



# 2004 Ground Water Extraction Summary Report



**Monterey County Water Resources Agency**

**December 2005**



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# Overview of the Ground Water Extraction Reporting Program

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## History of the Ground Water Extraction 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 and service connections. Ordinance No. 3717, which replaced Ordinance No. 3663, was adopted in October 1993; it modified certain other requirements in the old ordinance but kept the ground water extraction reporting requirements in place for wells with a discharge pipe having an inside diameter of at least three inches.

Monterey County Water Resources Agency (Agency) has collected ground water extraction data from well operators for water reporting years beginning November 1 and ending October 31, starting with the 1992-1993 water-reporting year. The information received from the over 300 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 extraction reporting program is to measure and document the amount of ground water 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, 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. Developed as the urban counterpart of the agricultural water conservation plans, this program provides an overview of per capita water use and the best management practices being implemented by urban water purveyors as conservation measures.

## 2004 Ground Water Extraction Summary Report

The purpose of this report is to summarize the data collected in February 2005 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, 2003, through October 31, 2004**; the *urban* data covers **calendar year 2004**. The agricultural and urban water conservation plans adopted for 2005 are also summarized. This report is intended to present a snapshot of current water pumping within the Salinas Valley, including agricultural and urban water conservation improvements that are being implemented to reduce total water pumping. It is not the purpose of this report to thoroughly analyze the factors that contribute to increases or decreases in pumping.

## Explanation of Reporting Methods

The ground water extraction reporting program allows water users to report water well extractions by one of three different measuring methods: water flowmeter, electrical meter, or hour meter (timer) data. The Agency requires regular pump efficiency testing to ensure the accuracy of the data reported. The summary of ground water extractions presented in this report is compiled from data generated from all three reporting methods.

## Disclaimer Regarding Quality of Data

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 is submitted by the individual reporting parties and is not verified by Agency staff. In addition, since so many factors can affect the 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.

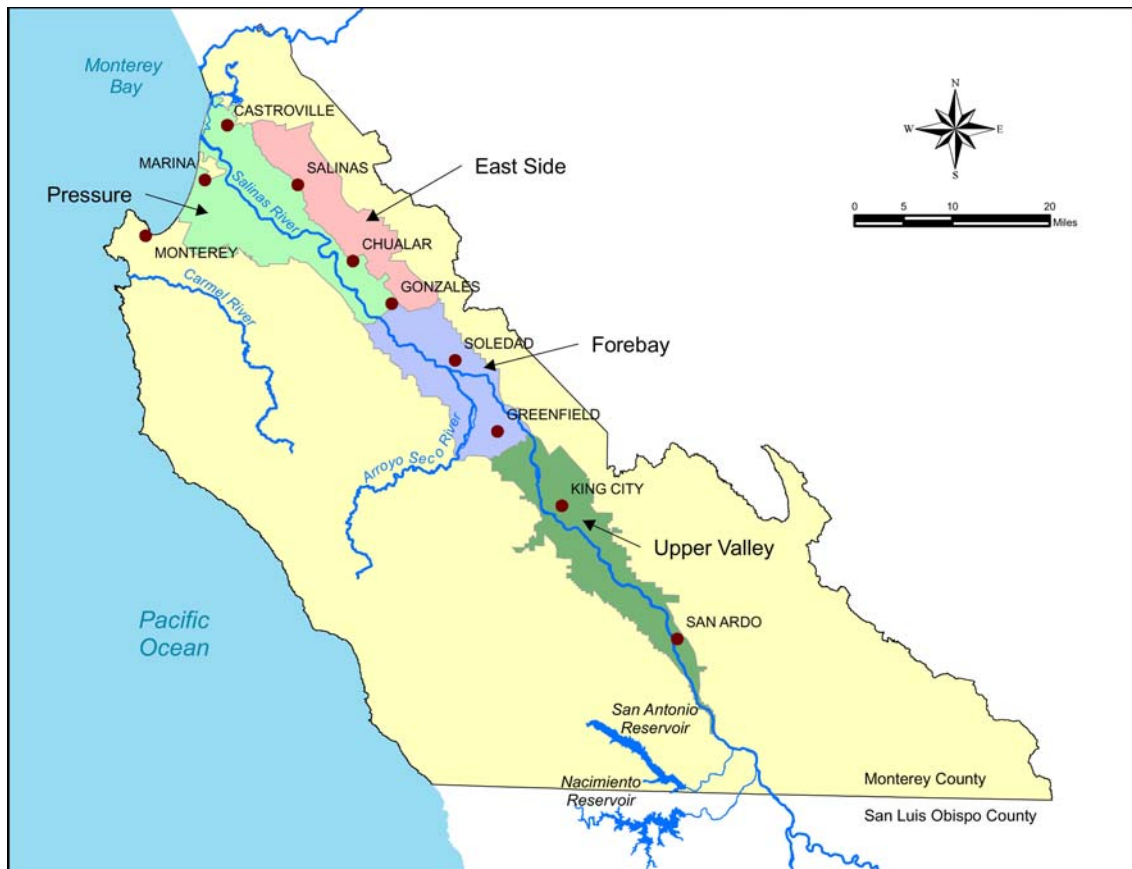
The Agency received Ground Water Extraction Reports from approximately ninety-seven percent (97%) of the 1776 wells in the Salinas Valley for the 2003-2004 (2004) water-reporting year. Agricultural and Urban Water Conservation Plan submittals for 2005 were ninety percent (90%) and ninety-three percent (93%), respectively.

## Notes Regarding Data 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 subareas of the Salinas Valley Ground Water Basin whose boundaries are drawn where discernible changes occur in the hydrogeologic conditions. These boundaries are shown in Figure 1.



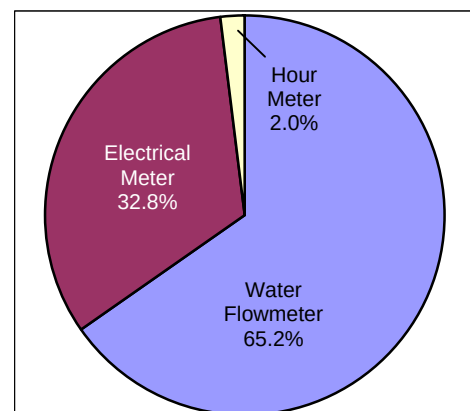
**Figure 1: Salinas Valley subareas**

## Summary of Methods Used for Extraction Reporting

The distribution of methods used for ground water extraction reporting (agricultural and urban) for the 2004 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**

| <b>Reporting Method</b>  | <b>Acre-Feet per Reporting Method</b> | <b>Wells per Reporting Method</b> |
|--------------------------|---------------------------------------|-----------------------------------|
| Water Flowmeter          | 341,771                               | 1,188                             |
| Electrical Meter         | 171,947                               | 505                               |
| Hour Meter               | 10,396                                | 31                                |
| <b>Total</b>             | <b>524,114</b>                        | <b>1,724</b>                      |
| <b>Average ('95-'04)</b> | <b>507,926</b>                        | <b>1,688</b>                      |



**Figure 2: Percentage by volume of methods used for extraction reporting**

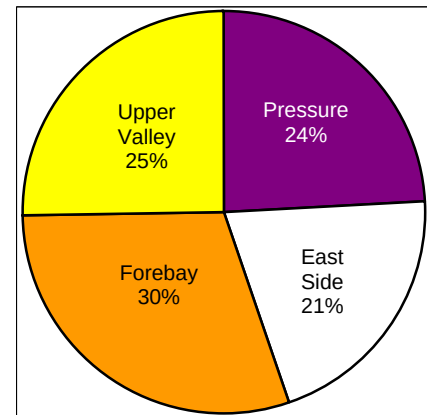
# Ground Water Extraction Data Summary (continued)

## Total Extraction Data by Subarea and Type of Use

The total ground water extractions for the 2004 water-reporting year are summarized by hydrologic subarea, type of use (agricultural and urban in Table 2) and percentage of use (Figure 3).

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

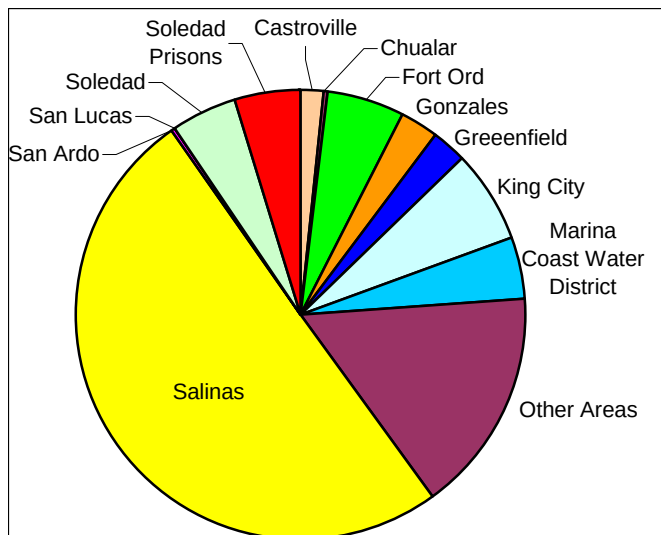
| <b>Subarea</b> | <b>Agricultural Pumping (acre-feet)</b> | <b>Urban Pumping (acre-feet)</b> | <b>Total Pumping (acre-feet)</b> |
|----------------|-----------------------------------------|----------------------------------|----------------------------------|
| Pressure       | 102,137                                 | 23,317                           | 125,454                          |
| East Side      | 95,313                                  | 16,888                           | 112,201                          |
| Forebay        | 146,718                                 | 8,225                            | 154,943                          |
| Upper Valley   | 126,884                                 | 4,632                            | 131,516                          |
| <b>Total</b>   | <b>471,052</b>                          | <b>53,062</b>                    | <b>524,114</b>                   |



**Figure 3: Percentage of total extractions by 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 2004 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 2004.



**Figure 4: Percentage representation of urban extraction by city or area**

**Table 3. Urban extraction data by city or area**

| <b>City or Area</b>         | <b>Urban Pumping (acre-feet)</b> | <b>Percentage of Total</b> |
|-----------------------------|----------------------------------|----------------------------|
| Castroville                 | 851                              | 1.6%                       |
| Chualar                     | 136                              | 0.3%                       |
| Fort Ord                    | 2,946                            | 5.6%                       |
| Gonzales                    | 1,520                            | 2.9%                       |
| Greenfield                  | 1,317                            | 2.5%                       |
| King City                   | 3,568                            | 6.7%                       |
| Marina Coast Water District | 2,276                            | 4.3%                       |
| Other Areas                 | 8,603                            | 16.2%                      |
| Salinas                     | 26,676                           | 50.3%                      |
| San Ardo                    | 128                              | 0.2%                       |
| San Lucas                   | 54                               | 0.1%                       |
| Soledad                     | 2,514                            | 4.7%                       |
| Soledad Prisons             | 2,473                            | 4.6%                       |
| <b>Total</b>                | <b>53,062</b>                    | <b>100.0%</b>              |

# Agricultural Water Conservation Plans

The Agricultural Water Conservation Plans include net irrigated acreage, irrigation method, and crop category. This information 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, 2003, 2004 and 2005, respectively.

**Table 4. 1993 - net acre distribution of irrigation methods by crop type based on N/A<sup>1</sup> % companies reported**

| 1993         | Furrow       | Sprinkler<br>& Furrow | Hand Move<br>Sprinklers | Solid Set<br>Sprinklers | Linear<br>Move | Drip          | Other <sup>2</sup> | 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            |
| <b>Total</b> | <b>3,227</b> | <b>86,435</b>         | <b>34,449</b>           | <b>20,295</b>           | <b>3,925</b>   | <b>25,080</b> | <b>199</b>         | <b>173,610</b> |

**Table 5. 2003 - net acre distribution of irrigation methods by crop type based on 79% companies reported**

| 2003         | Furrow       | Sprinkler<br>& Furrow | Hand Move<br>Sprinklers | Solid Set<br>Sprinklers | Linear<br>Move | Drip          | Other <sup>2</sup> | Total          |
|--------------|--------------|-----------------------|-------------------------|-------------------------|----------------|---------------|--------------------|----------------|
| Vegetables   | 1,601        | 54,712                | 21,941                  | 5,636                   | 2,205          | 28,206        | 0                  | 114,301        |
| Field Crops  | 312          | 930                   | 332                     | 981                     | 0              | 20            | 0                  | 2,575          |
| Berries      | 0            | 0                     | 0                       | 88                      | 0              | 4,851         | 0                  | 4,939          |
| Grapes       | 8            | 0                     | 0                       | 2,797                   | 0              | 31,175        | 0                  | 33,980         |
| Tree Crops   | 0            | 2,595                 | 0                       | 378                     | 20             | 2,273         | 0                  | 5,266          |
| Forage       | 27           | 0                     | 245                     | 217                     | 0              | 0             | 522                | 1,011          |
| Unirrigated  |              |                       |                         |                         |                |               |                    | 630            |
| <b>Total</b> | <b>1,948</b> | <b>58,237</b>         | <b>22,518</b>           | <b>10,097</b>           | <b>2,225</b>   | <b>66,525</b> | <b>522</b>         | <b>162,702</b> |

**Table 6. 2004 - net acre distribution of irrigation methods by crop type based on 90% companies reported**

| 2004         | Furrow       | Sprinkler<br>& Furrow | Hand Move<br>Sprinklers | Solid Set<br>Sprinklers | Linear<br>Move | Drip          | Other <sup>2</sup> | 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          |
| <b>Total</b> | <b>2,603</b> | <b>47,766</b>         | <b>30,669</b>           | <b>10,963</b>           | <b>1,659</b>   | <b>70,721</b> | <b>357</b>         | <b>167,767</b> |

**Table 7. 2005 - net acre distribution of irrigation methods by crop type based on 90% companies reported**

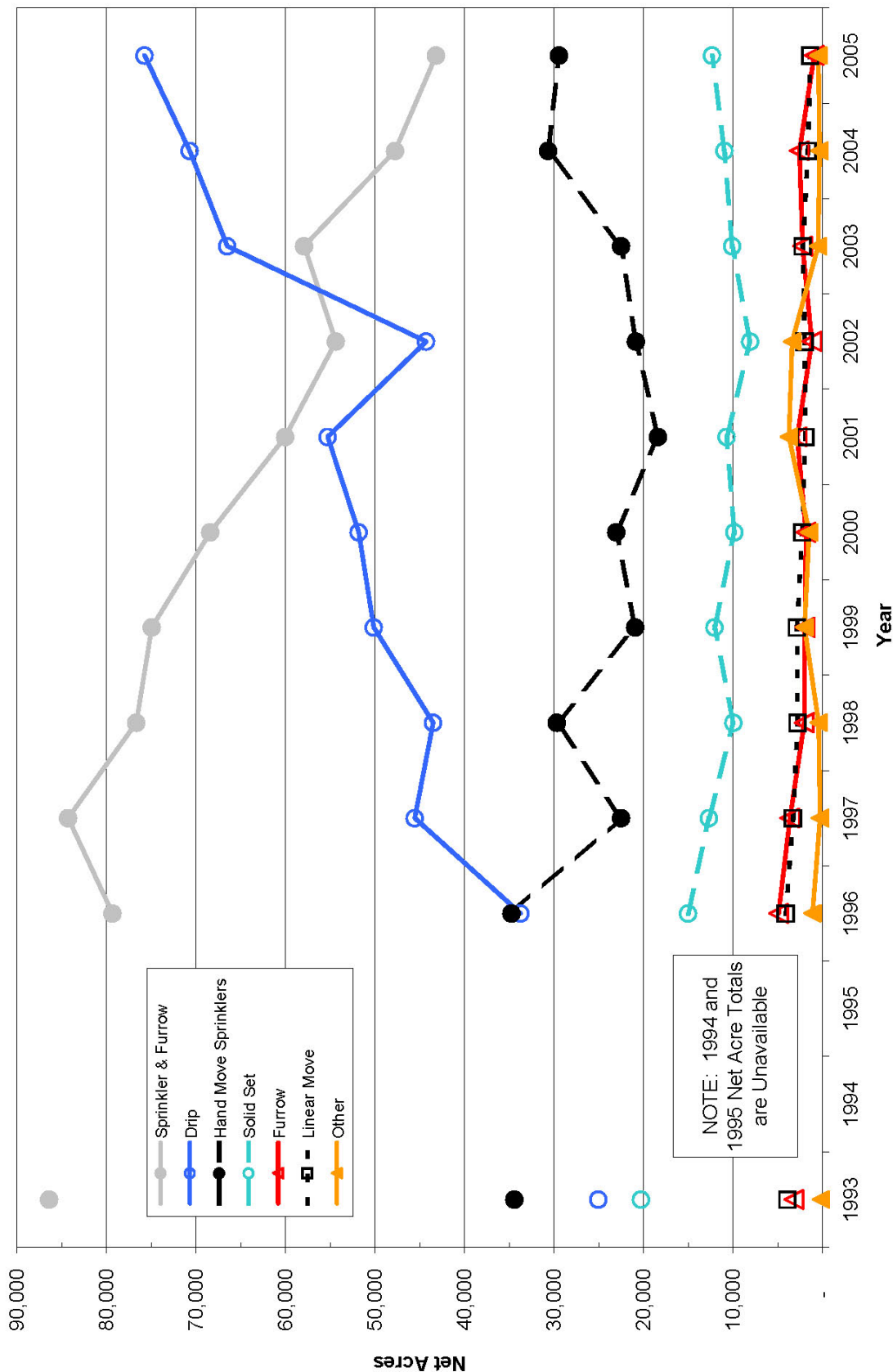
| 2005         | Furrow     | Sprinkler<br>& Furrow | Hand Move<br>Sprinklers | Solid Set<br>Sprinklers | Linear<br>Move | Drip          | Other <sup>2</sup> | Total          |
|--------------|------------|-----------------------|-------------------------|-------------------------|----------------|---------------|--------------------|----------------|
| 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          |
| <b>Total</b> | <b>955</b> | <b>43,194</b>         | <b>29,469</b>           | <b>12,369</b>           | <b>1,383</b>   | <b>75,763</b> | <b>477</b>         | <b>167,991</b> |

<sup>1</sup> "N/A" - % companies reported are unavailable for 1993

<sup>2</sup> "Other" may include an irrigation system not listed here or a different combination of systems

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 nine years.

**Table 8. Agricultural "Best Management Practices" implemented from 1997 through 2005**

| <i>Best Management Practices (BMP)</i> | Net Acres <sup>1</sup> |         |         |         |         |         |         |         |         |
|----------------------------------------|------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
|                                        | 1997                   | 1998    | 1999    | 2000    | 2001    | 2002    | 2003    | 2004    | 2005    |
| 12 Months Set Aside                    | 3,508                  | 2,058   | 1,332   | 1,396   | 2,363   | 3,940   | 2,742   | 6,012   | 3,337   |
| Summer Fallow                          | 2,241                  | 2,277   | 3,657   | 3,511   | 1,532   | 2,652   | 2,278   | 2,025   | 2,535   |
| Flowmeters                             | 122,475                | 132,225 | 124,963 | 127,454 | 125,624 | 106,739 | 124,342 | 133,349 | 131,711 |
| Time Clock/Pressure Switch             | 135,954                | 137,414 | 130,863 | 130,298 | 124,427 | 116,062 | 133,405 | 140,167 | 138,707 |
| Soil Moisture Sensors                  | 56,936                 | 58,854  | 62,357  | 58,975  | 56,148  | 45,927  | 50,460  | 49,328  | 48,824  |
| Pre-Irrigation Reduction               | 104,203                | 101,649 | 89,454  | 93,733  | 82,791  | 80,501  | 90,878  | 93,094  | 88,576  |
| Reduced Sprinkler Spacing              | 78,142                 | 81,856  | 75,884  | 74,245  | 68,963  | 61,607  | 76,691  | 82,292  | 81,068  |
| Sprinkler Improvements                 | 110,523                | 108,507 | 98,409  | 95,356  | 89,505  | 85,302  | 110,194 | 102,041 | 105,544 |
| Off-Wind Irrigation                    | 111,076                | 102,873 | 102,433 | 101,828 | 93,387  | 91,706  | 111,278 | 111,862 | 117,254 |
| Leakage Reduction                      | 125,334                | 120,006 | 114,882 | 106,917 | 95,304  | 95,217  | 121,890 | 118,125 | 115,117 |
| Micro Irrigation System                | 42,367                 | 40,893  | 48,562  | 55,292  | 55,261  | 44,078  | 58,742  | 62,796  | 68,861  |
| Surge Flow Irrigation                  | 20,507                 | 16,192  | 18,468  | 15,796  | 10,677  | 7,084   | 8,538   | 6,708   | 7,180   |
| Tailwater Return System                | 21,121                 | 22,803  | 23,597  | 23,773  | 26,236  | 25,263  | 23,914  | 27,653  | 23,097  |
| Land Leveling/Grading                  | 65,143                 | 57,625  | 58,679  | 61,001  | 54,319  | 56,361  | 69,420  | 71,682  | 69,673  |

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

## Water and Land Use Form

### Summary of Reported Unit Agricultural Water Pumped by Subarea

Table 9 presents the average unit agricultural water pumped (acre-feet/acre) by subarea, calculated using the reported acreage and water pumped from the 2003-2004 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.

**Table 9. Reported unit agricultural water pumped by subarea**

| <i>Subarea</i>                            | <i>Pressure</i> | <i>East Side</i> | <i>Forebay</i> | <i>Upper Valley</i> | <i>Overall Average</i> |
|-------------------------------------------|-----------------|------------------|----------------|---------------------|------------------------|
| <b>Unit Water Pumped (acre-feet/acre)</b> | <b>1.5</b>      | <b>2.6</b>       | <b>2.6</b>     | <b>2.4</b>          | <b>2.3</b>             |

Changing weather patterns and variable soil 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.

NOTE: Table 9 data should not be compared to the 1995 through 1999 Summary Reports because this table contains a larger data set; comparison to previous data could cause inaccurate conclusions.

# Urban Water Conservation Plans

Since 1996, the Agency has been collecting data for the Urban Water Conservation Plan program. Table 10 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 10. Urban “Best Management Practices” implemented from 2001 through 2005**

| <b>Best Management Practices</b>                                                                                                                                                  | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|-------------|-------------|-------------|
| <b>Provide speakers to community groups and media</b>                                                                                                                             | <b>65%</b>  | <b>94%</b>  | <b>77%</b>  | <b>71%</b>  | <b>42%</b>  |
| <b>Use paid and public service advertising</b>                                                                                                                                    | <b>63%</b>  | <b>90%</b>  | <b>77%</b>  | <b>74%</b>  | <b>45%</b>  |
| Provide conservation information in bill inserts                                                                                                                                  | 88%         | 82%         | 56%         | 65%         | 52%         |
| Provide individual historical water use information on water bills                                                                                                                | 69%         | 84%         | 88%         | 77%         | 72%         |
| Coordinate with other entities in regional efforts to promote water conservation practices                                                                                        | 91%         | 84%         | 85%         | 91%         | 68%         |
| <b>Work with school districts to provide educational materials and instructional assistance</b>                                                                                   | <b>72%</b>  | <b>94%</b>  | <b>54%</b>  | <b>33%</b>  | <b>46%</b>  |
| Implement requirements that all new connections be metered and billed by volume of use                                                                                            | 93%         | 91%         | 90%         | 95%         | 76%         |
| Establish a program to retrofit any existing unmetered connections and bill by volume of use                                                                                      | 92%         | 55%         | 69%         | 49%         | 45%         |
| <b>Offer free interior and exterior water audits to identify water conservation opportunities</b>                                                                                 | <b>81%</b>  | <b>55%</b>  | <b>75%</b>  | <b>58%</b>  | <b>96%</b>  |
| <b>Provide incentives to achieve water conservation by way of free conservation fixtures (showerheads, hose end timers) and/or conservation “adjustments” to water bills</b>      | <b>65%</b>  | <b>89%</b>  | <b>73%</b>  | <b>35%</b>  | <b>70%</b>  |
| <b>Enforcement and support of water conserving plumbing fixture standards, including requirement for ultra low flush toilets in all new construction</b>                          | <b>70%</b>  | <b>95%</b>  | <b>95%</b>  | <b>95%</b>  | <b>94%</b>  |
| Support of State/Federal legislation prohibiting sale of toilets using more than 1.6 gallons per flush                                                                            | 90%         | 85%         | 89%         | 96%         | 95%         |
| Program to retrofit existing toilets to reduce flush volume (with displacement devices)                                                                                           | 64%         | 45%         | 42%         | 56%         | 54%         |
| <b>Program to encourage replacement of existing toilets with ultra low flush (through rebates, incentives, etc.)</b>                                                              | <b>65%</b>  | <b>87%</b>  | <b>71%</b>  | <b>71%</b>  | <b>33%</b>  |
| Provide guidelines, information, and/or incentives for installation of more efficient landscapes and water-saving practices                                                       | 67%         | 64%         | 87%         | 93%         | 86%         |
| Encourage local nurseries to promote use of low water use plants                                                                                                                  | 84%         | 82%         | 39%         | 3%          | 53%         |
| <b>Develop and implement landscape water conservation ordinances pursuant to the “Water Conservation in Landscaping Act”</b>                                                      | <b>44%</b>  | <b>65%</b>  | <b>56%</b>  | <b>51%</b>  | <b>36%</b>  |
| <b>Identify and contact top industrial, commercial, and/or institutional customers directly; offer and encourage water audits to identify conservation opportunities</b>          | <b>30%</b>  | <b>56%</b>  | <b>53%</b>  | <b>4%</b>   | <b>67%</b>  |
| <b>Review proposed water uses for new commercial and industrial water service, and make recommendations for improving efficiency before completion of building permit process</b> | <b>45%</b>  | <b>69%</b>  | <b>80%</b>  | <b>10%</b>  | <b>73%</b>  |
| Complete an audit of water distribution system at least every three years as prescribed by American Water Works Association                                                       | 70%         | 57%         | 20%         | 76%         | 58%         |
| Perform distribution system leak detection and repair whenever the audit reveals that it would be cost effective                                                                  | 94%         | 90%         | 21%         | 77%         | 60%         |
| Advise customers when it appears possible that leaks exist on customer’s side of water meter                                                                                      | 93%         | 91%         | 93%         | 96%         | 94%         |
| <b>Identify irrigators of large landscapes (3 acres or more) and offer landscape audits to determine conservation opportunities</b>                                               | <b>47%</b>  | <b>60%</b>  | <b>52%</b>  | <b>4%</b>   | <b>29%</b>  |
| <b>Provide conservation training, information, and incentives necessary to encourage use of conservation practices</b>                                                            | <b>83%</b>  | <b>56%</b>  | <b>55%</b>  | <b>8%</b>   | <b>34%</b>  |
| Encourage and promote the elimination of non-conserving pricing and adoption of conservation pricing policies                                                                     | 30%         | 87%         | 43%         | 20%         | 24%         |
| Implementation of conservation pricing policies                                                                                                                                   | 30%         | 62%         | 43%         | 21%         | 26%         |
| 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                 | 94%         | 86%         | 71%         | 83%         | 51%         |
| <b>Implement and/or support programs for the treatment and reuse of industrial waste water / storm water / waste water</b>                                                        | <b>34%</b>  | <b>63%</b>  | <b>42%</b>  | <b>37%</b>  | <b>40%</b>  |

**Monterey County  
Board of Supervisors**

|                       |             |
|-----------------------|-------------|
| Fernando Armenta      | District #1 |
| Louis Calcagno, Chair | District #2 |
| W.B. "Butch" Lindley  | District #3 |
| Jerry Smith           | District #4 |
| Dave Potter           | District #5 |

**Monterey County Water Resources Agency  
Board of Directors**

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|--------------------------------|--------------------------------------|
| Mary Mecartney                 | District #1                          |
| Warren Church                  | District #2                          |
| Timothy M. Handley             | District #3                          |
| Paul E. Martin                 | District #4                          |
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| Richard Ortiz                  | Mayor Select Committee               |

Curtis V. Weeks, General Manager  
William L. Phillips, Deputy General Manager

Robert Johnson, Chief of Water Resources Planning and Management

**Summary Report Team**

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

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