Water Supply

Monterey County

168 West Alisal Street,
1st Floor
Salinas, CA 93901
831.755.5066

Board Report

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Consider receiving a presentation on, and the Executive Summary of, the State of the Salinas River Groundwater Basin Report by the firm Brown and Caldwell in response to Board Referral 2014.01.

RECOMMENDATION:

It is recommended that the Board of Supervisors of the County of Monterey, the Board of Supervisors of the Water Resources Agency of Monterey County, and the Board of Directors of the Water Resources Agency receive a presentation on, and the Executive Summary of, the State of the Salinas River Groundwater Basin Report by the firm Brown and Caldwell in response to Board Referral 2014.01.

SUMMARY:

Policy PS-3.1 of the Monterey County 2010 General Plan requires the County to undertake a comprehensive study of the condition of Zone 2C of the Salinas River Groundwater Basin. The study is designed to occur over a period of 5 years, and will result in a report with recommendations to the Board of Supervisors. Chair Calcagno submitted referral 2014.01 on February 14, 2014, the purpose of which was to commence the Salinas River Groundwater Basin Zone ZC study required by County General Plan Policy PS-3.1 and to perform a near term assessment of the groundwater basin's health and status. The firm Brown and Caldwell was retained to perform the study and the near term assessment, and the County contracted with the Water Resources Agency to manage the study on behalf of the County.

Brown and Caldwell has competed the near term assessment, entitled the State of the Salinas River Groundwater Basin. A copy of the Executive Summary of the report prepared by Brown and Caldwell in enclosed as Exhibit 1.

DISCUSSION:

A verbal report will be made to the Board of Supervisors by the Water Resources Agency and Brown and Caldwell. While the executive summary has been finalized, the full body of the report is still undergoing final preparation and will be made publicly available as soon as possible.

The Report addresses the ramifications of prolonged drought by considering likely changes in groundwater head elevations, groundwater storage, and seawater intrusion in the event that the current drought continues. In addition, some steps are presented that could be taken to help alleviate the consequences of further depleting groundwater storage.

OTHER AGENCY INVOLVEMENT:

The report has been prepared by the County Counsel's Office in coordination with the Water Resources Agency.

FINANCING:
There is no financial impact with respect to the receipt of the State of the Basin report.

Prepared by:	Approved by:
Leslie J. Girard Chief Assistant County Counsel Director Ext. 5365	Carl Holm Acting Resource Management Agency Ext. 5103

Attachment: Exhibit 1 Executive Summary of the Report
cc: Mike Novo, Resource Management Agency/Planning Director
Dave Chardavoyne, Water Resources Agency General Manager
Robert Johnson, Water Resources Agency Assistant General Manager
Howard Franklin, Water Resources Agency Senior Hydrologist
Leslie L. Chau, Brown and Caldwell

Brown AND Caldwell

Executive Summary

State of the Salinas River Groundwater Basin Report

An examination of the state of the Salinas River Groundwater Basin (Basin) was conducted in the last half of 2014 as part of the larger Basin Investigation. This Executive Summary of the State of the Basin Report addresses the ramifications of prolonged drought by considering likely changes in groundwater head elevations, groundwater storage, and seawater intrusion in the event that the current drought continues. In addition, some steps are presented that could be taken to help alleviate the consequences of further depleting groundwater storage.

This study was conducted for Monterey County under County Professional Agreement 14-714, dated 1 July 2014, in response to the Monterey County Board of Supervisors Referral No. 2014.01. The work was carried out with oversight provided by the Monterey County Water Resources Agency (MCWRA).

Study Area

The study area for this report is MCWRA Benefit Zone 2C (Zone 2C), which largely straddles the Salinas River within Monterey County (Figure ES-1). Zone 2C consists of 7 subareas named as follows: Above Dam, Below Dam, Upper Valley, Arroyo Seco, Forebay, East Side, and Pressure. The analyses detailed in this report cover the four primary water-producing subareas, the Pressure, East Side, Forebay (including the Arroyo Seco), and Upper Valley Subareas. These four subareas include most of the land area and account for nearly all of the groundwater usage within Zone 2C.

The Salinas River Groundwater Basin is the largest coastal groundwater basin in Central California. It lies within the southern Coast Ranges between the San Joaquin Valley and the Pacific Ocean, and is drained by the Salinas River. The valley extends approximately 150 miles from the La Panza Range north-northwest to its mouth at Monterey Bay, draining approximately 5,000 square miles in Monterey and San Luis Obispo Counties. The valley is bounded on the west by the Santa Lucia Range and Sierra de Salinas, and on the east by the Gabilan and Diablo Ranges. The Monterey Bay acts as the northwestern boundary of the Basin.

The Salinas Valley has a Mediterranean climate. Summers are generally mild, and winters are cool. Precipitation is almost entirely rain, with approximately 90% falling during the six-month period from November to April. Rainfall is highest on the Santa Lucia Range (ranging from 30 to 60 inches per year) and lowest on the valley floor (about 14 inches per year). Very dry years are common and droughts can extend over several years, such as the eight-year drought of Water Years (WY) 1984 to 1991.

Major land uses in the Salinas Valley include agriculture, rangeland, forest, and urban development. Mixed forest and chaparral shrub cover the mountain upland areas surrounding the valley, while the rolling hills are covered with coastal scrub and rangeland. Agricultural and urban land uses are predominant on the valley floor.

Historically, irrigated agriculture began with surface water diversions in 1773 on Mission Creek, and diversions from the Salinas River were first recorded in 1797. Groundwater pumping began as early as 1890, and expanded greatly through about 1920 as enabled by several developments such as widespread electrical lines, the development of better well pumps, and the replacement of grain crops with vegetable crops. Groundwater is currently the source of nearly all agricultural and municipal water demands in the Salinas Valley, and agricultural use represents approximately 90% of all water used in the Basin. In addition to groundwater, other sources of water for agricultural production include surface water diverted from the Arroyo Seco, recycled municipal waste water supplied by the Monterey County Water Recycling Projects, and surface water diverted from the Salinas River north of Marina as part of the Salinas Valley Water Project).

By 1944, groundwater pumping in the entire valley was estimated to total about 350,000 acre-feet per year (afy), with about 30% of the pumping occurring within the Pressure Subarea, 10% in the East Side Subarea, 35% in the Forebay Subarea, and 25% in the Upper Valley Subarea. Groundwater use in the Salinas Valley peaked in the early 1970's and then started declining, due primarily to changes in crop patterns, continued improvements in irrigation efficiency, and some conversion of agricultural lands to urban land uses.

Seawater intrusion was detected in coastal wells as early as the 1930's, resulting from declining groundwater head elevations in the Pressure and East Side Subareas. Seawater intrusion has continued so that it now reaches as far as 8 miles inland within the Pressure Subarea. The declining head and intruding seawater helped lead to the construction of the Nacimiento and San Antonio Dams (releases beginning in 1957 and 1965, respectively), which are used for flood control, maintenance of groundwater head elevations, multi-year storage, and recreation.

Today, as urbanization increases in the valley, alternative sources of urban water supplies and relocation of groundwater pumping are being evaluated and implemented by the Marina Coast Water District and various communities in the northern Salinas Valley.

Hydrogeology

The Salinas Valley Groundwater Basin is a structural basin (i.e., formed by tectonic processes) consisting of up to 10,000 to 15,000 feet of terrigenous and marine sediments overlying a basement of crystalline bedrock. The sediments are a combination of gravels, sands, silts, and clays that are organized into sequences of relatively coarse-grained and fine-grained materials. When layers within these sequences are spatially extensive and continuous, they form aquifers, which are relatively coarse-grained and are able to transmit significant quantities of groundwater to wells, and aquitards, which are relatively fine-grained and act to slow the movement of groundwater. Figure ES-2 is a schematic cross-section across the Pressure Subarea showing its general hydrostratigraphy.

Groundwater flow in the Basin is generally down the valley, from the southern end of the Upper Valley Subarea toward Monterey Bay, up to about Chualar (Figure ES-3). North of Chualar, groundwater flows in a north to east direction toward a trough of depressed groundwater head on the northeastern side of Salinas. This trough is especially pronounced in August, the approximate time of the seasonal peak groundwater pumping.

Water Balance

A water balance is a quantitative accounting of the various components of flow entering and leaving a groundwater system. Typical outflows include evapotranspiration, surface runoff that leaves the system, groundwater pumping, and groundwater outflow to a neighboring groundwater system. Typical inflows include recharge from infiltration of precipitation, releases from reservoirs (which receive runoff from precipitation), recharge from leaky aquitards, and groundwater inflow. The difference between inflows and outflows represents the change in groundwater storage. Because precipitation constitutes the major input of water to the Basin, rainfall records from the Salinas Municipal Airport gauge from 1873 to the present were analyzed. Based on the mean precipitation of 13.4 inches and standard deviation of 4.8 inches, each year's precipitation total was assigned to one of seven, "wetness levels," as follows: Extremely Dry, Very Dry, Dry, Normal, Wet, Very Wet, or Extremely Wet. In general, dry years are more common than wet years, but Extremely Dry years are less common than Extremely Wet years. The drought period from WY 1984 to 1991 included three Very Dry years, four Dry years, and one Normal year; this period was used in this study as a comparative period for predicting future changes in groundwater head and storage. Based on provisional data, the WY 2014 precipitation of about 5.9 inches represents a Very Dry year and the third-driest water year on record. The current drought of WY 2012 to 2014 includes two Dry years and one Very Dry year; over this three-year period, the total rainfall was about 15 inches below the period of record average.

This study emphasizes the importance of cumulative precipitation surplus, which quantifies precipitation on timescales longer than a year to examine the impacts of multi-year dry and wet periods. The cumulative precipitation surplus reached a high of about 41 inches at the end of WY 1958, and declined to zero by the end of WY 2013. During the extended drought from WY 1984 to 1991, the cumulative precipitation surplus declined by about 36 inches, an average of about 4.5 inches per year. The major declines in cumulative precipitation surplus had and continue to have negative effects on groundwater storage in Basin aquifers (see Storage Change discussion below). Figure ES-4 shows a time series of annual and cumulative precipitation surplus.

Inflows

Out of an estimated total of about 504,000 afy of inflow to the Basin, about 50% occurs as stream recharge, 44% occurs as deep percolation from agricultural return flows and precipitation, and 6% occurs as subsurface inflow from adjacent groundwater basins (MW, 1998). Table ES-1 summarizes the inflow components of the water budget, as reported by MW (1998).

Table ES-1 Water Budget Components by Subarea

Subarea	Representative of 1994 Conditions (from MW, 1998)				2013 Groundwater Pumping (reported by MCWRA)[3]
	Inflow		Outflow		
	Natural Recharge[1]	Subsurface Inflow	Groundwater Pumping[2]	Subsurface Outflow	
Pressure	117,000	17,000	130,000	8,000	118,000
East Side	41,000	17,000	86,000	0	98,000
Forebay	154,000	31,000	160,000	20,000	148,000
Upper Valley	165,000	7,000	153,000	17,000	145,000

Note: All estimates in acre-feet per year (afy).

Note 1: Includes agricultural return flow, stream recharge, and precipitation.

Note 2: Groundwater pumping as reported by MW(1998) are presented to provide a complete water budget.

Note 3: The 2013 groundwater pumping totals are provided for comparison.

Within the Pressure Subarea, inflow is largely made up of subsurface inflow from the Forebay Subarea; prior to development, additional subsurface inflow occurred from the East Side Subarea, but this flow had been reversed by declining groundwater head elevations in the East Side Subarea. An additional inflow to the Pressure Subarea is seawater intrusion, which could account for between about 11,000 and 18,000 afy.

Inflow to the East Side Subarea is made up of a combination of infiltration along the small streams on the west side of the Gabilan Range, direct recharge of precipitation on the valley floor, and subsurface inflow from the Pressure and Forebay Subareas.

Inflow to the Forebay Subarea is made up of infiltration along Arroyo Seco, Reliz Creek, and the Salinas River as well as agricultural return flow, direct recharge of precipitation on the valley floor, subsurface inflow from the Upper Valley Subarea, and mountain front recharge along the eastern and western Subarea boundaries.

Inflow to the Upper Valley Subarea is made up of infiltration along the Salinas River and its tributaries, with lesser amounts entering the subarea via direct recharge of precipitation on the valley floor and agricultural return flow, plus minor quantities entering via subsurface inflow from the Panch Rico Formation to the east and along drainages tributary to the Salinas River.

Outflows

Groundwater pumping is, by far, the largest component of outflow from the Basin. Of an estimated total of 555,000 afy of outflow, about 90% is groundwater pumping, with the remainder occurring as evapotranspiration along riparian corridors (Ferriz, 2001). Table ES-1 summarizes the outflow components of the water budget, as reported by MW (1998).

In general, groundwater pumping in the study area increased over the first 14 years of the available period of record (1949 to 2013), from about 380,000 afy in 1949 to about 620,000 afy in 1962, the highest pumping year on record. Pumping began to decline after about 1972, when pumping was about 530,000 afy, and fell to about 430,000 afy by 1982 before averaging about 500,000 afy over the rest of the period of record. Reported pumping for 2013 totaled about 509,000, acre-feet (af).

While annual pumping totals were relatively steady in the Pressure and East Side Subareas after about 1962, pumping in the Forebay and Upper Valley Subareas continued to increase until the early 1970's, then decreased slightly through the mid-1980's. On average, from 1949 to 2013, about 25% of basinwide pumping occurred in the Pressure Subarea, 17% in the East Side Subarea, 30% in the Forebay Subarea, and 28% in the Upper Valley Subarea.

Within the Pressure Subarea, outflow occurs as a combination of groundwater pumping and subsurface outflow to the East Side Subarea. In the East Side Subarea, outflow is made up entirely of groundwater pumping, since the reversal of the groundwater head gradient curtailed the natural subsurface outflow to the Pressure Subarea. In the Forebay Subarea, outflow is dominated by groundwater pumping, with a small amount of subsurface outflow to the Pressure and East Side Subareas. Outflow from the Upper Valley Subarea is largely made up of groundwater pumping, with a small amount of subsurface outflow to the Forebay Subarea.

Groundwater Storage

Estimated Basin groundwater storage is summarized in Table ES-2. The total stored volume of groundwater in the Basin is about 16.4 million af, and the aquifer storage capacity is approximately 19.8 million af (DWR, 2003); this suggests that there is an unfilled storage capacity of about 3.3 million af.

Storage Change

The estimation of groundwater storage changes in the Basin is more important than determining absolute storage because storage changes are measures of aquifer response to the natural hydrologic cycle (e.g. precipitation) and human-induced effects (e.g. pumping). The analysis of storage change was accomplished by considering subarea-averaged annual groundwater head elevation changes reported by MCWRA from 1944 to 2013. The accuracy of this analysis relies directly on the accuracy of the estimates of head change and of the values of storage coefficient and land area used. For this analysis, the storage coefficients reported by DWR (2003) were used[1]. Figure ES-5 shows a time series of calculated storage change for the Basin, color-coded by subarea. When compared with Figure ES-4, it is clear that there is a strong correlation between the pattern of the cumulative precipitation surplus and that of storage change. The storage change analysis included a statistical comparison between subarea storage change and annual precipitation surplus, reservoir releases, streamflow (at the Salinas River gauge near Bradley), and groundwater pumping. In all four subareas, annual storage change was correlated most strongly to annual precipitation surplus. The results of the storage change analysis are summarized in Table ES-3.

Table ES-2 Groundwater Storage

Subarea	Storage Coefficient (ft^3/ft^3)[1]	Land Area (acres)[2]	Storage Capacity (acre-feet)[1]	Groundwater in Storage (acre-feet)[1]	Available Storage (acre-feet)
Pressure	0.036	126,000	7,240,000	6,860,000	380,000
East Side	0.08	75,000	3,690,000	2,560,000	1,130,000
Forebay	0.12	87,000	5,720,000	4,530,000	1,190,000
Upper Valley	0.10	92,000	3,100,000	2,460,000	640,000
Total	--	380,000	19,750,000	16,410,000	3,340,000

Note 1: From DWR (2003).

Note 2: From the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM).

Table ES-3 Calculated Storage[1] Change by Subarea, 1944 to 2013

Subarea	Minimum Annual (af)	Maximum Annual (af)	Annual Average (afy)	Minimum Cumulative (af)	2013 Cumulative (af)	Predicted Change If Drought Continues (afy)
Pressure	-35,000	+44,000	-2,000	-144,000 (1991)	-110,000	-10,000 to -20,000
East Side	-58,000	+83,000	-5,000	-398,000 (1991)	-333,000	-25,000 to -35,000
Forebay[1]	-93,000	+98,000	-2,000	-192,000 (1991)	-105,000	-10,000 to -15,000
Forebay[2]	-93,000	+98,000	-2,000	-192,000 (1991)	-105,000	-80,000 to -90,000
Upper Valley[1]	-70,000	+65,000	-200	-88,000 (1990)	-12,000	-5,000 to -15,000
Upper Valley[2]	-70,000	+65,000	-200	-88,000 (1990)	-12,000	-50,000 to -70,000
Zone 2C[1]	-256,000	+217,000	-8,000	-786,000 (1990)	-559,000	-50,000 to -85,000
Zone 2C[2]	-256,000	+217,000	-8,000	-786,000 (1990)	-559,000	-165,000 to -215,000

Note: af = acre-feet; afy = acre-feet per year

Note 1: Based on calculated storage changes over the extended drought of WY 1984 to 1991

Note 2: Based on calculated storage changes for years with very low reservoir release (WYs 1961 and 1990)

[1] The storage calculation presented in this Executive Summary is based on the storage coefficients published in DWR (2003). In the main body of the Report, the storage calculation is based on the DWR (2003) data and an additional and smaller storage coefficient that could be representative of the confined portions of the Pressure Subarea aquifer system.

Pressure Subarea

Using the storage coefficient value of 0.036, as reported by DWR (2003), calculated storage change in the Pressure Subarea from 1944 to 2013 was about -110,000 af, averaging about -2,000 afy. Based on storage changes during the extended drought of WY 1984 to 1991, storage in the Pressure Subarea could be expected to decline by about 10,000 to 20,000 afy under continued dry conditions.

East Side Subarea

Calculated storage change in the East Side Subarea from 1944 to 2013 was about -333,000 af, averaging about -5,000 afy. Based on storage changes during the extended drought of WY 1984 to 1991, storage in the East Side Subarea could be expected to decline by about 25,000 to 35,000 afy under continued dry conditions.

Forebay Subarea

Calculated storage change in the Forebay Subarea from 1944 to 2013 was about -105,000 af, averaging about -2,000 afy. The pattern of storage change in the Forebay Subarea is quite dissimilar to that in the Pressure and East Side Subareas, being much closer to zero storage change over much of the period of record and appearing to be strongly affected by years of very low reservoir releases, which lead to very large storage declines in this Subarea. Based on storage changes during the extended drought of WY 1984 to 1991, storage in the Forebay Subarea could be expected to decline by about 10,000 to 15,000 afy under continued drought conditions. However, if reservoir releases are severely curtailed (as occurred in WYs 1961 and 1990), storage changes may be much greater in magnitude, on the order of 80,000 to 90,000 afy, or about 50 to 60% of annual pumping in the Forebay Subarea.

Upper Valley Subarea

Calculated storage change in the Upper Valley Subarea from 1944 to 2013 was about -12,000 af, averaging about -200 afy. The pattern of storage change is similar to that of the Forebay Subarea, with a similar apparent reliance on reservoir releases. Based on storage changes during the extended drought of WY 1984 to 1991, storage in the Upper Valley Subarea could be expected to decline by about 5,000 to 15,000 afy under continued drought conditions. However, if reservoir releases are severely curtailed, storage losses may be much larger, on the order of about 50,000 to 70,000 afy, or about 30 to 50% of annual pumping in the Upper Valley Subarea.

Zone 2C

Based on the numbers presented above, calculated storage change from 1944 to 2013 in all of Zone 2C was about -559,000 af, averaging about -8,000 afy. The pattern of storage change follows the pattern of the precipitation surplus, but is also affected by reservoir releases, which typically replenish approximately 35% of annual pumping as aquifer recharge. During years of exceptionally low reservoir releases, such as 1991, drought-related aquifer storage depletion is amplified.

Storage under continued dry conditions can be expected to decline by about 50,000 to 85,000 afy, comparable to past dry years. However, if reservoir releases are severely curtailed, as occurred in WYs 1961 and 1990, storage losses can be expected to be much larger, on the order of about 165,000 to 215,000 afy.

Over the period from 1959 to 2013 (the period for which groundwater pumping data are available and the reservoirs have been operating), the average annual pumping in Zone 2C was about 523,000 afy. During this same time period, the average annual storage change (calculated using groundwater head changes) was about -6,000 afy. An additional loss of storage due to seawater intrusion has occurred, and has been estimated at between 11,000 and 18,000 afy. This suggests that, overall, Zone 2C is out of groundwater balance by about 17,000 to 24,000 afy. The total calculated storage change over this period (not including seawater intrusion) was about -349,000 af, about 50% more than the storage change experienced prior to the beginning of operations of the reservoirs (about -210,000 af from 1944 to 1958), indicating that the reservoirs have greatly slowed storage losses in the Basin. However, the existing storage deficit has continued to grow over the period of record, and must be remedied before the deleterious effects of storage declines, such as seawater intrusion and the drying of wells, can be reversed. In addition, the volume of storage lost due to seawater intrusion must be better quantified.

State of the Basin - Water Supply in Zone 2C

The Basin is currently out of hydrologic balance by approximately 17,000 to 24,000 afy. However, the estimated volume of groundwater in reserve (i.e. storage) is about 6.8 million acre-feet in the aquifers of the Pressure Subarea (Table ES-2), and the total volume of groundwater stored in Zone 2C is about 16.4 million acre-feet.

The goal of the water supply analyses presented in this report was to provide a postulation of how groundwater supply may change in the future should the current drought conditions continue. This was accomplished by understanding how and why groundwater head elevations and groundwater storage have changed in the past. Independent hydrologic variables (precipitation, groundwater pumping, reservoir releases, and streamflow) were compared with the groundwater head and storage changes to provide insight (or correlations) into which of these factors is driving these changes. Lastly, this study then provides professional opinions on the consequences of using more groundwater than the estimated yield on both the short-term Basin conditions and long-term sustainability.

An analysis of historical groundwater head elevation at a selected set of 25 locations indicated that, overall, groundwater head changes are correlated most strongly to the annual precipitation surplus in the Pressure, East Side, and Forebay Subareas. Head changes in the Upper Valley Subarea are not well-correlated to any independent variable; whereas, the storage changes discussed above are statistically correlated to annual precipitation surplus.

Based on statistical correlations and comparison with the extended drought from WY 1984 to WY 1991, representative head changes at the Subarea scale are expected to range from:

- -5.3 to -1.1 feet per year in the Pressure Subarea (for all three aquifers),
- -9.6 to -3.0 feet per year in the East Side Subarea,
- -5.6 to -1.8 feet per year in the Forebay Subarea, and
- -2.0 to +0.2 feet per year[2] in the Upper Valley Subarea.

Storage changes are also strongly affected by the occurrence of very low reservoir releases, which have historically resulted in storage declines. The cumulative storage loss over the period from 1944 to 2013, not including storage volume lost to seawater intrusion, was about 559,000 af for all of Zone 2C. About 40% of the storage loss occurred in the 14 years before Nacimiento Reservoir

[2] Positive head changes in individual wells are reflective of increases in head that occurred in select wells during the WY 1984 to 1991 drought, and are not reflective of the average head change in the Upper Valley Subarea during the same period. It is considered unlikely that continued drought conditions will result in an overall increase in head in the Upper Valley Subarea, although individual wells may see head increases, depending on local conditions.

began releasing water, while about 60% occurred over the 55 years from 1959 to 2013. Estimates of storage decline in future dry years range from about 50,000 to 215,000 afy (Table ES-3), depending on the level of reservoir releases that occur. This storage loss, added to the existing storage deficit built up over the history of groundwater development in the study area, will exacerbate the problem of seawater intrusion in the Pressure Subarea.

State of the Basin - Seawater Intrusion

The water quality analysis in this study was undertaken to determine the extent of seawater intrusion into the coastal aquifers in 2013 and to analyze how it is likely to evolve in the future, should the current dry conditions continue into the coming years. The extent of seawater intrusion into the Pressure 180-Foot and Pressure 400-Foot Aquifers (Figures ES-6 and ES-7, respectively) in 2013 was not different from the extents mapped in 2011, indicating that the first two years of current drought did not have an apparent effect on the movement of the seawater intrusion front.

In assessing other markers of seawater intrusion, the sodium to chloride (Na/Cl) ratios[3] indicate that numerous wells on the landward side of the seawater intrusion front have likely been affected by seawater intrusion, even though the chloride concentration has not increased to the 500 mg/L level used by MCWRA to delineate seawater intrusion. Wells screened in the Pressure 400-Foot Aquifer that are several miles landward of the mapped seawater intrusion extent may have been impacted by seawater intrusion in the past. The landward seawater mixing with deeper groundwater can possibly be attributed to the vertical movement of groundwater from the Pressure 180-Foot Aquifer into the lower Pressure 400-Foot zone. Possible mechanisms include: a) natural leakage through areas of thin or absent aquitard between the two aquifers, b) via wells screened across both aquifers, and c) along faulty or compromised well casings acting as conduits.

The accelerated rate of seawater intrusion in 1984 can be attributed to the seven-year drought that started in 1984, the extent of which is depicted in Figures ES-6 and ES-7. The apparent rate of seawater intrusion in the period peaked from 1997 to 1999, despite the fact that the groundwater head elevations began to recover before this time from the declines experienced during the WY 1984 to 1991 drought. If this latent response to an extended drought is repeated in the Basin, water quality impacts stemming from the current drought may not manifest for several years. Chloride concentrations in affected wells increased by up to 100 mg/L from the beginning of the extended drought to 1999, and similar concentration changes may be expected in wells near the seawater intrusion front over the coming years.

Options to Address Water Supply under Continued Drought Conditions

Based on the analyses discussed above, the Basin is out of hydrologic balance. The average annual groundwater extraction for the four primary water-producing subareas that compose Zone 2C was about 523,000 afy from 1959 to 2013. The average annual change in storage was about -17,000 to -24,000 afy, including seawater intrusion. This implies that the yield for Zone 2C is on the order of about 501,000 to 508,000 afy; the deficit is essentially the storage change (loss) stated above. It is important to note that the Basin does have an estimated volume of groundwater in storage of about 16 million af (Table ES-2), which could represent a significant groundwater reserve – as compared to the current estimated storage loss of 17,000 to 24,000 afy – and could be used to offset temporary overdraft conditions in the future.

[3] Calculated from historical water quality data at selected monitoring wells

Based on the continued large storage declines in the East Side and Pressure Subareas (and resulting groundwater head declines and seawater intrusion), the current distribution of groundwater extractions is not sustainable. Seawater intrusion can account for up to 18,000 afy of the total storage loss of 24,000 afy. Sustainable use of groundwater can only be achieved by aggressive and cooperative water resources planning to mitigate seawater intrusion and groundwater head declines.

The consequences of no-action under continued drought conditions will be the imminent advancement of seawater intrusion within the next few years and the continued decline of groundwater head. Both of these conditions would necessitate the drilling of deeper groundwater wells to produce the quantity and quality of water needed for consumptive use and irrigation. The installation of deeper wells may not be feasible in some areas because of lower groundwater yield and water quality in the Pressure Deep Aquifer. A more sustainable and long term management practice would encourage a Basin-wide redistribution and reduction of groundwater pumping, which would require cooperative and aggressive resource management. The unsustainability of the current distribution of groundwater extractions has long been recognized by various investigators, and Basin-wide redistribution and reduction of pumping have been recommended previously (e.g. DWR, 1946).

Management Option 1

The large storage declines that have occurred in the Basin in the past, especially in the East Side Subarea, have created a significant landward groundwater head gradient that must be reversed before seawater intrusion can be halted. Reduction of pumping in the Pressure and East Side Subareas could help mitigate some of the anticipated effects of extended drought on groundwater storage and water quality in the study area. Shifting of pumping to areas farther away from the coast would also be helpful, as long as it is shifted south of the current head trough (Figure ES-3) that exists in the East Side Subarea. While not currently consistent with County Policy, shifting pumping to areas that are both south of the seawater intrusion zone and hydraulically connected to the Salinas River does represent a physical option for addressing seawater intrusion.

DWR (1946) recommended that pumping be curtailed in the Pressure and East Side Subareas and substituted with extraction in the Forebay and Upper Valley Subareas, which are strongly connected to (and interact with) the Salinas River. Yates (1988) performed a numerical modeling analysis of the Basin, with a specific focus on the effect of pumping changes on seawater intrusion, and found that seawater intrusion could be cut by more than half (from about 18,000 to 8,000 afy) over a 20-year period by decreasing pumping in the Pressure and East Side Subareas by 30%[4]; whereas, reducing pumping in the Forebay and Upper Valley Subareas had minimal to no effect on seawater intrusion.

Management Option 2

The shifting of some pumping from the Pressure 180-Foot and Pressure 400-Foot Aquifers to the Pressure Deep Aquifer would reduce the storage deficit in the shallower aquifers; however, this would necessarily lead to head declines in the Pressure Deep Aquifer. Unlike the Pressure 180-Foot and Pressure 400-Foot Aquifers, it is uncertain if the Pressure Deep Aquifer is hydraulically connected to the ocean in Monterey Bay, so it is not known whether this pumping shift would lead to the onset of seawater intrusion into the Pressure Deep Aquifer. Also unknown is the likelihood of localized interaquifer seawater mixing between the Pressure 400-Foot Aquifer and the Pressure

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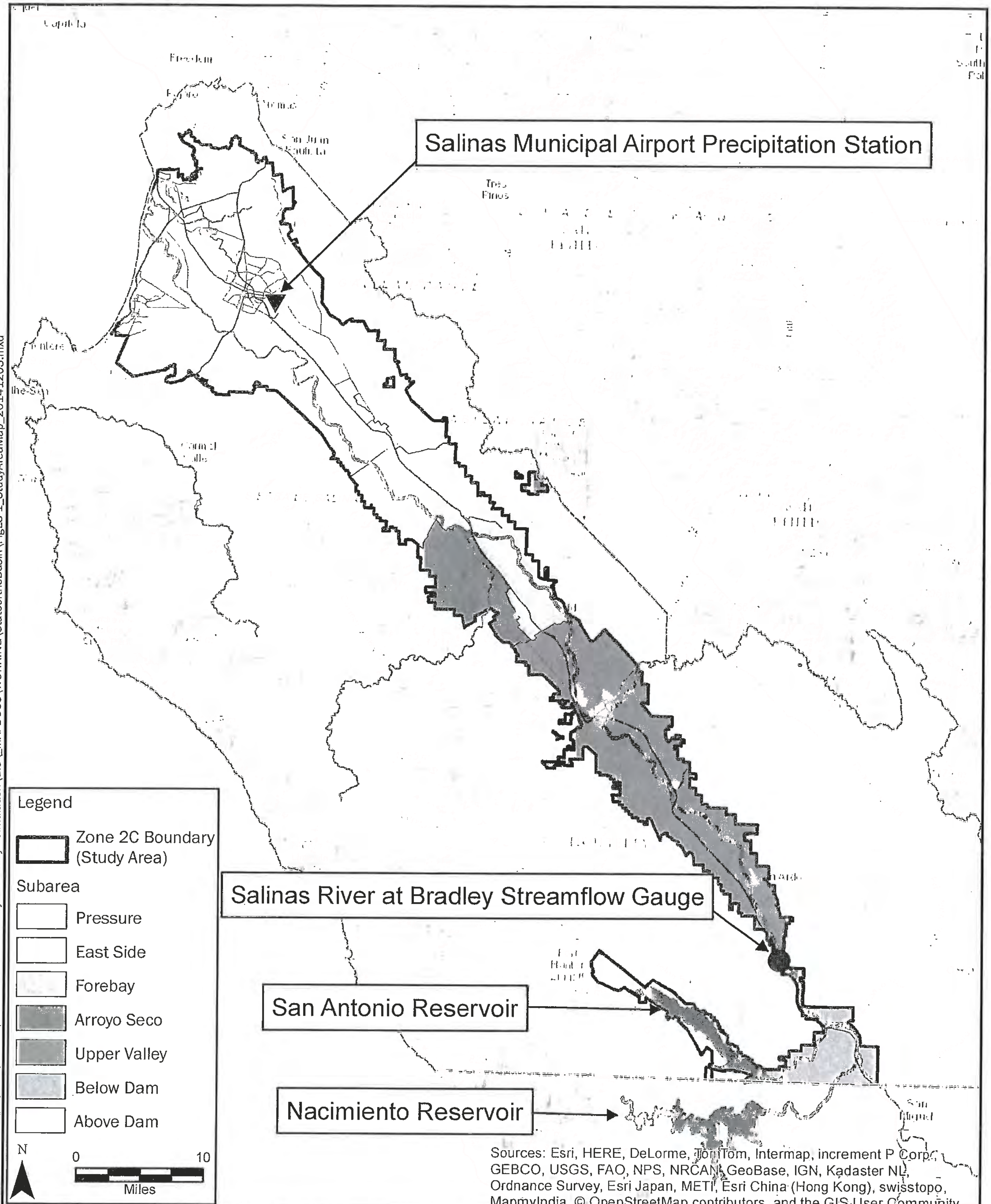
[4] Note that Yates (1988) assumed an agricultural pumping rate of 512,200 afy, based on the results of a land use survey performed in the Salinas Valley in 1976. Recent pumping rates are slightly lower (around 500,000 afy), in part due to the operation of the Monterey County Water Recycling Projects.

Deep Aquifer. Hence, this Management Option requires more investigation to determine its feasibility.

Evaluation of Potential Solutions

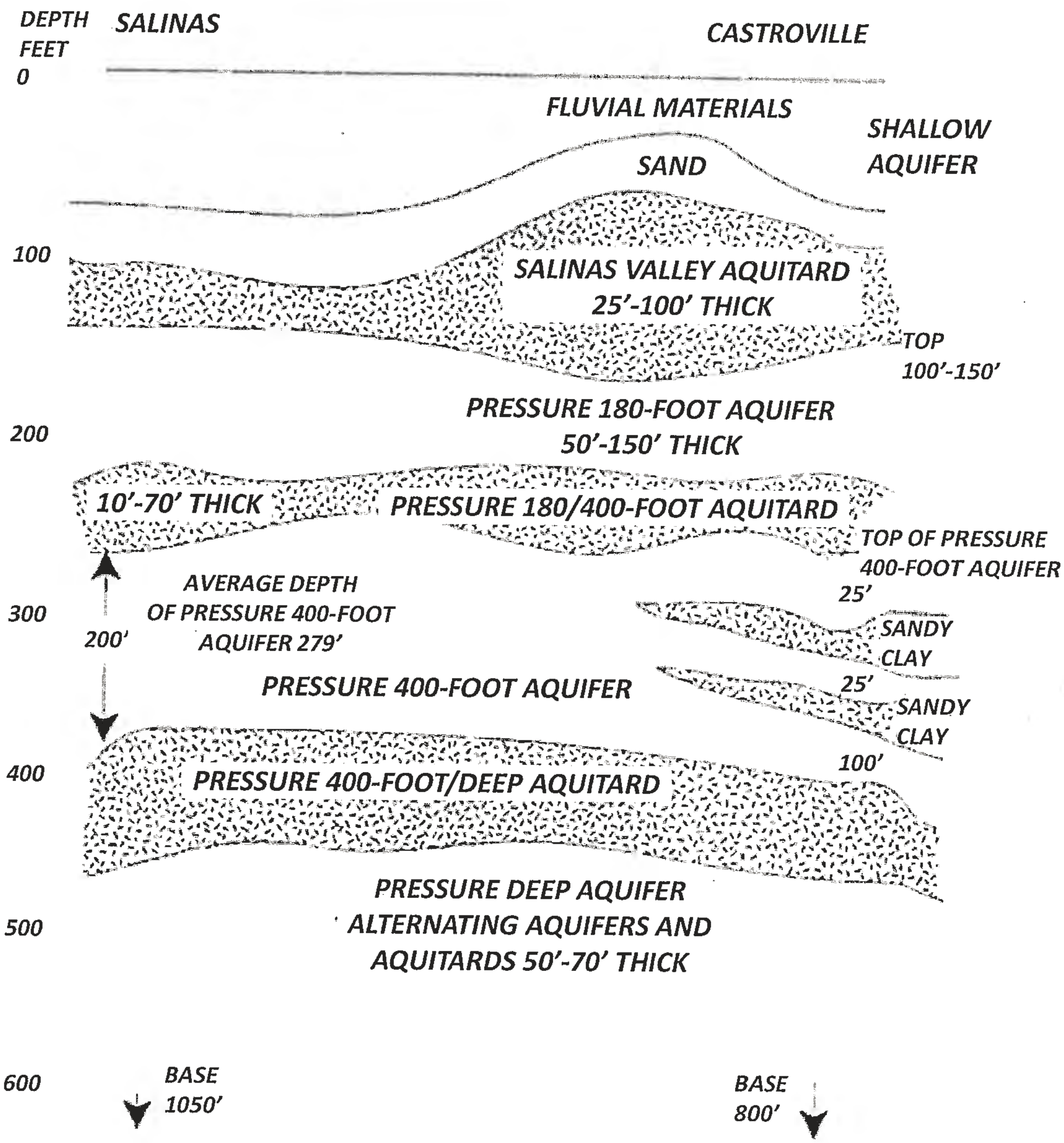
The numerical modeling analysis to be performed as the second part of this Basin Investigation will consider the effects of various management decisions on the water supply and water quality in the study area. The primary questions to be answered for each scenario are 1) what will be the rate of groundwater head decline and 2) what will be the rate of increase in acreage with impaired water quality due to the advancement of the seawater intrusion front. We can then determine the economic effects of 1) and 2) due to water supply wells becoming inoperable (i.e. dry), and the further loss of aquifer storage capacity due to the advancement of seawater intrusion.

The numerical model should be used to predict groundwater head declines under different management scenarios, including implementing targeted pumping rates and optimizing the distribution of pumping. Future declines in groundwater head must be evaluated by simulated groundwater conditions so that "trigger (groundwater) head levels" can be used as a measure of safe yield and an early alert system as part of Basin Management Objectives. That analysis will extend the discussions and conclusions presented in this report.



Document Path: BCSACFP01\bcsac01\projects\46000\146430 - Salinas Valley GW Study - Simulation\GIS_MAPDOCS\WORKING\StateoftheBasin\FigES-1_StudyAreaMap_20141203.mxd

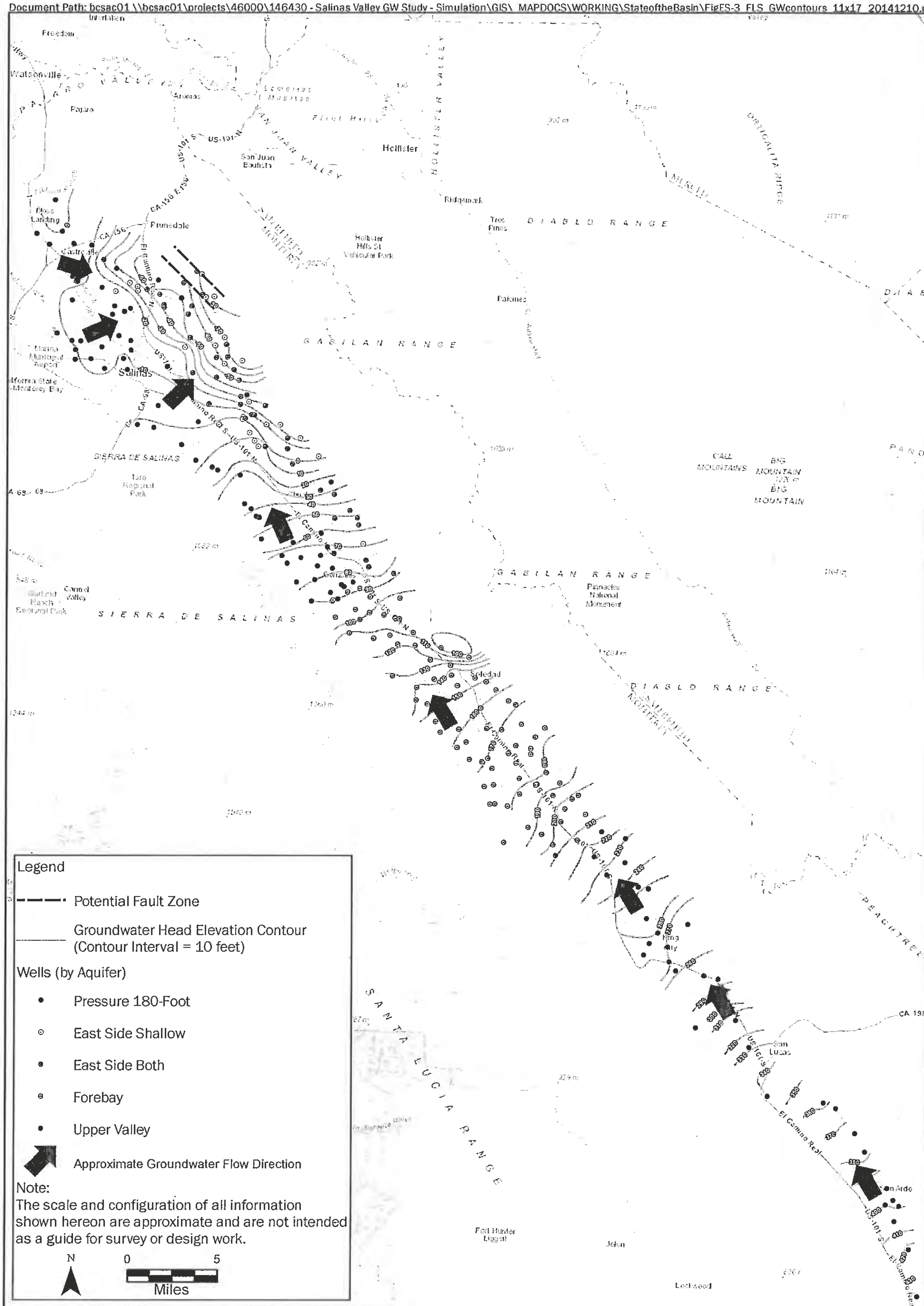
DATE	PROJECT	SITE	
12/03/14	146430	**Salinas River Groundwater Basin Investigation**	**Figure ES-1**
Brown AND Caldwell		TITLE **Study Area Map**	



Modified from Hall and Earthware of California, 1992.

Brown AND Caldwell	DATE 12/03/14	SITE Salinas River Groundwater Basin Investigation	Figure
	PROJECT 146430	TITLE Conceptual Hydrostratigraphic Section in the Pressure Subarea	ES-2

Document Path: bcsac01 \\bcsac01\projects\46000\146430 - Salinas Valley GW Study - Simulation\GIS_MAPDOCS\WORKING\StateoftheBasin\FigES-3_FLS_GWcontours_11x17_20141210.mxd



Legend

- Potential Fault Zone
- Groundwater Head Elevation Contour (Contour Interval = 10 feet)

Wells (by Aquifer)

- Pressure 180-Foot
- East Side Shallow
- East Side Both
- Forebay
- Upper Valley
- Approximate Groundwater Flow Direction

Note:
The scale and configuration of all information shown hereon are approximate and are not intended as a guide for survey or design work.

N 0 5 Miles

SITE
Salinas River Groundwater Basin Investigation

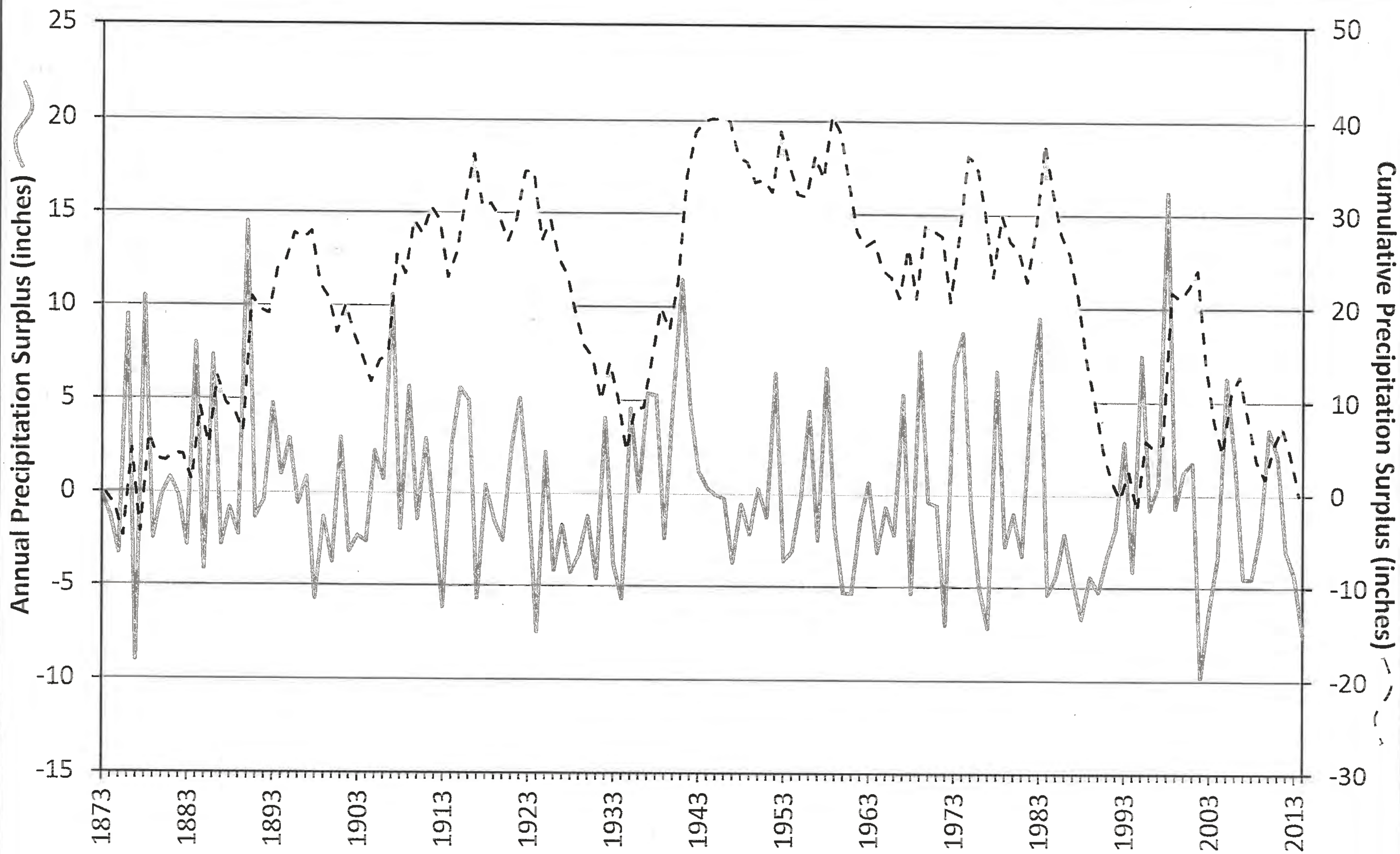
TITLE
Lines of Equal Groundwater Head Elevation in the Pressure 180-Foot, East Side Shallow/Both, Forebay, and Upper Valley Aquifers - Fall 2013

Brown AND Caldwell

DATE 12/10/14
PROJECT 146430

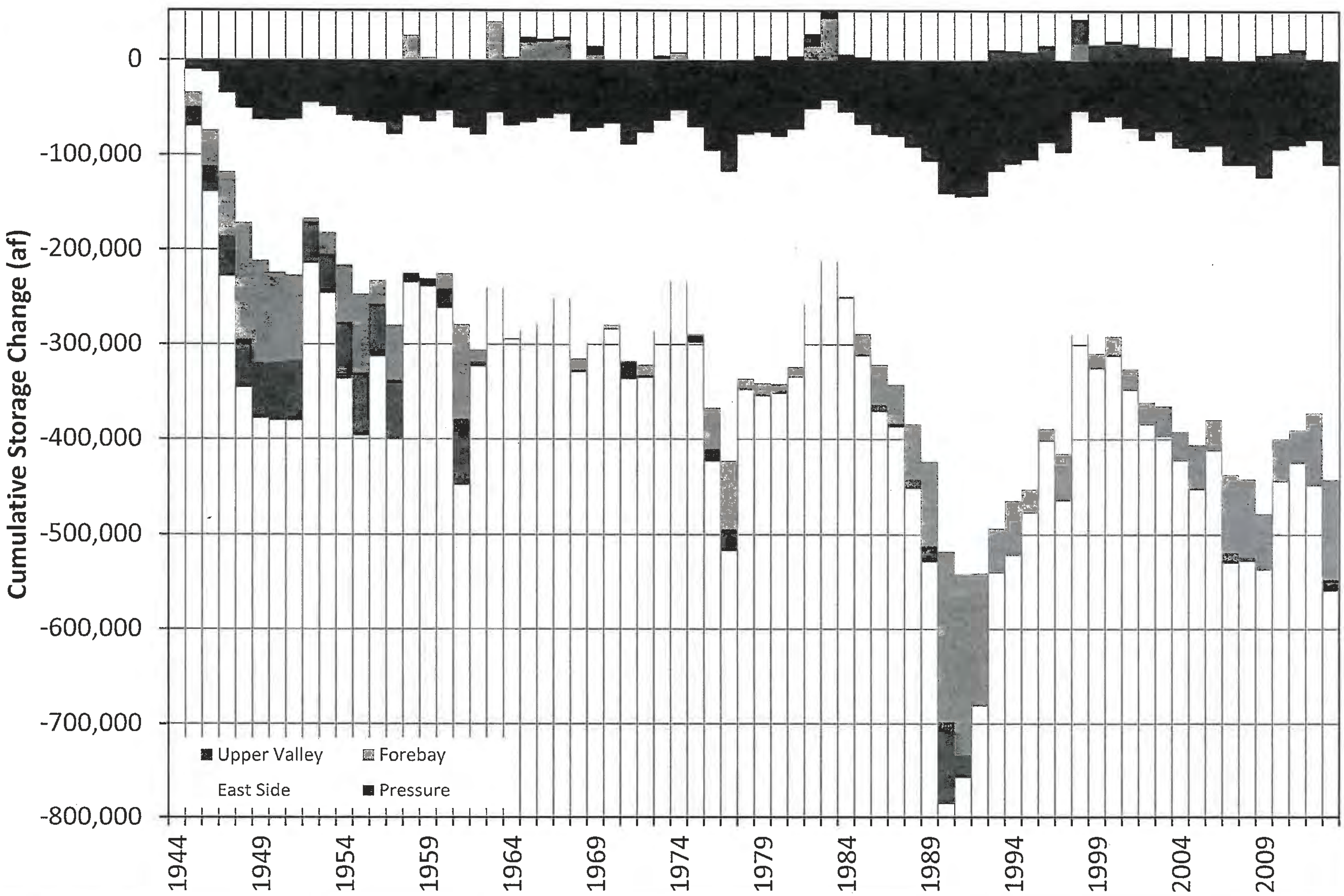
Figure ES-3

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



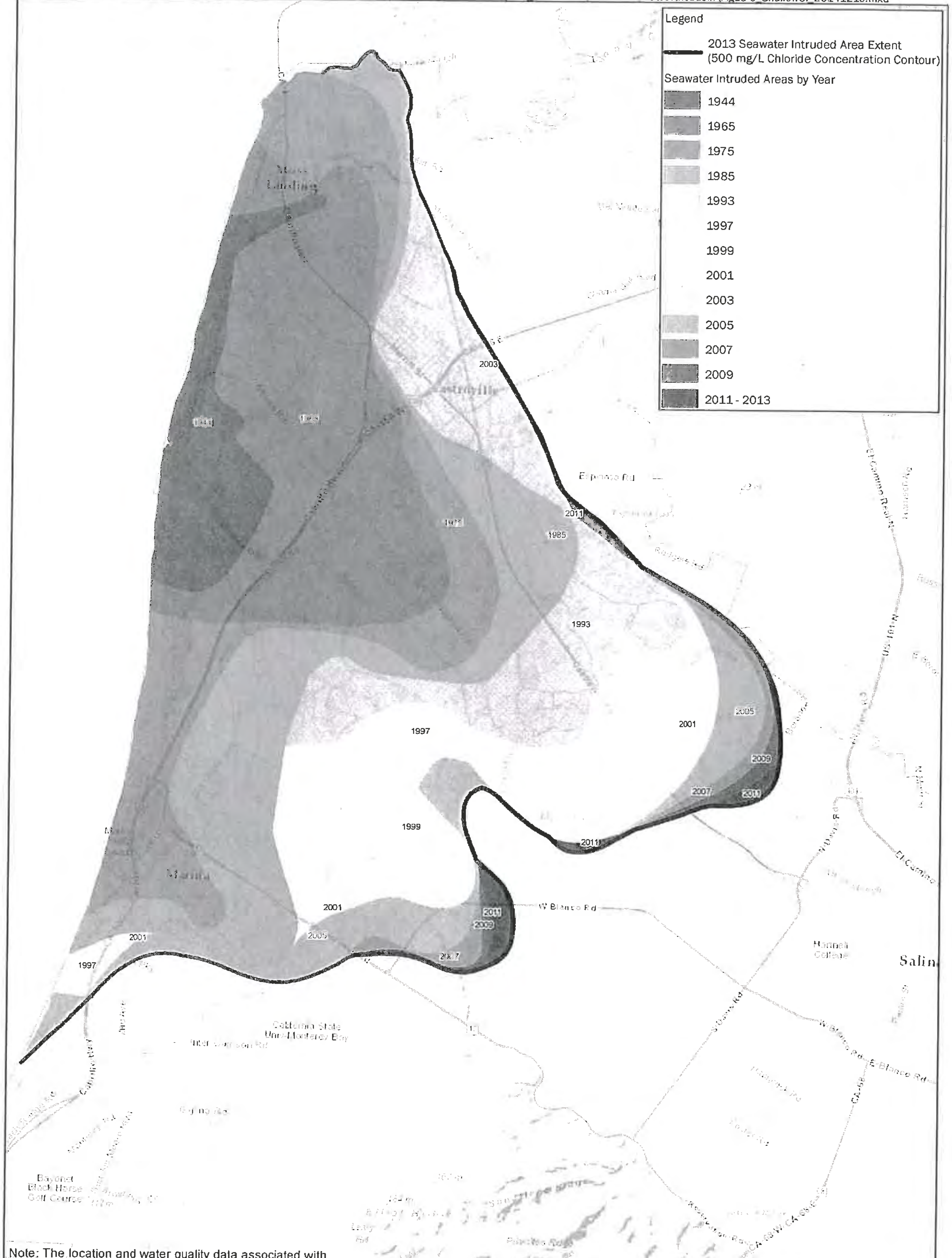
Note: The annual precipitation surplus represents the difference between the annual precipitation and the long-term mean.

Brown AND Caldwell	DATE 12/03/14	SITE Salinas River Groundwater Basin Investigation	Figure ES-4
	PROJECT 146430	TITLE Annual and Cumulative Precipitation Surplus at Salinas Municipal Airport	



Brown AND Caldwell	DATE 12/03/14	SITE Salinas River Groundwater Basin Investigation	Figure ES-5
	PROJECT 146430	TITLE Cumulative Storage Change by Subarea	

Document Path: BCSAC01\\bcsac01\projects\46000\146430 - Salinas Valley GW Study - Simulation\GIS_MAPDOCS\WORKING\StateoftheBasin\FigES-6_ShallowCl_20141210.mxd

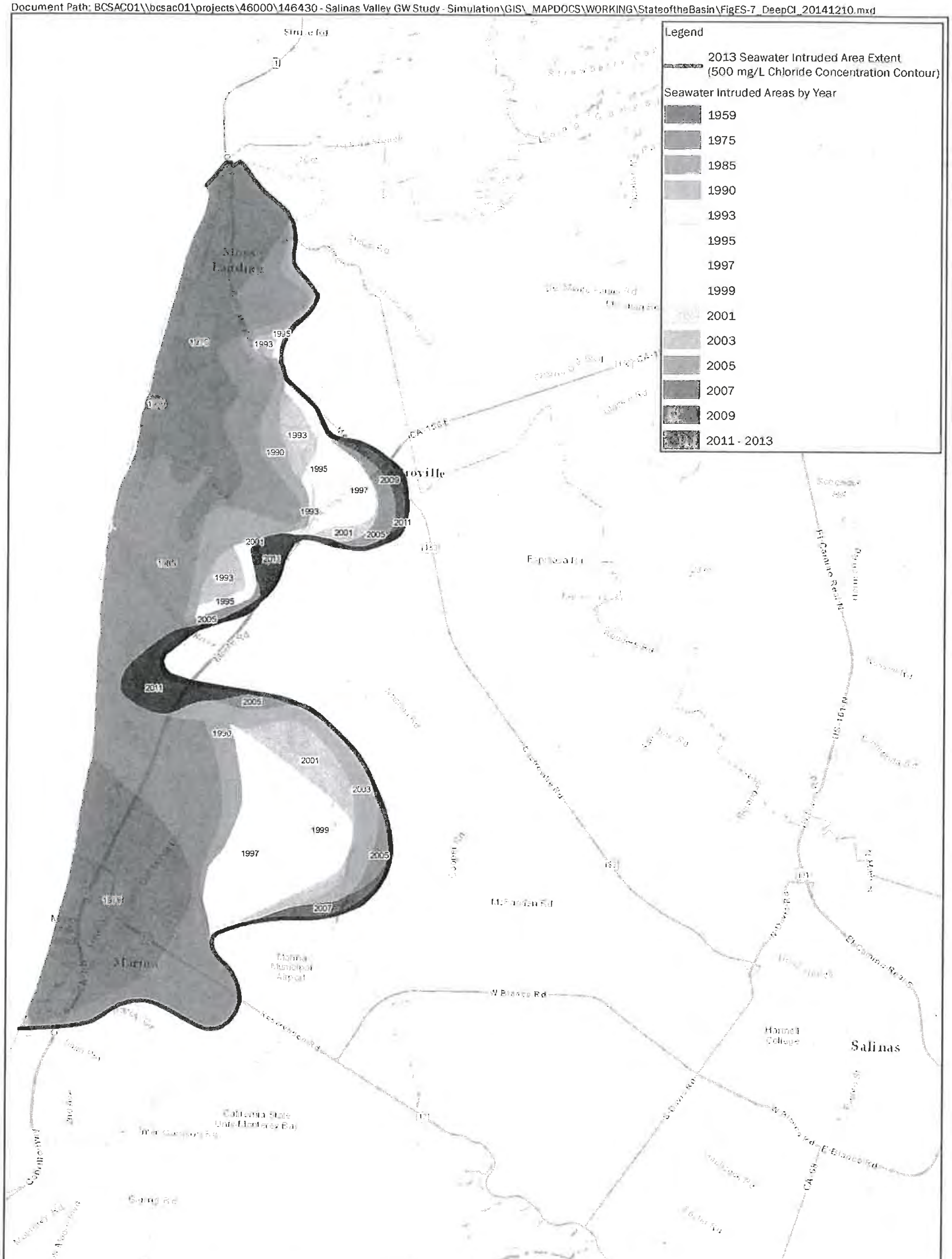


Note: The location and water quality data associated with groundwater wells monitored by the Monterey County Water Resources Agency are confidential per agreement between well owners and the Agency, and as such are not shown on map.

SITE	Salinas River Groundwater Basin Investigation
TITLE	Pressure 180-Foot and East Side Shallow/Both Aquifer Chloride Contours - 2013
Brown and Caldwell	DATE 12/10/14
	PROJECT 146430
	Figure ES-6

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Document Path: BCSAC01\\bcsac01\projects\46000\146430 - Salinas Valley GW Study - Simulation\GIS_MAPDOCS\WORKING\StateoftheBasin\FigES-7_DeepCl_20141210.mxd



Note: The location and water quality data associated with groundwater wells monitored by the Monterey County Water Resources Agency are confidential per agreement between well owners and the Agency, and as such are not shown on map.

SITE

Salinas River Groundwater Basin Investigation

TITLE

Pressure 400-Foot and East Side Deep Aquifer Chloride Contours - 2013

Brown AND Caldwell

DATE 12/10/14

PROJECT 146430

Figure ES-7

N

0 1 Miles

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

November 26, 2014
Job Number: 14-6-107

John Ford
RMA-Planning Services Manager
County of Monterey
168 W. Alisal Street
Salinas, CA 93901

SUBJECT: OPINIONS OF IMPACTS ON GROUNDWATER CONDITIONS FROM PROPOSED FERRINI RANCH DEVELOPMENT, MONTEREY COUNTY

Dear Mr. Ford:

At the request of Mark Kelton, Luhdorff and Scalmanini Consulting Engineers (LSCE) are providing this letter summarizing our opinions regarding the likely impact the Ferrini Ranch development (Project) may have on groundwater conditions in the northern portion of the Salinas Valley groundwater basin. These opinions are based on previous work conducted in the Salinas Valley dating back to involvement in the development and technical analysis of the Salinas Valley Water Project (SVWP) Environmental Impact Report and Environmental Impact Statement and subsequent involvement in other groundwater investigations focused on the northern portion of the Salinas Valley groundwater basin (Basin), review of the Ferrini Ranch project description, and the Monterey County Planning Commission staff report on October 8, 2014 (Staff Report).

Opinions

1. ***The growth in water demand by the Ferrini Ranch Project was accounted for in the technical analysis of the SVWP.***

This statement was verified in the Staff Report and therefore, the results of the SVWP analysis in addressing seawater intrusion accounts for the urban water demand of the Ferrini Ranch.

Urban demand in the Pressure subarea where the Ferrini Ranch is located and where the pumping by Cal Water to service the development is located was estimated to be 21,000 acre feet per year as part of the analysis of Phase I of the SVWP. In 2013, as reported by the Monterey County Water Resources Agency (Agency) in the Agency's groundwater extraction report (MCWRA, 2014), the current urban demand/pumping in the Pressure subarea was approximately 19,000 acre feet, 2,000 acre feet less than the amount projected in the analysis of Phase I of the SVWP.

To put the overall groundwater pumping numbers in perspective in the Pressure subarea, groundwater pumping for agriculture was approximately 95,500 acre feet in 2013 (MCWRA, 2014). The SVWP Phase I analysis assumed groundwater pumping for agriculture in the Pressure subarea would be about 107,500 acre feet prior to SVWP surface water deliveries and an average reduction of groundwater pumping of about 9,700 acre feet per year following SVWP surface water deliveries to about 98,000 acre feet per year. In summary, combined groundwater pumping for agriculture and urban use in the Pressure subarea is currently less than the 1995 water use conditions used in the technical analysis of the SVWP Phase I.

2. ***Rate of Seawater Intrusion and Potential Impact by Groundwater Pumping for the Ferrini Ranch***

As noted in the Staff Report, the rate of seawater intrusion has slowed but a definitive determination of the effectiveness of the SVWP Phase I will not be available for several years. I agree with this statement, however, closer analysis of MCWRA-produced seawater intrusion maps available on MCWRA website indicates that there is more relevant details than those presented in the Staff Report. Seawater intrusion has not advanced since 2007 in the area upgradient (toward the coastline) from the general location and aquifer unit where the Cal Water wells are located (see attached map).

3. ***Total Project demand is significantly less than overall storage capacity***

As noted in the Staff Report, the Project's water demand, approximately 90 acre feet per year for the proposed Project alternative is very small in relation to the 6.8 million acre feet of water in storage. To expand upon staff's statement, the water demand by the Project equates to such an extremely small percentage of aquifer storage that there is likely to be a greater amount of error or uncertainty involved in the calculation of aquifer storage as compared to the projected water use by the Project. When comparing Project water use to overall water use in the Pressure subarea, the Project increases existing groundwater pumping in the Pressure subarea (19,000 af urban and 95,500 af agriculture) by less than one tenth of one percent. Even this increase is likely less than the uncertainty involved in the estimation of water use in the Pressure subarea.

4. ***Historical Overdraft Conditions in the Salinas Valley Groundwater Basin and Economic and Urban Growth***

There is a long history of overdraft in the form of seawater intrusion in the Basin however, the County has also a history of continued pursuit of water projects to address this issue. Overdraft has been identified in the Basin since the 1930s and water projects, initially in the form of the development of Nacimiento and San Antonio reservoirs and most recently in the form of the SVWP, have been constructed to address overdraft concerns. Despite the overdraft conditions and continued implementation and planning of water projects to address those conditions, the County has also maintained economic growth in the Basin which provides the tax base to fund these water projects. The Project was included in the zones established by the MCWRA to fund past water projects and also the SVWP. As a result, the Project should be approved since the property owner is paying for the benefits of these projects. The Project is helping to fund improvements designed to combat overdraft conditions in the Basin. As a result, and due to its very small demand, the Project will not exacerbate overdraft conditions in the Basin over and above what has already been accounted for in the SVWP technical analysis.

Conclusions

In summary, the Project's water demand was accounted for in the SVWP Phase I analysis. The SVWP Phase I project was designed to address seawater intrusion based on 1995 land and water use conditions. The 1995 water use conditions in the Pressure subarea that were analyzed were greater than existing water use almost 20 years later. There has not been any migration of seawater intrusion in the area upgradient from where the Cal Water wells are located that have been identified as serving the Project in the 400 foot aquifer. Project water demand is miniscule compared to overall aquifer storage and existing water use. Finally, the implementation of water projects to address overdraft in the Basin should not preclude growth, especially if that growth has already been accounted for in evaluating the effectiveness of water projects to curb seawater intrusion.

Sincerely,

LUHDORFF AND SCALMANINI
CONSULTING ENGINEERS

William L. Halligan

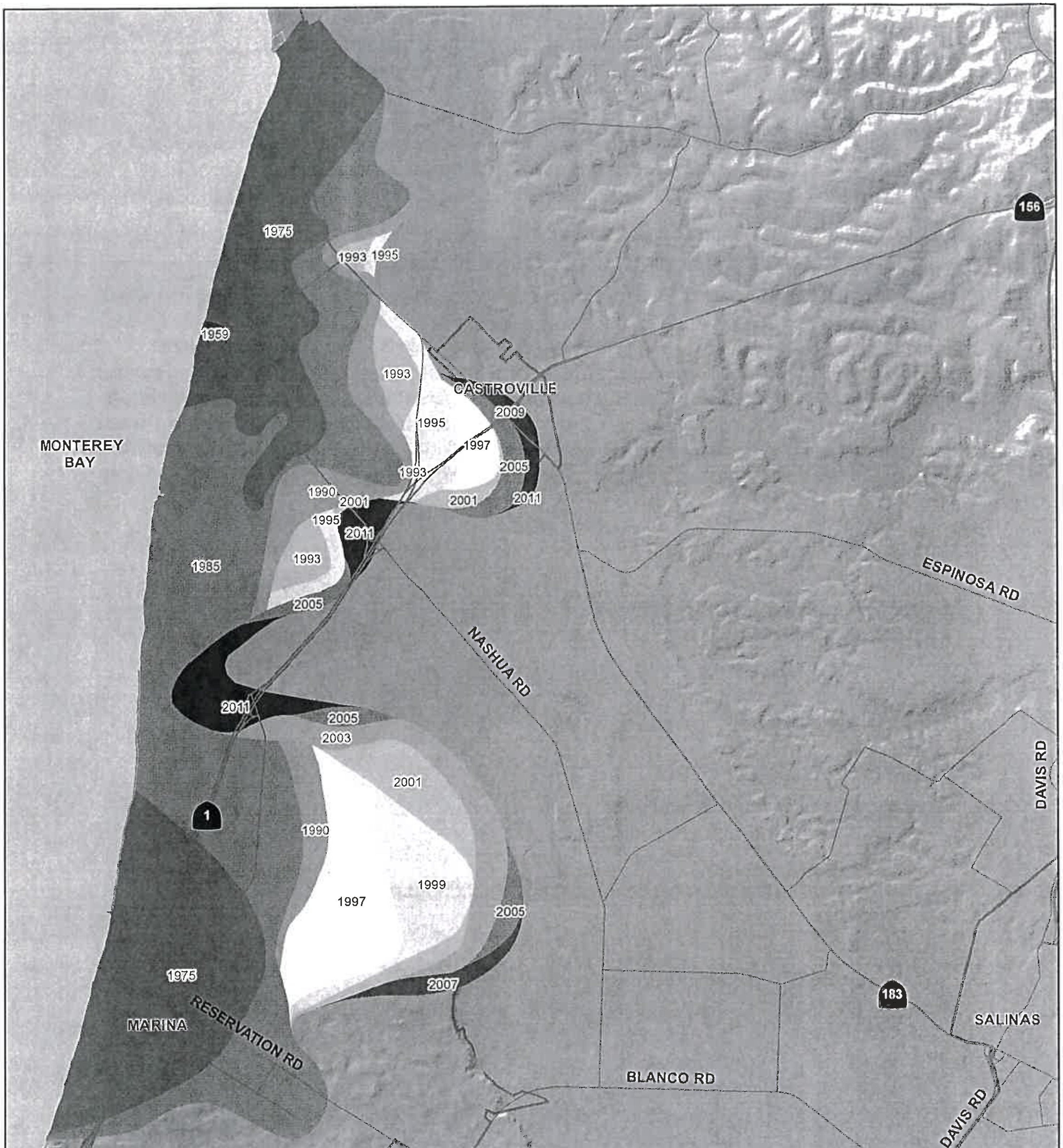
PROFESSIONAL GEOLOGIST
WILLIAM L. HALLIGAN
No. 7056
STATE OF CALIFORNIA

William L. Halligan P.G.
Senior Project Manager/Hydrogeologist

Figure 1: MCWRA Seawater Intrusion Map for 400 foot Aquifer

References

MCWRA, 2014. 2013 Groundwater Summary Report. October 2014.



Historic Seawater Intrusion Map

Pressure 400-Foot Aquifer - 500 mg/L Chloride Areas

Legend

Seawater Intruded Areas By Year

1959	1995	2005
1975	1997	2007
1985	1999	2009
1990	2001	2011
1993	2003	Cities

N W E S

0 0.5 1 1.5 2 Miles

MONTEREY COUNTY WATER RESOURCES AGENCY 1947

Note: The scale and configuration of all information shown hereon are approximate and are not intended as a guide for survey or design work. Contours lines are drawn from best available data.

Map Date: August 7, 2012

Salinas River test project deemed success

Dennis L. Taylor *4:58 p.m. PST November 6, 2014*

(Photo: Jay Dunn/The Salinas Californian)

The first collaborative effort to clear the Salinas River of brush and debris to control flooding, while at the same time protecting native species habitat, was unveiled Wednesday along a stretch of river just outside of Gonzales.

The practice of bulldozing the stream bed, which was halted in 2008 by state and federal regulators because universal clearing of sections of the river threatened endangered species, particularly steelhead, was intended to increase channel water velocity by removing impediments to flow. When the river is clogged with vegetation, a damming effect can cause the river to spill its banks onto valuable cropland.

Growers lined up on one side of the river; environmentalists and regulators on the other side, dug their heels into the silt and stared menacingly at each other for eight years. Then in September 2013, representatives of The Nature Conservancy sat down shoulder-to-shoulder with farmers to begin planning ways in which everyone would walk away from the table secure in knowing they got something out of it.

The Nature Conservancy, or TNC, has earned respect over the years by working collaboratively with growers and ranchers by purchasing agricultural easements to prevent developers from buying up prime farm- and rangeland and turning the Salinas Valley into five-acre parcels covered with McMansions.

So in October of that year, TNC began holding workshops with growers and stakeholders to understand everyone's needs and begin a tedious process of drafting plans for demonstration projects – one near Chualar and one near Gonzales. Combined, the projects span 11.5 miles of the river.

The resulting design mimics the natural braided channels of the river. During winter rains, the river rarely stays within a single channel, rather spreads out into disjointed channels that can resemble braids. Hydrologists and other scientists studied velocity, depth and direction of these braids to determine how best to use these secondary channels.

"When the floodwaters came, we watched where the river wanted to go," said Jennifer Biringer, the senior director of TNC. "Instead of fighting it, we learned to go with it and allow the channels to braid in and out of each other."

One conclusion of the research is the limitations of channel maintenance in general. Even if all the debris were removed from the channels, the river would still be prone to even five-year floods – flooding that occurs on average once every five years.

The computer modeling also shed light on the problems created by the old practice of bulldozing randomly. It might work well to prevent some flooding along that farmer's section of the river, but it only makes flooding worse for the farmer's downstream neighbor, Biringer said.

Creating multiple pathways for the water to flow eases flooding and helps migrating steelhead by creating low-flow areas, she added. Steelhead do not spawn in the Salinas River, but use the river to swim upstream to their historical spawning grounds on tributaries such as the Arroyo Seco River.

It's a long haul from the ocean to the Arroyo Seco, and the steelhead need to rest in shaded water along the way. Consequently, the project design focused on removing tons of the invasive cane-like weed arundo, which sucks up water and provides very little wildlife habitat. So biologists would tag trees with ribbon, and when the mowing commenced, the small, maneuverable mowers would take out the arundo but steer clear of the valuable trees and other native vegetation.

"In fact, no native vegetation was touched," Biringer said. "I'm confident that it is a successful step in the right direction. Growers are very pleased."

Dennis L. Taylor covers environment and water issues for TheCalifornian.com. Follow him on Twitter @taylor_salnews.

Who was involved

Local partners in the Salinas River flood control effort included the Monterey County Water Resources Agency, the Salinas River Channel Coalition, Grower Shipper Association, and Monterey County Resource Conservation District. Federal, state and regional government agencies included Army Corps of Engineers, National Oceanic & Atmospheric Administration, U.S. Fish & Wildlife, California Central Coast Water Board, California Department of Fish & Wildlife, and Environmental Protection Agency.

The project has also received strong support from U.S. Rep. Sam Farr, Assemblyman Luis Alejo, state Sen. Anthony Cannella and Monterey County Supervisor Simon Salinas.

Read or Share this story: http://bit.ly/1qsusxK

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Previously convicted Salinas man accused of killing dad

(/story/news/local/2015/02/18/previously-convicted-salinas-man-accused-killing-dad/23634383/)
(/story/news/local/2015/02/18/previously-convicted-salinas-man-accused-killing-dad/23634383/)

Feb. 18, 2015, 1:46 p.m.

Section of Davis Road to be closed today

(/story/news/local/2015/02/18/section-davis-road-closed-today/23616869/)
(/story/news/local/2015/02/18/section-davis-road-closed-today/23616869/)

Feb. 18, 2015, 9:28 a.m.

Prunedale probation search finds guns, marijuana

(/story/news/local/2015/02/18/prunedale-probation-search-finds-guns-marijuana/23615193/)
(/story/news/local/2015/02/18/prunedale-probation-search-finds-guns-marijuana/23615193/)

Feb. 18, 2015, 8:59 a.m.

Weekend rain pushes Monterey County year total above normal

By Dennis Taylor

POSTED: 11/01/14, 12:01 AM PDT |
0 COMMENTS

MONTEREY >> Rainfall in Monterey County is significantly above the normal level since July, a statistic fueled in part by a rainy start to the weekend, according to the National Weather Service in Monterey.

Forecaster Diana Henderson said season-to-date rainfall measured at Salinas Municipal Airport is 207 percent of normal since the measurement period began on July 1.

Salinas has received 1.68 inches of rain since that date, compared to a normal average of 0.81 from July through October, according to airport statistics. The Salinas climate site, in a different location, measured 2.18 inches during that period of time.

Since rain began falling on Monterey County on Friday morning, Monterey Regional Airport had measured 1.94 inches of rainfall through 4 p.m. Saturday. Big Sur got the heaviest precipitation with 2.93 inches during that time.

"We got rain because a cold front came through," Henderson said. "Now that that front has moved on into Los Angeles, we have a high-pressure system coming behind it, which means we should be looking at fair weather for the entire week."

Dennis Taylor can be reached at 726-4371.

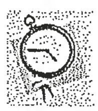
Water Project Integration to Combat Seawater Intrusion

Robert Johnson
AGM / Chief of Water Resources Planning

Planning Commission
October 29, 2014

Today's Presentation

- Introduction
- Background Information
- Groundwater Extraction Information
- Project Integration
- Where we are today
- Summary

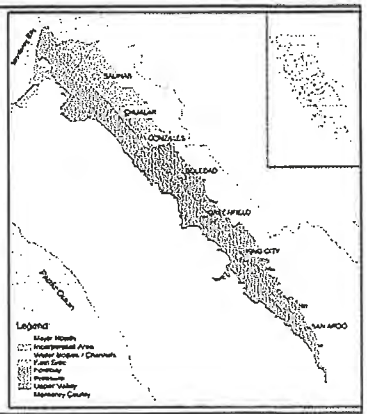


Monterey County Water Resources Agency

- Created 1947
  - Previously MCFC&WCD
  - Special Legislation
  - Special District – not a County Department
  - Shares County BOS / does not share General Fund
- Changed to MCWRA in 1991
  - Added a Board of Directors
  - Dual Governance – can be challenging
- Authority over County water
- Responsibility where funded

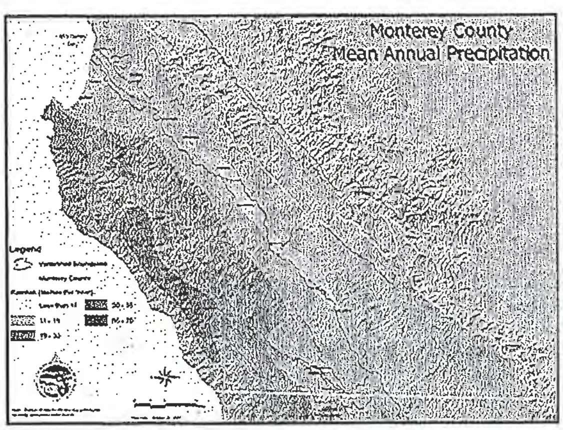
Salinas Valley

- Four major hydrologic subareas
  - Pressure - Brown
  - East Side - Gray
  - Forebay - Bluish
  - Upper Valley – Lt Green
- Hydrologically connected

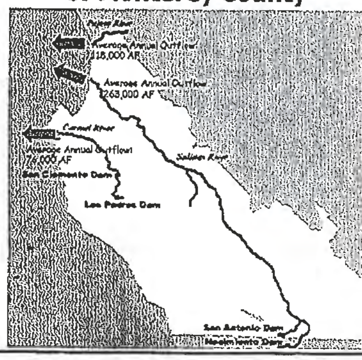


Where does Monterey County get its water from?

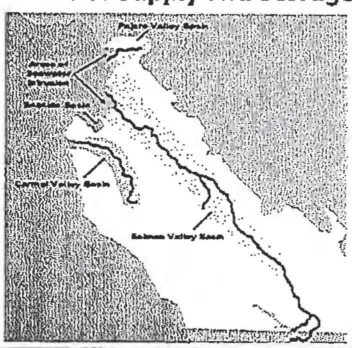
Monterey County Water Resources Agency



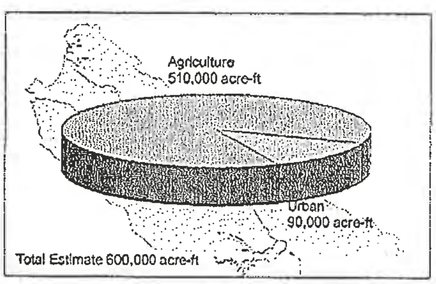
Surface Water Supplies of Monterey County

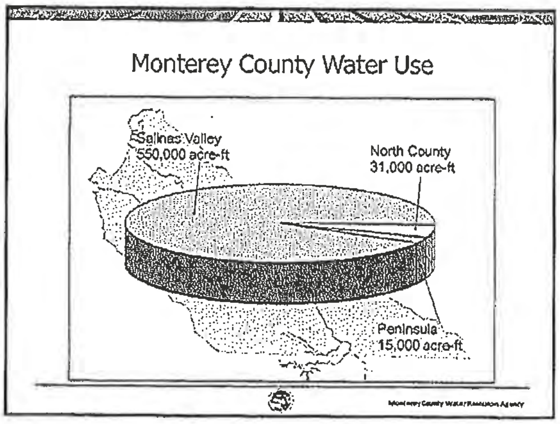


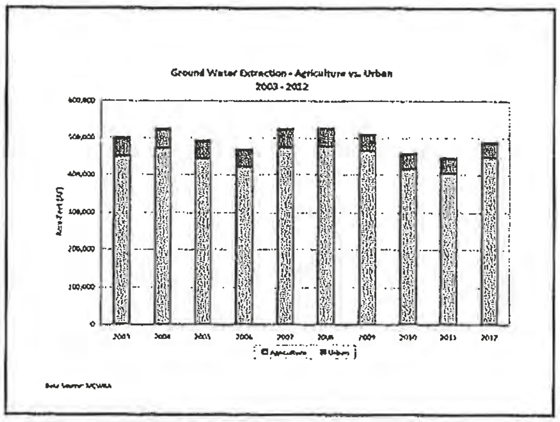
Groundwater is the Primary Source of Supply and Storage

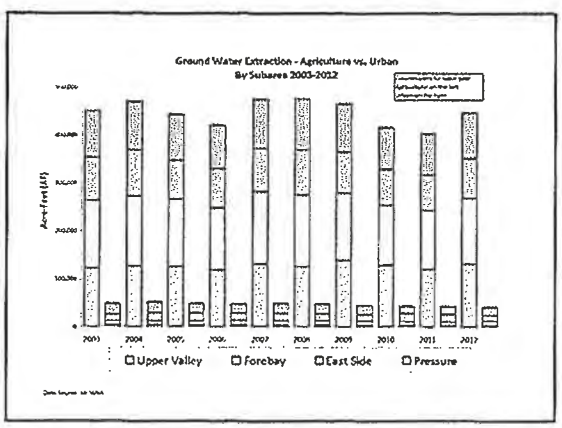


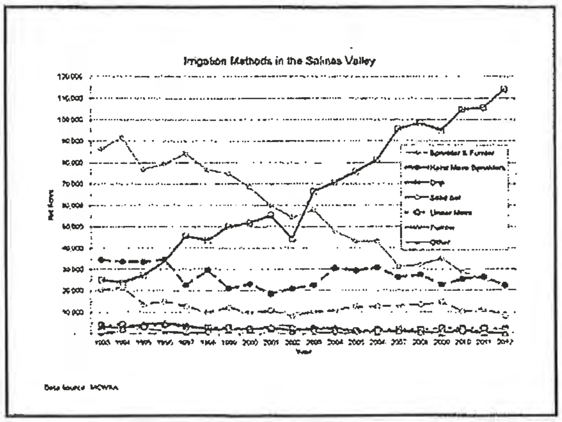
Monterey County Water Use

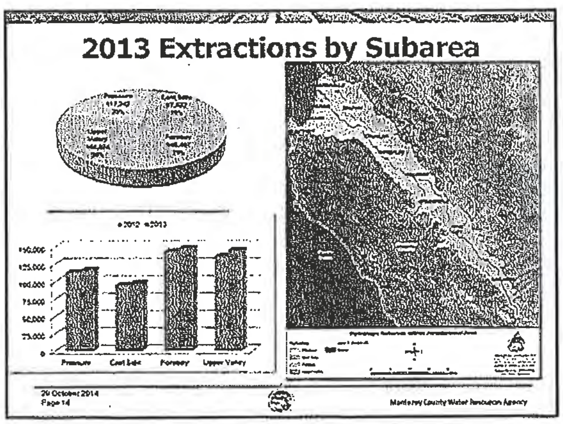


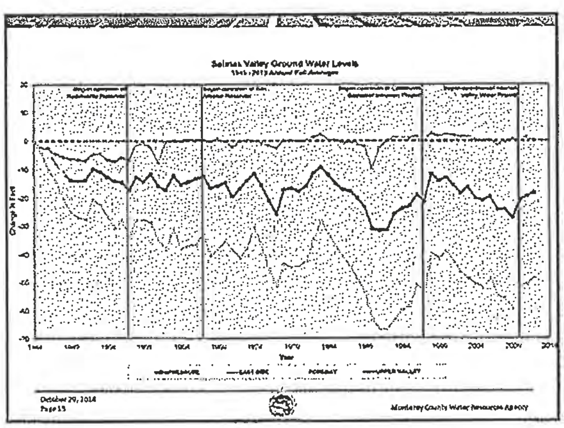

Monterey County Water Use
Salinas Valley
550,000 acre-ft
North County
31,000 acre-ft
Peninsula
15,000 acre-ft


Ground Water Extraction - Agriculture vs. Urban
2003 - 2012


Ground Water Extraction - Agriculture vs. Urban
By Subarea 2003-2012
Upper Valley
Forebay
East Side
Pressure

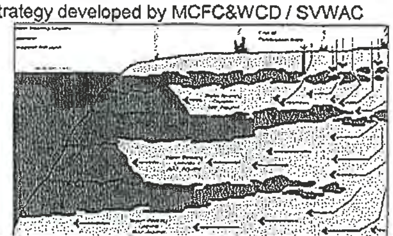

Irrigation Methods in the Salinas Valley


2013 Extractions by Subarea
Pressure
East Side
Forebay
Upper Valley
Monterey County Water Resources Agency


Salinas Valley Ground Water Levels
Monterey County Water Resources Agency

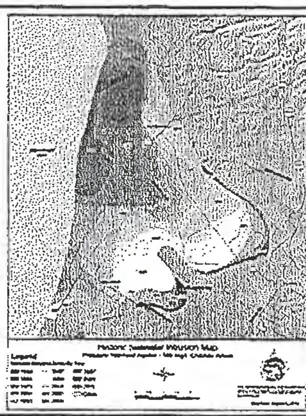
Sea Water Intrusion

- Seawater intrusion in the Salinas Valley
  - first reports – mid 1930s; needed to find a solution
  - Study in 1946
  - Strategy developed by MCFC&WCD / SVWAC



Historic Progression of Seawater Intrusion

2011
Pressure 180-Ft. Aquifer



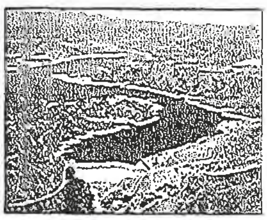
Historic Progression of Seawater Intrusion

2011
Pressure 400-Ft. Aquifer

Sea Water Intrusion Strategy

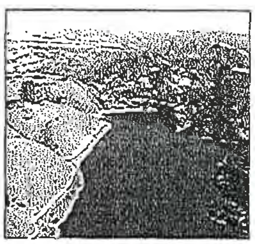
- Solution Strategy:
  - Develop a new water source (A)
  - Move water north (B)
  - Stop pumping along the coast (C)
- Agency has implemented the following:
  - Nacimiento and San Antonio Reservoirs (A)
  - Monterey County Water Recycling Projects (C)
  - Salinas Valley Water Project (B)

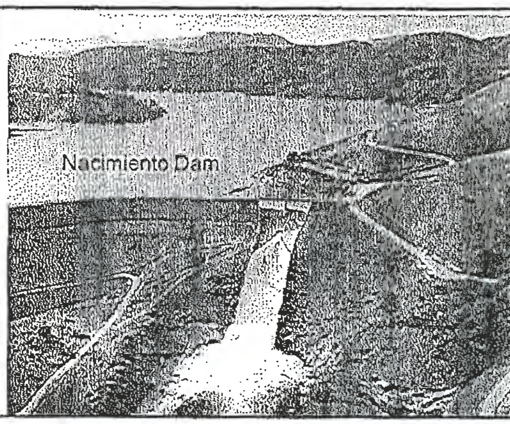
Sea Water Intrusion Solution Projects – New Water Source

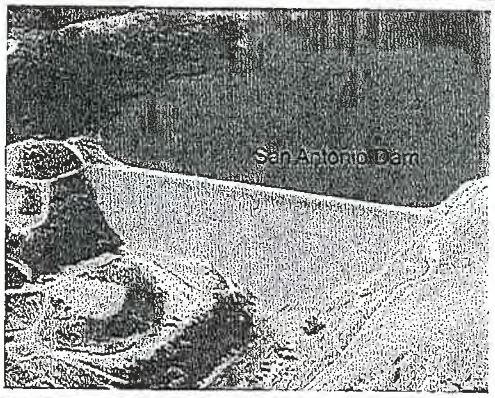


Nacimiento Reservoir
Completed in 1957
Lake Capacity 377,900 AF

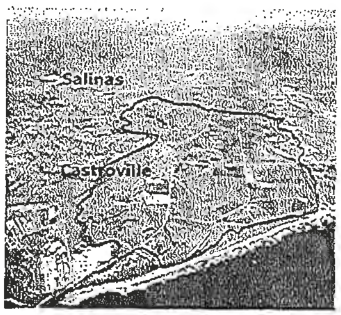
San Antonio Reservoir
Completed in 1967
Lake Capacity 335,000 AF





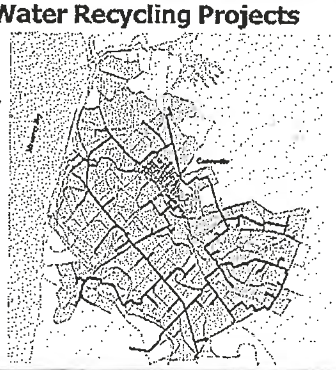


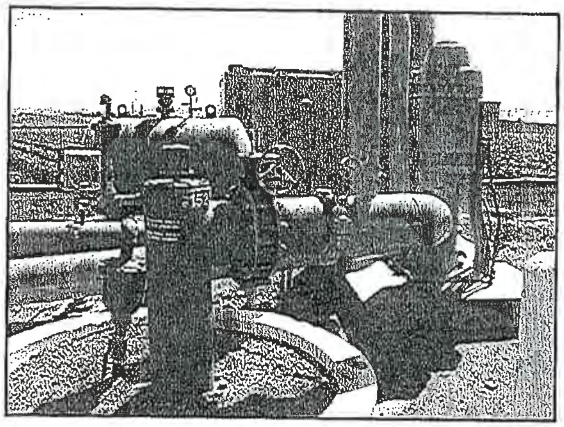
Seawater Intrusion Solution Projects – Stop Pumping at the Coast



Monterey County Water Recycling Projects

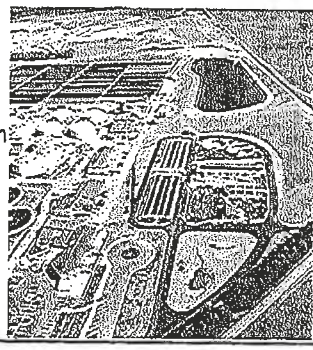
Castroville Seawater Intrusion Project



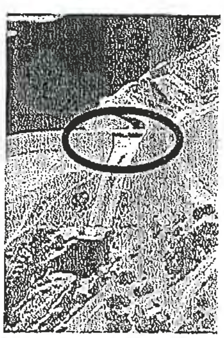


Monterey County Water Recycling Projects (cont.)

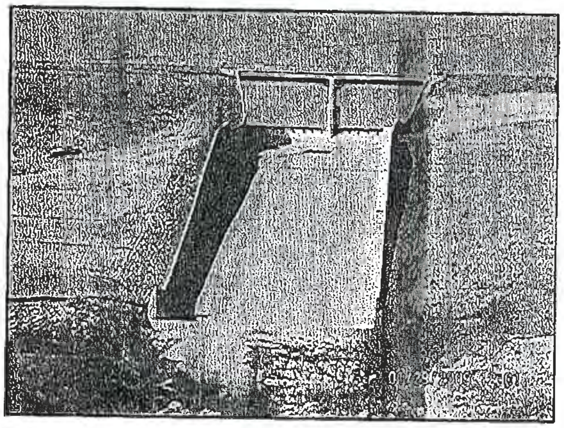
Salinas Valley Reclamation Project

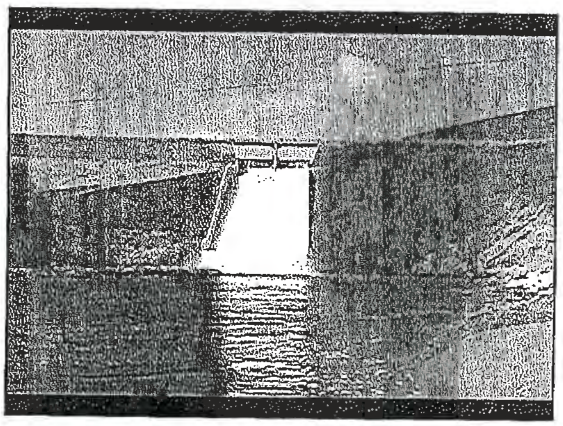


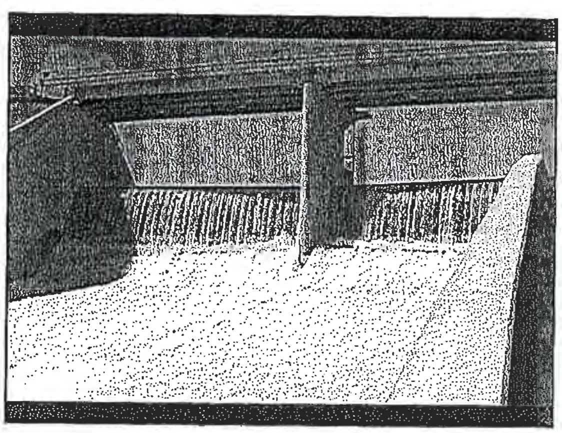
Seawater Intrusion Solution Projects – Move water north



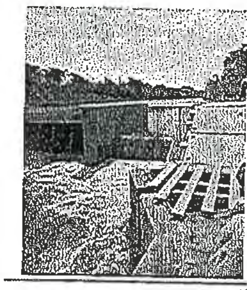
- Salinas Valley Water Project
  - Spillway Modification
    - Cut spillway crest 12'
    - Installed rubber dam
  - Increased Storage FLEXABILITY, same Storage CAPACITY



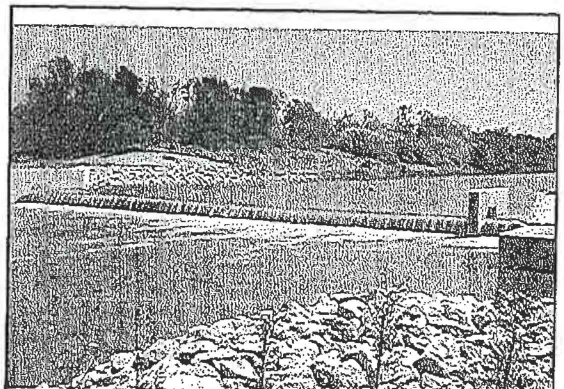


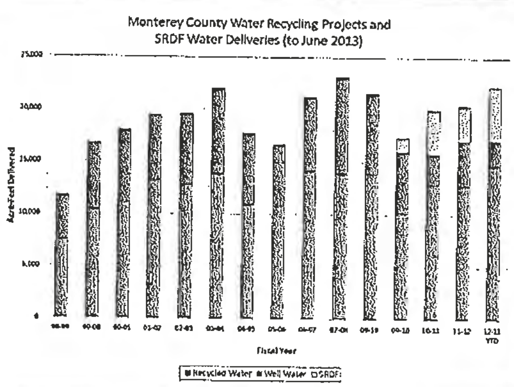


Salinas Valley Water Project (cont.)



- Salinas River Diversion Facility
  - Reservoir Releases Impounded April to October
  - Water Blended with Recycled Water
  - Utilizes existing infrastructure
  - Environmental
    - Fish Ladder
    - WQ Monitoring





Where we are today...

- MCWRA Project Suite has slowed SWI
  - Too early to call SWI halted
- SVWP was not planned to be final project
- Other projects on drawing board

Where we are today (cont.)

- 117,242 ac-ft was pumped from Pressure Area in 2013
  - 19,101 was urban
- Conservation efforts continue in Salinas Valley

Summary

- Introduction
- Background Information
- Groundwater Extraction Information
- Project Integration
- Where we are today
- Summary

MEMORANDUM OF UNDERSTANDING REGARDING SOURCE WATERS AND WATER RECYCLING

THIS MEMORANDUM OF UNDERSTANDING ("MOU") is made this 8th day of October 2014, by and between Monterey Regional Water Pollution Control Agency, the Monterey County Water Resources Agency, the City of Salinas, the Marina Coast Water District, and Monterey Peninsula Water Management District, collectively the "Parties."

The Monterey Regional Water Pollution Control Agency ("PCA") was formed as a California Joint Powers Agency by a Joint Exercise of Powers Agreement for the Monterey Regional Water Pollution Control Agency, effective June 29, 1979. The Monterey County Water Resources Agency ("WRA") was established in 1995 pursuant to the Monterey County Water Resources Agency Act. The City of Salinas ("Salinas") is a California charter city and municipal corporation. The Marina Coast Water District ("MCWD") is a county water district established in 1960 pursuant to Water Code §§30000, *et seq*. The Monterey Peninsula Water Management District ("MPWMD") was established in 1977 as a California special district pursuant to the Monterey Peninsula Water Management District Law (Chapter 527 of the Statutes of 1977, as amended, found at Water Code Appendix (Water C. App.) §§118-1, *et.* seq.)

WITNESSETH:

WHEREAS, PCA entered into an Annexation Agreement, dated April 25, 1989, with MCWD providing, among other things, annexation of MCWD and for it to become a member entity of MRWPCA; and,

WHEREAS, the Annexation Agreement between PCA and MCWD provides MCWD a water right entitlement equal, as a minimum, to the "volume of MCWD wastewater treated by PCA"; and,

WHEREAS, PCA entered into an agreement with WRA, dated June 16, 1992, for construction and operation of a tertiary treatment system (the "1992 Agreement"), with subsequent amendments thereto, as follows: Amendment No. 1 on May 30, 1994; Amendment No. 2 on February 16, 1998; and, Amendment No. 3 on May 28, 2002; and,

WHEREAS, the 1992 Agreement, as amended, caused WRA to finance $29,763,849.56 in tertiary treatment and related facilities; and,

WHEREAS, PCA and Monterey Peninsula Water Management District on May 20, 2013 entered into a Cost Sharing Agreement for the planning and development of the Pure Water Monterey Groundwater Replenishment ("GWR") Project for the advanced treatment and recycling of a variety of source waters for indirect potable reuse;

NOW, THEREFORE, for and in reliance on the foregoing, the Parties hereby agree to negotiate a Definitive Agreement to establish contractual rights and obligations of all Parties, containing, as a minimum, the following provisions:

1. Protection of MCWD's Recycled Water Right Entitlement

   a. Reaffirmation by PCA of MCWD's recycled water right entitlement granted to MCWD pursuant to Paragraph 12 of the April 25, 1989 Annexation Agreement between PCA and MCWD.

   b. Reaffirmation that MCWD's recycled water right is the senior right.

   c. MCWD, in use of its recycled water entitlement, will comply with all applicable requirements set forth in Contract No. 5-07-20-W1284, between the Bureau of Reclamation and WRA including, but not limited to, those contained in Paragraphs 10b and 10c, all at MCWD's sole cost and expense.

   d. MCWD's recycled water right entitlement may be made contractually available by MCWD to another Party and may be made available to WRA for CSIP if not utilized by MCWD, or its assignee, in any given year.

2. Provision of Recycled Water to WRA

   a. WRA to be supplied recycled water during the agricultural growing season in a minimum volume equal to the wastewater flows to the Regional Treatment Plant from all existing PCA members, plus treated waters originating from a variety of newly identified additional "incremental" and interruptible sources described in Section 3.a. hereof, subject to the provisions of Section 3.a.iii.

   b. The cost of primary and secondary treatment of Salinas agricultural wash water, estimated at $179/acre-foot in 2014, to be paid to PCA by Salinas, the future rates for which to be established pursuant to Section 3(o) hereof.

   c. The cost of tertiary treatment of agricultural wash water to be paid to PCA by WRA, the future rates for which will be established by a protocol to be set forth in the Definitive Agreement.

3. <u>Phase I – GWR Project Water and CSIP Area Additional Water</u>

a. Phase I to provide water from newly identified sources that are "incremental" additions over and above the incoming wastewater flows as identified in the 1992 Agreement, which consists of Salinas agricultural wash water, Salinas stormwater, all recoverable Reclamation Ditch water diverted at Davis Road, a portion of Tembladero Slough water diverted at Castroville, all recoverable Blanco Drain water, Lake El Estero stormwater, and reoperation of the Salinas ponds to store winter flows for summer use. Such waters may also include additional stormwater from other locations on the Monterey Peninsula. Phase I includes both (a) improvements to the SVRP in order to provide winter water to offset pumping at CSIP (contingent upon WRA completing hydraulic modifications to the existing CSIP system), and (b) treatment of wastewater from the Regional Treatment Plant that has been determined to be excess and not processed by the SVRP, provided, however, that PCA not curtail SVRP operations to produce said excess water, but in both cases such sources are not considered "incremental" additions.

   i. Projected annual amounts are 4,320 acre-feet for GWR Project, and 5,292 acre-feet for CSIP Area Replacement Water, and 248 acre-feet GWR to be held in drought reserve. These are approximate amounts based on average year conditions, but actual amounts will vary annually;

   ii. Projected costs of Phase I water are to be defined in the Definitive Agreement, consistent with Sections 3(k) and 3(l) below and subject to third party review as discussed in "Miscellaneous" below;

   iii. Except for the commitments under Section 3.j. below, the Parties agree that Salinas agricultural wash water may be utilized by PCA for the time period necessary for an average annual amount of 4,320 acre-feet for the GWR Project to be achieved from Phase I Additional Sources. However, PCA is obligated to endeavor to develop the additional supplies identified under Section 3.a. and transition a portion of the agricultural wash water for the benefit of CSIP and WRA.

iv. The Definitive Agreement to only apply to wastewater from existing PCA members and derived from the PCA's 2001 Service Area and water sources identified in Sections 3.a. and 3.q. Any future additions or annexations to the PCA Service Area or future sources outside of the 2001 Service Area will be subject to future agreement(s).

b. Phase I to be operational in 2017, but the Parties will adjust schedule for construction and operation if and as needed.

c. WRA's participation in Phase I to be contingent upon its successful completion of the Proposition 218 process, if applicable.

d. In 2014 WRA filed an application with the State Water Resources Control Board ("SWRCB") for water rights to appropriate waters of the Blanco Drain for the purpose of providing additional waters for CSIP and for domestic supplies within the Salinas River Valley; and, for water rights to appropriate waters of the Reclamation Ditch and Tembladero Slough for the purpose of providing additional waters for CSIP and for domestic supplies within the Salinas River Valley. The Parties agree that such water rights shall be retained exclusively by WRA. The Parties to pay pro rata all costs associated with WRA's procurement and retention of Blanco Drain, Tembladero Slough, and Reclamation Ditch water rights. The Parties agree to work jointly on obtaining the water rights. The Parties may agree to apply for water rights in increments to facilitate issuance of permits.

e. CSIP participants to be separately responsible for the tertiary treatment costs of the water processed and delivered through the SVRP. GWR participants to be separately responsible for the costs of advanced water treatment through the GWR facilities.

f. The Parties to work cooperatively and collaboratively among themselves, in good faith, to determine appropriate crop irrigation water quality standards for water supplies.

g. The Parties to work cooperatively and collaboratively among themselves, in good faith, to determine if, when, and how much of each water will be collected and sent to the RTP for treatment.

h. Excess flows to be made available to each other Party, as may be desired. "Excess flows" to be defined in the Definitive Agreement, but are generally accepted to mean waters available for treatment at the SVRP or GWR facilities, but not desired by the project participants to be processed and delivered at that period of time.

i. PCA to have rights to the first 4,320 acre-feet annually of the new "incremental" waters defined under Section 3.a. above, plus amounts in the six winter months to produce 200 acre-feet to be placed in drought reserve. WRA can request that PCA schedule withdrawals from the drought reserve in lieu of processing the incremental waters in order to make a like amount available to CSIP in time of need. Withdrawals will be limited to no more than the amount on deposit in the drought reserve.

j. WRA to receive the agricultural wash water on terms similar to the *Produce Wash Water Agreement, dated 1 July 2014,* in 2015, 2016, and 2017 and until the GWR project becomes operational.

k. PCA, at its cost and expense, to use its consultant to prepare a comprehensive rate analysis, to devise appropriate Interruptible Rates that will likely be less expensive than current non-Interruptible Rates for pumping, odor control, primary and secondary treatment. Separate Interruptible Rates to apply to each water source, but each separate Interruptible Rate to be subject to future escalation consistent with standard factors for operation and maintenance inflation over time. WRA will not pay rates for water it does not receive.

l. Capital costs to be shared by PCA and WRA proportional to the waters projected to be made available on an average annual basis. Fixed pro rata capital costs to be paid annually by the Parties, irrespective of water requested or received. However, the calculation of pro rata shares of capital costs to be based only upon facilities actually built and average annual water expected to be made available vis the constructed facilities. In recognition of potential, yet undetermined, benefits of the existing operations of the Salinas Industrial Ponds to the recharge of the groundwater basin and the Salinas River for purposes of calculating water made available to CSIP 33% of the water attributable to the Salinas agricultural wash water would not be counted in the calculation of the proportional cost to WRA. Annual recovery of fixed capital costs to include any annual capitalized costs for facilities leased by PCA for the furnishing of water to the Parties.

m. PCA subject to concurrence by the rate study to waive all capacity charges for use of water on an Interruptible basis from presently identified water sources to be included in Phase I or Phase II.

n. Pursuant to subsequent agreement and lease, PCA and Salinas to negotiate a separate agreement and lease and develop a seasonal working protocol for diversion of Salinas Industrial Ponds (Agricultural Wash Water) and storm water as allowed by available storage. PCA to pay Salinas an annual lease payment to be recovered in the cost of water in accord with criteria to be established in the Definitive Agreement.

o. PCA, if it uses tertiary treated water for the GWR Project, to comply with all applicable requirements set forth in Contract No. 5-07-20-W1284, between the Bureau of Reclamation and WRA including, but not limited to, those contained in Paragraphs 10b and 10c, all at PCA's sole cost and expense.

Phase II – CSIP Area Additional Water

p. Phase II to provide water from newly identified sources that are "incremental" additions over and above the incoming wastewater flows as identified in the 1992 Agreement, as amended, and may consist of diversion of remaining Tembladero Slough water, potential future advanced treated water, and UniKool water.

q. Phase II to approximate up to 3,754 AFA of new water.

r. Phase II to be operational by 2022.

s. Projected costs of Phase II will be determined in the future, consistent with engineering feasibility analysis, preliminary design, and third party rate consultant analysis.

t. Phase II would be contingent on its successful completion of the Proposition 218 process, if applicable.

4. Accounting Protocols

PCA to enter into a separate agreement with WRA by December 31, 2014 to achieve the following:

a. PCA's adoption of activity-based costing for all its CSIP, SRDF and SVRP activities.

b. Revision of the various financial protocols currently utilized to achieve one standard protocol for each of CSIP, SRDF and SVRP.

c. Allocation methodologies for costs associated with CSIP, SRDF, and SVRP.

d. An annual audit of PCA's financial transactions related to CSIP, SRDF and SVRP at WRA expense.

e. PCA to credit to the CSIP and SVRP accounts any pro rata revenues it receives from byproducts of tertiary treated wastewater.

f. A third-party agreed upon by both PCA and WRA to be hired to design and implement these Accounting Protocols.

MISCELLANEOUS

1. This Memorandum of Understanding is intended to provide a framework for negotiation of a Definitive Agreement. This Memorandum is not intended to create binding contractual obligations and other essential terms in addition to those set forth in this Memorandum are to be negotiated and agreed upon before the Parties reach a Definitive Agreement.

2. It is recognized and acknowledged that the Parties may not agree upon or enter into a Definitive Agreement. In such an event, no Party shall make any claim against any other Party related to the failure to enter into a Definitive Agreement.

3. An independent third-party review of proposed capital and operating costs to be performed before WRA Board approval of the Definitive Agreement.

4. The term of the Definitive Agreement to be 30 years or as subsequently agreed upon in the Definitive Agreement.

5. The Definitive Agreement may result in an Amendment to the 1992 Agreement and the amendments thereto. All previous Amendments will be reviewed to ensure conformity and continuity of relevant provisions. Amendment No.3 to be novated by the Definitive Agreement and any terms of Amendment No.3 that remain applicable will be restated in the Definitive Agreement.

6. The Definitive Agreement will incorporate standard contract language to govern enforcement and resolution of disputes.

7. This Memorandum of Understanding will expire the earlier of (i) execution of a Definitive Agreement, or (ii) March 31, 2015.

8. Individuals whose signatures appear on this document represent, warrant, and guarantee they are authorized to execute this document on behalf of those entities on whose behalf they purport to execute this document.

WITNESS, the Monterey Regional Water Pollution Control Agency, the Monterey County Water Resources Agency, the City of Salinas, the Marina Coast Water District, and the Monterey Peninsula Water Management District entered into this Memorandum of Understanding as of the date first written above.

MONTEREY REGIONAL WATER POLLUTION CONTROL AGENCY

By: ________________________________

Dennis Allion, Board Chair

MONTEREY COUNTY WATER RESOURCES AGENCY

By: ________________________________

Louis R. Calcagno, Chair of the Board of Supervisors

CITY OF SALINAS

By: ________________________________

Joe Gunter, Mayor

MARINA COAST WATER DISTRICT

By: ________________________________

Thomas P. Moore, Board President

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

By: ________________________________

David Potter, Board Chair

MASTER RESPONSE 2 - WATER SUPPLY AND RELATED ISSUES

This master response addresses several issues related to water supply, County requirements for hydrogeologic investigations, water demand, the Salinas Valley Water Project, and project relationship to Zone 2C. Specifically, several comments expressed concerns regarding drought conditions; impacts on the adjacent Toro Area that is in B-8 zoning; loss of recharge to the Toro Area; acceleration of seawater intrusion and overdraft of the Salinas Valley Groundwater Basin; viability of the SVWP; conservation requirements; annexation of the project site into California Water Service Company's service area; and arsenic levels.

PROJECT WATER SOURCE

As described in page 3.6-10 of the DEIR, the Ferrini Ranch project would be provided service by California Water Service Company (CWSC or Cal Water). Potable water for the proposed project would be provided by wells in the 180/400-Foot Aquifer Subbasin (also referred to as Monterey County Water Resources Agency's (MCWRA) "Pressure Subarea") of the Salinas Valley Groundwater Basin. As noted on page 3.6-2 of the DEIR, the project site overlies the northeast portion of the Corral de Tierra Area Subbasin (DWR 2010) of the Salinas Valley Groundwater Basin.

The water will be provided by Cal Water which has prepared an Urban Water Management Plan (UWMP.) Cal Water does not anticipate ever having the demand for the amount of water that they have the capacity to provide. The projected water use identified in the UWMP has been anticipated in the projections for the Salinas Valley Water Project (SVWP) and so impacts associated with seawater intrusion and declining ground water levels have been addressed on a cumulative basis through the set of projects associated with the SVWP.

The Cal Water Urban Water Management Plan (UWMP, 2010) notes that existing supply to this municipal system is considered the amount that Cal Water can pump. Cal Water currently has the design capacity to pump 50,000 acre feet per year; however, projections of customer use through year 2040 are 25,572 acre feet per year. (See discussion of Urban Water Management Plan below.)

CALIFORNIA WATER SERVICE AREA

The proposed project would have potable water provided by California Water Service Company (CWSC). According to Figure 2.1-3 and Appendix B of the 2010 Urban Water Management Plan (UWMP), the eastern parcel of the project site is located within the Indian Springs/Salinas Hills/Buena Vista service area of the Salinas District. The proposed project's potable water demand would be met by water procured from existing wells in CWSC's Salinas Hills system as noted on 3.10-21 of the DEIR.

CWSC provided a will serve letter in 2004, pending PUC's approval of the expansion of the District. As of June 2011 this annexation had not occurred. The PUC approval process would require CWSC to document their ability to serve the annexed service area with existing resources while remaining consistent with statewide urban water demand reduction policies. If the annexation were not approved by the PUC, there would be no water to serve development proposed on the western parcel, and no building permits would be issued for those lots. A condition would be added to the Tentative Map requiring that no final map creating lots within the California Water Service Area can be recorded until the lots outside of the service area is annexed into the CSWC Service Area.

LITIGATION RELATED TO 2010 GENERAL PLAN AND FEIR

Comments on the Ferrini Ranch DEIR suggest that the Ferrini Ranch DEIR should have disclosed the existence of existing litigation against the County challenging the 2010 Monterey County General Plan FEIR due to its reliance on the Salinas Valley Water Project (SVWP) and the SVWP EIR. The County acknowledges that two lawsuits are pending which challenge the 2010 General Plan and a 2013 amendment to the 2010 General Plan. (*The Open Monterey Project v. Monterey County Board of Supervisors* (Monterey County Superior Court Case No. M109441) and *Landwatch Monterey County v. County of Monterey* (Monterey County Superior Court Case No. M109434).) A hearing on these cases has not yet been held (the hearing is currently scheduled for May 2015), and no decision has been reached by the court. The comments on the Ferrini Ranch DEIR from the petitioners in the General Plan lawsuits about the adequacy of the General Plan EIR are allegations which have not been found valid by a court. Moreover, the General Plan litigation is of questionable relevance because the Ferrini Ranch EIR does not rely on the General Plan EIR. The Ferrini Ranch project is not subject to the 2010 General Plan, as the project application was deemed complete in 2005. Hence, this project is subject to the 1982 General Plan, which was the General Plan in effect as of that completeness date. The Ferrini Ranch project EIR does not rely on the 2010 General Plan or General Plan EIR.

Secondly, to the extent the comments attack the General Plan EIR's analysis of water supply, the comments are misplaced because the General Plan EIR analyzes the impacts of a project of a different nature and scale than the proposed Ferrini Ranch project. The General Plan is a policy document that addresses development of the entire inland unincorporated area of the County. The General Plan EIR is a program-level analysis which analyzes the impact of development under the General Plan through the General Plan planning horizon, designated as the year 2030, and through full build out, projected as the year 2092 and defined as the point when all existing undeveloped residential lots of record would likely be built up to the maximum density allowed by the Plan at the projected rate of growth. The General Plan EIR concluded overall water demand in Zone 2C through 2030 would not result in groundwater drawdown or seawater intrusion in Zone 2C. The analysis of impacts of growth through 2030 and 2092 is far broader and different than the impacts of a single 212 lot subdivision. CEQA does not require a project level analysis to reanalyze the contested environmental analysis for a General Plan.

One comment purports to incorporate by reference the administrative record of the 2010 General Plan as it relates to these issues including comments submitted by or on behalf of Landwatch, The Open Monterey Project, FANS, and Julie Engell (see comment 36-57). The administrative record of the 2010 General Plan is not relevant for the reasons explained above. However, to the extent commenter incorporates the administrative record of the 2010 General Plan, the County incorporates by reference County's responses to comments on the water supply impacts of the General Plan and water supply analysis in the administrative record of the 2010 General Plan and 2013 General Plan amendment of General Plan water policies.

COMPREHENSIVE HYDROGEOLOGIC INVESTIGATION REQUIREMENT

A comment was made that a comprehensive hydrogeologic report was not submitted with the application and contends this omission violates Monterey County Code section 19.05.040.L.3 (requirements for comprehensive hydrogeologic investigation). The comment fails to take into account Monterey County Code section 19.05.040L.1.B which allows the Environmental Health Department to determine if existing hydrogeologic investigations cover all or some of the pertinent issues. In this particular case, it was determined that a project-specific hydrological investigation was not needed because the project would receive water from a large publicly regulated utility, Cal Water. Cal Water must prepare an Urban Water Management Plan addressing its ability to provide water.

The Kleinfelder Report (2008) was prepared as part of the background material for the DEIR. This report was intended to provide technical information on the hydrologic, geotechnical, erosion, drainage and environmental phase I assessment for the project site. This report was incorrect because it incorrectly identified the source of the water as the El Toro Water Basin. This is the reason that the 2012 Hydrological update was provided from Kleinfelder, which correctly identified that water would come from the Salinas Valley Groundwater Basin. The DEIR correctly identifies the location of the Cal Water wells as being in the Salinas Valley Groundwater Basin.

EXISTING CONDITIONS FOR WATER ANALYSIS

Comments are correct that the Notice of Preparation for the project was issued in 2005. Existing conditions for the water analysis were the conditions of the Salinas Valley Groundwater Basin as known in 2005 based on various previously prepared reports, including 2004 aquifer storage data from DWR (DEIR page 3.6-9). Section 3.6 of the DEIR is the resulting synthesis of several sources of information available over time, including reports by Kleinfelder, Fugro, Geosyntec, CWSC (Cal Water) and information provided by the Monterey County Water Resources Agency (WRA). The County WRA assisted with the review and organization of all data sources to present a current and accurate section of the EIR. Several references to the "baseline year" used for the SVWP EIR are noted.

RELATIONSHIP TO THE SVWP

The water analysis for the proposed project does not rely solely on the SVWP and SVWP EIR for the adequacy of water supply. The DEIR uses a combination of factors when evaluating the impacts to water associated with this project. First as noted above, the proposed project will receive water from Cal Water (CWSC) for which a UWMP has been prepared. The UWMP for CWSC identifies that CWSC has more than sufficient water supply capacity to serve the proposed project. The CWSC's UWMP identifies the source of this water as the Salinas Valley Ground Water Basin. The impacts associated with the CWSC' UWMP is included within the pumping demand assumed by SWVP on the basin.

The subject property was included within the original Zone 2a. Zone 2 was the benefit zone originally defined for the Nacimiento Reservoir, which was built in 1957. Zone 2A was the benefit zone defined for the San Antonio Reservoir, which was built in 1967. Zone 2/2A was expanded to include Fort Ord and Marina in the 1990s. Zone 2B is the benefit area for the Castroville Seawater Intrusion Project (CSIP) project near Castroville. Zone 2C is the benefit zone defined for the Salinas Valley Water Project and new reservoir operations. These regional improvements were developed to better manage groundwater resources within the Salinas Valley Groundwater Basin. The project site is within Zone 2C, and the property owner pays Zone 2C assessments. Accordingly the owner is making a fair share contribution toward these groundwater management projects, which include the two reservoirs, CSIP, and the SVWP. As previously mentioned, the proposed project would not directly rely on water produced through the SVWP or other projects, but relies on the overall benefits provided from the suite of projects mentioned previously.

A comment asked whether the baseline for the SVWP EIR included the Ferrini property. The growth projections from AMBAG that were used for the SVWP EIR are conservative and did contemplate development at a level which would have included this property. Thus the SVWP EIR assumed development of this property in its analysis.

The WRA continues to monitor groundwater levels within the basin in order to assess the long term effect of current management efforts and projects over wet and dry years, including the SVWP. The most recent WRA groundwater data (2013) demonstrates near-term benefits of these management efforts, with an understanding that monitoring will be ongoing.

Although the proposed project will cause an increase the demand on the Salinas Valley Groundwater Basin, it would not be to a level that wasn't already analyzed and disclosed through preparation of the UWMP or the SVWP EIR.

GROUNDWATER SOURCE AND PROJECT IMPACTS

As identified on page 3.6-9 of the DEIR, the project water source, the 180/400-Foot Aquifer, a subbasin of the SVGB has an estimated total storage capacity of approximately 7,240,000 acre-feet of groundwater. As identified in the DEIR (page 3.6-1) and its supporting reference documents, the Salinas Valley Groundwater Basin as an entire unit is in an overdraft condition; however, some subbasins have better groundwater yields than others. The 180/400 Foot Aquifer Subbasin is recognized as a subbasin that has historically experienced overdraft conditions and, as a result, saltwater intrusion has progressed (DEIR 3.6-15).

The project is estimated to have a total demand on this subbasin of 95 acre feet per year. The DEIR found this demand on the subbasin was less than significant due to a combination of factors. First is the insignificant demand (95 acre feet per year) versus the total storage capacity of the subbasin (7.24 million acre feet per year). Second is the small demand of this project (95 AFY) in relation to the overall annual demand for the subbasin in 2005 of 118,372 AFY (Agricultural Pumping: 97,028 and Urban Pumping 21,344 (Monterey County Water Resources Agency 2007).) It should be noted that the total pumping from the SVGB is 500,000 AFY with a 90/10 split between agriculture and urban uses. Third is the consistency with the CWSC Urban Water Management Plan, and fourth is the positive influence of the suite of projects implemented to combat seawater intrusion; the Salinas Valley Water Project, CSIP, Lake Nacimiento and Lake San Antonio. DEIR page 3.6-17 provides graphs demonstrating that the rate seawater intrusion has been slowing since 2005. The most recent data from the MCWRA shows a continued slowing of the seawater intrusion. These maps are attached on the following pages.

PROJECT LOCATION AND RELATIONSHIP TO ZONE 2C

A commenter questioned whether the Project Site should be included in Zone 2C. The Toro/Fort Ord area was added to Zone 2a in the 1990's. Figure 3.6-6 of the DEIR shows the subject site is clearly within the boundaries of Zone 2c. In addition, the attached figure taken from the Monterey County Water Resources Agency shows the site was in Zone 2A prior to its expansion to include Zone 2C. The entire project site is within the Zone 2C boundary. An additional exhibit is attached.

Comments are correct that Geosyntec (2007) identified the Zone 2C boundary and described it relative to the "El Toro Planning Area" boundary. Comments on DEIR page 3.6-2 regarding basin boundaries simply describe that Geosyntec used a different method (watershed boundaries) to describe the study area of that report.

With respect to the 1998 Historic Benefits Analysis document cited in the comments, the hydrologic benefits of the Nacimiento and San Antonio reservoirs were analyzed and portrayed. The analysis did not model the Fort Ord/Toro area because at the time it was believed that the Fort Ord and Toro areas were not part of the main ground water basin. It is now a common understanding that the subject site is overlying the Corral de Tierra Subbasin of the Salinas Valley Ground Water Basin as shown in Bulletin 118 prepared by the California Department of Water Resources. Both the Seaside Area subbasin and Corral de Tierra subbasin are listed as subbasins of the Salinas Valley Groundwater Basin, on page 3.6-2 of the DEIR.

Further, the analysis by Geosyntec (2007 including update in 2010) documents the hydraulic connectivity between the project area and the larger SVGB. Figure 3.6-4 of the DEIR shows a cross section of the geologic formations across the subject site and into the Salinas Valley Groundwater Basin. This cross section shows the Plio-Pleistocene Continental Deposits maintain a hydraulic gradient under El Toro Creek and Highway 68 corridor in a northeasterly declination and contiguous to the Salinas Valley Groundwater Basin. Connectivity between the groundwater underlying the subject site and the Salinas Valley Groundwater Basin is thus affirmed by both DWR Basin Maps and the hydrogeologic

study prepared by Geosyntec (2007 and 2010.) A comment was made that the DEIR equivocates as to whether there is hydrologic connectivity between the project site and the SVGB. The DEIR is very clear on Page 3.6-2 that the Corral de Tierra subbasin is a subbasin to the SVGB by referencing Bulletin 118 of DWR and the discussion of the Geosyntec Report Supplement which demonstrates hydrologic connectivity between the project site and the SVGB.

GROUNDWATER BASIN, SERVICE AREA, WATERSHED, EL TORO GROUNDWATER STUDY AREA

A question was asked as to whether the project site overlies the El Toro Groundwater Basin. The project site is completely within the Corral de Tierra Subbasin of the Salinas Valley Ground Water Basin as discussed above. The Salinas Valley Groundwater Basin (SVGB) and its subbasins are defined and recognized by the County of Monterey and Department of Water Resources. The "El Toro Groundwater Basin" defined and studied by Geosyntec Consultants in the *El Toro Groundwater Study* in July 2007 and 2010 defined basins specific to the El Toro Planning Area, for a specific purpose. This study did not use Bulletin 118 from DWR to define the basin and thus defined a study area that is not a defined groundwater basin. The DEIR cites the Geosyntec Study, to demonstrate the hydrologic connectivity between the subject site and SVGB. Because the different studies define basins differently, the DEIR also explained these relationships in DEIR Section 3.6. Additional information is provided below.

GROUNDWATER BASIN

The Salinas Valley Groundwater Basin, including the 180/400-Foot Aquifer subbasin, is in overdraft and has experienced seawater intrusion. The MCWRA and the Monterey Regional Water Pollution Control Agency (MRWPCA) operate two major capital projects, Salinas Valley Water Project (SVWP) and the Salinas Valley Reclamation Project (SVRP), which are described in detail starting on page 3.6-17 of the DEIR, to provide better management of groundwater quality and halt the long-term trend of seawater intrusion and groundwater overdraft.

The Salinas Valley Integrated Ground and Surface Water Model (SVIGSM) is a tool that was used for planning the development of the Salinas Valley Water Project (SVWP) and analyzing potential hydrologic impacts.

A question was raised about whether the SVIGSM included the Ferrini property since the Toro/Fort Ord area was left out of the Historical Benefit Analysis in 1998 because at the time the area was believed to be not part of the main Salinas Valley Groundwater Basin. As asked and answered above it is now understood that the Corral de Tierra Area Subbasin is clearly hydrologically connected to and part of the Salinas Valley Groundwater Basin. In addition when the SVWP was modeled in 2002 the SVIGSM was updated using Association of Monterey Bay Area Governments (AMBAG) growth assumptions. This includes the water connections anticipated as part of Cal Water Services UWMP.

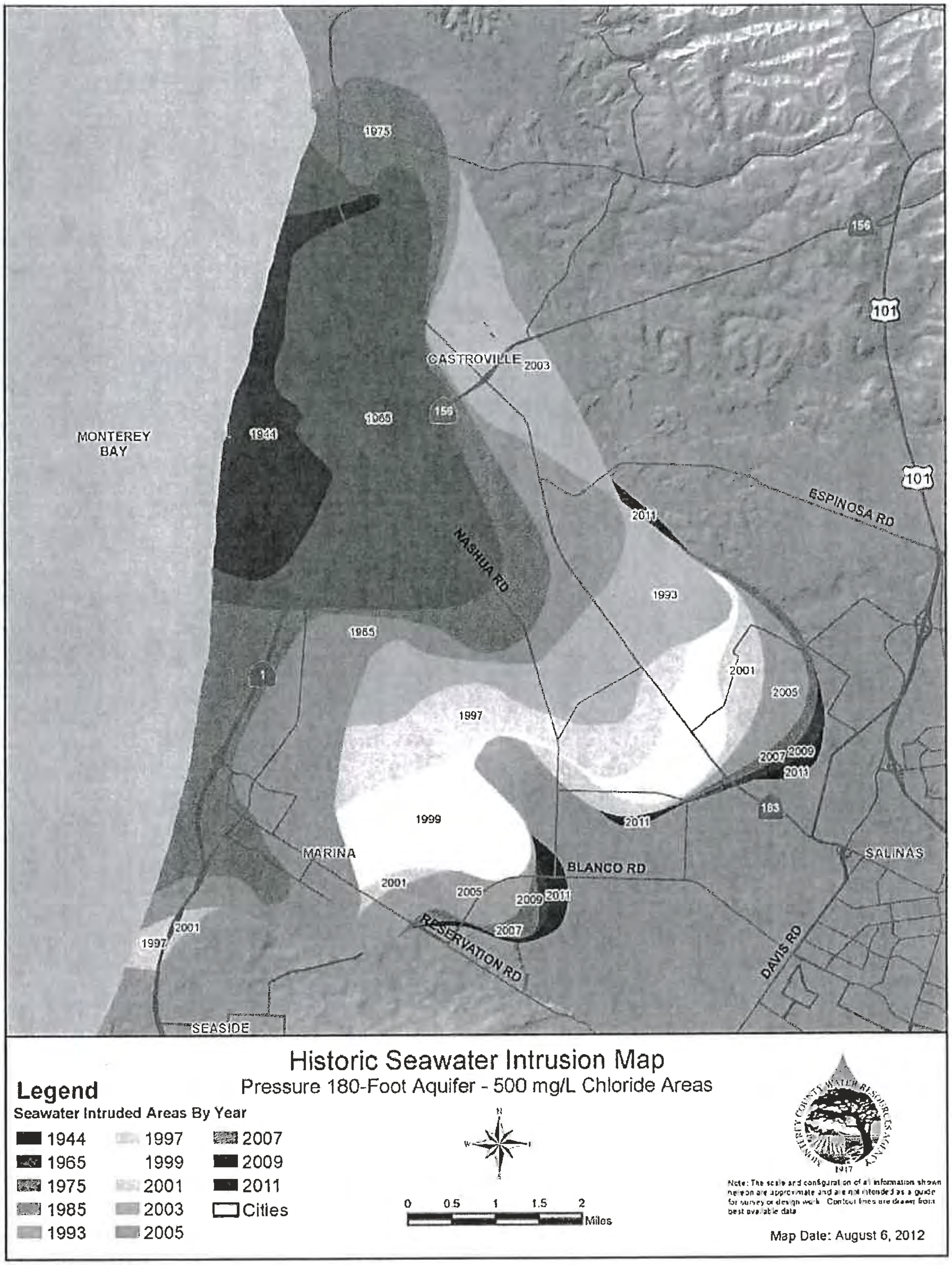
The SVWP provides additional releases of water to the Salinas River upstream, which provides recharge to the groundwater aquifers, increasing the amount of subsurface water. The CSIP/SVRP supplies irrigation water to farmlands in the northern Salinas Valley, allowing the farmers to reduce pumping a like amount, which counteracts the seawater attempting to intrude the aquifers thus reducing the advance of seawater intrusion.

As stated previously, the Ferrini Ranch project site would be served by wells that are located within the 180-/400-Foot Aquifer Subarea (also referred to as MCWRA's Pressure Subarea) of the Salinas Valley Groundwater Basin and the project site is located within Zone 2C, which means the wells and water source that would serve the proposed project are served by the projects managed by MCWRA to address seawater intrusion, and the property owner is assessed fees to fund these projects. Through payment of the Zone 2C fees, the property owner funds its proportionate fair share towards regional improvements to help better manage the basin as a whole. This would be similar to paying toward Regional Development Impact Fees for roadway network improvements mitigating for cumulative traffic impacts.

URBAN WATER MANAGEMENT PLAN

The proposed project would have potable water provided by California Water Service Company (CWSC). All urban water suppliers, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet annually are required to prepare an Urban Water Management Plan (UWMP). An UWMP is a foundation document and source of information for a Water Supply Assessment (WSA); a written verification of water supply; and serves as a long-range planning document for water supply, source data for development of a regional water plan, a source document for cities and counties as they prepare their General Plans, and a key component to Integrated Regional Water Management Plans. California Water Code §10644(a) requires CWSC to file a copy of its UWMP with the Department of Water Resources, the California State Library, and any city or county within which the supplier provides water supplies no later than 30 days after adoption.

The ability for CWSC to serve its service area is addressed in the UWMP for the Salinas District, which is updated at least every five years. The 2010 UWMP for the Salinas District was adopted in June 2011. The 2010 UWMP describes the service area, system supply and demand, water supply reliability and water shortage contingency planning, demand management measures and climate change.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Historic Seawater Intrusion Map
Pressure 180-Foot Aquifer - 500 mg/L Chloride Areas
Legend
Seawater Intruded Areas By Year
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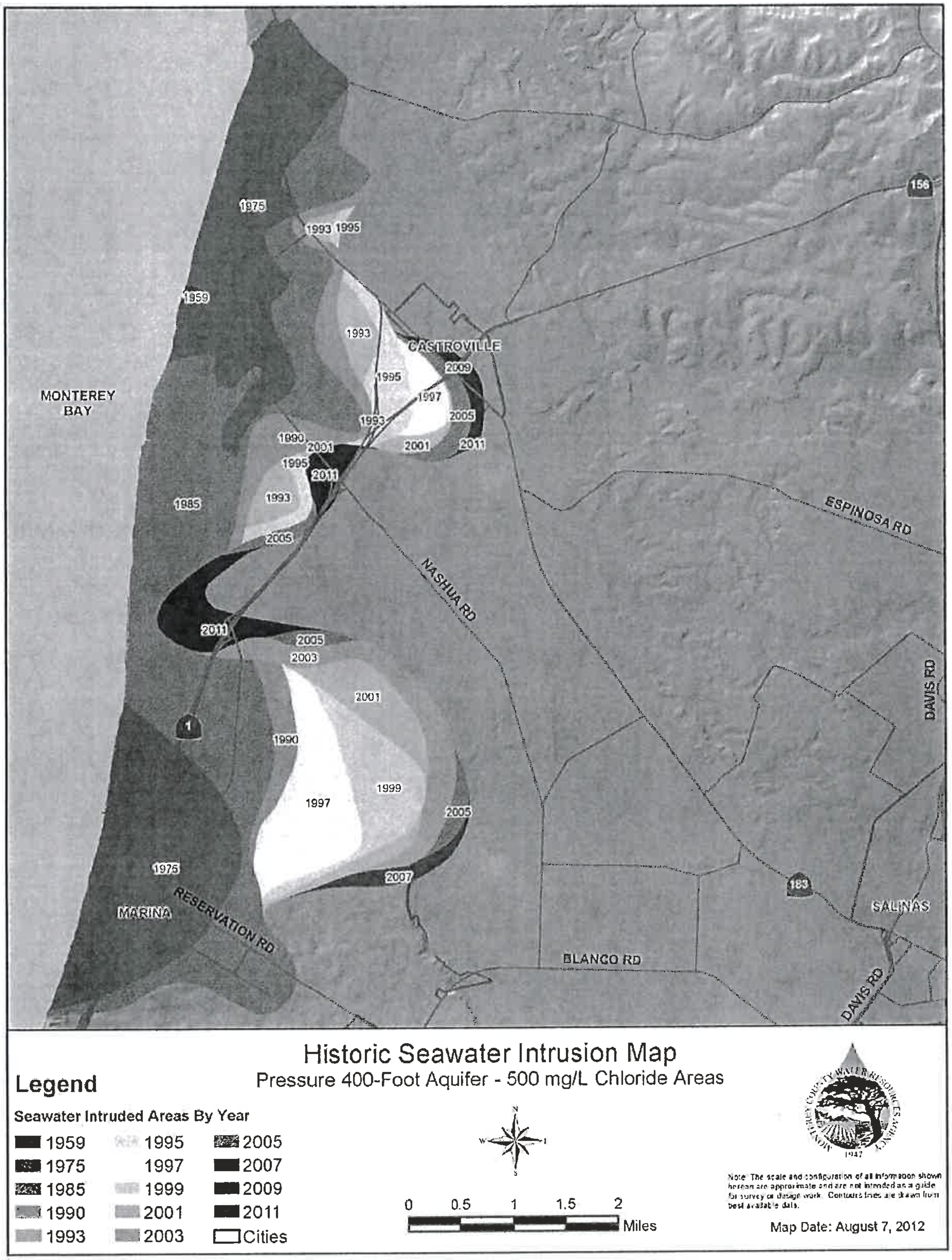
Map Date: August 6, 2012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Historic Seawater Intrusion Map
Pressure 400-Foot Aquifer - 500 mg/L Chloride Areas
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Seawater Intruded Areas By Year
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MCWRA Zone 2C Boundary

PMC

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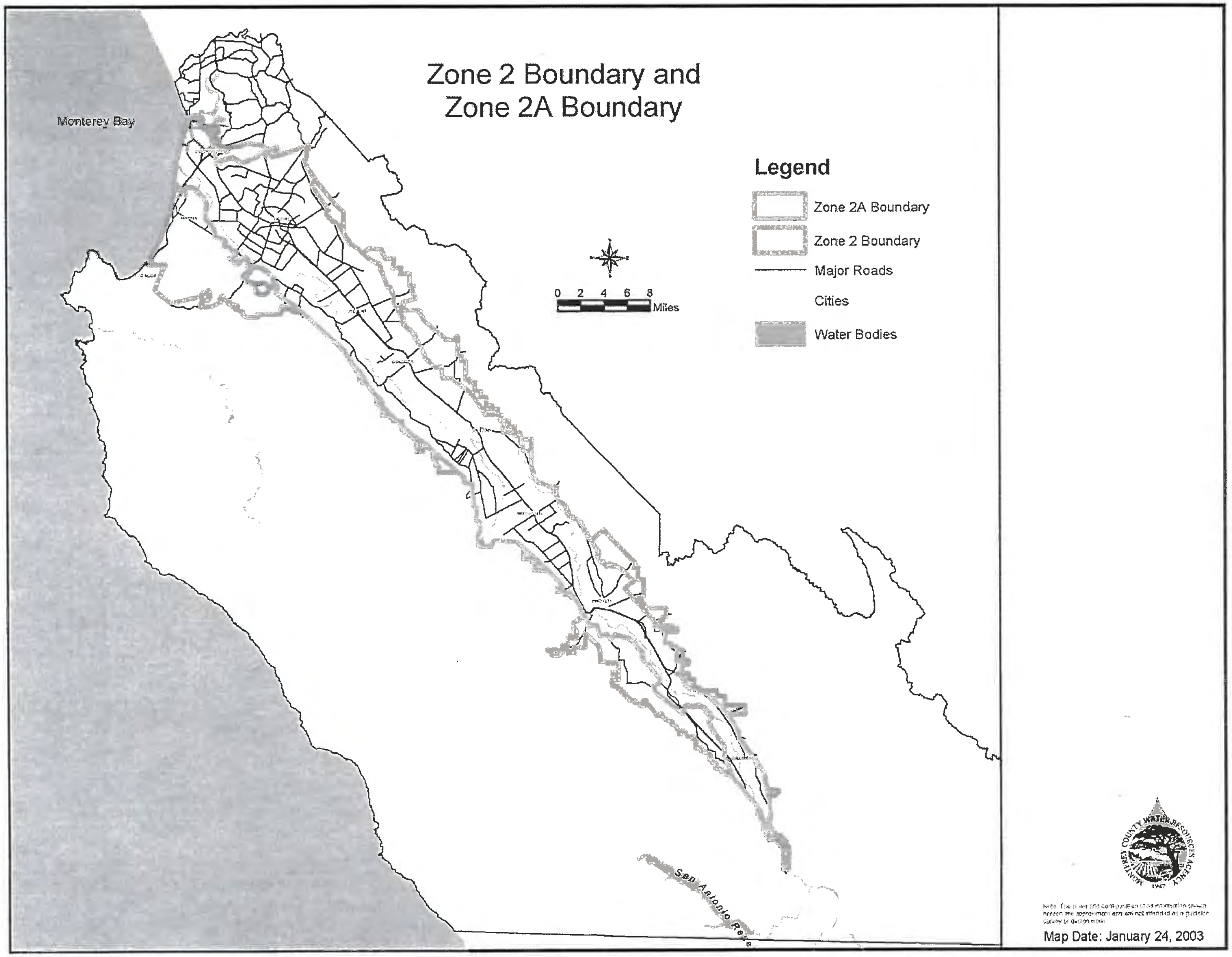
Zone 2 Boundary and
Zone 2A Boundary
Monterey Bay
Legend
Zone 2A Boundary
Zone 2 Boundary
Major Roads
Cities
Water Bodies
0 2 4 6 8
Miles
San Antonio Res.
Map Date: January 24, 2003

INCREASED DEMAND ON THE WATER PURVEYOR

Although the eastern parcel is located within CWSC's service area, the proposed project would require the expansion of the CWSC service area to include the eastern parcel. The expansion of the service area is subject to PUC approval. The proposed project's potable water demand would be met by water procured from existing wells in CWSC's Salinas Hills system as noted on 3.10-21 of the DEIR. The total design capacity of the Salinas Hills System is 4,260 gallons per minute (GPM). Based on an estimated water demand of 95.17 AFY, the proposed project would increase the demand on the Salinas Hills System by approximately 58.8 GPM. According to CWSC, the Salinas Hills System currently has 2,216 service connections and the existing demand is approximately 1,464.72 AFY (or 907.41 GPM) (He 2007). The increased potable water demand would result in a total demand of 1,559.89 AFY (or 966.21 GPM). The Salinas Hills System has the design capacity to accommodate the service connections to serve the proposed project, provided the PUC approves annexation into the service area.

INCREASED DEMAND ON GROUNDWATER RESOURCES

Long-Term Water Supply (safe yield) (as defined in Monterey County Code Title 19, section 19.02.143) is the amount of water that can be extracted continuously from the basin or hydrologic sub-area without degrading water quality, or damaging the economical extraction of water, or producing unmitigatable adverse environmental impacts. The proposed project's long term impact on groundwater resources is addressed under Impact 3.6-2 starting on page 3.6-31 of the DEIR.

MCWRA requires a project to estimate pre- and post-project water demand. As shown in Table 3.6-3 on page 3.6-35 of the DEIR, the proposed project would result in an estimated gross water demand of 95.17 AFY, which is approximately 94.67 AFY greater than the pre-project water demand of 0.5 AFY. Although the project would increase CWSC's demand for groundwater resources, the demand is well within the forecast identified within CWSC's 2010 Urban Water Management Plan (UWMP). The 2010 UWMP estimates the target water demand (demand with conservation savings) based on SBx7-7 target gpcd values or 132 gpcd in year 2015 and 117 pgcd in year 2020 multiplied by the projected population. Based on this methodology, the estimated 668 person increase in population generated by the proposed project (as noted on page 3.9-23 of the DEIR), would result in a target water demand of 78,156 to 88,176 gpd (87.5 to 98.9 AFY), which is comparable to the gross water demand estimated in Table 3.6-3 of the DEIR.

The UWMP estimated the water demand through 2040 by applying a projected growth rate of 0.91, which projected an increase of 7,480 total services by 2040. Eighty-five percent of the total connections (or 6,392) would be residential connections. The proposed 212 residential units would each have one service connection, which would represent a total of 3.3 percent of the forecasted residential connections. The agricultural industrial use would have a maximum of three service connections (one fire service, one commercial service and one agricultural service) which would represent 0.8 percent of the forecasted non-residential connections. Combined, the residential and agricultural industrial uses would represent approximately 3 percent of CWSC's total forecasted service connections anticipated by 2040. The 2010 UWMP analyzed the ability to meet the forecasted water demand under normal year, single dry year and multiple dry year conditions. The UWMP concluded that Cal Water has more than sufficient capacity to provide water to the subject site.

WATER QUALITY – ARSENIC LEVELS

As noted on page 3.6-31 of the DEIR, arsenic, total dissolved solids (TDS), and nitrates are of particular concern for wells in the area. The concern with arsenic levels was heightened upon new maximum contaminant level (MCL) for arsenic that became enforceable in 2006, which lowered the MCL from 50 ppb to 10 ppb. This resulted in several area wells producing water now needing to meet new treatment standards, not due to increased arsenic levels. This is not a factor for the proposed project as it will obtain water from a regulated utility that is required to provide water that meets established limits for contaminants.

RUNOFF AND RECHARGE

The proposed project's long term impact on surface runoff is addressed under Impact 3.7-1 started on page 3.7-17 of the DEIR. As noted starting on page 3.7-17, a majority of the stormwater runoff generated on the project site during a storm event due to increased impervious surface area would be collected on-site via a stormwater drainage system installed within the right-of-way of proposed roadways, which will convey stormwater to detention basins located throughout the property and allowed to recharge the aquifers. The project is required to detain increases in surface runoff and design for the difference between a 10-year pre-development storm event and a 100-year post-development storm event. This would allow water to infiltrate back to the aquifers. Figure 3.7-3 of the DEIR shows the schematic drainage watersheds proposed on the project site. Runoff would remain within the El Toro Creek-Salinas River subarea of the Salinas watershed and recharge the Corral de Tierra subarea of the Salinas Valley Groundwater Basin; however, proposed drainage watershed A would also lie within the northeastern portion of the study area for the *El Toro Groundwater Study*.

The proposed project's impact on recharge is addressed under Impact 3.6-2 starting on page 3.6-36 of the DEIR. As noted on page 3.6-37 of the DEIR, all runoff would be detained onsite and allowed to infiltrate back to the aquifers. As noted on page 3.6-37 and according to Geosyntec, the inferred groundwater flow beneath the project site is to the northeast toward the Salinas Valley; therefore, the project has no effect on the existing B-8 zoning district within the Toro Area. It should also be noted that the project, or any alternative to the project, approved by the County, would be subject to recently adopted post-project drainage and water quality performance standards designed to retain stormwater on site.

MONTEREY COUNTY

WATER RESOURCES AGENCY

PO BOX 930
SALINAS , CA 93902
(831)755-4860
FAX (831) 424-7935

DAVID E. CHARDAVOYNE
GENERAL MANAGER

STREET ADDRESS
893 BLANCO CIRCLE
SALINAS, CA 93901-4455

NOTICE OF PREPARATION

Salinas Valley Water Project, Phase II

Date: June 25, 2014

To: State Clearinghouse, Responsible Agencies, Trustee Agencies, Interested Parties and Organizations

Subject: Notice of Preparation of an Environmental Impact Report and Notice of Public Scoping Meeting

Project: Salinas Valley Water Project, Phase II

Lead Agency: Monterey County Water Resources Agency

The Monterey County Water Resources Agency (MCWRA) is the Lead Agency in accordance with the California Environmental Quality Act (CEQA) for preparation of an Environmental Impact Report (EIR) for the proposed Salinas Valley Water Project, Phase II (Project). The EIR is an environmental review document being prepared by MCWRA in compliance with CEQA to analyze potential environmental effects associated with implementation of the Project and to evaluate mitigation measures, as necessary. This Notice of Preparation (NOP) is being issued by the Lead Agency pursuant to CEQA requirements; it is intended to provide information about the Project and its potential environmental effects and to solicit public comments regarding the scope and content of the information to be included in the EIR.

With this Project, MCWRA seeks to capture and divert surface water from the Salinas River, which will be conveyed and delivered to the East Side and Pressure Subareas to effectively utilize water allocated to MCWRA by Water Right Permit #11043 and offset groundwater pumping in the Salinas River Groundwater Basin. In concert with other completed MCWRA water projects, the Project will enhance conjunctive management of water resources and be part of a comprehensive solution for combating seawater intrusion in Monterey County.

The Project is comprised of two capture and diversion facilities located at discrete diversion points, one located near the City of Soledad and the other located south of the City of Salinas. Each capture and diversion facility will have affiliated facilities for conveyance and delivery. Details specific to the conveyance and delivery elements, such as length and termination points of pipelines, or treatment of delivered water, will be analyzed in the EIR.

Public Comments

MCWRA, as Lead Agency, has provided this NOP to responsible and trustee agencies and other interested parties. As part of the environmental review process, MCWRA is soliciting the views of interested persons or agencies as to the scope and content of the proposed EIR. In accordance with CEQA, agencies are requested to review the project description provided in this NOP and provide comments on environmental issues relevant to the statutory responsibilities of the agency in connection with the Project.

The public comment period commences Monday, June 30, 2014. All written comments must be received no later than **4:00 PM on Monday, August 11, 2014**. Please submit all comments to the address shown below. Please include your name, the name of the agency you are representing, a return address or email address, and phone number with your comments so that the Lead Agency may contact you and keep you informed throughout the EIR process.

Robert Johnson, Assistant General Manager
Monterey County Water Resources Agency
893 Blanco Circle
Salinas, CA 93901
Phone: 831-755-4860
Email: johnsonr@co.monterey.ca.us
Fax: 831-424-7935

Scoping Meeting

MCWRA invites your participation in the preparation of the EIR through attendance at the scoping meetings, which will provide additional opportunities for public comment. Details of the scoping meetings are as follows:

Scoping Meeting #1

Date: July 15, 2014

Time: 2:30 pm

Location: Monterey County Water Resources Agency
Board Room
893 Blanco Circle
Salinas, CA 93901

Scoping Meeting #2

Date: July 16, 2014

Time: 6:00 pm

Location: Soledad City Hall
Council Chambers
248 Main Street
Soledad, CA 93960

Copies of this NOP are available for review at MCWRA offices, located at 893 Blanco Circle, Salinas, CA, 93901 and may also be downloaded from the MCWRA website at http://www.mcwra.co.monterey.ca.us.

Notice of Preparation

Salinas Valley Water Project, Phase II

June 2014

Monterey County
Water Resources Agency
893 Blanco Circle
Salinas, CA 93901

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Salinas Valley Water Project, Phase II

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Notice of Preparation

Salinas Valley Water Project, Phase II

Introduction

The Monterey County Water Resources Agency (MCWRA) proposes to implement the Salinas Valley Water Project, Phase II[1] (Project) to address water supply issues within the Salinas River Groundwater Basin[2]. The Project will put to beneficial use the water right allocated to MCWRA by Water Right Permit #11043 by further developing surface water resources that will be used to offset groundwater pumping. Reductions in groundwater extractions will help to halt seawater intrusion in the Salinas River Groundwater Basin and protect the water resources of Monterey County.[3]

Project Background

The Salinas Valley, located in Monterey County, is home to the Salinas River, which flows northward along the axis of the valley from its headwaters in San Luis Obispo County to its confluence with the Monterey Bay near Marina, California (Figure 1). The geology, climate, and topography of the Salinas Valley have contributed to the growth of an agricultural industry that has flourished since its beginnings over a century ago.

The Salinas Valley receives relatively little precipitation – between 10 and 16 inches annually, depending on location (MCWRA, 1997). As such, groundwater is a vital resource within the Salinas Valley for both agricultural and urban uses. Approximately 489,000 acre-feet[4] (af) of groundwater was extracted from the Salinas River Groundwater Basin in 2012, with 91.3% of the pumping attributed to agricultural uses and 8.7% to urban pumping (MCWRA, 2013). Conjunctive use of

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[1] The Project name, "Salinas Valley Water Project – Phase II" was established by the State Water Resources Control Board, not MCWRA. Previously, a 'Phase 2' was proposed as a follow-on project to the Salinas Valley Water Project; however this project is not the project proposed at that time.

[2] The Salinas River Groundwater Basin is divided into five hydrologic subareas: Pressure, East Side, Forebay, Arroyo Seco, and Upper Valley. The subareas have distinct recharge and stratigraphic characteristics but remain hydrologically connected to one another. See Figure 1.

[3] MCWRA has determined that an EIR will clearly be required for the Project, and so has not prepared an Initial Study for the Project.

[4] One acre-foot is the volume of water required to cover an area of one acre with one foot in depth.

surface water and groundwater plays a significant role in the Salinas River Groundwater Basin, where the management of surface water sources allows for prolonged periods of streamflow and increased groundwater recharge.

Seawater intrusion was first documented in the Salinas Valley during the 1930s (State of California, 1946). In 1946, the State of California Department of Public Works (that later became the Department of Water Resources) completed *Bulletin No. 52 Salinas Basin Investigation* (Bulletin 52) which evaluated the water resources of the Salinas Valley and set forth possible solutions for maintaining a water supply and addressing the issue of seawater intrusion.

Bulletin 52 prompted a number of actions, including creation of the Monterey County Flood Control & Water Conservation District (MCFC&WCD) by the State Legislature, for the purpose of having a local district to create and operate water supply projects within Monterey County. The Monterey County Water Resources Agency (MCWRA) is the successor agency to the MCFC&WCD, created in 1991, and made responsible for certain flood control activities as well as management, protection, and enhancement of water resources throughout Monterey County.[5]

In response to the findings of Bulletin 52, and as a means of addressing water supply concerns in the Salinas Valley, MCWRA framed a solution strategy that includes developing a surface water source, moving water to northern portions of the Salinas Valley to reduce groundwater pumping, and stopping pumping along the coast.

Bulletin 52 also prompted MCWRA to file two water right applications with the predecessor to the State Water Resources Control Board (SWRCB) in 1949 to permit diversion of Salinas River surface water and delivery of that water to northern portions of the Salinas Valley, which would decrease groundwater pumping and slow the advancement of seawater intrusion. Water rights allocated by these two applications, which were later combined into Water Right Permit #11043, were intended to be used as part of the solution described in Bulletin 52.

[5] As relevant to this Notice of Preparation, "MCWRA" and "MCFC&WCD" are interchangeable.

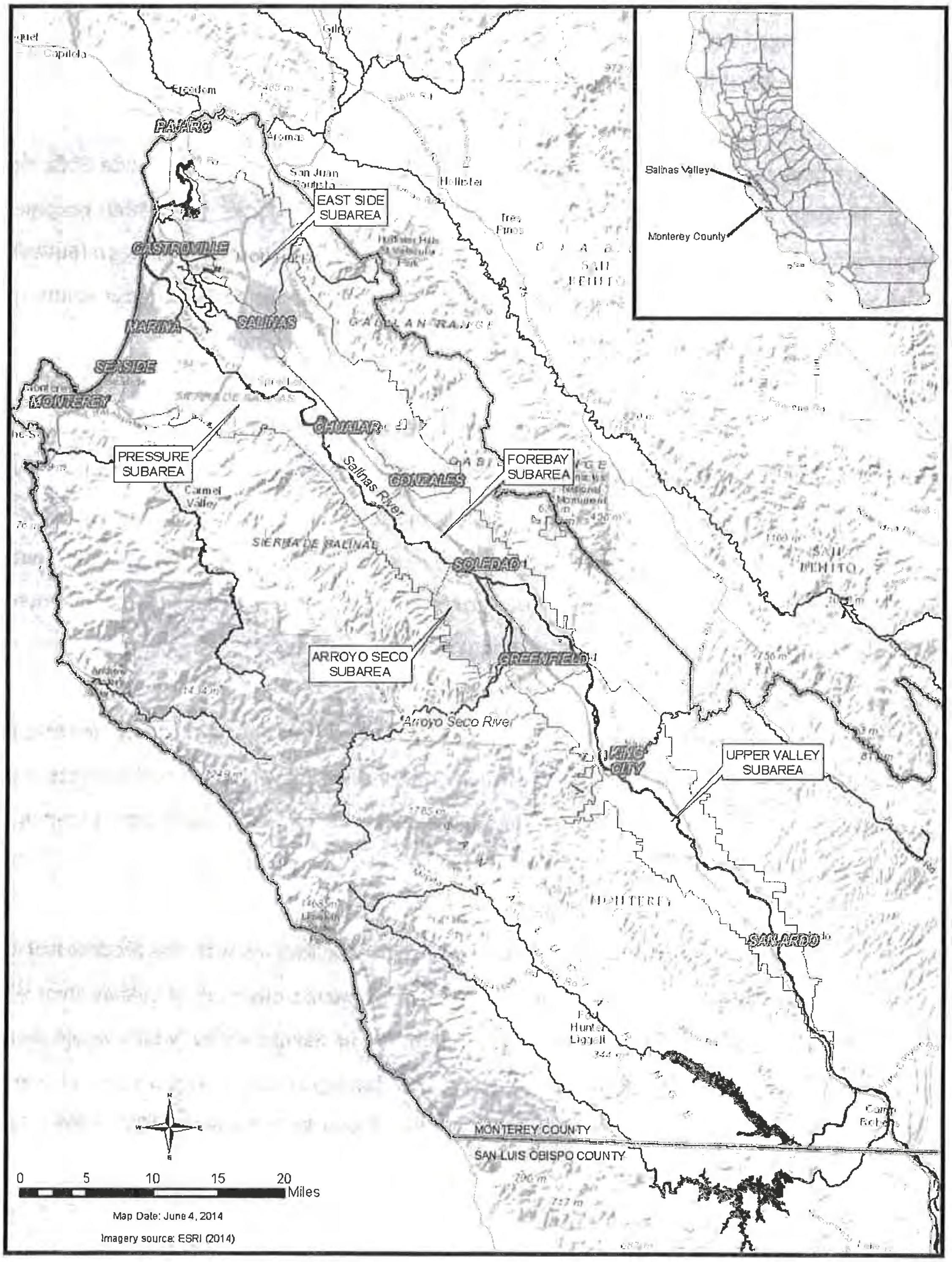


Figure 1 – Salinas River Groundwater Basin Hydrologic Subareas

To date, a number of water projects have been implemented in support of MCWRA's solution strategy (Figure 2). These projects include:

- Nacimiento Reservoir - completed in 1957;
- San Antonio Reservoir - completed in 1965;
- The Monterey County Water Recycling Project - includes the Salinas Valley Reclamation Project (SVRP) and the Castroville Seawater Intrusion Project (CSIP), which came online in 1997 and first made water deliveries in 1998; and,
- The Salinas Valley Water Project, Phase I - comprised of the Nacimiento Reservoir Spillway Modification (completed in 2009) and construction of the Salinas River Diversion Facility (SRDF), which was completed and began delivering water in 2010.

In August 2013, the MCWRA and the State Water Resources Control Board (SWRCB) reached a settlement agreement with regard to Water Right Permit #11043, which included some amendments to the permit and a timeline for implementation of a project utilizing the allocated waters.

While recent data suggest that the rate of advancement of the intrusion front has slowed in recent years, seawater intrusion continues to be a concern in portions of the Salinas Valley. The proposed Project will build upon the extensive work that has already been completed and continue to advance MCWRA's solution strategy.

Project Objectives

MCWRA is developing the Project as part of a comprehensive plan to offset groundwater pumping in the Pressure and East Side Subareas and halt the advancement of seawater intrusion.

Specific objectives of the Project are to:

- Halt seawater intrusion
- Enhance the value of the Salinas Valley Water Project, Phase I by providing additional surface water that is needed to combat seawater intrusion; and,
- Effectively utilize the water allocated to MCWRA by Permit #11043.

Project Location

The Project is located in Monterey County within the Salinas Valley (Figure 1). The Project incorporates two surface water diversion points, one located near the City of Soledad (called the East Side Canal Intake in the permit) and the other located south of the City of Salinas (called the Castroville Canal Intake in the permit), as shown on Figure 3. Each diversion point will be accompanied by conveyance and delivery facilities, the locations and termini of which will be evaluated in the EIR. The place of use will be within the Salinas River Groundwater Basin. The EIR will also explore treatment methods; the location and requirements of any treatment facilities associated with the Project will be examined in the EIR.

Project Description

The Project will allow MCWRA to facilitate further offsets of groundwater pumping by delivering additional surface water to the Pressure and East Side subareas. In accordance with the Technical Memorandum prepared by GEOSCIENCE Support Services, Inc. and released to the public in November 2013, up to 135,000 acre-feet per year of water will be diverted from the Salinas River and supplied for municipal, industrial, and/or agricultural uses in the Pressure and East Side subareas. Two pipelines will be constructed to deliver the water to end-users. Continued alleviation of groundwater pumping through use of the diverted surface water will help combat seawater intrusion in Monterey County.

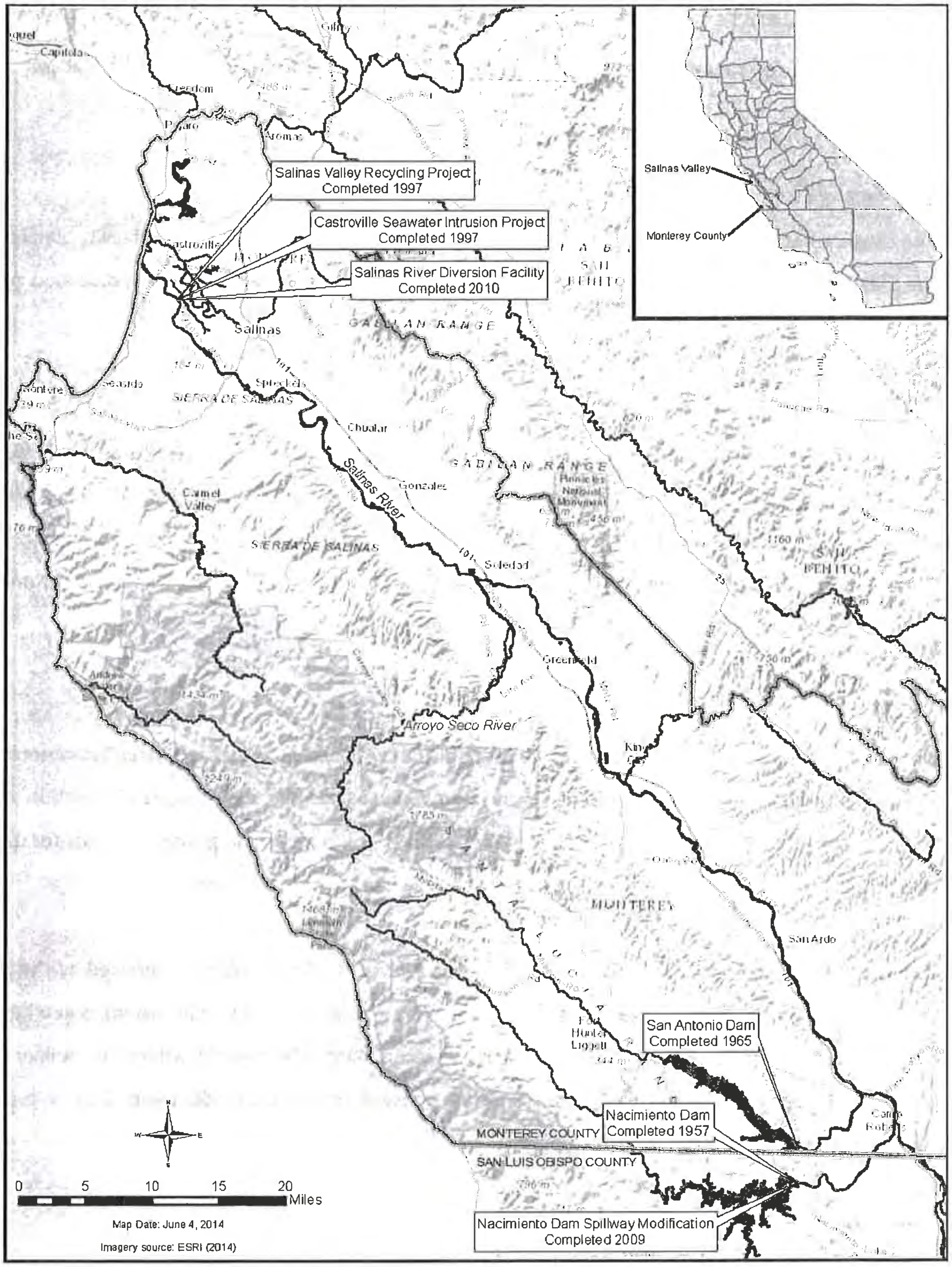


Figure 2 – MCWRA Completed Water Projects

Project Elements

The Project will encompass two surface water diversion points and their appurtenant facilities for capture, conveyance, and delivery of the water.

Capture and Diversion

The capture and diversion facilities will consist of either a surface water diversion facility, similar to the SRDF, or Ranney® Collector Wells. The most appropriate type of facility for each diversion point will be examined in the EIR.

Conveyance

The conveyance facilities associated with each diversion point will be composed of pipelines, which may be constructed both above and below ground level, and pump stations. The Project EIR will be used to analyze the most beneficial configuration of the pipelines and to explore specifics of the pipelines, including diameter, length, destination, number and location of turnouts, locations of pump stations, and physical layout of the conveyance facilities.

Delivery

The type and locations of the Project's delivery facilities will be analyzed in the EIR to determine maximum beneficial use of the water. The resulting delivery facilities may consist of injection wells that are part of an aquifer storage and recovery (ASR) system, percolation ponds, turnouts for direct use of the water, or other options ensuing from analysis during the EIR process.

The construction design and physical location of the delivery facilities will be influenced by the type of facility, the end-user's intended application of the water (agricultural versus urban), and whether or not the Project will involve a water treatment component. The Project will either deliver raw water or treated water; if treated, the method of treatment will be identified once a project alternative is selected.

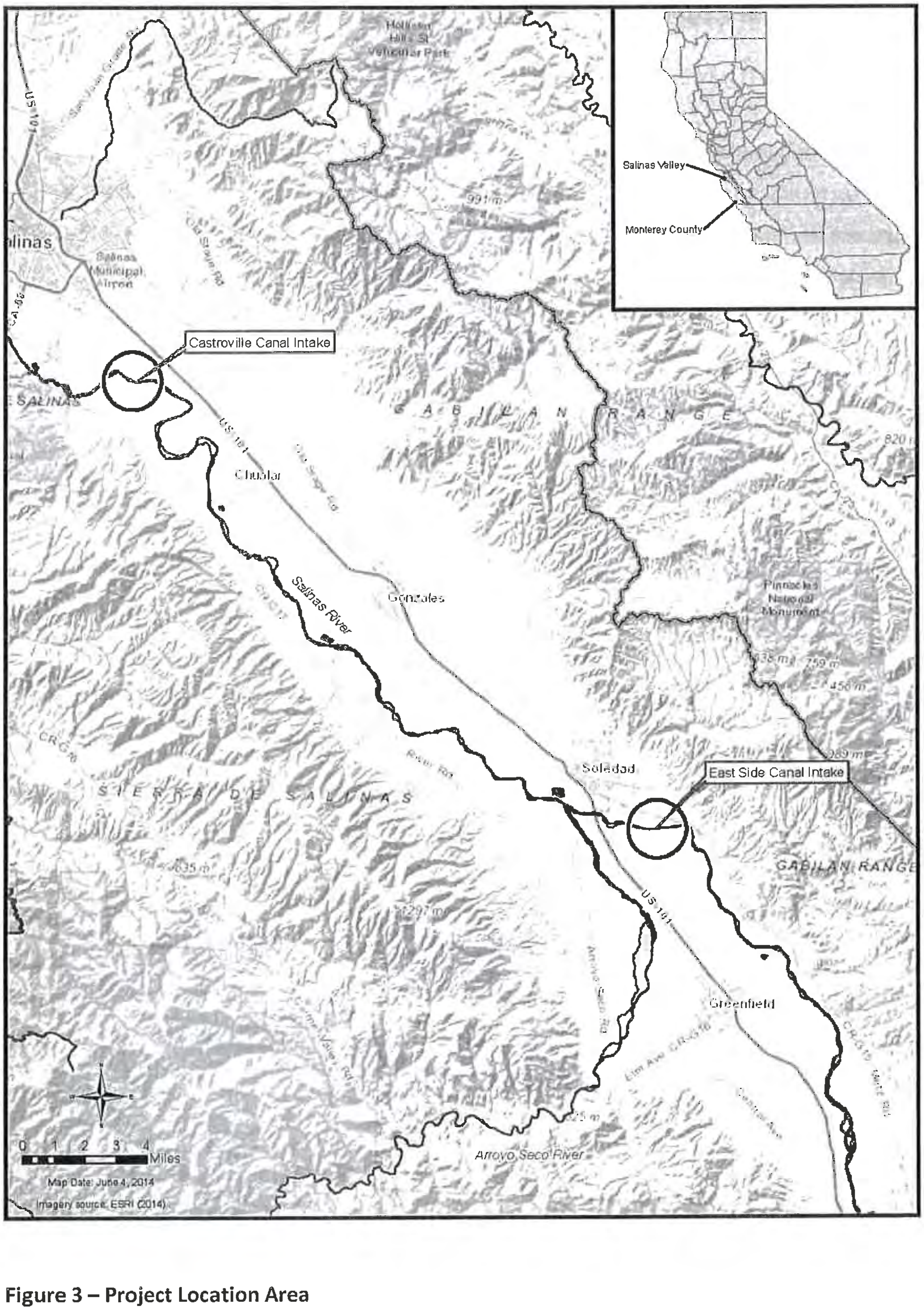


Figure 3 – Project Location Area

Environmental Issues to be Addressed

Aesthetics

Implementation of the Project will involve construction of above-ground structures for capture and diversion, conveyance, delivery, and possibly treatment of the diverted water; these may include diversion facilities, pump stations, and pipelines. Construction, maintenance, and operation of these facilities have the possibility for changes to existing visual quality. The EIR will evaluate the potential for Project-related structures to affect aesthetic, scenic, or other visual resources.

Agricultural Resources

Some components of the Project would be located in areas presently used as agricultural land. Potential impacts to agricultural resources, including conversion of agricultural land to other uses or conflicts with existing Williamson Act contracts, will be evaluated in the EIR.

Air Quality and Greenhouse Gas Emissions

Construction of Project elements would result in temporary emissions from construction equipment, earth moving activities, material hauling, and worker trips. Operation of the project may generate emissions resulting from energy use or worker trips associated with routine operation and maintenance activities. The EIR will analyze effects of construction, operation, and maintenance of the Project on air quality and greenhouse gas emissions.

Cultural Resources

Implementation of the Project would require disturbance of the ground for construction of above- and below-ground structures, which could possibly impact existing and/or previously unknown archaeological or paleontological resources. Other historic and cultural resources could also potentially be affected by construction and excavation. The EIR will evaluate the potential effect of Project implementation on cultural resources.

Fisheries

The fisheries and aquatic resources that support fish habitat of the Salinas River could be affected by the Project due to different water management practices, changes in diversion amounts or scheduling, altered river flows, and variations in water quality. The Project could also impact fisheries or aquatic resources during construction activities, some of which may be taking place in or near streams, rivers, and drainages. The EIR will examine potential effects on fisheries habitat, including conditions for spawning and migration, and interference with any special-status species.

Geology, Soils, and Seismicity

Construction of Project facilities will result in ground disturbance which could impact soil erosion or increase exposure of people or existing structures to geologic hazards, such as unstable slopes or poor soil conditions. Central California is a seismically active region, so Project facilities may be subject to seismic hazards and the geologic hazards associated with seismic activity, such as liquefaction or landslides. The EIR process will evaluate potential impacts to geology, soils, and seismicity that may result from implementation of the Project.

Groundwater Resources

The Project is part of a conjunctive water management strategy aimed at reducing groundwater pumping; so it may affect groundwater levels and water quality. Potential effects to be analyzed in the EIR will include changes to groundwater levels, groundwater flow patterns, water quality, and effects on other beneficial uses of groundwater.

Hazards and Hazardous Materials

Existing hazardous materials or contaminated soils may be encountered during excavation and construction activities related to the Project. Operation and maintenance of the Project facilities may involve use of hazardous materials such as fuel, lubricants, or chemicals involved in the water treatment process. The EIR will evaluate potential for exposure to hazardous chemicals during construction, operation, and maintenance of the Project.

Hydrology and Water Quality

The Project involves diversion of surface water from the Salinas River, which is expected to have a direct impact on localized and downstream flow regimes. Changes to hydrology from implementation of the Project may influence water quality and conditions in the river channel. Changes to surface water flows may affect aquatic habitat and fisheries, and may also influence flood control activities or growth patterns of vegetation. Construction of the Project and end-user applications of diverted surface water may impact drainage patterns or the volume and quality of surface water runoff. The timing and volume of diversions may factor into all of these potential impacts. The EIR will identify all potential impacts to channel conditions, drainage, flood control, hydrology, and water quality from the Project.

Land Use and Planning

The Project's facilities for capture and diversion, conveyance, and delivery of water may affect existing or planned land uses in the vicinity of the facilities. The EIR will examine the Project for consistency with established plans, policies, and regulations at the local, regional, county, state, and federal levels. The functional and physical compatibility of the Project with surrounding existing or planned land uses will also be assessed by the EIR process.

Noise

Implementation of the Project will result in an intermittent and temporary increase in the level of noise in localized areas near construction activities. Operation and maintenance of Project facilities is expected to have limited and discontinuous impact on noise levels; the extent of impact will depend on the selected Project alternative. The EIR will evaluate possible sources of noise from construction activities; operation of pump stations, injection and extraction wells, or water treatment facilities; and vehicle activity.

Public Services

It is not anticipated that implementation of the Project will impose additional demand for fire protection, police protection, schools, or parks. It is possible that the Project may affect facilities related to water treatment or solid waste disposal. The EIR will evaluate the potential for the Project to place additional demands on public service resources.

Socioeconomics and Environmental Justice

The EIR process will consider potential effects from the Project on socioeconomic and environmental conditions, including possible impacts to population, health, and economic activity that may disproportionately and adversely affect minority and low-income populations. The EIR will analyze these impacts for areas where the Project facilities will be constructed and operated.

Terrestrial Vegetation and Wildlife

Construction of the Project may result in short-term disturbance or loss of habitat for vegetation and wildlife and, long-term, could interfere with wildlife movement or migration corridors. The EIR will analyze these potential impacts as well as other indirect effects from dust, soil erosion, noise, or vibration that may occur during construction or operation of Project facilities.

Transportation and Traffic

A temporary increase in traffic in localized areas may occur during Project construction activities as a result of the need to transport equipment, personnel, and materials. Operation and maintenance of the Project are expected to generate a limited number of additional vehicle trips. The EIR will evaluate the potential for impact to traffic, including lane or road closures and established transportation policies.

Utilities and Services

Existing utilities and services may be temporarily impacted due to the location of excavation and construction activities associated with Project implementation. Depending upon the selected Project alternative, there may also be on-going effects if water treatment is involved in the Project operation. The EIR will evaluate potential effects to utilities and services.

Growth Inducement

Much of the area where the Project will be implemented is currently developed or being actively utilized for agricultural purposes. However, the availability of a reliable surface water supply from the Project may affect the nature of farming practices on agricultural land and the populations that support agricultural operations. Additionally, the Project may remove impediments to planned expansion of agricultural activities or urban development. Therefore, the EIR will consider potential for growth in areas that may receive water from the Project in the context of approved land uses in the Monterey County General Plan and/or other applicable local area plans.

Other Considerations

In accordance with CEQA Guidelines, the EIR will include a cumulative impacts assessment that will consider effects of the Project in concert with other past, present and reasonably foreseeable future projects that have been or may be proposed during the development of the EIR, and the cumulative potential for significant environmental impacts.

The EIR will not include analysis of Forestry Resources, Mineral Resources, or Recreation, which were determined to be less than significant within the context of the Project because the Project will have negligible or no impact on such resources.

Project Alternatives

As required by CEQA, the EIR will identify potentially significant impacts of the Project and analyze a range of alternatives to avoid or substantially decrease identified impacts. Some possible Project alternatives include relocation or addition of a diversion point; amendment of Water Right Permit #11043 to include storage of surface water; and a "no project" option.

The EIR will also explore treatment options for the delivery element of the Project. Alternatives will depend on the selected Project alternative and needs of the targeted end-users.

Intended Uses of the EIR

MCWRA is the CEQA Lead Agency for review of the proposed Salinas Valley Water Project, Phase II. The MCWRA Board of Directors, MCWRA Board of Supervisors, and Monterey County Board of Supervisors will consider the information in the EIR during the Project approval process. The EIR will also be a resource for other agencies that have a regulatory or permitting role over some aspect of the project. Responsible agencies, trustee agencies, and other agencies with jurisdiction over resources potentially affected by the Project will use the EIR as part of their review process.

References

GEOSCIENCE Support Services, Inc., Protective Elevations to Control Sea Water Intrusion in the Salinas Valley, November 2013.

Monterey County Water Resources Agency. *Water Resources Data Report, Water Year 1994-1995*. October 1997.

Monterey County Water Resources Agency. *Ground Water Extraction Summary Report 2012*. October 2013.

State of California, Department of Public Works. *Bulletin No. 52 Salinas Basin Investigation*. 1946.

2013 Annual Water Quality Report

Ambler Park
PWS ID: 2710006

CALIFORNIA AMERICAN WATER

A Message from California American Water President Rob MacLean

Dear Customer:

We are proud to be your water service provider and we are proud to share with you this information about the quality of the water we deliver to your home. This report, called an Annual Water Quality Report or a Consumer Confidence Report, summarizes the results of tests that we conducted on the water we served you during 2013. As in years past, we provided water that met or exceeded all state and federal regulations. At about a penny a gallon - and for most people their least expensive utility bill - it is still quite a value.

Our employees work all day long and all year long to make sure water is there when you and your family need it, whether it is for cooking, cleaning or bathing or whether it is for firefighting, public health or to assist our economy. Keeping the water supply flowing to you requires continual investment in our infrastructure, and in 2013 alone we invested more than $54 million to maintain and improve our water infrastructure in California. While most of these projects are underground or out of sight, they are direct investments that improve your community and improve the water supply for your family.

Please take time to review this report and learn more about the water you drink every day. You will note there are results for both "source" or untreated water and treated water that is delivered to your home. As a reminder, this is a summary of test result for the year ending December 31, 2013.

Thank for your interest in water service and for allowing us to serve you. If you have any questions about your water quality, billing, customer service or other issues please call us at 888-237-1333.

Sincerely,

Rob G. MacLean
President, California American Water

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

Mahalaga ang impormasyong ito. Mangyaring ipasalin ito.

Dieser Bericht enthält wichtige Information über Ihr Trinkwasser. Bitte übersetzen Sie ihn oder sprechen Sie mit jemandem, der ihn versteht.

Questo rapporto contiene informazioni inportanti che riguardano la vostra aqua potabile. Traducetelo, o parlate con una persona qualificata in grado di spiegarvelo.

Our Commitment to Quality

Last year, as in years past, your tap water met U.S. Environmental Protection Agency (EPA) and state drinking water health standards. California American Water vigilantly safeguards its water supplies, and once again we are proud to report that our system has not violated a maximum contaminant level.

Founded in 1886, American Water is the largest publicly traded U.S. water and wastewater utility company. With headquarters in Voorhees, N.J., the company employs approximately 6,600 dedicated professionals who provide drinking water, wastewater and other related services to an estimated 14 million people in more than 40 states and parts of Canada. More information can be found by visiting www.amwater.com.

California American Water, a subsidiary of American Water (NYSE: AWK), provides high-quality and reliable water and/or wastewater services to approximately 600,000 people.

AT ABOUT A PENNY PER GALLON WATER IS A GREAT VALUE™

What is a Consumer Confidence Report?

To comply with State and U.S. Environmental Protection Agency (EPA) regulations, California American Water issues a report annually describing the quality of your drinking water. The purpose of this report is to raise your understanding of drinking water and awareness of the need to protect your drinking water sources. In 2013, we conducted thousands of tests at numerous sampling points in your water system, all of which were below Federal and State maximum allowable levels. It includes details about where your water comes from and what it contains. The data presented in this report is a combination of data from our local water quality laboratory, our nationally recognized water quality lab, and commercial laboratories all of which are certified in drinking water testing by the State of California Department of Public Health.

For more information about this report, or for any questions relating to your drinking water, please contact California American Water's Customer Service Center at (888) 237-1333.

Share This Report

Landlords, businesses, schools, hospitals, and other groups are encouraged to share this important water quality information with water users at their location who are not billed customers of California American Water and therefore do not receive this report directly.

About Your Water

Ambler Park is served entirely by groundwater sources from the Paso Robles Aquifer. Drinking water treatment technologies used in your water system include Arsenic, Iron, and Manganese removal and disinfection to ensure the bacteriological quality. The water supply is distributed for residential and commercial use.

Notice of Source Water Assessment

An assessment of the drinking water sources for the California American Water - Ambler Park water system was completed in February 2003. No man-made contaminants have been detected in the groundwater supplies. The sources are considered vulnerable to the following activities: drinking water treatment plants, high-density housing, and water supply wells.

A copy of the completed assessment may be viewed at: California American Water; 511 Forest Lodge Road, Suite 100, Pacific Grove, CA. You may request a summary of the assessment be sent to you by contacting: Travis Peterson, Water Quality & Environmental Compliance Manager, 831-646-3269.

How to Contact Us

If you have any questions about this report, your drinking water, or service, please call California American Water Customer Service toll free: (888) 237-1333.

Water Information Sources

California American Water
www.amwater.com/caaw/

California Department of Public Health
http://www.cdph.ca.gov/

United States Environmental Protection Agency
http://www.epa.gov/safewater/

Safe Drinking Water Hotline: (800) 426-4791

Centers for Disease Control and Prevention
www.cdc.gov

American Water Works Association
www.awwa.org

Water Quality Association
www.wqa.org

National Library of Medicine/National Institute of Health
http://www.nlm.nih.gov/medlineplus/drinkingwater.html

What Are the Sources of Contaminants?

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

Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and herbicides that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants, including synthetic and volatile organic chemicals that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.

Radioactive contaminants that can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the California Department of Public Health (Department) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

Educational Information – Special Health Information

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. California American Water is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Radon

Radon is a radioactive gas that you can't see, taste, or smell. It is found throughout the U.S. Radon can move up through the ground and into a home through cracks and holes in the foundation. Radon can build up to high levels in all types of homes. Radon can also get into indoor air when released from tap water from showering, washing dishes, and other household activities. Compared to radon entering the home through soil, radon entering the home through tap water will in most cases be a small source of radon in indoor air. Radon is a known human carcinogen. Breathing air containing radon can lead to lung cancer. Drinking water containing radon may also cause increased risk of stomach cancer. If you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. Fix your home if the level of radon in your air is 4 picocuries per liter of air (pCi/L) or higher. There are simple ways to fix a radon problem that aren't too costly. For additional information, call your State radon program
(1-800-745-7236), the EPA Safe Drinking Water Act Hotline (1-800-426-4791), or the National Safe Council Radon Hotline (1-800-SOS-RADON).

How to Read This Table

California American Water conducts extensive monitoring to ensure that your water meets all water quality standards. The results of our monitoring are reported in the following tables. While most monitoring was conducted in 2013, certain substances are monitored less than once per year because the levels do not change frequently. For help with interpreting this table, see the "Table Definitions" section.

Starting with a **Substance**, read across; **Year Sampled** is usually in 2013 or a prior year. **MCL** shows the highest level of substance (contaminant) allowed. **MCLG** is the goal level for that substance (this may be lower than what is allowed). **Average Amount Detected** represents the measured amount (less is better). **Range** tells the highest and lowest amounts measured. A **No** under **Violation** indicates government requirements were met. **Major Sources in Drinking Water** tells where the substance usually originates.

Unregulated substances are measured, but maximum allowed contaminant levels have not been established by the government.

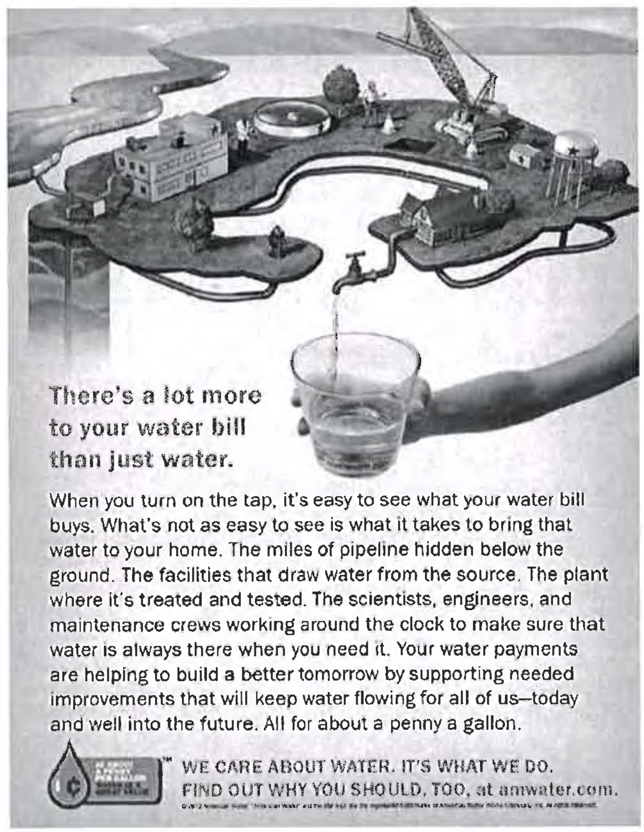
Definitions of Terms Used in This Report

- **AL (Action Level):** The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements, which a water system must follow.

- **Maximum Contaminant Level (MCL):** The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary

MCLs are set to protect the odor, taste, and appearance of drinking water.

- **Maximum Contaminant Level Goal (MCLG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency.
- **MFL:** Million fibers per liter
- **Maximum Residual Disinfectant Level (MRDL):** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **Maximum Residual Disinfectant Level Goal (MRDLG):** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **NA:** Not applicable
- **ND:** Not detected
- **NS:** No standard
- **NTU (Nephelometric Turbidity Units):** Measurement of the clarity, or turbidity, of the water.
- **pCi/L (picocuries per liter):** Measurement of the natural rate of disintegration of radioactive contaminants in water (also beta particles).
- **pH:** A measurement of acidity, 7.0 being neutral.
- **Public Health Goal (PHG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.
- **ppm (parts per million):** One part substance per million parts water or milligrams per liter.
- **ppb (parts per billion):** One part substance per billion parts water, or micrograms per liter.
- **Primary Drinking Water Standard (PDWS):** MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.
- **Regulatory Action Level:** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
- **RAA:** Running Annual Average
- **TON:** Threshold Odor Number
- **TDS (Total Dissolved Solids):** An overall indicator of the amount of minerals in water.
- **Treatment Technique (TT):** A required process intended to reduce the level of a contaminant in drinking water.
- **Variances and Exemptions:** Department permission to exceed an MCL or not comply with a treatment technique under certain conditions.
- **µmhos/cm (micromhos per centimeter):** A measure of electrical conductance.
- **%:** percent



Water Quality Results

Bacterial Results (from the Distribution System)

Substance (units)	Year Sampled	MCL	PHG (MCLG)	Highest Number Detected	Violation	Typical Source
Total Coliform Bacteria	2013	MCL: (systems that collect ≥ 40 samples/ month) more than 5% of monthly samples are positive; (systems that collect < 40 samples/ month), no more than 1 positive monthly sample	(0)	0	No	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful bacteria may be present.

Regulated Substances

Substance (units)	Year Sampled	MCL	PHG (MCLG)	Average Amount Detected	Range Low - High	Violation	Major Sources in Drinking Water
Radioactive Contaminants							
Gross Alpha Particle Activity (pCi/L)	2012	15	(0)	2.76	ND – 6.07	No	Erosion of natural deposits
Uranium (pCi/L)	2012	20	0.43	4.0	N/A	No	Erosion of natural deposits
Volatile Organic Contaminants							
Toluene (ppb)	2013	150	150	0.16	ND – 0.08	No	Discharge from petroleum and chemical factories; underground gas tank leaks
Inorganic Contaminants							
Aluminum (ppm)	2013	1	0.6	0.04	ND –0.18	No	Erosion of natural deposits; residue from some surface water treatment processes
Arsenic (ppb) [1]	2013	10	0.004	5.9	3 – 9	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Cadmium (ppb)	2013	5	0.04	0.2	ND –1	No	Internal corrosion of galvanized pipes; erosion of natural deposits; discharge from electroplating and industrial chemical factories, and metal refineries; runoff from waste batteries and paints
Chromium (ppb)	2013	50	(100)	6	ND –19	No	Discharge from steel and pulp mills and chrome plating; erosion of natural deposits
Fluoride (naturally occurring) (ppm)	2013	2	1	0.24	0.2 – 0.3	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Nickel (ppb)	2013	100	12	3.2	ND –16	No	Erosion of natural deposits; discharge from metal factories
Nitrate as NO_3 (ppm)	2013	45	45	1.5	ND – 2.9	No	Runoff and leaching from fertilizer use; Leaching from septic tanks and sewage; Erosion of natural deposits
Selenium (ppb)	2013	50	(50)	1.3	ND – 7	No	Discharge from petroleum, glass, and metal refineries; Erosion of natural deposits; Discharge from mines and chemical manufacturers; Runoff from livestock lots (feed additive)

Disinfection By-products, Disinfectant Residuals, and Disinfection By-products Precursors

Substance (units)	Year Sampled	MCL (MRDL)	PHG (MCLG)	Results	Range Low – High	Violation	Major Sources in Drinking Water
TTHMs (Total Trihalomethanes) (ppb)	2013	80	NA	40.3	N/A	No	By-product of drinking water disinfection
Haloacetic Acids (ppb)	2013	60	NA	6.4	N/A	No	By-product of drinking water disinfection
Chlorine (ppm)	2013	(4.0 as Cl_2)	(4.0 as Cl_2)	1.07	0.3 – 1.9	No	Drinking water disinfectant added for treatment

Secondary Substances (Measured on the Water Leaving the Treatment Facility or within the Distribution System)

Substance (units)	Year Sampled	SMCL	PHG (MCLG)	Average Results	Range Low - High	Violation	Typical Source
Chloride (ppm)	2013	500	NS	206	152 – 235	No	Runoff/leaching from natural deposits; Seawater influence
Odor (units)	2013	3	NS	1.9	ND – 4	No	Naturally-occurring organic materials
Specific Conductance (μmhos/cm)	2013	1,600	NS	1287	1142 – 1498	N/A	Substances that form ions when in water; Seawater influence
Sulfate (ppm)	2013	500	NS	55	47 – 75	No	Runoff/leaching from natural deposits; Industrial wastes
Total Dissolved Solids (ppm)	2013	1000	NS	725	654 – 754	N/A	Runoff/leaching from natural deposits
Zinc (ppm)	2013	5.0	NS	0.13	ND – 0.67	No	Runoff/leaching from natural deposits; Industrial wastes

Tap Water Samples: Lead and Copper Results (from the Distribution System)

Substance (units)	Year Sampled	Action Level	PHG (MCLG)	Number of Samples	Amount Detected at the 90th Percentile	Number of Homes Above Action Level	Violation	Typical Source
Copper (ppm)	2011	1.3	0.17	22	0.32	0	No	Internal corrosion of household plumbing system; Erosion of natural deposits; Leaching from wood preservatives
Lead (ppb)	2011	15	2	22	4	0	No	Internal corrosion of household water plumbing system; Discharges from industrial manufacturers; Erosion of natural deposits

Additional Water Quality Parameters of Interest (Measured on the Water Leaving the Treatment Facility or within the Distribution System)

This table shows average levels of additional water quality parameters, which are often of interest to consumers. Values shown here are averages of operating data through 2013. Values may vary from day to day. There are no health-based limits for these substances in drinking water.

Substance (units)	Year Sampled	Average Amount Detected	Range Low-High
Alkalinity as $CaCO_3$ (ppm)	2013	273	260 – 290
Calcium (ppm)	2013	110	91 – 124
Magnesium (ppm)	2013	25	21 – 30
pH (pH Units)	2013	7.1	6.8 – 7.3
Radon (pCi/L)	2010	245	N/A
Sodium (ppm)	2013	124	118 – 128
Total Hardness as $CaCO_3$ (ppm)	2013	378	340 – 417

Arsenic

[1]While your drinking water meets the federal and state standard for arsenic, it does contain low levels of arsenic. The arsenic standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The U.S. Environmental Protection Agency continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

CALIFORNIA
AMERICAN WATER

Ambler Park

Typical Water Quality Information

PWSID Number: 2710006

Area Served: Salinas

Where Does My Water Come From?

Ground water from the Laguna Seca Sub-basin – Paso Robles Aquifer

Average amount of water supplied to customers on a daily basis

200,000 gallons per day

Parameter	Average or Range	Comments
pH	7.05 pH Units	A measurement of water acidity, 7.0 is neutral
Total Hardness (as CaCO3)	324 mg/L	No MCL - Naturally occurring
Total Hardness (as CaCO3)	19 gpg	No MCL - Naturally occurring
Fluoride	0.4 mg/L	Naturally-occurring; MCL = 2 mg/L
Sodium	113 mg/L	No MCL – Informational only
Iron	ND	Secondary Standard Limit = 0.3 mg/L
Type of disinfection	Chlorination	
Disinfectant residual level in the distribution system (average)	1.19 mg/L	Max Residual Disinfectant Level Running Annual Avg. < or = 4.0 mg/L

Parameter	Average or Range	Comments
Lead [90th percentile result]	4 µg/L	Action Level = 15 µg/L
Copper [90th percentile result]	0.32 mg/L	Action Level = 1.3 mg/L
Nitrate (as Nitrate)	1.8 mg/L	MCL = 45 mg/L
Arsenic	5.3 µg/L	Arsenic Treatment provided; MCL = 10 µg/L
Alkalinity as CaCO3, mg/L	279 mg/l	
Chromium-6	0.21 – 0.50 µg/L (ppb)	Chromium-6 is not currently regulated as an individual contaminant. For more information, please visit http://www.amwater.com/caaw/Ensuring-Water-Quality/Chromium-6
Sulfate, mg/L	54 mg/L	
Total Dissolved Solids, mg/L	644 mg/L	

Definitions

- mg/L – milligrams per liter; one milligram per liter is equal to one part per million (ppm), which is approximately the same as 1 second in 11.5 days
- µg/L – micrograms per liter; one microgram per liter is equal to one part per billion (ppb), which is approximately the same as 1 second in 31.7 years
- N/A – not applicable
- ND – not detected
- MCL – Maximum Contaminant Level – the highest level of a contaminant allowed in drinking water under State and Federal regulations

For a complete report of your water quality, please refer to the Water Quality Report located on the American Water web site

For more information about water quality in your area, please contact Travis Peterson at 831-646-3269

Other inquiries should be directed to our Customer Service Center at 1-888-237-1333

Ground Water Summary Report 2012

Monterey County Water Resources Agency

October 2013

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Overview of the Ground Water Reporting Program

History of the Ground Water Reporting Program

In February 1993, the Monterey County Board of Supervisors adopted Ordinance No. 3663 that required water suppliers within Zones 2, 2A, and 2B to report water-use information for ground water extraction facilities (wells) and service connections to the Monterey County Water Resources Agency (Agency). Monterey County Ordinance No. 3717, which replaced Ordinance No. 3663 and was adopted in October 1993, modified certain other requirements in the previous ordinance while keeping the ground water extraction reporting requirements in place for wells with a discharge pipe having an inside diameter of at least three inches.

The Agency has collected ground water extraction data from well operators, for the period beginning November 1 and ending October 31, starting with the 1992-1993 reporting year. Information received from the 300-plus well operators in the above-referenced zones of the Salinas Valley is compiled by the Ground Water Extraction Management System (GEMS) portion of the Water Resources Agency Information Management System (WRAIMS), a relational database maintained by the Agency. The intent of the ground water reporting program is to provide documentation of the reported amount of ground water that is extracted from Zones 2, 2A, and 2B of the Salinas Valley Ground Water Basin each year.

Since 1991, the Agency has required the annual submittal of Agricultural Water Conservation Plans (Ordinance 3851), which outline the best management practices that are adopted each year by growers in the Salinas Valley. In 1996, an ordinance was passed that requires the filing of Urban Water Conservation Plans (Ordinance 3886). Developed as the urban counterpart of the agricultural water conservation plans, this program provides an overview of the best management practices being implemented by urban water purveyors as conservation measures.

2012 Ground Water Summary Report

The purpose of this report is to summarize the data submitted to the Agency by well operators in February 2013 from the following annual reports:

- Ground Water Extraction Reports (agricultural and urban)
- Water Conservation Plans (agricultural and urban)
- Water and Land Use Forms (agricultural)

The agricultural data from the ground water extraction program covers the reporting year of November 1, 2011, through October 31, 2012; the urban data covers calendar year 2012. The agricultural and urban water conservation plans adopted for 2013 are also summarized. This report is intended to present a synopsis of current water extraction within the Salinas Valley, including agricultural and urban water conservation improvements that are being implemented to reduce the total amount of water pumped. It is not the purpose of this report to thoroughly analyze the factors that contribute to increases or decreases in pumping.

Reporting Methods

The Ground Water Conservation and Extraction Program provides well operators with a choice of three different reporting methods for each of their wells: Water Flowmeter, Electrical Meter, or Hour Meter (timer). The summary of ground water extractions presented in this report is compiled from data generated by all three reporting methods. Ordinance 3717 requires annual pump efficiency tests and/or meter calibration of each well to ensure the accuracy of the data reported.

Disclaimer

While the Agency has made every effort to ensure the accuracy of the data presented in this report, it should be noted that the data are submitted by individual reporting parties and are not verified by Agency staff. In addition, since so many factors can affect the extraction calculations, it is understood that no reporting method is 100 percent accurate. The Agency maintains strict quality assurance in the compilation, standardization, and entry of the data received. The Agency received Ground Water Extraction Reports from ninety-seven percent (97%) of the 1867 wells in the Salinas Valley for the 2012 reporting year. Agricultural and Urban Water Conservation Plan submittals for 2013 were ninety-four percent (94%) and one hundred percent (100%), respectively.

Reporting Format

Ground water extraction data are presented in this report by measurement in acre-feet. One acre-foot is equal to 325,851 gallons.

Ground Water Extraction Data Summary

The Salinas Valley Ground Water Basin is divided into four major hydrologic subareas whose boundaries are derived from discernible changes in the hydrogeologic conditions of the underground aquifers. Figure 1 (below) illustrates the Agency-designated Zones of the Salinas Valley in relation to the hydrologic subareas.

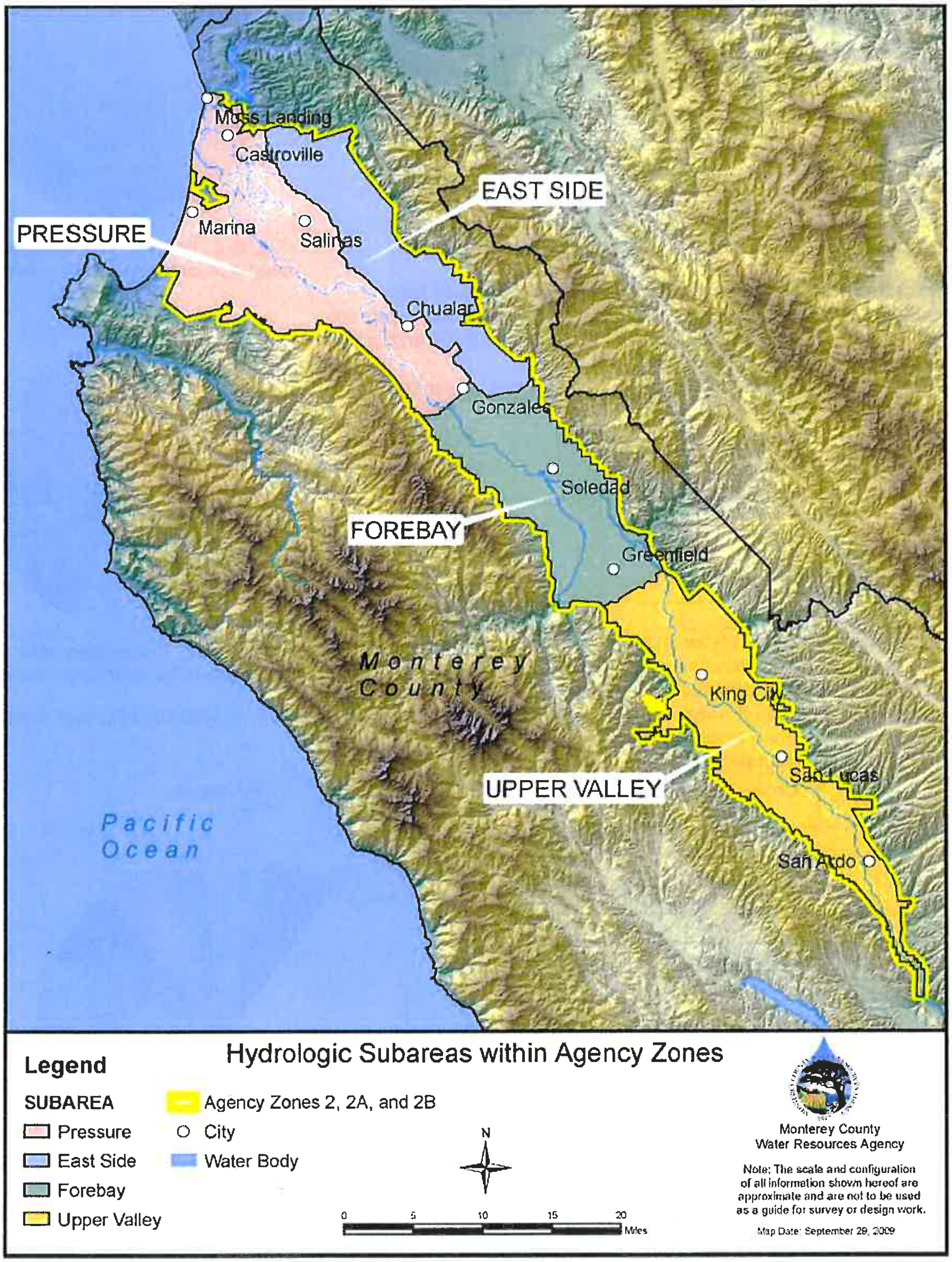


Figure 1. Agency Zones and hydrologic subareas of the Salinas Valley Ground Water Basin

Ground Water Extraction Data Summary (continued)

Summary of Methods Used for Extraction Reporting
The distribution of methods used for ground water extraction reporting (agricultural and urban) for the 2012 reporting year is shown in Table 1; a percentage distribution by volume is shown in Figure 2.

Table 1. Total extraction data by reporting method

Reporting Method	Acre-Feet per Reporting Method	Wells per Reporting Method
Water Flowmeter	343,597	1,380
Electrical Meter	136,543	407
Hour Meter	9,101	18
Total (2012)	489,241	1,806
Average ('03-'12)	**495,968**	**1,756**

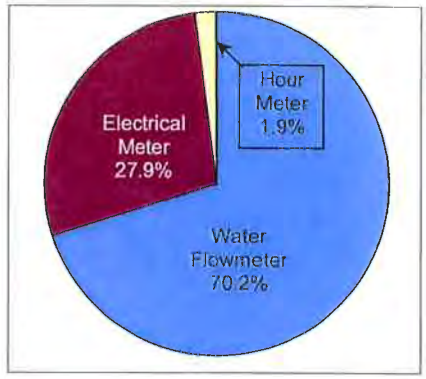


Figure 2. Percentage distribution by volume of methods used for extraction reporting

Total Extraction Data by Hydrologic Subarea and Type of Use
The total ground water extractions for the 2012 reporting year are summarized by hydrologic subarea, type of use (agricultural and urban in Table 2), and percentage (Figure 3).

Table 2. Total extraction data by hydrologic subarea and type of use

Subarea	Agricultural Pumping (acre-feet)	Urban Pumping (acre-feet)	Total Pumping (acre-feet)
Pressure	95,814	18,084	113,898
East Side	82,451	13,092	95,543
Forebay	135,971	7,488	143,459
Upper Valley	132,383	3,957	136341
Total	446,620	42,621	489,241
Percent of Total	**91.3%**	**8.7%**	**100%**

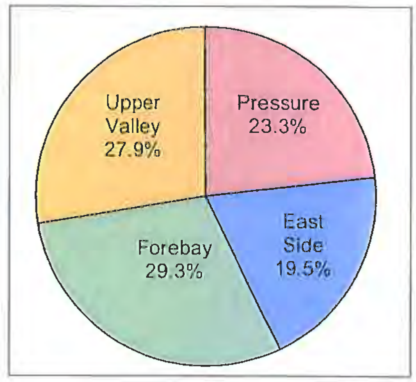


Figure 3. Percentage of total extractions by hydrologic subarea

Urban Extraction Data by City or Area
The total ground water extractions attributed to urban (residential, commercial/institutional, industrial, and governmental) pumping for the 2012 reporting year are summarized by city or area in Table 3. Figure 4 shows how the total urban pumping for 2012 is apportioned among each city or area.

Table 3. Urban extraction data by city or area

City or Area	Urban Pumping (AF)	Percentage of Total
Castroville	776	1.82%
Chualar	130	0.30%
Gonzales	1,454	3.41%
Greenfield	2,426	5.69%
King City	2,735	6.42%
Marina	4,129	9.69%
Other Areas (OA)		
OA-Pressure	3,893	9.13%
OA-East Side	3,434	8.06%
OA-Forebay	933	2.19%
OA-Upper Valley	1,081	2.54%
Salinas	17,360	40.73%
San Ardo	110	0.26%
San Lucas	31	0.07%
Soledad	2,519	5.91%
Soledad Prisons	1,610	3.78%
Total	42,621	100.00%

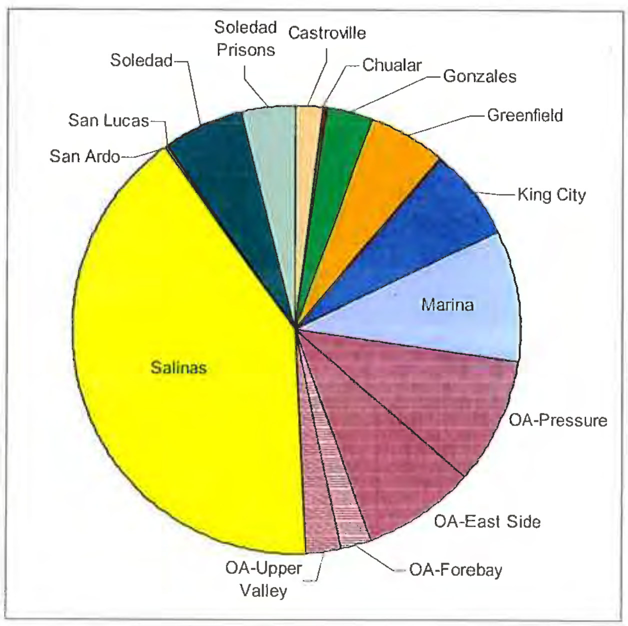


Figure 4. Distribution of urban extraction by city or area

Agricultural Water Conservation Plans

The Agricultural Water Conservation Plans include net irrigated acreage, irrigation method, and crop category. This information is forecasted and indicates what the grower plans to do in the upcoming year. It reflects the changing trends in irrigation methods in the Salinas Valley. Tables 4, 5, 6, and 7 show the distribution of irrigation methods by crop type for 1993, 2011, 2012 and 2013, respectively. Figure 5 (on the following page) illustrates the irrigation method trends from 1993 to 2013.

Table 4. 1993 - net acre distribution of irrigation methods by crop type (based on 94% companies reported)

1993	Furrow	Sprinkler & Furrow	Hand Move Sprinklers	Solid Set Sprinklers	Linear Move	Drip	Other[1]	Total
Vegetables	2,349	84,060	30,764	6,607	3,827	3,682	0	131,289
Field Crops	575	2,173	2,236	90	50	48	0	5,172
Berries	1	0	0	0	0	4,158	0	4,159
Grapes	261	0	0	13,347	0	15,976	0	29,584
Tree Crops	0	0	122	251	0	1,216	10	1,599
Forage	41	202	1,327	0	48	0	189	1,807
Unirrigated								N/A
Total	**3,227**	**86,435**	**34,449**	**20,295**	**3,925**	**25,080**	**199**	**173,610**

Table 5. 2011 - net acre distribution of irrigation methods by crop type (based on 94% companies reported)

2011	Furrow	Sprinkler & Furrow	Hand Move Sprinklers	Solid Set Sprinklers	Linear Move	Drip	Other[1]	Total
Vegetables	30	24,027	23,409	9,907	869	62,275	185	120,702
Field Crops	35	444	266	80	1,416	544	0	2,785
Berries	0	38	0	340	0	6,810	0	7,188
Grapes	0	0	0	620	0	33,008	0	33,628
Tree Crops	0	0	0	366	0	1,742	0	2,108
Forage	18	0	133	0	0	0	132	283
Other Type[2]	0	126	2,427	175	12	1,321	100	4,161
Unirrigated								6,137
Total	**83**	**24,635**	**26,235**	**11,488**	**2,297**	**105,700**	**417**	**176,992**

Table 6. 2012 - net acre distribution of irrigation methods by crop type (based on 92% companies reported)

2012	Furrow	Sprinkler & Furrow	Hand Move Sprinklers	Solid Set Sprinklers	Linear Move	Drip	Other[1]	Total
Vegetables	0	22,556	19,469	7,476	677	69,040	2,001	121,219
Field Crops	0	323	284	206	1,416	389	140	2,758
Berries	0	122	0	100	0	7,707	0	7,929
Grapes	0	0	0	363	0	34,381	0	34,744
Tree Crops	0	0	0	0	0	1,724	0	1,724
Forage	0	138	172	0	0	1	0	311
Other Type[2]	36	126	2,297	126	12	886	20	3,503
Unirrigated								6,317
Total	**36**	**23,265**	**22,222**	**8,271**	**2,105**	**114,128**	**2,161**	**178,505**

Table 7. 2013 - net acre distribution of irrigation methods by crop type (based on 94% companies reported)

2013	Furrow	Sprinkler & Furrow	Hand Move Sprinklers	Solid Set Sprinklers	Linear Move	Drip	Other[1]	Total
Vegetables	389	19,621	15,737	12,209	591	69,773	2,463	120,783
Field Crops	0	167	166	121	0	280	0	734
Berries	0	122	0	0	0	6,610	0	6,732
Grapes	0	0	0	363	0	34,358	0	34,721
Tree Crops	0	0	0	0	0	1,695	0	1,695
Forage	0	145	107	2	0	1	68	323
Other Type[2]	0	126	2,592	126	7	900	25	3,776
Unirrigated								1,280
Total	**389**	**20,181**	**18,602**	**12,821**	**598**	**113,617**	**2,556**	**170,044**

[1] "Other" may include an irrigation system not listed here or a different combination of systems
[2] "Other Type" are for other crop types not included, i.e. cactus, flower bulbs, etc.
NOTE: Percentage of companies reported varies from year to year

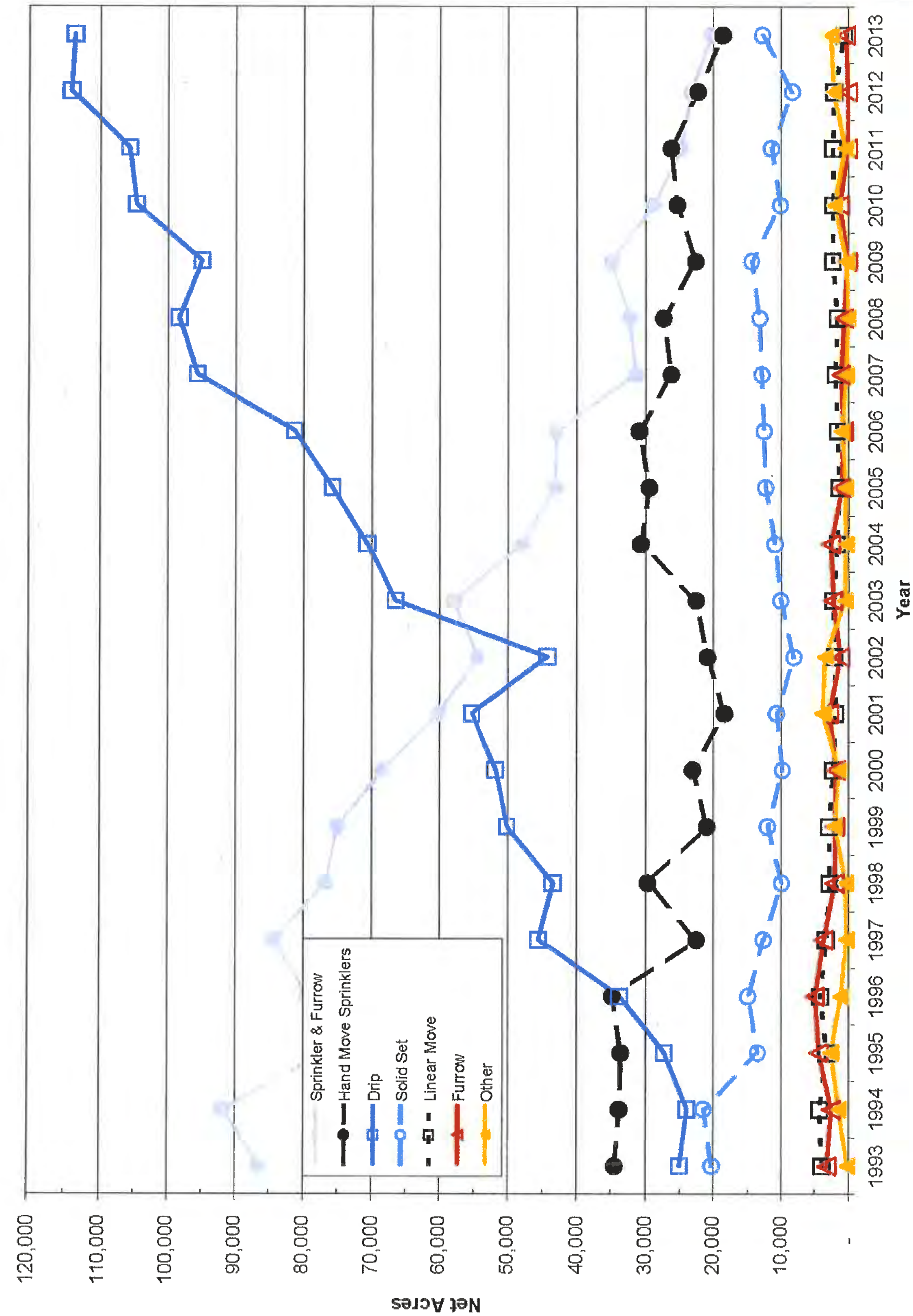


Figure 5. Types of irrigation methods used in the Salinas Valley based on companies reported

NOTE: Reported net acres vary from year to year

Agricultural Water Conservation Plans (continued)

Since 1991, Salinas Valley growers have submitted Agricultural Water Conservation Plans to the Agency. Table 8 shows the number of net acres, by year, for selected Best Management Practices (BMPs) or water conservation measures which were reported to be implemented over the past five years.

Table 8. Agricultural Best Management Practices reported to be adopted from 2009 through 2013

Best Management Practices	2009	2010	2011	2012	2013
12 Months Set Aside	9,043	7,447	3,285	8,172	1,314
Summer Fallow	509	692	1,944	688	1,462
Water Flowmeters	124,561	138,957	144,353	141,595	132,104
Time Clock/Pressure Switch	126,694	144,853	153,715	152,488	144,693
Soil Moisture Sensors	32,427	44,644	46,121	46,309	45,953
Pre-Irrigation Reduction	84,693	96,908	99,362	94,954	92,338
Reduced Sprinkler Spacing	83,046	90,065	97,926	90,503	89,289
Sprinkler Improvements	105,495	111,889	115,517	115,946	108,617
Off-Wind Irrigation	107,552	114,843	116,209	114,110	108,243
Leakage Reduction	105,702	113,820	115,255	113,372	110,565
Micro Irrigation System	71,710	67,383	87,464	93,146	84,031
Surge Flow Irrigation	7,182	8,785	11,473	12,275	10,154
Tailwater Return System	10,046	16,581	15,402	13,577	8,220
Land Leveling/Grading	56,482	73,361	76,436	79,534	65,306

Note: Due to unique crop rotations, it is difficult to account for each BMP used on total Crop Acres; therefore Net Acres were used.

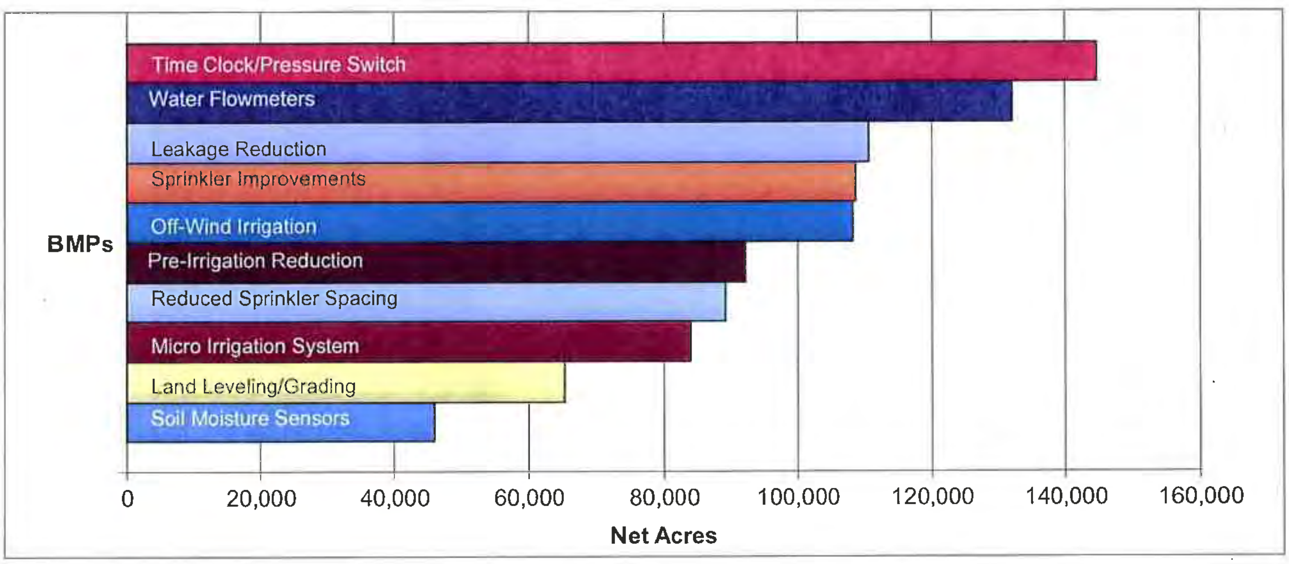


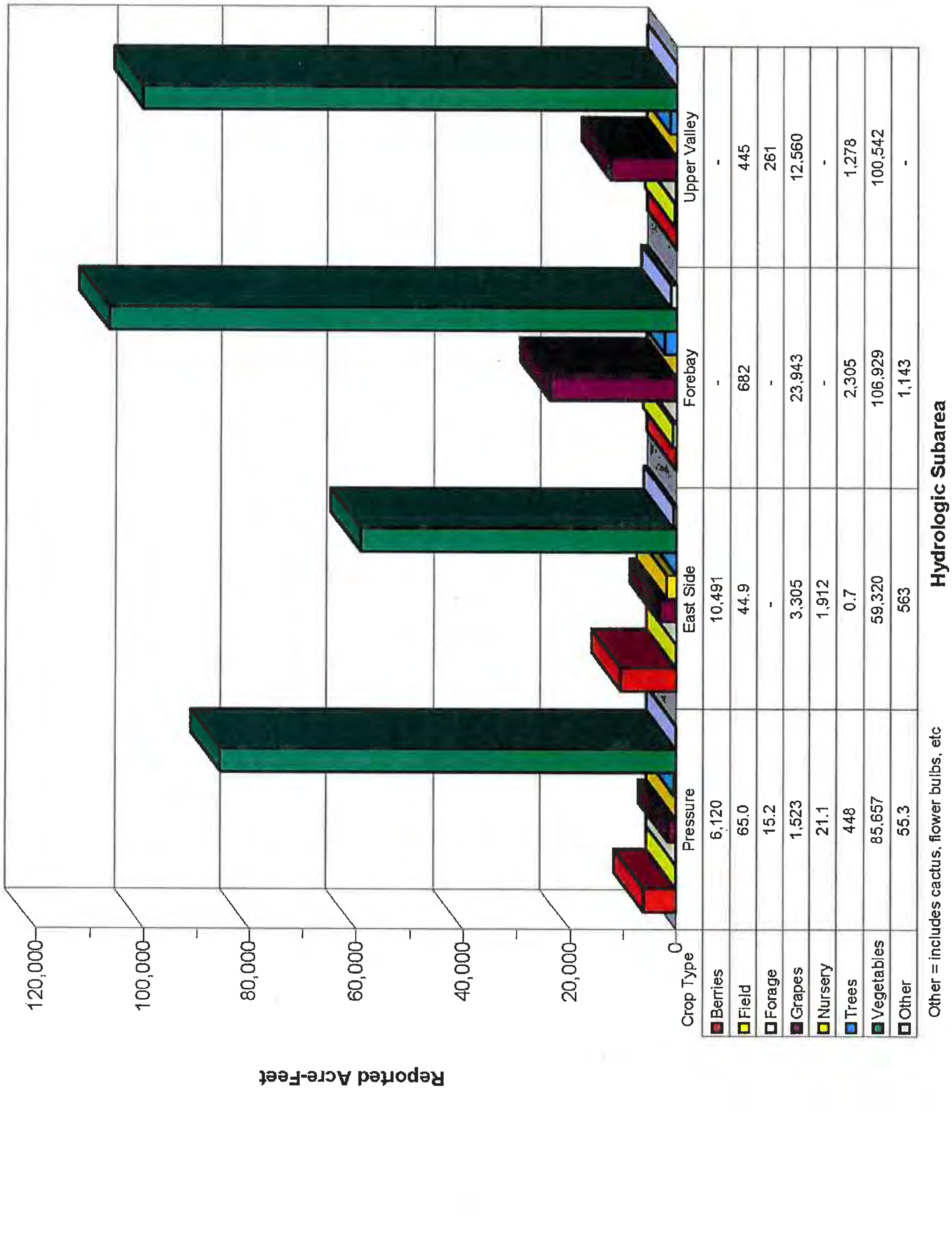
Figure 6. Top Ten Best Management Practices forecasted for 2013 based on reported net acres

Water and Land Use Forms

Agricultural Water Pumped

The following three figures present the agricultural water pumped (Fig. 7), irrigated net acres (Fig. 8), and amount of water used per acre (Fig. 9) by hydrologic subarea and crop type. The data was compiled using the reported acreage and water pumped from the 2012 Water and Land Use Forms. The data accounts for all crop types reported and all reporting methods: Water Flowmeter, Electrical Meter, and Hour Meter.

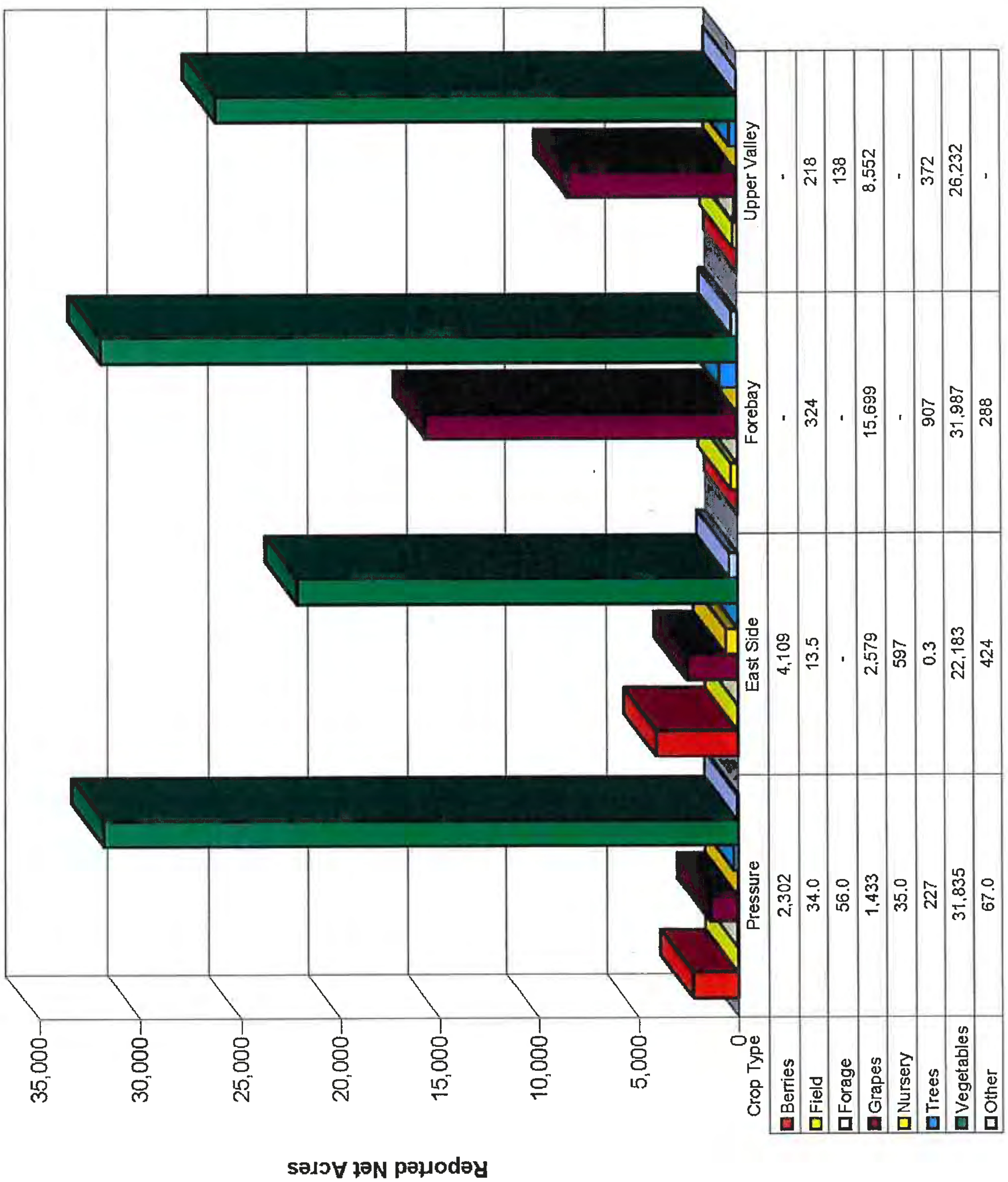
Changing weather patterns, variable soils, and crop types affect the amount of water needed for efficient irrigation. Even during a normal rain year, pumping rates will vary from one subarea to another and crop types will vary depending on economic demand.



Crop Type	Pressure	East Side	Forebay	Upper Valley
Berries	6,120	10,491	-	-
Field	65.0	44.9	682	445
Forage	15.2	-	-	261
Grapes	1,523	3,305	23,943	12,560
Nursery	21.1	1,912	-	-
Trees	448	0.7	2,305	1,278
Vegetables	85,657	59,320	106,929	100,542
Other	55.3	563	1,143	-

Other = includes cactus, flower bulbs, etc

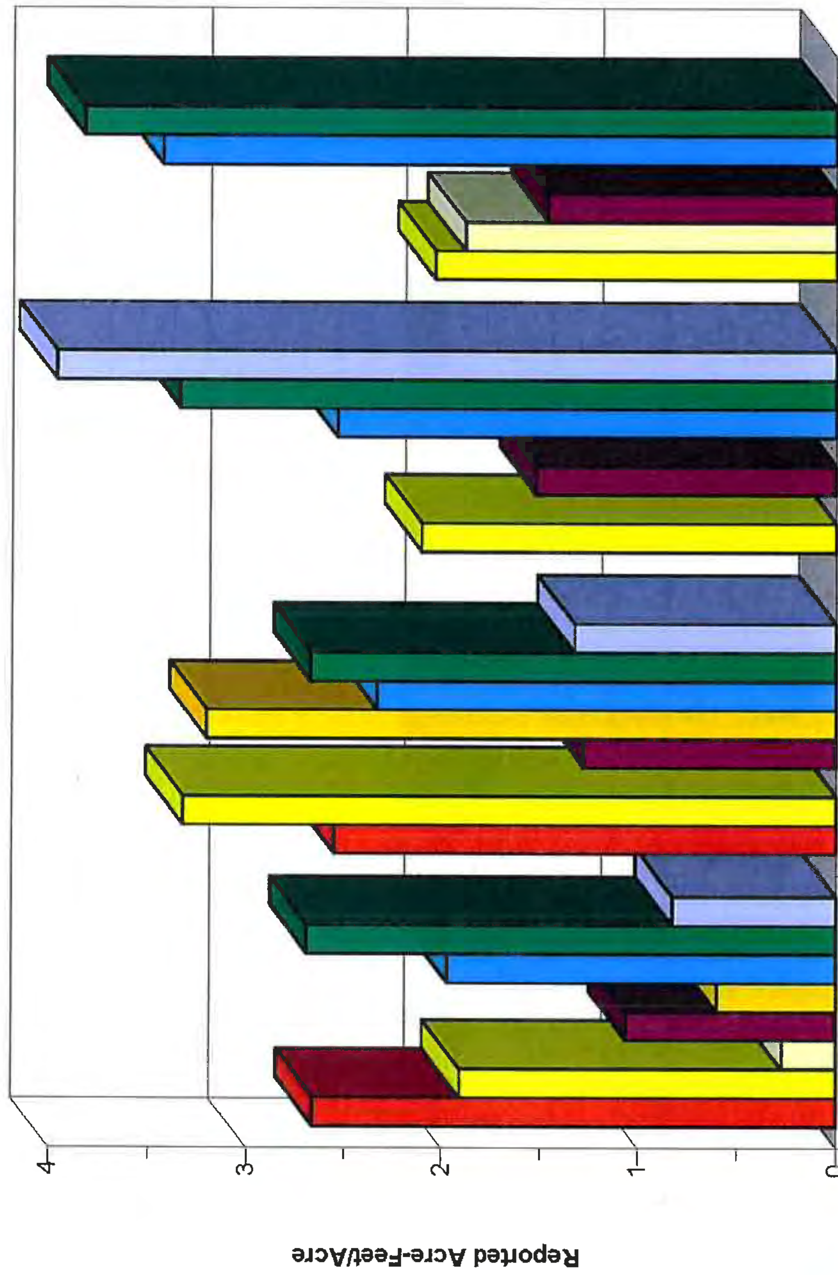
Figure 7. 2012 reported acre-feet by crop type & hydrologic subarea



Crop Type	Pressure	East Side	Forebay	Upper Valley
Berries	2,302	4,109	-	-
Field	34.0	13.5	324	218
Forage	56.0	-	-	138
Grapes	1,433	2,579	15,699	8,552
Nursery	35.0	597	-	-
Trees	227	0.3	907	372
Vegetables	31,835	22,183	31,987	26,232
Other	67.0	424	288	-

Other = includes cactus, flower bulbs, etc

Figure 8. 2012 reported net acres by crop type & hydrologic subarea



Crop Type	Pressure	East Side	Forebay	Upper Valley
Berries	2.7	2.6		
Field	1.9	3.3	2.1	2.0
Forage	0.3			1.9
Grapes	1.1	1.3	1.5	1.5
Nursery	0.6	3.2		
Trees	2.0	2.3	2.5	3.4
Vegetables	2.7	2.7	3.3	3.8
Other	0.8	1.3	4.0	

Other = includes cactus, flower bulbs, etc

Figure 9. 2012 reported acre-feet/acre by crop type & hydrologic subarea

Urban Water Conservation Plans

Since 1996, the Agency has been collecting data for the Urban Water Conservation Plan program. Table 9 shows the forecasted adoption of "Best Management Practices" (water conservation measures) for the past three years, as a percentage of total acreage reported. It is important to note that, while all of the listed practices apply to "large" water systems (200 or more customer connections), not all apply to "small" water systems (between 15 and 199 customer connections). The practices that apply **only** to large systems are printed in **bold** below.

Table 9. Urban Best Management Practices reported to be adopted from 2011 through 2013

Best Management Practices	2011	2012	2013
Provide speakers to community groups and media	**85%**	**81%**	**85%**
Use paid and public service advertising	**74%**	**96%**	**89%**
Provide conservation information in bill inserts	94%	95%	94%
Provide individual historical water use information on water bills	92%	92%	96%
Coordinate with other entities in regional efforts to promote water conservation practices	94%	95%	94%
Work with school districts to provide educational materials and instructional assistance	**61%**	**92%**	**91%**
Implement requirements that all new connections be metered and billed by volume of use	99%	99%	98%
Establish a program to retrofit any existing unmetered connections and bill by volume of use	77%	78%	39%
Offer free interior and exterior water audits to identify water conservation opportunities	**98%**	**100%**	**98%**
Provide incentives to achieve water conservation by way of free conservation fixtures (showerheads, hose end timers) and/or conservation "adjustments" to water bills	**94%**	**90%**	**89%**
Enforcement and support of water conserving plumbing fixture standards, including requirement for ultra low flush toilets in all new construction	**78%**	**98%**	**94%**
Support of State/Federal legislation prohibiting sale of toilets using more than 1.6 gallons per flush	96%	97%	97%
Program to retrofit existing toilets to reduce flush volume (with displacement devices)	66%	34%	48%
Program to encourage replacement of existing toilets with ultra low flush (through rebates, incentives, etc.)	**89%**	**95%**	**89%**
Provide guidelines, information, and/or incentives for installation of more efficient landscapes and water-saving practices	94%	90%	94%
Encourage local nurseries to promote use of low water use plants	78%	78%	77%
Develop and implement landscape water conservation ordinances pursuant to the "Water Conservation in Landscaping Act"	**63%**	**63%**	**63%**
Identify and contact top industrial, commercial, and/or institutional customers directly; offer and encourage water audits to identify conservation opportunities	**89%**	**87%**	**89%**
Review proposed water uses for new commercial and industrial water service, and make recommendations for improving efficiency before completion of building permit process	**64%**	**84%**	**84%**
Complete an audit of water distribution system at least every three years as prescribed by American Water Works Association	74%	92%	93%
Perform distribution system leak detection and repair whenever the audit reveals that it would be cost effective	79%	97%	98%
Advise customers when it appears possible that leaks exist on customer's side of water meter	99%	99%	97%
Identify irrigators of large landscapes (3 acres or more) and offer landscape audits to determine conservation opportunities	**90%**	**89%**	**90%**
Provide conservation training, information, and incentives necessary to encourage use of conservation practices	**91%**	**92%**	**96%**
Encourage and promote the elimination of non-conserving pricing and adoption of conservation pricing policies	91%	86%	86%
Implementation of conservation pricing policies	96%	91%	91%
Enact and enforce measures prohibiting water waste as specified in Agency Ordinance No. 3932 or as subsequently amended, and encourage the efficient use of water	64%	71%	76%
Implement and/or support programs for the treatment and reuse of industrial waste water / storm water / waste water	**53%**	**67%**	**66%**

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Wini Chambliss, Administrative Services Assistant

Summary Report Team

Elizabeth Krafft, Senior Hydrologist
Tamara Voss, Hydrologist
Teresa Campa, Engineering Aide II

For more information, contact:

Monterey County Water Resources Agency
893 Blanco Circle, Salinas

Mailing address:
P.O. Box 930, Salinas, CA 93902-0930

831.755.4860
831.424.7935 (fax)

www.mcwra.co.monterey.ca.us

MONTEREY COUNTY WATER RESOURCES AGENCY

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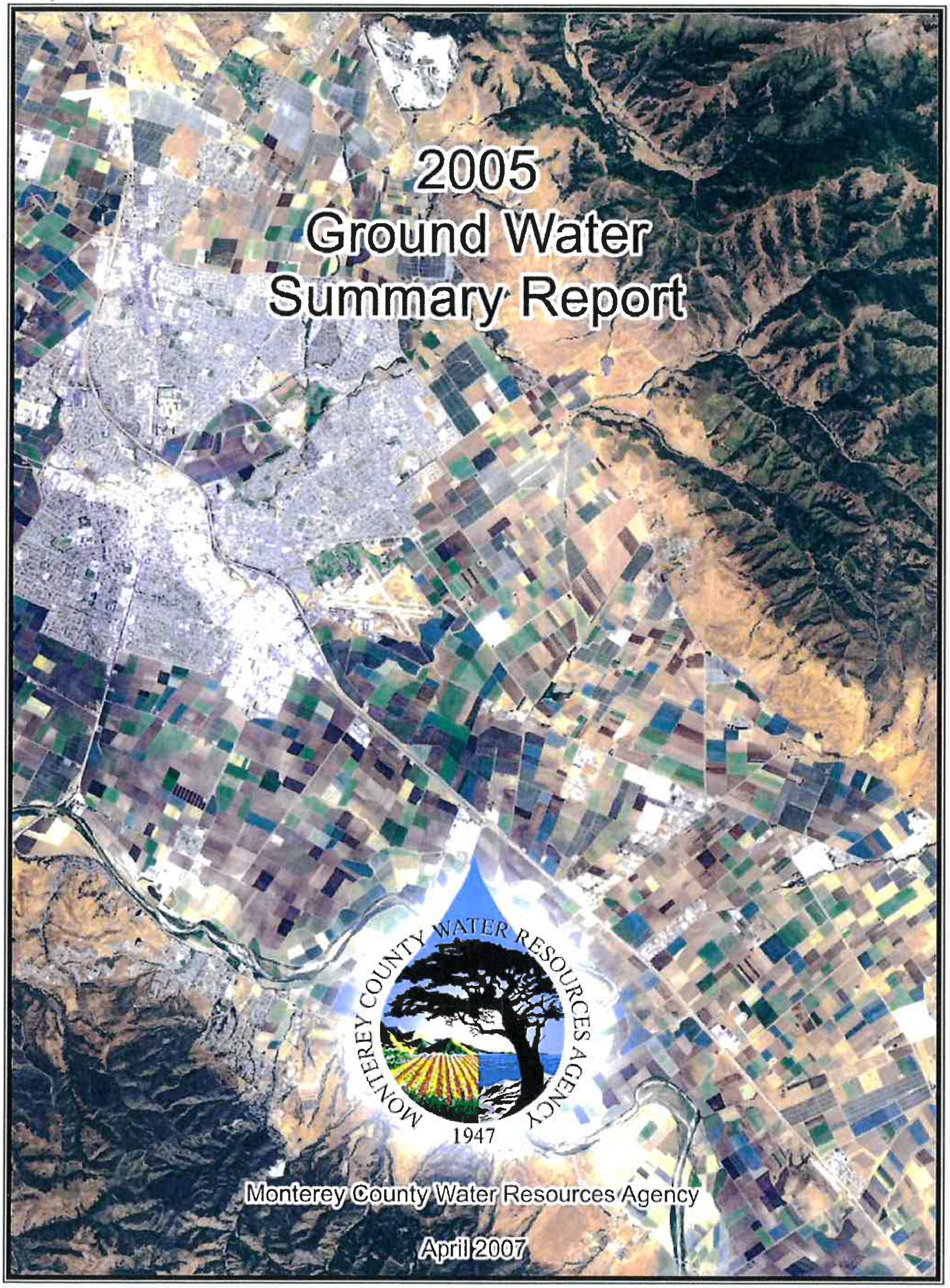

2005 Ground Water Summary Report

Monterey County Water Resources Agency

April 2007

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Overview of the Ground Water Reporting Program

History of the Ground Water Reporting Program
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2005 Ground Water Summary Report
The purpose of this report is to summarize the data collected in February 2006 from the following annual reporting programs: ***Ground Water Extraction Reporting (agricultural and urban), Water Conservation Plans (agricultural and urban), and Water and Land Use Information (agricultural)***. The *agricultural* data from the ground water extraction reporting program covers the water-reporting year of **November 1, 2004, through October 31, 2005**; the *urban* data covers **calendar year 2005**. The agricultural and urban water conservation plans adopted for 2006 are also summarized. This report is intended to present a snapshot of current water extraction within the Salinas Valley, including agricultural and urban water conservation improvements that are being implemented to reduce the total amount of water pumped. It is not the purpose of this report to thoroughly analyze the factors that contribute to increases or decreases in pumping.

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The Agency received Ground Water Extraction Reports from approximately ninety-eight percent (98%) of the 1780 wells in the Salinas Valley for the 2005 water-reporting year. Agricultural and Urban Water Conservation Plan submittals for 2006 were ninety-seven percent (97%) and ninety-three percent (93%), respectively.

Reporting Format
Ground water extraction data is presented in this report by measurement in acre-feet. One acre-foot is equal to 325,851 gallons.

Ground Water Extraction Data Summary

The Agency has designated hydrologic subareas of the Salinas Valley Ground Water Basin whose boundaries are drawn where discernible changes occur in the hydrogeologic conditions. Also outlined on the map are the Agency Zones of the Valley, showing areas required to report. These boundaries are shown in Figure 1.

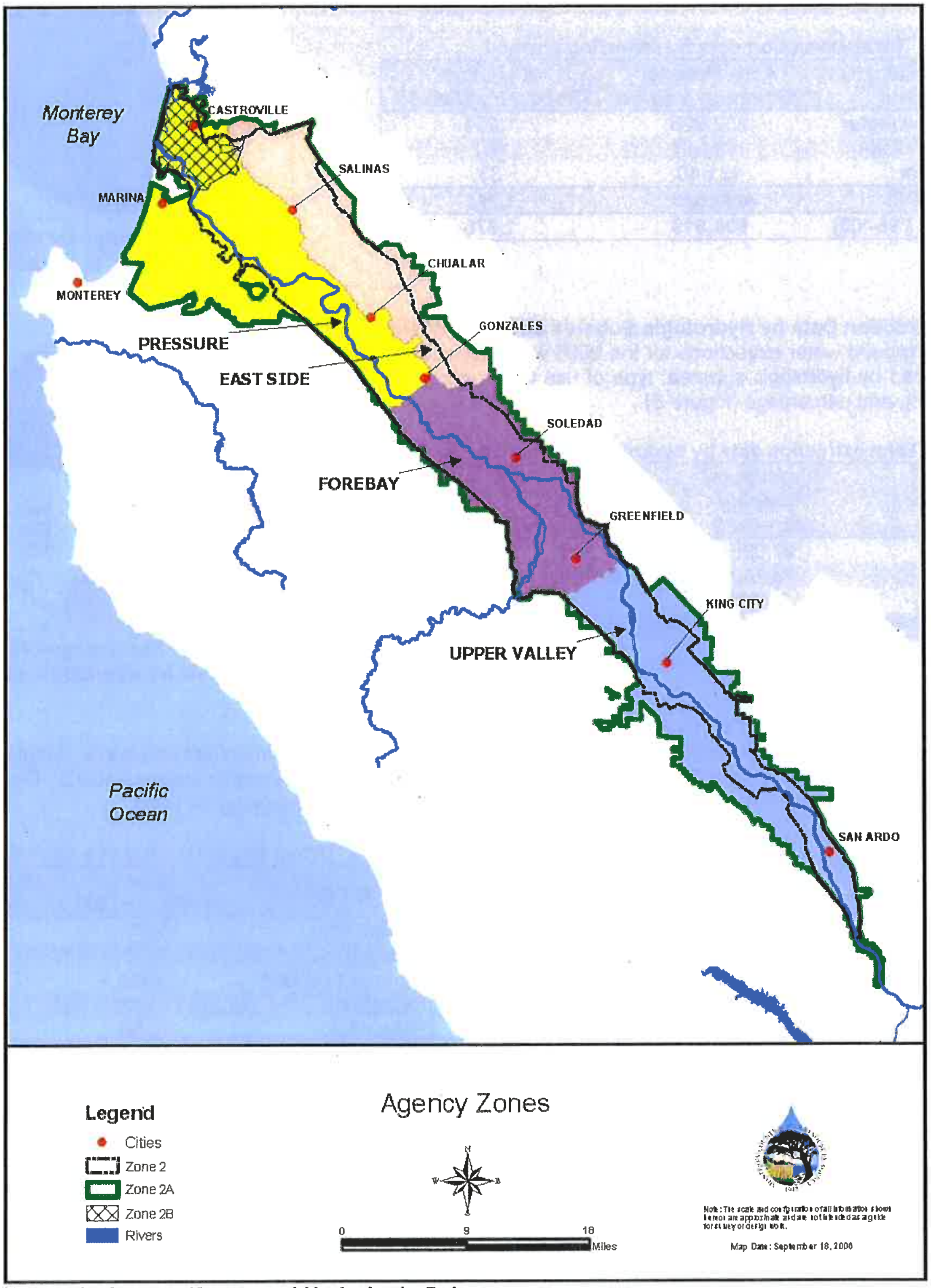


Figure 1. Agency Zones and Hydrologic Subareas

Ground Water Extraction Data Summary (continued)

Summary of Methods Used for Extraction Reporting

The distribution of methods used for ground water extraction reporting (agricultural and urban) for the 2005 water-reporting year is shown in Table 1; a percentage distribution by volume is shown in Figure 2.

Table 1. Total extraction data by reporting method

Reporting Method	Acre-Feet per Reporting Method	Wells per Reporting Method
Water Flowmeter	332,825	1,254
Electrical Meter	148,581	461
Hour Meter	12,640	33
Total (2005)	**494,046**	**1,748**
Average ('95-'05)	**506,519**	**1,676**

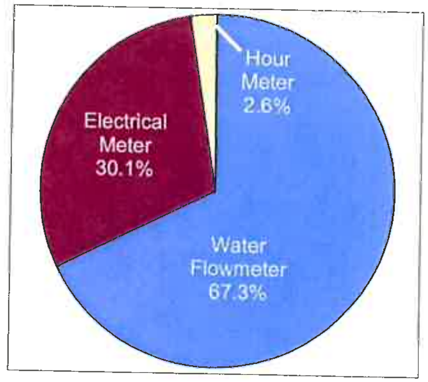


Figure 2. Percentage by volume of methods used for extraction reporting

Total Extraction Data by Hydrologic Subarea and Type of Use

The total ground water extractions for the 2005 water-reporting year are summarized by hydrologic subarea, type of use (agricultural and urban in Table 2), and percentage (Figure 3).

Table 2. Total extraction data by hydrologic subarea and type of use

Subarea	Agricultural Pumping (acre-feet)	Urban Pumping (acre-feet)	Total Pumping (acre-feet)
Pressure	97,028	21,344	118,372
East Side	80,100	16,028	96,128
Forebay	139,951	8,571	148,522
Upper Valley	126,488	4,536	131,024
Total	**443,567**	**50,479**	**494,046**

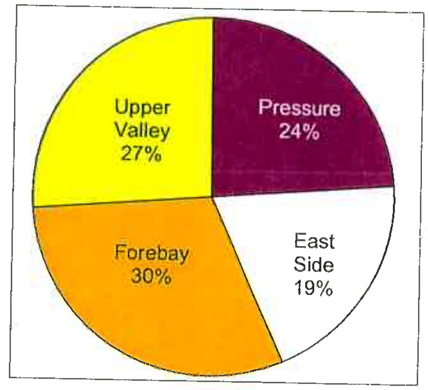


Figure 3. Percentage of total extractions by hydrologic subarea

Urban Extraction Data by City or Area

The total ground water extractions attributed to urban (residential, commercial/institutional, industrial, and governmental) pumping for the 2005 water-reporting year are summarized by city or area in Table 3. Figure 4 is a graphic representation of each city or area's percentage of the total urban pumping for 2005.

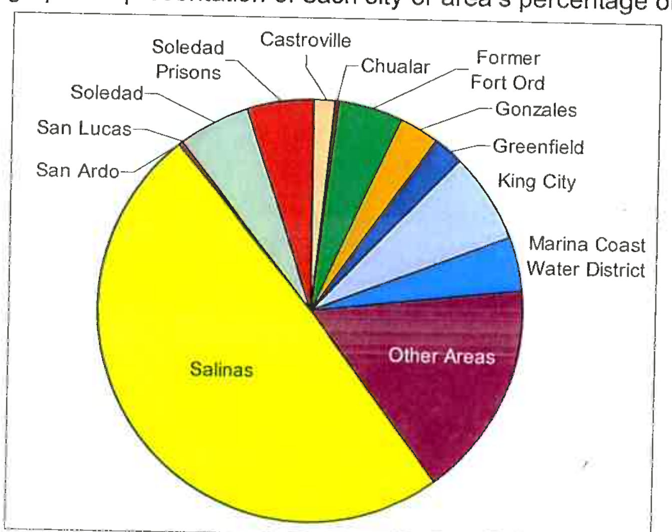


Figure 4. Percentage representation of urban extraction by city or area

Table 3. Urban extraction data by city or area

City or Area	Urban Pumping (AF)	Percentage of Total
Castroville	867	1.7%
Chualar	135	0.3%
Former Fort Ord	2,508	5.0%
Gonzales	1,526	3.0%
Greenfield	1,183	2.3%
King City	3,403	6.7%
Marina Coast WD	2,201	4.4%
Other Areas	8,250	16.3%
Salinas	24,918	49.4%
San Ardo	117	0.2%
San Lucas	94	0.2%
Soledad	2,709	5.4%
Soledad Prisons	2,568	5.1%
Total	**50,479**	**100.0%**

Agricultural Water Conservation Plans

The Agricultural Water Conservation Plans include net irrigated acreage, irrigation method, and crop category. This information is forecasted and indicates what the grower plans to do in the upcoming year. It reflects the changing trends in irrigation methods in the Salinas Valley. Tables 4, 5, 6, and 7 show the distribution of irrigation methods by crop type for 1993, 2004, 2005, and 2006, respectively.

Table 4. 1993 - net acre distribution of irrigation methods by crop type based on N/A[1] % companies reported

1993	*Furrow*	*Sprinkler & Furrow*	*Hand Move Sprinklers*	*Solid Set Sprinklers*	*Linear Move*	*Drip*	*Other[2]*	*Total*
Vegetables	2,349	84,060	30,764	6,607	3,827	3,682	0	131,289
Field Crops	575	2,173	2,236	90	50	48	0	5,172
Berries	1	0	0	0	0	4,158	0	4,159
Grapes	261	0	0	13,347	0	15,976	0	29,584
Tree Crops	0	0	122	251	0	1,216	10	1,599
Forage	41	202	1,327	0	48	0	189	1,807
Unirrigated								N/A
Total	**3,227**	**86,435**	**34,449**	**20,295**	**3,925**	**25,080**	**199**	**173,610**

Table 5. 2004 - net acre distribution of irrigation methods by crop type based on 90% companies reported

2004	*Furrow*	*Sprinkler & Furrow*	*Hand Move Sprinklers*	*Solid Set Sprinklers*	*Linear Move*	*Drip*	*Other[2]*	*Total*
Vegetables	2,001	46,325	28,221	7,641	1,659	29,800	350	115,997
Field Crops	286	1,178	1,774	1,187	0	2,298	0	6,723
Berries	290	233	113	0	0	4,303	0	4,939
Grapes	8	0	300	1,653	0	32,526	0	34,487
Tree Crops	0	0	0	456	0	1,778	0	2,234
Forage	18	30	261	26	0	16	7	358
Unirrigated								3,029
Total	**2,603**	**47,766**	**30,669**	**10,963**	**1,659**	**70,721**	**357**	**167,767**

Table 6. 2005 - net acre distribution of irrigation methods by crop type based on 90% companies reported

2005	*Furrow*	*Sprinkler & Furrow*	*Hand Move Sprinklers*	*Solid Set Sprinklers*	*Linear Move*	*Drip*	*Other[2]*	*Total*
Vegetables	704	42,783	26,540	9,396	1,383	35,850	355	117,011
Field Crops	225	367	377	547	0	0	115	1,631
Berries	0	4	0	0	0	4,662	0	4,666
Grapes	8	0	0	1,970	0	31,999	0	33,977
Tree Crops	0	0	2,338	441	0	3,252	0	6,031
Forage	18	40	214	15	0	0	7	294
Unirrigated								4,381
Total	**955**	**43,194**	**29,469**	**12,369**	**1,383**	**75,763**	**477**	**167,991**

Table 7. 2006 - net acre distribution of irrigation methods by crop type based on 97% companies reported

2006	*Furrow*	*Sprinkler & Furrow*	*Hand Move Sprinklers*	*Solid Set Sprinklers*	*Linear Move*	*Drip*	*Other[2]*	*Total*
Vegetables	590	42,577	27,873	9,553	1,640	37,368	732	120,333
Field Crops	156	447	270	85	0	206	78	1,242
Berries	0	0	0	0	0	5,312	0	5,312
Grapes	0	0	0	1,947	0	35,229	0	37,176
Tree Crops	0	0	2,338	441	0	3,042	0	5,821
Forage	0	0	362	15	0	0	97	474
Other Type[3]	18	0	64	554	0	222	68	926
Unirrigated								3,254
Total	**764**	**43,024**	**30,907**	**12,595**	**1,640**	**81,379**	**975**	**174,538**

[1] "N/A" - % companies reported are unavailable for 1993
[2] "Other" may include an irrigation system not listed here or a different combination of systems
[3] "Other Type" are for other crop types not included, i.e. cactus, flower bulbs, etc.
NOTE: Percent companies reported varies from year to year

Agricultural Water Conservation Plans (continued)

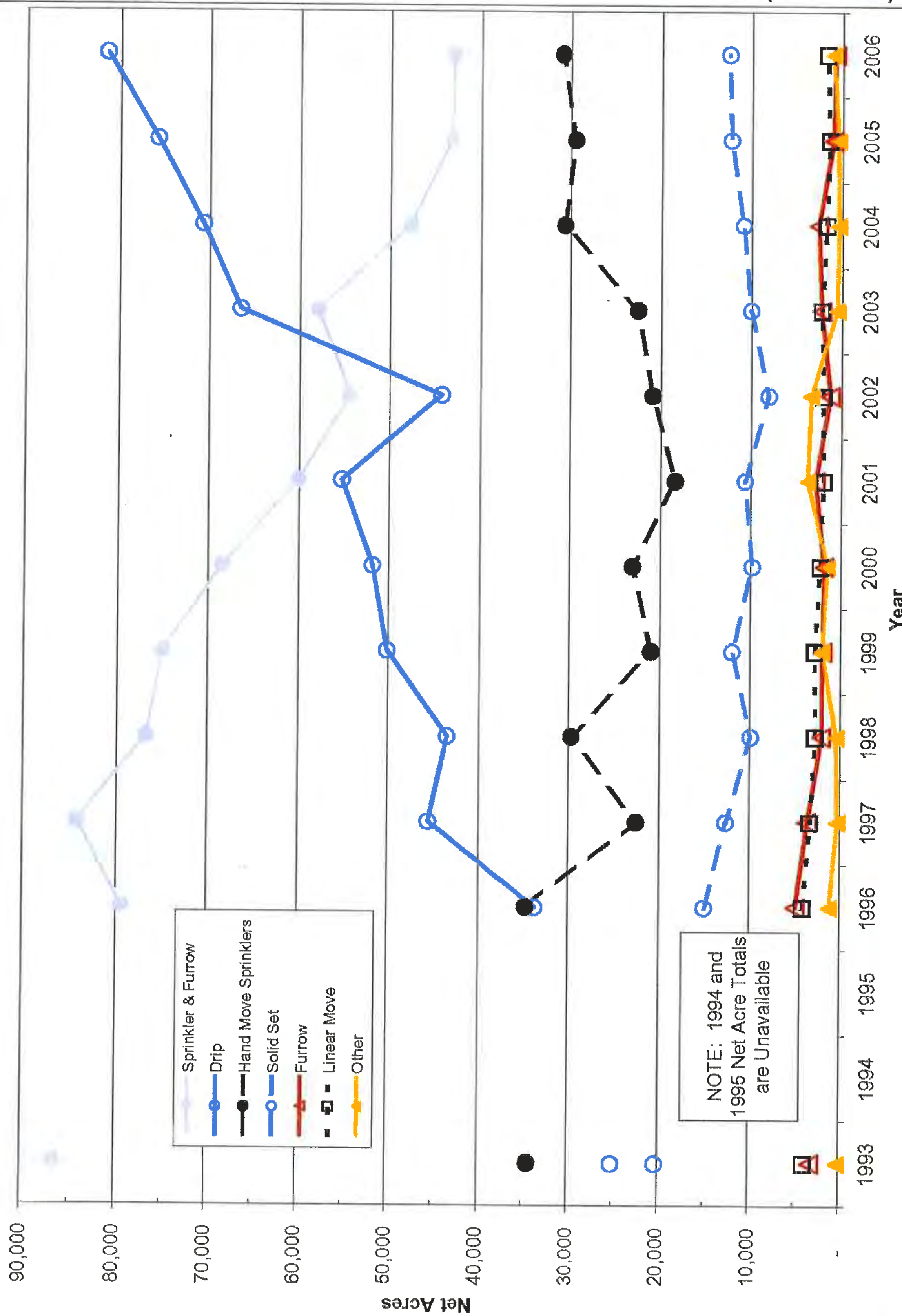


Figure 5. Types of irrigation methods used in the Salinas Valley based on companies reported

NOTE: Reported net acres vary from year to year

Agricultural Water Conservation Plans (continued)

Since 1991, Salinas Valley growers have submitted Agricultural Water Conservation Plans to the Agency. Table 8 shows the number of acres, by year, for selected "Best Management Practices" (water conservation measures) which have been implemented over the past eight years.

Table 8. Agricultural "Best Management Practices" implemented from 1999 through 2006

Best Management Practices (BMPs)	Net Acres[1]							
	1999	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***
12 Months Set Aside	1,332	1,396	2,363	3,940	2,742	6,012	3,337	2,557
Summer Fallow	3,657	3,511	1,532	2,652	2,278	2,025	2,535	5,797
Flowmeters	124,963	127,454	125,624	106,739	124,342	133,349	131,711	133,148
Time Clock/Pressure Switch	130,863	130,298	124,427	116,062	133,405	140,167	138,707	142,184
Soil Moisture Sensors	62,357	58,975	56,148	45,927	50,460	49,328	48,824	50,130
Pre-Irrigation Reduction	89,454	93,733	82,791	80,501	90,878	93,094	88,576	96,082
Reduced Sprinkler Spacing	75,884	74,245	68,963	61,607	76,691	82,292	81,068	87,159
Sprinkler Improvements	98,409	95,356	89,505	85,302	110,194	102,041	105,544	102,642
Off-Wind Irrigation	102,433	101,828	93,387	91,706	111,278	111,862	117,254	113,867
Leakage Reduction	114,882	106,917	95,304	95,217	121,890	118,125	115,117	116,662
Micro Irrigation System	48,562	55,292	55,261	44,078	58,742	62,796	68,861	74,829
Surge Flow Irrigation	18,468	15,796	10,677	7,084	8,538	6,708	7,180	7,117
Tailwater Return System	23,597	23,773	26,236	25,263	23,914	27,653	23,097	23,968
Land Leveling/Grading	58,679	61,001	54,319	56,361	69,420	71,682	69,673	71,873

[1] Due to unique crop rotations, it is difficult to account for each BMP used on total Crop Acres; therefore Net Acres were used.

Note: For Urban Water Conservation Plan information, see page 10.

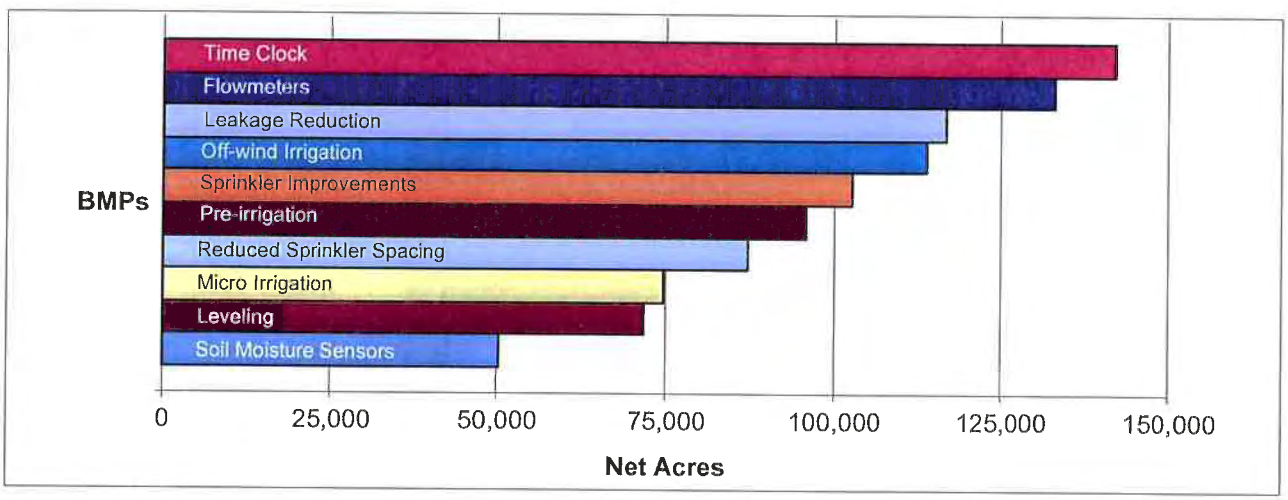


Figure 6. Top Ten Best Management Practices (BMPs) utilized in 2006 by net acres

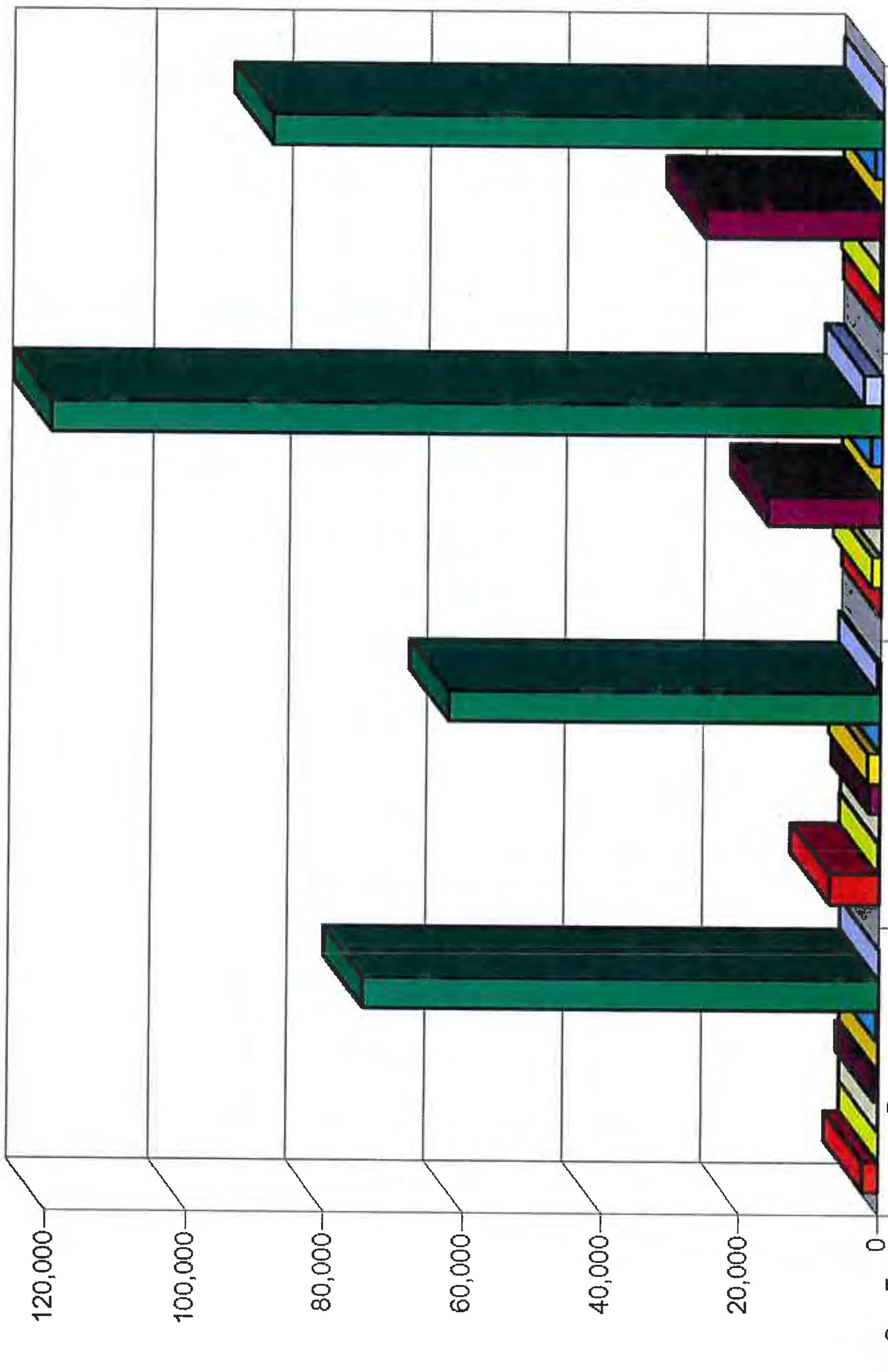
Water and Land Use Form

Agricultural Water Pumped

The following three figures present the agricultural water pumped (acre-feet/acre) by hydrologic subarea and crop type. The data was compiled using the reported acreage and water pumped from the 2004-2005 Water and Land Use Form. The data accounts for all crop types reported, including nurseries, and all reporting methods: Water Flowmeter, Electrical Meter, and Hour Meter.

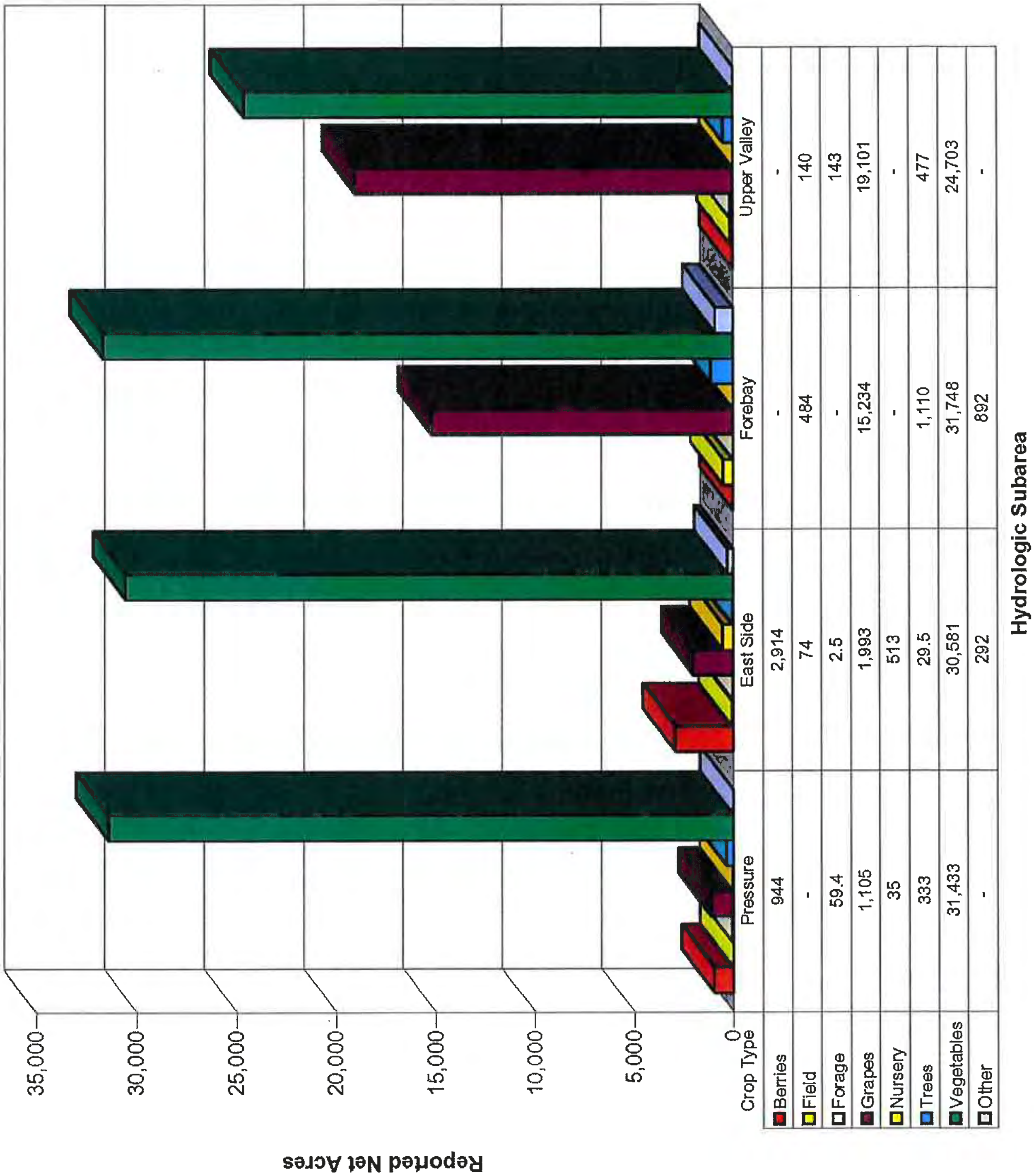
Changing weather patterns, variable soils, and crop types affect the amount of water needed for efficient irrigation. Even during a normal rain year, pumping rates will vary from one area to another and crop types will vary depending on economic demand.

Water and Land Use Form (continued)



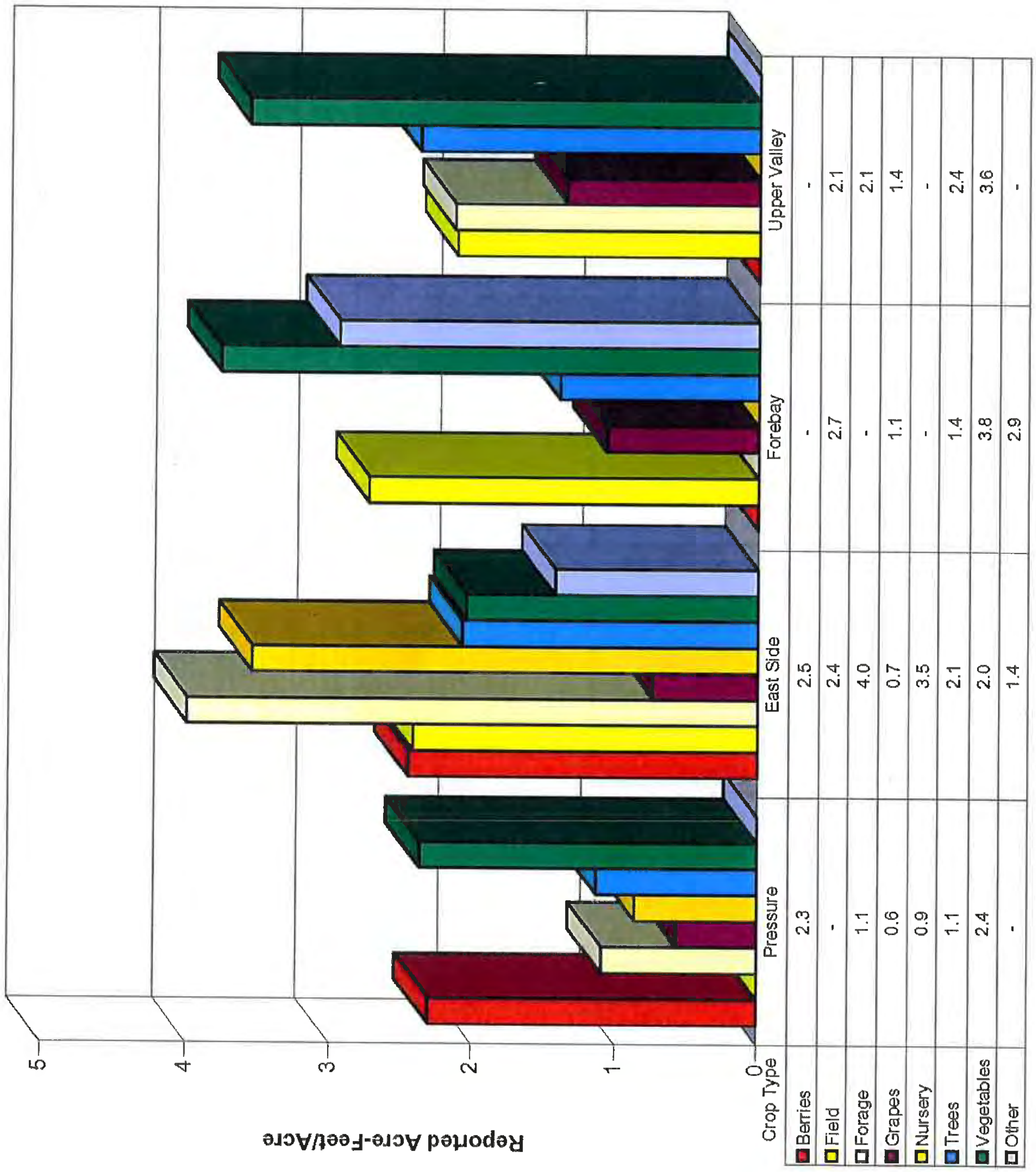
Crop Type	Pressure	East Side	Forebay	Upper Valley
Berries	2,174	7,145	-	-
Field	-	179	1,323	297
Forage	64.9	10	-	306
Grapes	623	1,465	16,289	25,825
Nursery	30.1	1,819	-	-
Trees	376	61.2	1,552	1,140
Vegetables	74,584	62,467	119,896	88,406
Other	-	416	2,630	-

Figure 7. 2005 reported acre-feet by crop type & hydrologic subarea



Crop Type	Pressure	East Side	Forebay	Upper Valley
Berries	944	2,914	-	-
Field	-	74	484	140
Forage	59.4	2.5	-	143
Grapes	1,105	1,993	15,234	19,101
Nursery	35	513	-	-
Trees	333	29.5	1,110	477
Vegetables	31,433	30,581	31,748	24,703
Other	-	292	892	-

Figure 8. 2005 reported net acres by crop type & hydrologic subarea



Crop Type	Pressure	East Side	Forebay	Upper Valley
Berries	2.3	2.5	-	-
Field	-	2.4	2.7	2.1
Forage	1.1	4.0	-	2.1
Grapes	0.6	0.7	1.1	1.4
Nursery	0.9	3.5	-	-
Trees	1.1	2.1	1.4	2.4
Vegetables	2.4	2.0	3.8	3.6
Other	-	1.4	2.9	-

Figure 9. 2005 reported acre-feet/acre by crop type & hydrologic subarea

Urban Water Conservation Plans

Since 1996, the Agency has been collecting data for the Urban Water Conservation Plan program. Table 9 shows the implementation of "Best Management Practices" (water conservation measures) for the past five years, as a percentage of total acreage reported. It is important to note that, while all of the listed practices apply to "large" water systems (200 or more customer connections), not all apply to "small" water systems (between 15 and 199 customer connections). The practices that apply *only* to large systems are printed in **bold** below.

Table 9. Urban "Best Management Practices" implemented from 2002 through 2006

Best Management Practices	*2002*	*2003*	*2004*	*2005*	*2006*
Provide speakers to community groups and media	**94%**	**77%**	**71%**	**42%**	**70%**
Use paid and public service advertising	**90%**	**77%**	**74%**	**45%**	**70%**
Provide conservation information in bill inserts	82%	56%	65%	52%	76%
Provide individual historical water use information on water bills	84%	88%	77%	72%	81%
Coordinate with other entities in regional efforts to promote water conservation practices	84%	85%	91%	68%	92%
Work with school districts to provide educational materials and instructional assistance	**94%**	**54%**	**33%**	**46%**	**72%**
Implement requirements that all new connections be metered and billed by volume of use	91%	90%	95%	76%	93%
Establish a program to retrofit any existing unmetered connections and bill by volume of use	55%	69%	49%	45%	57%
Offer free interior and exterior water audits to identify water conservation opportunities	**55%**	**75%**	**58%**	**96%**	**92%**
Provide incentives to achieve water conservation by way of free conservation fixtures (showerheads, hose end timers) and/or conservation "adjustments" to water bills	**89%**	**73%**	**35%**	**70%**	**68%**
Enforcement and support of water conserving plumbing fixture standards, including requirement for ultra low flush toilets in all new construction	**95%**	**95%**	**95%**	**94%**	**94%**
Support of State/Federal legislation prohibiting sale of toilets using more than 1.6 gallons per flush	85%	89%	96%	95%	90%
Program to retrofit existing toilets to reduce flush volume (with displacement devices)	45%	42%	56%	54%	62%
Program to encourage replacement of existing toilets with ultra low flush (through rebates, incentives, etc.)	**87%**	**71%**	**71%**	**33%**	**71%**
Provide guidelines, information, and/or incentives for installation of more efficient landscapes and water-saving practices	64%	87%	93%	86%	83%
Encourage local nurseries to promote use of low water use plants	82%	39%	3%	53%	59%
Develop and implement landscape water conservation ordinances pursuant to the "Water Conservation in Landscaping Act"	**65%**	**56%**	**51%**	**36%**	**35%**
Identify and contact top industrial, commercial, and/or institutional customers directly; offer and encourage water audits to identify conservation opportunities	**56%**	**53%**	**4%**	**67%**	**68%**
Review proposed water uses for new commercial and industrial water service, and make recommendations for improving efficiency before completion of building permit process	**69%**	**80%**	**10%**	**73%**	**73%**
Complete an audit of water distribution system at least every three years as prescribed by American Water Works Association	57%	20%	76%	58%	64%
Perform distribution system leak detection and repair whenever the audit reveals that it would be cost effective	90%	21%	77%	60%	71%
Advise customers when it appears possible that leaks exist on customer's side of water meter	91%	93%	96%	94%	94%
Identify irrigators of large landscapes (3 acres or more) and offer landscape audits to determine conservation opportunities	**60%**	**52%**	**4%**	**29%**	**30%**
Provide conservation training, information, and incentives necessary to encourage use of conservation practices	**56%**	**55%**	**8%**	**34%**	**32%**
Encourage and promote the elimination of non-conserving pricing and adoption of conservation pricing policies	87%	43%	20%	24%	30%
Implementation of conservation pricing policies	62%	43%	21%	26%	29%
Enact and enforce measures prohibiting water waste as specified in Agency Ordinance No. 3932 or as subsequently amended, and encourage the efficient use of water	86%	71%	83%	51%	46%
Implement and/or support programs for the treatment and reuse of industrial waste water / storm water / waste water	**63%**	**42%**	**37%**	**40%**	**40%**

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Summary Report Team

Kathleen Thomasberg, Program Manager II
Jess Barreras, Hydrologist
Carla James, Water Resources Technician
Teresa Campa, Engineering Aide II

For more information, contact:

Monterey County Water Resources Agency
893 Blanco Circle, Salinas

Mailing address:
P.O. Box 930, Salinas, CA 93902-0930

831.755.4860
831.424.7935 (fax)

www.mcwra.co.monterey.ca.us

MONTEREY COUNTY WATER RESOURCES AGENCY

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