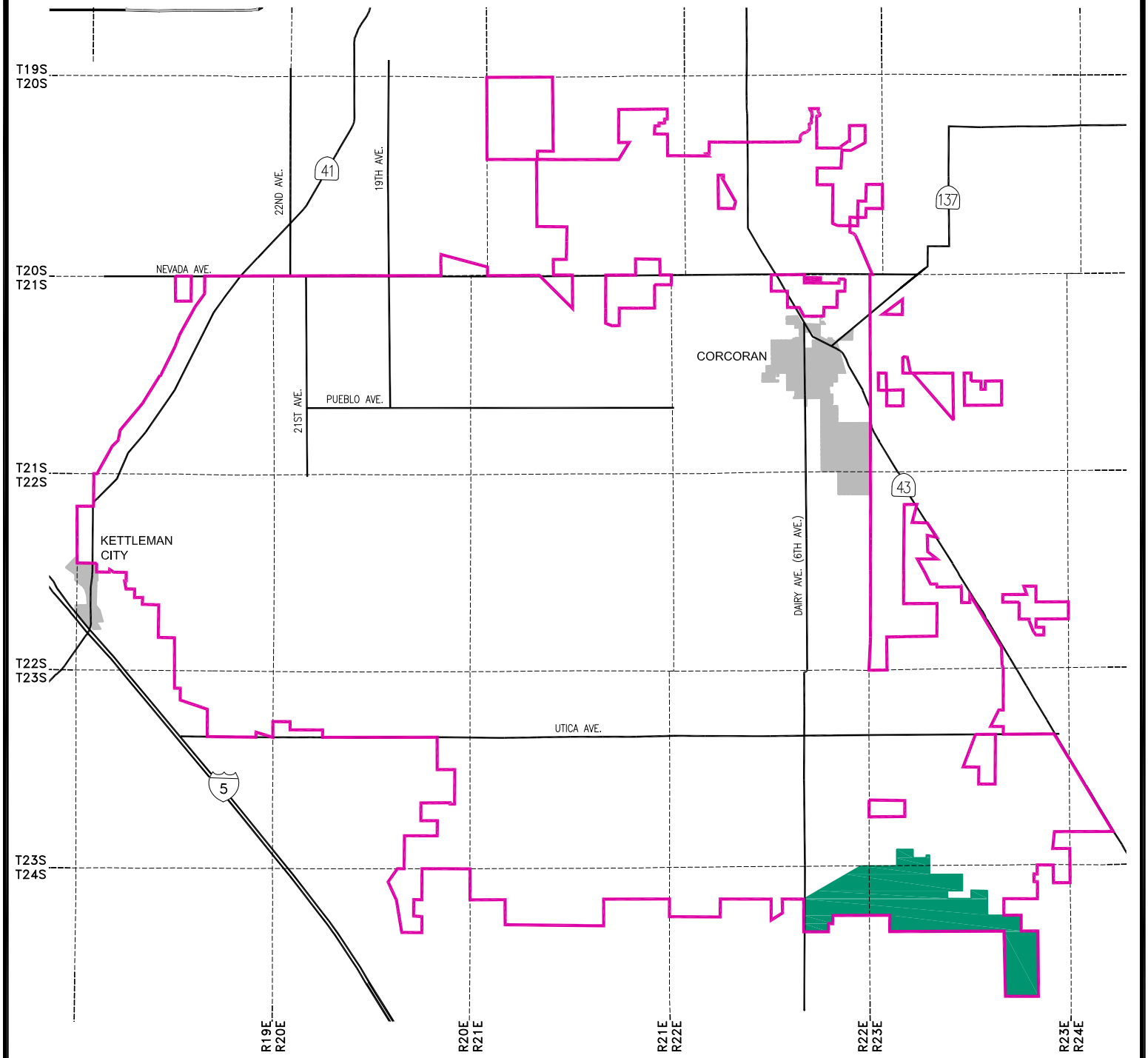
FIGURE 4



LEGEND

GROUNDWATER MANAGEMENT PLAN BOUNDARY

ATWELL ISLAND WATER DISTRICT

SCALE IN MILES

0 1 2 3 4

TULARE LAKE BED COORDINATED GROUNDWATER MANAGEMENT PLAN

ATWELL ISLAND IRRIGATION DISTRICT LOCATION MAP

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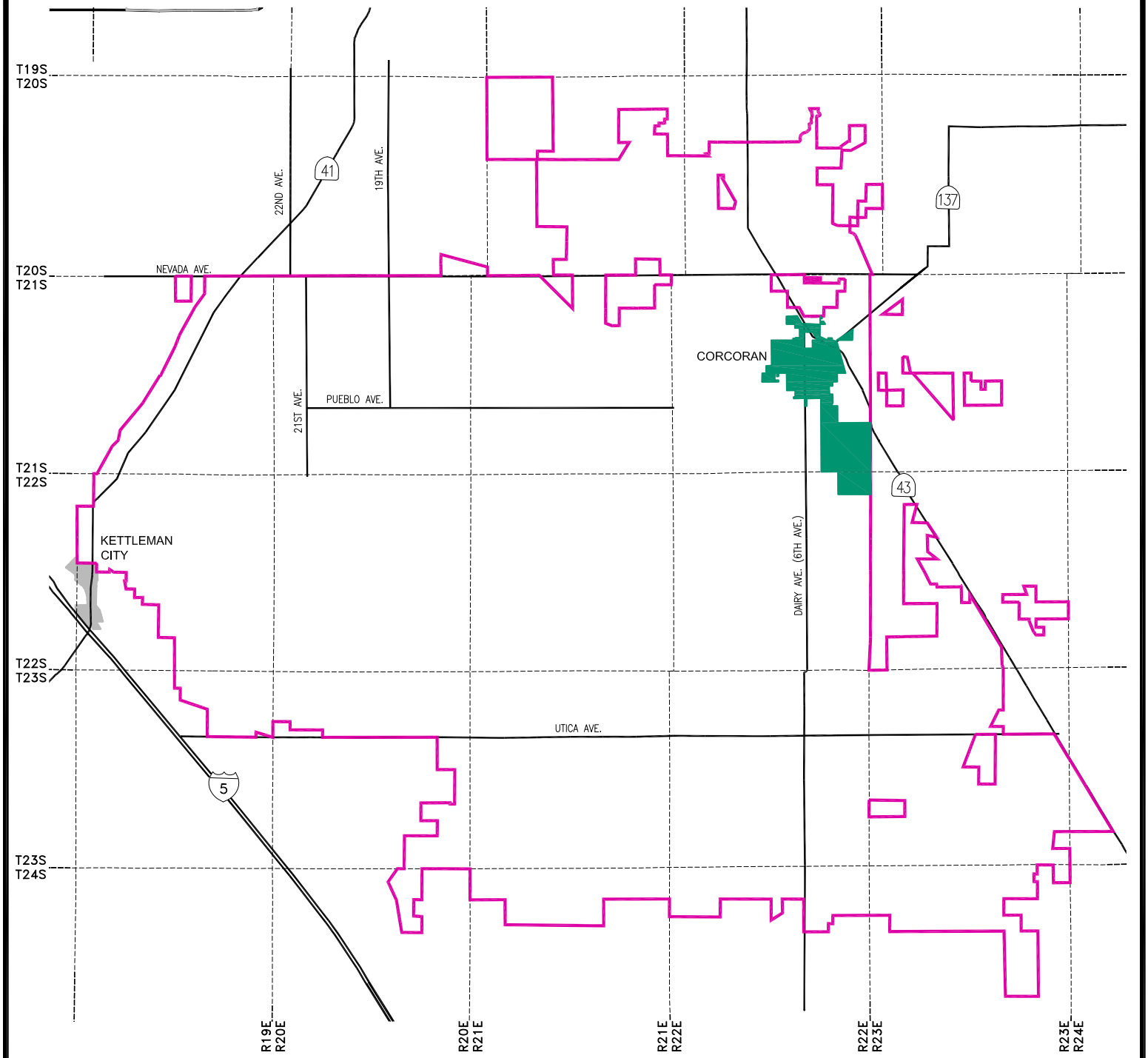
FIGURE 5



LEGEND

GROUNDWATER MANAGEMENT PLAN BOUNDARY

CITY OF CORCORAN

SCALE IN MILES

0 1 2 3 4

TULARE LAKE BED COORDINATED GROUNDWATER MANAGEMENT PLAN

CITY OF CORCORAN LOCATION MAP

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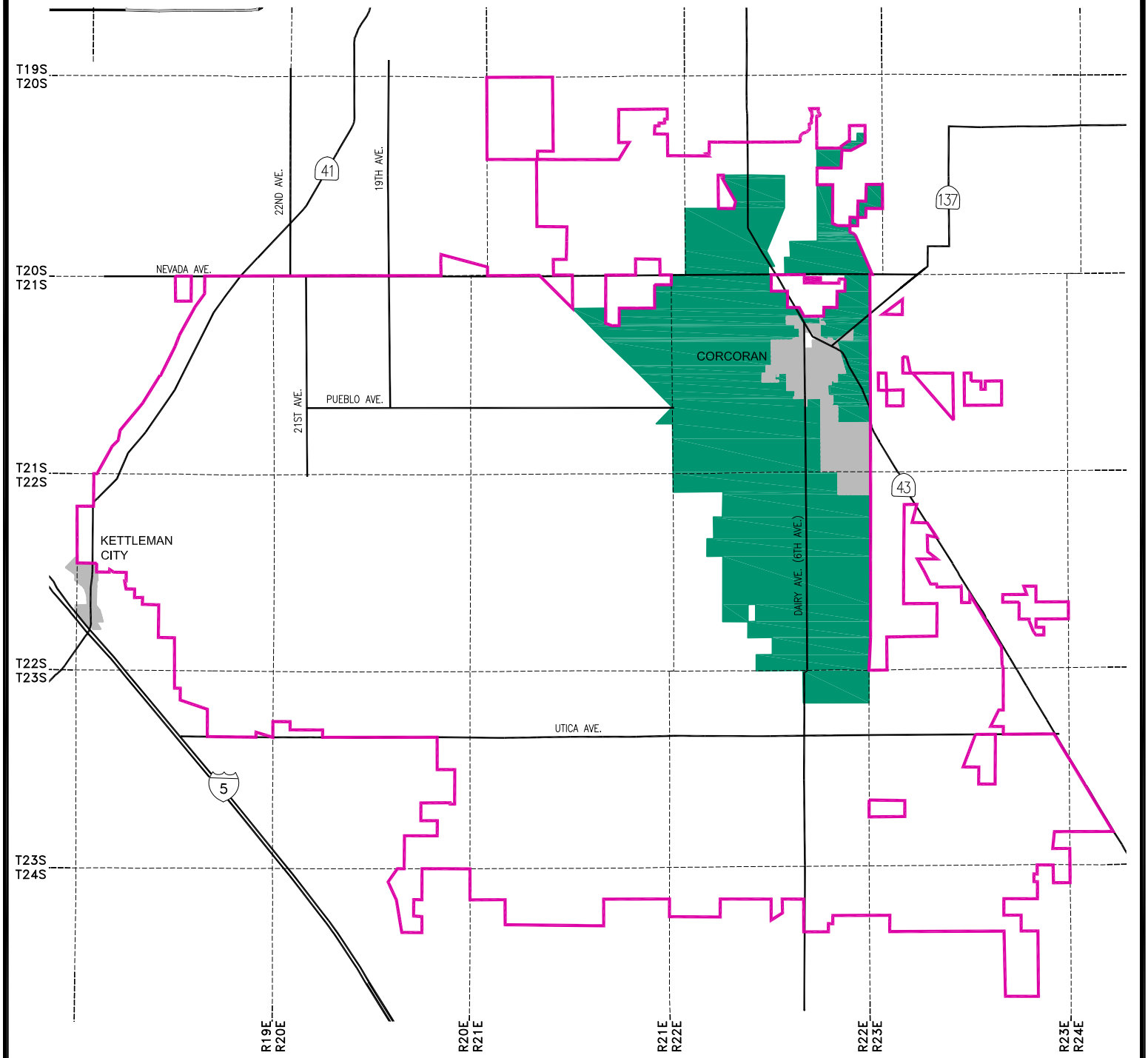
FIGURE 6



LEGEND

GROUNDWATER MANAGEMENT PLAN BOUNDARY

CORCORAN IRRIGATION DISTRICT

SCALE IN MILES

0 1 2 3 4

TULARE LAKE BED COORDINATED GROUNDWATER MANAGEMENT PLAN

CORCORAN IRRIGATION DISTRICT LOCATION MAP

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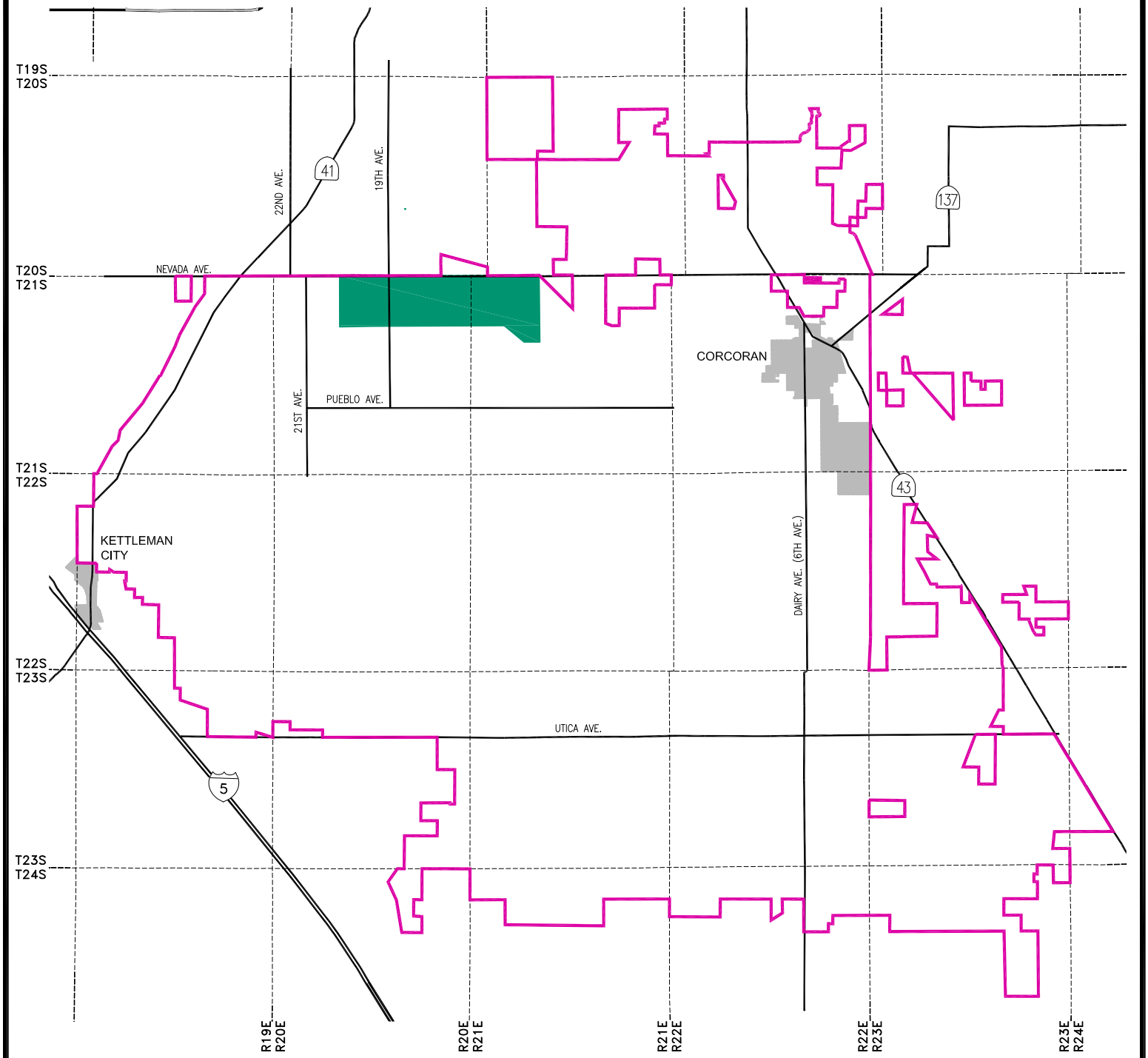
FIGURE 7



LEGEND

GROUNDWATER MANAGEMENT PLAN BOUNDARY

LOVELACE RECLAMATION DISTRICT #739

SCALE IN MILES

0 1 2 3 4

TULARE LAKE BED COORDINATED GROUNDWATER MANAGEMENT PLAN

LOVELACE RECLAMATION DISTRICT #739 LOCATION MAP

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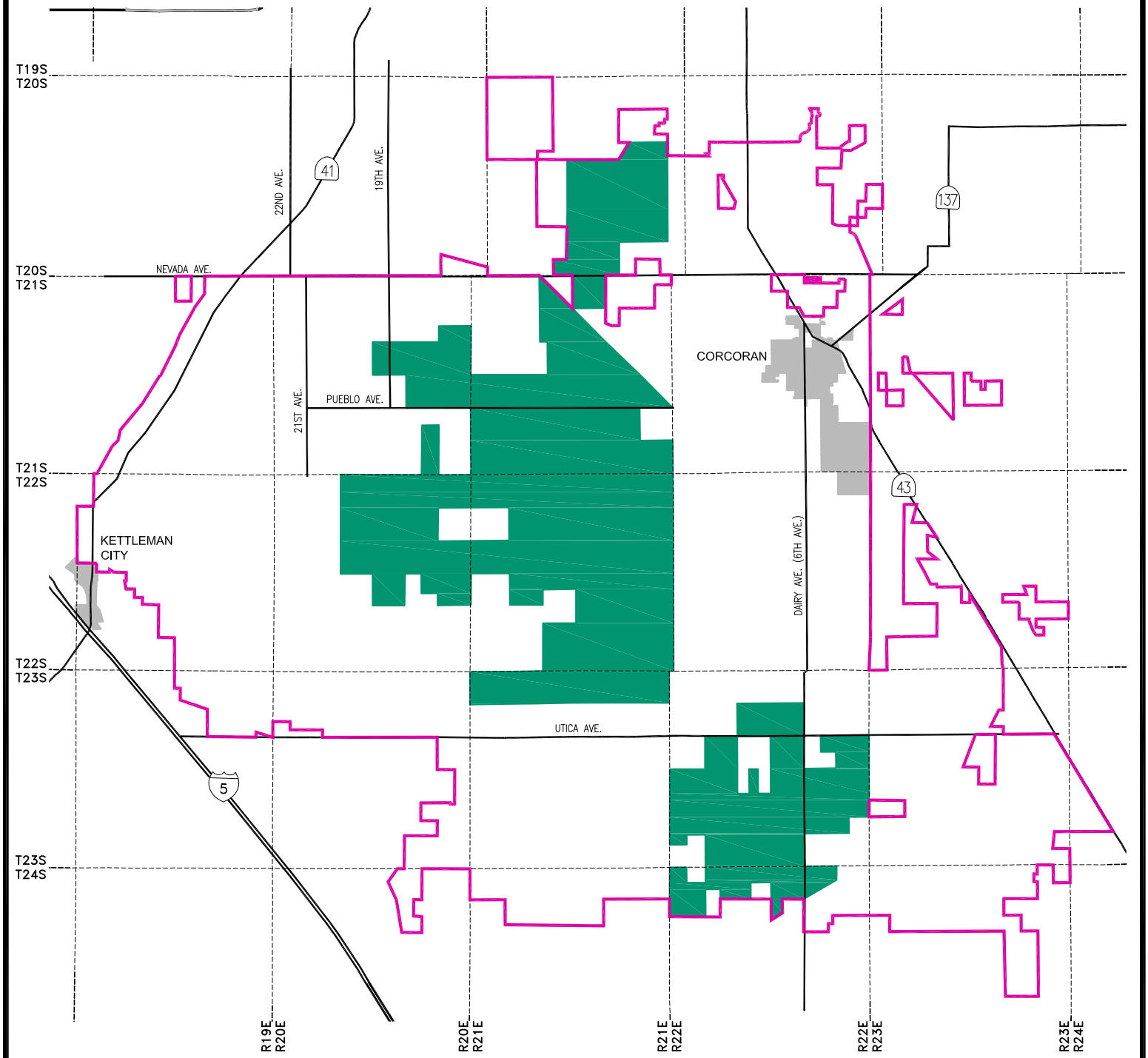
October 2011

FIGURE 8



LEGEND

GROUNDWATER MANAGEMENT PLAN BOUNDARY

MELGA WATER DISTRICT

SCALE IN MILES

0 1 2 3 4

TULARE LAKE BED COORDINATED GROUNDWATER MANAGEMENT PLAN

MELGA WATER DISTRICT LOCATION MAP

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HANFORD CALIFORNIA

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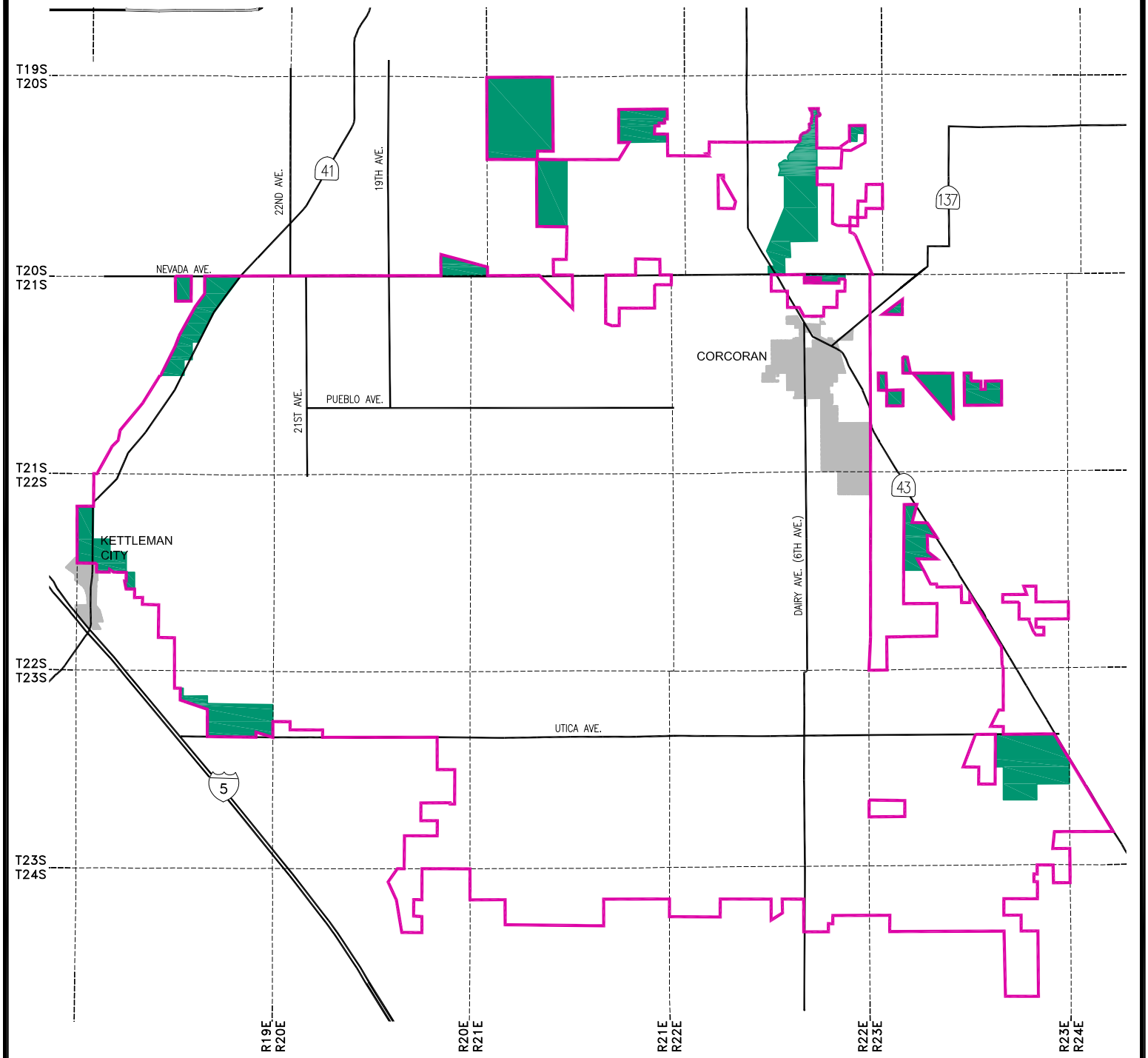
FIGURE 9



LEGEND

GROUNDWATER MANAGEMENT PLAN BOUNDARY

MOU PRIVATE LANDS

SCALE IN MILES

0 1 2 3 4

TULARE LAKE BED COORDINATED GROUNDWATER MANAGEMENT PLAN

MOU PRIVATE LANDS LOCATION MAP

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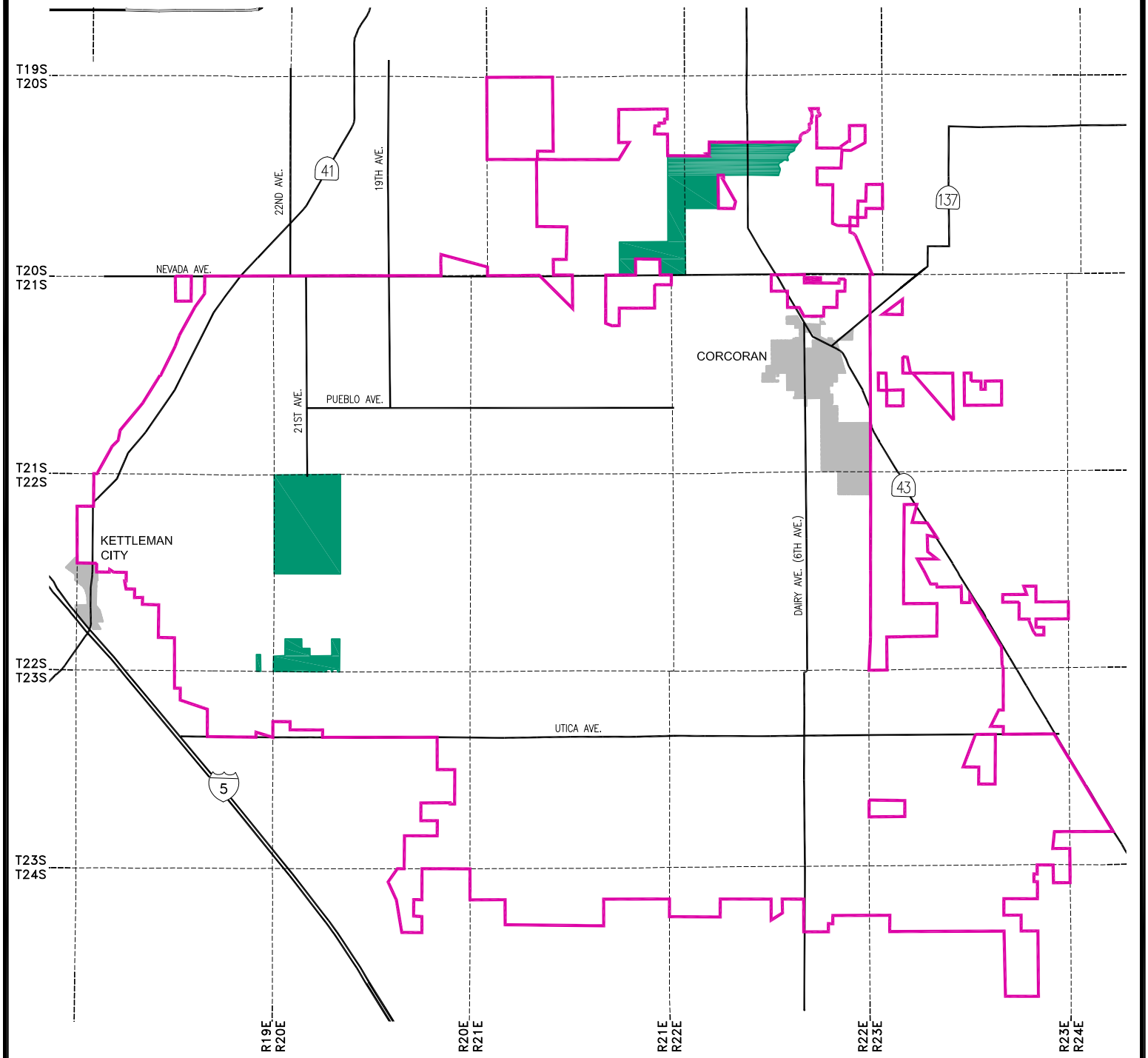
FIGURE 10



LEGEND

GROUNDWATER MANAGEMENT PLAN BOUNDARY

SALYER WATER DISTRICT

SCALE IN MILES

0 1 2 3 4

TULARE LAKE BED COORDINATED GROUNDWATER MANAGEMENT PLAN

SALYER WATER DISTRICT LOCATION MAP

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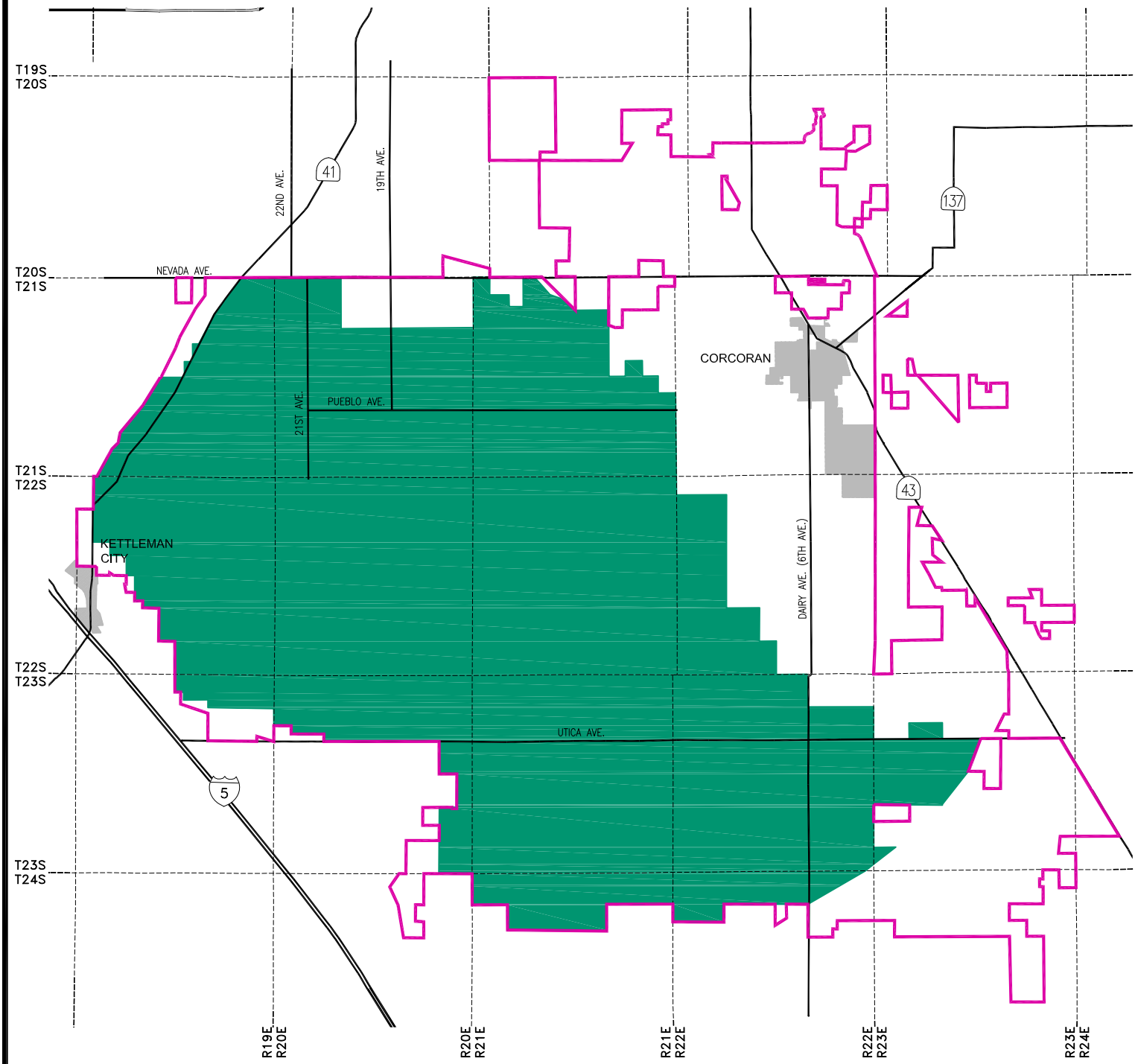
FIGURE 11



LEGEND

- GROUNDWATER MANAGEMENT PLAN BOUNDARY
- TULARE LAKE BASIN WATER STORAGE DISTRICT

SCALE IN MILES

0 1 2 3 4

TULARE LAKE BED COORDINATED GROUNDWATER MANAGEMENT PLAN

TULARE LAKE BASIN WATER STORAGE DISTRICT LOCATION MAP

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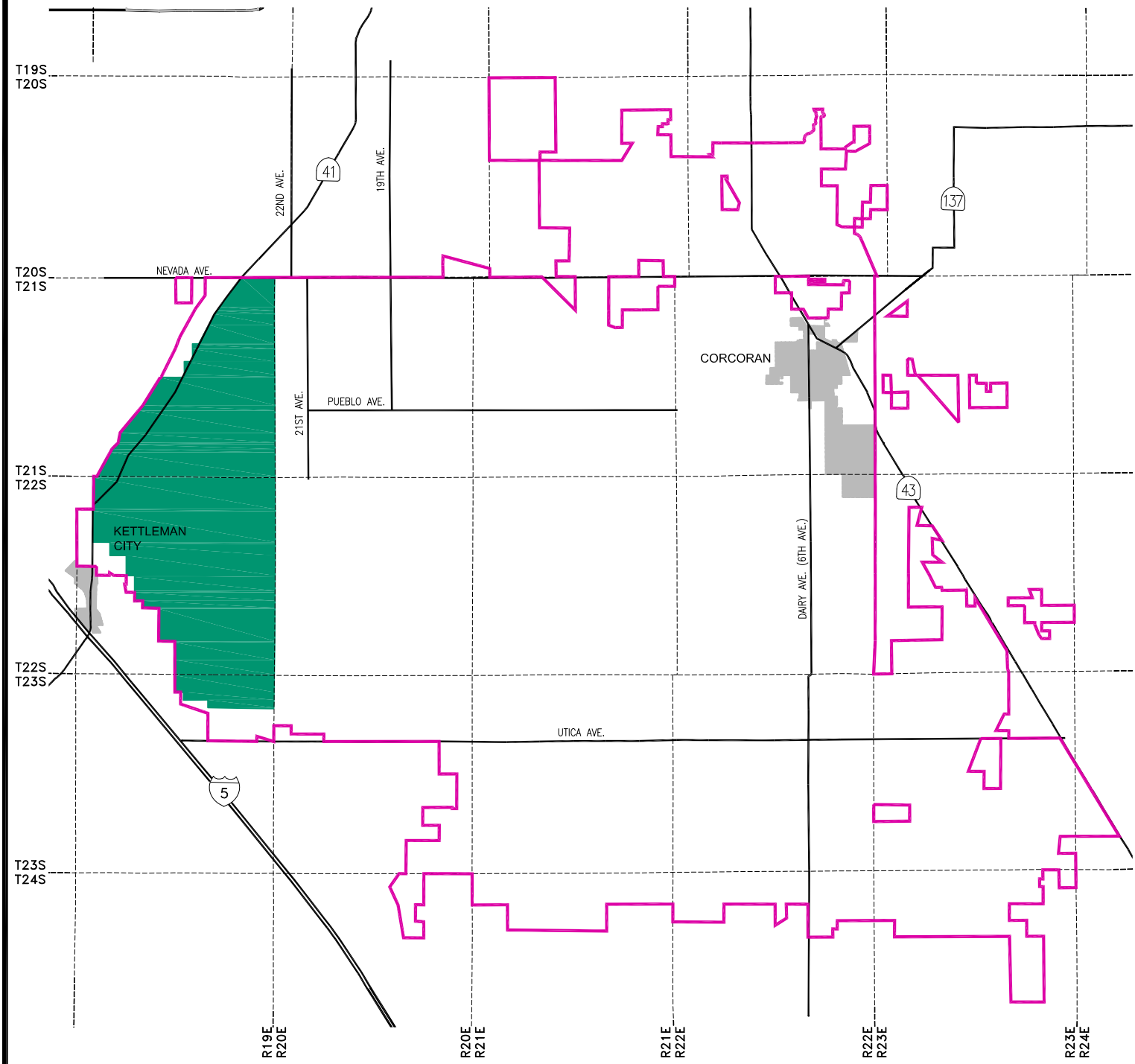
October 2011

FIGURE 12



LEGEND

- GROUNDWATER MANAGEMENT PLAN BOUNDARY
- TULARE LAKE RECLAMATION DISTRICT #761

N

SCALE IN MILES

0 1 2 3 4

TULARE LAKE BED COORDINATED GROUNDWATER MANAGEMENT PLAN

TULARE LAKE RECLAMATION DISTRICT #761 LOCATION MAP

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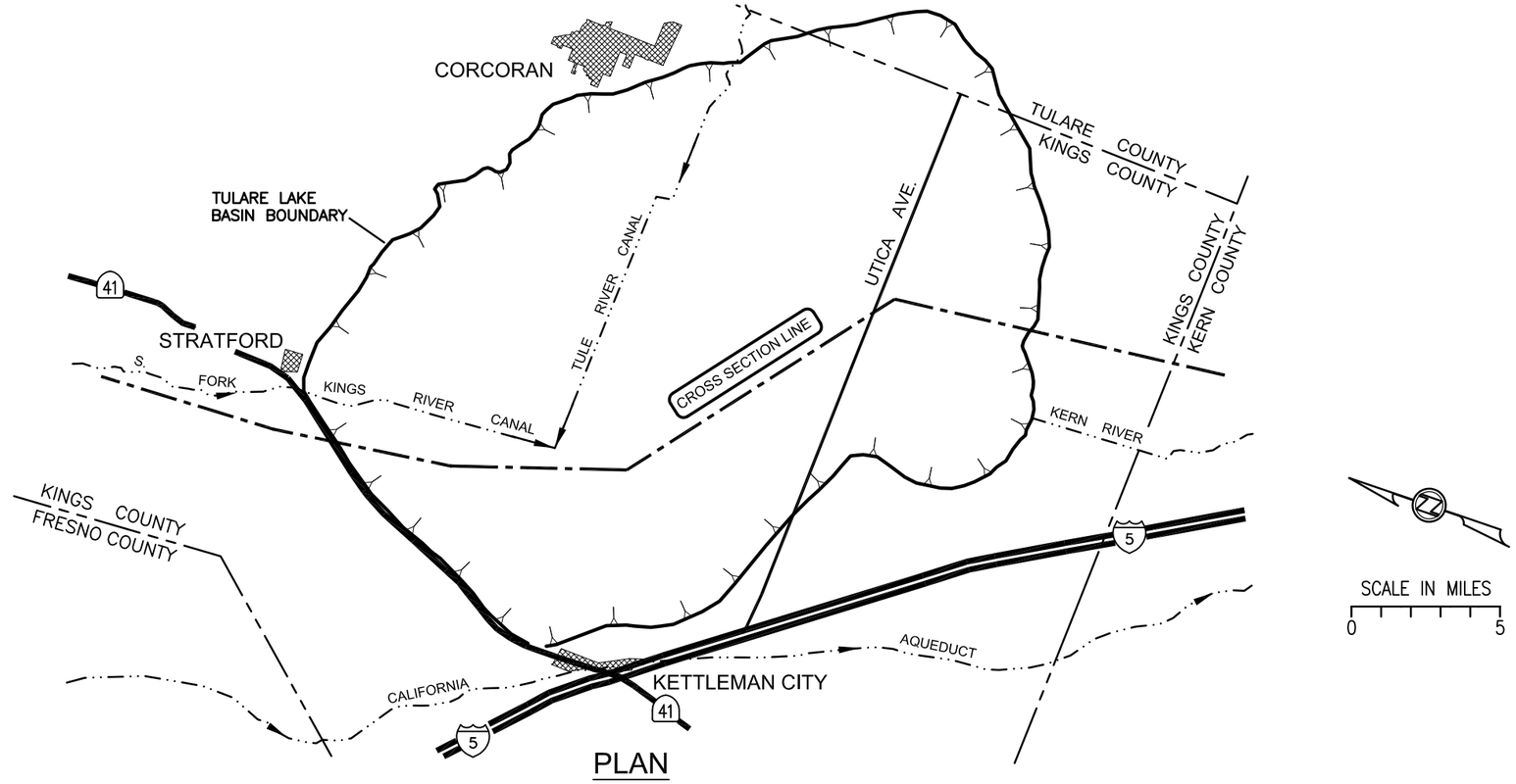
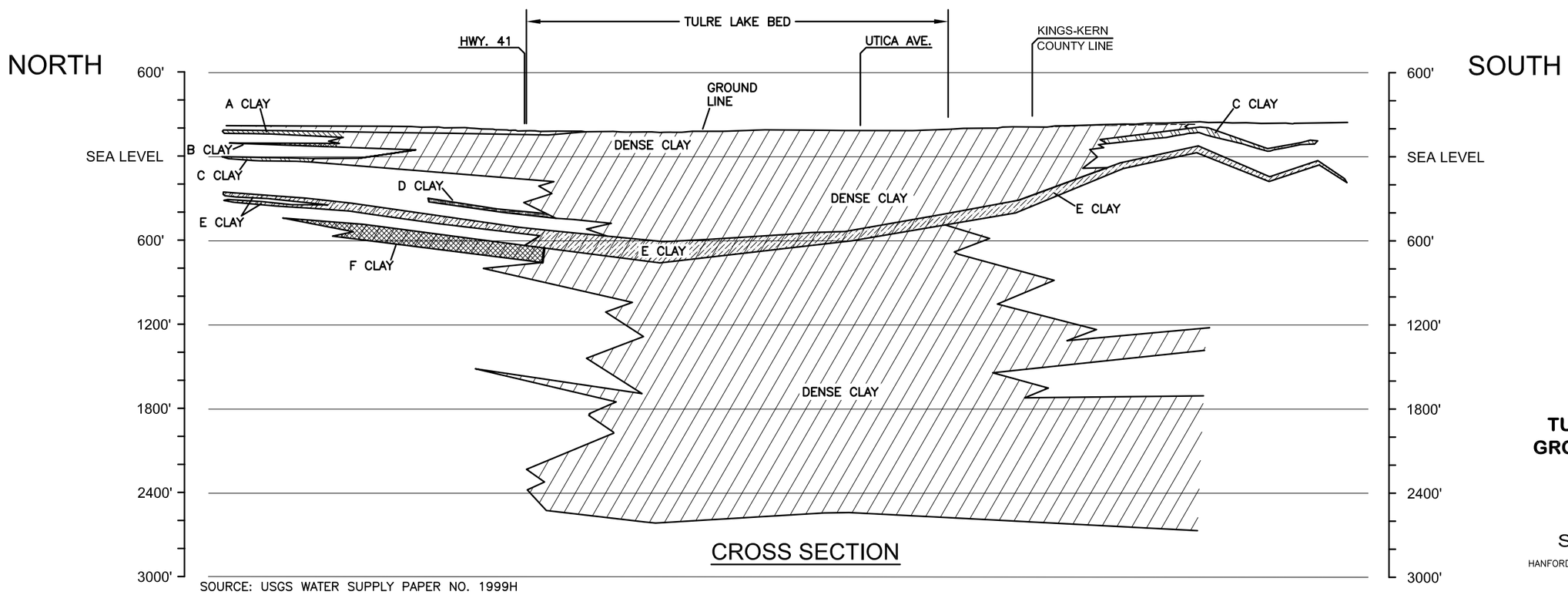
HANFORD CALIFORNIA

October 2011

FIGURE 13



PLAN



CROSS SECTION

SOURCE: USGS WATER SUPPLY PAPER NO. 1999H

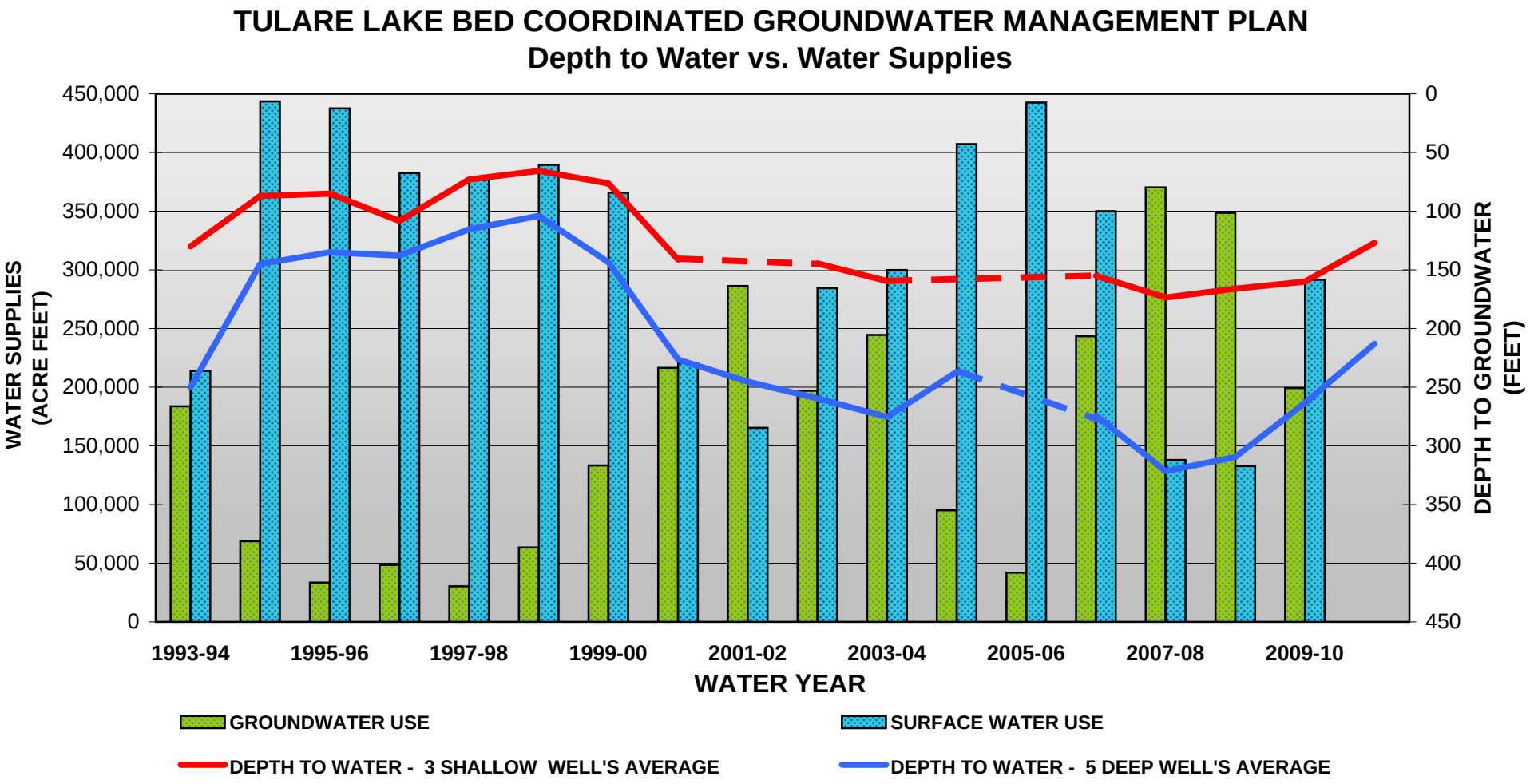
TULARE LAKE BED COORDINATED GROUNDWATER MANAGEMENT PLAN

TULARE LAKE BED
GEOLOGIC CROSS SECTION

SUMMERS ENGINEERING INC.
HANFORD Consulting Engineers CALIFORNIA

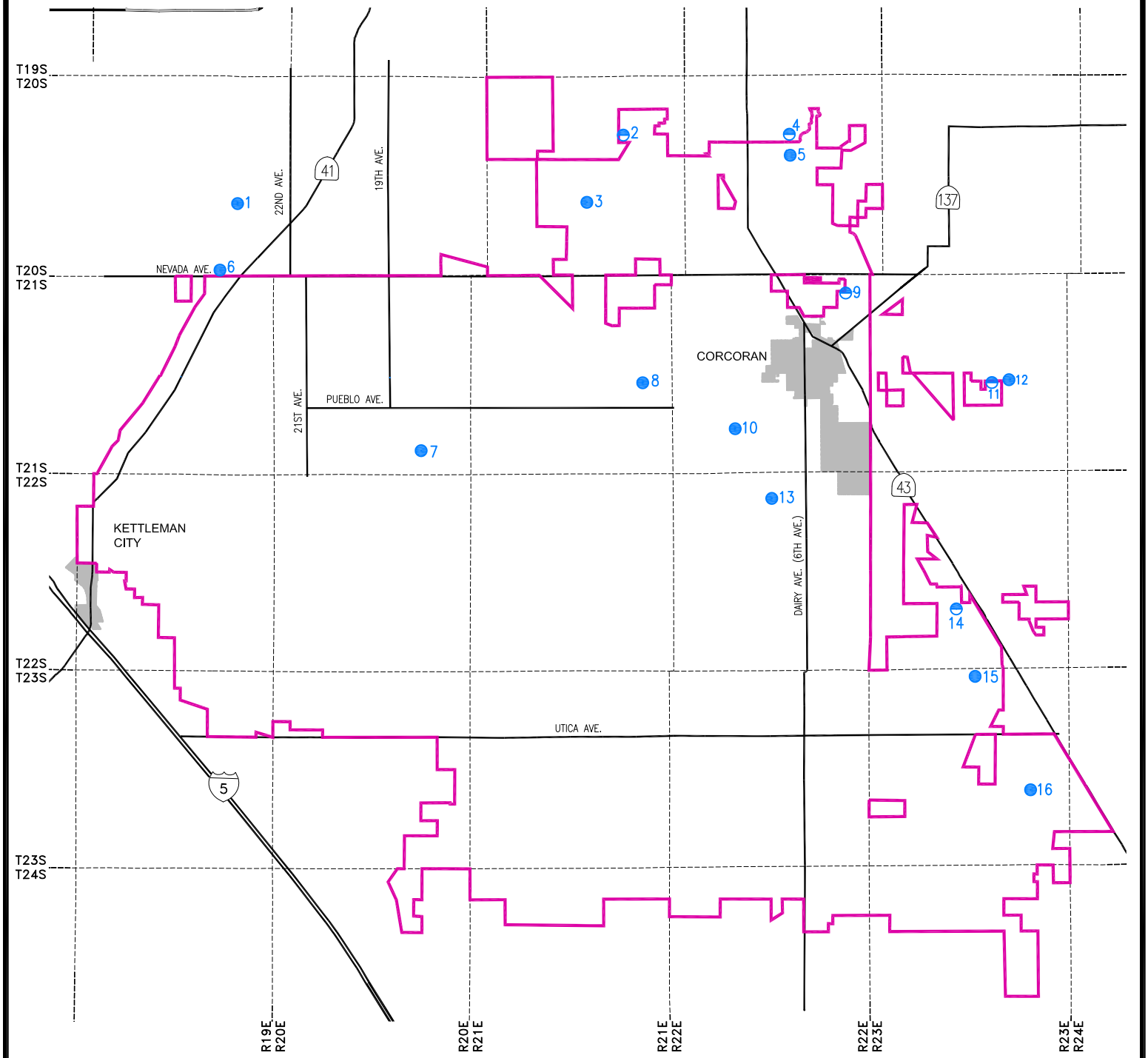
TLB11001.DWG

FIGURE 14



NOTES:
1. DASH LINE REPRESENTS MISSING DATA.
2. DEPTH TO GROUNDWATER IS AN AVERAGE OF THREE (3) SHALLOW WELLS AND FIVE (5) DEEP WELLS LOCATED WITHIN THE PLAN AREA.
3. WATER SUPPLIES EXCLUDE DELIVERIES TO LANDS WITHIN THE TULARE LAKE RECLAMATION DISTRICT NO. 761.

FIGURE 15



LEGEND

- GROUNDWATER MANAGEMENT PLAN BOUNDARY
- SHALLOW CASGEM WELL
- DEEP CASGEM WELL

SCALE IN MILES

0 1 2 3 4

TULARE LAKE BED COORDINATED GROUNDWATER MANAGEMENT PLAN

CASGEM WELLS LOCATION MAP

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HANFORD CALIFORNIA

October 2011

Attachment 5

Table 4-1. 2004 Mean Water Quality at Selected State Water Project Locations

Constituents	Units	Thermalito Afterbay at Outlet to Feather River	North Bay Aqueduct Barker Slough Pumping Plant	Delta-Mendota Canal Upstream of McCabe Road	California Aqueduct					
					Banks Pumping Plant	*O'Neill Outlet (Check 13)*	*Kettleman City (Check 21)*	*Highway 119 (Check 29)*	*Tehachapi Afterbay (Check 41)*	*Devil Canyon Afterbay near San Bernardino*
Alkalinity	mg/L as $CaCO_3$	40	96	74	70	76	78	78	40	77
Antimony	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NR
Arsenic	mg/L	<0.001	0.003	0.003	0.002	0.003	0.003	0.003	<0.001	0.003
Beryllium	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	mg/L	<0.1	0.1	0.1	<0.1	0.2	0.2	0.1	<0.1	0.2
Bromide	mg/L	<0.01	0.03	0.17	0.15	0.18	0.21	0.19	<0.01	0.19
Calcium	mg/L	8	16	19	17	19	20	21	8	21
Carbon-Dissolved Organic	mg/L as C	NR	4.8	3.6	3.1	3.1	3.5	3.6	NR	3.4
Carbon-Total Organic	mg/L as C	NR	5.6	3.5	3.3	3.2	3.6	3.4	NR	4.0
Chloride	mg/L	<1	20	60	51	64	71	66	<1	70
Chromium	mg/L	<0.001	0.001	0.003	0.001	0.002	0.002	0.003	<0.001	0.002
Copper	mg/L	<0.001	0.002	0.002	0.002	0.002	0.003	0.002	<0.001	0.003
Fluoride	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Hardness	mg/L as $CaCO_3$	35	94	95	85	96	102	99	35	101
Iron	mg/L	<0.005	0.022	0.012	0.015	0.011	0.013	0.008	<0.005	0.006
Lead	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Magnesium	mg/L	4	13	12	10	12	13	11	4	12
Manganese	mg/L	<0.005	0.019	<0.005	0.011	<0.005	<0.005	<0.005	<0.005	0.006
Nitrate + Nitrite	mg/L as N	<0.01	0.33	NR	0.51	0.45	0.69	0.54	<0.01	0.69
Phosphorus - Ortho	mg/L as P	<0.01	0.12	NR	0.06	0.07	0.08	0.04	<0.01	0.08
Phosphorus - Total	mg/L	0.0125	0.26	NR	0.10	0.08	0.10	0.07	0.01	0.13
Selenium	mg/L	<0.001	<0.001	<0.001	<0.001	0.001	0.001	0.001	<0.001	0.001
Sodium	mg/L	3	24	43	37	45	49	48	3	49
Electrical Conductivity	µS/cm	85	293	414	365	432	464	461	85	461
Sulfate	mg/L	2	21	35	26	34	36	38	2	37
Total Dissolved Soilds	mg/L	52	171	236	210	244	261	261	52	258
Turbidity	NTU	3	54	13	16	5	6	7	3	16
Zinc	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Note: All reported constituents are the yearly mean of laboratory analytical values sampled monthly. Nondetectable values were not used in the calculation of the yearly mean.
NR = No data recorded at this location.
NTU = nephelometric turbidity units
mg/L = milligrams per liter
µS/cm = microSiemens per centimeter

Attachment 6

EWMP: TLBWSD / EWMP Summary Analysis Table

IMPORTANT: Make sure that this table is printed in **Landscape** format. Printing this table in regular Letter format will result in data loss.

B = Beneficial; N = Negative; I = Insignificant; IN = Indeterminate

EWMP		EWMP			Environmental Effects				Third Party Allocation Effects				Indirect Economic Effects				Water Supplier B/C Ratio (25 years)	Financial Analysis (yes/no)	EWMP Accepted? (yes/no)
		Fully Implemented?	Demonstrably Inappropriate?	Technically Infeasible?	B	N	I	IN	B	N	I	IN	B	N	I	IN			
List A. Facilitating Practices	1. Facilitate Alternate Land Use	Yes	--	Yes															Yes
	2. Facilitate Use of Available Recycled Water	Yes	--	--															Yes
	3. Facilitate Financial Assistance	No	Yes	--															Yes
	4. Facilitate Voluntary Water Transfers	Yes	--	--															Yes
List B.	5. Line or Pipe Ditches/Canals	Yes	--	--	0	0	0	0	0	0	0	0	0	0	0	0	--	--	Yes
	6. Increase Water Ordering/Delivering Flexibility	Yes	--	--	0	0	0	0	0	0	0	0	0	0	0	0	--	--	Yes
	7. Construct/Operate Tailwater and Spill Recovery System	Yes	--	--	0	0	0	0	0	0	0	0	0	0	0	0	--	--	Yes
	8. Optimize Conjunctive Use	Yes	--	--	0	0	0	0	0	0	0	0	0	0	0	0	--	--	Yes
	9. Automate Canal Structures	Yes	Yes	No	1	0	5	0	1	0	3	0	0	0	4	0	--	--	No
List C.	10. Water Measurement/Water Use Update				0	0	7	0	0	0	4	0	0	0	4	0	--	Yes	No
	11. Pricing and Incentives				0	0	7	0	0	1	3	0	0	2	1	1	--	Yes	No

EWMP: TLBWSD / EWMP Summary Analysis Table

EWMP 1: Facilitate Alternate Land Use

Summary of Analysis

Initial Evaluation Table

Is this EWMP being implemented at a satisfactory level?	Yes
Is this EWMP demonstrably inappropriate for implementation by the water supplier?	--
Is this EWMP technically infeasible given current technology or prevailing local conditions?	Yes

Is this EWMP accepted?
Yes

Discussion
(See WMP pages 26)

Part 1: Information to Determine if Analysis is Required

A. Is this EWMP being implemented at a satisfactory level?
Yes

Details
(See WMP page 26 & attachment 6)

B. Is this EWMP demonstrably inappropriate for implementation by the water supplier?
--

Details
--

C. Is this EWMP technically infeasible given current technology or prevailing local conditions?
Yes

Details
--

Part 2: Detailed Analysis

A. Does this EWMP impact any of the other EWMPs on List B and/or List C?
--

Details
--

B. Does the water supplier have the legal authority to implement this EWMP?
--

Are legal restrictions based on water supplier policy or policies imposed from an outside entity?
--

Details
--

C. Has the water supplier approached or been approached by any customers or other entities concerning the potential for implementing this EWMP?
--

Details
--

D. If the water supplier were to be approached with a proposal endorsed by the water users, would the water supplier be willing to take an active role in facilitating this request?
--

Details
--

E. Does the water supplier have adequate funding sources, or could funds reasonably be made available to implement this EWMP?
--

Details
--

F. Could the water supplier provide any incentives for customers for this EWMP?
--

Details
--

G. Does the water supplier have the ability to secure and or administer low-interest loans for customers?
--

Details
--

EWMP 2: Facilitate Use of Available Recycled Water

Summary of Analysis

Initial Evaluation Table

Is this EWMP being implemented at a satisfactory level?	Yes
Is this EWMP demonstrably inappropriate for implementation by the water supplier?	--
Is this EWMP technically infeasible given current technology or prevailing local conditions?	--

Is this EWMP accepted?
Yes

Discussion
(See WMP page 27)

Part 1: Information to Determine if Analysis is Required

A. Is this EWMP being implemented at a satisfactory level?
Yes

Details
(See WMP page 27)

B. Is this EWMP demonstrably inappropriate for implementation by the water supplier?
--

Details
--

C. Is this EWMP technically infeasible given current technology or prevailing local conditions?
--

Details
--

Part 2: Detailed Analysis

A. Does this EWMP impact any of the other EWMPs on List B and/or List C?
--

Details
--

B. Does the water supplier have the legal authority to implement this EWMP?
--

Are legal restrictions based on water supplier policy or policies imposed from an outside entity?
--

Details
--

C. Has the water supplier approached or been approached by any customers or other entities concerning the potential for implementing this EWMP?
--

Details
--

D. If the water supplier were to be approached with a proposal endorsed by the water users, would the water supplier be willing to take an active role in facilitating this request?
--

Details
--

E. Does the water supplier have adequate funding sources, or could funds reasonably be made available to implement this EWMP?
--

Details
--

F. Could the water supplier provide any incentives for customers for this EWMP?
--

Details
--

G. Does the water supplier have the ability to secure and or administer low-interest loans for customers?
--

Details
--

EWMP 3: Facilitate Financial Assistance

Summary of Analysis

Initial Evaluation Table

Is this EWMP being implemented at a satisfactory level?	No
Is this EWMP demonstrably inappropriate for implementation by the water supplier?	Yes
Is this EWMP technically infeasible given current technology or prevailing local conditions?	--

Is this EWMP accepted?
Yes

Discussion
(See WMP pages 27-28)

Part 1: Information to Determine if Analysis is Required

A. Is this EWMP being implemented at a satisfactory level?
No

Details
--

B. Is this EWMP demonstrably inappropriate for implementation by the water supplier?
Yes

Details
(See WMP pages 27-28)

C. Is this EWMP technically infeasible given current technology or prevailing local conditions?
--

Details
--

Part 2: Detailed Analysis

A. Does this EWMP impact any of the other EWMPs on List B and/or List C?
--

Details
--

B. Does the water supplier have the legal authority to implement this EWMP?
--

Are legal restrictions based on water supplier policy or policies imposed from an outside entity?
--

Details
--

C. Has the water supplier approached or been approached by any customers or other entities concerning the potential for implementing this EWMP?
--

Details
--

D. If the water supplier were to be approached with a proposal endorsed by the water users, would the water supplier be willing to take an active role in facilitating this request?
--

Details
--

E. Does the water supplier have adequate funding sources, or could funds reasonably be made available to implement this EWMP?
--

Details
--

F. Could the water supplier provide any incentives for customers for this EWMP?
--

Details
--

G. Does the water supplier have the ability to secure and or administer low-interest loans for customers?
--

Details
--

EWMP 4: Facilitate Voluntary Water Transfers

Summary of Analysis

Initial Evaluation Table

Is this EWMP being implemented at a satisfactory level?	Yes
Is this EWMP demonstrably inappropriate for implementation by the water supplier?	--
Is this EWMP technically infeasible given current technology or prevailing local conditions?	--

Is this EWMP accepted?
Yes

Discussion
(See WMP page 28 & ATTACHMENT 6)

Part 1: Information to Determine if Analysis is Required

A. Is this EWMP being implemented at a satisfactory level?
Yes

Details
(See WMP pages 28 & ATTACHMENT 6)

B. Is this EWMP demonstrably inappropriate for implementation by the water supplier?
--

Details
--

C. Is this EWMP technically infeasible given current technology or prevailing local conditions?
--

Details
--

Part 2: Detailed Analysis

A. Does this EWMP impact any of the other EWMPs on List B and/or List C?
--

Details
--

B. Does the water supplier have the legal authority to implement this EWMP?
--

Are legal restrictions based on water supplier policy or policies imposed from an outside entity?
--

Details
--

C. Has the water supplier approached or been approached by any customers or other entities concerning the potential for implementing this EWMP?
--

Details
--

D. If the water supplier were to be approached with a proposal endorsed by the water users, would the water supplier be willing to take an active role in facilitating this request?
--

Details
--

E. Does the water supplier have adequate funding sources, or could funds reasonably be made available to implement this EWMP?
--

Details
--

F. Could the water supplier provide any incentives for customers for this EWMP?
--

Details
--

G. Does the water supplier have the ability to secure and or administer low-interest loans for customers?
--

Details
--

EWMP 5: Line or Pipe Ditches/Canals

Summary of Analysis

Initial Evaluation Table

Is this EWMP being implemented at a satisfactory level?	Yes
Is this EWMP demonstrably inappropriate for implementation by the water supplier?	--
Is this EWMP technically infeasible given current technology or prevailing local conditions?	--

Potential Environmental Effects Summary Table

Source of Supply	--
Confined/Unconfined Groundwater Levels	--
Shallow Groundwater Elevations	--
Instream Flows	--
Drain Flows	--
Fertilizer/Herbicide/Pesticide Use	--
Soil Erosion	--
Field Burning and Fugitive Dust	--
Energy Use	--
Vernal Pools and Swales	--
Riparian Habitat	--
Open Water Bodies	--
Marshes (permanent or seasonal)	--

Potential Third-Party Effects Summary Table

Confined/Unconfined Groundwater Levels	--
Instream Flows	--
Drain Flows	--
Fertilizer/Herbicide/Pesticide Use	--
Wind/Water Soil Erosion	--

Indirect Economic Effects Summary Table

Farm Inputs	--
Local Farm Labor	--
Processing of Farm Products	--

EWMP Economic Analysis

Water Supplier B/C Ratio	--

Can adequate funding be expected to be made available?
--

Is this EWMP accepted?
Yes

Discussion
(See WMP pages 28-29)

Part 1: Information to Determine if Detailed Analysis is Required

A. Is this EWMP being implemented at a satisfactory level?
Yes

Details
See WMP pages 28-29)

B. Is this EWMP demonstrably inappropriate for implementation by the water supplier?
--

Details
--

C. Is this EWMP technically infeasible given current technology or prevailing local conditions?
--

Details
--

Part 2: General Information for Detailed Analysis

A. Does this EWMP impact any of the other EWMPs?
--

Details
--

B. Matrix information about seepage flows

Estimated length of canals/ditches in the service area (miles):	--
Ditches/canals currently unlined (miles):	--
Ditches/canals currently lined (miles):	--
Pipelines in service area (miles):	--
Potential average seepage flows from unlined ditches/canals (ac-ft/yr):	--
Potential average recovered seepage flows from unlined ditches/canals (ac-ft/yr):	--
Estimated average seepage flows which exit and are lost to service area (ac-ft/yr):	--
Estimated average seepage flows which exit and are lost to the basin (ac-ft/yr):	--
Estimated average seepage flows which exit and are lost to the saline sink (ac-ft/yr):	--

Details
--

C. Was this EWMP considered in coordination with any other EWMPs or other neighboring water suppliers?
--

Details
--

Part 3 EE: Environmental, Third Party, & Indirect Economic Analysis

A. Source of Supply

Will implementation of the EWMP result in reduced water demand in the water supplier's service area?
--

What will be the potential impact?
--

Details
--

B. Confined/Unconfined Groundwater Levels

Are there any habitats in the water service area that are supported/supplied by the existing groundwater levels?
--

Will implementation of the EWMP affect groundwater levels?
--

What will be the potential impact?
--

Details
--

C. Shallow Groundwater

Is the water supplier located in an area where shallow groundwater and/or water quality problems (i.e. salinity, selenium) limit the use of land and/or drainage water?
--

Do you anticipate that shallow groundwater conditions will improve or degrade as a result of implementation of the EWMP?
--

What will be the potential impact?
--

Details
--

D. Instream Flows

Does the water supplier's distribution system contribute to flows in any other water courses?
--

Will implementation of the EWMP affect flows to any other water courses?
--

What will be the potential impact?
--

Details
--

E. Drain Flows

Does the water supplier's service area have drains that supply or support habitat?
--

Will these drain flows be reduced as a result of practices associated with the EWMP?
--

Do you anticipate that drain water quality will improve or degrade as a result of implementing the EWMP?
--

What will be the potential impact?
--

Details

--

F. Fertilizer / Herbicide / Pesticide Use

Are pesticides / herbicides used to control vegetative growth or burrowing along ditches / canals?
--

Will pesticide / herbicide use by the water supplier along ditches / canals be decreased or increased as a result of piping or lining?
--

What will be the potential impact?
--

Details
--

G. Soil Erosion

Will implementation of the EWMP reduce the current amount of soil erosion in the water supplier's service area?
--

What will be the potential impact?
--

Details
--

H. Field Burning and / or Fugitive Dust

Is vegetation removed from canal banks by burning?
--

Would this burning decrease as a result of lining or piping ditches / canals?
--

What will be the potential impact?
--

Details
--

I. Energy Use

Would this EWMP increase or decrease energy use (e.g. pump use, canal structure controls, etc.)?
--

What will be the potential impact?
--

J. Habitat Effect

Do ditches / canals that might be considered for lining / piping supply or support any of the following habitats?

1. Vernal pools and swales
--

What will be the potential impact?
--

Details
--

2. Riparian
--

What will be the potential impact?
--

Details
--

3. Open water bodies
--

What will be the potential impact?
--

Details
--

4. Marshes (permanent or seasonal)
--

What will be the potential impact?
--

Details
--

Part 3 TPE: Environmental, Third-Party & Indirect Economic Analysis

A. Confined / Unconfined Ground Water Levels

Will implementation of the EWMP affect groundwater elevations?
--

What will be the potential impact?
--

Details
--

B. Instream Flows

Do the water supplier's distribution flows contribute to any natural streams?
--

Will implementation of the EWMP decrease or increase instream flows to any streams that supply or support any third party?
--

What will be the potential impact?
--

Details
--

C. Drain Flows

Do drain flows supply or support any third party user?
--

Do you anticipate that drain water conditions will be affected as a result of implementation of the EWMP?
--

What will be the potential impact?
--

Details
--

D. Herbicide / Pesticide Use

Are pesticides / herbicides used to control vegetative growth or burrowing along distribution system banks?
--

Does water that flows through water supplier ditches and canals continue on to third party users

(such as M&J)?
--

Will fewer pesticides/herbicides be applied by the agricultural water supplier as a result of implementing the EWMP?
--

What will be the potential impact?
--

Details
--

E. Wind/Water Soil Erosion

Will implementation of the EWMP reduce the current amount of soil erosion in the water supplier's service area?
--

What will be the potential impact?
--

Details
--

Part 3 IEE: Environmental, Third-Party & Indirect Economic Analysis

A. Effects on local economies

Will the EWMP affect local economies through changes in on-farm operations (indirect economic effects)?
--

What will be the potential impact?
--

Details
--

B. Effects on farmers' purchases of crop inputs

Will practices associated with implementation of the EWMP increase or decrease farmers' purchases of crop inputs such as seed, fertilizer, irrigation equipment, etc.?
--

What will be the potential impact?
--

C. Effects on local employment

Will practices associated with implementation of the EWMP increase or decrease the hiring of local (county) farm workers?
--

What will be the potential impact?
--

D. Effects on local processing of farm produce

Will practices associated with implementation of the EWMP increase or decrease the local (county) processing of farm produce (i.e. canning of nuts, fruits, vegetables and milk production supported by cows/pasture, etc.)?
--

What will be the potential impact?
--

Part 4: Economic Analysis

A. How much water (in acre-feet) is estimated to be conserved annually as a result of the EWMP?

--

Details
--

B. Does the EWMP result in water supplier capital costs and/or annual operation and maintenance costs?
--

Details
--

C. Would the EWMP reduce current water supplier water purchases, water diversions, and/or groundwater pumping?
--

D. Would the EWMP delay or eliminate the need to complete future water supply augmentation and/or distribution projects?
--

E. Would the EWMP result in additional sales of water supplies to existing customers, new customers, and/or other agencies?
--

Details
--

Economic Analysis Worksheets

Worksheet 1. Estimated amount of water conserved annually:
--

Worksheet 2a. EWMP Water Supplier Capital Costs

Capital Cost Category	Item	Cost	Contingency Cost	Subtotal (rounded)
			Percent	Dollars
Planning	--	$ --	15%	$0 $0
	--	$ --	15%	$0 $0
Land	--	$ --	15%	$0 $0
	--	$ --	15%	$0 $0
Structure	--	$ --	15%	$0 $0
	--	$ --	15%	$0 $0
Equipment	--	$ --	15%	$0 $0
	--	$ --	15%	$0 $0
Mitigation	--	$ --	15%	$0 $0
	--	$ --	15%	$0 $0
Other	--	$ --	15%	$0 $0
Subtotal Capital Costs (rounded)				**$0**
Deduct Expected Salvage Value after			25 Years	**$0**
Total Capital Costs				**$0**
Capital Recovery Factor at			6% for 25 Years	**0.0782**

Annual Capital Costs (Total Capital Costs x Capital Recovery Factor) **$0**

Worksheet 2b. EWMP Water Supplier Capital Costs

Annual Operating Costs	Annual Maintenance Costs	Other Annual Costs [1]	Total Annual O&M Costs
$0	$0	$0	$0

[1]Other annual costs not included in O&M, such as annual environmental mitigation costs.

Worksheet 2c. EWMP Water Supply Costs/af Summary

Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Annual Conserved Water (af)	Cost / af
$0	$0	$0	--	$0

Worksheet 3a. EWMP Water Supplier Avoided Costs - Current Sources

Source of Supply Avoided	Amount of Water (af)	Annual O&M Costs ($ / af)	Sources to Be Used as Benefit Measure
--	--	$0	--

Worksheet 3b. EWMP Water Supplier Avoided Costs - Future Sources

Alternative	Total Capital Costs	Capital Recovery Factor [1]	Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Annual Yield (af)	Cost / af
--	$0	0.0782	$0	$0	$0	--	$0

[1]For a period of 25 years and 6% discount rate.

Worksheet 3c. Water Supplier Revenue Effects

Parties Purchasing Conserved Water	Amount of Water (af)	Selling Price ($ / af)	Expected Frequency of Sales (%) [1]	Expected Selling Price ($ / af)	Option Fee ($ / af)	Total Selling Price ($ / af)
--	--	$0	-- %	$0	$0	$0

[1]During a 25-year analysis period, how many years are water sales expected to occur? For example, water sales to farmers might be expected to occur 90% of the years, whereas the frequency to other agencies might be 50% of the years.

Worksheet 4. EWMP Water Supplier Benefit/Cost Ratio

EWMP Benefits ($/af)	$$0
EWMP Costs ($/af)	$0
Benefit/Cost Ratio	

Part 5: EWMP Financial Analysis

If the water supplier is claiming an exemption based upon the lack of available funding, please discuss the reasons for this finding. Please include a copy of your latest financial statement and a list of other potential plan beneficiaries who have been contacted.

Details

--

EWMP 6: Increase Water Ordering/Delivering Flexibility

Summary of Analysis

Initial Evaluation Table

Is this EWMP being implemented at a satisfactory level?	Yes
Is this EWMP demonstrably inappropriate for implementation by the water supplier?	--
Is this EWMP technically infeasible given current technology or prevailing local conditions?	--

Potential Environmental Effects Summary Table

Source of Supply	--
Confined/Unconfined Groundwater Levels	--
Shallow Groundwater Elevations	--
Instream Flows	--
Drain Flows	--
Soil Erosion	--
Energy Use	--

Potential Third-Party Effects Summary Table

Confined/Unconfined Groundwater Levels	--
Instream Flows	--
Drain Flows	--
Wind/Water Soil Erosion	--

Indirect Economic Effects Summary Table

Farm Inputs	--
Local Farm Labor	--
Processing of Farm Products	--

EWMP Economic Analysis

Water Supplier B/C Ratio --

Can adequate funding be expected to be made available?
--

Is this EWMP accepted?
Yes

Discussion
(See WMP page 29)

Part 1: Information to Determine if Detailed Analysis is Required

A. Is this EWMP being implemented at a satisfactory level?
Yes

Details
(See WMP page 29)

B. Is this EWMP demonstrably inappropriate for implementation by the water supplier?
--

Details
--

C. Is this EWMP technically infeasible given current technology or prevailing local conditions?
--

Details
--

Part 2: General Information for Detailed Analysis

A. Does this EWMP impact any of the other EWMPs?
--

Details
--

B. Description of facilities and components

Details
--

C. Was this EWMP considered in coordination with any other EWMPs or other neighboring water suppliers?
--

Details
--

Part 3 EE: Environmental, Third-Party & Indirect Economic Analysis

A. Source of Supply

Will implementation of the EWMP result in reduced water demand in the water supplier's service area?
--

What will be the potential impact?
--

Details
--

B. Confined/Unconfined Groundwater Levels

Are there any habitats in the water service area that are supported/supplied by the existing groundwater levels?
--

Will implementation of the EWMP affect groundwater levels?
--

What will be the potential impact?
--

Details
--

C. Shallow Groundwater

Is the water supplier located in an area where shallow groundwater and/or water quality problems (i.e. salinity, selenium) limit the use of land and/or drainage water?
--

Do you anticipate that shallow groundwater conditions will improve or degrade as a result of

implementation of the EWMP?
--

What will be the potential impact?
--

Details
--

D. Instream Flows

Does the water supplier's distribution system contribute to flows in any other water courses?
--

Will implementation of the EWMP affect flows to any other water courses?
--

What will be the potential impact?
--

Details
--

E. Drain Flows

Does the water supplier's service area have drains that supply or support habitat?
--

Will these drain flows be reduced as a result of practices associated with the EWMP?
--

Do you anticipate that drain water quality will improve or degrade as a result of implementing the EWMP?
--

What will be the potential impact?
--

Details
--

F. Soil Erosion

Will implementation of the EWMP reduce the current amount of soil erosion in the water supplier's service area?
--

What will be the potential impact?
--

Details
--

G. Energy Use

Would this EWMP increase or decrease energy use (e.g. pump use, canal structure controls, etc.)?
--

What will be the potential impact?
--

Part 3 TPE: Environmental, Third-Party & Indirect Economic Analysis

A. Confined/Unconfined Ground Water Levels

Will implementation of the EWMP affect groundwater elevations?
--

What will be the potential impact?
--

--

B. Instream Flows

Do the water supplier's distribution flows contribute to any natural streams?
--

Will implementation of the EWMP decrease or increase instream flows to any streams that supply or support any third party?
--

What will be the potential impact?
--

Details
--

C. Drain Flows

Do drain flows supply or support any third party user?
--

Do you anticipate that drain water conditions will be affected as a result of implementation of the EWMP?
--

What will be the potential impact?
--

Details
--

D. Wind / Water Soil Erosion

Will implementation of the EWMP reduce the current amount of soil erosion in the water supplier's service area?
--

What will be the potential impact?
--

Details
--

Part 3 IEE: Environmental, Third-Party & Indirect Economic Analysis

A. Effects on local economies

Will the EWMP affect local economies through changes in on-farm operations (indirect economic effects)?
--

What will be the potential impact?
--

Details
--

B. Effects on farmers' purchases of crop inputs

Will practices associated with implementation of the EWMP increase or decrease farmers' purchases of crop inputs such as seed, fertilizer, irrigation equipment, etc.?
--

What will be the potential impact?
--

C. Effects on local employment

Will practices associated with implementation of the EWMP increase or decrease the hiring of local (county) farm workers?
--

What will be the potential impact?
--

D. Effects on local processing of farm produce

Will practices associated with implementation of the EWMP increase or decrease the local (county) processing of farm produce (i.e. canning of nuts, fruits, vegetables, and milk production supported by cows/pasture etc.)?
--

What will be the potential impact?
--

Part 4: Economic Analysis

A. How much water (in acre-feet) is estimated to be conserved annually as a result of the EWMP?
--

Details
--

B. Does the EWMP result in water supplier capital costs and/or annual operation and maintenance costs?
--

Details
--

C. Would the EWMP reduce current water supplier water purchases, water diversions, and/or groundwater pumping?
--

D. Would the EWMP delay or eliminate the need to complete future water supply augmentation and/or distribution projects?
--

E. Would the EWMP result in additional sales of water supplies to existing customers, new customers, and/or other agencies?
--

Details
--

Economic Analysis Worksheets

Worksheet 1. Estimated amount of water conserved annually:
--

Worksheet 2a. EWMP Water Supplier Capital Costs

Capital Cost Category	Item	Cost	Contingency Cost	Subtotal (rounded)	
			Percent	Dollars	
Planning	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Land	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0

Structure	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Equipment	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Mitigation	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Other	--	$ --	15%	$0	$0
Subtotal Capital Costs (rounded)					**$0**
Deduct Expected Salvage Value after			25 Years		**$0**
Total Capital Costs					**$0**
Capital Recovery Factor at			6% for 25 Years		**0.0782**
Annual Capital Costs (Total Capital Costs x Capital Recovery Factor)					**$0**

Worksheet 2b. EWMP Water Supplier Capital Costs

Annual Operating Costs	Annual Maintenance Costs	Other Annual Costs [1]	Total Annual O&M Costs
$0	$0	$0	$0

[1]Other annual costs not included in O&M, such as annual environmental mitigation costs.

Worksheet 2c. EWMP Water Supply Costs/af Summary

Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Annual Conserved Water (af)	Cost / af
$0	$0	$0	--	$0

Worksheet 3a. EWMP Water Supplier Avoided Costs - Current Sources

Source of Supply Avoided	Amount of Water (af)	Annual O&M Costs ($ / af)	Sources to Be Used as Benefit Measure
--	--	$0	--

Worksheet 3b. EWMP Water Supplier Avoided Costs - Future Sources

Alternative	Total Capital Costs	Capital Recovery Factor [1]	Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Annual Yield (af)	Cost / af
--	$0	0.0782	$0	$0	$0	--	$0

[1]For a period of 25 years and 6% discount rate.

Parties Purchasing Conserved Water	Amount of Water (af)	Selling Price ($/af)	Expected Frequency of Sales (%) [1]	Expected Selling Price ($/af)	Option Fee ($/af)	Total Selling Price ($/af)
--	--	$0	-- %	$0	$0	$0

[1]During a 25-year analysis period, how many years are water sales expected to occur? For example, water sales to farmers might be expected to occur 90% of the years, whereas the frequency to other agencies might be 50% of the years.

Worksheet 4. EWMP Water Supplier Benefit/Cost Ratio

EWMP Benefits ($/af)	$0
EWMP Costs ($/af)	$0
Benefit/Cost Ratio	

Part 5: EWMP Financial Analysis

If the water supplier is claiming an exemption based upon the lack of available funding, please discuss the reasons for this finding. Please include a copy of your latest financial statement and a list of other potential plan beneficiaries who have been contacted.

Details
--

EWMP 7: Construct/Operate Tailwater and Spill Recovery System

Summary of Analysis

Initial Evaluation Table

Is this EWMP being implemented at a satisfactory level?	Yes
Is this EWMP demonstrably inappropriate for implementation by the water supplier?	--
Is this EWMP technically infeasible given current technology or prevailing local conditions?	--

Potential Environmental Effects Summary Table

Source of Supply	--
Confined/Unconfined Groundwater Levels	--
Shallow Groundwater Elevations	--
Instream Flows	--
Drain Flows	--
Soil Erosion	--
Energy Use	--

Potential Third-Party Effects Summary Table

Confined/Unconfined Groundwater Levels	--
Instream Flows	--
Drain Flows	--
Wind/Water Soil Erosion	--

Indirect Economic Effects Summary Table

Farm Inputs	--
Local Farm Labor	--
Processing of Farm Products	--

EWMP Economic Analysis

Water Supplier B/C Ratio --

Can adequate funding be expected to be made available?
--

Is this EWMP accepted?
Yes

Discussion
(See WMP pages 29-30)

Part 1: Information to Determine if Detailed Analysis is Required

A. Is this EWMP being implemented at a satisfactory level?
Yes

Details
(See WMP pages 29-30)

B. Is this EWMP demonstrably inappropriate for implementation by the water supplier?
--

Details
--

C. Is this EWMP technically infeasible given current technology or prevailing local conditions?
--

Details
--

Part 2: General Information for Detailed Analysis

A. Does this EWMP impact any of the other EWMPs?
--

Details
--

B. Matrix information about spill and seepage losses

Estimated average amount of spill/tailwater produced (ac-ft/yr):	--
Quantity of average spill/tailwater/drainage released from service area (ac-ft/yr):	--

Details
--

C. Matrix information about spill/tailwater/drainage water quality

Total Dissolved Solids/EC:	--
Selenium (if applicable):	--
Boron (if applicable):	--
Other constituents of concern that may be detrimental for soil or crop production:	--

D. Description of potential water reuse system

Details
--

E. Was this EWMP considered in coordination with any other EWMPs or other neighboring water suppliers?
--

Details
--

Part 3 EE: Environmental, Third-Party & Indirect Economic Analysis

A. Source of Supply

Will implementation of the EWMP result in reduced water demand in the water supplier's service area?
--

What will be the potential impact?
--

Details
--

Are there any habitats in the water service area that are supported/supplied by the existing groundwater levels?
--

Will implementation of the EWMP affect groundwater levels?
--

What will be the potential impact?
--

Details
--

C. Shallow Groundwater

Is the water supplier located in an area where shallow groundwater and/or water quality problems (i.e. salinity, selenium) limit the use of land and/or drainage water?
--

Do you anticipate that shallow groundwater conditions will improve or degrade as a result of implementation of the EWMP?
--

What will be the potential impact?
--

Details
--

D. Instream Flows

Does the water supplier's distribution system contribute to flows in any other water courses?
--

Will implementation of the EWMP affect flows to any other water courses?
--

What will be the potential impact?
--

Details
--

E. Drain Flows

Does the water supplier's service area have drains that supply or support habitat?
--

Will these drain flows be reduced as a result of practices associated with the EWMP?
--

Do you anticipate that drain water quality will improve or degrade as a result of implementing the EWMP?
--

What will be the potential impact?
--

Details
--

F. Soil Erosion

Will implementation of the EWMP reduce the current amount of soil erosion in the water supplier's service area?
--

What will be the potential impact?
--

--

G. Energy Use

Would this EWMP increase or decrease energy use (e.g. pump use, canal structure controls, etc.)?
--

What will be the potential impact?
--

Part 3 TPE: Environmental, Third-Party & Indirect Economic Analysis

A. Confined / Unconfined Ground Water Levels

Will implementation of the EWMP affect groundwater elevations?
--

What will be the potential impact?
--

Details
--

B. Instream Flows

Do the water supplier's distribution flows contribute to any natural streams?
--

Will implementation of the EWMP decrease or increase instream flows to any streams that supply or support any third party?
--

What will be the potential impact?
--

Details
--

C. Drain Flows

Do drain flows supply or support any third party user?
--

Do you anticipate that drain water conditions will be affected as a result of implementation of the EWMP?
--

What will be the potential impact?
--

Details
--

D. Wind / Water Soil Erosion

Will implementation of the EWMP reduce the current amount of soil erosion in the water supplier's service area?
--

What will be the potential impact?
--

Details
--

Part 3 IEE: Environmental, Third-Party & Indirect Economic Analysis

A. Effects on local economies

Will the EWMP affect local economies through changes in on-farm operations (indirect economic effects)?
--

What will be the potential impact?
--

Details
--

B. Effects on farmers' purchases of crop inputs

Will practices associated with implementation of the EWMP increase or decrease farmers' purchases of crop inputs such as seed, fertilizer, irrigation equipment, etc.?
--

What will be the potential impact?
--

C. Effects on local employment

Will practices associated with implementation of the EWMP increase or decrease the hiring of local (county) farm workers?
--

What will be the potential impact?
--

D. Effects on local processing of farm produce

Will practices associated with implementation of the EWMP increase or decrease the local (county) processing of farm produce (i.e. canning of nuts, fruits, vegetables, and milk production supported by cows/pasture, etc.)?
--

What will be the potential impact?
--

Part 4: Economic Analysis

A. How much water (in acre-feet) is estimated to be conserved annually as a result of the EWMP?
--

Details
--

B. Does the EWMP result in water supplier capital costs and/or annual operation and maintenance costs?
--

Details
--

C. Would the EWMP reduce current water supplier water purchases, water diversions, and/or groundwater pumping?
--

D. Would the EWMP delay or eliminate the need to complete future water supply augmentation and/or distribution projects?
--

E. Would the EWMP result in additional sales of water supplies to existing customers, new customers and/or other agencies?
--

Details
--

Economic Analysis Worksheets

Worksheet 1. Estimated amount of water conserved annually:
--

Worksheet 2a. EWMP Water Supplier Capital Costs

Capital Cost Category	Item	Cost	Contingency Cost	Subtotal (rounded)
			Percent	Dollars
Planning	--	$ --	15%	$0 $0
	--	$ --	15%	$0 $0
Land	--	$ --	15%	$0 $0
	--	$ --	15%	$0 $0
Structure	--	$ --	15%	$0 $0
	--	$ --	15%	$0 $0
Equipment	--	$ --	15%	$0 $0
	--	$ --	15%	$0 $0
Mitigation	--	$ --	15%	$0 $0
	--	$ --	15%	$0 $0
Other	--	$ --	15%	$0 $0
Subtotal Capital Costs (rounded)				**$0**
Deduct Expected Salvage Value after			25 Years	**$0**
Total Capital Costs				**$0**
Capital Recovery Factor at			6% for 25 Years	**0.0782**
Annual Capital Costs (Total Capital Costs x Capital Recovery Factor)				**$0**

Worksheet 2b. EWMP Water Supplier Capital Costs

Annual Operating Costs	Annual Maintenance Costs	Other Annual Costs [1]	Total Annual O&M Costs
$0	$0	$0	$0

[1]Other annual costs not included in O&M, such as annual environmental mitigation costs.

Worksheet 2c. EWMP Water Supply Costs/af Summary

Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Annual Conserved Water (af)	Cost / af
$0	$0	$0	--	$0

Worksheet 3a. EWMP Water Supplier Avoided Costs - Current Sources

Source of Supply Avoided	Amount of Water (af)	Annual O&M Costs ($/af)	Sources to Be Used as Benefit Measure
--	--	$0	--

Worksheet 3b. EWMP Water Supplier Avoided Costs - Future Sources

Alternative	Total Capital Costs	Capital Recovery Factor [1]	Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Annual Yield (af)	Cost/af
--	$0	0.0782	$0	$0	$0	--	$0

[1]For a period of 25 years and 6% discount rate.

Worksheet 3c. Water Supplier Revenue Effects

Parties Purchasing Conserved Water	Amount of Water (af)	Selling Price ($/af)	Expected Frequency of Sales (%) [1]	Expected Selling Price ($/af)	Option Fee ($/af)	Total Selling Price ($/af)
--	--	$0	-- %	$0	$0	$0

[1]During a 25-year analysis period, how many years are water sales expected to occur? For example, water sales to farmers might be expected to occur 90% of the years, whereas the frequency to other agencies might be 50% of the years.

Worksheet 4. EWMP Water Supplier Benefit/Cost Ratio

EWMP Benefits ($/af)	$0
EWMP Costs ($/af)	$0
Benefit/Cost Ratio	

Part 5: EWMP Financial Analysis

If the water supplier is claiming an exemption based upon the lack of available funding, please discuss the reasons for this finding. Please include a copy of your latest financial statement and a list of other potential plan beneficiaries who have been contacted.

Details
--

EWMP 8: Optimize Conjunctive Use

Summary of Analysis

Initial Evaluation Table

Is this EWMP being implemented at a satisfactory level?	Yes
Is this EWMP demonstrably inappropriate for implementation by the water supplier?	--
Is this EWMP technically infeasible given current technology or prevailing local conditions?	--

Potential Environmental Effects Summary Table

Source of Supply	--
Confined / Unconfined Groundwater Levels	--
Shallow Groundwater Elevations	--
Instream Flows	--
Drain Flows	--
Soil Erosion	--
Energy Use	--

Potential Third-Party Effects Summary Table

Confined / Unconfined Groundwater Levels	--
Instream Flows	--
Drain Flows	--
Wind / Water Soil Erosion	--

Indirect Economic Effects Summary Table

Farm Inputs	--
Local Farm Labor	--
Processing of Farm Products	--

EWMP Economic Analysis

Water Supplier B / C Ratio --

Can adequate funding be expected to be made available?
--

Is this EWMP accepted?
Yes

Discussion
(See WMP page 30)

Part 1: Information to Determine if Detailed Analysis is Required

A. Is this EWMP being implemented at a satisfactory level?
Yes

Details
(See WMP page 30)

B. Is this EWMP demonstrably inappropriate for implementation by the water supplier?
--

Details
--

C. Is this EWMP technically infeasible given current technology or prevailing local conditions?
--

Details
--

Part 2: General Information for Detailed Analysis

A. Does this EWMP impact any of the other EWMPs?
--

Details
--

B. Matrix about water supply

Ground water pumping in average supply year (ac-ft/yr):	--
Maximum ground water pumping capability (ac-ft/yr):	--
Surface water deliveries in normal year (ac-ft/yr):	--
Surface water deliveries in deficit year (ac-ft/yr):	--

C. Description of programs

Details
--

Part 3 EE: Environmental, Third-Party & Indirect Economic Analysis

A. Source of Supply

Will implementation of the EWMP result in reduced water demand in the water supplier's service area?
--

What will be the potential impact?
--

Details
--

B. Confined/Unconfined Groundwater Levels

Are there any habitats in the water service area that are supported/supplied by the existing groundwater levels?
--

Will implementation of the EWMP affect groundwater levels?
--

What will be the potential impact?
--

Details
--

C. Shallow Groundwater

Is the water supplier located in an area where shallow groundwater and/or water quality problems (i.e.

salinity, selenium) limit the use of land and/or drainage water?
--

Do you anticipate that shallow groundwater conditions will improve or degrade as a result of implementation of the EWMP?
--

What will be the potential impact?
--

Details
--

D. Instream Flows

Does the water supplier's distribution system contribute to flows in any other water courses?
--

Will implementation of the EWMP affect flows to any other water courses?
--

What will be the potential impact?
--

Details
--

E. Drain Flows

Does the water supplier's service area have drains that supply or support habitat?
--

Will these drain flows be reduced as a result of practices associated with the EWMP?
--

Do you anticipate that drain water quality will improve or degrade as a result of implementing the EWMP?
--

What will be the potential impact?
--

Details
--

F. Soil Erosion

Will implementation of the EWMP reduce the current amount of soil erosion in the water supplier's service area?
--

What will be the potential impact?
--

Details
--

G. Energy Use

Would this EWMP increase or decrease energy use (e.g. pump use, canal structure controls, etc.)?
--

What will be the potential impact?
--

Part 3 TPE: Environmental, Third-Party & Indirect Economic Analysis

A. Confined/Unconfined Ground Water Levels

Will implementation of the EWMP affect groundwater elevations?

--

What will be the potential impact?
--

Details
--

B. Instream Flows

Do the water supplier's distribution flows contribute to any natural streams?
--

Will implementation of the EWMP decrease or increase instream flows to any streams that supply or support any third party?
--

What will be the potential impact?
--

Details
--

C. Drain Flows

Do drain flows supply or support any third party user?
--

Do you anticipate that drain water conditions will be affected as a result of implementation of the EWMP?
--

What will be the potential impact?
--

Details
--

D. Wind / Water Soil Erosion

Will implementation of the EWMP reduce the current amount of soil erosion in the water supplier's service area?
--

What will be the potential impact?
--

Details
--

Part 3 IEE: Environmental, Third-Party & Indirect Economic Analysis

A. Effects on local economies

Will the EWMP affect local economies through changes in on-farm operations (indirect economic effects)?
--

What will be the potential impact?
--

Details
--

B. Effects on farmers' purchases of crop inputs

Will practices associated with implementation of the EWMP increase or decrease farmers' purchases of crop inputs such as seed, fertilizer, irrigation equipment, etc.?
--

What will be the potential impact?

--

C. Effects on local employment

Will practices associated with implementation of the EWMP increase or decrease the hiring of local (county) farm workers?

--

What will be the potential impact?

--

D. Effects on local processing of farm produce

Will practices associated with implementation of the EWMP increase or decrease the local (county) processing of farm produce (i.e. canning of nuts, fruits, vegetables, and milk production supported by cows/pasture, etc.)?

--

What will be the potential impact?

--

Part 4: Economic Analysis

A. How much water (in acre-feet) is estimated to be conserved annually as a result of the EWMP?

--

Details

--

B. Does the EWMP result in water supplier capital costs and/or annual operation and maintenance costs?

--

Details

--

C. Would the EWMP reduce current water supplier water purchases, water diversions, and/or groundwater pumping?

--

D. Would the EWMP delay or eliminate the need to complete future water supply augmentation and/or distribution projects?

--

E. Would the EWMP result in additional sales of water supplies to existing customers, new customers, and/or other agencies?

--

Details

--

Economic Analysis Worksheets

Worksheet 1. Estimated amount of water conserved annually:

--

Worksheet 2a. EWMP Water Supplier Capital Costs

Capital Cost Category	Item	Cost	Contingency Cost	Subtotal (rounded)	
			Percent	Dollars	
Planning	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0

Land	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Structure	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Equipment	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Mitigation	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Other	--	$ --	15%	$0	$0
Subtotal Capital Costs (rounded)					**$0**
Deduct Expected Salvage Value after			25 Years		**$0**
Total Capital Costs					**$0**
Capital Recovery Factor at			6% for 25 Years		**0.0782**
Annual Capital Costs (Total Capital Costs x Capital Recovery Factor)					**$0**

Worksheet 2b. EWMP Water Supplier Capital Costs

Annual Operating Costs	Annual Maintenance Costs	Other Annual Costs [1]	Total Annual O&M Costs
$0	$0	$0	$0

[1]Other annual costs not included in O&M, such as annual environmental mitigation costs.

Worksheet 2c. EWMP Water Supply Costs/af Summary

Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Annual Conserved Water (af)	Cost / af
$0	$0	$0	--	$0

Worksheet 3a. EWMP Water Supplier Avoided Costs - Current Sources

Source of Supply Avoided	Amount of Water (af)	Annual O&M Costs ($ / af)	Sources to Be Used as Benefit Measure
--	--	$0	--

Worksheet 3b. EWMP Water Supplier Avoided Costs - Future Sources

Alternative	Total Capital Costs	Capital Recovery Factor [1]	Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Annual Yield (af)	Cost / af
--	$0	0.0782	$0	$0	$0	--	$0

[1]For a period of 25 years and 6% discount rate.

Worksheet 3c. Water Supplier Revenue Effects

Parties Purchasing Conserved Water	Amount of Water (af)	Selling Price ($/af)	Expected Frequency of Sales (%) [1]	Expected Selling Price ($/af)	Option Fee ($/af)	Total Selling Price ($/af)
--	--	$0	-- %	$0	$0	$0

[1]During a 25-year analysis period, how many years are water sales expected to occur? For example, water sales to farmers might be expected to occur 90% of the years, whereas the frequency to other agencies might be 50% of the years.

Worksheet 4. EWMP Water Supplier Benefit/Cost Ratio

EWMP Benefits ($/af)	$0
EWMP Costs ($/af)	$0
Benefit/Cost Ratio	

Part 5: EWMP Financial Analysis

If the water supplier is claiming an exemption based upon the lack of available funding, please discuss the reasons for this finding. Please include a copy of your latest financial statement and a list of other potential plan beneficiaries who have been contacted.

Details
--

EWMP 9: Automate Canal Structures

Summary of Analysis

Initial Evaluation Table

Is this EWMP being implemented at a satisfactory level?	Yes
Is this EWMP demonstrably inappropriate for implementation by the water supplier?	Yes
Is this EWMP technically infeasible given current technology or prevailing local conditions?	No

Potential Environmental Effects Summary Table

Source of Supply	Insignificant
Confined / Unconfined Groundwater Levels	Insignificant
Instream Flows	Insignificant
Drain Flows	Insignificant
Soil Erosion	Beneficial
Energy Use	Insignificant

Potential Third-Party Effects Summary Table

Confined / Unconfined Groundwater Levels	Insignificant
Instream Flows	Insignificant
Drain Flows	Insignificant
Wind / Water Soil Erosion	Beneficial

Indirect Economic Effects Summary Table

Farm Inputs	Insignificant
Local Farm Labor	Insignificant
Processing of Farm Products	Insignificant

EWMP Economic Analysis

Water Supplier B / C Ratio --

Can adequate funding be expected to be made available?
--

Is this EWMP accepted?
No

Discussion
--

Part 1: Information to Determine if Detailed Analysis is Required

A. Is this EWMP being implemented at a satisfactory level?
Yes

Details

(See WMP pages 31-34)

B. Is this EWMP demonstrably inappropriate for implementation by the water supplier?
Yes

Details
(See WMP pages 31-34)

C. Is this EWMP technically infeasible given current technology or prevailing local conditions?
No

Details
--

Part 2: General Information for Detailed Analysis

A. Does this EWMP impact any of the other EWMPs?
Yes

Details
(See WMP page 32)

B. Matrix about automated locations

Number of loactions within the distribution system which are automated:	8
Estimate the number of locations within the distribution system which could potentially be automated:	3

C. Description of potential canal system

Details
Three AMIL automatic gates could be installed to provide constant upstream water level over 5 miles of Lateral A estimated life is 30 years no water would be saved as a result of this EWMP.

D. Was this EWMP considered in coordination with any other EWMPs or other neighboring water suppliers?
Yes?

Details
This EWMP was considered with respect to EWMP 6, in that it would benefit the flexibility of water deliveries from Lateral A and reduce some O&M expenses. However, the District already implements a high level of flexibility to its Water Users and no water savings would result from the implementation of this EWMP. After considering this NBA and considering the small benefit as compared to the cost of installing 3 automatic gates, the District concludes that this EWMP is demonstrably inappropriate.

Part 3 EE: Environmental, Third-Party & Indirect Economic Analysis

A. Source of Supply

Will implementation of the EWMP result in reduced water demand in the water supplier's service area?
No

What will be the potential impact?
Insignificant

Details
(See page 33)

B. Confined/Unconfined Groundwater Levels

Are there any habitats in the water service area that are supported/supplied by the existing groundwater levels?
No

Will implementation of the EWMP affect groundwater levels?
No

Insignificant

Details
--

C. Instream Flows

Does the water supplier's distribution system contribute to flows in any other water courses?
No

Will implementation of the EWMP affect flows to any other water courses?
No

What will be the potential impact?
Insignificant

Details
--

D. Drain Flows

Does the water supplier's service area have drains that supply or support habitat?
No

Will these drain flows be reduced as a result of practices associated with the EWMP?
No

Do you anticipate that drain water quality will improve or degrade as a result of implementing the EWMP?
Neither

What will be the potential impact?
Insignificant

Details
--

E. Soil Erosion

Will implementation of the EWMP reduce the current amount of soil erosion in the water supplier's service area?
Yes

What will be the potential impact?
Beneficial

Details
(See WMP page 33)

F. Energy Use

Would this EWMP increase or decrease energy use (e.g. pump use, canal structure controls, etc.)?
Neither

What will be the potential impact?
Insignificant

Part 3 TPE: Environmental, Third-Party & Indirect Economic Analysis

A. Confined / Unconfined Ground Water Levels

Will implementation of the EWMP affect groundwater elevations?
No

What will be the potential impact?
Insignificant

Details
(See WMP page 33)

B. Instream Flows

Do the water supplier's distribution flows contribute to any natural streams?
No

Will implementation of the EWMP decrease or increase instream flows to any streams that supply or support any third party?
No

What will be the potential impact?
Insignificant

Details
--

C. Drain Flows

Do drain flows supply or support any third party user?
No

Do you anticipate that drain water conditions will be affected as a result of implementation of the EWMP?
Neither

What will be the potential impact?
Insignificant

Details
--

D. Wind / Water Soil Erosion

Will implementation of the EWMP reduce the current amount of soil erosion in the water supplier's service area?
Yes

What will be the potential impact?
Beneficial

Details
(See WMP pages 33-34)

Part 3 IEE: Environmental, Third-Party & Indirect Economic Analysis

A. Effects on local economies

Will the EWMP affect local economies through changes in on-farm operations (indirect economic effects)?
No

What will be the potential impact?
Insignificant

Details
--

B. Effects on farmers' purchases of crop inputs

Will practices associated with implementation of the EWMP increase or decrease farmers' purchases of crop inputs such as seed, fertilizer, irrigation equipment, etc.?
Neither

What will be the potential impact?
Insignificant

C. Effects on local employment

Will practices associated with implementation of the EWMP increase or decrease the hiring of local (county) farm workers?
Neither

Insignificant

D. Effects on local processing of farm produce

Will practices associated with implementation of the EWMP increase or decrease the local (county) processing of farm produce (i.e. canning of nuts, fruits, vegetables, and milk production supported by cows/pasture, etc.)?
Neither

What will be the potential impact?
Insignificant

Part 4: Economic Analysis

A. How much water (in acre-feet) is estimated to be conserved annually as a result of the EWMP?
0

Details
--

B. Does the EWMP result in water supplier capital costs and/or annual operation and maintenance costs?
Yes

Details
--

C. Would the EWMP reduce current water supplier water purchases, water diversions, and/or groundwater pumping?
No

D. Would the EWMP delay or eliminate the need to complete future water supply augmentation and/or distribution projects?
No

E. Would the EWMP result in additional sales of water supplies to existing customers, new customers, and/or other agencies?
No

Details
--

Economic Analysis Worksheets

Worksheet 1. Estimated amount of water conserved annually:
0

Worksheet 2a. EWMP Water Supplier Capital Costs

Capital Cost Category	Item	Cost	Contingency Cost	Subtotal (rounded)	
			Percent	Dollars	
Planning	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Land	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Structure	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0

Equipment	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Mitigation	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Other	--	$ --	15%	$0	$0
Subtotal Capital Costs (rounded)					**$0**
Deduct Expected Salvage Value after			25 Years		**$0**
Total Capital Costs					**$0**
Capital Recovery Factor at			6% for 25 Years		**0.0782**
Annual Capital Costs (Total Capital Costs x Capital Recovery Factor)					**$0**

Worksheet 2b. EWMP Water Supplier Capital Costs

Annual Operating Costs	Annual Maintenance Costs	Other Annual Costs [1]	Total Annual O&M Costs
$0	$0	$0	$0

[1]Other annual costs not included in O&M, such as annual environmental mitigation costs.

Worksheet 2c. EWMP Water Supply Costs/af Summary

Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Annual Conserved Water (af)	Cost / af
$0	$0	$0	0	$0

Worksheet 3a. EWMP Water Supplier Avoided Costs - Current Sources

Source of Supply Avoided	Amount of Water (af)	Annual O&M Costs ($ / af)	Sources to Be Used as Benefit Measure
--	0	$0	--

Worksheet 3b. EWMP Water Supplier Avoided Costs - Future Sources

Alternative	Total Capital Costs	Capital Recovery Factor [1]	Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Annual Yield (af)	Cost / af
--	$0	0.0782	$0	$0	$0	--	$0

[1]For a period of 25 years and 6% discount rate.

Worksheet 3c. Water Supplier Revenue Effects

Parties Purchasing Conserved Water	Amount of Water (af)	Selling Price ($/af)	Expected Frequency of Sales (%) [1]	Expected Selling Price ($/af)	Option Fee ($/af)	Total Selling Price ($/af)
--	0	$0	-- %	$0	$0	$0

[1]During a 25-year analysis period, how many years are water sales expected to occur? For example, water sales to farmers might be expected to occur 90% of the years, whereas the frequency to other agencies might be 50% of the years.

Worksheet 4. EWMP Water Supplier Benefit/Cost Ratio

EWMP Benefits ($/af)	$0
EWMP Costs ($/af)	$0
Benefit/Cost Ratio	

Part 5: EWMP Financial Analysis

If the water supplier is claiming an exemption based upon the lack of available funding, please discuss the reasons for this finding. Please include a copy of your latest financial statement and a list of other potential plan beneficiaries who have been contacted.

Details
--

EWMP 10: Water Measurement / Water Use Update

Summary of Analysis

Potential Environmental Effects Summary Table

Source of Supply	Insignificant
Confined / Unconfined Groundwater Levels	Insignificant
Shallow Groundwater Elevations	Insignificant
Instream Flows	Insignificant
Drain Flows	Insignificant
Soil Erosion	Insignificant
Energy Use	Insignificant

Potential Third-Party Effects Summary Table

Confined / Unconfined Groundwater Levels	Insignificant
Instream Flows	Insignificant
Drain Flows	Insignificant
Wind / Water Soil Erosion	Insignificant

Indirect Economic Effects Summary Table

Farm Inputs	Insignificant
Local Farm Labor	Insignificant
Processing of Farm Products	Insignificant

EWMP Economic Analysis

Water Supplier B / C Ratio --

Can adequate funding be expected to be made available?
Yes

Is this EWMP accepted?
No

Discussion
(See WMP page 37)

Part 1: General Information for Detailed Analysis

A. Does this EWMP impact any of the other EWMPs?
No

Details
(See pages 34-37)

B. Description of measurement and calculation practices

Details
(See WMP Attachment 6)

C. Was this EWMP considered in coordination with any other EWMPs or other neighboring water suppliers?
No

Details
--

Part 2 EE: Environmental, Third-Party & Indirect Economic Analysis

A. Source of Supply

Will implementation of the EWMP result in reduced water demand in the water supplier's service area?
No

What will be the potential impact?
Insignificant

Details
(See WMP pages 35-36)

B. Confined / Unconfined Groundwater Levels

Are there any habitats in the water service area that are supported / supplied by the existing groundwater levels?
No

Will implementation of the EWMP affect groundwater levels?
No

What will be the potential impact?
Insignificant

Details
--

C. Shallow Groundwater

Is the water supplier located in an area where shallow groundwater and / or water quality problems (i.e. salinity, selenium) limit the use of land and / or drainage water?
Yes

Do you anticipate that shallow groundwater conditions will improve or degrade as a result of implementation of the EWMP?
Neither

What will be the potential impact?
Insignificant

Details
(See WMP page 36)

D. Instream Flows

Does the water supplier's distribution system contribute to flows in any other water courses?
No

Will implementation of the EWMP affect flows to any other water courses?
No

What will be the potential impact?
Insignificant

Details
--

E. Drain Flows

Does the water supplier's service area have drains that supply or support habitat?
No

Will these drain flows be reduced as a result of practices associated with the EWMP?

No

Do you anticipate that drain water quality will improve or degrade as a result of implementing the EWMP?
Neither

What will be the potential impact?
Insignificant

Details
--

F. Soil Erosion

Will implementation of the EWMP reduce the current amount of soil erosion in the water supplier's service area?
No

What will be the potential impact?
Insignificant

Details
--

G. Energy Use

Would this EWMP increase or decrease energy use (e.g. pump use, canal structure controls, etc.)?
Neither

What will be the potential impact?
Insignificant

Part 2 TPE: Environmental, Third-Party & Indirect Economic Analysis

A. Confined / Unconfined Ground Water Levels

Will implementation of the EWMP affect groundwater elevations?
No

What will be the potential impact?
Insignificant

Details
(See WMP page 36)

B. Instream Flows

Do the water supplier's distribution flows contribute to any natural streams?
No

Will implementation of the EWMP decrease or increase instream flows to any streams that supply or support any third party?
Neither

What will be the potential impact?
Insignificant

Details
--

C. Drain Flows

Do drain flows supply or support any third party user?
No

Do you anticipate that drain water conditions will be affected as a result of implementation of the EWMP?
Neither

What will be the potential impact?

Insignificant

Details
--

D. Wind/Water Soil Erosion

Will implementation of the EWMP reduce the current amount of soil erosion in the water supplier's service area?
No

What will be the potential impact?
Insignificant

Details
--

Part 2 IEE: Environmental, Third-Party & Indirect Economic Analysis

A. Effects on local economies

Will the EWMP affect local economies through changes in on-farm operations (indirect economic effects)?
No

What will be the potential impact?
Insignificant

Details
--

B. Effects on farmers' purchases of crop inputs

Will practices associated with implementation of the EWMP increase or decrease farmers' purchases of crop inputs such as seed, fertilizer, irrigation equipment, etc.?
Neither

What will be the potential impact?
Insignificant

C. Effects on local employment

Will practices associated with implementation of the EWMP increase or decrease the hiring of local (county) farm workers?
Neither

What will be the potential impact?
Insignificant

D. Effects on local processing of farm produce

Will practices associated with implementation of the EWMP increase or decrease the local (county) processing of farm produce (i.e. canning of nuts, fruits, vegetables, and milk production supported by cows/pasture, etc.)?
Neither

What will be the potential impact?
Insignificant

Part 3: Economic Analysis

A. How much water (in acre-feet) is estimated to be conserved annually as a result of the EWMP?
0

Details
The water demand is based on crop water requirements and is not dependent on the measurement of water deliveries from the District's conveyance facilities. Water Users request a certain amount on a daily basis throughout the irrigation seasons. Every turnout from the District's canals are measured with acceptable methods and devices. Measurement enables the Water Users to better manage and account for stored and

applied water. However, shortages and spills from the Delivery system are managed by the Water Users' internal distribution systems. Therefore, if deliveries are short or in excess of requested amounts due to an error in measurement, water can respetively deliver or store water in the internal systems to meet the daily crop water requirements.

B. Does the EWMP result in water supplier capital costs and/or annual operation and maintenance costs?

Yes

Details

--

C. Would the EWMP reduce current water supplier water purchases, water diversions, and/or groundwater pumping?

No

D. Would the EWMP delay or eliminate the need to complete future water supply augmentation and/or distribution projects?

No

E. Would the EWMP result in additional sales of water supplies to existing customers, new customers and/or other agencies?

No

Details

The District measures every turnout from the District's conveyance facilities. More importantly, no additional water would be conserved by greater accurate measuring devices, as a result of the Water Users' ability to compensate any shortages or spills through their internal distribution systems. The Water User's extensive tailwater recovery systems also enable them to manage water deliveries in a more efficient and effective manner.

Economic Analysis Worksheets

Worksheet 1. Estimated amount of water conserved annually:

0

Worksheet 2a. EWMP Water Supplier Capital Costs

Capital Cost Category	Item	Cost	Contingency Cost	Subtotal (rounded)	
			Percent	Dollars	
Planning	--	$2500	15%	$375	$2875
	--	$ --	15%	$0	$0
Land	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Structure	--	$25000	15%	$3750	$28750
	--	$ --	15%	$0	$0
Equipment	--	$2000000	15%	$300000	$2300000
	--	$ --	15%	$0	$0
Mitigation	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Other	--	$ --	15%	$0	$0
Subtotal Capital Costs (rounded)					**$2331625**
Deduct Expected Salvage Value					

after	25 Years	**$0**
Total Capital Costs		**$2331625**
Capital Recovery Factor at	6% for 25 Years	**0.0782**
Annual Capital Costs (Total Capital Costs x Capital Recovery Factor)		**$182395**

Worksheet 2b. EWMP Water Supplier Capital Costs

Annual Operating Costs	Annual Maintenance Costs	Other Annual Costs [1]	Total Annual O&M Costs
$0	$24000	$0	$24000

[1]Other annual costs not included in O&M, such as annual environmental mitigation costs.

Worksheet 2c. EWMP Water Supply Costs/af Summary

Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Annual Conserved Water (af)	Cost / af
$182395	$24000	$206395	0	$0

Worksheet 3a. EWMP Water Supplier Avoided Costs - Current Sources

Source of Supply Avoided	Amount of Water (af)	Annual O&M Costs ($ / af)	Sources to Be Used as Benefit Measure
--	0	$0	--

Worksheet 3b. EWMP Water Supplier Avoided Costs - Future Sources

Alternative	Total Capital Costs	Capital Recovery Factor [1]	Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Annual Yield (af)	Cost / af
--	$0	0.0782	$0	$0	$0	--	$0

[1]For a period of 25 years and 6% discount rate.

Worksheet 3c. Water Supplier Revenue Effects

Parties Purchasing Conserved Water	Amount of Water (af)	Selling Price ($ / af)	Expected Frequency of Sales (%) [1]	Expected Selling Price ($ / af)	Option Fee ($ / af)	Total Selling Price ($ / af)
--	0	$150	100%	$150	$0	$150

[1]During a 25-year analysis period, how many years are water sales expected to occur? For example, water sales to farmers might be expected to occur 90% of the years, whereas the frequency to other agencies might be 50% of

the years.

Worksheet 4. EWMP Water Supplier Benefit/Cost Ratio

EWMP Benefits ($/af)	$0
EWMP Costs ($/af)	$0
Benefit/Cost Ratio	

Part 4: EWMP Financial Analysis

If the water supplier is claiming an exemption based upon the lack of available funding, please discuss the reasons for this finding. Please include a copy of your latest financial statement and a list of other potential plan beneficiaries who have been contacted.

Details
--

EWMP 11: Pricing and Incentives

Summary of Analysis

Potential Environmental Effects Summary Table

Source of Supply	Insignificant
Confined / Unconfined Groundwater Levels	Insignificant
Shallow Groundwater Elevations	Insignificant
Instream Flows	Insignificant
Drain Flows	Insignificant
Soil Erosion	Insignificant
Energy Use	Insignificant

Potential Third-Party Effects Summary Table

Confined / Unconfined Groundwater Levels	Negative
Instream Flows	Insignificant
Drain Flows	Insignificant
Wind / Water Soil Erosion	Insignificant

Indirect Economic Effects Summary Table

Farm Inputs	Indeterminable
Local Farm Labor	Negative
Processing of Farm Products	Insignificant

EWMP Economic Analysis

Water Supplier B / C Ratio	--

Can adequate funding be expected to be made available?
Yes

Is this EWMP accepted?
No

Discussion
This EWMP is not accepted due to the lack of control of all waters delivered into the District and the efficient manner in which water supplies are conjunctively utilized. The effects of pricing surface water supplies would be detrimental to groundwater conditions and the continual conjunctive use practices.

Part 1: General Information for Detailed Analysis

A. Description of Objective

Details
The District's pricing policy must support conjunctive use efforts by the District and its Water Users. A pricing incentive must not negatively impact the continous practices of the Distric's wet year-dry year water management programs. There are institutional as well that need to be considered since the District does not control all water supplies and does not determine the costs for its supplies.

B. Practices

1. Tiered water pricing (increasing block rates)
No

Details
(See WMP Pages 39-40 for Explanation)

2. Wet vs. dry year pricing structure
No

Details
(See WMP page 40 for Explanation)

3. Uniform block pricing
No

Details
(See WMP page 40 for Explanation)

4. Other
No

Details
--

5. Supplier buy-back program
No

Details
(See WMP pages 40-41 for Explanation)

6. Low-interest loans
No

Details
(See WMP page 41 for Explanation)

7. Cost sharing for on-farm improvements
No

Details
(See WMP page 41 for Explanation)

C. Does this EWMP impact any of the other EWMPs?
Yes

Details
(See WMP pages 41-42 for Explanation)

D. Was this EWMP considered in coordination with any other EWMPs or other neighboring water suppliers?
No

Details
--

Part 2 EE: Environmental, Third-Party & Indirect Economic Analysis

A. Source of Supply

Will implementation of the EWMP result in reduced water demand in the water supplier's service area?
No

What will be the potential impact?
Insignificant

Details
(See WMP page 42 for Explanation)

B. Confined/Unconfined Groundwater Levels

Are there any habitats in the water service area that are supported/supplied by the existing

groundwater levels?
No

Will implementation of the EWMP affect groundwater levels?
Neither

What will be the potential impact?
Insignificant

Details
--

C. Shallow Groundwater

Is the water supplier located in an area where shallow groundwater and/or water quality problems (i.e. salinity, selenium) limit the use of land and/or drainage water?
Yes

Do you anticipate that shallow groundwater conditions will improve or degrade as a result of implementation of the EWMP?
Neither

What will be the potential impact?
Insignificant

Details
(See WMP page 42 for Explanation)

D. Instream Flows

Does the water supplier's distribution system contribute to flows in any other water courses?
No

Will implementation of the EWMP affect flows to any other water courses?
No

What will be the potential impact?
Insignificant

Details
--

E. Drain Flows

Does the water supplier's service area have drains that supply or support habitat?
No

Will these drain flows be reduced as a result of practices associated with the EWMP?
No

Do you anticipate that drain water quality will improve or degrade as a result of implementing the EWMP?
Neither

What will be the potential impact?
Insignificant

Details
--

F. Soil Erosion

Will implementation of the EWMP reduce the current amount of soil erosion in the water supplier's service area?
No

What will be the potential impact?
Insignificant

Details
--

Would this EWMP increase or decrease energy use (e.g. pump use, canal structure controls, etc.)?
Neither

What will be the potential impact?
Insignificant

Part 2 TPE: Environmental, Third-Party & Indirect Economic Analysis

A. Confined/Unconfined Ground Water Levels

Will implementation of the EWMP affect groundwater elevations?
Yes

What will be the potential impact?
Negative

Details
(See WMP page 42 for Explanation)

B. Instream Flows

Do the water supplier's distribution flows contribute to any natural streams?
No

Will implementation of the EWMP decrease or increase instream flows to any streams that supply or support any third party?
No

What will be the potential impact?
Insignificant

Details
--

C. Drain Flows

Do drain flows supply or support any third party user?
No

Do you anticipate that drain water conditions will be affected as a result of implementation of the EWMP?
Neither

What will be the potential impact?
Insignificant

Details
--

D. Wind/Water Soil Erosion

Will implementation of the EWMP reduce the current amount of soil erosion in the water supplier's service area?
No

What will be the potential impact?
Insignificant

Details
--

Part 2 IEE: Environmental, Third-Party & Indirect Economic Analysis

A. Effects on local economies

Will the EWMP affect local economies through changes in on-farm operations (indirect economic effects)?

Yes

What will be the potential impact?
Negative

Details
(See WMP page 43 for Explanation)

B. Effects on farmers' purchases of crop inputs

Will practices associated with implementation of the EWMP increase or decrease farmers' purchases of crop inputs such as seed, fertilizer, irrigation equipment, etc.?
Unknown

What will be the potential impact?
Indeterminable

C. Effects on local employment

Will practices associated with implementation of the EWMP increase or decrease the hiring of local (county) farm workers?
Decrease

What will be the potential impact?
Negative

D. Effects on local processing of farm produce

Will practices associated with implementation of the EWMP increase or decrease the local (county) processing of farm produce (i.e. canning of nuts, fruits, vegetables, and milk production supported by cows/pasture, etc.)?
Neither

What will be the potential impact?
Insignificant

Part 3: Economic Analysis

A. How much water (in acre-feet) is estimated to be conserved annually as a result of the EWMP?
0

Details
(See WMP page 43 for Explanation)

B. Does the EWMP result in water supplier capital costs and/or annual operation and maintenance costs?
No

Details
(See WMP page 43 for Explanation)

C. Would the EWMP reduce current water supplier water purchases, water diversions, and/or groundwater pumping?
No

D. Would the EWMP delay or eliminate the need to complete future water supply augmentation and/or distribution projects?
No

E. Would the EWMP result in additional sales of water supplies to existing customers, new customers, and/or other agencies?
No

Details
No water is conserved and therefore, no water would be replacing any of the water deliveries made to the District, no beneficial project would be delayed or eliminated, and no water would be available for selling since the District's Water Users are highly efficient in their water management practices.

Economic Analysis Worksheets

Worksheet 1. Estimated amount of water conserved annually:
0

Worksheet 2a. EWMP Water Supplier Capital Costs

Capital Cost Category	Item	Cost	Contingency Cost		Subtotal (rounded)
			Percent		Dollars
Planning	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Land	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Structure	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Equipment	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Mitigation	--	$ --	15%	$0	$0
	--	$ --	15%	$0	$0
Other	--	$ --	15%	$0	$0
Subtotal Capital Costs (rounded)					**$2331625**
Deduct Expected Salvage Value after			25 Years		**$0**
Total Capital Costs					**$2331625**
Capital Recovery Factor at			6% for 25 Years		**0.0742**
Annual Capital Costs (Total Capital Costs x Capital Recovery Factor)					**$173051**

Worksheet 2b. EWMP Water Supplier Capital Costs

Annual Operating Costs	Annual Maintenance Costs	Other Annual Costs [1]	Total Annual O&M Costs
$0	$0	$0	$24000

[1]Other annual costs not included in O&M, such as annual environmental mitigation costs.

Worksheet 2c. EWMP Water Supply Costs/af Summary

Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Annual Conserved Water (af)	Cost / af
$173051	$24000	$197051	0	$0

Worksheet 3a. EWMP Water Supplier Avoided Costs - Current Sources

Source of Supply Avoided	Amount of Water (af)	Annual O&M Costs ($/af)	Sources to Be Used as Benefit Measure
--	0	$0	--

Worksheet 3b. EWMP Water Supplier Avoided Costs - Future Sources

Alternative	Total Capital Costs	Capital Recovery Factor [1]	Annual Capital Costs	Annual O&M Costs	Total Annual Costs	Annual Yield (af)	Cost/af
--	$0	0.0742	$0	$0	$0	--	$0

[1]For a period of 25 years and 6% discount rate.

Worksheet 3c. Water Supplier Revenue Effects

Parties Purchasing Conserved Water	Amount of Water (af)	Selling Price ($/af)	Expected Frequency of Sales (%) [1]	Expected Selling Price ($/af)	Option Fee ($/af)	Total Selling Price ($/af)
--	0	$0	-- %	$0	$0	$0

[1]During a 25-year analysis period, how many years are water sales expected to occur? For example, water sales to farmers might be expected to occur 90% of the years, whereas the frequency to other agencies might be 50% of the years.

Worksheet 4. EWMP Water Supplier Benefit/Cost Ratio

EWMP Benefits ($/af)	$0
EWMP Costs ($/af)	$0
Benefit/Cost Ratio	

Part 4: EWMP Financial Analysis

If the water supplier is claiming an exemption based upon the lack of available funding, please discuss the reasons for this finding. Please include a copy of your latest financial statement and a list of other potential plan beneficiaries who have been contacted.

Details
No exemption is requested.

Attachment 7

TULARE LAKE BASIN WATER STORAGE DISTRICT

DELIVERY OF TREATED WASTEWATER TO LANDS WITHIN THE DISTRICT CONVEYED BY INDIVIDUAL WATER USERS

Quantity of Treated Wastewater Delivered to Lands within the District (acre-feet)

YEAR	CITY OF LEMOORE		CITY OF KETTLEMEN
1974	368		-
1975	1,120		-
1976	1,654		-
1977	1,251		-
1978	1,628		-
1979	1,825		64
1980	1,825		160
1981	1,880		160
1982	1,679		160
1983	1,930		160
1984	1,958		160
1985	1,754		160
1986	2,029		160
1987	2,102		160
1988	2,102		160
1989	1,964		200
1990	1,964		151
1991	1,931		273
1992	2,464		139
1993	2,285		157
1994	2,429		150
1995	2,408		131
1996	2,458		137
1997	2,442		130
1998	2,805		136
TOTALS	**48,255**		**3,108**
	(1974 - 1998)		**(1974 - 1998)**
AVERAGE	**1,930**		**155**
	(1974 - 1998)		**(1974 - 1998)**

NOTES:

CITY OF LEMOORE

- **Treated wastewater is not conveyed through District facilities.**
- **Commenced deliveries of treated wastewater discharged into the Blakeley Canal as of August 1974, estimated amount based on deliveries for Oct. - Dec.**
- **Agreement between City of Lemoore and Westlake Farms, Inc. was signed on April 5, 1972.**

CITY OF KETTLEMAN

- **Commenced deliveries of treated wastewater discharged into the Blakeley Canal as of August 1979, estimated amount based on approximate average of 160 A.F. x 40% assumed pro rate delivery for Aug. - Dec.**
- **For 1980 - 1989 Kettlemen City's discharge treated wastewater is estimated based on approximate average of 160 A.F. for 1989 through 1998**
- **Agreement between Kettlemen City Sanitary District and Tulare Lake Reclamation District No. 761 (Westlake Farms, Inc.) dated June 5, 1991.**

Attachment 8

TULARE LAKE BASIN WATER STORAGE DISTRICT
EXAMPLES OF VOLUNTARY TRANSFERS

DESCRIPTION OF TRANSFER	PARTY OR PARTIES RECEIVING WATER	PARTY OR PARTIES TRANSFERRING WATER	QUANTITY OF WATER DELIVERED (ACRE FEET)
Transfers Received due to 1977 Drought 1/	TLBWSD/various Water Users	MWD, SBVWD, CVCWD, DWA	28,121
1977 Emergency Relief Water 2/	TLBWSD/various Water Users	KCWA	4,409
Yuba County Water Agency Transfer 3/	TLBWSD/various Water Users	YCWA	84,712
California Drought Water Bank 4/	TLBWSD/various Water Users	DWR/various sellers	35,075
Short-Term Water Purchase Program	TLBWSD/various Water Users	DWR/various sellers	11,380
Like Landowner Transfer 5/	Westlands Water District	Tulare Lake Basin WSD/ Private Landowner	Up to 4,000
Transfer to SWP Turnback Pool Program 6/	SWP Turnback Pool Program/various purchasers	TLBWSD/various Water Users	89,100

NOTES:

1/ Transfer of Metropolitan Water District of Southern California's 1977 Table A State Project Water (SPW) (25,312 acre feet). Also includes transfer of San Bernardino Valley Municipal Water District's, Coachella Valley County Water District's, and Desert Water Agency's 1977 Table A SPW (2,809 acre feet).

2/ Transfer of water in late 1985 and early 1986 from Kern County Water Agency who purchased 1977 Emergency Relief Water in 1983 from DWR, originally purchased by DWR during the 1977 Drought.

3/ Transfer water made available by Yuba County Water Agency and delivered during 1989 (53,501 acre feet) and 1990 (31,211 acre feet).

4/ California Drought Water Bank in which the District participated in 1992 (31,550 acre feet) and 1994 (3,525 acre feet).

5/ Transfer of up to 4,000 acre feet of Table A State Project Water to various TLBWSD landowner's lands in Westlands Water District constituting a "landowner to landowner" transfer.

6/ Transfer of 1997 Table A water to the SWP Turnback Pool Program.

Attachment 9

TULARE LAKE BASIN WATER STORAGE DISTRICT

SUMMARY OF FLOWRATE MEASURING DEVICES FOR TURNOUTS FROM DISTRICT CONVEYANCE FALCILITIES

District Conveyance Facility	MEASURING DEVICE	Method of Recording Water Levels
KINGS RIVER EMPIRE WEIR NO. 2 POOL	- Parshall Flume	Float still well and chart recorder
	- Rectangular Sluice Gate	Float still well and chart recorder
	- Sharp Crested Weir	Float still well and chart recorder

STATE PROJECT WATER: LATERAL A	- Propeller-type Flowmeters	Flow totalizer
	- Propeller-type Flowmeters	Flow totalizer
	- Parshall flume	Float still well and chart recorder
	- Parshall flume	Float still well and chart recorder
	- Venturi Meter	Float still wells and differential recorders

STATE PROJECT WATER: LATERAL B	- Cipolletti Weir	Float still well and chart recorder
	- Parshall flume	Float still well and chart recorder
	- Propeller-type Flowmeters	Flow totalizer
	- Venturi Meter	Float still wells and differential recorders
	- Venturi Meter	Float still wells and differential recorders

13 total turnouts from District conveyance facilities.

Attachment 10

C. PAYMENT PROVISIONS

22. DELTA WATER CHARGE.

(a) Payment of Reimbursable Costs of Project Conservation Facilities

The payments to be made by each contractor for project water shall include an annual charge designated as the Delta Water Charge. This charge, together with the total revenues derived during the project repayment period from the sale or other disposal of electrical energy generated in connection with operation of project conservation facilities, shall return to the State during the project repayment period all costs of the project conservation facilities including capital, operation, maintenance, power, and replacement costs, which are allocated to the purpose of water conservation in, above, and below the Delta pursuant to subdivision (e) of this article during the project repayment period. Wherever reference is made, in connection with the computation or determination of the Delta Water Charge, to the costs of any facility or facilities included in the System, such reference shall be only to those costs of such facility or facilities which are reimbursable by the contractors as determined by the State.

(b) Delta Water Rate Until 1970; Components of Rate Thereafter

[33]For each contractor receiving project water in any year through December 31, 1969, the Delta Water Charge shall be the product of $3.50 and the contractor's annual entitlement to project water for the respective year. For each contractor receiving project water in the year 1970, the Delta Water Charge shall be the product of $6.65 and the contractor's annual entitlement to project water for that year. The $6.65 rate for the year 1970 shall consist of a capital cost component of $5.04 and a minimum operation, maintenance, power and replacement component of $1.61. For each contractor receiving project water in the year 1971, the Delta Water Charge shall be the product of $7.24 and the contractor's annual entitlement to project water for that year. The $7.24 rate for the year 1971 shall consist of a capital cost component of $5.44 and a minimum operation, maintenance, power and replacement component of $1.80. After December 31, 1971, the Delta Water Charge shall consist and be the sum of the following components as these are computed in accordance with subdivisions (c) and (d) of this article: a capital cost component; a minimum operation, maintenance, power and replacement component; and a variable operation, maintenance, power and replacement component.

(c) Computation of the Components of the Delta Water Rate

The capital cost, the minimum operation, maintenance, power, and replacement, and the variable operation, maintenance, power, and replacement components of the Delta Water Charge, together with that portion of the revenues

[33] Amended: Amendments No. 5 and 6

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derived during the project repayment period from the sale or other disposal of electrical energy generated in connection with operation of project conservation facilities which is allocated by the State to repayment of the respective category of costs, shall return to the State during the project repayment period, respectively, the following categories of the costs allocated to the purpose of water conservation in, above, and below the Delta pursuant to subdivision (e) of this article: (1) capital costs; (2) operation, maintenance, power, and replacement costs incurred irrespective of the amount of project water delivered to the contractors; and (3) operation, maintenance, power, and replacement costs incurred in an amount which is dependent upon and varies with the amount of project water delivered to the contractors: *Provided*, That each of the above categories of costs shall be inclusive of the appropriate costs properly chargeable to the generation and transmission of electrical energy in connection with operation of project conservation facilities. Each component of the Delta Water Charge shall be computed on the basis of a rate which, when charged during the project repayment period for each acre-foot of the sum of the yearly totals of annual entitlements of all contractors, will be sufficient, together with that portion of the revenues derived during the project repayment period from the sale or other disposal of electrical energy generated in connection with operation of project conservation facilities which is allocated by the State to repayment of the respective category of costs, to return to the State during the project repayment period all costs included in the respective category of costs covered by that component. Each such rate shall be computed in accordance with the following formula:

$$\frac{(c_1 - r_1)(1+i)^{-1} + (c_2 - r_2)(1+i)^{-2} + \ldots + (c_n - r_n)(1+i)^{-n}}{e_1(1+i)^{-1} + e_2(1+i)^{-2} + \ldots + e_n(1+i)^{-n}}$$

Where:

i = The project interest rate.

c = The total costs included in the respective category of costs for the respective year of the project repayment period.

r = That portion of the revenues derived from the sale or other disposal of electrical energy allocated by the State to repayment of the costs included in the respective category for the respective year of the project repayment period.

1, 2, and n appearing below c and r = The respective year of the project repayment period for which costs are included in the respective category, n being the last year of the project repayment period.

e = With respect to the capital cost and minimum operation, maintenance, power, and replacement components, the total of annual entitlements to project water of all contractors for the respective year of the project repayment period.

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e	=	With respect to the variable operation, maintenance, power, and replacement component, the total of the amounts of project water delivered to all contractors for the respective year of the expired portion of the project repayment period, together with the total of annual entitlements to project water of all contractors for the respective year of the unexpired portion of the project repayment period.
1, 2, and n appearing below e	=	The respective year of the project repayment period in which the annual entitlements or project water deliveries occur, n being the last year of the project repayment period.
n used as an exponent	=	The number of years in the project repayment period.

(d) Application of Component Rates

The capital cost and minimum operation, maintenance, power, and replacement components of the Delta Water Charge shall be the product of the appropriate rate computed under subdivision (c) of this article, and the contractor's annual entitlement to project water for the respective year. The variable operation, maintenance, power, and replacement component of the charge shall be the product of the appropriate rate computed under subdivision (c) of this article and the number of acre-feet of project water delivered to the contractor during the respective year: *Provided*, That when project water has been requested by a contractor and delivery thereof has been commenced by the State, and, through no fault of the State, such water is wasted as a result of failure or refusal by the contractor to accept delivery thereof, said variable component during such period shall be the product of said rate per acre-foot and the sum of the number of acre-feet of project water delivered to the contractor and the number of acre-feet wasted.

(e) Allocations to Project Purposes

[34]Prior to the time that additional project conservation facilities or supplemental conservation facilities are constructed, the Delta Water Charge shall be determined on the basis of an allocation to project purposes, by the separable cost-remaining benefits method, of all actual and projected costs of all those initial project conservation facilities located in and above the Delta, and upon an allocation to the purposes of water conservation and water transportation, by the proportionate use of facilities method, of all actual and projected costs of the following project facilities

[34] Amended: Amendment No. 7

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located below the Delta: The aqueduct intake facilities at the Delta, Pumping Plant I (Delta Pumping Plant), the aqueduct from the Delta to San Luis Forebay (O'Neill Forebay), San Luis Forebay (O'Neill Forebay), and San Luis Reservoir: *Provided*, That all of the actual and projected costs properly chargeable to the generation and transmission of electrical energy in connection with operation of project conservation facilities shall be allocated to the purpose of water conservation in, above, and below the Delta: *Provided further*, That allocations to purposes the cost of which are to be paid by the United States shall be as determined by the United States.

Commencing in the year in which the State first awards a major construction contract for construction of a major feature of additional project conservation facilities, or first commences payments under a contract with a federal agency in the event a major feature of additional project conservation facilities is constructed by such federal agency under an agreement requiring the State to pay all or part of the costs of such construction, the Delta Water Charge shall be determined on the basis of the foregoing allocations and upon an allocation to project purposes, by the separable costs-remaining benefits method and subject to the foregoing provisos, of all projected costs of such feature of the additional project conservation facilities: *Provided*, That if the agreement with such federal agency allows repayment of costs of a portion of a facility to be deferred, the associated costs of such portion shall be excluded from the Delta Water Charge computations until repayment of such deferred costs or interest thereon is commenced by the State: *Provided further*, That all costs of additional project conservation facilities incurred prior to the award of a major construction contract, shall be included in the Delta Water Charge computations in the year in which they are incurred.

(f) Yearly Recomputation of Rate After 1970

The rates to be used in determining the components of the Delta Water Charge pursuant to subdivision (d) of this article and to become effective on January 1, 1970, shall be computed by the State in accordance with subdivision (c) of this article prior to that date. Such computation shall include an adjustment which shall account for the difference, if any, between revenues received by the State under the Delta Water Charge prior to January 1, 1970, and revenues which would have been received under the charge prior to that date had it been computed and charged in accordance with subdivisions (c) and (d) of this article. Upon such computation, a document establishing such rates shall be prepared by the State and attached to this contract as an amendment of this article. The State shall recompute such rates each year thereafter, and each such recomputation shall take account of and reflect increases or decreases from year to year in projected costs, outstanding reimbursable indebtedness of the State incurred to construct the project conservation facilities described in subdivision (e) of this article, annual entitlements, deliveries of project water, project interest rate, revenues from the sale or other disposal of electrical energy, and all other factors which are determinative of such rates. In addition, each such recomputation shall include an adjustment of the rates for succeeding years which shall account for the differences, if any, between projections of costs used by

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the State in determining said rates for all preceding years, and actual costs incurred by the State during such years. Upon each such recomputation, an appropriately revised copy of the document establishing such rates shall be prepared by the State and attached to this contract as an amendment of this article.

(g) Supplemental Conservation Facilities

[35]Upon the construction of supplemental conservation facilities, the Delta Water Charge shall be paid by all contractors for supplemental water, as well as by contractors for project water, and, together with revenues derived from the sale or other disposal of electrical energy generated in connection with operation of project conservation facilities and supplemental conservation facilities, shall return to the State, in addition to those costs of the project conservation facilities allocated to the purpose of water conservation in, above, and below the Delta pursuant to subdivision (e) of this article, all costs of such supplemental conservation facilities, including capital, operation, maintenance, power, and replacement costs which are allocated to the purpose of water conservation, in, above, and below the Delta pursuant hereto. Commencing in the year in which the State first awards a major construction contract for construction of a major feature of any supplemental conservation facilities, or first commences payments under a contract with a federal agency in the event a major feature of supplemental conservation facilities is constructed by such federal agency under an agreement requiring the State to pay all or part of the costs of such construction, the Delta Water Charge shall be determined on the basis of the allocations made pursuant to subdivision (e) of this article, and upon an allocation to project purposes, by the separable costs-remaining benefits method and subject to provisos corresponding to those contained in said subdivision (e), of all projected costs of such feature of the supplemental conservation facilities. Commencing in the same year, the computation of the rates to be used in determining the components of the Delta Water Charge shall include the annual entitlements to water under all contracts for supplemental water. If the repayment period of any bonds sold to construct supplemental conservation facilities or the repayment period under any agreement with a federal agency for repayment of the costs of supplemental conservation facilities constructed by such federal agency extends beyond the repayment period of the contract, the Delta Water Charge shall be determined and redetermined on the basis of such extended repayment period as the State determines to be appropriate: *Provided*, That if the agreement with such federal agency allows repayment of costs of a portion of a facility to be deferred, the associated costs of such portion shall be excluded from the Delta Water Charge computations until repayment of such deferred costs or interest thereon is commenced by the State.

(h) [36]The determination of the rate for water under the Delta Water Charge shall be made by including the appropriate costs and quantities of water, calculated in accordance with subdivisions (c), (d) and (e) above, for all additional project

[35] Amended: Amendment No. 7
[36] Amended: Amendment No. 18

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conservation facilities as defined in Article 1(h) hereinabove. In the event a Local Project as defined in Article 1(h)(2) will, pursuant to written agreement between the State and the sponsoring contractor, be considered and treated as an additional project conservation facility for less than the estimated life of the facility, the rate under the Delta Water Charge will be determined on the basis of that portion of the appropriate cost and water supply associated with such facility as the period of time during which such facility shall be considered as an additional project conservation facility bears to the estimated life of such facility. No costs for the construction or implementation of any Local Project are to be included in the Delta Water Charge unless and until the written agreement required by Article 1(h) has been entered into.

(i) [37]In calculating the rate for project water to be paid by each contractor for the Delta Water Charge under subdivisions (c), (d) and (e) above, the component for operation, maintenance, power and replacement costs shall include, but not be limited to, all costs to the State incurred in purchasing water, which is competitive with alternative sources as determined by the State, for delivery as project water.

(j) [38]Notwithstanding provisions of Article 22 (a) through (i), the capital cost component and the minimum OMP&R component of the Delta Water Charge shall include an annual charge to recover the Agency's <District's> share of the conservation portion of the water system revenue bond financing costs. Charges to the Agency <District> for these costs shall be calculated in accordance with provisions in Article 50 of this contract. Charges for the conservation portion of the water system revenue bond financing costs shall not be affected by any reductions in payments pursuant to Article 51.

23. TRANSPORTATION CHARGE.

The payments to be made by each contractor entitled to delivery of project water from the project transportation facilities shall include an annual charge under the designation Transportation Charge. This charge shall return to the State during the project repayment period those costs of all project transportation facilities necessary to deliver project water to the contractor, including capital, operation, maintenance, power, and replacement costs, which are allocated to the contractor during the project repayment period in accordance with the cost allocation principles and procedures herein after set forth. Wherever reference is made, in connection with the computation, determination, or payment of the Transportation Charge, to the costs of any facility or facilities included in the System, such reference shall be only to those costs of such facility or facilities which are reimbursable by the contractors as determined by the State. The Transportation Charge shall consist of a capital cost component; a minimum operation, maintenance, power, and replacement component; and a variable operation, maintenance, power, and replacement component, as these components are defined in and determined under Articles 24, 25, and 26, respectively. For the purpose of allocations of costs pursuant to said articles, the project transportation facilities shall be segregated into

[37] Amended: Amendment No. 18

[38] Amended: Amendments No. 22 and 25

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such aqueduct reaches as are determined by the State to be necessary for such allocations of costs. Subject to such modifications as are determined by the State to be required by reason of any request furnished by the Agency <District> to the State pursuant to Article 17(a) of this contract, or by reason of contracts entered into by the State with other contractors, the aqueduct reaches of the project transportation facilities are established as set forth in Table I of this contract: *Provided*, That those costs of the aqueduct reaches from the Delta through the outlet of San Luis Reservoir which are allocated to the purpose of water conservation in, above, and below the Delta for the purpose of determining the Delta Water Charge, as hereinbefore set forth, shall not be included in the Transportation Charge.

TABLE I
AQUEDUCT REACHES
TULARE LAKE BASIN WATER STORAGE DISTRICT

Aqueduct Reach	Major Features of Reach
Delta to Discharge Delta Pumping Plant:	Intake Canal Fish Protective Facilities Delta Pumping Plant (Pumping Plant I)
Discharge Delta Pumping Plant to San Luis Forebay:	Aqueduct
San Luis Forebay:	San Luis Forebay and Forebay Dam
San Luis Forebay to Kettlemen City:	Aqueduct Mile 18 Pumping Plant
Kettlemen City to Avenal Gap:	Aqueduct

24. TRANSPORTATION CHARGE – CAPITAL COST COMPONENT.

(a) Method of Computation

The capital cost component of the Transportation Charge shall be sufficient to return to the State those capital costs of the project transportation facilities necessary to deliver water to the contractor which are allocated to the contractor pursuant to subdivision (b) of this article. The amount of this component shall be determined in two steps as follows: (1) an allocation of capital costs to the contractor, and (2) a computation of annual payment of such allocated capital costs and interest thereon, computed at the project interest rate and compounded annually, to be made by the contractor.

(b) Allocation of Capital Costs Among Contractors

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[39]In the first step, the total amount of capital costs of each aqueduct reach to be returned to the State shall be allocated among all contractors entitled to delivery of project water from or through the reach by the proportionate use of facilities method of cost allocation and in accordance with (1) and (2) below. The measure of the proportionate use of each contractor of each reach shall be the average of the following two ratios: (i) the ratio of the contractor's maximum annual entitlement to be delivered from or through the reach to the total of the maximum annual entitlements of all contractors to be delivered from or through the reach from the year in which charges are to be paid through the end of the project repayment period and (ii) the ratio of the capacity provided in the reach for the transport and delivery of project water to the contractor to the total capacity provided in the reach for the transport and delivery of project water to all contractors served from or through the reach from the year in which charges are to be paid through the end of the project repayment period. Allocations of capital costs to the Agency <District> pursuant hereto shall be on the basis of relevant values which will be set forth in Table B of this contract by the State as soon as designs and cost estimates are prepared by it subsequent to receipt of requests from the Agency <District> as to the maximum monthly delivery capability to be provided in each aqueduct reach of the project transportation facilities for the transport and delivery of project water to the Agency <District>, pursuant to Article 17(a): *Provided,* That these values shall be subject to redetermination by the State in accordance with Article 28: *Provided further,* That the principles and procedures set forth in this subdivision shall be controlling as to allocations of capital costs to the Agency <District>. Proportionate use of facilities factors for prior years shall not be adjusted by the State in response to changes or transfers of entitlement among contractors unless otherwise agreed by the State and the parties to the transfer and unless there is no impact on past charges or credits of other contractors.

[39] Amended: Amendment No. 25

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(1) The total amount of capital costs allocated to a contractor shall be the sum of the products obtained when there is multiplied, for each aqueduct reach necessary to deliver water to the contractor, the total amount of the capital costs of the reach to be returned to the State under the Transportation Charge by the average of the two foregoing ratios for such reach as said average is set forth in the appropriate table included in its contract.

(2) In the event that excess capacity is provided in any aqueduct reach for the purpose of making project water available in the future to an agency or agencies with which the State has not executed contracts at the time of any allocation of costs pursuant to this subdivision, the prospective maximum annual entitlement or entitlements to be supplied by such excess capacity, as determined by the State, shall be deemed to be contracted for by said agency or agencies for the purpose of such allocation of costs, to the end that the capital costs of providing such excess capacity are not charged to any contractor entitled by virtue of an executed contract to the delivery of project water from or through that aqueduct reach at the time of such allocation. Where additional capacity is provided in any aqueduct reach to compensate for loss of water due to evaporation, leakage, seepage, or other causes, or to compensate for scheduled outages for purposes of necessary investigation, inspection, maintenance, repair or replacement of the facilities of the project facilities, then, for the purpose of any allocation of costs pursuant to this subdivision: (i) the maximum annual entitlement to be delivered from or through the reach of each contractor entitled to delivery of project water from or through the reach shall be increased by an amount which bears the same proportion to the maximum annual delivery capability provided by such additional capacity that the contractor's maximum annual entitlement to be delivered from or through the reach bears to the total of the maximum annual entitlements to be delivered from or through the reach under all contracts; and (ii) the capacity provided in the reach for each contractor entitled to delivery of project water from or through the reach shall be increased in the same proportion that the contractor's maximum annual entitlement to be delivered from or through the reach is increased pursuant to (i) above.

(3) The projected amounts of capital costs to be allocated annually to the Agency <District> under the capital cost component of the Transportation Charge shall be determined by the State in accordance with the cost allocation principles and procedures set forth in this subdivision, which principles and procedures shall be controlling as to allocations of capital costs to the Agency <District>. Such amounts will be set forth in Table C of this contract by the State as soon as designs and cost estimates are prepared by it subsequent to receipt of requests from the Agency <District> as to the maximum monthly delivery capability to be provided in each aqueduct reach for transport and delivery of project water to the Agency <District>, pursuant

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to Article 17(a): *Provided*, That these amounts shall be subject to redetermination by the State in accordance with Article 28.

(c) Annual Payments of Allocated Capital Costs

In the second step, the Agency's <District's> annual payment of its allocated capital costs and interest thereon, computed at the project interest rate and compounded annually, shall be determined in accordance with a payment schedule established by the State and determined in accordance with the principles set forth in (1), (2), and (3) below, which principles shall be controlling as to the Agency's <District's> payment of its allocated capital costs. The Agency's <District's> payment schedule will be set forth in Table D of this contract by the State as soon as designs and cost estimates are prepared by it subsequent to receipt of requests from the Agency <District> as to the maximum monthly delivery capability to be provided in each aqueduct reach for transport and delivery of project water to the Agency <District>, pursuant to Article 17(a): *Provided*, That the amounts set forth in Table D shall be subject to redetermination by the State, pursuant to Article 28.

(1) The Agency's <District's> annual payment shall be the sum of the amounts due from the Agency <District> on the Agency's <District's> allocated capital costs for the then current year and for each previous year where each such amount will pay, in not more than fifty (50) equal annual installments of principal and interest, the Agency's <District's> allocated capital costs for the respective year and interest thereon, computed at the project interest rate and compounded annually.

(2) The Agency <District> may make payments at a more rapid rate if approved by the State.

(3) Such annual payments shall cease when all allocated capital costs and interest thereon, computed at the project interest rate and compounded annually, are repaid.

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(d) Payment in Advance for Excess Peaking Capacity

In the event that any contractor, pursuant to Article 12(b), requests delivery capacity in any aqueduct reach which will permit maximum monthly deliveries to such contractor in excess of the percentage amounts specified in said Article 12(b) for the uses designated therein, such contractor shall furnish to the State, in advance of the construction of such aqueduct reach, funds sufficient to cover the costs of providing such excess capacity, which funds shall be in an amount which bears the same proportion to the total capital costs of such reach, including the costs of providing such excess capacity, as such excess capacity bears to the total capacity of such reach, including such excess capacity. For the purpose of any allocation of costs pursuant to subdivision (b) of this article, the total capital costs of such aqueduct reach shall be allocated among all contractors entitled to delivery of project water from or through the reach in the following manner:

(1) The costs which would have been incurred for such reach had no such excess capacity been provided shall be estimated by the State and allocated among all such contractors in the manner provided in said subdivision (b); and

(2) The amount of the difference between said estimated costs and the projected actual costs of such reach shall be allocated to the contractor or contractors for which such excess capacity is provided.

Where such excess capacity is provided for more than one contractor, the costs allocated to them under (2) above shall be further allocated between or among them in amounts which bear the same proportion to the total of said allocated costs as the amount of such excess capacity provided for the respective contractor bears to the total of such excess capacity provided in such reach. In the event that the funds advanced by a contractor pursuant to this subdivision are more or less than the costs so allocated to such contractor under (2) above, the account of such contractor shall be credited or debited accordingly.

(e) Costs Incurred Prior to Date of Contract

The Agency's <District's> allocated capital costs for the year preceding the year of initial payment of the capital component of the Transportation Charge, pursuant to subdivision (c) of this article, shall consist of the sum of the Agency's <District's> allocated capital costs for each year through such year preceding the year of initial payment, and interest thereon, computed at the project interest rate and compounded annually.

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(f) [40]The capital costs of project aqueduct power recovery plants shall be charged and allocated in accordance with this Article 24. The capital costs of off-aqueduct power facilities shall be charged and allocated in accordance with Article 25(d).

(g) [41]Notwithstanding provisions of Article 24 (a) through (d), the capital cost component of the Transportation Charge shall include an annual charge to recover the Agency's <District's> share of the transportation portion of the water system revenue bond financing costs. Charges to the Agency <District> for these costs shall be calculated in accordance with the provisions of Article 50 of this contract. Charges for the transportation portion of the water system revenue bond financing costs shall not be affected by any reductions in payments pursuant to Article 51.

25. TRANSPORTATION CHARGE – MINIMUM OPERATION, MAINTENANCE, POWER, AND REPLACEMENT COMPONENT.

(a) Method of Computation

The minimum operation, maintenance, power, and replacement component of the Transportation Charge shall return to the State those costs of the project transportation facilities necessary to deliver water to the contractor which constitute operation, maintenance, power, and replacement costs incurred irrespective of the amount of project water delivered to the contractor and which are allocated to the contractor pursuant to (b) below: *Provided*, That to the extent permitted by law, the State may establish reserve funds to meet anticipated minimum replacement costs; and deposits in such reserve funds by the State: (1) shall be made in such amounts that such reserve funds will be adequate to meet such anticipated costs as they are incurred, and (2) shall be deemed to be a part of the minimum replacement costs for the year in which such deposits are made.

(b) Allocation of Costs

The total projected minimum operation, maintenance, power, and replacement costs of each aqueduct reach of the project transportation facilities for the respective year shall be allocated among all contractors entitled to delivery of project water from said facilities by the proportionate use of facilities method of cost allocation, in the same manner and upon the same bases as are set forth for the allocation of capital costs in Article 24: *Provided*, That such minimum operation, maintenance, power, and replacement costs as are incurred generally for the project transportation facilities first shall be allocated to each aqueduct reach in an amount which bears the same proportion to the total amount of such general costs that the amount of the costs incurred directly for the reach bears to the total of all direct costs for all aqueduct reaches.

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[40] Amended: Amendment No. 18

[41] Amended: Amendments No. 22 and 25

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(c) Payment Table

The amount to be paid each year by the Agency <District> under the minimum operation, maintenance, power, and replacement component of the Transportation Charge shall be determined in accordance with subdivision (b) of this article on the basis of the relevant values to be set forth for the respective aqueduct reaches in Table B of this contract: *Provided*, That these values shall be subject to redetermination by the State in accordance with Article 28. Such amounts and any interest thereon shall be set forth by the State in Table E of this contract as soon as designs and cost estimates have been prepared by it subsequent to receipt of requests from the Agency <District> as to the maximum monthly delivery capability to be provided in each aqueduct reach for transport and delivery of project water to the Agency <District>, pursuant to Article 17(a): *Provided*, That the amounts set forth in Table E shall be subject to redetermination by the State in accordance with Article 28.

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(d) [42]Notwithstanding the provisions of subdivisions (a) and (b) of this article, or of Article 1(s), the costs of off-aqueduct power facilities shall be determined and allocated as follows:

(1) The off-aqueduct power costs shall include all annual costs the State incurs for any off-aqueduct power facility, which shall include, but not be limited to, power purchases, any annual principal and interest payments on funds borrowed by or advanced to the State, annual principal and interest on bonds issued by the State or other agency, or under revenue bond financing contracts, any requirements for coverage, deposits to reserves, and associated operation and maintenance costs of such facility, less any credits, interest earnings, or other monies received by the State in connection with such facility. In the event the State finances all or any part of an off-aqueduct power facility directly from funds other than bonds or borrowed funds, in lieu of such annual principal and interest payments, the repayment of capital costs as to that part financed by such other funds shall be determined on the basis of the schedule that would have been required under Article 24.

(2) The annual costs of off-aqueduct power facilities as computed in (1) above shall initially be allocated among contractors in amounts which bear the same proportions to the total amount of such power costs that the total estimated electrical energy (kilowatt hours) required to pump through project transportation facilities the desired delivery amounts of annual entitlements for that year, as submitted pursuant to Article 12(a)(1) and as may be modified by the State pursuant to Article 12(a)(2), bears to the total estimated electrical energy (kilowatt hours) required to pump all such amounts for all contractors through project transportation facilities for that year, all as determined by the State.

(3) [43]An interim adjustment in the allocation of the power costs calculated in accordance with (2) above, may be made in May of each year based on April revisions in approved schedules of deliveries of project and nonproject water for contractors for such year. A further adjustment shall be made in the following year based on actual deliveries of project and nonproject water for contractors provided, however, in the event no deliveries are made through a pumping plant, the adjustments shall not be made for that year at that plant.

(4) To the extent the monies received or to be received by the State from all contractors for off-aqueduct power costs in any year are determined by the State to be less than the amount required to pay the off-aqueduct power costs in such year, the State may allocate and charge that amount of off-aqueduct power costs to the District and other contractors in the same manner

[42] Amended: Amendment No. 18
[43] Amended: Amendments No. 18 and 25

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as costs under the capital cost component of the Transportation Charge are allocated and charged. After that amount has been so allocated, charged and collected, the State shall provide a reallocation of the amounts allocated pursuant to this paragraph (4), such reallocation to be based on the allocations made pursuant to (2) and (3) above for that year, or in the event no such allocation was made for that year, on the last previous allocation made pursuant to (2) and (3) above. Any such reallocation shall include appropriate interest at the project interest rate.

(e) [44]The total minimum operation, maintenance, power and replacement component due that year from each contractor shall be the sum of the allocations made under the proportionate use of facilities method provided in subdivision (b) of this article and the allocations made pursuant to subdivision (d) of this article for each contractor.

26. TRANSPORTATION CHARGE – VARIABLE OPERATION, MAINTENANCE, POWER, AND REPLACEMENT COMPONENT.

(a) Method of Computation

The variable operation, maintenance, power, and replacement component of the Transportation Charge shall return to the State those costs of the project transportation facilities necessary to deliver water to the contractor which constitute operation, maintenance, power and replacement costs incurred in an amount which is dependent upon and varies with the amount of project water delivered to the contractor and which are allocated to the contractor pursuant to (1) and (2) below: *Provided*, That to the extent permitted by law, the State may establish reserve funds to meet anticipated variable replacement costs; and deposits in such reserve funds by the State: (1) shall be made in such amounts that such reserve funds will be adequate to meet such anticipated costs as they are incurred, and (2) shall be deemed to be a part of the variable replacement costs for the year in which such deposits are made. The amount of this component shall be determined as follows:

(1) There shall be computed for each aqueduct reach of the project transportation facilities a charge per acre-foot of water which will return to the State the total projected variable operation, maintenance, power, and replacement costs of the reach for the respective year. This computation shall be made by dividing said total by the number of acre-feet of project water estimated to be delivered from or through the reach to all contractors during the year.

(2) The amount of the variable component shall be the sum of the products obtained when the charges per acre-foot of water, determined under (1) above, for each aqueduct reach necessary to deliver water to the contractor are multiplied by the number of acre-feet of project water delivered to the

[44] Amended: Amendment No. 18

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contractor from or through that reach during the year: *Provided*, That when project water has been requested by a contractor and delivery thereof has been commenced by the State, and, through no fault of the State, such water is wasted as a result of failure or refusal by the contractor to accept delivery thereof, the amount of said variable component to be paid by such contractor during such period shall be the product of the above sum and the sum of the number of acre-feet of project water delivered to the contractor and the number of acre-feet wasted.

(b) Revenue from Aqueduct on Power Recovery Plants

There shall be credited against the amount of the variable component to be paid by each contractor, as determined pursuant to subdivision (a) of this article, a portion of the projected net value of any power recovered during the respective year at project aqueduct power recovery plants located upstream on the particular aqueduct from the delivery structures for delivery of project water to the contractor. Such portion shall be in an amount which bears the same proportion to said projected net value that the number of acre-feet of project water delivered to the contractor through said plants during the year bears to the number of acre-feet of project water delivered to all contractors through said plants during the year.

(c) Payment Table

The amount to be paid each year by the Agency <District> under the variable operation, maintenance, power, and replacement component of the Transportation Charge shall be determined in accordance with subdivision (a) of this article for the respective aqueduct reaches in Table B of this contract. Such amounts and any interest thereon shall be set forth by the State in Table F of this contract as soon as designs and cost estimates are prepared by it subsequent to receipt of requests from the Agency <District> as to the maximum monthly delivery capability to be provided in each aqueduct reach for transport and delivery of project water to the Agency <District>, pursuant to Article 17(a): *Provided*, That the amounts set forth in Table F shall be subject to redetermination by the State in accordance with Article 28.

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27. TRANSPORTATION CHARGE – PAYMENT SCHEDULE.

The amounts to be paid by the Agency <District> for each year of the project repayment period under the capital cost and minimum operation, maintenance, power, and replacement components of the Transportation Charge, and under the variable operation, maintenance, power, and replacement component of said charge on the basis of then estimated deliveries, shall be set forth by the State in Table G of this contract as soon as designs and cost estimates have been prepared by it subsequent to receipt of requests from the Agency <District> as to the maximum monthly delivery capability to be provided in each aqueduct reach for transport and delivery of project water to the Agency <District>, pursuant to Article 17(a). Table G of this contract shall constitute a summation of Tables D, E, and F of this contract: *Provided*, That each of the amounts set forth in Table G shall be subject to redetermination by the State in accordance with Article 28: *Provided further*, That the principles and procedures set forth in Articles 24, 25, and 26 shall be controlling as to such amounts. Such amounts shall be paid by the Agency <District> in accordance with the provisions of Article 29.

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28. [45]TRANSPORTATION CHARGE - REDETERMINATION.

(a) Determinative Factors Subject to Retroactive Change

The State shall redetermine the values and amounts set forth in Tables B, C, D, E, F, and G of this contract in the year following the year in which the State commences construction of the project transportation facilities and each year thereafter in order that the Transportation Charge to the Agency <District> and the components thereof may accurately reflect the increases or decreases from year to year in projected costs, outstanding reimbursable indebtedness of the State incurred to construct the project transportation facilities described in Table I <Table H> of this contract, annual entitlements, estimated deliveries, project interest rate, and all other factors which are determinative of such charges. In addition, each such redetermination shall include an adjustment of the components of the Transportation Charge to be paid by the Agency <District> for succeeding years which shall account for the differences, if any, between those factors used by the State in determining the amounts of such components for all preceding years and the factors as then currently known by the State. Such adjustment shall be computed by the State and paid by the Agency <District> or credited to the Agency's <District's> account in the manner described in (b) and (c) below or in Article 45(c) if the Agency <District> elects that option.

TABLE H
PROJECT TRANSPORTATION FACILITIES
TULARE LAKE BASIN WATER STORAGE DISTRICT

A San Joaquin Valley-Southern California Aqueduct extending to Avenal Gap, to the extent such aqueduct is determined by the State to be required for water transportation.

(b) Adjustment: Transportation Charge-Capital Cost Component

Adjustments for prior underpayments or overpayments of the capital cost component of the Transportation Charge to the Agency <District>, together with accrued interest charges or credits thereon computed at the then current project interest rate on the amount of the underpayment or overpayment and compounded annually for the number of years from the year the underpayment or overpayment occurred to and including the year following the redetermination, shall be paid in the year following the redetermination: *Provided*, That the Agency <District> may elect to exercise the option whereby when the redetermined Transportation Charge for the following year, with adjustments, including adjustments of the operation, maintenance, power, and replacement components provided for in subdivision (c) of this article, is more or less than the last estimate of the Charge provided pursuant to Article 27 for the corresponding year, without adjustments, an amount equal to the total of such

[45] Amended: Amendment No. 11

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difference shall be deducted from or added to the adjusted capital cost component for that year and paid or credited in accordance with the following schedule:

Percent that Transportation Charge differs from last estimate (+ or -)	Period, in years, for amortizing the difference in indicated charge
for 10% or less	no amortization
more than 10%, but not more than 20%	2
more than 20%, but not more than 30%	3
more than 30%, but not more than 40%	4
more than 40%.	5

Such payments or credits shall be in equal semiannual amounts of principal and interest on or before the 1st day of January and the 1st day of July, with interest computed at the project interest rate and compounded annually, during varying amortization periods as set forth in the preceding schedule: *Provided*, That for the purpose of determining the above differences in the Transportation Charge, the variable operation, maintenance, power, and replacement component shall be computed on the basis of the same estimated project water deliveries as was assumed in computing pursuant to Article 26(c).

(c) Adjustment: Transportation Charge-Minimum and Variable Components

One-twelfth of the adjustments for prior underpayments or overpayments of the Agency's <District's> minimum and variable operation, power, and replacement components for each year shall be added or credited to the corresponding components to be paid in the corresponding month of the year following the redetermination, together with accrued interest charges or credits thereon computed at the then current project interest rate on the amount of the underpayment or overpayment and compounded annually for the number of years from the year the underpayment or overpayment occurred to and including the year following the redetermination.

(d) Exercise of Option

The option provided for in subdivision (b) above and in Article 45(c) shall be exercised in writing on or before the January 1 due date of the first payment of the capital cost component of the Transportation Charge for the year in which the option is to become effective.

Such option, once having been exercised, shall be applicable for all of the remaining years of the project repayment period.

<(e) No Such Subarticle.>

(f) [46]Adjustment: Water System Revenue Bond Financing Costs

[46] Amended: Amendment No. 22

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The use of water system revenue bonds for financing facilities listed in Article 1(hh) would result in adjustments for prior underpayments or overpayments of the capital cost component of the Transportation Charge to the Agency <District> under the provisions of this article; however, in place of making such adjustments, charges to the Agency <District> will be governed by Article 50.

29. TIME AND METHOD OF PAYMENT.

(a) Initial Payments – Delta Water Charge

Payments by the Agency <District> under the Delta Water Charge shall commence in the year of initial water deliver<y> to the Agency <District>.

(b) Initial Payment –Transportation Charge: Capital Component

Payments by the Agency <District> under the capital cost component of the Transportation Charge shall commence in the year following the year in which the State commences construction of the project transportation facilities. If such construction has already commenced when this contract is executed, such payments shall begin in the year following the year of execution.

(c) Initial Payment – Transportation Charge: Minimum Component

Payments by the Agency <District> under the minimum operation, maintenance, power, and replacement component of the Transportation Charge shall commence for each aqueduct reach in the year following the year in which construction of that reach is completed.

(d) Initial Payment –Transportation Charge: Variable Component

Payments by the Agency <District> under the variable operation, maintenance, power, and replacement component of the Transportation Charge shall commence in the year of initial water delivery to the Agency <District>.

(e) Statement of Charges

The State shall, on or before July 1 of each year, commencing with the year preceding the year in which payment of the respective charge is to commence pursuant to this article, furnish the Agency <District> with a written statement of: (1) the charges to the Agency <District> for the next succeeding year under the capital cost and minimum operation, maintenance, power, and replacement components of the Delta Water Charge and Transportation Charge; (2) the unit charges to the Agency <District> for the next succeeding year under the variable operation, maintenance, power, and replacement components of said Delta Water Charge and Transportation

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Charge; and (3) the total charges to the Agency <District> for the preceding year under the variable operation, maintenance, power, and replacement components of said Delta Water Charge and Transportation Charge: *Provided*, That through December 31, 1969, the Delta Water Charge shall be based upon a unit rate of $3.50 per acre-foot and shall be paid by the contractors on the basis of their respective annual entitlements to project water, as provided in Article 22(b): *Provided further*, that the first such statement shall be provided by the State as soon after the execution of this contract as is feasible. All such statements shall be accompanied by the latest revised copies of the document amendatory to Article 22 and of Tables B, C, D, E, F and G of this contract, together with such other data and computations used by the State in determining the amounts of the above charges as the State deems appropriate. The State shall, on or before the fifteenth day of each month of each year, commencing with the year of initial water delivery to the Agency <District>, furnish the Agency <District> with a statement of the charges to the Agency <District> for the preceding month under the variable operation, maintenance, power, and replacement components of the Delta Water Charge and Transportation Charge. Such charges shall be determined by the State in accordance with the relevant provisions of Articles 22 and 26 of this contract, upon the basis of metered deliveries of project water to the Agency <District>, except as otherwise provided in those articles.

(f) Times of Payment – Capital Components

The Agency <District> shall pay to the State, on or before January 1 of each year, commencing with the year in which payment of the respective charge is to commence pursuant to this article, one-half (1/2) of the charge to the Agency <District> for the year under the capital cost component of the Delta Water Charge and one-half (1/2) of the charge to the Agency <District> for the year under the capital cost component of the Transportation Charge, as such charges are stated pursuant to subdivision (e) of this article; and shall pay the remaining one-half (1/2) of each of said charges on or before July 1 of that year.

(g) Times of Payment – Minimum Component

The Agency <District> shall pay to the State, on or before the first day of each month of each year, commencing with the year of initial water delivery to the Agency <District>, one-twelfth (1/12) of the sum of the charges to the Agency <District> for the year under the minimum operation, maintenance, power, and replacement components of the Delta Water Charge and Transportation Charge, respectively, as such charges are stated pursuant to subdivision (e) of this article.

(h) Times of Payment – Variable Component

The Agency <District> shall pay to the State on or before the fifteenth day of each month of each year, commencing with the year of initial water delivery to the Agency <District>, the charges to the Agency <District> under the variable operation, maintenance, power, and replacement components of the Delta Water Charge and

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Transportation Charge, respectively, for which a statement was received by the Agency <District> during the preceding month pursuant to subdivision (e) of this article, as such charges as stated in such statement.

(i) Contest of Accuracy of Charges

In the event that the Agency <District> contests the accuracy of any statement submitted to it pursuant to subdivision (e) of this article, it shall give the State notice thereof at least ten (10) days prior to the day upon which payment of the stated amounts is due. To the extent that the State finds the Agency's <District's> contentions regarding the statement to be correct, it shall revise the statement accordingly, and the Agency <District> shall make payment of the revised amounts on or before the due date. To the extent that the State does not find the Agency's <District's> contentions to be correct, or where time is not available for a review of such contentions prior to the due date, the Agency <District> shall make payment of the stated amounts on or before the due date, but may make the contested part of such payment under protest and seek to recover the amount thereof from the State.

30. [47]SURCHARGE FOR EXCESS USE OF PROJECT WATER. (Deleted)

31. ADJUSTMENT FOR OVERPAYMENT OR UNDERPAYMENT.

If in any year, by reason of errors in computation or other causes, there is an overpayment or underpayment to the State by the Agency <District> of the charges provided for herein, which overpayment or underpayment is not accounted for and corrected in the annual redetermination of said charges, the amount of such overpayment or underpayment shall be credited or debited, as the case may be, to the Agency <District's> account for the next succeeding year and the State shall notify the Agency <District> thereof in writing.

32. DELINQUENCY IN PAYMENT.

(a) Agency to Provide for Punctual Payment

The governing body of the Agency <District> shall provide for the punctual payment to the State of payments which become due under this contract.

(b) [48]Interest on Overdue Payments

Upon every amount of money required to be paid by the District to the State pursuant to this contract which remains unpaid after it becomes due and payable, interest shall accrue at an annual rate equal to that earned by the Pooled Money Investment Fund, as provided in Government Code Sections 16480, et seq. calculated monthly on the amount of such delinquent payment from and after the due date until it

[47] Amended: Amendments No. 4, 8, and 10
[48] Amended: Amendment No. 18

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is paid, and the District hereby agrees to pay such interest: *provided*, that no interest shall be charged to or be paid by the District unless such delinquency continues for more than thirty (30) days.

33. OBLIGATION OF AGENCY <DISTRICT> TO MAKE PAYMENTS.

(a) Refusal of Water Does Not Affect Obligation

The Agency's <District's> failure or refusal to accept delivery of project water to which it is entitled under Article 6(b) shall in no way relieve the Agency <District> of its obligation to make payments to the State as provided for in this contract. The State, however, shall make reasonable efforts to dispose of any water made available to but not required by the Agency <District>, and any net revenues from such disposal shall be credited pursuant to Article 21.

(b) Character of Obligation

The Agency <District> as a whole is obligated to pay to the State the payments becoming due under this contract, notwithstanding any individual default by its constituents or others in the payment to the Agency <District> of assessments, tolls, or other charges levied by the Agency <District>.

34. OBLIGATION OF AGENCY <DISTRICT>TO LEVY TAXES AND ASSESSMENTS.

(a) When Obligated

If in any year the Agency <District> fails or is unable to raise sufficient funds by other means, the governing body of the Agency <District> shall levy upon all property in the Agency <District> not exempt from taxation, a tax or assessment sufficient to provide for all payments under this contract then due or to become due within that year.

(b) Enforcement by Officers of Agency <District>

Taxes or assessments levied by the governing body of the Agency <District> pursuant to subdivision (a) of this article shall be enforced and collected by all officers of the Agency <District> charged with the duty of enforcing and collecting taxes or assessments levied by the Agency <District>.

(c) Deposit in Separate Fund

All money collected for taxes or assessments under this article shall be kept in a separate fund by the treasurer or other officer of the Agency <District> charged with the safekeeping and disbursement of funds of the Agency <District>, and, upon the

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written demand of the State, the treasurer or other officer shall pay over to the State all such money in his possession or control then due the State under this contract, which money shall be applied by the State to the satisfaction of the amount due under this contract.

(d) Enforcement of Levy

In the event of failure, neglect, or refusal of any officer of the Agency <District> to levy any tax or assessment necessary to provide payment by the Agency <District> under this contract, to enforce or to collect the tax or assessment, or to pay over to the State any money then due the State collected on the tax or assessment, the State may take such action in a court of competent jurisdiction as it deems necessary to compel the performance in their proper sequence of all such duties. Action taken pursuant hereto shall not deprive the State of or limit any remedy provided by this contract or by law for the recovery of money due or which may become due under this contract.

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6. PAYMENTS AND PROCEDURES FOR DISTRICT BILLINGS FOR CONTRACT WATER SERVICE

(a) On or about September 1 of each Year, District shall notify Water User, in writing, of the estimated total monthly amount of the Water Availability Charge and Water Use Charges for Table A Water for the following Year.

(b) The Water Availability Charge shall be Water User's share of District's fixed or recurring costs based in proportion to Water User's respective Table A Water, including, but not necessarily limited to, the following:

(I) Capital Cost Component of the Delta Water Charge and the Transportation Charge.

(II) Minimum Operation, Maintenance, Power, and Replacement Component of the Delta Water Charge and the Transportation Charge.

(III) Replacement Charge.

(IV) Off-Aqueduct Charge.

(V) Water Revenue Bond Surcharge.

(VI) District Water Service Charge.

(VII) Other State Charges.

The Water Availability Charge shall be billed on a monthly basis. Payment on said charges must be received by District within thirty (30) days from date of billing.

(c) The Water Use Charge shall include Water Users' cost of, but not be limited to the following:

(I) *Project and Carryover Water* - The variable or non-recurring costs associated with the delivery of Project Water or Carryover Water. Such charges shall be made on a uniform basis, in dollars per acre foot of water delivered from Project Facilities, and shall include, but not necessarily be limited to the Variable Operation, Maintenance, Power, and Replacement Component of the Delta Water Charge and the Transportation Charge.

(II) *Interruptible Water* - In addition to the costs specified in Paragraph 6(c)(I) any State administrative charges, as provided in State Contract.

(III) *Turnback Pool Water* - All charges imposed under State Contract for such deliveries, including a portion of the Delta Water Charge and those costs specified in Paragraph 6(c)(I) above.

(IV) *Other Project Water* - All charges imposed under the State Contract for such deliveries.

The Water Use Charge shall be billed monthly on or about the tenth (10th) day following the month that delivery was made. District must receive payment on such charge(s) not later than thirty (30) days from date of invoice.

(d) Supplemental Water Charge shall include all charges imposed by separate Contract with State for deliveries of Supplemental Water.

(e) Following receipt of any adjusted water cost information from State, District shall provide each Water User an adjusted accounting of the water charge(s), based upon District's adjusted payment obligations to State and the actual quantities of water delivered to Water User. District shall include with said adjusted accounting either:

(I) A statement of credit showing the amount that shall be deducted from the next installment of Water User's payment obligations to District. or a District check to Water User for overpayment

(II) An invoice statement for Water User's additional payment obligations that shall be due and payable within thirty (30) days from date of billing.

(f) The District Water Service Charge adjustment shall be based on actual expenditures at Year-end and credited or charged to the Water Users in accordance with Paragraph 6(e)(I)&(II).

(g) Under the provisions of the State Contract and the administrative procedures of the State, it is expected that there will continue to be occasions when District will not receive final power cost information on various categories of Project Water, including Carryover Water and/or Supplemental Water delivered to District until one year or more after the date of delivery of such water. Such final cost information may indicate that upward and/or downward power cost adjustments will be applicable to such delivered water. All such upward and/or downward power cost adjustments shall be allocated in proportion to the Water Users respective Project Water, and/or Supplemental Water delivered in the subject Year of adjustment.

(h) The State shall determine annually the Off-Aqueduct Charge based on costs for energy required for requested water deliveries. A Year-end adjustment shall be made based upon actual water deliveries and upon the net Off-Aqueduct charge. In the event the quantity of Project Water delivered by District in Year is zero, then the Off-Aqueduct Charge shall be allocated uniformly to the Water Users in proportion to Water User's respective Table A Water.

(i) The charges provided for herein are authorized by Sections 43006 and 47180 of the California Water Code and are intended to be provisionally in lieu of assessments authorized under said Code. Nothing contained herein shall limit the power of District to levy assessments from time to time in accordance with benefits, as provided in said California Water Code, to collect such amounts as may be found necessary by District to meet its financial obligations.

(j) No water shall be delivered to Water User if such Water User is delinquent in the payment of any charges under this Water Service Contract, delinquent in any assessment levied by District, or in violation of any of the Rules and Regulations. In addition to the other remedies provided herein and by law, the Board may reallocate a Water User's water in the manner provided in Paragraph 6(o) herein in the event he fails to cure a delinquency or violation within ten days of notice of such. Any violation of the Rules and Regulations must be cured within five days of notice of such violation. Should Water User fail to timely cure the violation, he shall be considered in default of this Water Service Contract. In the event Water User is or has been delinquent or in default under this Water Service Contract or the immediately prior Water Service Contract, Board may, in its descretion, require Water User to post a deposit in an amount to be determined by Board before Water Service may be reinstated under this or any

subsequent Water Service Contract.

(k) In the event District is unable to meet its total financial obligation to the State due to failure by one or more of the Water Users to remit payment as provided in this Water Service Contract that would result in delinquency charges by the State, District shall make payment to the State of those funds which are available from Water Users prior to the State's delinquency date. Remaining payments received from the delinquent Water User(s), including State delinquency charges, will be forwarded to the State as they are received to be credited against District's delinquent account. The delinquent Water User shall be responsible for any and all State delinquency charges, and other charges accrued on the outstanding delinquency. District shall bill each delinquent Water User his pro rata share of such charges, considering both the amounts and periods of time of the delinquency. In addition, each such delinquent Water User shall be obligated to pay any District interest, penalties, or other charges, all as hereinafter provided.

(l) In the event any charge or any obligation of the Water User arising from this Water Service Contract remains unpaid for a period of thirty (30) days after invoice date, it shall thereupon become delinquent and a penalty of ten percent (10%) shall be added thereto and it shall thereafter bear interest at the rate of twelve percent (12%) per annum, shall be recorded as a lien on the Water User's land, and shall be collectible, all as provided in Sections 47181 to 47185, inclusive, and Section 43003 of said California Water Code and in any other manner authorized by law. Any Water User who shall become delinquent in any payment due hereunder shall be considered in default of this Water Service Contract.

(m) Monies received from Water User shall be first applied to the oldest outstanding invoices and any penalties or interest thereon. District imposed penalties and interest collected from Water User(s) shall be deposited in the District's State Water Fund Account for the benefit of all Water Users.

(n) Delinquent Water User shall reimburse District for all costs, including, but not limited to, administrative costs and attorneys fees associated with the collection of delinquent payments, penalties, and interest.

(o) Water User's failure or refusal to accept delivery of his Contract Amount of Water in any Year shall in no way relieve Water User of the payment obligations provided for herein. Should any Water User not accept delivery of his Contract Amount of Water, then the District, at the request of Water User shall make reasonable efforts to dispose of any water made available to, but not required by, Water User. In disposing of any such water, District shall first make the water available to other Water Users within the District at the District Rate. The District shall then make reasonable efforts to dispose of the water under the provisions of the State Contract on the open market. Each Water User shall be deemed a third party beneficiary of each of the other Water User contracts and shall have a right of first refusal to purchase the water being disposed of. Revenue

derived from the disposition of the water shall be first credited against the Water User's payment obligations hereunder. Any surplus revenues from the disposition of the water shall be deposited into District's State Water Project Fund Account for the benefit of all Water Users.

(p) Purchasers outside of District and/or Water User(s) who purchase water on the open market, pursuant to Paragraph 6(o) above, for use outside District shall reimburse District for all of its out of pocket costs associated with the processing of the transfer of said water out of the District. Three percent (3%) of the total amount of water to be transferred will be contributed to the District to offset delivery losses in Project Facilities.